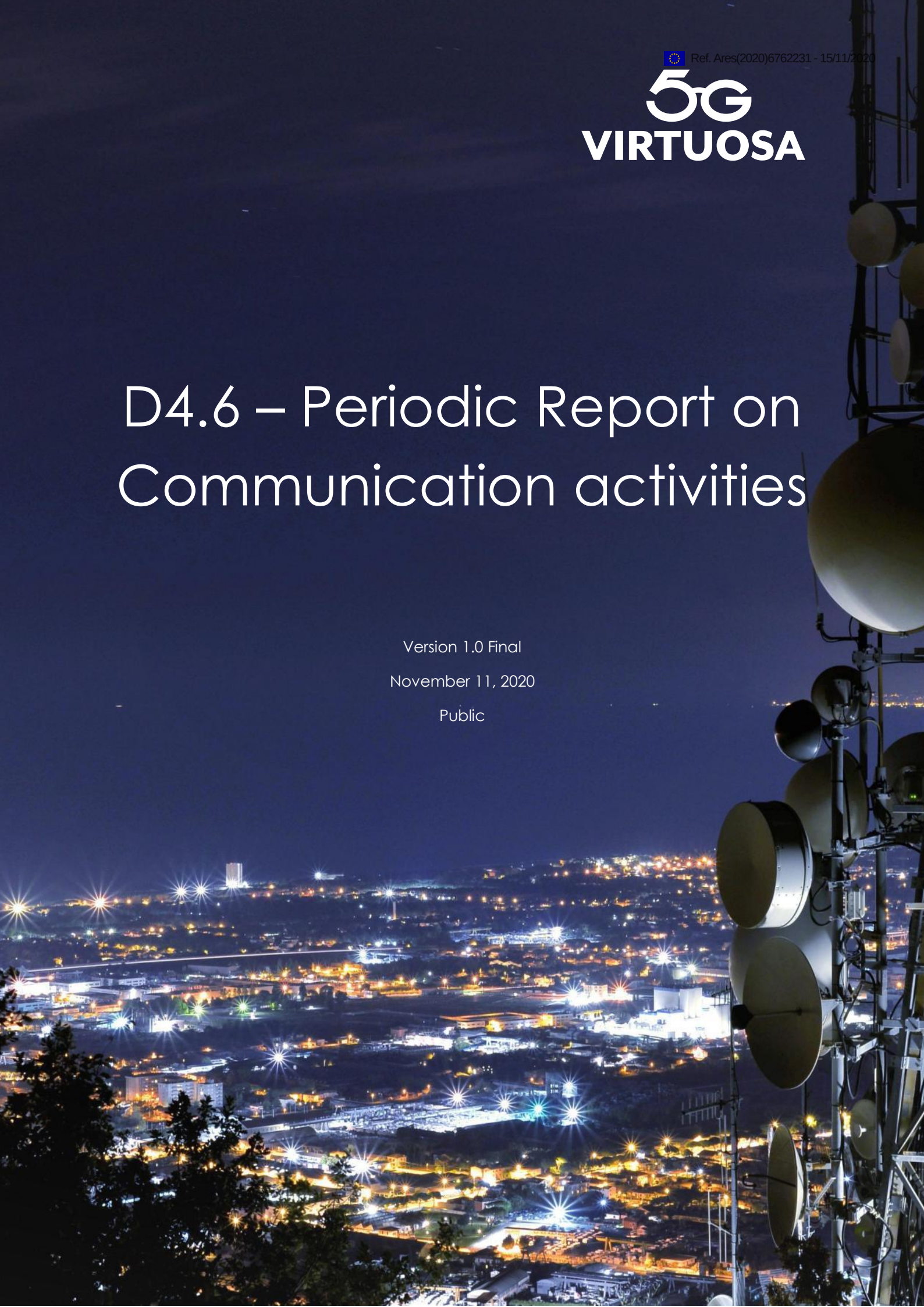
5G VIRTUOSA

D4.6 – Periodic Report on Communication activities

Version 1.0 Final

November 11, 2020

Public



Grant Agreement No.:	866656
Project Acronym	VIRTUOSA
Project Title	Scalable Software Defined Network Architectures for Cooperative LIVE Media Production exploiting Virtualised Production Resources and 5G Wireless Acquisition
Project Start Date (and Duration)	1 September 2019 (24 months)

Work Package	D4.6 – Periodic Report on Communication activities
Due Delivery Date	31 August 2020
Actual Delivery Date	11 November 2020
Lead Participant for this Deliverable	Nevion
Lead Responsible	Olivier Suard & Thomas Heinzer
Dissemination level	Public
Type	R: Report
Status	Version 1.0 Final

History of changes		
Version	**Date**	**Change**
0.1	25 August 2020	Frist draft
0.2	21 September 2020	Reviewed and updated
0.3	10 November 2020	Updated, new video on IP-based studio set-up (Phase 1).
1.0	11 November 2020	Final

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1. Executive summary

This document is a report on communication activities done in Period 1 of the 5G-VIRTUOSA project. It presents qualitative and quantitative measures of communication and dissemination activities that the VIRTUOSA consortium implemented to promote the project, its results and success effectively. The targeted audience for this promotion extends beyond the project's own community, with the overall goal to increase awareness and promotion of market launch.

The outcome of the communication activities in Period 1 of the 5G-VIRTUOSA project is tremendous, in particular under the circumstances of an ongoing COVID-19 pandemic and its impact on events and people.

At least **60 articles published** in the press and presentations on **17 events**, both of which mostly international, have led to a great visibility of the 5G-VIRTUOSA project and its results and success, of each of our companies, and of the awarded EU funding in Europe and globally.

Estimated **1.1 million people** have been reached worldwide in Europe, North America, Latin America, Asia-Pacific, and Middle East/Africa; about **4,650 people directly in events.**

Outstanding is 5G-VIRTUOSA's reach out to international industry associations (i.e. **IABM, International Trade Association for the Broadcast & Media Industry**) and international industry working groups (i.e. **AIMS, Alliance for IP Media Solutions**) which are the representants of the Media industry and act as multiplying bodies to reach out to a huge number of potential customers. This stakeholder group helps to cross-disseminate and widely multiply the key messages and results of the 5G-VIRTUOSA project.

Outstanding is 5G-VIRTUOSA's reach out to standardisation organisations (i.e. **VSF, Video Services Forum**) and its contribution to standardisation work with its expertise in the implementation of new voluntary technical standards of the Media Industry (i.e. SMPTE 2110).

5G-VIRTUOSA has reached out successfully to key stakeholders needed for commercial exploitation such as customers, supply and sales partners, investors, media industry, but also to the scientific community, standards organisations, policy makers and the general public.

In summary, key performance indicators have been reached and our **communication strategic approach** as presented in **D4.2 Communication Plan** was a great success.

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2. Introduction

2.1. About this document

2.1.1. Purpose of this document

The purpose of this document is to present the deliverable **D4.6 – Periodic Report on Communication activities** of the 5G-VIRTUOSA project. The purpose of this document is to report on planned and completed communication activities as a result of our communication activities (Task 4.1), dissemination activities (Task 4,2), standardisation activities (Task 4.5) and training activities (Task 4.6).

2.1.2. Document structure

The main part of this document covers:

- **Deliverables and Milestones (section 3):** an overview of planned and achieved deliverables and milestones related to communication and dissemination activities.
- **Targeted stakeholders (section 4):** an overview of targeted stakeholders in terms of stakeholder groups, regions and estimated number of persons reached.
- **Communication activities planned and completed (section 5):** an overview of all communication, dissemination, standardisation, and training activities implemented and its reach out to targeted stakeholders. In particular:
    - **Branding:** project's visible ID;
    - **Digital communication:** reach out via project's website and social media;
    - **Media:** reach out to the media, press releases, press articles published, other articles published (own contributions, interviews)
    - **Direct (face-to-face) communication:** presentations on events (trade fairs, conferences, workshops) and presentations on own organised events (demo events, webinars).
    - **Communication materials:** project brochure, project presentation (power point), template for deliverable reports, newsletters posted.
- **Key Performance Indicators (KPIs) achieved (section 6):** executive overview of KPIs planned and achieved in Period 1
- **Conclusion (section 7):** evaluation of communication strategic approach.
- **Annexes (section 8):** presentation of 5G-VIRTUOSA branding, 5G-VIRTUOSA website, 5G-VIRTUOSA on social media and YouTube, all 5G-VIRTUOSA articles published and all 5G-VIRTUOSA events participated to or organised in Period 1.

2.1.3. Audience

This document is public.

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3. Deliverables and Milestones in Period 1

The tables below (**Table 1, Table 2**) presents a list of deliverables and milestones related to communication and dissemination activities planned and achieved in Period 1 of the 5G-VIRTUOSA project.

Table 1: Deliverables – planned and achieved in Period 1

Del. No	Deliverable title	Nature	Dissemination level	Due date	Status
D4.1	VIRTUOSA Website & Social Media launch	Website etc.	PUBLIC	M02	Achieved, M03, 5 Nov 2019
D4.2	Communication Plan	Report	PUBLIC	M03	Achieved, M04, 2 Dec 2019
D4.3	Communication Pack and Guide	Website etc.	PUBLIC	M04	Achieved, M05, 31 Jan 2020
D4.4	Data Management Plan	ORDP	CONFIDENTIAL	M06	Achieved, M07, 16 Mar 2020
D4.6	Periodic Report on Communication activities	Report	PUBLIC	M12	Achieved, M15, 11 Nov 2020 (This report)

Table 2: Milestones – planned and achieved in Period 1

Mile. No	Milestone title	Nature	Due date	Status
MS4	Commercial exploitation, Dissemination & Communication activities 50% completed.	Means of verification: **D4.1**, **D4.2**, **D4.3**, **D4.4**, D4.5, **D4.6**, D4.7 finalised.	M12	Achieved, M15, 11 Nov 2020. Communication & dissemination activities (bold)

The deliverable **D4.2 - Communication Plan** (submitted M03, 2 Dec 2019) describes the over strategy for communication, including the objectives, phases, targeted audience, and channels used. It details the activities planned for the entire duration of the project duration, with a timeline for their implementation as well as key performance indicators (KPIs) to measure the effectiveness of those activities.

The deliverable **D4.1 - VIRTUOSA Website & Social Media launch** (submitted M03, 5 Nov 2019) describes the project website and the social media presence.

The deliverable **D4.3 – Communication Pack and Guide** (submitted M05, 31 Jan 2020) presents a Communication Pack as first set of valuable and quality communication/promotional materials and tools written in an understandable way for non-specialists and a short Communication Guide for the VIRTUOSA project.

The deliverable **D4.4 – Data Management Plan** (submitted M07, 16 Mar 2020) is a document for making project's data findable, accessible, interoperable, and reusable (FAIR) in line with EC's guidelines and recommendation.

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4. Targeted Stakeholders

The overall objective of the VIRTUOSA project is to demonstrate and validate our new VIRTUOSA product in a real operational environment and to complete commercial and manufacturing preparations for product launch within this 24-month project.

Therefore, overall goal is to target stakeholders needed for successful commercial take-up and wide deployment.

Targeted stakeholders were first described in the Communication Plan (**D4.2 Communication Plan**). Later, a detailed stakeholder analysis (**D4.5 Stakeholder analysis**) was done.

Figure 1 graphically summaries eight identified main stakeholder groups needed for successful commercial take-up and wide deployment at this stage. A description of each stakeholder group is given in deliverable **D4.5 Stakeholder analysis**.

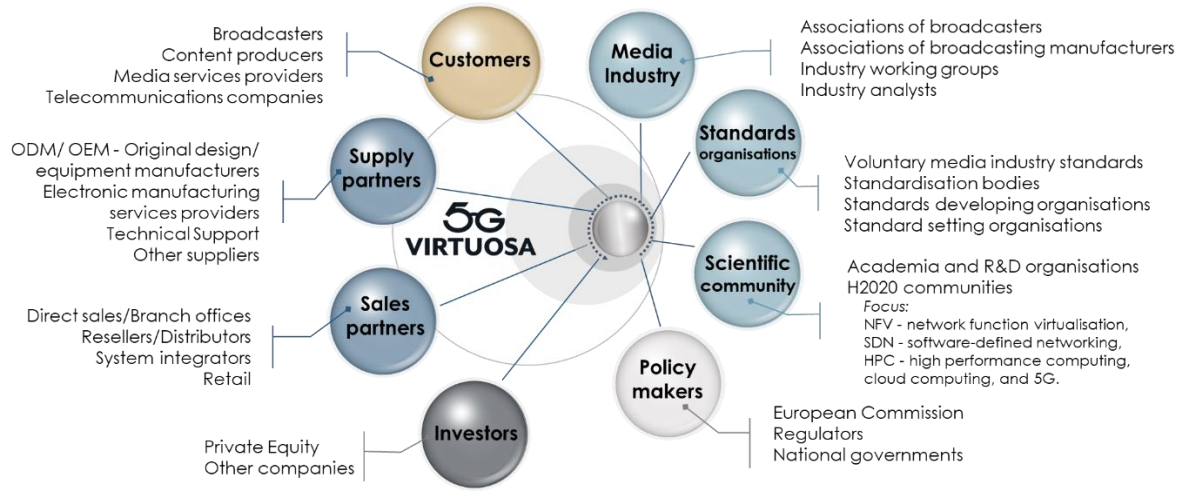

Figure 1: 5G-VIRTUOSA Stakeholder Map.

Three main categories have been identified:

Category I – Potential Customers. These are stakeholders needed to reach out to potential customers i.e. individual **Customers** (i.e. broadcasters, content producers, media services providers, telecommunication companies) and multiplying bodies of the **Media Industry** (e.g. associations of broadcasters and broadcasting manufacturers, working groups, analysts).

Category II – Supply chain and major channels to markets. These are stakeholders needed to build up the supply chain and sales channels as well as financial support to scale up production, i.e. Supply partners, Sales partners, and Investors.

Category III – R&D community and Policy makers. These are stakeholders needed to boost the uptake of disruptive technologies and to facilitate the overall IP-driven ecosystem, i.e. Standards organisations (for voluntary media industry standards e.g. VSF, AMWA, SMPTE, AES) Scientific community, and Policy makers.

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In order to prepare market launch in Europe and global reach out, we seek relevant stakeholders in the countries associated to our key targeted markets in Europe, but also in North America, Latin America, Asia-Pacific, Middle East and Africa.

Figure 2 summaries targeted geographic regions and markets and priority levels.

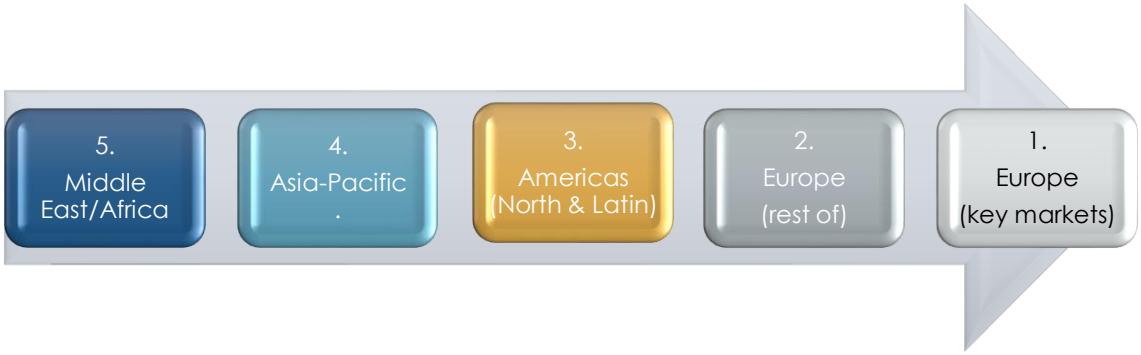

Figure 2: 5G-VIRTUOSA geographic distribution of stakeholders.

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5. Communication activities in Period 1 – planned and completed

5.1. Branding - Project's corporate identity

A brand was designed to create an identity that was separate from that of any of the participants and that reflects the professionalism of the project and to maintain visual coherence in all communication materials, presentations and reports produced within the VIRTUOSA project.

A first version of the logo and graphic identity was launched in October 2019:

Logo:

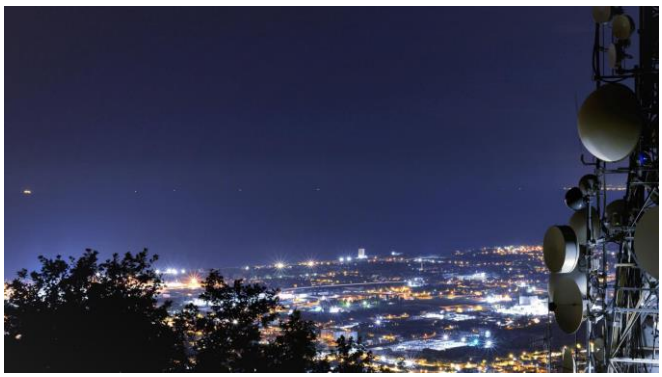
Tagline:

"Exploring 5G and virtualization in broadcast production"

The VIRTUOSA project is using the potential of 5G and Virtualization in live broadcast production. For that reason, the selected tagline for the VIRTUOSA project is: "*Exploring 5G and virtualization in broadcast production*".

The logo is simple and versatile. It also emphasizes the 5G aspect of the project, which is the most-high profile and ground-breaking aspect of the project. The 5G part of the logo is designed to look a little bit like a pair of glasses, reflecting the fact that the project is "exploring" the potential of the 5G technology.

Cover photo:



Various logo versions (see Annex 8.1.1) and a **brand guideline (see Annex 8.1.2)** were developed and communicated, including guidelines for **visibility of EU funding (see Annex 8.1.3)**.

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5.2. Digital communication

5.2.1. Project website

The 5G-VIRTUOSA project website (http://5g-virtuosa.eu) is online since October 31, 2019 (M02).

Annex 8.2.1 shows the start page of the 5G-VIRTUOSA website. A detailed description of the project website has been provided in **deliverable *"D4.1 VIRTUOSA Website & Social Media launch"*.**

The project website is the project's showcase for a broad audience to get information and updates about the 5G-VIRTUOSA project. It has been periodically updated with the latest news, events, and public documents (see **Table 3**, below). All media, social networks and communication or dissemination activities are linked on the website to promote the 5G-VIRTUOSA project, its results and success.

Table 3: 5G-VIRTUOSA project website – activities in Period 1

Website	Content & Activities in Period 1
Home	• 5G-VIRTUOSA's project logo & tagline • Logo of each project participant (NEVION, MELLANOX, LOGIC, IRT) • EU emblem and EU disclaimer
Project	• Challenges of the Media & Entertainment (M&E) industry • The project • Objectives • Logo of each project participant
Participants	• Description of each project participant • Link to each partner's website
Documentation	7 publicly available documents of the project for downloading: 1. 5G-VIRTUOSA logo (October 2019) 2. The brand guidelines (October 2019) 3. Press Release, no.1 (October 2019) - 2 million euros funding 4. 5G-VIRTUOSA presentation (October 2019) 5. 5G-VIRTUOSA brochure (February 2020) 6. Press Release, no.2 (June 2020) – initial IP-based studio set-up 7. Phase 1 video – LAN pilot system for IP-based studio set-ups
News	6 posts promoting 5G-VIRTUOSA's activities (press, events, other): 1. NEVION-led consortium receives 2 million euros (10 Sep 2019) & Link to Press Release, no.1 for downloading 2. Website and Social media Launch (31 Oct 2019) & Link to LinkedIN and Twitter 3. Project documents uploaded (31 Oct 2019) & Link to documents for downloading 4. IRT Fachtung Event (11 Dec 2019) & Link to NEVION's project presentation for downloading

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	5. The VIRTUOSA project – how NEVION is helping bring 5G into live production (12 Dec 2019) & Link to Article about 5G-VIRTUOSA at IABM (International Trade Association for broadcast & media technology)'s website 6. 5G-VIRTUOSA project completes initial technical IP-based studio set-up (16 Jun 2020) & Link to Press Release, no.1 for downloading
Contact	• Get in touch form embedded in website

Website analysis

Table 4 summaries the activities of our project website in Period 1, from its launching till 31 August 2020.

Table 4: 5G-VIRTUOSA project website – summary of KPIs in Period 1

Channel	Measure	Indicator	Period 1
Activities			
Digital	Project website	Number of websites	1
		Number of news	6
		Number of documents uploaded	7

5.2.2. Social media

The 5G-VIRTUOSA project is online on two social media channels (LinkedIn, Twitter) since October 31, 2019 (M02):

- LinkedIn: @5G-VIRTUOSA (https://www.linkedin.com/company/5g-virtuosa/),
- Twitter: @5G_VIRTUOSA (https://twitter.com/5g_virtuosa/).

Annex 8.2.2 and 8.2.3 shows the 5G-VIRTUOSA project on LinkedIn and Twitter. A detailed description of the social media launch has been provided in **deliverable *"D4.1 VIRTUOSA Website & Social Media launch"*.**

The 5G-VIRTUOSA project being a business-to-business (B2B) focused project, the communication team is using **LinkedIn** (a common platform for professional use) and **Twitter** (used by many media and press to stay up to date).

The entire consortium posts regularly news on achievements, events, publications or other activities often referring to the partner's own LinkedIn and Twitter accounts.

Social media analysis

The analysis of the social media for Period 1, from its launching till 31 August 2020, resulted in a total number of:

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- 22+ tweets/posts,
- 110+ following and 91+ followers (see **Table 5**, **Figure 2, 4**, below).

Multiplying effect through retweets of partner's own and other Twitter accounts:

- 14+ tweets/posts,
- 6,077+ following and 85,966+ followers (see **Table 6**, below; **Annex 8.2.4**).

Table 5: 5G-VIRTUOSA on social media – activities and reach out in Period 1

Social media	Type	Twitter account	Tweets/ posts	Following	Followers
LinkedIn	5G-VIRTUOSA project	@5G-VIRTUOSA	5+	63+	63+
Twitter	5G-VIRTUOSA project	@5G_VIRTUOSA	17+	47+	28+
		TOTAL reach out:	**22+**	**110+**	**91+**

Table 6: 5G-VIRTUOSA on social media – multiplying effect and reach out in Period 1

Partner	Type	Twitter account	Tweets/ posts	Following	Followers
NEVION	Partner	@nevioncorp	8+	669+	826+
Mellanox	Partner	@mellanox tech	1+	442+	72,791+
IRT	Partner	@IRTpresse	2+	662+	1,191+
LOGIC	Partner		0+		
IABM	A leading global M&E association of vendors	@The IABM	2+	2,953+	7,098+
Satellite Evolution	A leading news publication for the global satellite industry	@satelliteevo	1+	1,351+	4,060+
		TOTAL reach out:	**14+**	**6,077+**	**85,966+**

Table 7 summaries the activities and reach out of our social media presence in Period 1.

Table 7: 5G-VIRTUOSA on social media – summary of KPIs in Period 1

Channel	Measure	Indicator	Period 1
Activities			
Digital	Social media	Number of social media networks	2
		Number of posts/tweets	22+
		Number of posts/tweets (multiplying effect)	14+
Reach out			
Digital	Social media	Number of following	110+
		Number of followers	91+
		Number of following (multiplying effect)	6,077+
		Number of followers (multiplying effect)	85,966+

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Figure 3: 5G-VIRTUOSA's followers on LinkedIn in Period 1 (Oct 2019 – Aug 2020)

Figure 4: 5G-VIRTUOSA's followers on Twitter in Period 1 (Oct 2019 – Aug 2020)

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5.2.3. Videos

The 5G-VIRTUOSA project has produced two videos in Period 1. The first was launched on Jun 24, 2020 (M10) and the second was launched with some delay on Nov 3, 2020 (M15).

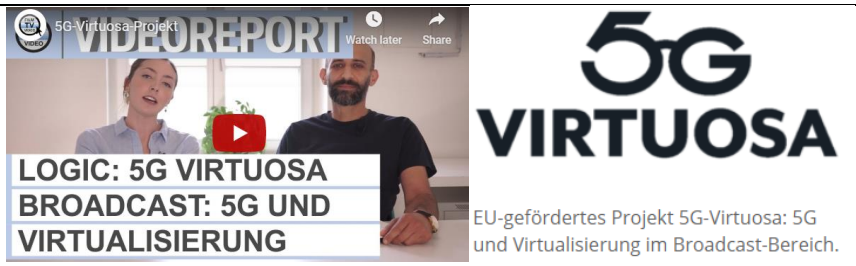
Today, the video are published on three channels:

- **Film-TV-Video** (www.film-tv-video.de), a platform to promote news in broadcasting
- **YouTube**
- **5G-VIRTUOSA website.**

- **Video no1 (in German), launched on Jun 24, 2020:**
  The video lasts 2:50 minutes and was produced under the lead of LOGIC. It describes the purpose of the project and project partners, the planned three use cases for real live testing of the VIRTUOSA innovation, and the preparation work for the first use case at IRT to attract potential users and customers.
- **Video no2 (in English), launched on Nov 3, 2020:**
  The video lasts 6:42 minutes and was produced under the lead of LOGIC. It describes the final setup of the LAN pilot system at IRT's facilities and its benefits with interviews of all project partners (Nevion, Mellanox, LOGIC, IRT) to attract potential users and customers.

More details in **Table 8.**

Table 8: 5G-VIRTUOSA videos in Period 1

Video no.	1
Title	The 5G-VIRTUOSA-Projekt
Lead	LOGIC (LOGIC Media Solutions GmbH)
Speaker	Haci Cengiz, Solution Architect, LOGIC Jessica Volk, Solution Architect, LOGIC
Language	German
Duration	2:50
Channel	**Film-TV-Video**
Link	https://www.film-tv-video.de/technology/2020/06/24/5g-virtuosa-projekt-ip-studio-laeuft/
Published	Jun 24, 2020
Number of Views	**---**
Photos	
	More photos under **Annex 8.2.5**
Channel	**YouTube**
Link	https://www.youtube.com/watch?v=eWvGDRUcIRQ
Published	Jul 21, 2020

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Number of Views	**187 (in only 1 month)**
Photos	
	More photos under **Annex 8.2.5**

Video no.	2
Title	5G-VIRTUOSA - IP-based studio set-up for broadcast facilities (Phase 1)
Lead	LOGIC (LOGIC Media Solutions GmbH)
Speaker	Andy Rayner, Chief Technologist, Nevion Markus Berg, Head of Future Networks, IRT Haci Cengiz, Solution Architect, LOGIC Oliver Schmid, Solution Architect, LOGIC Yonatan Piasetzky, Software Architect, Mellanox
Language	English
Duration	6:42
Channel	**Project website, LinkedIN, Twitter**
Link	• Website: https://5g-virtuosa.eu/5g-virtuosa-phase-1-video/ • LinkedIn: https://www.linkedin.com/posts/5g-virtuosa_new-5g-virtuosa-video-activity-6730054058821877761--9bH • Twitter: https://twitter.com/5G_VIRTUOSA/status/1324291323671781379
Published	Nov 3, 2020
Photos	

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Interview	
	Andy Rayner, Chief Technologist, Nevion: *"… our vision is to explore the potential of **distributed IP production** and look at the way future technology such as **5G** can provide further capability and flexibility."* *"…with the convergence of IP technology, both in the broadcast facility and the WAN network, there is great potential for enabling broadcasters to do more and to **make events and productions viable that has previously been to cost prohibitive without these technologies**."* *"… the **funding from the EU is absolutely vital** for advancing capabilities and helping to take the technology focus away from the media short-term commercial pressure into longer term innovation and exploring potential."*
Interview	
	Markus Berg, Head of Furture Networks, IRT: *"…the migration to IP- and Cloud-enabled production is one of the biggest challenges in the next years but also brings new chances to **improve workflows, reduce costs,** and **reduces the time to playout system** - the **Next Big Thing for Audio Videa Production**"*

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Interview	
	Haci Cengiz, Solution Architect, LOGIC: *"…this project is special because it is a kind of **Blueprint dedicated to broadcasters in the European Union** to get reliable information and perfomance in terms of LIVE production in LAN, WAN and 5G enviroment. This will give them a really good overview how a setup like this will work."*
Interview	
	Oliver Schmid, Solution Architect, LOGIC: *"…make LIVE Media Production a way more effective, a way more cost-efficient and **more scalable**. As a result of this project, we can **reduce the costs by 30-40%** and can do **a lot of more productions in the same time** and **at the same cost level**"*

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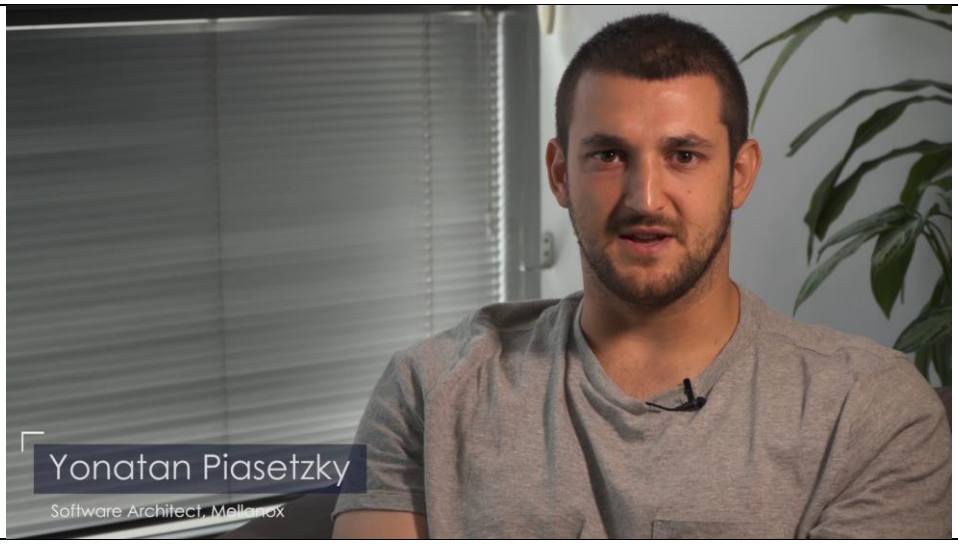
Interview	 **Yonatan Piasetzky, Software Architect, Mellanox:** "*…the ability to add advanced features [like **clean switching**] shows the **great advantage of using flexible and programmable network over SND and commodity off-the-shelf internet switches** for broadcast media*"
Photos	More photos under **Annex 8.2.5**

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5.3. Media

The Consortium is making use of "traditional media" to promote the 5G-VIRTUOSA project and its results and success. It targets primarily print and digital media outlet for the broadcasting industry.

5.3.1. Press releases

The 5G-VIRTUOSA project has produced and launched four press releases in Period 1 (**Table 9**).

Table 9: 5G-VIRTUOSA press releases in Period 1

No.	Press release title	Date	Issued by	see
1	Nevion-led consortium receives 2 million euros	10 Sep 19	NEVION/ 5G-VIRTUOSA	**Annex 8.3.1**
2	Majority of broadcasters optimistic about 5G	8 Jun 20	NEVION/ 5G-VIRTUOSA	**Annex 8.3.2**
3	5G-VIRTUOSA project completes initial technical IP-based studio set-up.	16 Jun 20	5G-VIRTUOSA/ NEVION	**Annex 8.3.3**
4	2020 Broadcast survey into the adoption of 5G	16 Jul 20	NEVION/ 5G-VIRTUOSA	**Annex 8.3.4**

Press release analysis

The press releases have been a tremendous success and led to a great visibility of the 5G-VIRTUOSA project and each of our companies in Europe and global.

In Period 1, **51 individual media** have been reached and **60 articles** have been published with articles about 5G-VIRTUOSA in top-ranked media such as:

- TVB EUROPE
- TVTechnology EUROPE
- SVG Europe
- Broadcast Beat (Americas, global)
- TM Broadcast International (Americas, global)
- Panorama Audiovisual, International (Spain, Americas, global, in Spanish)

Estimated **1.1 million people** have been reached worldwide in Europe, North America, Latin America, Asia-Pacific, and Middle East/Africa.

In addition to the traditional media, industry associations, industry analysts, supply & sales partners as well as agencies of the European Commission have reported about the 5G-VIRTUOSA project and its results and success.

Outstanding is an interview and article about 5G-VIRTUOSA published **by IABM, The International Trade Association for the Broadcast & Media Industry** with global reach.

Outstanding is an interview and article about 5G-VIRTUOSA published by **EE Times (Electronic Engineering Times)**, a journal offering management executives news and analysis of the latest technologies and business developments in the global electronic industry.

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Table 10 summaries 5G-VIRTUOSA's activities and reach out to media in Period 1.

Table 10: 5G-VIRTUOSA in the PRESS – summary of KPIs in Period 1

Channel	Measure	Indicator	Period 1
Activities			
Media	Press releases	Number of press releases launched	4
	Press interviews	Number of interviews given	3
	Articles*	Number of articles written	4
Reach out			
Media	Articles*	Number of individual media reached	51
		Number of articles published (as result of the press releases)	49
		Number of other articles published (contributed to/written)	11
		Total number of articles published	**60**
		Estimated number of people reached	1.1 million
* non-scientific and non-peer- reviewed			

A detailed analysis is done in the following **Section 5.3.2** and **5.3.3**.

Section 5.3.4 is a comprehensive list of all articles published with details (publisher, date, title, web link) and stakeholders reached (stakeholder group, region, estimated number of people reached). All articles published are shown in **Annex 8.4.1-8.4.5.**

5.3.2. In the PRESS - Media reached and Articles published

Table 11 is a comprehensive list of all media reached and all 5G-VIRTUOSA articles published as response to the press releases and an overview of stakeholder groups, regions, and an estimate of persons reached.

Table 11: 5G-VIRTUOSA in the PRESS – media reached and articles published in Period 1

Press release	no. 1
Title	Nevion-led consortium receives 2 million euro EU funding for 5G broadcast remote production project
Lead	NEVION
Published	Sep 10, 2019
Occasion	Project start, Get-to-gather at IBC2019
Media reached	Articles about 5G-VIRTUOSA in (alphabetic order): International press: 1. **Advanced Television** (17 Sep 19), Europe 2. **Digitalisation World** (11 Sep 19) 3. **LightReading** (10 Sep 19) 4. **MarTechSeries** (23 Jul 20, update) 5. **MEDIANTEK** (12 Sep 19) 6. **Multichannel News** (10 Sep 19) 7. **NEXT TV** (10 Sep 19)

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	8. **SVG EUROPE** (16 Sep 19), Europe 9. **Telecompaper** (10 Sep 19) 10. **TVB EUROPE** (11 Sep 19), Europe 11. **TVTechnology EUROPE** (10 Sep 19), Europe National press: 12. **Business Portal Norway** (18 Sep 19), Germany, Norway Details and reach out of each publication is listed in **Table 13** and the published articles are shown in **Annex 8.4.1.**
Number of media reached	**12 individual media reached**; **12 articles published** promoting the 5G-VIRTUOSA project and partners
Regions reached	Europe, Middle East/Africa, global
Stakeholders reached	Customers, Supply & Sales, Media Industry, 5G Industry, Scientific Com., Investors, General public
Est. number of persons reached	1,015,000 people reached
Press release	no. 2
Title	Survey: Majority of broadcasters optimistic about 5G
Lead	NEVION
Published	Jun 8, 2020
Occasion	Result of broadcaster survey on 5G and promotion for planned webinar on 5G by NEVION on June 10, 2020.
Media reached	Articles about 5G and 5G-VIRTUOSA in (alphabetic order): International press: 1. **Advanced Television** (9 Jun 20), Europe 2. **APB-news** (17 Jun 20), Asia-Pacific 3. **CABSAT Industry News (17 Jun 20),** Middle East/Africa 4. **CSI Magazine** (9 Jun 20) 5. **IBC365** (10 Jun 20), Europe, global 6. **IoT2MARKET** (15 Jun 20) 7. **MOBILE EUROPE** (12Jun 20), Europe 8. **Pipeline** (10 Jun 20) 9. **RAPID TV News** (9 Jun 20) 10. **5G radar** (9 Jun 20) National press: 11. **Digi-TV** (11Jun 20), Poland 12. **Film-TV-Video** (9 Jun 20), Germany, Austria, Switzerland Details and reach out of each publication is listed in **Table 13** and the published articles are shown in **Annex 8.4.2 .**
Number of media reached	**12 individual media reached**; **12 articles published** promoting 5G and the 5G-VIRTUOSA project.
Regions reached	Europe, Asia-Pacific, Middle East/Africa, global
Stakeholders reached	Customers, Supply & Sales, Media Industry, 5G Industry, Scientific Com
Est. number of persons reached	865,000 people reached
Press release	no. 3

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Title	5G-VIRTUOSA project completes initial technical IP-based studio set-up
Lead	NEVION
Published	Jun 16, 2019
Occasion	Major achievement: VIRTUOSA LAN pilot system set-up and initial tests completed.
Media reached	Articles about 5G-VIRTUOSA in (alphabetic order): International press: 1. **Broadcast Beat** (16 Jun 20), NAB, US, global 2. **IBC365 News** (17 Jun 20), IBC, Europe, global 3. **KitPlus** (16 Jun 20) 4. **Live Production** (18 Jun 20) 5. **Panorama Audiovisual** (16 Jun 20), in Spanish, Americas, global) 6. **ProductionHUB** (16 Jun 20) 7. **SATELITE Evolution Group** (16 Jun 20), Europe, global 8. **Sound & Video Contractor** (16 Jun 20) 9. **SVG News** (16 Jun 20), Europe 10. **Telecompaper** (22 Jun 20), Europe 11. **TM Broadcast International** (17 Jun 20), Europe, global 12. **TVB Europe** (17 Jun 20), Europe 13. **4RFV** (16 Jun 20) 14. **5G radar** (17 Jun 20), Europe National press: 15. **Digital Studio India** (17 Jun 20), India 16. **FKT** (17 Jun 20) – Germany, Austria, Switzerland 17. **mebucom (Medien Business Community)** (16 Jun 20) – Germany, Austria, Switzerland 18. **Radio+TV Link** (16 Jun 20) – Greece Details and reach out of each publication is listed in **Table 13** and the published articles are shown in **Annex 8.4.3.**
Number of media reached	**18 individual media reached**; **18 articles published** promoting the 5G-VIRTUOSA project and partners
Regions reached	Europe, North America, Latin America, Asia-Pacific, Middle East/Africa, global
Stakeholders reached	Customers, Supply & Sales, Media Industry, 5G Industry, Scientific Com
Est. number of persons reached	1,295,000 people reached
Press release	no. 4
Title	Survey: 82% of broadcasters expect TV content access via 5G to forge ahead of traditional methods
Lead	NEVION
Published	July 16, 2020
Occasion	Result of broadcaster survey on 5G
Media reached	Articles about 5G in broadcasting (alphabetic order): International press: 1. **Advanced Television** (16 July 20), Europe

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	2. **Broadcast** (16 July 20), UK, Europe 3. **SportsPro** – Smart Series (16 July 20), UK, Europe 4. **Broadband TV News** (17 July 20), Europe, global 5. **Digital TV Europe** (17 July 20), Europe 6. **HD GURU** (17 July 20), National press: 7. **5G.NRW Competence Center NEWS** (31 July 20), Germany, Austria, Switzerland Details and reach out of each publication is listed in **Table 13** and the published articles are shown in **Annex 8.4.4.**
Number of media reached	**7 individual media reached**; **7 articles published** promoting 5G in broadcasting
Regions reached	Europe, North America, global
Stakeholders reached	Customers, Supply & Sales, Media Industry, 5G Industry, Scientific Com
Est. number of persons reached	515,000 people reached

5.3.3. In the PRESS - Other Articles published

In addition to the press releases and articles published (5.3.2), 5G-VIRTUOSA has reached out directly to Industry associations, analysts, and policy makers.

Another 11 articles have been published about the 5G-VIRTUOSA project (see **Table 12**, below)

Table 12: 5G-VIRTUOSA in the PRESS – other articles published in Period 1

A. Media Industry – Associations, Industry working groups, Industry analysts	
Articles published	Articles about 5G-VIRTUOSA (alphabetic order) published by: Associations: 1. **IAMB – International Trade Association for the Broadcast & Media Industry,** IAMB Article (12 Dec 19) – Interview with NEVION 2. **IAMB – International Trade Association for the Broadcast & Media Industry,** IAMB Industry News (12 Jun 20) – Press release no2 3. **IAMB – International Trade Association for the Broadcast & Media Industry,** IAMB Industry News (18 Jun 20) – Press release no3 Industry analysts: 4. **EE Times,** Article (01 Jul 20) - Interview with NEVION Details and reach out of each publication is listed in Table 13**Table 14** and the published articles are shown in **Annex 8.4.5**
Number of articles published	**2 individual publishers reached**; **4 articles published** promoting 5G-VIRTUOSA.
Regions reached	Europe, North America, Latin America, Asia-Pacific
Stakeholders reached	Media Industry – Association of broadcasting manufacturers and its members (Customers, Supply & Sales partners) Media Industry – Industry analysts
Est. number of persons reached	200.000 people reached

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B. Supply & Sales partners	
Articles published	Articles about 5G-VIRTUOSA (alphabetic order) published by: Supply & Sales partners: 1. **CVE Italy,** News (07/04/20) Details and reach out of each publication is listed in Table 13**Table 14** and the published articles are shown in **Annex 8.4.5.**
Number of articles published	**1 individual partner**; **1 article published** promoting 5G-VIRTUOSA.
Regions reached	Italy
Stakeholders reached	Supply & Sales partners
Est. number of persons reached	5.000 people reached
C. Policy makers, Scientific community, general public	
Articles published	Articles about 5G-VIRTUOSA (alphabetic order) published by: Policy makers: 1. **CORDIS EU research results,** News (08/07/20) 2. **CDE Centro de Documentacion Europea de Almeria**, News (20/07/20) Details and reach out of each publication is listed in Table 13**Table 14** and the published articles are shown in **Annex 8.4.5.**
Number of articles published	**2 individual publishers**; **2 articles published** promoting 5G-VIRTUOSA.
Regions reached	Europe
Stakeholders reached	Policy makers, Scientific community, General Public
Est. number of persons reached	50.000 people reached
C. Other articles	
Articles published	Articles about 5G-VIRTUOSA (alphabetic order) published by: Other articles published: 1. **Newsline Report** (Tecnologia), Article (23/12/19) - Interview with NEVION 2. **Content + Technology ANZ**, Article (21/11/19) – written by NEVION 3. **Film-TV-Video, Article** (24/06/20) – written by LOGIC 4. **Film-TV-Video, Article** (22/07/20) – written by LOGIC Details and reach out of each publication is listed in Table 13**Table 14** and the published articles are shown in **Annex 8.4.5.**
Number of articles published	**3 individual publishers**; **4 articles published** promoting 5G-VIRTUOSA.
Regions reached	Europe, North America, Latin America, Asia-Pacific, Middle East/Africa, global
Stakeholders reached	Customers, Supply & Sales, Media Industry, Scientific Com., Policy makers, General public
Est. number of persons reached	160.000 people reached

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5.3.4. In the PRESS - List of all Articles published and Stakeholders reached in Period 1

Here all articles published are listed with details for public access (publisher, date, title, web link) and reach out details (audience/region/people reached).

Table 13 lists articles in the press as direct response to our press releases.

Table 13 lists other articles published by industry associations, industry analysts, sales & supply partners, agencies of the European Commission and other media.

All articles published can been seen in **Annex 8.4.**

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Table 13: 5G-VIRTUOSA in the PRESS – List of press Articles published and Stakeholders reached in Period 1 (published order)

No	Date	Publisher	Article title	Link to articles (publics & free of charge)	Stakeholders reached	Regions reached	Est. number of persons reached
	A: Response of Press Release no.1 (Project start-up)						
1	10/09/19	**LightReading**	Eurobites: Telefonica to Wield Jobs Av Again - Report	https://www.lightreading.com/business-employment/jobs/eurobites-telefonica-to-wield-jobs-ax-again-andndash-report/d/d-id/753997	• Customers • Supply & Sales	Europe, Middle East/ Africa	10,000
2	10/09/19	**Multichannel News**	Nevion-led consortium receives 2 million euro EU funding for 5G broadcast remote production project	https://www.multichannel.com/pr-feed/nevion-eu-5g	• Customers • Supply & Sales • Media Industry	Europe global	100,000
3	10/09/19	**NEXT TV: Broadcasting + Cable**	Nevion-led consortium receives 2 million euro EU funding for 5G broadcast remote production project	https://www.nexttv.com/post-type-the-wire/nevion-eu-5g	• Customers • Supply & Sales • Media Industry	Europe global	100.000
4	10/09/19	**Telecompaper**	Nevion-led consortium receives EUR 2 mln EU funding for 5G broadcast remote production project	https://www.telecompaper.com/news/nevion-led-consortium-receives-eur-2-mln-eu-funding-for-5g-broadcast-remote-production-project--1307653	• Customers • Supply & Sales • Media Industry • Scientific Com.	Europe global	100,000
5	10/09/19	**TVTechnology EUROPE**	Nevion-led consortium receives 2 million euro EU funding for 5G broadcast remote production project	https://www.tvtechnology.com/the-wire-blog/nevion-eu-5g	• Customers • Supply & Sales • Media Industry • Scientific Com	Europe, global	100,000

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6	11/09/19	**Digitalisation World**	Nevion-led consortium receives 2 million euro EU funding for 5G broadcast remote production project	https://digitalisationworld.com/news/57644/nevion-led-consortium-receives-2-million-euro-eu-funding-for-5g-broadcast-remote-production-project	• Customers • Supply & Sales • Media Industry • 5G Industry • Scientific Com	Europe, global	100,000
7	11/09/19	**TVB EUROPE**	Consortium secures €2 million EU funding for 5G remote production project	https://www.tvbeurope.com/technology/consortium-secures-e2-million-eu-funding-for-5g-remote-production-project	• Customers • Supply & Sales • Media Industry	Europe	100,000
8	12/09/19	**MEDIANTEK**	Nevion-led consortium receives 2 million euro EU funding for 5G broadcast remote production project	https://mediantek.com/2019/09/12/nevion-led-consortium-receives-2-million-euro-eu-funding-for-5g-broadcast-remote-production-project/	• Customers • Supply & Sales • Media Industry • 5G Industry	Europe	100,000
9	16/09/19	**SVG EUROPE**	IBC 2019: Nevion leads consortium to 2 million euro EU funding for 5G broadcast remote production project	https://www.svgeurope.org/blog/news-roundup/ibc-2019-nevion-leads-consortium-to-2-million-euro-eu-funding-for-5g-broadcast-remote-production-project/	• Customers • Supply & Sales • Media Industry	Europe	100,000
10	16/09/19	**Advanced Television**	Nevion-led consortium receives €2m EU funding for 5G broadcast remote production project	https://advanced-television.com/2019/09/17/nevion-led-consortium-receives-e2m-eu-funding-for-5g-broadcast-remote-production-project/	• Customers • Supply & Sales • Media Industry	Europe	100,000
11	18/09/19	**Business Portal Norway**	Konsortium unter norwegischer Führung erhælt Fördergelder aus EU-Programm „Horizon 2020“ (in German)	https://businessportal-norwegen.com/2019/09/18/konsortium-unter-norwegischer-fuehrung-erhaelt-foerdergelder-aus-eu-programm-horizont-2020/	• Investors • General public	Germany, Norway	5,000

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12	23/07/20 update	**MarTechSeries (MTS)**	Nevion-led consortium receives 2 million euro EU funding for 5G broadcast remote production project	https://martechseries.com/tv-advertising/nevion-led-consortium-receives-2-million-euro-eu-funding-5g-broadcast-remote-production-project/	• Customers • Supply & Sales • Media Industry • Scientific Com	Europe	100,000
	B: Response of Press Release no.2 (Broadcaster survey on 5G & 5G-VIRTUOSA)						
13	09/06/20	**Advanced Television**	Survey: Broadcasters optimistic about 5G	https://advanced-television.com/2020/06/09/survey-broadcasters-optimistic-about-5g/	• Customers • Supply & Sales • Media Industry	Europe	100,000
14	09/06/20	**CSI Magazine**	Most broadcasters bullish on 5G	https://www.csimagazine.com/csi/Most-broadcasters-bullish-on-5G.php	• Customers • Supply & Sales • Media Industry	Europe	100,000
15	09/06/20	**Film-TV-Video**	Broadcaster optimistisch bei 5G (in German)	https://www.film-tv-video.de/technology/2020/06/09/broadcaster-blicken-optimistisch-auf-5g/	• Customers • Supply & Sales • Media Industry • Scientific Com	Germany, Austria, Switzerland	10,000
16	09/06/20	**RAPID TV News**	92% of broadcasters will except to adopt 5G within the next two years	https://www.rapidtvnews.com/2020060958623/92-of-broadcasters-expect-to-adopt-5g-within-the-next-two-years.html#axzz6V78ULPzD	• Customers • Supply & Sales • Media Industry	Europe	50,000
17	09/06/20	**5G radar**	92% of broadcasters will adopt 5G by 2022	https://www.5gradar.com/news/92-of-broadcasters-will-adopt-5g-by-2022	• Customers • Supply & Sales • Media Industry • 5G Industry	Europe	50,000
18	10/06/20	**IBC365 News**	Remote production identified as key 5G application	https://www.ibc.org/news/remote-production-identified-as-key-5g-application/6077.article	• Customers • Supply & Sales • Media Industry • Scientific Com	Europe. global	500,000

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19	10/06/20	**Pipeline**	Nevion Polls Broadcasters on 5G Adoption Plans	https://www.pipelinepub.com/news/Nevion-Polls-Broadcasters-on-5G-Adoption-Plans	• Customers • Supply & Sales • 5G Industry	Europe	50,000
20	11/06/20	**Digi-TV**	Większość nadawców optymistycznie podchodzi do 5G (in Polish)	http://www.digi-tv.pl/laravel/news/192813/wiekszosc-nadawcow-optymistycznie-podchodzi-do-5g.html	• Customers • Supply & Sales • Media Industry	Poland	5,000
21	12/06/20	**MOBILE EUROPE**	Broadcasters eye remote production as leading 5G use case	https://www.mobileeurope.co.uk/press-wire/14862-broadcasters-eye-remote-production-as-leading-5g-use-case	• Customers • Supply & Sales • Media Industry • Scientific Com	Europe	100,000
22	15/06/20	**IoT2MARKET**	Most broadcasters (92%) expect to be ready to adopt 5G within two years according to new research	https://iot2market.com/newsView/228	• Customers • Supply & Sales • Media Industry	Europe	100,000
23	17/06/20	**CABSAT Industry News**	92% of broadcasters expect to adopt 5G within the next two years	https://www.cabsat.com/Industry-news/92-of-broadcasters-expect-to-adopt-5g-within-the-next-two-years	• Customers • Supply & Sales • Media Industry • Scientific Com	Middle East/ Africa	100,000
24	17/06/20	**APB-news** (Asia-Pacific Broadcasting)	Will 5G be a lifeline for FTAs?	https://apb-news.com/will-5g-be-a-lifeline-for-ftas/	• Customers • Supply & Sales • Media Industry • Scientific Com	Asia-Pacific	100,000
	C: Response on Press Release no.3 (5G-VIRTUOSA's first IP-based studio set-up)						
25	16/06/20	**Broadcast Beat (NAB Show LIVE)**	5G-VIRTUOSA project completes initial technical IP-based studio set-up	https://www.broadcastbeat.com/5g-virtuosa-project-completes-initial-technical-ip-based-studio-set-up/	• Customers • Supply & Sales	North America, Latin America, global	100,000

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					• Media Industry • Scientific Com.		
26	16/06/20	**KitPlus**	5G-VIRTUOSA project completes initial technical IP-based studio set-up	https://www.kitplus.com/news/5G-Virtuosa_project_completes_initial_technical_IP-based_studio_set-up/22385.html	• Customers • Supply & Sales • Media Industry	Europe	10,000
27	16/06/20	**mebucom (Medien Business Community)**	5G-VIRTUOSA Projekt tested erste technische IP-based - basierte Studioeinrichtung (in German)	https://mebucom.de/produktion/id-5g-virtuosa-projekt-testet-erste-technische-ip-basierte-studioeinrichtung.html	• Customers • Supply & Sales • Media Industry • Scientific Com	Germany, Austria, Switzerland	10,000
28	16/06/20	**Panorama Audiovisual**	Proyecto 5G-Virtuosa completa la configuración técnica inicial del estudio basado en IP (in Spanish)	https://www.panoramaaudiovisual.com/2020/06/16/proyecto-5g-virtuosa-completa-configuracion-tecnica-inicial/	• Customers • Supply & Sales • Media Industry • Scientific Com	North America, Latin America, global	100,000
29	16/06/20	**ProductionHUB**	5G-VIRTUOSA project completes initial technical IP-based studio set-up	https://www.productionhub.com/press/70481/5g-virtuosa-project-completes-initial-technical-ip-based-studio-set-up	• Customers • Supply & Sales • Media Industry • Scientific Com	North America, Latin America, global	100,000
30	16/06/20	**Radio+TV Link**	Το έργο 5G-Virtuosa λοκληρώνει το αρχικό τεχνικό studio set-up που βασίζεται στο IP (in Greek)	https://www.radiotvlink.com/el/creation/3143-to-ergo-5g-virtuosa-oloklironei-to-arxiko-texniko-studio-set-up-pou-vasizetai-sto-ip	• Customers • Supply & Sales • Media Industry	Greece	5,000
31	16/06/20	**SATELLITE Evolution Group**	5G-VIRTUOSA project completes initial technical IP-based studio set-up	https://www.satellite-evolution.com/single-post/2020/06/16/5G-Virtuosa-project-completes-initial-technical-IP-based-studio-set-up	• Customers • Supply & Sales • Media Industry • Scientific Com	Europe, global	100,000

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32	16/06/20	**Sound & Video Contractor**	5G-VIRTUOSA project completes initial technical IP-based studio set-up	https://www.svconline.com/the-wire/5g-virtuosa-project-completes-initial-technical-ip-based-studio-set-up	• Customers • Supply & Sales • Media Industry	Europe	10,000
33	16/06/20	**SVG News**	Nevion and 5G-VIRTUOSA project partners complete initial technical IP-based studio set-up	https://www.sportsvideo.org/2020/06/16/nevion-and-5g-virtuosa-project-partners-complete-initial-technical-ip-based-studio-set-up/	• Customers • Supply & Sales • Media Industry	Europe	100,000
34	16/06/20	**4RFV**	5G-VIRTUOSA project completes initial technical IP-based studio set-up	https://www.4rfv.com/JHZOA5Q0WMLE/5gvirtuosa-project-completes-initial-technical-ipbased-studio-setup.htm	• Customers • Supply & Sales • Media Industry	Europe, global	100,000
35	17/06/20	**Digital Studio India**	5G-VIRTUOSA project completes initial technical IP-based studio set-up	https://www.digitalstudioindia.com/production/6980-5g-virtuosa-project-completes-initial-technical-ip-based-studio-set-up	• Customers • Supply & Sales • Media Industry • Scientific Com	India	100,000
36	17/06/20	**FKT**	5G-VIRTUOSA project: first technical stage completed	https://www.fkt-online.de/news/news-detail/28004-5g-virtuosa-project-first-technical-stage-completed/	• Customers • Supply & Sales • Media Industry • Scientific Com	Germany, Austria, Switzerland	10,000
37	17/06/20	**IBC365 News**	5G-VIRTUOSA project completes first milestone	https://www.ibc.org/news/5g-virtuosa-project-completes-first-milestone/6107.article	• Customers • Supply & Sales • Media Industry • Scientific Com	Europe, Global	100,000
38	17/06/20	**TM Broadcast International**	5G-VIRTUOSA concludes initial technical IP-based studio set-up	http://tmbroadcast.com/index.php/5g-virtuosa-concludes-initial-technical-ip-based-studio-set-up/	• Customers • Supply & Sales • Media Industry	Europe, global	100,000

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					• Scientific Com		
39	17/06/20	**TVB EUROPE**	5G-VIRTUOSA project completes first IP-based studio set-up	https://www.tvbeurope.com/media-delivery/5g-virtuosa-project-completes-first-ip-based-studio-set-up	• Customers • Supply & Sales • Media Industry • Scientific Com.	Europe	100,000
40	17/06/20	**5G radar**	EU project showcases the first IP-based studio for 5G broadcasting	https://www.5gradar.com/how-to/eu-project-showcases-the-first-ip-based-studio-for-5g-broadcasting	• Customers • Supply & Sales • Media Industry • 5G Industry • Scientific Com	Europe	50,000
41	18/06/20	**Live Production**	5G-VIRTUOSA project completes initial technical IP-based studio set-up	https://www.live-production.tv/news/products/5g-virtuosa-project-completes-initial-technical-ip-based-studio-set.html	• Customers • Supply & Sales • Media Industry • Scientific Com	Europe	100,000
42	22/06/20	**Telecompaper**	5G-VIRTUOSA project completes initial technical IP-based studio set-up	https://www.telecompaper.com/news/5g-virtuosa-project-completes-initial-technical-ip-based-studio-set-up--1343292	• Customers • Supply & Sales • Media Industry • Scientific Com	Europe, global	100,000
	D. Response of Press Release no.4 (Broadcaster survey on 5G)						
43	16/07/20	**Advanced Television**	Survey: 5G to replace traditional broadcast distribution	https://advanced-television.com/2020/07/16/survey-5g-to-replace-traditional-broadcast-distribution/	• Customers • Supply & Sales • Media Industry	Europe	100,000
44	16/07/20	**Broadcast**	Most broadcasters back 5G to replace traditional TV distribution	https://www.broadcastnow.co.uk/tech/most-broadcasters-back-5g-to-replace-traditional-tv-distribution/5151627.article	• Customers • Supply & Sales	Europe	100,000

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					• Media Industry		
45	16/07/20	**SportsPro** SmartSeries	Study: 82% of broadcasters say 5G will replace satellite distribution	https://smartseries.sportspromedia.com/news/5g-technology-nbc-nfl-olympics-bt-sport-remote-broadcast-study	• Customers • Supply & Sales • Media Industry	Europe	100,000
46	17/07/20	**Broadband TV News**	82% of broadcasters think 5G will replace traditional broadcast distribution	https://www.broadbandtvnews.com/2020/07/17/82-of-broadcasters-think-5g-will-replace-traditional-broadcast-distribution/	• Customers • Supply & Sales • Media Industry	Europel	100,000
47	17/07/20	**Digital TV Europe**	5G expected to replace traditional broadcast distribution	https://www.digitaltveurope.com/2020/07/17/5g-expected-to-replace-traditional-broadcast-distribution/	• Customers • Supply & Sales • Media Industry	Europe, global	100,000
48	17/07/20	**HD GURU**	Some broadcasters expect sea change from 5G cellular	https://hdguru.com/some-broadcasters-expect-sea-change-from-5g-cellular/	• Supply & Sales	North America	5,000
49	31/07/20	**5G.NRW Competence Center NEWS**	5G als Ersatz für Satelliten-Fernsehen (in German)	https://5g.nrw/5g-als-ersatz-fuer-satelliten-fernsehen/	• Customers • Supply & Sales • Media Industry • Scientific Com	Germany	10,000

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Table 14: 5G-VIRTUOSA in the PRESS – List of Other Articles published and Stakeholders reached in Period 1

	Date	Publisher	Article title	Link to article (public & free of charge)	Stakeholder group reached	Region reached	Est. number of persons reached
E: Media Industry - Associations/Industry Working groups/Industry analysts							
1	10/12/19	**IAMB -Articles**	The VIRTUOSA project – how Nevion is helping bring 5G into live production (Interview with NEVION, OS)	https://theiabm.org/the-virtuosa-project-how-nevion-is-helping-bring-5g-into-live-production/	• Media Industry	Europe, North America, Latin America, Asia-Pacific, Middle East/Africa, global	100,000
2	12/06/20	**IAMB -Industry News**	Majority of broadcasters optimistic about 5G (Press release no2)	https://theiabm.org/news/majority-of-broadcasters-optimistic-about-5g/	• Media Industry	Europe, North America, Latin America, Asia-Pacific, Middle East/Africa, global	100,000
3	18/06/20	**IAMB - Industry News**	5G-VIRTUOSA project completes initial technical IP-based studio set-up (Press release no3)	https://theiabm.org/news/5g-virtuosa-project-completes-initial-technical-ip-based-studio-set-up/	• Media Industry	Europe, North America, Latin America, Asia-Pacific, Middle East/Africa, global	100,000
4	01/07/20	**EE Times** Electronic Engineering Times	The 5G Opportunity for Broadcasters Remains Tenuous (Interview with NEVION, AR)	https://www.eetimes.com/the-5g-opportunity-for-broadcasters-remains-tenuous/#	• Media Industry	Europe, global	100,000

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	F: Supply & Sales partners						
5	07/04/20	**CVE Italy**	Five Broadcast Trends to Watch in 2020 (also in Italy) Article written by NEVION, AR)	https://www.cve-italy.com/cinque-tendenze-broadcast-da-tenere-docchio-nel-2020/?lang=en	• Customers • Supply & Sales	Italy	5,000
	G: Policy makers – European Commission						
6	08/07/20	**CORDIS EU research results**	Taking a step towards a fully-fledged 5G broadcasting environment (in English, German, Spanish, Italian, Polish)	https://cordis.europa.eu/article/id/421548-taking-a-step-towards-a-fully-fledged-5g-broadcasting-environment	• Policy makers • Scientific Com. • General public	Europe	50,000
7	20/07/20	**CDE** (Centro de Documentacion Europea de Almeria)	Taking a step towards a fully-fledged 5G broadcasting environment	https://www.cde.ual.es/en/taking-a-step-towards-a-fully-fledged-5g-broadcasting-environment/	• Policy makers • Scientific Com. • General public	Europe	50,000
	H: Other articles						
8	23/12/19	**Newsline Report** (Tecnologia)	PROYECTO VIRTUOSA: EL 5G AVANZA EN EUROPA (in Spanish) (Interview with NEVION, OS)	https://www.newslinereport.com/tecnologia/nota/proyecto-virtuosa-el-5g-avanza-en-europa	• Customers • Supply & Sales • Media Industry • Scientific Com.	North America, Latin America	100,000
9	21/11/19	**Content + Technology ANZ**	How broadcasters can transition to an all-IP environment (by Olivier Suard, Nov-Dec 2019, Vol.16, Issue 6) (article written by NEVION, OS)	https://issuu.com/contentandtechnology/docs/content_technology_anz_november_2019__issuu/46	• Customers • Supply & Sales • Media Industry • Scientific Com.	Europe, North America, Latin America, Asia-Pacific, Middle East/Africa, global	50,000
10	24/06/20	**Film-TV-Video**	5G-Virtuosa-Project: IP-Studio läuft (in German) + VIDEO (article written by LOGIC)	https://www.film-tv-video.de/technology/2020/06/24/5g-virtuosa-projekt-ip-studio-laeuft/	• Customers • Supply & Sales • Media Industry	Germany, Austria, Switzerland	10,000

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					• Scientific Com.		
11	22/07/20	**Film-TV-Video**	Video: 5G-Virtuosa-Project (in German) + VIDEO (article written by LOGIC)	https://www.film-tv-video.de/business/2020/07/22/video-5g-virtuosa-projekt/	• Customers • Supply & Sales • Media Industry • Scientific Com.	Germany, Austria, Switzerland	10,000

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5.4. Direct (face-to-face) communication

Due to the COVID-19 pandemic, unfortunately various planned events have been cancelled or postponed by the event organiser for safety reason. Nevertheless, many event organisers have offered alternative to traditional face-to-face events various virtual events to keep the communication running. In addition, the 5G-VIRTUOSA project has started to offer own webinars.

Event activities and analysis

Table 15 summaries 5G-VIRTUOSA's activities on events and reach out in Period 1.

In Period 1, 5G-VIRTUOSA was actively presented on **17 events** and reached out directly to customers, supply & sales partners, industry associations, industry working groups, standards organisations, and the scientific community.

Estimated **4,650 people** have been reached **directly** worldwide in Europe, North America, Latin America, Asia-Pacific, and Middle East/Africa.

Outstanding are presentations on events hosted by:

- **IBAM: International Trade Association for the Broadcast & Media Industry**
  with over 500 members representing 60% of the global broadcast technology market;
- **AIMS: Alliance for IP Media Solutions**,
  an alliance founded by leading broadcast technology companies to foster the adoption of industry standards;
- **VSF: Video Services Forum**
  an international association comprised of service providers, users and manufacturers dedicated to interoperability, quality metrics, and contributing towards standards development.

Outstanding are presentations on following events:

- **IP SHOWCASE Summer Sessions 2020, hosted by VSF and AIMS and in cooperation with AES, AMWA, SMPTE, the ULTRA HD Forum and EBU.**
  This is a WEBINAR series on media-over-IP education by industry experts organised in the absence of major trade shows (e.g. NAB) due to COVID-19 pandemic.
- **IABM event on Virtualisation, hosted by IABM**
  A virtual event on scalability via virtualisation, including a panel discussion with industry experts.
- **IABM event on 5G, hosted by IABM**
  A virtual event on global 5G market and deployment strategies, including a panel discussion with industry experts.
- **FIT-PRO, Munich, Germany, hosted by IRT in cooperation with the public broadcasters from Germany (ARD, ZDF), Austria (ORF) and Switzerland (SRG/SSR)**
  Annual conference of the Networks IT and Production on IP and Remote Production.

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Table 15: 5G-VIRTUOSA on EVENTS – summary of KPIs in Period 1

Channel	Measure	Indicator	Period 1
Activities			
Direct Commu-nication	Trade fairs	Number of trade fairs participated	4
	Conferences	Number of conferences participated	2
	Workshops	Number of workshops participated	2
	Events hosted by Standards org.	Number of conferences participated	3
		Number of workshops participated	1
	Other events	---	0
	Organisation of workshops	Number of workshops held	5
	Organisation of demo events	Number of demo workshops held	0
	Training	---	0
		TOTOAL number of events	**17**
Reach out			
Direct Commu-nication	Events	Number of associations directly reached	3
		Number of standardization organization directly reached	5
		Estimated number of people directly reached	4,650

A detailed analysis is done in the following **Section 5.4.1** - **5.4.4**.

Section 5.3.4 is a comprehensive list of all events participated to or organized with details (event name, date, place, web links) and stakeholders reached (stakeholder group, region, estimate of people reached).

All events participated to are shown in the **Annex 8.5.1** and all events own organized are shown in **Annex 8.5.2** .

5.4.1. On EVENTS - Trade fairs

5G-VIRTUOSA has been presented at selected international trade-fairs for the broadcast sector, where all project partners - NEVION, MELLANOX, LOGIC and IRT - regularly participate with their own booths, showcases and conference contributions.

Due to the COVID-19 pandemic, only 1 of 4 planned trade fairs could be visited in Period 1 (see **Table 16**, below). However, promotion of the 5G-VIRTUOSA project was achieved through articles in the accompanying media (IBC365 News, Broadcast Beat (NAB), CABSAT Industry News).

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Table 16: 5G-VIRTUOSA on EVENTS – trade fairs in Period 1

A. Trade fairs	
Trade Fairs	Participation to trade fairs with exhibitions/conferences (order by date): International trade fairs with exhibition/conferences: 1. **IBC Show 2019**- International Broadcasting Convention, Amsterdam, Netherlands, Europe, 13-17 Sep. 20. 5G-VIRTUOSA promotion through press release and B2B talks with booth visitors. 2. **CABSAT 20** Dubai, Middle East & Africa, 31 Mar - 2 Apr. 2020 **(POSTPONED to 26-28 Oct. 20 by organizer).** Promotion of 5G-VIRTUOSA through article published in CABSAT Industry News (17 Jun 20). 3. **NAB Show 20 -** National Association of Broadcasters Las Vegas, USA, America, April 18-22, 2020 **(CANCELLED by organizer).** Promotion of 5G-VIRTUOSA through article published in Broadcast Beat (16 Jun 20). 4. **Broadcast Asia 2020** Singapore, Asia-Pacific, 9-11 June 20 **(POSTPONED to 29.Sep. – 1 Oct. 20 by organizer)** National trade fairs with exhibition/conferences: **---** Details of each trade fair, presentations, and reach out are listed in **Table 20** and the announcements are shown in **Annex 8.5.1**.
Number of Trade fairs	**4 (1) trade fairs** promoting 5G-VIRTUOSA.
Regions reached	Europe, North America, Latin America, Asia-Pacific, Middle East/ Africa
Stakeholders reached	Customers, Supply & Sales, Media Industry, Scientific Com., Standards Org., Investors, General Public
Est. number of persons reached	1.000 individual persons reached directly

5.4.2. On EVENTS - Conferences and Workshops

5G-VIRTUOSA has been presented on conferences and workshops hosted by selected industry associations, industry working groups, and others, where project partners as NEVION, MELLANOX, and IRT are active members and contributed with various presentations.

Table 17: 5G-VIRTUOSA on EVENTS – conferences and workshops in Period 1

B. Participation to Conferences,/ Workshops/Seminars (other than C&D))	
Other Events (e.g. conferences, workshops,	Participation to conferences/ workshops/ annual meetings (order by date): International conferences/ workshops/ annual meetings:

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meetings, seminars)	--- <u>National conferences/ workshops/ annual meetings:</u> 1. **FIT-PRO19,** Munich, Germany, Europe, 3-4 Dec 19. Annual conference of the Networks IT and Production; hosted by IRT and in cooperation with public broadcasters from DACH region Details and reach out of each trade fair is listed in **Table 20** and the announcements are shown in **Annex 8.5.1**.
Number of events	**1 conference** promoting 5G-VIRTUOSA.
Regions reached	DACH region (Germany, Austria, Switzerland)
Stakeholders reached	Customers, Supply & Sales, Media Industry, Scientific Com.
Est. number of persons reached	150 individual persons reached directly
C. Participation to Events of Industry Associations / Industry Working Groups	
Events of industry associations or industry working groups	Participation to conferences/workshops/annual meetings (order by date): <u>International conferences/workshops/annual meetings:</u> 1. **IABM DACH Member Council Meeting,** Munich, Germany, Europe, 6 Mar 20. Annual meeting of IBAM DACH, hosted 2019 at IRT. 2. **IABM event on Virtualisation,** Worcester, UK, Europe, 15Apr 20. WEBINAR instead of F2F due to COVID-19 pandemic, hosted by IABM. 3. **IABM event on 5G,** Worcester, UK, Europe, 25 Jun 20. WEBINAR instead of F2F due to COVID-19 pandemic. Details and reach out of each event is listed in **Table 20** and the announcements are shown in **Annex 8.5.1**.
Number of events	**1 conference, 2 workshops** hosted by the Media Industry (i.e. associations)
Regions reached	Europe, North America, Latin America, Asia-Pacific, Middle East/ Africa, global
Stakeholders reached	Media Industry: associations (i.e. IABM) and its members (Customers, Supply & Sales, Scientific Com.)
Est. number of persons reached	1000 individual persons reached directly

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5.4.3. On EVENTS - Events hosted by Standards organisations

5G-VIRTUOSA has been presented on conferences and workshops hosted by standards organisations working with voluntary media industry standards and where project partners as NEVION, MELLANOX, and IRT are active members and contributed with various presentations.

Table 18: 5G-VIRTUOSA on EVENTS – conferences and workshops hosted by Standards organisations in Period 1

D. Participation to Events of Standards organisations, incl. voluntary standards of the Media Industry	
Events of standards organisations, incl. voluntary industry standards	Participation to conferences/workshops/annual meetings (order by date): International conferences/workshops/annual meetings: 1. **VSF Meeting Series,** New York, USA, North America, 14-15 Oct 19. Bi-Annual technical meetings; hosted by VSF. 2. **VidTrans20,** Los Angeles, USA, North America, 25-27 Feb 20. Annual Conference & Exposition; hosted by VSF. 3. **VSF and AIMS event – IP Showcase Summer Sessions 2020,** Washington, USA, North America, 17 Jun 20. WEBINAR in the absence of major trade shows (e.g. NAB20), hosted by VSF and AIMS and in cooperation by AES, AMWA, EBU, SMPTE, the Ultra HD Forum, and EBU. 4. **VSF Meeting Series,** New York, USA, North America, 14 Aug 20. Bi-Annual technical meetings; hosted by VSF. WEBINAR instead of F2F due to COVID-19 pandemic) Details and reach out of each event is listed in **Table 20** and the announcements are shown in **Annex 8.5.1.**
Number of events	**3 conferences and 1 workshop** hosted by standards organisations.
Regions reached	Europe, North America, Latin America, Asia-Pacific, Middle East/ Africa, global
Stakeholders reached	Standards organisations (i.e. VSF, AES, AMWA, SMPTE, Ultra HD Forum)
Est. number of persons reached	1000 individual persons reached directly

5.4.4. On EVENTS - Own organised Workshops/Conferences or Demo events

5G-VIRTUOSA has been presented on own organised workshops.

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s and demo events that will be organized by the project partners themselves.

Table 19 5G-VIRTUOSA on EVENTS - own organised workshops/ conferences/ demo events in Period 1

E. Organization of own workshops/ seminars/ colloquia	
Workshops organised by 5G-VIRTUOSA project partners	Organisation of own workshops/conferences/ seminars/ colloquia (order by date): <u>Organisation of seminars/colloquia:</u> 1. **IRT Expertengespräch,** organised by IRT; Munich, Germany, Europe, 27 May 20. Monthly workshop on technical evolution in broadcasting; organised by IRT. WEBINAR instead of F2F due to COVID-19 pandemic. 2. **WEBINAR series as Alternative Broadcasting Show 2020** in the absence of major trade shows due to COVID-19 pandemic; organised by NEVION. Ipswich, UK, Europe, 17 April 20. 3. **WEBINAR series as Alternative Broadcasting Show 2020** in the absence of major trade shows due to COVID-19 pandemic; organised by NEVION. Ipswich, UK, Europe, 24 April 20. 4. **WEBINAR series as Alternative Broadcasting Show 2020** in the absence of major trade shows due to COVID-19 pandemic; organised by NEVION. Ipswich, UK, Europe, 18 Mai 20. 5. **WEBINAR series as Alternative Broadcasting Show 2020** in the absence of major trade shows due to COVID-19 pandemic; organised by NEVION. Ipswich, UK, Europe, 10 Jun 20. <u>Organisation of demo workshops:</u> **Demo workshop for the VIRTUOSA LAN pilot system**, organised by IRT; Munich, Germany, Europe, Jun 20. **CANCELLED due to COVID-19 pandemic.** Details and reach out of each trade fair is listed in **Table 20** and the announcements are shown in **Annex 8.5.2**.
Number of events	**5 events organised** by project partners
Regions reached	Europe

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Stakeholders reached	Customers, Supply & Sales, Scientific Com.
Est. number of persons reached	1500 individual persons reached directly

5.4.5. On EVENTS - List of all Events and Stakeholders reached in Period 1

In **Table 20** all events participated to or organized are listed with details for public access (event, date, title, web link), kind of activity (e.g. presentation, poster, B2B) and reach out to stakeholders (stakeholder category/region/estimate number of people reached).

All articles published can been seen in **Annex 8.5.1** (events participated to) and **Annex 8.5.2** (events organised).

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Table 20: 5G-VIRTUOSA on EVENTS – List of all Events and Stakeholders reached in Period 1

No	Event Date	Event/ Place	Event Participant	Activities (presentation, poster, B2B, etc.)	Link to event or contri-bution	Stakeholders reached	Region reached	Est. num-ber of per-sons reach ed
	A. Participation to Trade fairs (with exhibitions and conferences)							
1	13/09/19 - 17/09/19	**IBC Show 2019** Amsterdam, Netherlands	NEVION (TH, GE, OS); MLNX (Xx,xx); LOGIC (JG, JV); IRT (MB, RN)	International trade fair. • Own booth: NEVION, MLNX, LOGIC, IRT. • Promotion of 5G-VIRTUOSA through Press Release no1 and B2B talks with booth visitors. • 15/09/19: Get-to-gather F2F meeting of all 5G-VIRTUOSA project partners to discuss project start-up.	https://www.ibc.org/ibcshowcase	• Customers • Supply & Sales • Media Industry • Scientific Com. • Standards org. • Investors • Public	Europe, global	1,000
2	31/03/20 - 02/04/20	**CABSAT 2020** Dubai, UAE	NEVION:	International trade fair. **POSTPONED by organiser to 26-28 Oct 20 due to COVID-19 PANDEMIC.** • Promotion of 5G-VIRTUOSA through article published in CABSAT Industry News (17 Jun 20).	https://www.cabsat.com	• Customers • Supply & Sales • Media Industry • Scientific Com. • Standards org. • Investors • Public	Middle East/ Africa, global	0
3	18/04/20 - 22/04/20	**NAB Show 2020** Las Vegas, USA	NEVION: LOGIC:	International trade fair. **CANCELLED by organiser due to COVID-19 PANDEMIC** • Promotion of 5G-VIRTUOSA through article published in Broadcast Beat (16 Jun 20).	https://nabshow.com/2020/	• Customers • Supply & Sales • Media Industry • Scientific Com. • Standards org. • Investors • Public	North America, Latin America, global	0

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4	09/06/20 - 11/06/20	**Broadcast Asia 2020** Singapore	NEVION	International trade fair. **POSTPONED by organiser to 29 Sep-1 Oct 20 due to COVID-19 PANDEMIC.**	https://www.connectechasia.com/broadcast-asia/	• Customers • Supply & Sales • Media Industry • Scientific Com. • Standards org. • Investors • Public	Asia-Pacific, global	0
	B. Participation to Conferences and Workshops (general)							
5	03/12/19 - 04/12/19	**FIT-PRO19** Munich, Germany	NEVION: (MW); IRT (MB, RN)	Annual conference of the Networks IT and Production; hosted by IRT in cooperation with the broadcasters ARD, ZDF, ORF and SRG/SSR. • TOPIC: IP and Remote production. • NEVION: Presentation on IP use cases and 5G-VIRTUOSA by MW. • IRT: Presentation on the latest status of standards for All-IP-Production by MB.	https://www.irt.de/fileadmin/media/downloads/aktuell/tagungen/2019/Programm_FIT-PRO19.pdf	• Customers • Supply & Sales • Media Industry • Scientific Com.	Germany, Austria, Switzerland	150
	C. Participation to Conferences and Workshops of industry associations/ industry working groups							
6	05/03/20	**IABM DACH Member Council Meeting** Munich, Germany	LOGIC (JG)	Annual meeting of IBAM DACH, hosted 2019 at IRT. • TOPIC: IP and Remote Production. • LOGIC: Presentation on intercontinental remote production by JG.	https://www.irt.de/fileadmin/media/downloads/veranstaltungen/2020/iabm-draft-agenda.pdf	• Media Industry	Germany, Austria, Switzerland	150
7	15/04/20	**IABM event on Virtualisation** Worcester, UK	NEVION (AR)	Event series hosted by IABM. **(WEBINAR due to COVID-19 pandemic)** • TOPIC: Is Virtualization really the key to Scalability? • NEVION: Presentation on virtualisation and panel discussion with IABM, Dell	https://theiabm.org/is-virtualization-really-the-key-to-scalability-webinar/	• Media Industry	Europe, North Am., Latin Am., Asia-Pacific, Middle East/ Africa, global	1,000

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				Technologies, NEVION (AR) (duration: 54:57).				
8	25/06/20	**IABM event on 5G** Worcester, UK	NEVION (AR)	Event series hosted by IABM. **(WEBINAR due to COVID-19 pandemic).** • TOPIC: Global 5G market and deployment strategies. • NEVION: Presentation on 5G and panel discussion with IABM, Sceenic, Mobile Viewpoints, NEVION (AR) (duration: 60:55).	https://event.on24.com/eventRegistration/EventLobbyServlet?target=reg30.jsp&referrer=https%3A%2F%2Fnevion.com%2Fresources%2Fwebinars%2Fiabm-webinar-recording-focus-on-5g%2F&eventid=2434951&sessionid=1&key=5A9CB98F2D4405B6A3A33495E1521A77&regTag=&sourcepage=register	• Media Industry	Europe, North America, Latin America, Asia-Pacific, Middle East/ Africa, global	1,000
	D. Participation to Conferences and Workshops of Standards organisations, incl. voluntary standards							
9	14/10/19 - 15/10/19	**VSF Meeting Series** New York, USA	NEVION (AR)	Bi-Annual technical meetings; hosted by VSF. • TOPIC: Media networking technologies. • NEVION: Presentation on ST2110 transport over WAN, Activity Group update by AR. • NEVION: Presentation on JPEG XS deployment by AR.	https://vsf.tv/events_archive/2019-10_MtgSeries-NYNY.shtml	• Standards org.	Europe, North Am., Latin Am., Asia-Pacific, Middle East/ Africa, global	150

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10	25/02/20 - 27/02/20	**VidTrans20** Los Angeles, USA	NEVION (AR)	Annual Conference & Exposition; hosted by VSF. • TOPIC: IP production. • NEVION: Presentation on carrying media essence long distance by AR. • NEVION: Presentation on matters of Space and Time in IP production by AR.	https://vsf.tv/events_archive/2020-02_VidTrans20-LACA.shtml	• Standards org.	Europe, North Am., Latin Am., Asia-Pacific, Middle East/ Africa, global	150
11	17/07/20	**VSF and AIMS event –** **IP SHOWCASE Summer Sessions 2020** Washington, USA	NEVION (AR)	VSF and AIMS Virtual Event in cooperation with AES, AMWA, SMPTE, the Ultra HD Forum and EBU. **(WEBINAR series in the absence of major trade shows (e.g. NAB) due to COVID-19 pandemic).** • TOPIC: Media-Over-IP Education by industry experts • NEVION: Large Scale Distributed ST 2110 Deployment by AR (duration: 32:41).	http://www.ipshowcase.org/summersessions2020/	• Standards org. • Media Industry	Europe, North America, Latin America, Asia-Pacific, Middle East/ Africa, global	615 (views on You-Tube)
12	14/08/20	**VSF Meeting Series** New York, USA	NEVION (AR)	Bi-Annual technical meetings; hosted by VSF. (**WEBINAR due to COVID-19 pandemic)** • TOPIC: ST2110-WAN • NEVION: Presentation on the requirements for essence-based long-haul transport and the story of ST2210-WAN work by AR (duration: 1 hour).	https://us02web.zoom.us/meeting/register/tZUkd-2qrzktH9TgPxejDX4Um3htCM7PjBTp	• Standards org.	Europe, North Am., Latin Am. Asia-Pacific, Middle East/ Africa, global	150
	E. Organisation of a Workshop/ Conference/ Demo event							
13	17/04/20	**WEBINAR - At home with the Architects**	NEVION (AR) Ipswich, UK	WEBINAR series as Alternative Broadcasting Show 2020 in the absence of major trade shows due to COVID-19 pandemic; organised by NEVION. • TOPIC: Distributed production - federating **SMPTE ST 2110 facilities** • NEVION: Presentation on the benefits of	https://nevion.com/resources/webinars/nevion-webinar-federating-st2110-facilities/	• Customers • Supply & Sales • Scientific Com.	Europe, global	406 (views on You-Tube)

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				distributed (shared) production and the importance of SMPTE ST 2110; with discussion by AR (duration: 59:39).				
14	27/05/20	**IRT Experten-gespräch** Munich, Germany	IRT (MB, FB)	Monthly workshop on technical evolution in broadcasting; hosted by IRT. (**WEBINAR due to COVID-19 pandemic**) • TOPIC: Live IP - update on standards and technical development • IRT: Presentation on latest status on standards and 5G-VIRTUOSA by MB.	https://www.irt.de/de/archive/events/rueckblick	• Customers • Supply & Sales • Scientific Com.	Germany, Austria, Switzerland	100
15	24/04/20	**WEBINAR - At home with the Architects**	NEVION (AR) Ipswich, UK	WEBINAR series as Alternative Broadcasting Show 2020 in the absence of major trade shows due to COVID-19 pandemic; organised by NEVION. • TOPIC: The Road to **fully Virtualized** Production. • NEVION: Presentation on the signal transport and processing functionality through the Cloud; with discussion by AR (duration: 48:48).	https://nevion.com/resources/webinars/nevion-webinar-the-road-to-fully-virtualized-production/	• Customers • Supply & Sales • Scientific Com.	Europe, global	250 (views on You-Tube)
16	18/05/20	**WEBINAR - At home with the Architects**	NEVION (AR) Ipswich, UK	WEBINAR series as Alternative Broadcasting Show 2020 in the absence of major trade shows due to COVID-19 pandemic; organised by NEVION. • TOPIC: Don't forget the **audio**! • NEVION: Presentation on issues surrounding handling audio over IP in a live IP production including standards and scalability; with discussion by AR (duration: 54:29).	https://nevion.com/resources/webinars/nevion-webinar-dont-forget-the-audio/	• Customers • Supply & Sales • Scientific Com.	Europe, global	300

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17	10/06/20	**WEBINAR - At home with the Architects**	NEVION (AR) Ipswich, UK	WEBINAR series as Alternative Broadcasting Show 2020 in the absence of major trade shows due to COVID-19 pandemic; organised by NEVION. • TOPIC: Will **5G** transform broadcasting? • NEVION: Presentation on the potential of 5G for broadcast production; with discussion by AR (duration: 54:57).	https://nevion.com/resources/webinars/nevion-webinar-recording-will-5g-transform-broadcasting/	• Customers • Supply & Sales • Scientific Com.	Europe, global	400
-	xx/07/20	**Demo workshop for the VIRTUOSA LAN pilot system**	IRT Munich, Germany	Demo workshop for the VIRTUOSA LAN pilot system; hosted by IRT. **CANCELLED by IRT due to COVID-19 pandemic.**	---	• Customers • Supply & Sales • Scientific Com.	Germany	(30)

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5.5. Communication material

Table 21 summaries 5G-VIRTUOSA's communication materials produced in Period 1.

In Period 1, 5G-VIRTUOSA has produced a first communication pack consistent of project logo, branding guideline (colour palette, typography, etc.), the use of EU emblem and disclaimer, deliverable report template (Word), project presentation (PowerPoint), project brochure, roll-up banner and a video.

Table 21: 5G-VIRTUOSA communication material in Period 1

Channel	Measure	Indicator	Period 1
Activities			
Communication materials produced	Brochure/leaflet	Number of brochures produced	1
	Roll-up banner	Number of roll-up banner produced	1
	Project Presentation	Number of power point presentations produced	1
	Template for Deliverable reports	Number of templates produced	1
	Newsletters	Number of newsletters produced	6
	Videos (5.2.3)	Number of videos produced	2
	Branding (5.1)	Number of logos produced	1
		Number of photos	1
		Number of brand guidelines produced	1

All communication material produced is shown in **Annex 8.6**.

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6. Key Performance Indicators (KPIs) achieved in Period 1

This is an executive summary of key performance indicators (KPIs) in the context of all communication and dissemination activities achieved in Period 1 of the 5G-VIRTUOSA projects (**Table 22**) and the successful reach out to targeted stakeholders in terms of stakeholder groups, regions reached and estimate of persons reached (**Table 23, Table 24)**.

Table 22: Key Performance Indicators (KPIs) – planned and achieved Activities in Period 1

Key Performance Indicators		Planned			Achieved Period 1 (M01-M12)	
		Period 1	Period 2	TOTAL	Achieved	Status
Channels	Indicator	09/19-08/20	09/20-08/21	09/19-08/21	**M12**	**M12**
I. Digital Communication						
Website	Number of websites	**1**	0	1	**1**	
Social media	Number of social media	**2**	0	2	**2**	
	Number of followers	**150**	350	500	**177**	
YouTube, Film-TV-Video, other	Number of videos produced	**0**	3	3	**2**	
	Number of views	**0**	500	500	**177**	
II. Media						
Press releases	Number of press releases issued	**1**	3	4	**4**	
Articles	Number of articles published (result of press releases)	**10**	30	40	**49**	
	Number of other articles published	**0**	6	6	**11**	
TV promotion	Number of TV interview	**0**	1	1	**0**	
Media	Number of individual media reached	**--**	--	**--**	**51**	
				TOTAL number of articles published for public access & free of charge	**60**	
III. Direct (face-to-face) communication						
Participation to a Trade fair	Number of trade fairs at which 5G-VIRTUOSA was presented	**2**	6	8	**4 (1)**	
Participation to a Conference and Workshop	Number of conferences and workshops at which 5G-VIRTUOSA was presented	**2**	5	7	**8**	

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Participation to Other events	Number of other events at which 5G-VIRTUOSA was presented	**0**	0	0	**0**	
Organisation of workshops	Number of workshops held	**0**	1	1	**5**	
Organisation of Demonstrations	Number of demonstration events	**1**	3	4	**0**	
				TOTAL number of events participated to	**17**	
IV. Communication materials						
Branding	Number of logos	**1**	1	2	**1**	
	Brand guidelines	**1**	1	2	**1**	
	Communication guideline	**1**	0	1	**1**	
Project presentation	Number of project presentations produced	**1**	2	3	**1**	
Deliverable Report template	Number of templates produced	**1**	1	2	**1**	
Brochures/flyers	Number of flyers issued	**1**	2	3	**1**	
Roll-up banner	Number of roll-up banners produced	**1**	2	3	**1**	
Poster	Number of poster produced	**1**	2	3	**0**	
Newsletter	Number of posted news	**3**	2	5	**6**	

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Estimated **1.1 million people** have been reached worldwide in Europe, North America, Latin America, Asia-Pacific, and Middle East/Africa; about **4,650 people directly in events**

Table 23: Key Performance Indicators (KPIs) – reach out to targeted Stakeholders in Period 1

EC Category	Targeted stakeholders	Number of Persons reached	Comments
Customers	Customers	50,000	i.e. broadcasters, services providers, telcos, etc.
Industry	Supply & Sales partners	500,000	i.e. ODM/OEMs, distributors, system integrators etc.
Civil Society	Media Industry	50,000	i.e. associations (e.g. IABM, AIMS, EBU)
	Standards organisations	50,000	i.e. professional organisations (e.g. VSF, AES, AMWA, SMPTE)
Scientific Community	Scientific Community	250,000	i.e. research organisations, universities
General Public	Public	200,000	
Policy makers	Policy makers	5,000	i.e. EC
Media	Media	500	i.e. international press
Investors	Investors	10,000	i.e. shareholders
	TOTAL	**1.1 million**	**People reached.**

Table 24: Key Performance Indicators (KPIs) – reach out to targeted Regions in Period 1

Targeted regions	Key countries reached	Number of Persons reached	Comment
Europe	UK, Norway, Germany, Austria, Switzerland, Spain, Italy, Greece, Poland	500,000	
North America	USA, Canada	250,000	
Latin-America	Panama	150,000	
Asia-Pacific	Singapore, India, China, Australia, New Zealand	150,000	
Middle East/ Africa	United Arab Emirates, Israel	65,000	
	TOTAL	**1.1 million**	

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7. Conclusion

The outcome of the communication activities in Period 1 of the 5G-VIRTUOSA project is tremendous, in particular under the circumstances of an ongoing COVID-19 pandemic and its impact on events and people.

At least **60 articles published** in the press and presentations on **17 events**, both of which mostly international, have led to a great visibility of the 5G-VIRTUOSA project and its results and success, of each of our companies, and of the awarded EU funding in Europe and globally.

Estimated **1.3 million people** have been reached worldwide in Europe, North America, Latin America, Asia-Pacific, and Middle East/Africa; about **4,650 people directly in events.**

Outstanding is 5G-VIRTUOSA's reach out to international industry associations (i.e. **IABM, International Trade Association for the Broadcast & Media Industry**) and international industry working groups (i.e. **AIMS, Alliance for IP Media Solutions**) which are the representants of the Media industry and act as multiplying bodies to reach out to a huge number of customers. This stakeholder group helps to cross-disseminate and widely multiply the key messages and results of the 5G-VIRTUOSA project.

Outstanding is 5G-VIRTUOSA's reach out to standardisation organisations (i.e. **VSF, Video Services Forum**) and its contribution to standardisation work with its expertise in the implementation of new voluntary technical standards of the Media Industry (i.e. SMPTE 2110).

5G-VIRTUOSA has reached out successful to key stakeholders needed for successful commercialisation such as customers, supply and sales partners, investors, media industry, but also to the scientific community, policy makers and the general public.

In summary, key performance indicators have been reached and our **communication strategic approach** as presented in deliverable **D4.2 Communication Plan** was a great success.

In Period 2, we will follow our communication plan and start the strategic phase with maximizing target market and industry awareness in order to attract more potential users and customers of the VIRTUOSA innovation

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8. Annexes

8.1. Branding

8.1.1. 5G-VIRTUOSA logo

The logo in various formats is made available for download on the VIRTUOSA website (http://5g-virtuosa.eu/documentation/):

HozirontalLogo_White	
VerticallLogo_Black	
VerticallLogo_Black	

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8.1.2. 5G-VIRTUOSA brand guidelines

The Virtuosa 5G logo is at the core of our visual identity. When using the logo there are some simple rules to follow which is made available for download (PDF file) on the VIRTUOSA website (http://5g-virtuosa.eu/documentation/).

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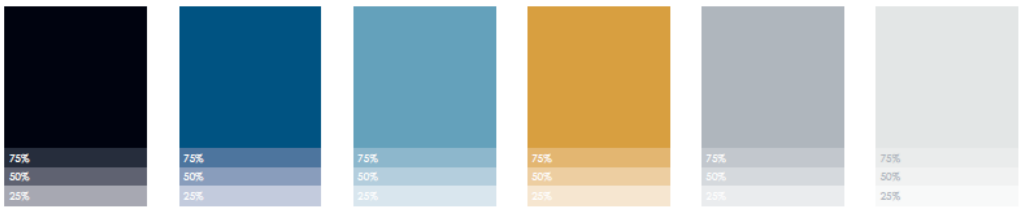
Colour palette



The Virtuosa 5G colour palette

The corporate primary colours provide a definite, solid and professional base for the Virtuosa 5G identity. The colour palette should be used consistently across all brand communications as flat colours and never a gradient. Tints of the base palette colours may be used and can be especially useful for designing information graphics, charts and tables.

Page 5 I Brand guidelines - October 2019 | VIRTUOSA 5G

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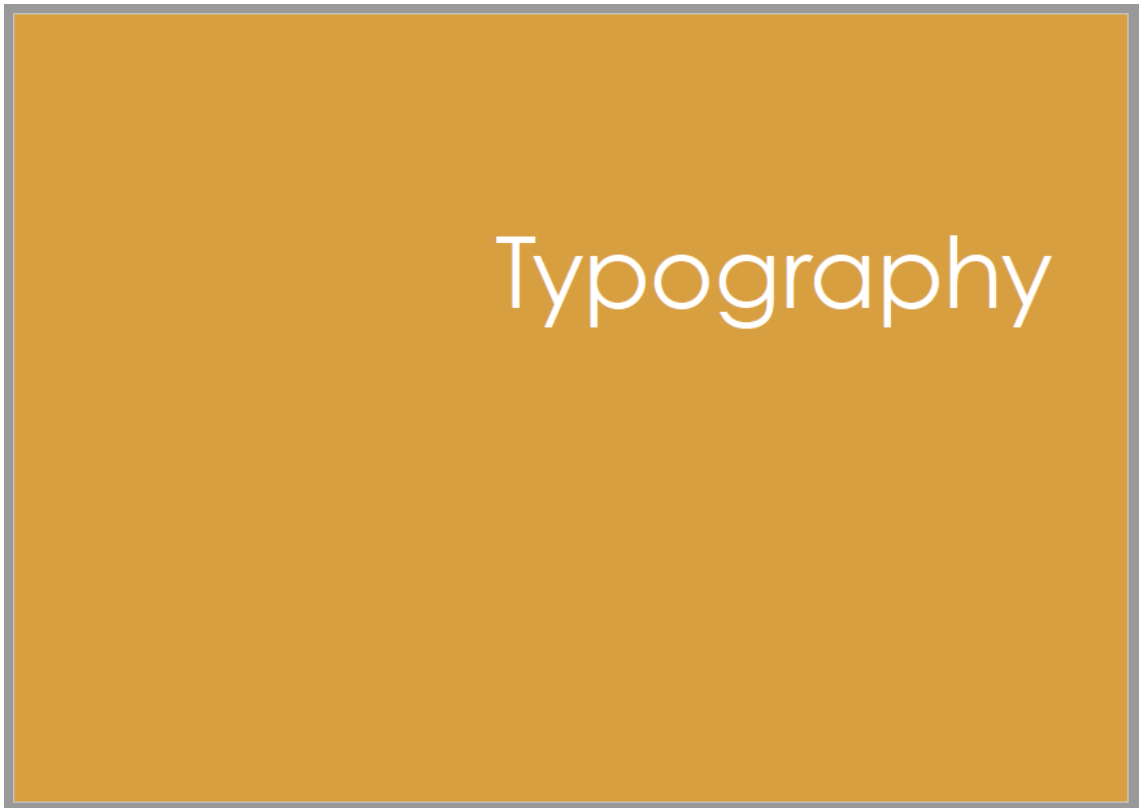

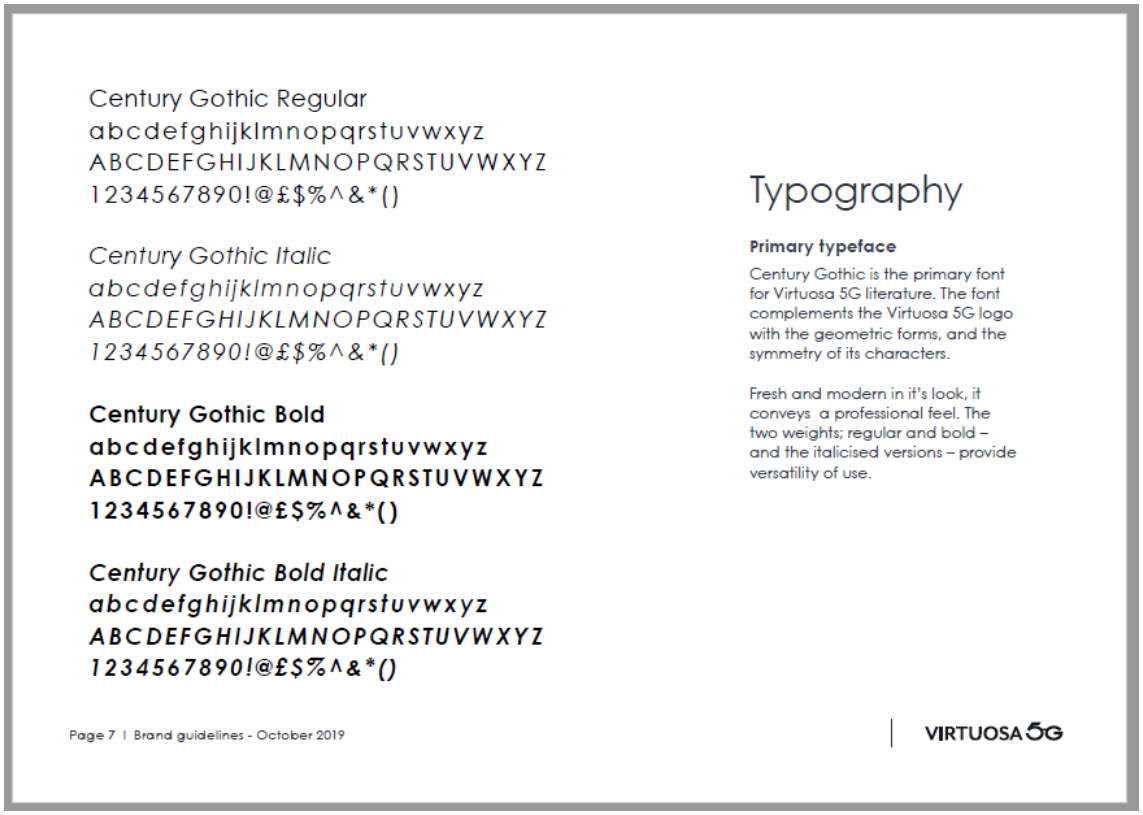

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8.1.3. EU emblem and EU disclaimer

1. EU emblem

EU emblem:

2. Information on EU funding:

Display the EU emblem and include the following sentence to all publications and to the web site and social media:

"This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 866656".

Display the EU emblem and include the following sentence to all major results (e.g. prototypes):

"This [infrastructure][equipment][insert type of result] is part of a project that has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 866656".

3. Disclaimer excluding Agency and Commissions responsibility:

Any communication must indicate:

"This reflects only the author's view and that the Agency and the Commission are not responsible for any use that may be made of the information it contains. "

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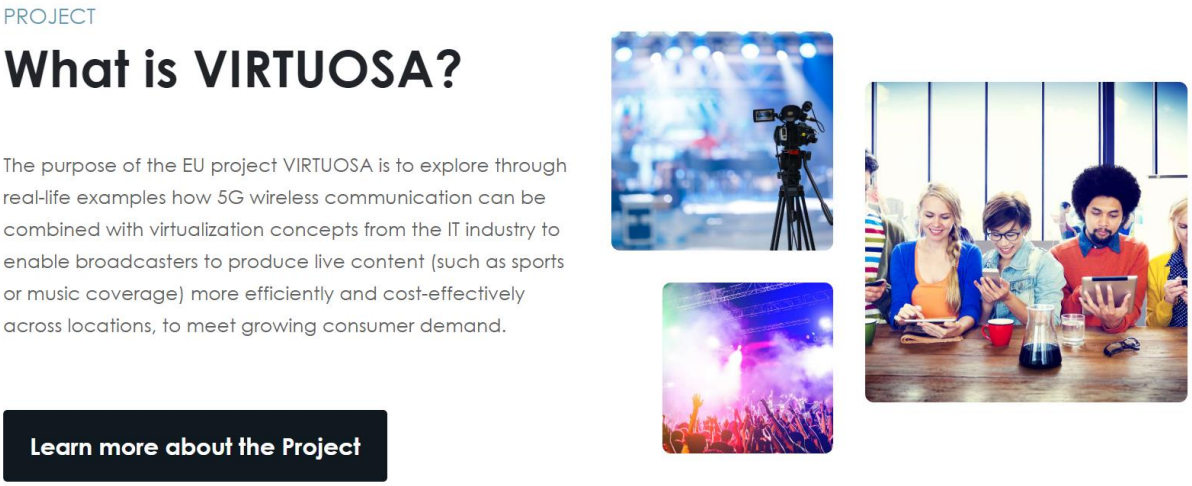
8.2. Digital Communication

8.2.1. 5G-VIRTUOSA website

VIRTUOSA project website: http://5g-virtuosa.eu, start page:



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PARTICIPANTS

Meet Our Participants

Nevion provides media network and broadcast infrastructure solutions to broadcasters, telecommunication service providers, government agencies and other industries.

Mellanox Technologies is a leading supplier of end-to-end Ethernet and InfiniBand intelligent interconnect solutions and services for servers, storage, and hyper-converged infrastructure.

LOGIC is a German-based media infrastructure architect and distributor of professional broadcast and telecommunication equipment.

The IRT is a world-renowned research and innovation center for broadcasting and media technology with more than 60 years of experience.

Know more about the Participants

NEWS

Latest Project News

16 Jun 2020

5G-VIRTUOSA project completes initial technical IP-based studio set-up

12 Dec 2019

The VIRTUOSA project – how Nevion is helping bring 5G into live production

11 Dec 2019

IRT Fachtagung Event

Read all the News about this Project

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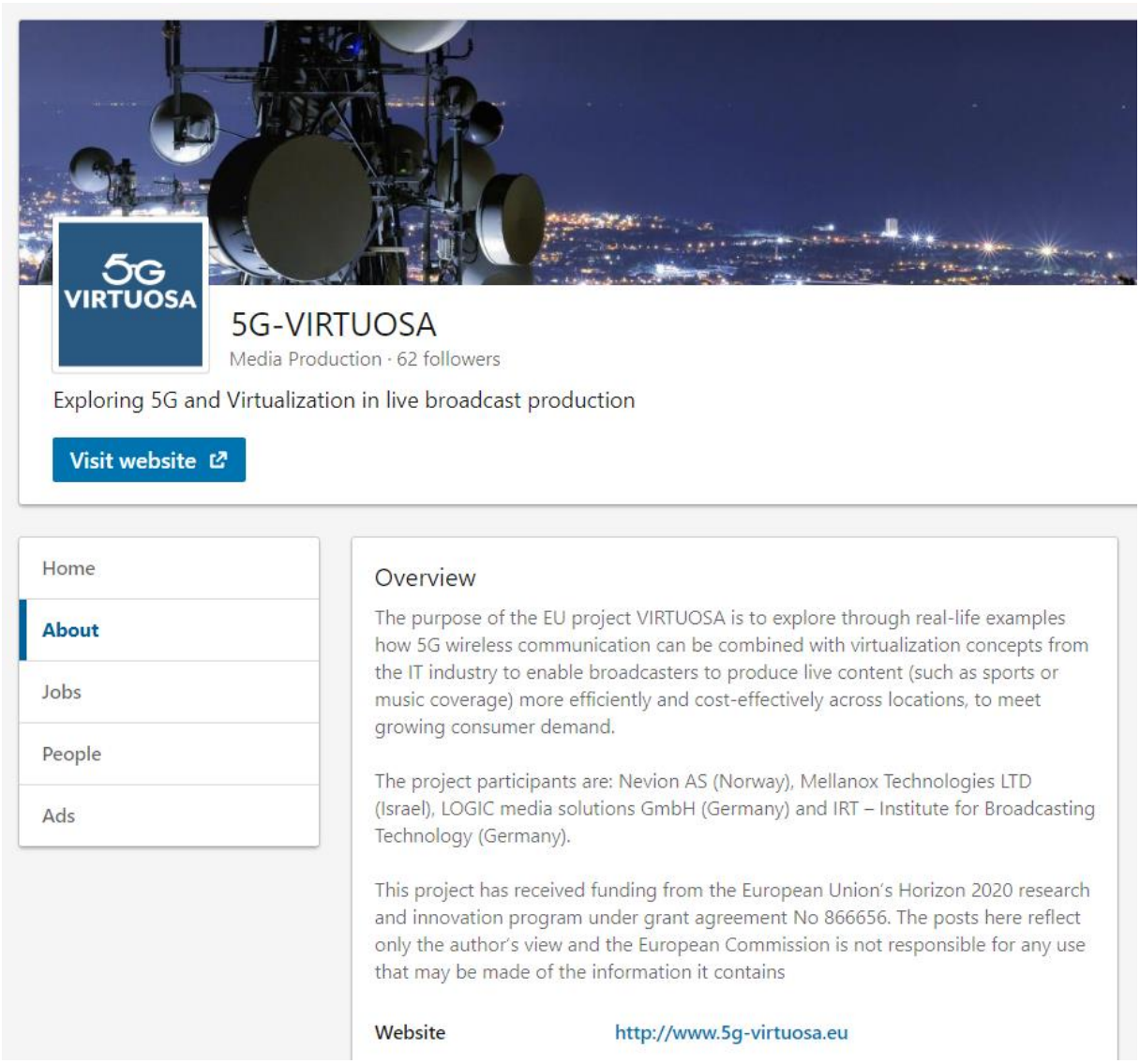
8.2.2. 5G-VIRTUOSA on LinkedIn

VIRTUOSA's LinkedIn profile at:

@5G-VIRTUOSA, https://www.linkedin.com/company/5g-virtuosa/



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8.2.3. 5G-VIRTUOSA on Twitter

VIRTUOSA's Twitter profile at:

@5G-VIRTUOSA, https://www.linkedin.com/company/5g-virtuosa/
https://twitter.com/5g_virtuosa

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8.2.4. 5G-VIRTUOSA Twitter retweets

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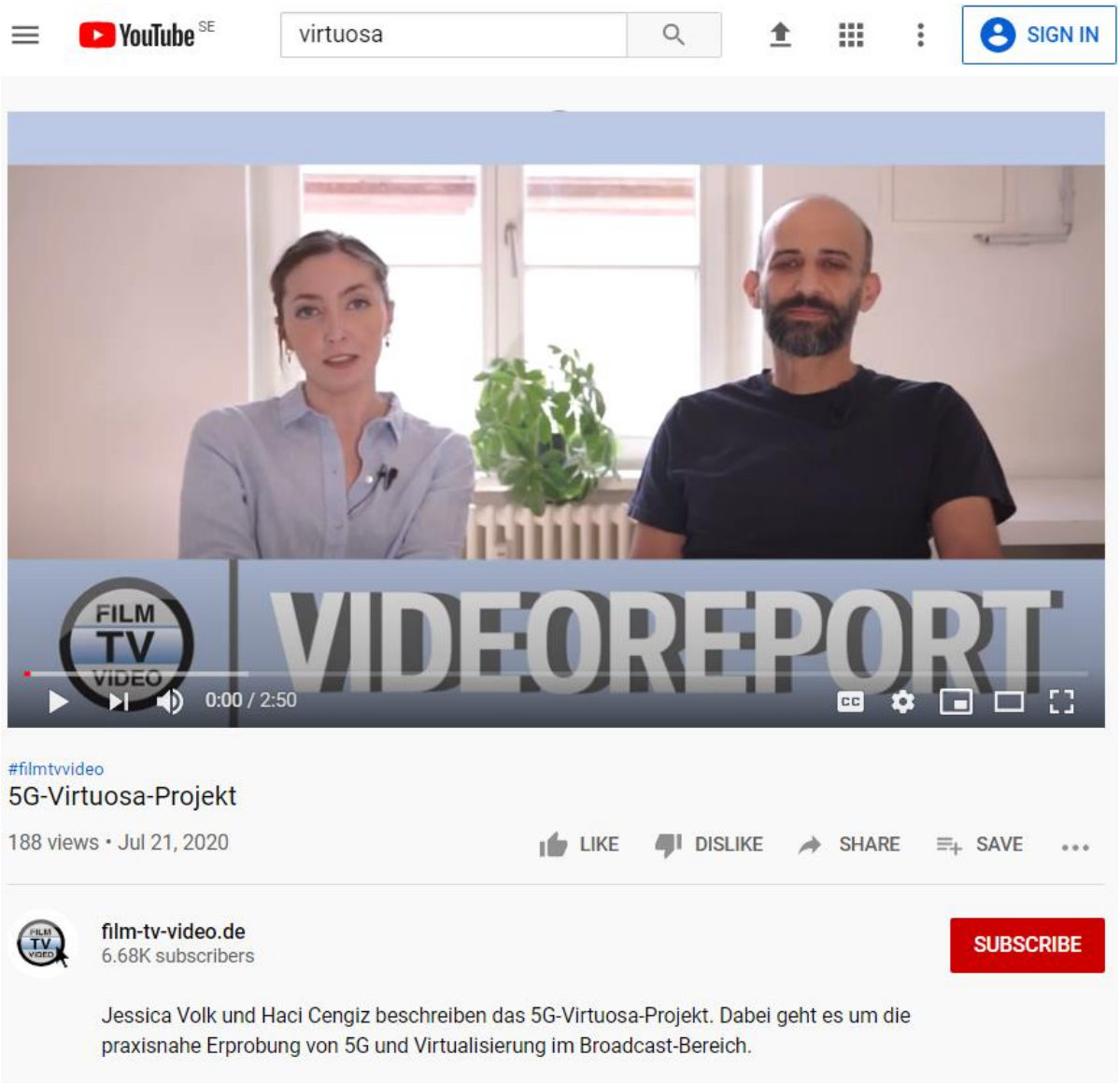
8.2.5. 5G-VIRTUOSA on YouTube and Film-TV-Video

1) 5G-VIRTUOSA Video no1 – The 5G-project

- YouTube: https://www.youtube.com/watch?v=eWvGDRUcIRQ
- Film-TV-Video: https://www.film-tv-video.de/technology/2020/06/24/5g-virtuosa-projekt-ip-studio-laeuft/



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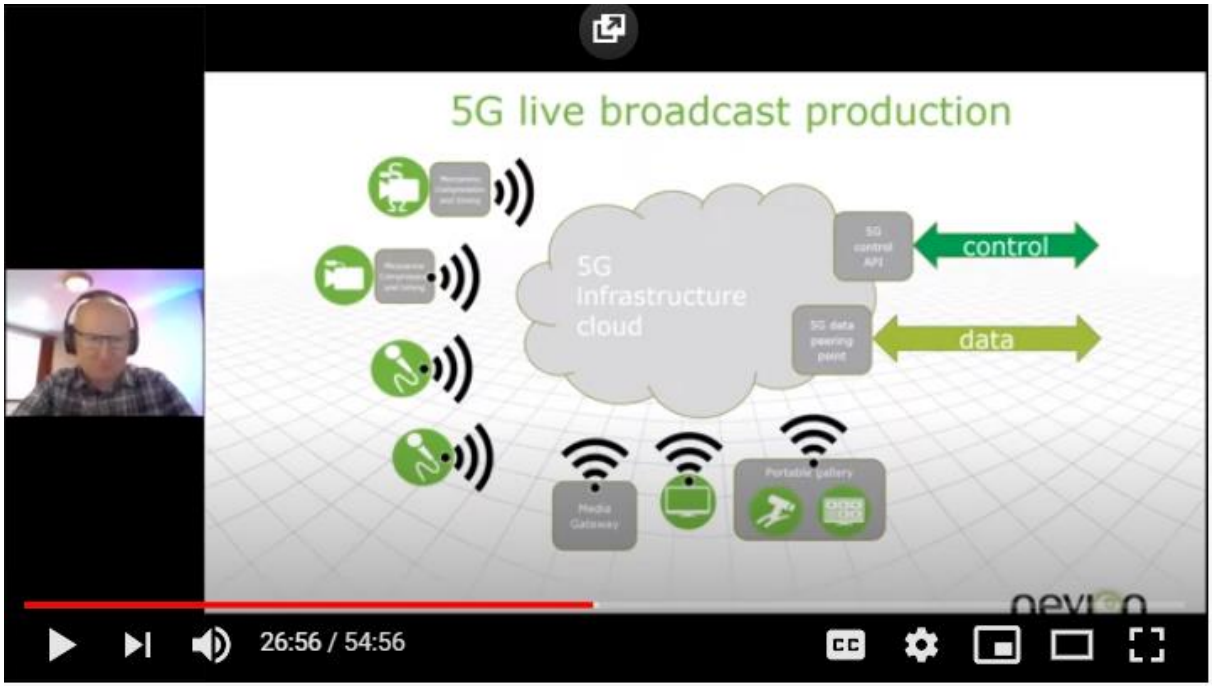
2) Nevion's webinar (June 10, 2020) on the Potential of 5G in broadcast Production:

- YouTube: https://www.youtube.com/watch?v=gLsOzDKINLo



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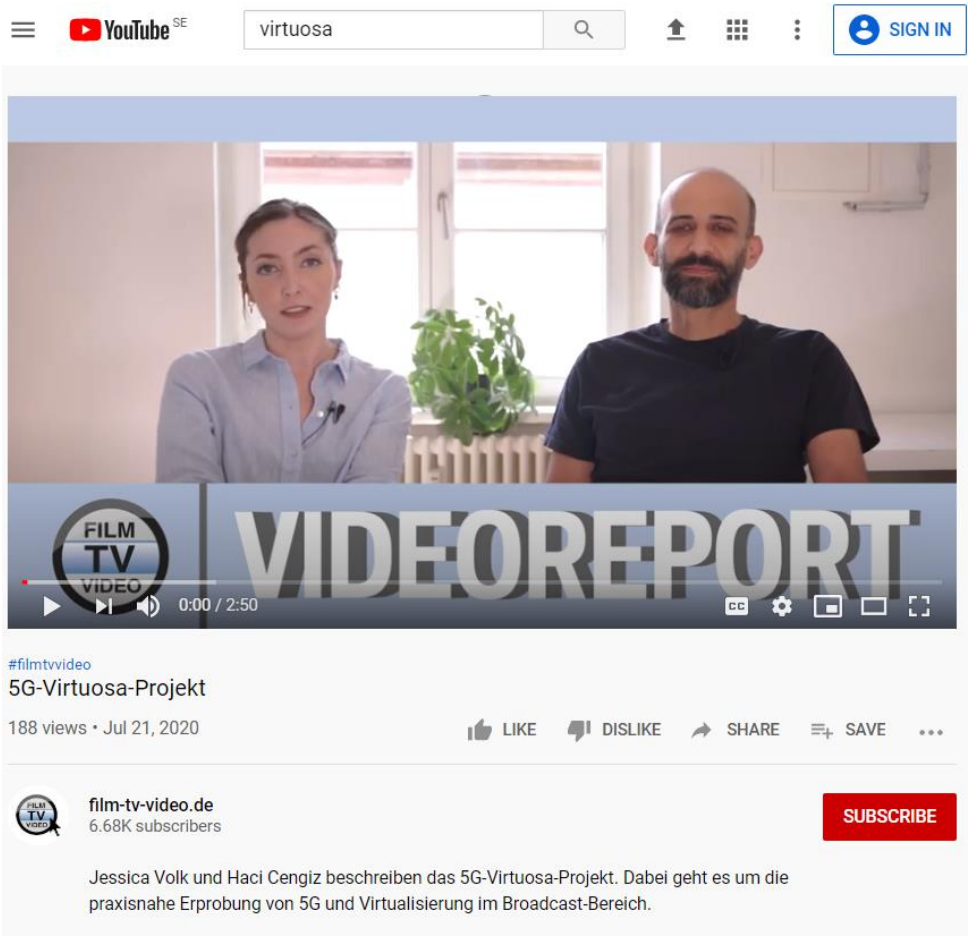
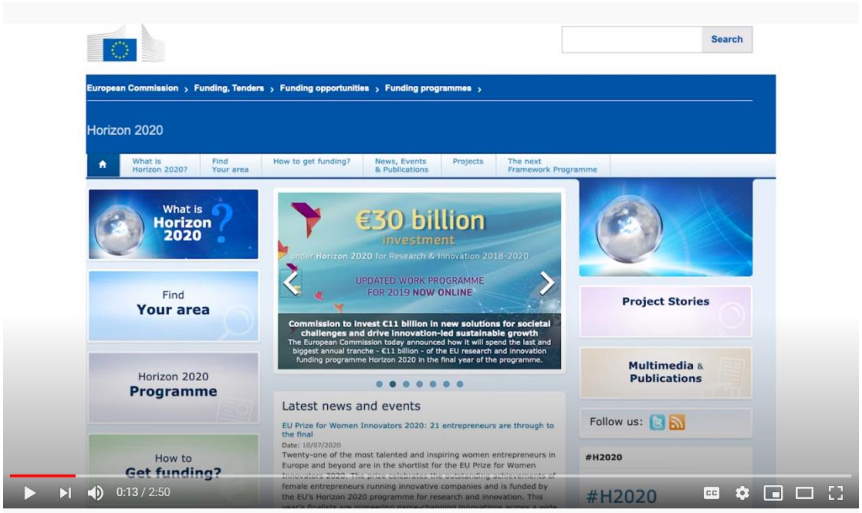
8.2.6. 5G-VIRTUOSA Video 1 – The 5G-VIRTUOSA project

- YouTube: https://www.youtube.com/watch?v=eWvGDRUcIRQ
- Film-TV-Video: https://www.film-tv-video.de/technology/2020/06/24/5g-virtuosa-projekt-ip-studio-laeuft/





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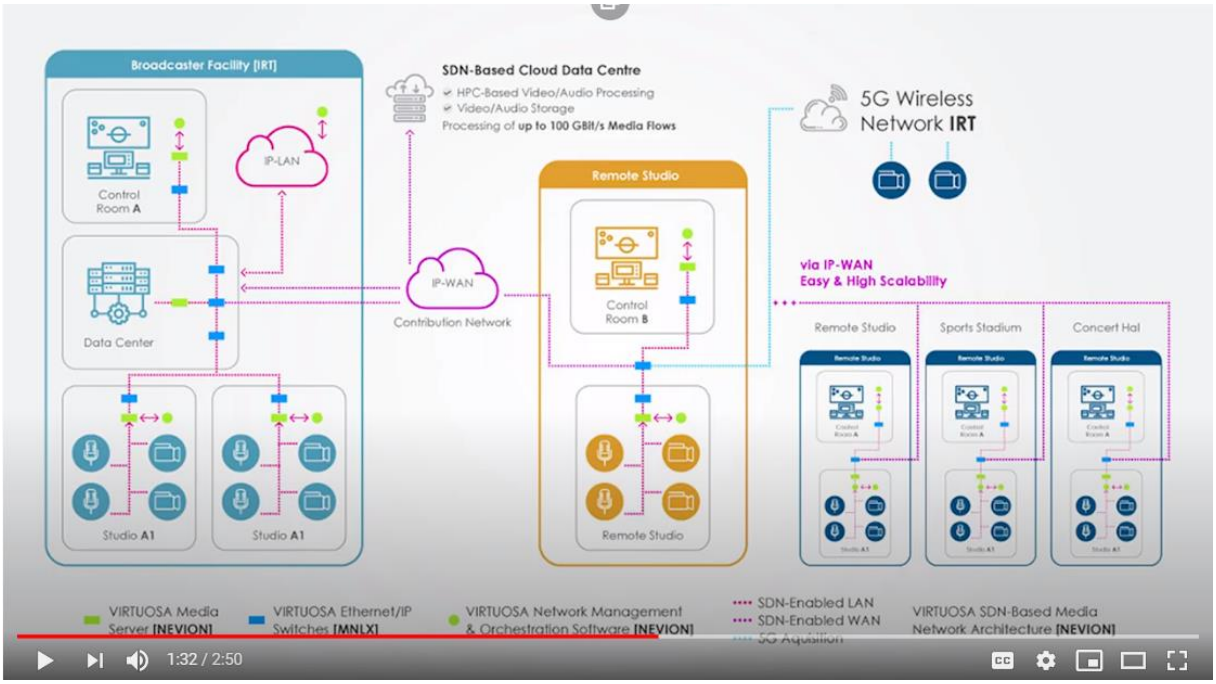

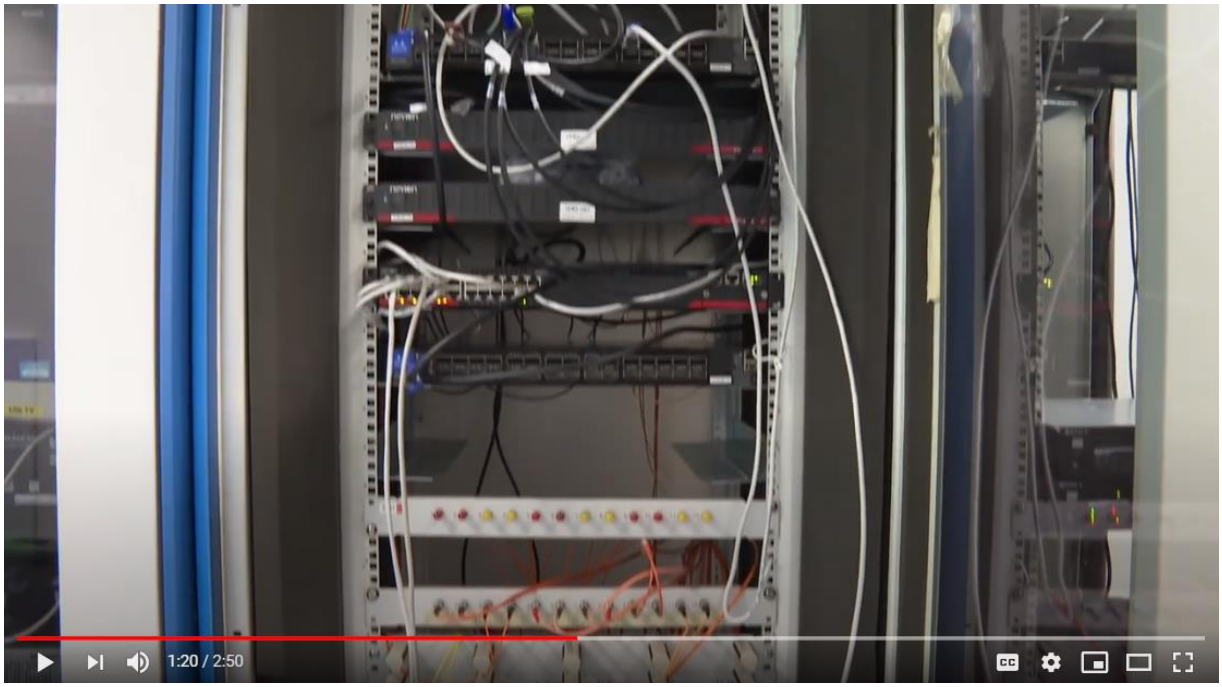

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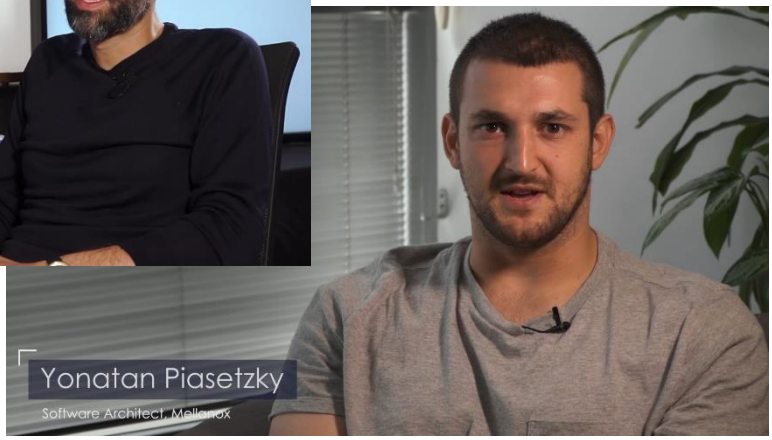
8.2.7. 5G-VIRTUOSA Video 2 – IP-based studio set-up for broadcast facilities (Phase 1)

- 5G-VIRTUOSA website (https://5g-virtuosa.eu/5g-virtuosa-phase-1-video/)



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8.3. Press Releases

8.3.1. 5G-VIRTUOSA press release no1 (10 September 2019)

The first press release has been launched in September, 2019 and is made available for download (Power Point file) on the VIRTUOSA website (http://5g-virtuosa.eu/documentation/):

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Nevion-led consortium receives 2 million euro EU funding for 5G broadcast remote production project

September 10, 2019 Press Releases Virtualization, 5G, SDN, VIRTUOSA

Grant provided under European Union's Horizon 2020 program – Fast Track to Innovation

Oslo, Norway, 10 September 2019 – Nevion, award-winning provider of virtualized media production solutions, announced today that a mobile-5G remote production project by a consortium it is leading has received a grant of €2 million from the European Union's Horizon 2020 research and innovation program 'Fast Track to Innovation'. Project "VIRTUOSA" was selected as the best proposal of a highly competitive call with 225 applications.

The winning consortium comprises four international leading industry players with complementary competences and a common goal to bring 5G (the Fifth Generation of Cellular Network Technology) Broadcast Remote Production solutions to market: Nevion AS (Norway), Mellanox Technologies LTD (Israel), LOGIC media solutions GmbH (Germany) and IRT – Institute for Broadcasting Technology (Germany).

The purpose of the EU project VIRTUOSA is to explore "*Scalable Software Defined Network Architectures for Cooperative Live Media Production exploiting Virtualized Production Resources and 5G Wireless Acquisition*". In practical terms, this means demonstrating through real-life examples how 5G can be combined with virtualization concepts to enable broadcasters to produce live content (such as sports or music coverage) more efficiently and cost-effectively across locations, to meet growing consumer demand.

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VIRTUOSA Project Coordinator Thomas Heinzer, EVP Strategic Projects, Nevion, commented: "We at Nevion are honored by the European Commission's acknowledgement of our VIRTUOSA EU project. After being at the forefront of the professional media industry's move to IP for more than a decade, we look forward to working together with our consortium partners to take our proven SDN technology to the next level by leveraging the capabilities of 5G for live production."

Thomas Heinzer

Nevion's SDN technology provides the means to control media networks more effectively in order to achieve the defined and predictable reliability and performance required for the transport of video, audio and associated data used in live broadcast production.

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About Mellanox Technologies

Mellanox Technologies (NASDAQ: MLNX) is a leading supplier of end-to-end Ethernet and InfiniBand intelligent interconnect solutions and services for servers, storage, and hyper-converged infrastructure. Mellanox intelligent interconnect solutions increase data center efficiency by providing the highest throughput and lowest latency, delivering data faster to applications and unlocking system performance. Mellanox offers a choice of high-performance solutions: network and multicore processors, network adapters, switches, cables, software and silicon, that accelerate application runtime and maximize business results for a wide range of markets including high performance computing, enterprise data centers, Web 2.0, cloud, storage, network security, telecom and financial services. More information is available at: www.mellanox.com

About LOGIC media solutions GmbH

LOGIC is a German-based media infrastructure architect and distributor of professional broadcast and telecommunication equipment. Almost 20 years of experience on the market and excellent connections to the German media companies makes LOGIC one of the leading value-added reseller not only in regards to IP based productions. Solutions based on traditional SDI technology as well as services within the cloud can be covered with the portfolio and team LOGIC provides to their customers. For more information please visit www.logicmedia.de

About Institut für Rundfunktechnik GmbH (IRT) -Institute for Broadcasting Technology

With more than 60 years of experience, the IRT is a world-renowned research and innovation center for broadcasting and media technology. It observes, evaluates and develops new technologies in the digital audiovisual media with the aim of strategically adapting the idea of broadcasting to new market environments. Around 100 employees conduct research in Munich in close cooperation with shareholders and clients for innovative solutions in the fields of Next Generation Audio, Future Video, Artificial Intelligence, Metadata, All IP / IT, IP Distribution, Portals and Services, Accessibility and 5G. Its shareholders are the broadcasters ARD, ZDF, Deutschlandradio, ORF and SRG / SSR. In addition, the IRT works together with a large number of customers from the broadcasting, media and industry sectors. The cooperation with international research partners offers access to worldwide trends and developments. In cooperation with universities, the IRT promotes the training of junior staff. More information is available at: https://www.irt.de/home/

Press release (PDF)

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nevion Press Release

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nevion Press Release

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8.3.2. 5G-VIRTUOSA press release no2 (8 June 2020)

The second press release has been launched 8 June, 2020 and is made available for download (Power Point file) on Nevion's website (https://nevion.com/news/press-releases/majority-of-broadcasters-optimistic-about-5g//):

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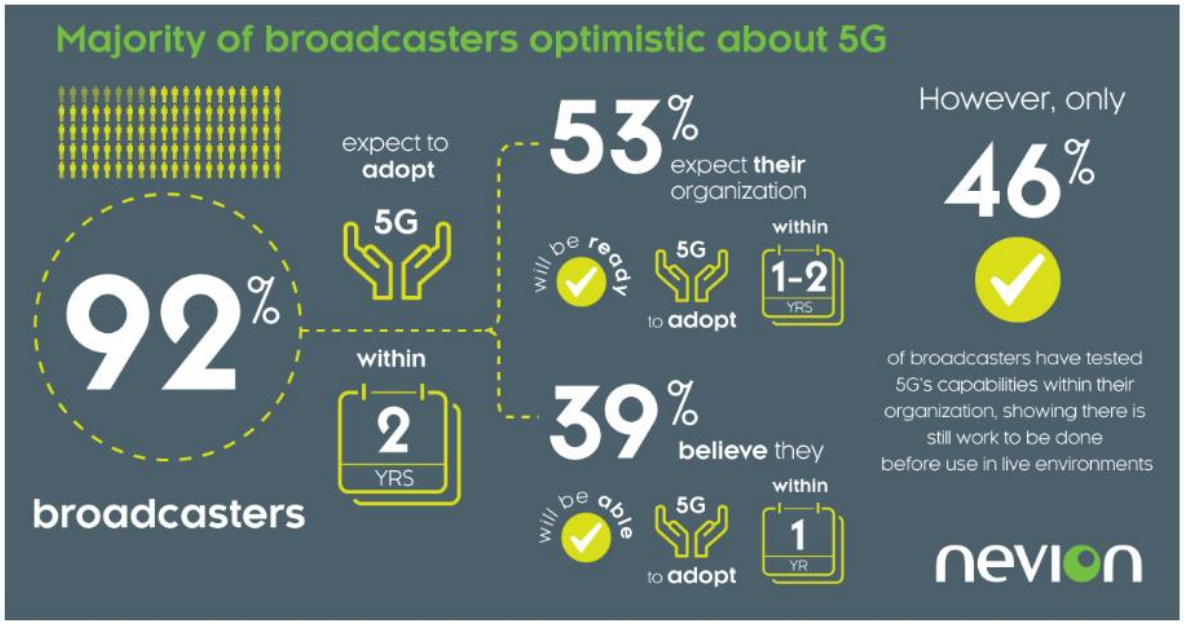
June 8, 2020 Press Releases



New survey finds 92% of broadcasters expect to adopt 5G within two years

Oslo, Norway, 9 June 2020 – A global poll of broadcasters conducted by OnePoll on behalf of Nevion, the architects of virtualized media production, has found that over a third (39%) of respondents expect their organization will be ready to adopt 5G within a year, while a further 53% believe they will be able to do so within the following year.

The survey found that 94% of broadcasters think that their country has the infrastructure ready to adopt 5G. Yet, despite this optimism, only 46% of broadcasters have tested 5G's capabilities within their organization.

Andy Rayner, Chief Technologist, Nevion, commented: "It's positive that broadcasters are expecting to move forward at pace with 5G. However, there is still a lot of work to be done before it can be implemented into live environments, and given the current climate worldwide, testing and developments may have slowed down. Over the next year or so, it will be a case of broadcasters looking in earnest at the potential of 5G in the value chain and testing the technology's capabilities within their organizations – something over half of broadcasters are yet to do."

Andy Rayner, Chief Technologist, Nevion

As broadcasters explore 5G's potential use cases, almost two-thirds (65%) would consider adopting it for remote production, while 61% would consider using it for distribution as a potential replacement for DTT, satellite or cable. Broadcasters would also consider using 5G technologies for OTT services (33%) and contribution (29%).

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While broadcasters are mainly considering 5G for remote production, only one-fifth (20%) think 5G's ability to provide a more portable and flexible primary link for (some) outside broadcast production is its biggest benefit.

"Even though the infrastructure isn't quite there yet, 5G's use for remote production could be extremely beneficial in the future beyond connecting cameras to the local outside broadcast production facility," added Rayner. "It can, for example, serve as a flexible way to take signals from the venues or locations back to the central production facility."

Looking at the expected advantages of 5G, 42% think the biggest benefit will be providing a cost-effective back-up for contribution links.

"As broadcasters contemplate using 5G in production, they must consider a number of issues, such as getting dedicated bandwidth, as well as how to handle timing and security. Investigations are currently underway in each of these areas with the 5G-VIRTUOSA project helping to uncover the potential of 5G technology in live production," added Rayner.

Broadcasters also expect 5G to be advantageous to the end-user with 34% saying they think that the biggest benefit will be improving the viewer experience. For example, 5G is likely to improve immediacy through lower buffering or provide better download speeds no matter where they are or what device they are watching on.

Andy Rayner presented a webinar on June 10, 2020 on the subject of "Will 5G transform broadcasting?". The recording of the webinar can be found here.

Read the full survey results here.

Press release (PDF)

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nevion Press Release

Majority of broadcasters optimistic about 5G

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nevion Press Release

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For more information about Nevion and its solutions, please visit the Nevion website.

About Nevion

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8.3.3. 5G-VIRTUOSA press release no3 (16 June 2020)

The third press release has been launched on 16 June 2020 and is made available for download (Power Point file) on the VIRTUOSA website (http://5g-virtuosa.eu/documentation/):

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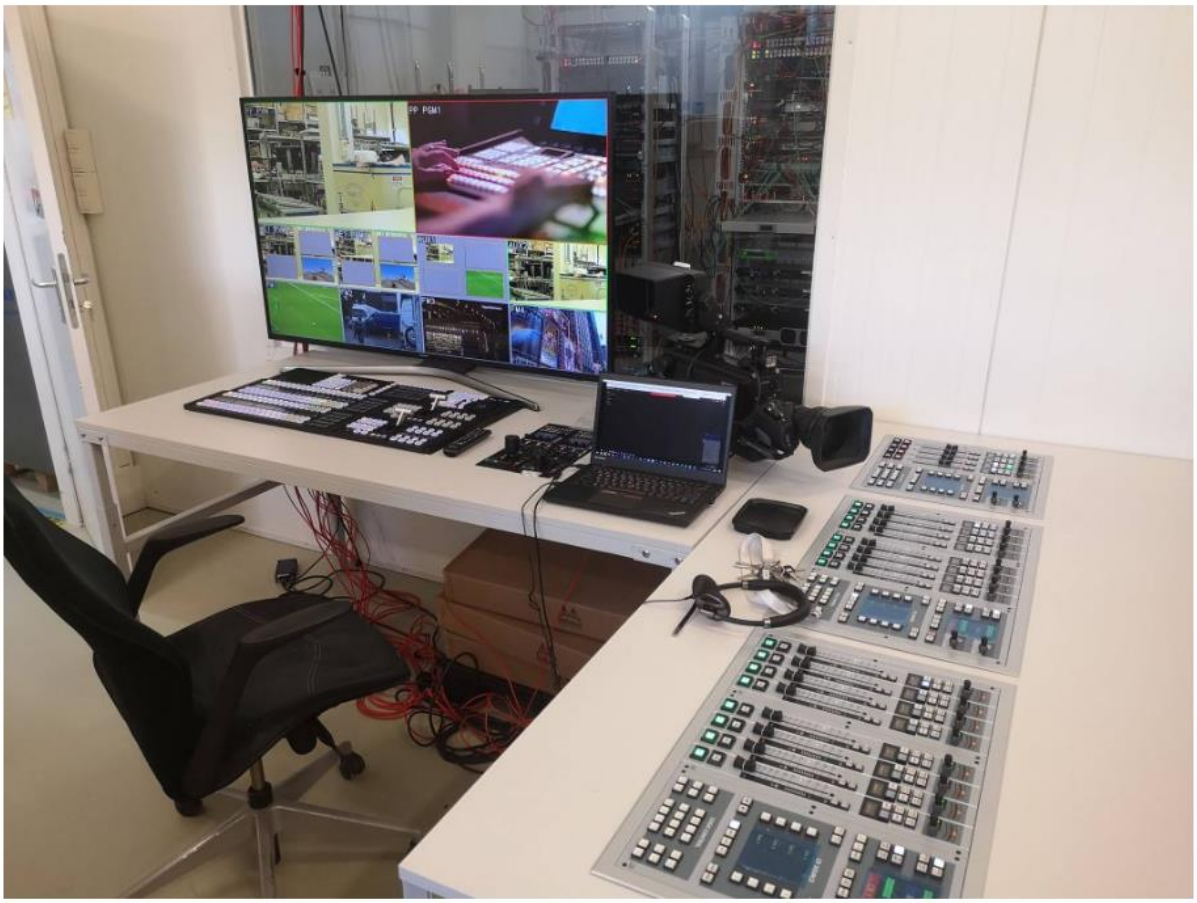
5G-VIRTUOSA project completes initial technical IP-based studio set-up

June 16, 2020 Press Releases 5G



Products from multiple vendors integrated in a SMPTE ST 2110 compliant environment

[This press release was issued by the 5G-VIRTUOSA project]

Oslo, Norway, 16 June 2020 – The participants of 5G-VIRTUOSA, the EU-funded project exploring 5G and virtualization in broadcast production, announced today that the first technical step of the initiative has been completed at Nevion's Service Operations Center (SOC) in Gdansk, Poland. The step involves the integration of multiple products from various vendors, with most of the work done remotely because of the COVID-19 situation.

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The project participants are: Nevion AS (Norway), Mellanox Technologies LTD (Israel), LOGIC media solutions GmbH (Germany) and IRT – Institute for Broadcasting Technology (Germany).

The first phase of the project involves setting up an IP-based studio, built on industry standards (SMPTE ST 2110 and NMOS) and integrating equipment from multiple vendors, including: video cameras, a vision mixer, and a server from Sony; a multiviewer from TAG Video Systems; an audio mixer from Stagetec; a media analyzer from Telestream; IP switches from Mellanox; a PTP-compliant time and frequency synchronization from Meinberg; software-defined media nodes from Nevion; and all of it managed by an orchestration and SDN control system from Nevion.

The set-up has now been transferred to IRT's premises in Munich, Germany, where tests will be carried to ascertain the compliance of the complete set-up to industry standards.

Markus Berg, Head of Future Networks at IRT explains: "After a slight delay because of the COVID-19 situation, we are pleased that we are now in a position to start testing. The set-up is the fundamental building block that we will be using to create the 5G remote production planned for later phases of the project. The compliance to standards is a key part of the tests, and very important for IRT, as an internationally renowned research and innovation center for audiovisual technologies."

For more information about the 5G-VIRTUOSA project, please visit the 5G VIRTUOSA website.

The 5G-VIRTUOSA project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 866656.

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8.3.4. 5G-VIRTUOSA press release no4 (16 July 2020)

The forth press release has been launched on 16 July 2020 and is made available for download (Power Point file) on Nevion's website (https://nevion.com/news/press-releases/majority-of-broadcasters-optimistic-about-5g//):

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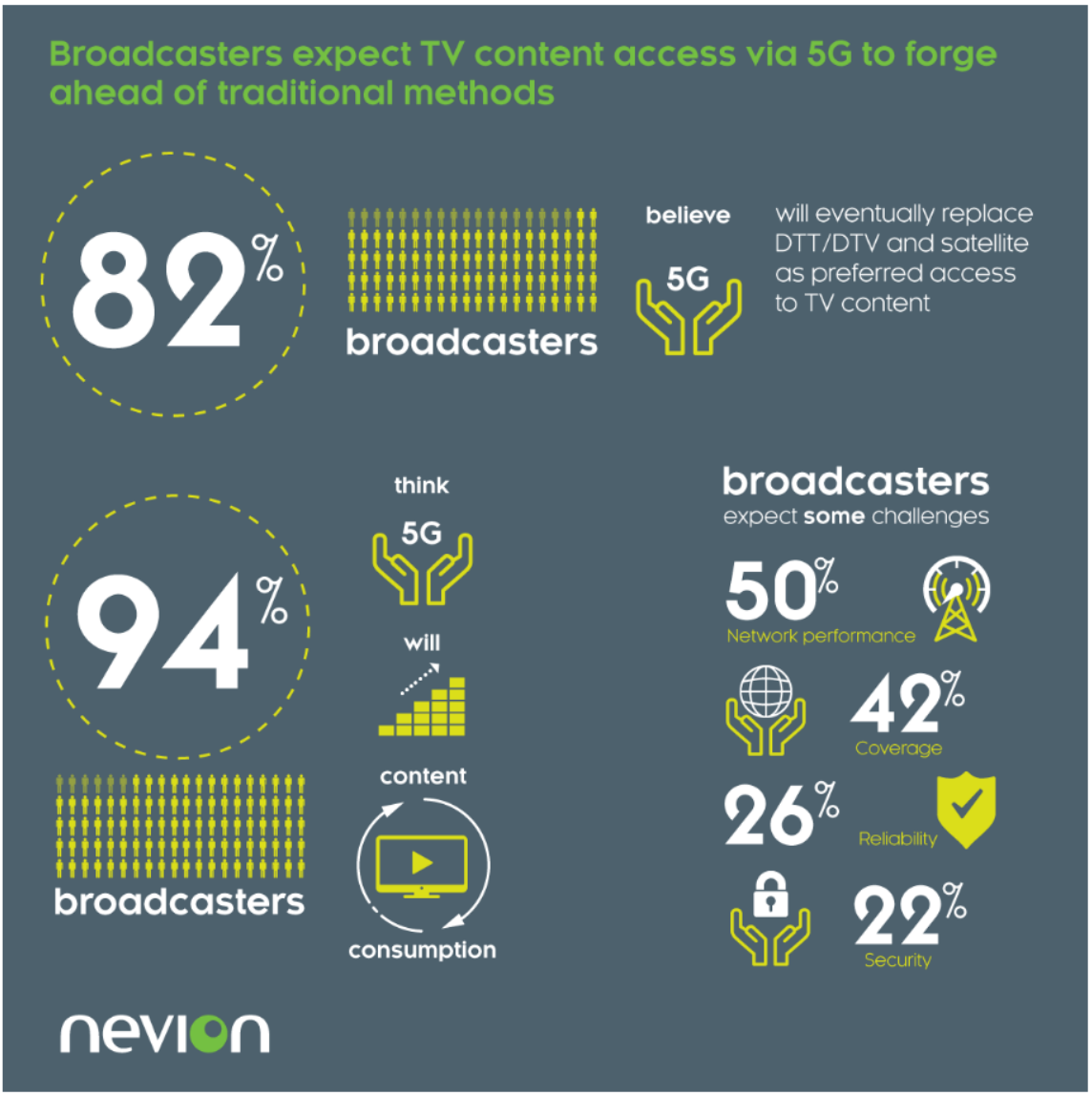
Survey: 82% of broadcasters expect TV content access via 5G to forge ahead of traditional methods

July 16, 2020 Press Releases



However, half of broadcasters anticipate network issues to be 5G's biggest challenge

Oslo, Norway, 16 July 2020 – According to a recent global survey of broadcasters, 82% believe that cellular networks like 5G will eventually replace traditional broadcast distribution like DTT/DTV and satellite as the preferred way to access TV content, with over a third (37%) of these respondents expecting this to begin happening within 1 to 2 years.

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The survey, conducted on behalf of Nevion, the architects of virtualized media production, discovered that 10% still anticipate that it will take more than three years for 5G to overtake traditional services but the vast majority (94%) of broadcasters agree that 5G will likely increase the consumption of content.

As increasing numbers of people favor streaming over conventional linear television delivery, the capabilities of 5G will help to cater to this audience and the demand to be able to stream content on the go.

With 5G set to enable viewers to stream live content on any connected device no matter where they are, Andy Rayner, Chief Technologist, Nevion, said, "5G technology can potentially deliver OTT broadcast services with the quality required not only for mobile devices, but also for TV screens at home. This could mean, as our research uncovered, that 5G is eventually likely to usurp DTT for consumers at home as well as on the move. In the long term, it is likely that 5G mobile technology could become the standard means to deliver terrestrial television. However, it is expected that both DTT and 5G delivery (when ready) will co-exist for a reasonable time."

Andy Rayner, Chief Technologist, Nevion

There are clear shortcomings with the current capabilities of mobile technology compared to DTT, which is highly optimized for power-efficient digital linear broadcast distribution.

There is also a key distinction between the potential of Service Provider offerings for broadcast media consumption and the use of the 5G radio technology to provide future real time broadcast distribution capability.

These views regarding 5G as the primary means of distribution of TV content are reflected in the research findings. Half (50%) of the broadcasters surveyed think the biggest challenge of using it will be network performance issues and coverage issues (42%). This is followed by issues with reliability (26%) and network security (22%), as well as some broadcasters expressing concern about the environmental impact of 5G.

Nonetheless, as previously published, the research uncovered broadcasters' optimism about the potential of 5G in production with 95% of broadcasters expecting to adopt 5G within two years.

Rayner concluded, "Ultimately, we are only just scratching the surface of 5G, and although broadcasters already see its potential value, at this stage industry-wide explorations into the technology are ongoing. It is too soon to say exactly at which point in the broadcast chain 5G will provide the most value. As such, broadcasters currently delivering with DTT will need to work with experts to follow the evolution of 5G broadcast capability."

Read the full survey results here.

Press release (PDF)

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nevion Press Release

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nevion Press Release

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Nonetheless, as previously published, the research uncovered broadcasters' optimism about the potential of 5G in production with 95% of broadcasters expecting to adopt 5G within two years.

Rayner concluded, "Ultimately, we are only just scratching the surface of 5G, and although broadcasters already see its potential value, at this stage industry-wide explorations into the technology are ongoing. It is too soon to say exactly at which point in the broadcast chain 5G will provide the most value. As such, broadcasters currently delivering with DTT will need to work with experts to follow the evolution of 5G broadcast capability."

About Nevion

As the architect of virtualized media production, Nevion provides media network and broadcast infrastructure solutions to broadcasters, telecommunication service providers, government agencies and other industries. Increasingly based on IP, virtualization and Cloud technology, Nevion's solutions enable the management, transport and processing of professional-quality video, audio and data – in real time, reliably and securely. From content production to distribution, Nevion solutions are used to power major sporting and live events across the globe. Some of the world's largest media groups and telecom service providers use Nevion technology, including AT&T, NBC Universal, Sinclair Broadcast Group Inc., NASA, Arqiva, BBC, CCTV, EBU, BT, TDF and Telefonica.

For more information please visit www.nevion.com. Follow Nevion on Twitter @nevioncorp

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Media Contacts

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8.4. Articles published

8.4.1. 5G-VIRTUOSA in the PRESS – articles published as result of Press Release no1

(published order)

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LightReading

JOBS

Eurobites: Telefónica to Wield Jobs Ax Again – Report

News Analysis
PAUL RAINFORD, Assistant Editor, Europe
9/10/2019

COMMENT (0)

Also in today's EMEA regional roundup: Soros considers sale of Hyperoptic stake; BT unleashes its drone killer; Nevion 5G virtualization project bags EU grant.

- Steadily shrinking Telefónica is reportedly planning to cut about 5,000 jobs in Spain, its domestic market, as it tries to reduce costs and boost its share price. According to a Bloomberg report that cites two people familiar with the matter, the Spanish incumbent has already held talks with unions on what is described as an "incentivized retirement plan" for workers over 53 years old. A formal proposal is due for presentation to unions on Wednesday, says Bloomberg. Telefónica employed about 122,000 people worldwide last year, when it cut nearly 900 jobs, according to financial statements. Its workforce has fallen from about 137,500 employees in 2015, partly because of divestment activity. Despite other cost-cutting and debt-reduction efforts, its share price has fallen 11% this year. A spokesperson for the operator declined to comment on the latest reports. (See Telco staff face crisis as cuts claim 127K jobs at big CSPs since 2015.)

- In other Telefónica news, the International Wholesale Services arm of the Spanish giant says it has completed network automation across all of its networking services, enabling, it claims, such services to be automatically provisioned and orchestrated from a common control layer and tailored to a customer's specific needs.

- George Soros, the billionaire investor of near-mythical status, is in talks over selling his stake in UK altnet Hyperoptic, the Daily Telegraph reports. According to the report, the deal is expected to value the fiber broadband access operator at more than £500 million (US$616 million). (See Eurobites: Hyperoptic Bags £21M EIB Loan for UK Gigabit Rollout and Hyperoptic Lands £50M Investment.)

- Just before Christmas, the runway at Gatwick Airport, the UK's second-busiest airport, was closed for 33 hours while the authorities investigated sightings of a unauthorized drone or drones flying close enough to the runway to raise the alarm. Around 1,000 flights were cancelled or delayed. Perhaps it's no surprise, then, that BT has climbed aboard the counter-drone bandwagon with the launch of a new offering that combines multi-sensor detection technology with an enterprise-grade network and a real-time alert system to help protect organizations from drone-driven carnage. BT joined forces with DroneShield, whose drone detection technologies have already been used at the 2018 Olympics in South Korea and by the UK and US military.

Looks like trouble

- A consortium led by Norway's Nevion has received a grant of €2 million ($2.2 million) from the European Union to help fund a project that seeks to demonstrate through real-life examples how 5G can be combined with virtualization technologies to enable broadcasters to produce live content more efficiently and cost-effectively across locations, to meet growing consumer demand.

- Spanish public broadcaster RTVE has chosen Net Insight's Nimbra platform to power its new nationwide IP media network.

- VEON, the Amsterdam-based but Russia-focused operator, has received shareholder approval for its acquisition of the remaining shares of Egypt's Global Telecom Holding (GTH). An outstanding tax bill of $82.3 million has also been paid to the Egyptian Tax Authority. GTH operates networks across Algeria, Bangladesh and Pakistan.

— Paul Rainford, Assistant Editor, Europe, Light Reading

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Nevion-led consortium receives 2 million euro EU funding for 5G broadcast remote production project

Grant provided under European Union's Horizon 2020 program - Fast Track to Innovation

WHITEOAKS INTERNATIONAL · SEP 10, 2019

Oslo, Norway, 10 September 2019 – Nevion, award-winning provider of virtualized media production solutions, announced today that a mobile-5G remote production project by a consortium it is leading has received a grant of €2 million from the European Union's Horizon 2020 research and innovation program 'Fast Track to Innovation'. Project "VIRTUOSA" was selected as the best proposal of a highly competitive call with 225 applications.

The winning consortium comprises four international leading industry players with complementary competences and a common goal to bring 5G (the Fifth Generation of Cellular Network Technology) Broadcast Remote Production solutions to market: Nevion AS (Norway), Mellanox Technologies LTD (Israel), LOGIC media solutions GmbH (Germany) and IRT – Institute for Broadcasting Technology (Germany).

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VIRTUOSA Project Coordinator Thomas Heinzer, EVP Strategic Projects, Nevion, commented: "We at Nevion are honored by the European Commission's acknowledgement of our VIRTUOSA EU project. After being at the forefront of the professional media industry's move to IP for more than a decade, we look forward to working together with our consortium partners to take our proven SDN technology to the next level by leveraging the capabilities of 5G for live production."

Nevion's SDN technology provides the means to control media networks more effectively in order to achieve the defined and predictable reliability and performance required for the transport of video, audio and associated data used in live broadcast production.

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By Whiteoaks International September 10, 2019

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WIRELESS

Nevion-led consortium receives EUR 2 mln EU funding for 5G broadcast remote production project

Tuesday 10 September 2019 | 13:55 CET | News

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Friday, 14th August 2020 About

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Grant provided under European Union's Horizon 2020 program - Fast Track to Innovation.

11 Sep 2019 Posted in Wireless Telecoms + Mobile

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Consortium secures €2 million EU funding for 5G remote production project

Aims to demonstrate through real-life examples how 5G can be combined with virtualisation concepts

BY JENNY PRIESTLEY
PUBLISHED: SEPTEMBER 11, 2019 · UPDATED: SEPTEMBER 12, 2019

A consortium made up of Nevion AS, Mellanox Technologies LTD, LOGIC media solutions and Germany's Institute for Broadcasting Technology has secured €2 million in funding from the European Union for a 5G broadcast remote production project.

The project, known as VIRTUOSA, secured the funding from the European Union's Horizon 2020 research and innovation programme Fast Track to Innovation.

The purpose of the project is is to explore scalable software defined Network architectures for cooperative live media production exploiting virtualised production resources and 5G wireless acquisition. In practical terms, this means demonstrating through real-life examples how 5G can be combined with virtualisation concepts to enable broadcasters to produce live content (such as sports or music coverage) more efficiently and cost-effectively across locations, to meet growing consumer demand.

VIRTUOSA project coordinator Thomas Heinzer, who is also EVP strategic projects, Nevion, commented: "We at Nevion are honoured by the European Commission's acknowledgement of our VIRTUOSA EU project. After being at the forefront of the professional media industry's move to IP for more than a decade, we look forward to working together with our consortium partners to take our proven SDN technology to the next level by leveraging the capabilities of 5G for live production."

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Nevion-led consortium receives 2 million euro EU funding for 5G broadcast remote production project

12 Sep 2019 Leave a Comment

Grant provided under European Union's Horizon 2020 program - Fast Track to Innovation.

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Oslo, Norway

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Keywords

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IBC 2019: Nevion leads consortium to 2 million euro EU funding for 5G broadcast remote production project

By Kristian Hernandez, Associate Editor
Monday, September 16, 2019 - 07:55
Print This Story

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Nevion-led consortium receives €2m EU funding for 5G broadcast remote production project

September 17, 2019

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BusinessPortal Norwegen

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FIRMEN UND KOOPERATIONEN

September 18, 2019

Konsortium unter norwegischer Führung erhält Fördergelder aus EU-Programm "Horizont 2020"

Oslo, Norwegen, 10. September 2019. Ein von dem norwegischen Unternehmen Nevion geleitetes internationales Konsortium erhält für ein Mobile-5G-Remote-Produktionsprojekt eProjekt „VIRTUOSA" aus dem EU-Forschungsprogramm „Horizont 2020" einen Zuschuss von zwei Millionen Euro. 225 Bewerbungen hatten sich im Forschungs- und Innovationsprogramm '"Fast Track to Innovation" um diese Fördergelder beworben.

Das siegreiche Konsortium setzt sich aus vier international führenden Akteuren der Branche zusammen, die über komplementäre Kompetenzen verfügen: Nevion AS (Norwegen), ein preisgekrönter Anbieter virtualisierter Medienproduktionslösungen, Mellanox Technologies LTD (Israel), LOGIC media solutions GmbH (Deutschland) und IRT-Institut für Rundfunktechnologie (Deutschland). Das gemeinsame Ziel besteht darin, Broadcast-Remote-Production-Lösungen der 5. Generation (5G) auf den Markt zu bringen. Mit dem EU-Projekts VIRTUOSA sollen „skalierbare, softwaredefinierte Netzwerkarchitekturen für die kooperative Live-Medienproduktion unter Ausnutzung virtualisierter Produktionsressourcen und 5G Wireless Acquisition" untersucht werden. Dabei soll anhand von Beispielen aus der Praxis demonstriert werden, wie 5G mit Virtualisierungskonzepten kombiniert werden kann, damit Rundfunkveranstalter Live-Inhalte wie Sport- oder Musikübertragungen effizienter und kostengünstiger über Standorte hinweg produzieren können..

„Wir bei Nevion fühlen uns geehrt, dass die Europäische Kommission unser VIRTUOSA-EU-Projekt anerkannt hat. Nachdem wir mehr als ein Jahrzehnt an der Spitze der professionellen Medienbranche im Bereich IP stehen, freuen wir uns darauf, mit unseren Konsortialpartnern zusammenzuarbeiten, um unsere bewährte SDN-Technologie auf die nächste Stufe zu heben und die Möglichkeiten von 5G für die Live-Produktion zu nutzen", erklärt Thomas Heinzer, VIRTUOSA-Projektkoordinator, EVP Strategic Projects, von Nevion.

Die SDN-Technologie von Nevion bietet nach Informationen des Unternehmens die Möglichkeit, Mediennetze effektiver zu steuern, um die definierte und vorhersehbare Zuverlässigkeit und Leistung zu erreichen, die für den Transport von Video-, Audio- und zugehörigen Daten erforderlich sind, die in der Live-Broadcast-Produktion verwendet werden.

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Nevion-Led Consortium Receives 2 Million Euro EU Funding for 5G Broadcast Remote Production Project

MTS By MTS Staff Writer — Last updated Jul 23, 2020

TV ADVERTISING AUDIENCE DATA

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Grant provided under European Union's Horizon 2020 program – Fast Track to Innovation

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Marketing Technology News: Adobe Named a Leader in Gartner 2020 Magic Quadrant for Personalization Engines

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Thomas Heinzer

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Marketing Technology News: Everest Group Recognizes Whatfix as a Leader in Digital Adoption Platforms PEAK Matrix Report 2020

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8.4.2. 5G-VIRTUOSA in the PRESS – articles published as result of Press Release no2

(published order)

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Survey: Broadcasters optimistic about 5G

June 9, 2020

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A global poll of broadcasters from virtualised media production specialist Nevion has found that over a third (39 per cent) of respondents expect their organisation will be ready to adopt 5G within a year, while a further 53 per cent believe they will be able to do so within the following year.

The survey, conducted by OnePoll, found that 94 per cent of broadcasters think that their country has the infrastructure ready to adopt 5G. Yet, despite this optimism, only 46 per cent of broadcasters have tested 5G's capabilities within their organisation.

"It's positive that broadcasters are expecting to move forward at pace with 5G," noted Andy Rayner, Chief Technologist, Nevion. "However, there is still a lot of work to be done before it can be implemented into live environments, and given the current climate worldwide, testing and developments may have slowed down. Over the next year or so, it will be a case of broadcasters looking in earnest at the potential of 5G in the value chain and testing the technology's capabilities within their organisations – something over half of broadcasters are yet to do."

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As broadcasters explore 5G's potential use cases, almost two-thirds (65 per cent) would consider adopting it for remote production, while 61 per cent would consider using it for distribution as a potential replacement for DTT, satellite or cable. Broadcasters would also consider using 5G technologies for OTT services (33 per cent) and contribution (29 per cent).

While broadcasters are mainly considering 5G for remote production, only one-fifth (20 per cent) think 5G's ability to provide a more portable and flexible primary link for (some) outside broadcast production is its biggest benefit.

"Even though the infrastructure isn't quite there yet, 5G's use for remote production could be extremely beneficial in the future beyond connecting cameras to the local outside broadcast production facility," added Rayner. "It can, for example, serve as a flexible way to take signals from the venues or locations back to the central production facility."

Looking at the expected advantages of 5G, 42 per cent think the biggest benefit will be providing a cost-effective back-up for contribution links.

"As broadcasters contemplate using 5G in production, they must consider a number of issues, such as getting dedicated bandwidth, as well as how to handle timing and security," advised Rayner. "Investigations are currently underway in each of these areas with the 5G-VIRTUOSA project helping to uncover the potential of 5G technology in live production."

Broadcasters also expect 5G to be advantageous to the end-user, with 34 per cent saying they think that the biggest benefit will be improving the viewer experience. For example, 5G is likely to improve immediacy through lower buffering or provide better download speeds no matter where they are or what device they are watching on.

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Most broadcasters bullish on 5G

By CSI 09/06/20

A global poll of broadcasters conducted by OnePoll on behalf of Nevion has revealed an optimism in broadcaster thinking on 5G. Over 9 out of 10 of them expect to adopt the technology in just a couple of years, thinking their country has the necessary infrastructure in place to enable them to do so.

And yet, this is even though not even half of them have tested the technology inside their organisation to see what 5G can do for them - only 46% of those polled have put 5G to its paces.

It is also clear that broadcasters see 5G as an opportunity as opposed to a threat to their business.

As broadcasters explore 5G's potential use cases, almost two-thirds (65%) would consider adopting it for remote production, while 61% would consider using it for distribution as a potential replacement for DTT, satellite or cable. Broadcasters would also consider using 5G technologies for OTT services (33%) and contribution (29%).

The survey found that over a third (39%) of respondents expect their organisation will be ready to adopt 5G within a year, while a further 53% believe they will be able to do so within the following year.

While broadcasters are mainly considering 5G for remote production, only one-fifth (20%) think 5G's ability to provide a more portable and flexible primary link for (some) outside broadcast production is its biggest benefit.

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Looking at the expected advantages of 5G, 42% think the biggest benefit will be providing a cost-effective back-up for contribution links.

Broadcasters also expect 5G to be advantageous to the end-user with 34% saying they think that the biggest benefit will be improving the viewer experience. For example, 5G is likely to improve immediacy through lower buffering or provide better download speeds no matter where they are or what device they are watching on.

As broadcasters contemplate using 5G in production, Nevion warns they must consider a number of issues, such as getting dedicated bandwidth, as well as how to handle timing and security. Investigations are currently underway in each of these areas with the 5G-VIRTUOSA project helping to uncover the potential of 5G technology in live production.

Andy Rayner, Chief Technologist, Nevion, commented: "It's positive that broadcasters are expecting to move forward at pace with 5G. However, there is still a lot of work to be done before it can be implemented into live environments, and given the current climate worldwide, testing and developments may have slowed down. Over the next year or so, it will be a case of broadcasters looking in earnest at the potential of 5G in the value chain and testing the technology's capabilities within their organizations – something over half of broadcasters are yet to do."

"Even though the infrastructure isn't quite there yet, 5G's use for remote production could be extremely beneficial in the future beyond connecting cameras to the local outside broadcast production facility," added Rayner. "It can, for example, serve as a flexible way to take signals from the venues or locations back to the central production facility."

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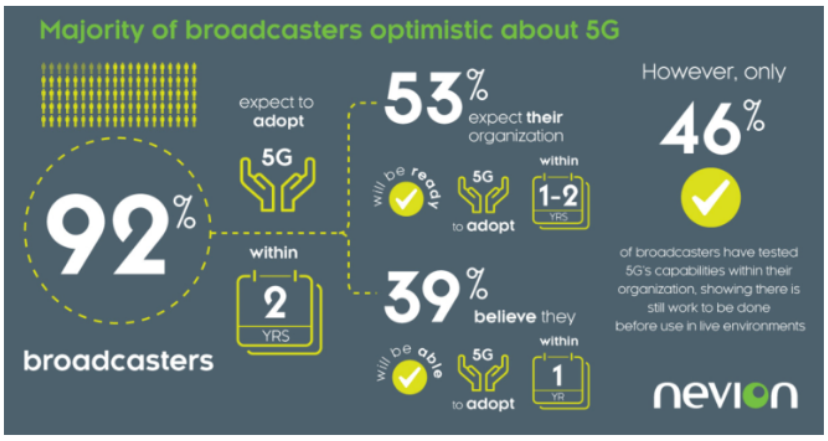
5G, IP, Studie: 09.06.2020

Broadcaster optimistisch bei 5G

Eine Umfrage von Nevion hat ergeben, dass mehr als 90 % der Broadcaster optimistisch auf 5G blicken.

Innerhalb der nächsten zwei Jahre wollen 92 % der Rundfunkanstalten die 5G-Technologie nutzen. Das ergab eine Umfrage, die das Meinungsforschungsunternehmen OnePoll im Auftrag von Nevion durchführen ließ. Optimistisch blicken die Broadcaster auch auf die Infrastruktur: 94 % glauben, dass ihr Land bereits jetzt über die 5G-Infrastruktur verfüge. Wirklich ausprobiert haben das aber nur 46 % der Unternehmen, in denen die Befragten arbeiten.

Diese und weitere Ergebnisse zeigte eine weltweit durchgeführte Umfrage unter Broadcastern. Mehr als ein Drittel (39%) geht davon aus, dass ihre jeweilige Organisation innerhalb eines Jahres bereit sein wird, 5G einzuführen. Weitere 53 % glauben, dass sie dazu innerhalb des nächsten Jahres in der Lage sein werden. Was diesen Optimismus verursacht, erklärt die Umfrage nicht wirklich. In Wahrheit sind nämlich in puncto 5G für Broadcaster — auch aus der Sicht von Nevion — noch viele Fragen offen.



Andy Rayner, Chief Technologist von Nevion, kommentiert das Gesamtergebnis so: »Es ist positiv, dass die Rundfunkanstalten erwarten, dass sie mit der Einführung von 5G vorankommen. Es bleibt jedoch noch viel zu tun, bevor 5G in Live-Umgebungen implementiert werden kann — und angesichts des derzeitigen weltweiten Wirtschaftsklimas haben sich die Tests und Entwicklungen möglicherweise sogar noch verlangsamt. Es wird wahrscheinlich noch weiteres Jahr dauern, bis sich die Broadcaster ernsthaft mit dem Potenzial von 5G in der Wertschöpfungskette auseinandersetzen und die Fähigkeiten der Technologie innerhalb ihrer Organisationen testen. Und mehr als die Hälfte der Rundfunkanstalten hat das noch vor sich.«

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Mögliche Einsatzgebiete von 5G sehen fast zwei Drittel (65 %) der Rundfunkanstalten im Bereich Remote Production, 61 % sehen 5G auch in der Distribution, etwa als Ersatz für DVB, Satellit oder Kabel. Die Rundfunkanstalten würden auch erwägen, 5G-Technologien für OTT-Dienste (33 %) und Zuspielungen/Contribution (29 %) einzusetzen. Dabei betrachtet nur ein Fünftel (20%) der Befragten es als größten Vorteil der 5G-Technologie, dass man damit auch mobilere, transportablere Möglichkeiten hat, die primäre Zuspielung (einiger) Außenübertragungen umzusetzen.

Andy Rayner, Chief Technologist von Nevion

»Auch wenn die Infrastruktur noch nicht ganz ausgereift ist, könnte die Nutzung von 5G für die Remote Production in der Zukunft über den Anschluss von Kameras an die lokale Produktionsstätte für Außenübertragungen hinaus äußerst vorteilhaft sein«, fügte Rayner hinzu. »Sie kann zum Beispiel als flexible Möglichkeit dienen, Signale von den Veranstaltungsorten oder Standorten zurück zur zentralen Produktionsstätte zu bringen.«

Betrachtet man die erwarteten Vorteile von 5G, so sind 42 % der Befragten der Ansicht, dass der größte Nutzen darin besteht, eine kosteneffektive Unterstützung für Beitragsverbindungen zu bieten.

»Wenn Rundfunkanstalten den Einsatz von 5G in der Produktion erwägen, müssen sie eine Reihe von Fragen in Betracht ziehen, wie etwa die Bereitstellung einer dedizierten Bandbreite sowie die Handhabung von Timing und Sicherheit. In jedem dieser Bereiche werden derzeit Untersuchungen durchgeführt, wobei das 5G-Virtuosa-Projekt dazu beiträgt, das Potenzial der 5G-Technologie in der Live-Produktion auszuschöpfen«, fügte Rayner hinzu.

Die Broadcaster erwarten auch, dass 5G für den Endbenutzer von Vorteil sein werde. 34 % gaben an, dass der größte Nutzen ihrer Meinung nach in der Verbesserung des Zuschauererlebnisses liegen werde. Zum Beispiel sei 5G wahrscheinlich geeignet, schnelleren Zugriff durch geringere Pufferung zu ermöglichen oder kürzere Download-Geschwindigkeiten zu erreichen, unabhängig davon, wo man sich befindet oder auf welchem Gerät man zuschaut.

Andy Rayner wird am 10. Juni 2020 ein Webinar zum Thema »Wird 5G den Rundfunk verändern?« durchführen. Weitere Einzelheiten zu diesem Webinar finden Sie hier.

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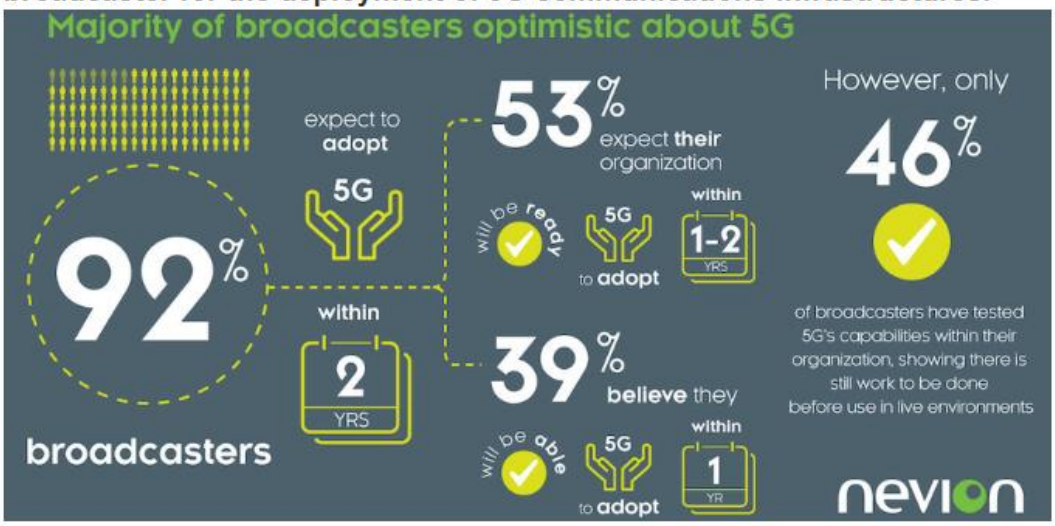
92% of broadcasters expect to adopt 5G within the next two years

Joseph O'Halloran | 09 June 2020

Despite the Covid-19 outbreak hampering telecoms providers in laying networks, research from Nevion has revealed huge optimism among broadcaster for the deployment of 5G communications infrastructures.



The global poll of broadcasters conducted by OnePoll on the of virtualised media production firm found as many as 94% of broadcasters think that their country already has the infrastructure in place to adopt 5G while 92% of broadcasters are expecting to adopt the new platform. nearly two-fifths of respondents expect their organisation will be ready to adopt 5G within a year. Just over half (53%) believe they will be able to do so within the following year.

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Almost two-thirds of broadcasters would consider adopting 5G for remote production purposes and while 61% would consider using it for distribution as a potential replacement for DTT, satellite or cable. In addition 33% and 29% of broadcasters would also consider using 5G technologies for OTT services and contribution respectively. Looking at the expected advantages of 5G, 42% think the biggest benefit will be providing a cost-effective back-up for contribution links.

While broadcasters are mainly considering 5G for remote production, only a fifth think 5G's ability to provide a more portable and flexible primary link for (some) outside broadcast production is its biggest benefit. Broadcasters also expect 5G to be advantageous to the end-user with 34% saying they think that the biggest benefit will be improving the viewer experience.

Yet despite this general optimism for deploying 5G, only 46% of broadcasters say that they have tested 5G's capabilities within their organisation. And with that in mind Nevion noted that while it was positive that broadcasters are expecting to move forward at pace with 5G, there was is still a lot of work to be done before it can be implemented into live environments, and given the current climate worldwide, testing and developments may have slowed down.

"Even though the infrastructure isn't quite there yet, 5G's use for remote production could be extremely beneficial in the future beyond connecting cameras to the local outside broadcast production facility," commented Nevion chief technologist Andy Rayner. "As broadcasters contemplate using 5G in production, they must consider a number of issues, such as getting dedicated bandwidth, as well as how to handle timing and security. Investigations are currently underway in each of these areas with the 5G-VIRTUOSA project helping to uncover the potential of 5G technology in live production."

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5Gradar. GET UP TO SPEED

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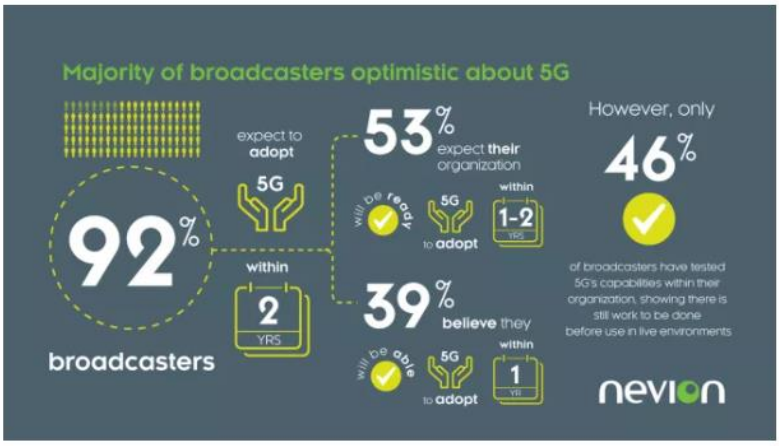
92% of broadcasters will adopt 5G by 2022

By Dan Oliver June 09, 2020

According to a new poll of global broadcast companies, 5G is set to have a significant impact on every aspect of the broadcasting industry.



(Image credit: Nevion)

Nevion, a specialist in real-time media production, has surveyed 225 broadcasters across Europe, Australia, China and North America, to assess where the industry currently stands on 5G adoption.

Working with market research company OnePoll, Nevion found that over a third (39%) of respondents expect their organization will be ready to adopt 5G within a year, with a further 53% believing they will do so by 2022. However, the survey also found that, despite 94% of broadcasters thinking 5G was broadcast-ready, only 46% had actually tested 5G's capabilities within their organization.

"It's positive that broadcasters are expecting to move forward at pace with 5G," said Andy Rayner, Chief Technologist, Nevion. "However, there is still a lot of work to be done before it can be implemented into live environments, and given the current climate worldwide, testing and developments may have slowed down. Over the next year or so, it will be a case of broadcasters looking in earnest at the potential of 5G in the value chain and testing the technology's capabilities within their organizations – something over half of broadcasters are yet to do."

> **"Over the next year or so, it will be a case of broadcasters looking in earnest at the potential of 5G in the value chain and testing the technology's capabilities."**
>
> Andy Rayner, Nevion.

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Broadcasters moving to 5G

These results follow a "ground-breaking" report from the European Broadcasting Union (EBU), into the feasibility of using 5G technology as a distribution method for public service media (PSM) organizations across Europe. The main conclusions of the report emphasise the fact that, technically, 5G may be able to meet the distribution requirements of both PSM and commercial media providers, if a combination of 5G Mobile Broadband and 5G Broadcast is used.

Nevion's poll data supports this shift to 5G, revealing that 61% of broadcasters would consider using it for distribution as a potential replacement for DTT (digital terrestrial television), satellite or cable. Broadcasters would also consider using 5G technologies for OTT (over-the-top) services (33%) and contribution (29%). And 65% of respondents said they would consider 5G for remote production.

"Even though the infrastructure isn't quite there yet, 5G's use for remote production could be extremely beneficial in the future beyond connecting cameras to the local outside broadcast production facility," said Rayner. "It can, for example, serve as a flexible way to take signals from the venues or locations back to the central production facility."

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NEWS

REMOTE PRODUCTION IDENTIFIED AS KEY 5G APPLICATION

By George Bevir | 10 June 2020

- Some 92% of broadcasters expect to adopt 5G within two years
- Remote production identified as the main use case for the wireless technology
- Survey finds only 46% of broadcasters have tested 5G's capabilities

An overwhelming majority of broadcasters say they will adopt 5G technology within the next two years, with remote production identified as the most popular use case for the technology.

Remote production has been identified as one of the key reasons broadcasters are looking to adopt 5G technology
Source: BT Sport

According to a survey, 92% of respondents expect to adopt 5G within two years, comprised of 39% within a year and a further 53% inside two years.

As broadcasters explore 5G's potential use cases, almost two-thirds (65%) would consider adopting it for remote production, while 61% would consider using it for distribution as a potential replacement for DTT, satellite or cable, according to the global poll of broadcasters conducted by OnePoll on behalf of Nevion.

While broadcasters are mainly considering 5G for remote production, only one-fifth (20%) think 5G's ability to provide a more portable and flexible primary link for (some) outside broadcast production is its biggest benefit.

- **Read more:** 365 Playlist: 5G

The survey also found that 94% of broadcasters think that their country has the infrastructure ready to adopt 5G. However, only 46% of broadcasters said they have tested 5G's capabilities within their organisation.

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Olympic postponement: Consequences for broadcasters

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Nevion chief technologist Andy Rayner said: "Even though the infrastructure isn't quite there yet, 5G's use for remote production could be extremely beneficial in the future beyond connecting cameras to the local outside broadcast production facility. "It can, for example, serve as a flexible way to take signals from the venues or locations back to the central production facility."

According to a report released by the EBU earlier this week, 5G could meet the distribution requirements of both public service and commercial broadcasters. However, there are significant structural barriers that will need to be overcome to realise the potential of 5G.

The EBU concluded that technically 5G Broadcast could fulfil many broadcaster requirements for the distribution of linear services to portable devices. It highlighted the need for dedicated spectrum and noted that 5G Mobile Broadband is, in principle, well suited to unicast delivery of nonlinear services although universal coverage will take a long time to achieve.

- **Read more:** EBU report on how 5G could work for broadcasters

Rayner added: "It's positive that broadcasters are expecting to move forward at pace with 5G. However, there is still a lot of work to be done before it can be implemented into live environments, and given the current climate worldwide, testing and developments may have slowed down.

"Over the next year or so, it will be a case of broadcasters looking in earnest at the potential of 5G in the value chain and testing the technology's capabilities within their organizations – something over half of broadcasters are yet to do."

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News Center

Nevion Polls Broadcasters on 5G Adoption Plans

Majority of broadcasters optimistic about 5G

New survey finds 92% of broadcasters expect to adopt 5G within two years

A global poll of broadcasters conducted by OnePoll on behalf of Nevion, the architects of virtualized media production, has found that over a third (39%) of respondents expect their organization will be ready to adopt 5G within a year, while a further 53% believe they will be able to do so within the following year.

The survey found that 94% of broadcasters think that their country has the infrastructure ready to adopt 5G. Yet, despite this optimism, only 46% of broadcasters have tested 5G's capabilities within their organization.

Andy Rayner, Chief Technologist, Nevion, commented: "It's positive that broadcasters are expecting to move forward at pace with 5G. However, there is still a lot of work to be done before it can be implemented into live environments, and given the current climate worldwide, testing and developments may have slowed down. Over the next year or so, it will be a case of broadcasters looking in earnest at the potential of 5G in the value chain and testing the technology's capabilities within their organizations – something over half of broadcasters are yet to do."

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"Even though the infrastructure isn't quite there yet, 5G's use for remote production could be extremely beneficial in the future beyond connecting cameras to the local outside broadcast production facility," added Rayner. "It can, for example, serve as a flexible way to take signals from the venues or locations back to the central production facility."

Looking at the expected advantages of 5G, 42% think the biggest benefit will be providing a cost-effective back-up for contribution links.

"As broadcasters contemplate using 5G in production, they must consider a number of issues, such as getting dedicated bandwidth, as well as how to handle timing and security. Investigations are currently underway in each of these areas with the 5G-VIRTUOSA project helping to uncover the potential of 5G technology in live production," added Rayner.

Broadcasters also expect 5G to be advantageous to the end-user with 34% saying they think that the biggest benefit will be improving the viewer experience. For example, 5G is likely to improve immediacy through lower buffering or provide better download speeds no matter where they are or what device they are watching on.

Andy Rayner will be presenting a webinar on June 10, 2020 on the subject of "Will 5G transform broadcasting?". More details about this webinar can be found here.

Source: Nevion media announcement

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News | Nevion Polls Broadcasters on 5G Adoption Plans ...

10. jun. 2020 - In this release, **Nevion** releases the results of its recent poll on 5G ... areas with the 5G-**VIRTUOSA** project helping to uncover the potential of 5G ...

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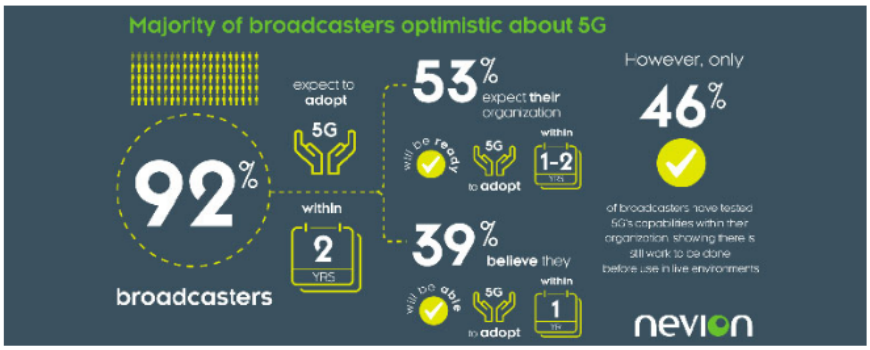
SAT KURIER

Większość nadawców optymistycznie podchodzi do 5G

dodano: 2020-06-11 21:40
autor: **Jerzy Kruczek** | źródło: Nevion

Globalna ankieta wśród nadawców przeprowadzona przez OnePoll w imieniu Nevion, architektów zwirtualizowanej produkcji medialnej, wykazała, że ponad jedna trzecia (39%) respondentów spodziewa się, że ich organizacja będzie gotowa na przyjęcie 5G w ciągu roku, podczas gdy kolejne 53% uważa, że będzie w stanie to zrobić w następnym roku. Okazuje się, że większość nadawców telewizyjnych optymistycznie podchodzi do 5G.



Badanie wykazało, że **94% nadawców uważa, że ich kraj ma infrastrukturę gotową na przyjęcie 5G**. Jednak pomimo tego optymizmu **tylko 46% nadawców przetestowało możliwości 5G w swojej organizacji.**

Andy Rayner, główny technolog w Nevion, powiedział:

> *- To dobrze, że nadawcy oczekują postępów w rozwoju technologii 5G. Jednak zanim będzie można go wdrożyć w środowiskach na żywo, wciąż pozostaje wiele do zrobienia, a biorąc pod uwagę obecny klimat na całym świecie, testy i rozwój mogły ulec spowolnieniu. W ciągu najbliższego roku będzie to przypadek nadawców, którzy poważnie spoglądają na potencjał 5G w w jego możliwościach i testują możliwości technologii w swoich organizacjach - ponad połowa nadawców jeszcze nie zrobiła.*

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Gdy nadawcy badają potencjalne przypadki użycia 5G, **prawie dwie trzecie (65%) rozważyłoby przyjęcie go do zdalnej produkcji.**

Co więcej, aż **61% rozważałoby wykorzystanie go do dystrybucji jako potencjalnego zamiennika naziemnej telewizji cyfrowej (NTC), satelity lub kabla**. Nadawcy rozważyliby również wykorzystanie technologii 5G do usług OTT (33%) i dystrybucji (29%).

Chociaż **nadawcy zastanawiają się głównie nad 5G do zdalnej produkcji**, tylko jedna piąta (20%) uważa, że zdolność 5G do zapewnienia bardziej przenośnego i elastycznego łącza podstawowego dla (niektórych) produkcji zewnętrznych jest jego największą korzyścią.

> *- Mimo że infrastruktura jeszcze nie istnieje, wykorzystanie 5G do zdalnej produkcji może być w przyszłości niezwykle korzystne poza podłączeniem kamer do lokalnego zewnętrznego ośrodka produkcyjnego - dodał **Rayner**.*
>
> *- Może na przykład służyć jako elastyczny sposób przesyłania sygnałów z miejsc lub lokalizacji z powrotem do centralnego ośrodka produkcyjnego.*

Spodziewane zalety 5G: 42% uważa, że największą korzyścią będzie opłacalne wsparcie dla przesyłu materiałów.

> *- Ponieważ nadawcy zastanawiają się nad wykorzystaniem 5G w produkcji, muszą wziąć pod uwagę szereg kwestii, takich jak uzyskanie dedykowanej przepustowości, a także sposób obsługi czasu i bezpieczeństwa. W każdym z tych obszarów trwają badania nad projektem 5G-VIRTUOSA, który pomaga odkryć potencjał technologii 5G w produkcji na żywo - dodał **Rayner**.*

Nadawcy oczekują również, że **5G będzie korzystne dla użytkownika końcowego**, a 34% twierdzi, że ich zdaniem największą korzyścią będzie poprawa wrażeń widza. Na przykład 5G może poprawić natychmiastowość dzięki niższemu buforowaniu lub zapewnić lepszą prędkość pobierania bez względu na to, gdzie się znajduje i na jakim urządzeniu ogląda.

Źródło: nevion.com

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Broadcasters eye remote production as leading 5G use case

12 JUNE 2020

Most broadcasters (92%) expect to be ready to adopt 5G within two years, according to new research.

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The global poll of broadcasters conducted by OnePoll on behalf of Nevion, a virtualised media production company, found that 94% of broadcasters think that their country has the infrastructure ready to adopt 5G but only 46% have tested the technology's capabilities within their company.

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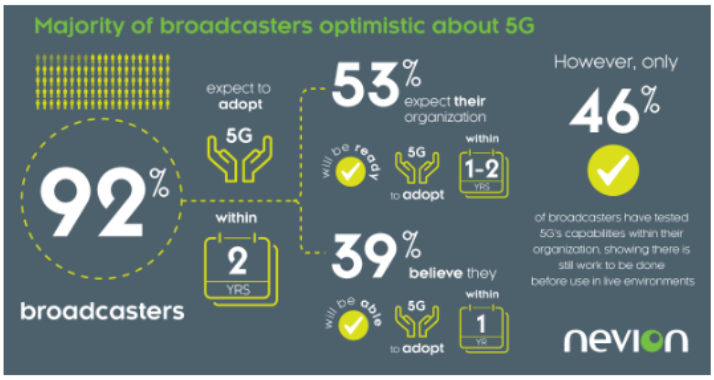
Andy Rayner, Chief Technologist, Nevion, commented, "It's positive that broadcasters are expecting to move forward at pace with 5G. However, there is still a lot of work to be done before it can be implemented into live environments, and given the current climate worldwide, testing and developments may have slowed down.

"Over the next year or so, it will be a case of broadcasters looking in earnest at the potential of 5G in the value chain and testing the technology's capabilities within their organisations – something over half of broadcasters are yet to do."

Use cases



Areas broadcasters are considering using 5G include remote production (65%), distribution as a potential replacement for digital terrestrial transmission, satellite or cable (61%) over the top services (33%) and contribution (29%).

While broadcasters are mainly considering 5G for remote production, only 20% think 5G's ability to provide a more portable and flexible primary link for some outside broadcast production is its biggest benefit – 42% tip 5G to offer a cost-effective back-up for contribution links and 34% believe it will improve the viewer experience.

"Even though the infrastructure isn't quite there yet, 5G's use for remote production could be extremely beneficial in the future beyond connecting cameras to the local outside broadcast production facility," said Rayner. "It can, for example, serve as a flexible way to take signals from the venues or locations back to the central production facility."

As broadcasters prepare to use 5G in production, they must consider several issues, such as getting dedicated bandwidth, as well as how to handle timing and security. Initiatives such as the EU 5G-VIRTUOSA project are exploring these areas.

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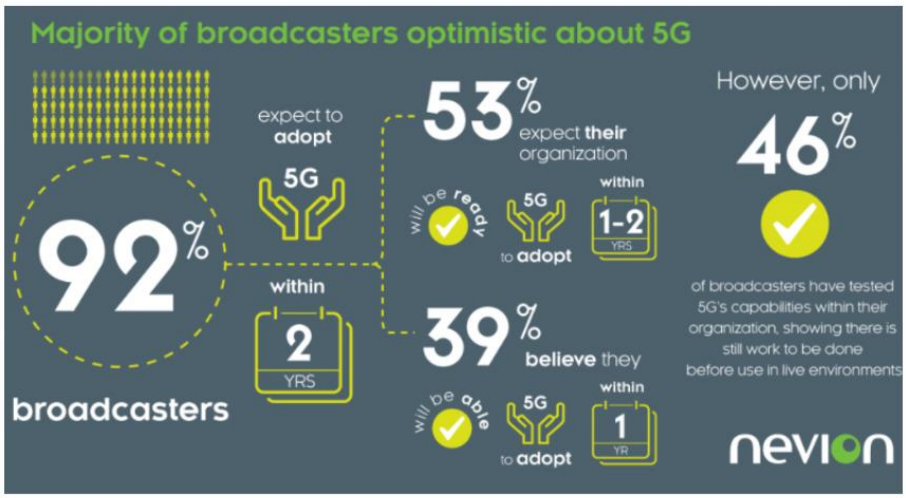
Jun 15.2020

Most broadcasters (92%) expect to be ready to adopt 5G within two years, according to new research



ew survey finds 92% of broadcasters expect to adopt 5G within two years

The global poll of broadcasters conducted by OnePoll on behalf of Nevion, a virtualised media production company, found that 94% of broadcasters think that their country has the infrastructure ready to adopt 5G but only 46% have tested the technology's capabilities within their company.

Andy Rayner, Chief Technologist, Nevion, commented, "It's positive that broadcasters are expecting to move forward at pace with 5G. However, there is still a lot of work to be done before it can be implemented into live environments, and given the current climate worldwide, testing and developments may have slowed down.

"Over the next year or so, it will be a case of broadcasters looking in earnest at the potential of 5G in the value chain and testing the technology's capabilities within their organisations – something over half of broadcasters are yet to do."

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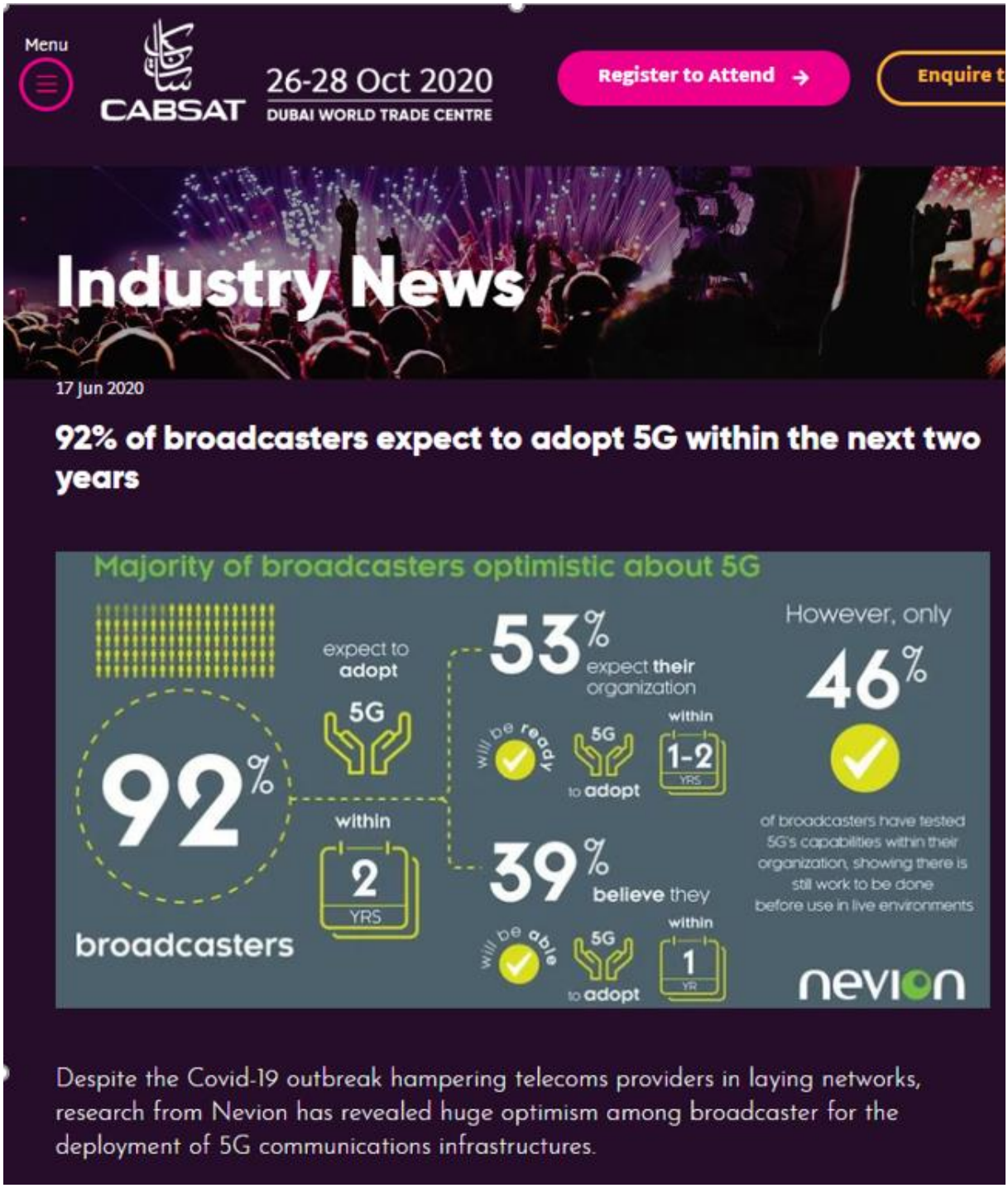

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The global poll of broadcasters conducted by OnePoll on the of virtualised media production firm found as many as 94% of broadcasters think that their country already has the infrastructure in place to adopt 5G while 92% of broadcasters are expecting to adopt the new platform. nearly two-fifths of respondents expect their organisation will be ready to adopt 5G within a year. Just over half (53%) believe they will be able to do so within the following year.

Almost two-thirds of broadcasters would consider adopting 5G for remote production purposes and while 61% would consider using it for distribution as a potential replacement for DTT, satellite or cable. In addition 33% and 29% of broadcasters would also consider using 5G technologies for OTT services and contribution respectively. Looking at the expected advantages of 5G, 42% think the biggest benefit will be providing a cost-effective back-up for contribution links.

While broadcasters are mainly considering 5G for remote production, only a fifth think 5G's ability to provide a more portable and flexible primary link for (some) outside broadcast production is its biggest benefit. Broadcasters also expect 5G to be advantageous to the end-user with 34% saying they think that the biggest benefit will be improving the viewer experience.

Yet despite this general optimism for deploying 5G, only 46% of broadcasters say that they have tested 5G's capabilities within their organisation. And with that in mind Nevion noted that while it was positive that broadcasters are expecting to move forward at pace with 5G, there was is still a lot of work to be done before it can be implemented into live environments, and given the current climate worldwide, testing and developments may have slowed down.

"Even though the infrastructure isn't quite there yet, 5G's use for remote production could be extremely beneficial in the future beyond connecting cameras to the local outside broadcast production facility," commented Nevion chief technologist Andy Rayner. "As broadcasters contemplate using 5G in production, they must consider a number of issues, such as getting dedicated bandwidth, as well as how to handle timing and security. Investigations are currently underway in each of these areas with the 5G-VIRTUOSA project helping to uncover the potential of 5G technology in live production."

Source: Rapid TV News

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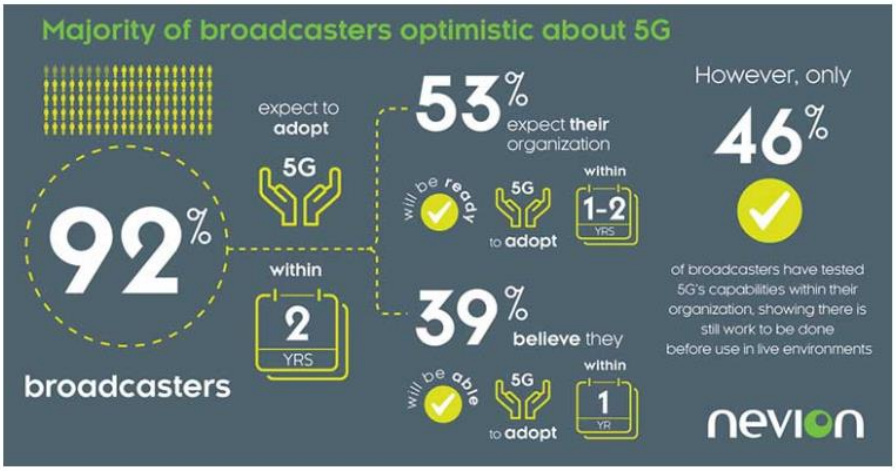
Will 5G be a lifeline for FTAs?

June 17, 2020 1 minute read



While Covid-19 may have delayed the pace of 5G implementations in some countries, optimism over the new wireless technology has not been dampened, with 92% of broadcasters expected to adopt 5G within the next two years.

The findings – conducted by OnePoll on behalf of Nevion – also found that 39% of respondents expect their organisations to be 5G-ready within a year, while a further 53% believe they will be able to do so within the following year.

Although the pandemic has impacted the top-line revenues of media operators, broadcasters are not shelving their plans to explore 5G's potential use cases. Almost two-thirds of the respondents would consider adopting 5G for remote production, and 20% of them think that portable 5G would provide the most value.

"As broadcasters contemplate using 5G in production, they must consider a number of issues, such as getting dedicated bandwidth, as well as how to handle timing and security.

"Investigations are currently under way in each of these areas with the 5G-VIRTUOSA project helping to uncover the potential of 5G technology in live production," commented Andy Rayner, chief technologist, Nevion.

Furthermore, 61% of respondents would consider using it for distribution as a potential replacement for DTT, satellite or cable, while 33% of them would consider using 5G technologies for OTT services.

Broadcasters expect to see improvement in viewer experience such as lower buffering on all devices with the advent of 5G.

However, the success of 5G is highly dependent on the country's readiness to adopt 5G, and only 46% of broadcasters have tested 5G's capabilities in their organisations.

While 5G can usher in a new era of broadcasting, will it be a lifeline for FTAs?

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8.4.3. 5G-VIRTUOSA in the PRESS – articles published as result of Press Release no3

(published order)

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5G-Virtuosa project completes initial technical IP-based studio set-up

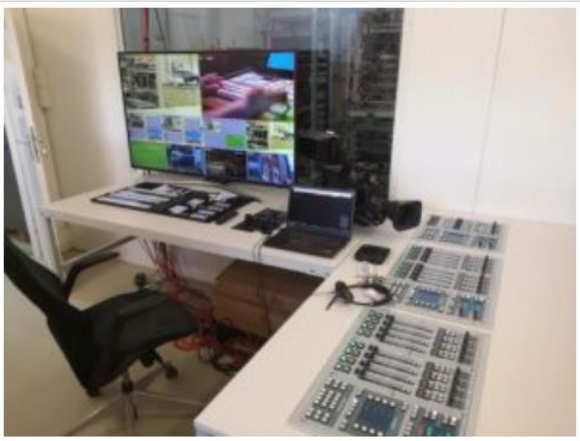
AlertMe

The participants of 5G-Virtuosa, the EU-funded project exploring 5G and virtualization in broadcast production, announced today that the first technical step of the initiative has been completed at Nevion's Service Operations Center (SOC) in Gdansk, Poland. The step involves the integration of multiple products from various vendors, with most of the work done remotely because of the COVID-19 situation.

The purpose of the EU project VIRTUOSA is to explore "*Scalable Software Defined Network Architectures for Cooperative Live Media Production exploiting Virtualized Production Resources and 5G Wireless Acquisition*". In practical terms, this means demonstrating through real-life examples how 5G can be combined with virtualization concepts to enable broadcasters to produce live content (such as sports or music coverage) more efficiently and cost-effectively across locations, to meet growing consumer demand.

The project participants are: Nevion AS (Norway), Mellanox Technologies LTD (Israel), LOGIC media solutions GmbH (Germany) and IRT – Institute for Broadcasting Technology (Germany).

The first phase of the project involves setting up an IP-based studio, built on industry standards (SMPTE ST 2110 and NMOS) and integrating equipment from multiple vendors, including: video cameras, a vision mixer, and a server from Sony; a multiviewer from TAG Video Systems; an audio mixer from Stagetec; a media analyzer from Telestream; IP switches from Mellanox; a PTP-compliant time and frequency synchronization from Meinberg; software-defined media nodes from Nevion; and all of it managed by an orchestration and SDN control system from Nevion.



The set-up has now been transferred to IRT's premises in Munich, Germany, where tests will be carried to ascertain the compliance of the complete set-up to industry standards.

Markus Berg, Head of Future Networks at IRT explains: "After a slight delay because of the COVID-19 situation, we are pleased that we are now in a position to start testing. The set-up is the fundamental building block that we will be using to create the 5G remote production planned for later phases of the project. The compliance to standards is a key part of the tests, and very important for IRT, as an internationally renowned research and innovation center for audiovisual technologies."

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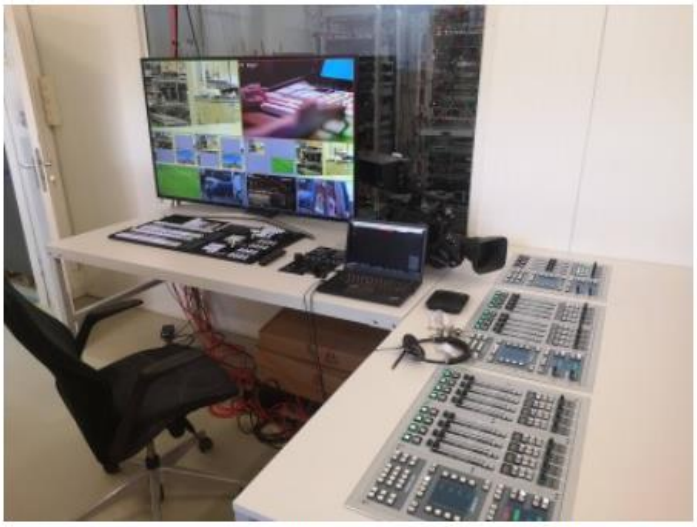
5G-VIRTUOSA PROJECT COMPLETES INITIAL TECHNICAL IP-BASED STUDIO SET-UP

Date: 16/06/2020



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Tags: 5G | Nevion | EU | IP | Broadcast | Virtualization
Submitted by Amber Chawner (Whiteoaks)
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Produktion

5G-Virtuosa-Projekt testet erste technische IP-basierte Studioeinrichtung

Die Teilnehmer von 5G-Virtuosa, dem von der EU geförderten Projekt zur Erforschung von 5G und Virtualisierung in der Rundfunkproduktion, haben den ersten technischen Schritt der Initiative im Service Operations Center (SOC) von Nevion gemacht. Dieser Schritt beinhaltet die Integration mehrerer Produkte verschiedener Hersteller, die aufgrund der COVID-19-Situation größtenteils aus der Ferne durchgeführt wurde.

Das Ziel des EU-Projekts VIRTUOSA ist es, "Skalierbare softwaredefinierte Netzwerkarchitekturen für die kooperative Live-Medienproduktion unter Nutzung virtualisierter Produktionsressourcen und drahtloser 5G-Akquisition" zu erforschen. In der Praxis bedeutet das, anhand von Produktionsbeispielen zu zeigen, wie 5G mit Virtualisierungskonzepten kombiniert werden kann, um Rundfunkanstalten in die Lage zu versetzen, Live-Inhalte (z. B. Sport- oder Musikberichterstattung) effizienter und kostengünstiger standortübergreifend zu produzieren.

Die Projektteilnehmer sind: Nevion, Mellanox Technologies, LOGIC media solutions und das IRT - Institut für Rundfunktechnik .

In der ersten Phase des Projekts geht es um die Einrichtung eines IP-basierten Studios, das auf Industriestandards (SMPTE ST 2110 und NMOS) aufbaut, und um die Integration von Geräten verschiedener Hersteller. Eingesetzt werden unter anderem Kameras, ein Bildmischer und ein Server von Sony, ein Multiviewer von TAG Video Systems, ein Audiomischer von Stagetec, ein Medienanalysator von Telestream, IP-Switches von Mellanox, eine PTP-kompatible Zeit- und Frequenzsynchronisation von Meinberg sowie softwaredefinierte Media Nodes von Nevion. Gesteuert wird wird die Technik von einem einem Orchestrierungs- und SDN-Kontrollsystem von Nevion.

Der Aufbau wurde nun in die Räumlichkeiten des IRT in München verlegt. Hier sollen Tests durchgeführt werden, um den Testaufbau gegen aktuelle Industriestandards zu prüfen.

Markus Berg, Head of Network Technologies am IRT, erklärt: "Nach einer leichten Verzögerung aufgrund der COVID-19-Situation freuen wir uns, dass wir nun in der Lage sind, mit den Tests zu beginnen. Der Aufbau ist der grundlegende Baustein, mit dem wir die für spätere Phasen des Projekts geplante 5G-Fernproduktion erstellen werden. Die Einhaltung von Standards ist ein wesentlicher Bestandteil der Tests und für das IRT als international anerkanntes Forschungs- und Innovationszentrum für audiovisuelle Technologien sehr wichtig".

Das 5G-VIRTUOSA-Projekt wurde im Rahmen der Zuschussvereinbarung Nr. 866656 vom Forschungs- und Innovationsprogramm "Horizont 2020" der Europäischen Union finanziert.

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REPORTAGENS

Projeto 5G-Virtuosa completa a configuração técnica inicial do estudo baseado em IP

Escrito por Ricardo Batalha | 16/06/2020

Projeto explora arquiteturas de rede escaláveis definidas por software para produção cooperativa de mídia ao vivo, com recursos de produção virtualizados e aquisição sem fio 5G

Os participantes do 5G-Virtuosa, projeto financiado pela União Europeia que explora o 5G e a virtualização na produção de broadcast, anunciaram que a primeira etapa técnica da iniciativa foi concluída no Service Operations Center (SOC) de Nevion, em Gdansk (POL). A etapa envolve a integração de vários produtos de vários fornecedores – Nevion (Noruega), Mellanox Technologies (Israel), Logic Media Solutions (Alemanha) e IRT – Institute of Broadcasting Technology (Alemanha) –, com a maior parte do trabalho feito de forma remota devido à situação do COVID-19.

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O objetivo do projeto Virtuosa da União Europeia é explorar 'arquiteturas de rede definidas por software escaláveis para produção cooperativa de mídia ao vivo, explorando recursos de produção virtualizados e aquisição sem fio 5G'. Em termos práticos, isso significa demonstrar, através de exemplos da vida real, como o 5G pode ser combinado com os conceitos de virtualização para permitir que as emissoras produzam conteúdo ao vivo de maneira mais eficiente e lucrativa em todos os locais, para atender à crescente demanda do consumidor.

A primeira fase do projeto envolve a criação de um estudo baseado em IP, baseado nos padrões da indústria (SMPTE ST 2110 e NMOS) e a integração de equipamentos de vários fornecedores, incluindo câmeras de vídeo, mixer e um servidor Sony; uma tela múltipla da TAG Video Systems; um mixer de áudio Stagetec; um analisador de mídia Telestream; Roteadores IP Mellanox; sincronização de tempo e frequência de acordo com o Meinberg PTP; Nós de mídia definidos pelo software Nevion; e todos gerenciados por um sistema Nevion SDN e controle de orquestração.

O sistema foi agora transferido para a instalação de IRT em Munique (ALE), onde serão realizados testes para determinar a conformidade do sistema completo com os padrões da indústria. Markus Berg, chefe de redes futuras da IRT, explica que "após um pequeno atraso devido à situação do COVID-19, temos o prazer de estar em posição de começar a testar. A montagem é o elemento fundamental que usaremos para criar a produção remota de 5G planejada para as fases posteriores do projeto. A conformidade é uma parte essencial dos testes e muito importante para a IRT, como um centro de pesquisa e inovação em tecnologias audiovisuais de renome internacional."

O projeto 5G-Virtuosa recebeu financiamento do programa de pesquisa e inovação Horizonte 2020 da União Europeia.

*Acompanhe a **Panorama Audiovisua**l no Facebook e Youtube*

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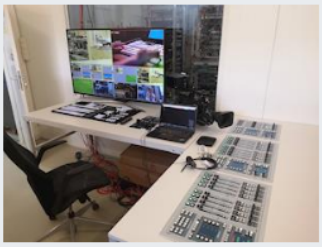
5G-VIRTUOSA PROJECT COMPLETES INITIAL TECHNICAL IP-BASED STUDIO SET-UP



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Oslo, Norway

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Amber Chawner

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TAGS

virtualization broadcast nevion eu 5g

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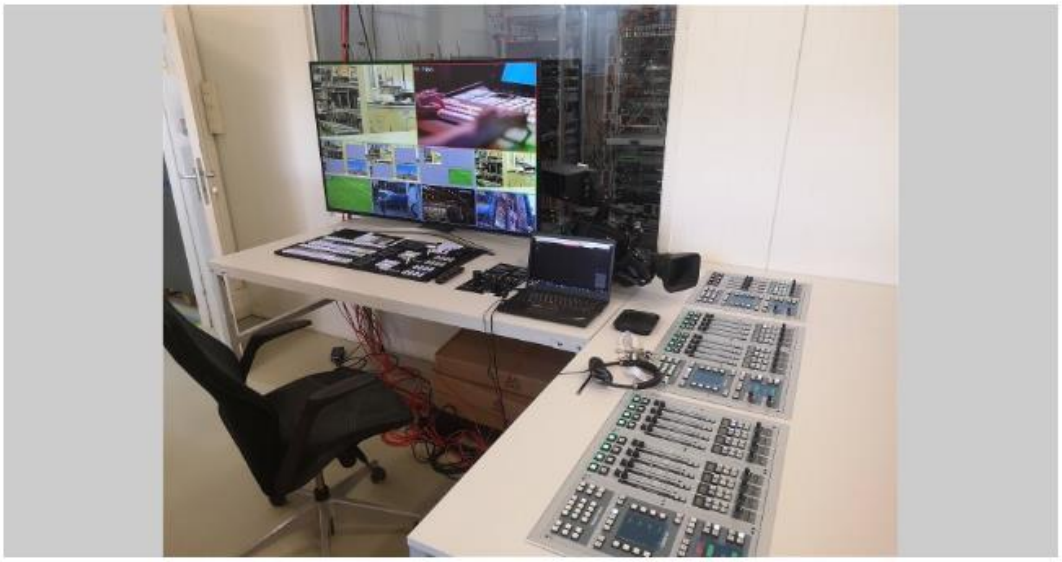
RADIO+TV Link

Το έργο 5G-Virtuosa ολοκληρώνει το αρχικό τεχνικό studio set-up που βασίζεται στο IP.

CREATION | 16 ΙΟΥΝΙΟΥ 2020



0 Comments

Προϊόντα από πολλούς κατασκευαστές ενοποιούνται σε περιβάλλον που είναι συμβατό με το πρότυπο SMPTE ST 2110.

Όσλο, Νορβηγία, 16 Ιουνίου 2020 - Οι συμμετέχοντες στο έργο **5G-Virtuosa**, που χρηματοδοτείται από την Ευρωπαϊκή Ένωση (ΕΕ), το οποίο εξερευνά το 5G και την εικονικότητα της broadcast παραγωγής, ανακοίνωσαν σήμερα ότι το πρώτο τεχνικό βήμα αυτής της πρωτοβουλίας ολοκληρώθηκε στο Service Operations Center (SOC) της Nevion στο Γκντανσκ της Πολωνίας. Αυτό το βήμα περιλαμβάνει την ενοποίηση πολλών προϊόντων από διάφορους κατασκευαστές, με το μεγαλύτερο μέρος της εργασίας να γίνεται εξ' αποστάσεως λόγω της κατάστασης που δημιούργησε η εξάπλωση του COVID-19.

Σκοπός του έργου της VIRTUOSA της ΕΕ είναι η διερεύνηση των "Κλιμακωτών Δικτυακών Αρχιτεκτονικών που καθορίζονται από το Λογισμικό για τη Συνεργατική Παραγωγή Ζωντανών Μέσων (Scalable Software Defined Network Architectures for Cooperative Live Media Production) με την αξιοποίηση Εικονικών Πόρων Παραγωγής (Virtualized Production Resources) και την απόκτηση υλικού με την Ασύρματη Τεχνολογία 5G. Στην πράξη, αυτό σημαίνει να επιδείξουμε μέσω πραγματικών παραδειγμάτων τον τρόπο που το 5G μπορεί να συνδυαστεί με ιδέες εικονικότητας ώστε να επιτρέψει στους broadcasters να παράγουν ζωντανό περιεχόμενο (όπως η κάλυψη αθλητικών ή μουσικών εκδηλώσεων) πιο αποτελεσματικά και οικονομικά σε διάφορες τοποθεσίες, προκειμένου να καλύψουν την αυξανόμενη ζήτηση των καταναλωτών.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 866656. This document reflects only the author's view and the European Commission and the Agency are not responsible for any use that may be made of the information it contains.

Στο έργο συμμετείχαν οι: **Nevion AS** (Νορβηγία), **Mellanox Technologies LTD** (Ισραήλ), **LOGIC media solutions GmbH** (Γερμανία) and **IRT – Institute for Broadcasting Technology** (Γερμανία).

Η πρώτη φάση του έργου περιλαμβάνει τη δημιουργία ενός studio που στηρίζεται στο IP, έχοντας ως βάση πρότυπα της βιομηχανίας (SMPTE ST 2110 και NMOS) και την ενοποίηση εξοπλισμού από πολλούς κατασκευαστές, συμπεριλαμβανομένων: κάμερες video, vision mixer και server από τη Sony, multiviewer της TAG Video Systems, μίκτη ήχου από τη Stagetec, αναλυτή μέσων της Telestream, IP switches από τη Mellano, συγχρονισμό χρόνου και συχνότητας συμβατό με PTP της Meinberg,•media nodes που καθορίζονται από το λογισμικό της Nevion και όλα αυτά να τα διαχειρίζεται ένα σύστημα οργάνωσης και ελέγχου SDN από τη Nevion.

Το set-up έχει πλέον μεταφερθεί στις εγκαταστάσεις του IRT στο Μόναχο της Γερμανίας, όπου θα πραγματοποιηθούν δοκιμές προκειμένου να εξακριβωθεί η πλήρης συμμόρφωση του με τα πρότυπα της βιομηχανίας.

Ο Markus Berg, Επικεφαλής Μελλοντικών Δικτύων του IRT εξηγεί: "Ύστερα από μία μικρή καθυστέρηση λόγω της κατάστασης από την εξάπλωση του COVID-19, είμαστε ικανοποιημένοι διότι τώρα μπορούμε να ξεκινήσουμε τις δοκιμές. Το set-up είναι ο θεμέλιος λίθος που θα χρησιμοποιήσουμε για να δημιουργήσουμε την απομακρυσμένη παραγωγή 5G που έχει προγραμματιστεί για τις μεταγενέστερες φάσεις του έργου. Η συμμόρφωση προς τα πρότυπα αποτελεί βασικό μέρος των δοκιμών και είναι πολύ σημαντική για το IRT που αποτελεί γνωστό παγκοσμίως κέντρο έρευνας και καινοτομίας για τις οπτικοακουστικές τεχνολογίες."

Το έργο 5G-VIRTUOSA έλαβε χρηματοδότηση από το πρόγραμμα έρευνας και καινοτομίας Horizon 2020 της Ευρωπαϊκής Ένωσης βάσει της συμφωνίας επιχορήγησης αριθ. 866656.

Πληροφορίες: www.nevion.com & OmniWave* & Pierides TechnoSystems LtD (PTS)*
*** Διανομείς Ελλάδος & Κύπρου κατ' αλφαβητική σειρά**

Παρατηρήσεις: Δελτίο Τύπου - Nevion - Όσλο, Νορβηγία, 16 Ιουνίου 2020

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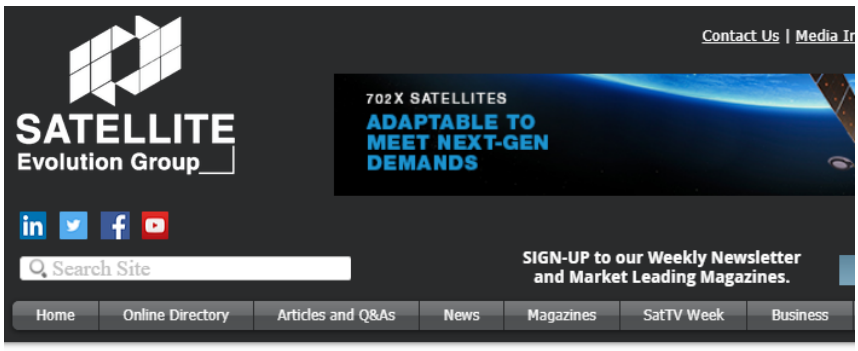
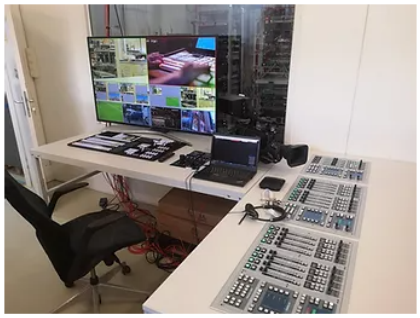


5G Broadcast & Video Delivery

5G-Virtuosa project completes initial technical IP-based studio set-up

June 16, 2020 by Satellite Evolution Group



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The set-up has now been transferred to IRT's premises in Munich, Germany, where tests will be carried to ascertain the compliance of the complete set-up to industry standards. Markus Berg, Head of Future Networks at IRT explains: "After a slight delay because of the COVID-19 situation, we are pleased that we are now in a position to start testing. The set-up is the fundamental building block that we will be using to create the 5G remote production planned for later phases of the project. The compliance to standards is a key part of the tests, and very important for IRT, as an internationally renowned research and innovation center for audiovisual technologies."

Tags: Virtuosa Nevion Live Media Production Virtualization

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5G-Virtuosa project completes initial technical IP-based studio set-up

BY WHITEOAKS
PUBLISHED: JUNE 16, 2020

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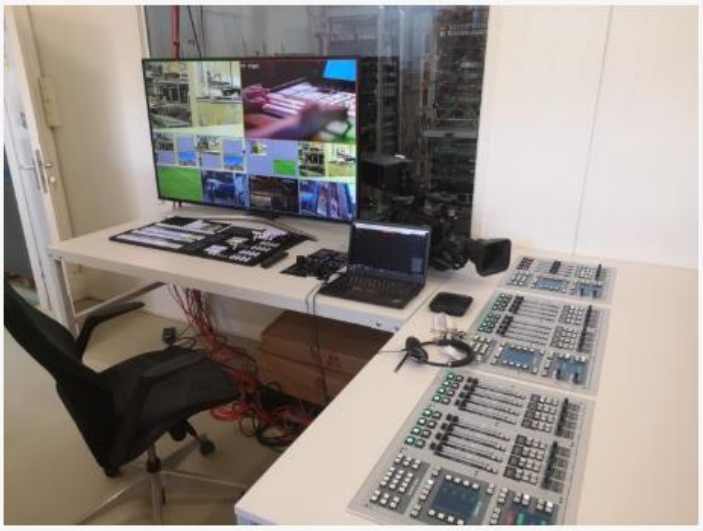

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Nevion and 5G-Virtuosa Project Partners Complete Initial Technical IP-Based Studio Set-Up

By SVG Staff
Tuesday, June 16, 2020 - 12:17 pm
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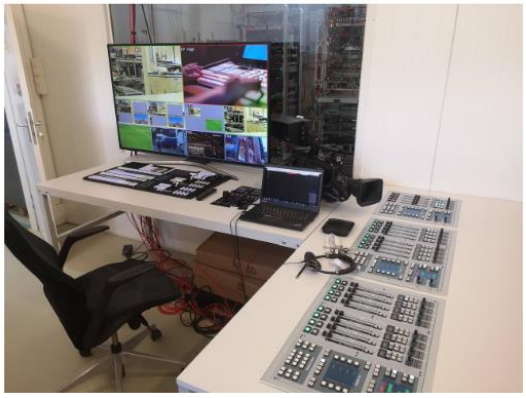

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The 5G-VIRTUOSA project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 866656.

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5G-VIRTUOSA PROJECT COMPLETES INITIAL TECHNICAL IP-BASED STUDIO SET-UP »

16/06/2020

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LINK: https://www.kitplus.com/news/5G-Virtuosa_project_completes_initial_tec...

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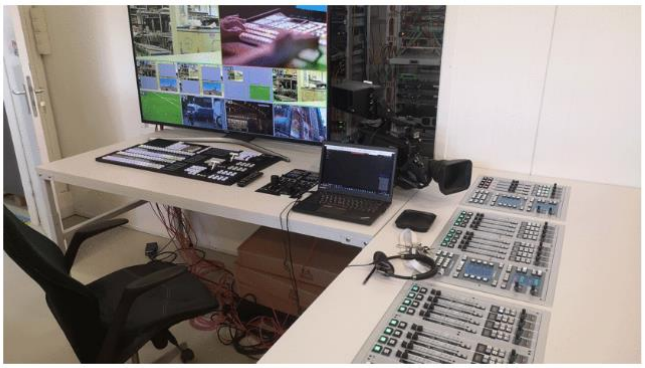
PRODUCTION

5G-Virtuosa Project Completes Initial Technical IP-Based Studio Set-Up

| 17 June 2020



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02  Anant Roongta, MD, Famous Studios, is young at heart and focussed at breathing new life into the legacy of Famous Studios

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FKT

Startseite > News > 5G-Virtuosa project: first tec... >

17.06.2020 | Produkte und Lösungen · International | Autor: mb

5G-Virtuosa project: first technical stage completed

PRODUCTS FROM MULTIPLE VENDORS INTEGRATED IN A SMPTE ST 2110 COMPLIANT ENVIRONMENT

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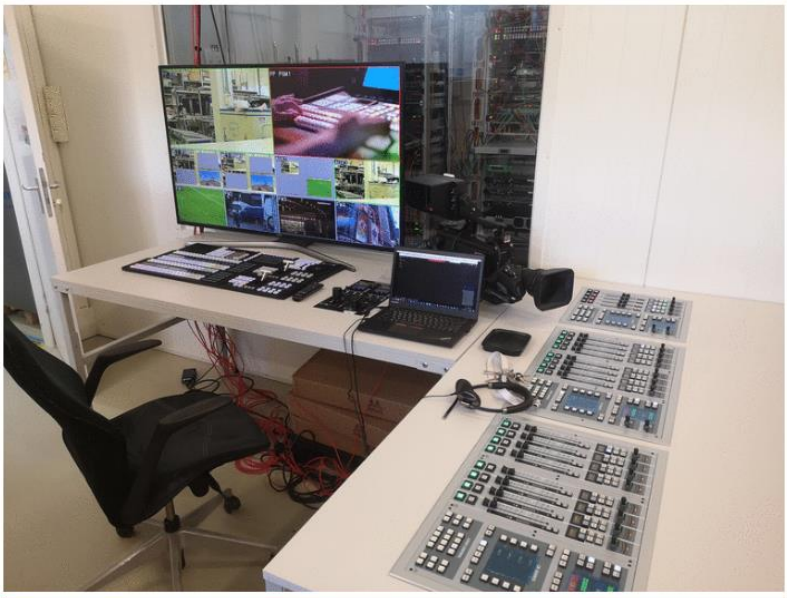

Source: Nevion

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www.nevion.com

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NEWS

5G-VIRTUOSA PROJECT COMPLETES FIRST MILESTONE

By George Bevir | 17 June 2020

- **EU initiative to showcase cost-effective live production**
- **Project combines 5G acquisition with software defined networks**
- **First phase completed with build of IP-based studio**

An EU-funded project exploring the use of 5G and virtualisation for broadcast production has completed its first round of technology integration, building an IP-based studio based on industry standards SMPTE ST 2110 and NMOS.

Virtuosa: EU funded project moves onto the next round of testing

The 5G-Virtuosa project aims to demonstrate through real-life examples how 5G can be combined with virtualisation to allow broadcasters to produce live content such as sports or music coverage more efficiently and cost-effectively across locations.

It is doing this by exploring scalable, software-defined network architectures for cooperative live media production, exploiting virtualised production resources and 5G wireless acquisition.

- **Read more:** EBU report: 5G could work for broadcasters

The project group is comprised of Norway's Nevion, Mellanox Technologies from Israel and Germany's Logic Media Solutions and IRT (Institute for Broadcasting Technology).

The first technical step of the initiative involved the integration of multiple products from various vendors at Nevion's Service Operations Center in Gdansk, Poland.

These included video cameras, a vision mixer, and a server from Sony; a multiviewer from Tag Video Systems; an audio mixer from Stage Tec; a media analyser from Telestream; IP switches from Mellanox; a PTP-compliant time and frequency synchronisation from Meinberg; software-defined media nodes from Nevion; and all of it managed by an orchestration and SDN control system from Nevion.

Because of the restrictions imposed because of the coronavirus most of the work has been done remotely.

IRT head of future networks Markus Berg said: "After a slight delay because of the Covid-19 situation, we are pleased that we are now in a position to start testing.

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Pan Shot

5G-Virtuosa concludes initial technical IP-based studio set-up

June 17, 2020

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5G Virtuosa project completes first IP-based studio set-up

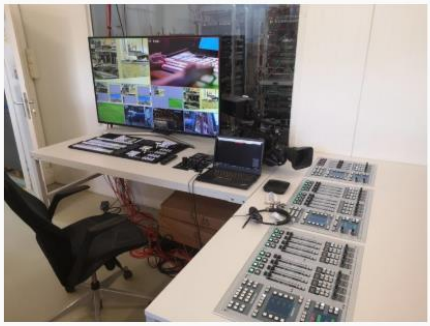
Trial integrated multiple products from various vendors

BY JENNY PRIESTLEY
PUBLISHED: JUNE 16, 2020 · UPDATED: JUNE 17, 2020

Virtuosa, the EU-funded project exploring 5G and virtualisation in broadcast production, has successfully set up an IP-based studio, built on industry standards (SMPTE ST 2110 and NMOS).

The purpose of the project is to demonstrate how 5G can be combined with virtualisation concepts to enable broadcasters to produce live content (such as sports or music coverage) more efficiently and cost-effectively across locations, to meet growing consumer demand.

The trial, carried out at Nevion's Service Operations Centre in Gdansk, Poland integrated multiple products from various vendors.



The studio set-up at Nevion's SOC

Technology employed during the trial included: video cameras, a vision mixer, and a server from Sony; a multiviewer from TAG Video Systems; an audio mixer from Stagetec; a media analyser from Telestream; IP switches from Mellanox; a PTP-compliant time and frequency synchronisation from Meinberg; and software-defined media nodes from Nevion. All of the tech was managed by an orchestration and SDN control system from Nevion.

The set-up has now been transferred to the Institute for Broadcasting Technology's (IRT) premises in Munich, Germany, where tests will continue to ascertain the compliance of the complete set-up to industry standards.

Markus Berg, head of future networks at IRT said: "After a slight delay because of the Covid-19 situation, we are pleased that we are now in a position to start testing. The set-up is the fundamental building block that we will be using to create the 5G remote production planned for later phases of the project. The compliance to standards is a key part of the tests, and very important for IRT, as an internationally renowned research and innovation centre for audiovisual technologies."

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5Gradar GET UP TO SPEED

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Home > News

EU project showcases the first IP-based studio for 5G broadcasting

By Dan Oliver June 17, 2020

Having received a €2m grant from the EU, the VIRTUOSA project has now taken its first steps towards becoming a fully-fledged 5G broadcasting environment.

(Image credit: VIRTUOSA)

In 2019, a consortium of European broadcasting companies – led by virtualized media production company, Nevion – received a grant of €2 million from the European Union to create a remote production studio, powered by 5G technology.

The project, known as VIRTUOSA, was selected from a list of 225 applications, and it has announced that it has taken its first technical step, opening an IP-based production studio, at Nevion's Service Operations Center (SOC) in Gdansk, Poland.

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This initial phase involves setting up an IP-based studio, built on industry standards (SMPTE ST 2110 and NMOS) and integrating equipment from multiple vendors, including: video cameras, a vision mixer, and a server from Sony; a multiviewer from TAG Video Systems; an audio mixer from Stagetec; a media analyzer from Telestream; IP switches from Mellanox; a PTP-compliant time and frequency synchronization from Meinberg; software-defined media nodes from Nevion; and all of it managed by an orchestration and SDN control system from Nevion.

> **"The set-up is the fundamental building block that we will be using to create the 5G remote production planned for later phases of the project."**
>
> Markus Berg, IRT.

The project participants are: Nevion AS (Norway), Mellanox Technologies LTD (Israel), LOGIC media solutions GmbH (Germany) and IRT – Institute for Broadcasting Technology (Germany).

"After a slight delay because of the COVID-19 situation, we are pleased that we are now in a position to start testing," said "Markus Berg, Head of Future Networks at IRT. "The set-up is the fundamental building block that we will be using to create the 5G remote production planned for later phases of the project. The compliance to standards is a key part of the tests, and very important for IRT, as an internationally renowned research and innovation center for audiovisual technologies."

Broadcasting via 5G

The broadcasting industry is currently looking at whether 5G technology can deliver both linear, and nonlinear broadcasts, whilst supporting them with enhanced media services (EMS), which are a combination of both. ('Linear media' refers to conventional TV or radio channels where programmes such as news, sport, entertainment and documentaries are scheduled by a service provider to be viewed at the time of transmission; whereas 'nonlinear media' is a type of media content that is offered on-demand at the request of the user.)

And according to the VIRTUOSA website: "VIRTUOSA will enable virtual connections of any studio, control room and on-site production across multiple locations, and live feedback from the audience straight into the production chain via 5G acquisition. It will allow media production facilities, equipment, resources, and talent to be shared across locations, supporting Cooperative Live Media Production with real-time transport and processing of live media over IP with up to 100Gbit/s."

The product itself will be based on three core technical elements: architecture, equipment, and software. And, as a result, live media production costs are expected to be reduced by 30-40%, whilst making live content easier to produce.

The overall objective of the 24-month VIRTUOSA project is to create a "market ready product - the VIRTUOSA product - fully tested technically, validated in a real operational environment".

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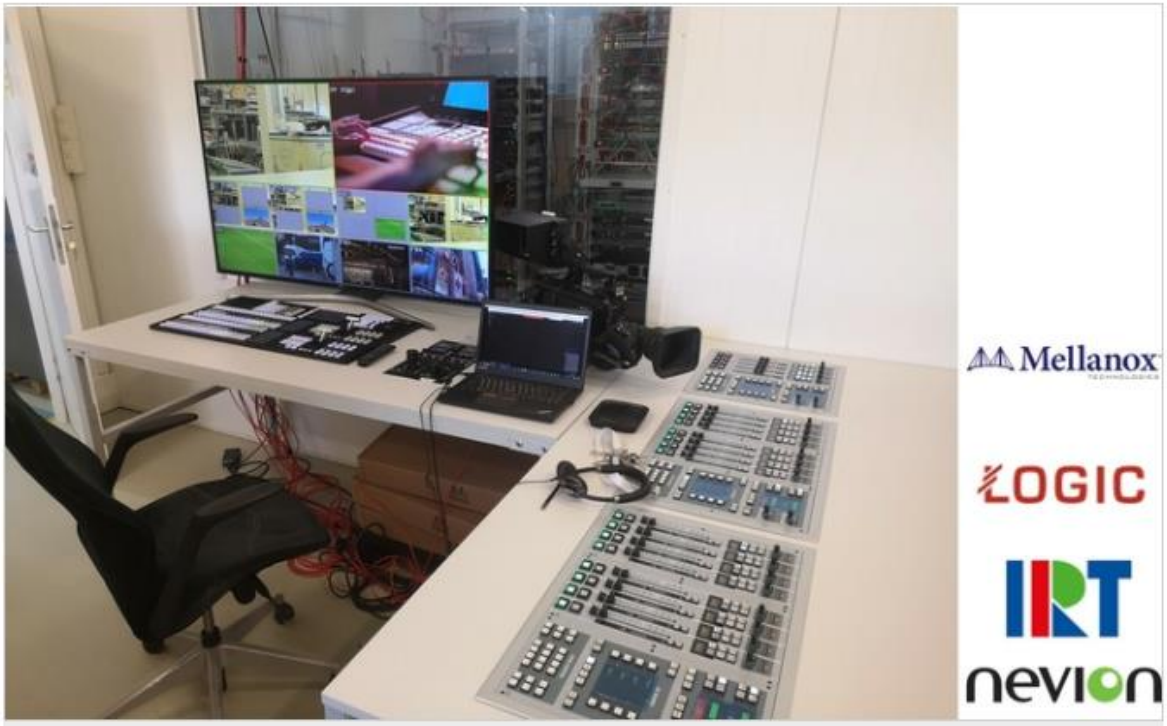
LIVE PRODUCTION

5G-Virtuosa project completes initial technical IP-based studio set-up

posted:18/06/2020



Products from multiple vendors integrated in a SMPTE ST 2110 compliant environment

The participants of 5G-Virtuosa, the EU-funded project exploring 5G and virtualization in broadcast production, announced today that the first technical step of the initiative has been completed at Nevion's Service Operations Center (SOC) in Gdansk, Poland. The step involves the integration of multiple products from various vendors, with most of the work done remotely because of the COVID-19 situation.

The purpose of the EU project VIRTUOSA is to explore "Scalable Software Defined Network Architectures for Cooperative Live Media Production exploiting Virtualized Production Resources and 5G Wireless Acquisition". In practical terms, this means demonstrating through real-life examples how 5G can be combined with virtualization concepts to enable broadcasters to produce live content (such as sports or music coverage) more efficiently and cost-effectively across locations, to meet growing consumer demand.

The project participants are: Nevion AS (Norway), Mellanox Technologies LTD (Israel), LOGIC media solutions GmbH (Germany) and IRT – Institute for Broadcasting Technology (Germany).

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The set-up has now been transferred to IRT's premises in Munich, Germany, where tests will be carried to ascertain the compliance of the complete set-up to industry standards.

Markus Berg, Head of Future Networks at IRT explains: "After a slight delay because of the COVID-19 situation, we are pleased that we are now in a position to start testing. The set-up is the fundamental building block that we will be using to create the 5G remote production planned for later phases of the project. The compliance to standards is a key part of the tests, and very important for IRT, as an internationally renowned research and innovation center for audiovisual technologies."

The 5G-VIRTUOSA project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 866656.

About Mellanox Technologies
Mellanox Technologies (NASDAQ: MLNX) is a leading supplier of end-to-end Ethernet and InfiniBand intelligent interconnect solutions and services for servers, storage, and hyper-converged infrastructure. Mellanox intelligent interconnect solutions increase data center efficiency by providing the highest throughput and lowest latency, delivering data faster to applications and unlocking system performance. Mellanox offers a choice of high-performance solutions: network and multicore processors, network adapters, switches, cables, software and silicon, that accelerate application runtime and maximize business results for a wide range of markets including high performance computing, enterprise data centers, Web 2.0, cloud, storage, network security, telecom and financial services.

About LOGIC media solutions GmbH
LOGIC is a German-based media infrastructure architect and distributor of professional broadcast and telecommunication equipment. Almost 20 years of experience on the market and excellent connections to the German media companies makes LOGIC one of the leading value-added reseller not only in regards to IP based productions. Solutions based on traditional SDI technology as well as services within the cloud can be covered with the portfolio and team LOGIC provides to their customers.

About Institut für Rundfunktechnik GmbH (IRT) -Institute for Broadcasting Technology
With more than 60 years of experience, the IRT is a world-renowned research and innovation center for broadcasting and media technology. It observes, evaluates and develops new technologies in the digital audiovisual media with the aim of strategically adapting the idea of broadcasting to new market environments. Around 100 employees conduct research in Munich in close cooperation with shareholders and clients for innovative solutions in the fields of Next Generation Audio, Future Video, Artificial Intelligence, Metadata, All IP / IT, IP Distribution, Portals and Services, Accessibility and 5G. Its shareholders are the broadcasters ARD, ZDF, Deutschlandradio, ORF and SRG / SSR. In addition, the IRT works together with a large number of customers from the broadcasting, media and industry sectors. The cooperation with international research partners offers access to worldwide trends and developments. In cooperation with universities, the IRT promotes the training of junior staff.

About Nevion
As the architect of virtualized media production, Nevion provides media network and broadcast infrastructure solutions to broadcasters, telecommunication service providers, government agencies and other industries. Increasingly based on IP, virtualization and Cloud technology, Nevion's solutions enable the management, transport and processing of professional-quality video, audio and data – in real time, reliably and securely. From content production to distribution, Nevion solutions are used to power major sporting and live events across the globe. Some of the world's largest media groups and telecom service providers use Nevion technology, including AT&T, NBC Universal, Sinclair Broadcast Group Inc., NASA, Arqiva, BBC, CCTV, EBU, BT, TDF and Telefonica.

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5G-Virtuosa project completes initial technical IP-based studio set-up

Monday 22 June 2020 | 10:51 CET | News

The participants of 5G-Virtuosa, the EU-funded project exploring 5G and virtualisation in broadcast production, announced that the first technical step of the initiative was completed at Nevion's Service Operations Center (SOC) in Gdansk, Poland. The step involves the integration of multiple products from various vendors, with most of the work done remotely because of the covid-19 pandemic.

The purpose of the EU project Virtuosa is to explore "scalable software defined network architectures for cooperative live media production exploiting virtualized production resources and 5G wireless acquisition". In practical terms, this means demonstrating through real-life examples how 5G can be combined with virtualisation concepts to enable broadcasters to produce live content more efficiently and cost-effectively across locations, to meet growing consumer demand.

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The set-up has now been transferred to IRT's premises in Munich, Germany, where tests will be carried to ascertain the compliance of the complete set-up to industry standards.

Categories: Mobile & Wireless

Companies: Mellanox Technologies / Sony

Countries: Europe

::: add a comment

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8.4.4. 5G-VIRTUOSA in the PRESS – articles published as result of Press Release no4

(published order)

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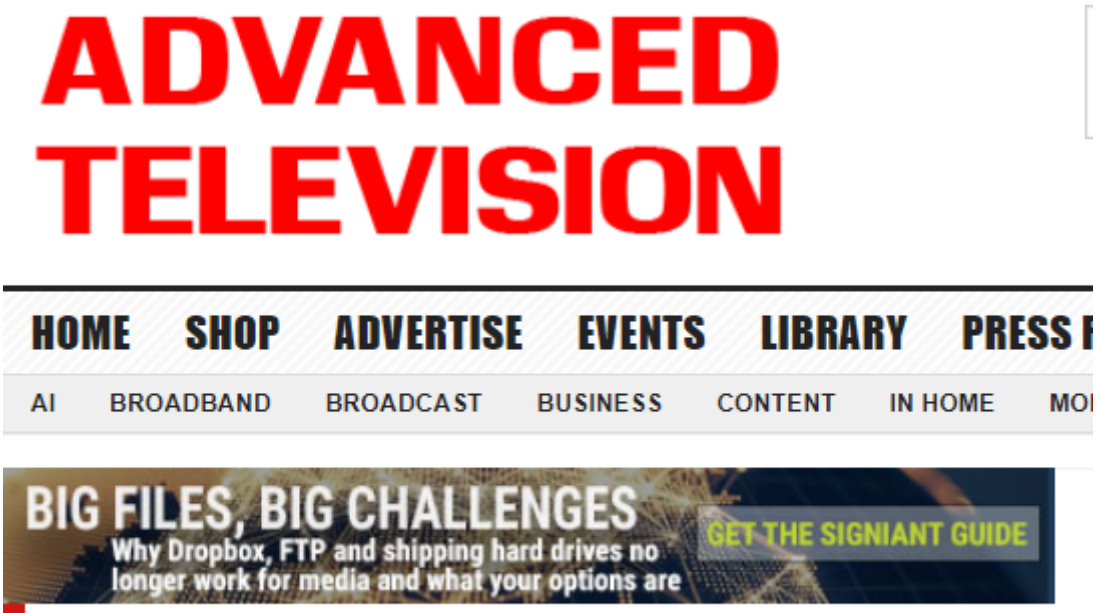
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Survey: 5G to replace traditional broadcast distribution

July 16, 2020

According to a recent global survey of broadcasters, 82 per cent believe that cellular networks such as 5G will eventually replace traditional broadcast distribution such as DTT/DTV and satellite as the preferred way to access TV content, with over a third (37 per cent) of these respondents expecting this to begin happening within one to two years.

The survey, conducted on behalf of virtualised media production specialist Nevion, discovered that 10 per cent still anticipate that it will take more than three years for 5G to overtake traditional services but the vast majority (94 per cent) of broadcasters agree that 5G will likely increase the consumption of content.

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As increasing numbers of people favour streaming over conventional linear television delivery, the capabilities of 5G will help to cater to this audience and the demand to be able to stream content on the go.

With 5G set to enable viewers to stream live content on any connected device no matter where they are, Andy Rayner, Chief Technologist, Nevion, suggests that 5G technology can potentially deliver OTT broadcast services with the quality required, not only for mobile devices, but also for TV screens at home. "This could mean, as our research uncovered, that 5G is eventually likely to usurp DTT for consumers at home, as well as on the move," he adds. "In the long term, it is likely that 5G mobile technology could become the standard means to deliver terrestrial television. However, it is expected that both DTT and 5G delivery (when ready) will co-exist for a reasonable time."

Nevion notes that there are clear shortcomings with the current capabilities of mobile technology compared to DTT, which is highly optimised for power-efficient digital linear broadcast distribution.

There is also a key distinction between the potential of Service Provider offerings for broadcast media consumption and the use of the 5G radio technology to provide future real time broadcast distribution capability.

These views regarding 5G as the primary means of distribution of TV content are reflected in the research findings. Half (50 per cent) of the broadcasters surveyed think the biggest challenge of using it will be network performance issues and coverage issues (42 per cent). This is followed by issues with reliability (26 per cent) and network security (22 per cent), as well as some broadcasters expressing concern about the environmental impact of 5G.

Nonetheless, as reported by advanced-television.com, the research uncovered broadcasters' optimism about the potential of 5G in production with 95 per cent of broadcasters expecting to adopt 5G within two years.

"Ultimately, we are only just scratching the surface of 5G, and although broadcasters already see its potential value, at this stage industry-wide explorations into the technology are ongoing. It is too soon to say exactly at which point in the broadcast chain 5G will provide the most value. As such, broadcasters currently delivering with DTT will need to work with experts to follow the evolution of 5G broadcast capability," he advises.

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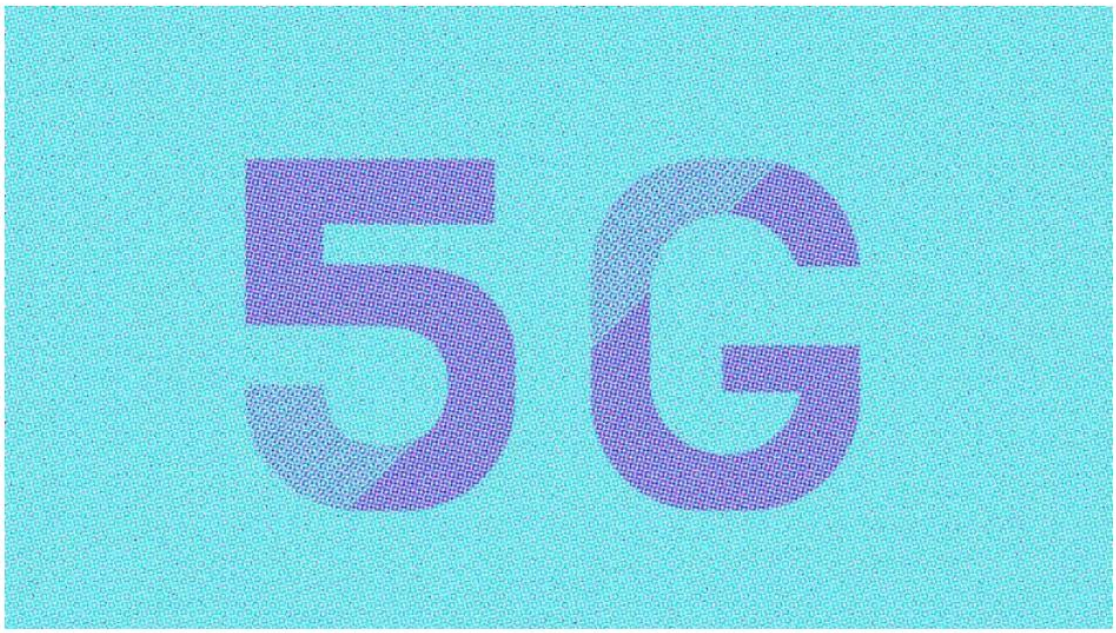
TECH

Most broadcasters back 5G to replace traditional TV distribution

By Jake Bickerton | 16 July 2020

Global survey of broadcasters shows widespread belief that 5G will become the preferred way to access TV content



A global survey commissioned by virtualised production specialist Nevion says the vast majority (82%) of broadcasters believe 5G and, more generally, cellular networks, will replace traditional broadcast distribution and satellite as the preferred way to access TV content.

The timescales for this change are probably sooner than you might expect too, with over a third (37%) of respondents expecting it will happen within the next two years.

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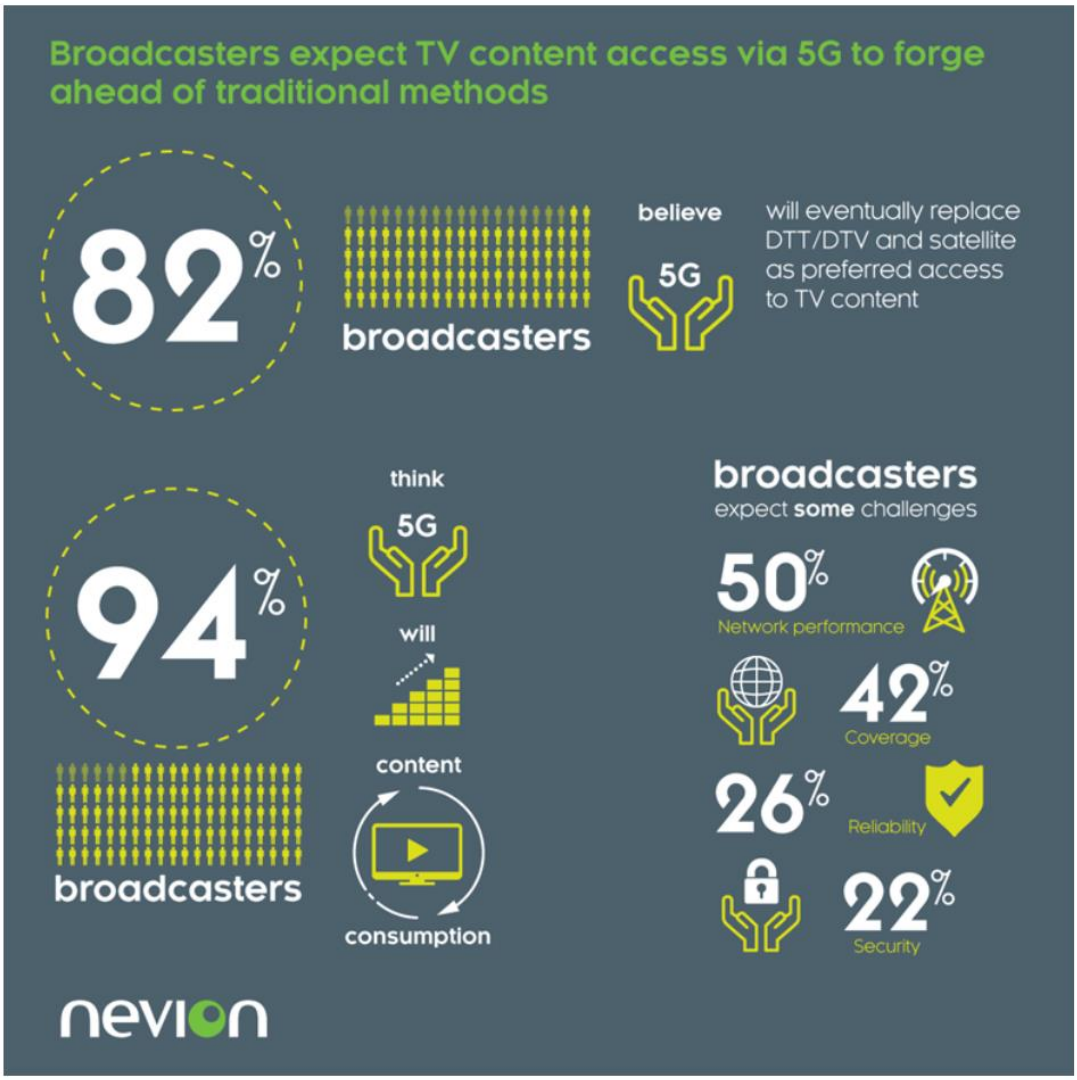
The timescales for this change are probably sooner than you might expect too, with over a third (37%) of respondents expecting it will happen within the next two years.

With 5G catering for consumers' demand to stream content on the go, half the broadcasters taking part in the survey say the biggest challenge will be network performance issues and coverage issues (42%).

This is followed by issues with reliability (26%) and network security (22%). Some broadcasters also expressed concern about the environmental impact of 5G.

However, asked if they were anticipating adopting 5G within the next two years, 95% of broadcasters said yes.

Andy Rayner, chief technologist, Nevion, said: "5G technology can potentially deliver OTT broadcast services with the quality required not only for mobile devices, but also for TV screens at home. This could mean, as our research uncovered, that 5G is eventually likely to usurp DTT for consumers at home as well as on the move. In the long term, it is likely that 5G mobile technology could become the standard means to deliver terrestrial television. However, it is expected that both DTT and 5G delivery (when ready) will co-exist for a reasonable time."



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SportsPro SmartSeries

Future sports technology & next generation business insights

Study: 82% of broadcasters say 5G will replace satellite distribution

Next-gen technology will also boost consumption, survey says.

by Steven Impey

- 37% say 5G transition to happen within two years; 10% say more than three years
- Performance (42%), reliability (26%) and network security (22%) among barriers

A survey of broadcasters has revealed that 82 per cent believe 5G and next generation cellular networks will eventually replace traditional satellite and digital TV (DTV) broadcast distribution methods.

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The new research, carried out by Norwegian media production specialist Nevion, also found that almost all of the broadcasters surveyed (94 per cent) agreed that the use of 5G will increase the consumption of content.

Furthermore, 37 per cent of respondents believe that the transition to 5G will take place within the next two years – though ten per cent said that it is unlikely to happen within the next three years.

However, Nevion's findings also show that 50 per cent of the broadcasters believe there are still several barriers to overcome before 5G is universally available. They include challenges related to network performance, reliability and network security. Some broadcasters also expressed concerns about the environmental impact of 5G.

Andy Rayner, Nevion's chief technologist, Nevion, said: "5G technology can potentially deliver OTT broadcast services with the quality required not only for mobile devices, but also for TV screens at home. This could mean, as our research uncovered, that 5G is eventually likely to usurp DTT for consumers at home as well as on the move.

- 'Revenue streams will multiply': How the Olympics' postponement can boost the sports tech industry

"In the long term, it is likely that 5G mobile technology could become the standard means to deliver terrestrial television. However, it is expected that both DTT [direct terrestrial television] and 5G delivery – when ready – will co-exist for a reasonable time."

As part of its UK rollout, domestic pay-TV network BT Sport became the first broadcaster to complete a 5G-enabled remote production trial, testing out the next generation technology from multiple top-flight English soccer stadia last September. Manchester City's Etihad Stadium, Arsenal's Emirates Stadium, and Chelsea's Stamford Bridge were all used as part of the demonstration.

Similarly, NBC Sports successfully trialled the use of 5G during a live broadcast from the National Football League (NFL) in December, as part of a tie-up with telecommunications company Verizon and US technology giant Sony.

Speaking to *SportsPro* at the beginning of April, Yiannis Exarchos, the chief executive of Olympic Broadcasting Services (OBS), said that its 5G trials can now be scaled up for the Tokyo Olympic Games after the event was postponed by a year due the coronavirus pandemic.

Rayner says that 5G is still a relative unknown in terms of its capability, adding: "Ultimately, we are only just scratching the surface of 5G, and although broadcasters already see its potential value, at this stage industry-wide explorations into the technology are ongoing.

"It is too soon to say exactly at which point in the broadcast chain 5G will provide the most value. As such, broadcasters currently delivering with DTT will need to work with experts to follow the evolution of 5G broadcast capability."

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82% of broadcasters think 5G will replace traditional broadcast distribution

JULY 17, 2020 12.36 EUROPE/LONDON BY JULIAN CLOVER

The majority of broadcasters believe that cellular distribution such as 5G will eventually replace traditional distribution methods.

In a global survey, conducted on behalf of the Norwegian firm Nevion, 82% believe that cellular networks like 5G will eventually replace traditional broadcast distribution such as DTT and satellite as the preferred way to access TV content, with over a third (37%) of these respondents expecting this to begin happening within 1 to 2 years.

Nevion is best known for its virtualised media production technology.

10% of those surveyed anticipate it will take more than three years for 5G to overtake traditional services but the vast majority (94%) of broadcasters agree that 5G will likely increase the consumption of content.

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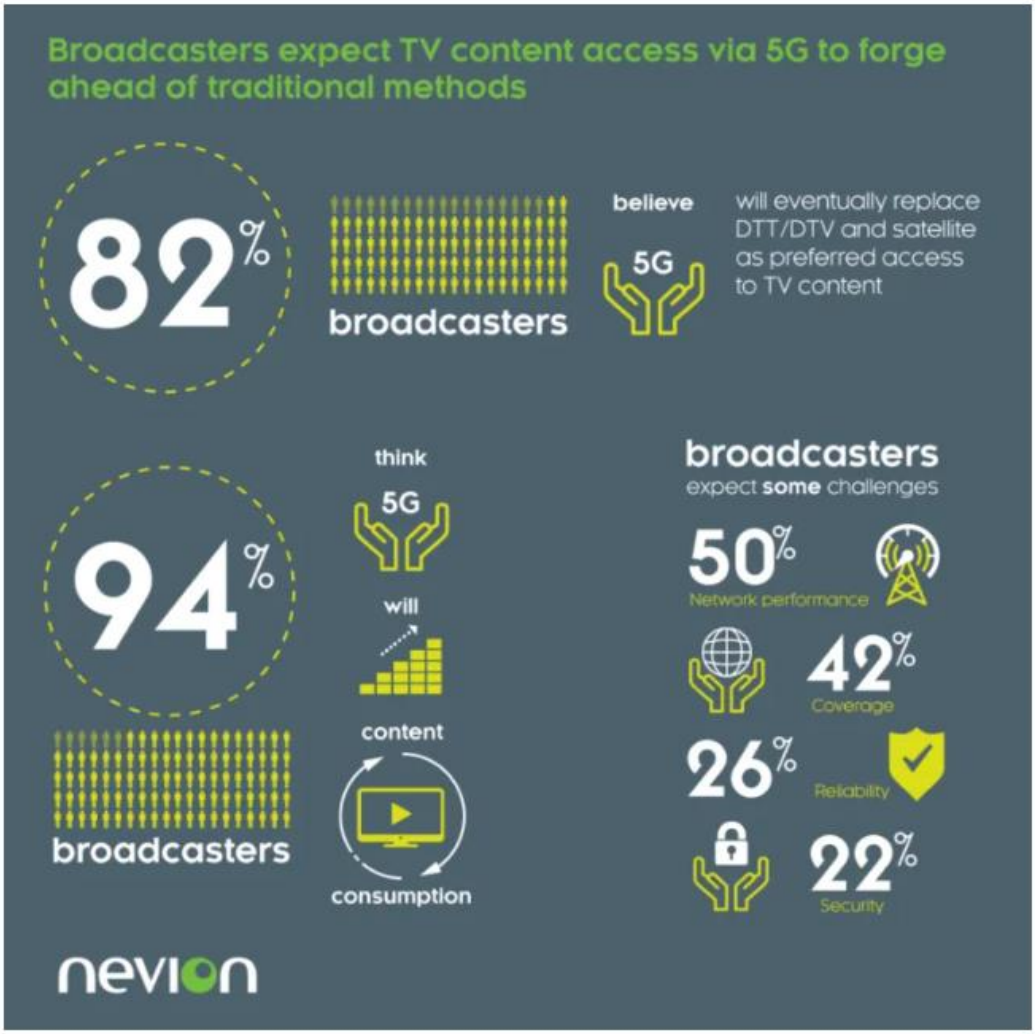
"5G technology can potentially deliver OTT broadcast services with the quality required not only for mobile devices, but also for TV screens at home," said Andy Rayner, Chief Technologist, Nevion. "This could mean, as our research uncovered, that 5G is eventually likely to usurp DTT for consumers at home as well as on the move. In the long term, it is likely that 5G mobile technology could become the standard means to deliver terrestrial television. However, it is expected that both DTT and 5G delivery (when ready) will co-exist for a reasonable time."

Half (50%) of the broadcasters surveyed think the biggest challenge of using it will be network performance issues and coverage issues (42%). This is followed by issues with reliability (26%) and network security (22%), as well as some broadcasters expressing concern about the environmental impact of 5G.



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News

5G expected to replace traditional broadcast distribution

Written by Jonathan Easton | 17th July 2020 @ 09:25

The vast majority of broadcasters believe that 5G will replace traditional broadcast distribution as the preferred way to access TV content.

According to a new study from Norwegian communications equipment company Nevion, 82% of broadcasters see 5G as the future of broadcast distribution, with 37% expecting the change to begin happening within the next two years.

A smaller proportion (10%) are more cautious, expecting it to take more than three years for 5G to overtake traditional services.

However, an overwhelming majority (94%) of broadcasters do believe that 5G will increase the consumption of content.

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Despite its obvious advantages in terms of data transfer speed, some of the surveyed broadcasters are still concerned about the technical shortcomings of mobile technology compared to DTT.

Half of the respondents think that 5G's biggest hurdle will be network performance issues, followed by 42% who pointed towards coverage. A little more than a quarter (26%) said that reliability was of a concern to them, while 22% expressed frets over network security.

Andy Rayner, chief technologist at Nevion, said,:"5G technology can potentially deliver OTT broadcast services with the quality required not only for mobile devices, but also for TV screens at home. This could mean, as our research uncovered, that 5G is eventually likely to usurp DTT for consumers at home as well as on the move. In the long term, it is likely that 5G mobile technology could become the standard means to deliver terrestrial television. However, it is expected that both DTT and 5G delivery (when ready) will co-exist for a reasonable time."

While there is disagreement about 5G becoming the primary broadcast technology, 95% of the surveyed broadcasters said that they expect to adopt the tech within two years in some capacity.

Rayner said: "Ultimately, we are only just scratching the surface of 5G, and although broadcasters already see its potential value, at this stage industry-wide explorations into the technology are ongoing. It is too soon to say exactly at which point in the broadcast chain 5G will provide the most value. As such, broadcasters currently delivering with DTT will need to work with experts to follow the evolution of 5G broadcast capability."

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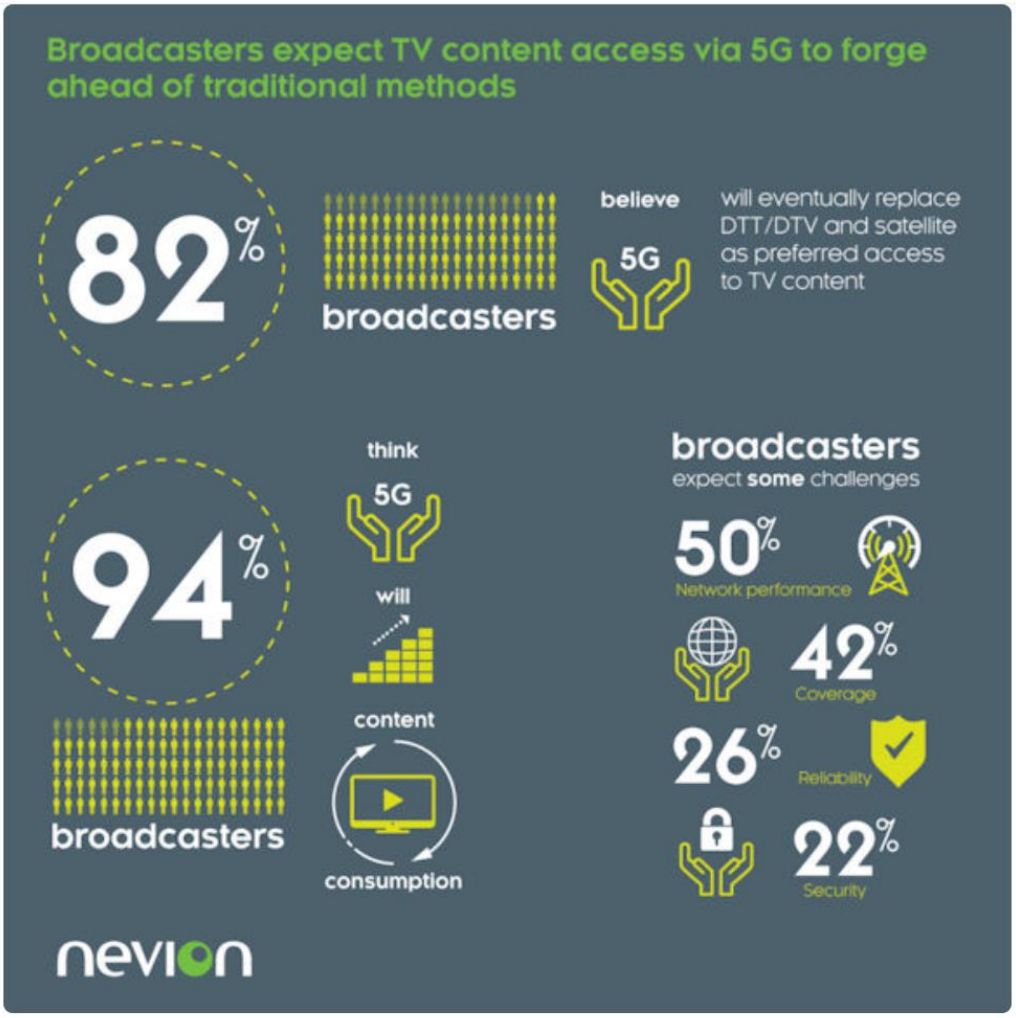

5G, ATSC 3.0, STREAMING MEDIA PLAYERS, STREAMING SERVICES

SOME BROADCASTERS EXPECT SEA CHANGE FROM 5G CELLULAR

Greg Tarr, July 17, 2020
4 min

The new NextGen TV (ATSC 3.0) digital broadcast system is just rolling out in the United States, and already the industry is looking at the emergence of 5G wireless as the potential future for digital content access around the world.

A growing number of television broadcasters across the globe view the new 5G wireless broadband platform to be the likely successor to traditional digital video distribution platforms in the next several years, according to a recent survey conducted for Norwegian virtualized media production firm, Nevion.

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The survey that was conducted for Nevion by OnePoll, found some 2% of broadcasters contacted around the world indicated they expect the next-generation cellular communications infrastructure will emerge as the new preferred way to access content. Nevio said 225 broadcasters across Europe, Australia, China and North America were contacted for the survey to help ascertain how the industry sees the emergency of 5G impacting their businesses and to uncover any issues they might see as potential obstacles.

In general, the survey that was first announced in parts last month, showed more than 90% of broadcasters contacted are expecting to adopt 5G technology over the next several years.

A further release of survey data this week showed that approximately 37% of the respondents said they expect 5G to begin replacing traditional broadcast distribution platforms including digital terrestrial television (DTT), digital TV (DTV) and direct broadcast satellite (DBS) within one or two years. Some 10% surveyed said they expect 5G will take more than three years to overtake traditional content distribution platforms, and some 94% of broadcasters polled said they think 5G is going to increase the consumption of content overall.

Some 82% think 5G will eventually replace traditional terrestrial broadcasting, satellite and other distribution methods for content access.

Nevion cited the growing popularity of streaming TV services over conventional linear television delivery as the key driver in this trend, while the desire for more effective content streaming on the go as well as at home is another expected popular benefit.

In the meantime, DTT continues to provide a superior power-efficient linear digital broadcast distribution vehicle that overcomes some of the shortcomings with current mobile technology. There was also a key distinction between the potential of service provider offerings for broadcast media consumption and the use of the 5G radio technology to provide future real time broadcast distribution capability.

Nearly half of the broadcasters surveyed think the biggest challenge of using 5G will be issues with network performance and coverage. Other areas of concern with the platform included: reliability (26%), network security (22%), and the environmental impact of 5G.

“5G technology can potentially deliver OTT broadcast services with the quality required not only for mobile devices, but also for TV screens at home,” stated Nevion chief technologist Andy Rayner. “This could mean, as our research uncovered, that 5G is eventually likely to usurp DTT for consumers at home as well as on the move. In the long term, it is likely that 5G mobile technology could become the standard means to deliver terrestrial television. However, it is expected that both DTT and 5G delivery (when ready) will co-exist for a reasonable time.”

All told, the survey revealed it is still very early in the deployments of 5G infrastructure making it too early to tell when 5G will begin to deliver the most value in the broadcast chain, but at the very least, Nevion advises broadcasters engaged with DTT to begin consulting experts to stay in step with the evolution of 5G broadcast technology.

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Die im Auftrag von Nevion, einer Medienproduktionsfirma, durchgeführten Ergebnisse einer weltweiten Umfrage unter Rundfunkveranstaltern wurden veröffentlicht.

82 Prozent der Befragten geben dabei an, dass Mobilfunknetze, wie 5G, die traditionelle Rundfunkverbreitung, wie DTT/DTV und Satellit, als bevorzugte Art des Zugangs zu TV-Inhalten ablösen werden. Mehr als ein Drittel (37 Prozent) der befragten Teilnehmer erwarten, dass dies innerhalb von ein bis zwei Jahren der Fall sein wird.

10 Prozent der Rundfunkveranstalter glauben, dass es mehr als drei Jahre dauern wird, bis 5G die traditionellen Dienste überholt hat, jedoch stimmt die Mehrheit der Befragten zu, dass 5G den Konsum von Rundfunk-Inhalten wahrscheinlich erhöhen wird.

5G ermöglicht, dass Zuschauer Live-Inhalte auf jedes angeschlossene Gerät von jedem Ort aus streamen können. Dazu sagt Andy Rayner, Chief Technologist von Nevion: „Die 5G-Technologie kann potenziell OTT-Broadcast-Services mit der Qualität liefern, die nicht nur für mobile Geräte, sondern auch für Fernsehbildschirme zu Hause erforderlich ist. Dies könnte, wie unsere Forschung gezeigt hat, bedeuten, dass 5G letztendlich wahrscheinlich DTT für die Verbraucher zu Hause und unterwegs übernehmen wird. Langfristig ist es wahrscheinlich, dass die 5G-Mobilfunktechnologie zum Standardmittel für die Bereitstellung von terrestrischem Fernsehen werden könnte. Es wird jedoch erwartet, dass sowohl DTT- als auch 5G-Bereitstellung (wenn bereit) für einen angemessenen Zeitraum nebeneinander existieren werden."

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Deutliche Defizite bestehen bei den derzeitigen Möglichkeiten der Mobilfunktechnologie im Vergleich zum digitalen terrestrischen Fernsehen, das in hohem Maße für eine energieeffiziente digitale lineare Rundfunkübertragung optimiert ist. Ein wesentlicher Unterschied besteht außerdem zwischen dem Potenzial der Angebote von Service-Anbietern für die Nutzung von Rundfunkmedien und der Nutzung der 5G-Funktechnologie, um zukünftige Echtzeit-Rundfunkverteilungsmöglichkeiten zu bieten.

Diese Ansichten über 5G als primäres Mittel zur Verbreitung von Fernsehinhalten spiegeln sich in den Forschungsergebnissen wider. 50 Prozent der befragten Rundfunkveranstalter ist der Ansicht, dass die größte Herausforderung beim Einsatz der Technologie Fragen der Netzleistung und der Reichweite (42 Prozent) sein werden. Es folgen Fragen der Zuverlässigkeit (26 Prozent) und der Netzsicherheit (22 Prozent). Einige Befragte äußern sich zudem besorgt über mögliche Umweltauswirkungen von 5G.

95 Prozent der Rundfunkveranstalter erwarten, 5G innerhalb von zwei Jahren einzuführen. Rayner: „Letztendlich kratzen wir erst an der Oberfläche von 5G, und obwohl die Rundfunkanstalten den potenziellen Wert von 5G bereits erkennen, wird die Technologie derzeit branchenweit erforscht. Es ist noch zu früh, um genau zu sagen, an welcher Stelle in der Übertragungskette 5G den größten Nutzen bringen wird. Daher werden die Rundfunkanstalten, die derzeit mit DTT senden, mit Experten zusammenarbeiten müssen, um die Entwicklung der 5G-Sendefähigkeit zu verfolgen."

Weitere Informationen finden Sie hier: Nevion.

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8.4.5. 5G-VIRTUOSA in the PRESS – other articles published

(type order)

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The VIRTUOSA project – how Nevion is helping bring 5G into live production

By Olivier Suard (Vice-President of Marketing, Nevion)

Tue 10, 12 2019

We spoke to Olivier Suard, Vice-President of Marketing, Nevion, about the company's leading role in the EU's VIRTUOSA project which aims to take advantage of the potential of 5G in live production.

Before we get into discussing the VIRTUOSA project, please remind us of the background of Nevion and give us an overview of Nevion today

As the self-styled architects of virtualized media production, Nevion specializes in helping broadcasters and service providers revolutionize the way they do business, by transforming broadcast workflows using IP network technology and IT concepts like virtualization. This positions Nevion in the 'PRODUCE' area of the IABM BaM Content Chain®.

When it was first founded in 1996, Nevion (then called Network Electronics) specialized in providing hardware products for the transport of video, audio and associated data, primarily in the facilities. Over the subsequent years, other companies (VPG and T-VIPS) merged into Nevion, bringing IP and WAN (wide area network) expertise with them. As a result, Nevion became a pioneer of IP media transport both in WANs and LANs (facilities). However, in the past five years, Nevion has transformed from being a supplier of hardware products into one that delivers transformative solutions based on software-defined products and with associated services. The solutions are focused in four main areas within the broadcasting business: facilities, contribution, remote production and terrestrial distribution.

Nevion solutions are used to power major sporting and live events across the globe. Some of the world's largest media groups and telecom service providers use Nevion technology, including AT&T, NBC Universal, Sinclair Broadcast Group Inc., NASA, Arqiva, BBC, CCTV, EBU, BT, TDF and Telefonica.

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Tell us about the VIRTUOSA project – what is its objective, who are the partners and how you will measure its success?

The purpose of the EU-funded project VIRTUOSA is to explore through real-life examples how 5G (the Fifth Generation of Cellular Network Technology) wireless communication can be combined with virtualization concepts from the IT industry to enable broadcasters to produce live content (such as sports or music coverage) more efficiently and cost-effectively across locations, to meet growing consumer demand.

The project involves four international leading industry players with complementary competencies: Nevion AS (Norway), Mellanox Technologies LTD (Israel), LOGIC media solutions GmbH (Germany) and IRT – Institute for Broadcasting Technology (Germany). These partners bring to the project expertise in, amongst others, IP networks including SDN (software defined networking) and virtualization, media transport, network architecture and system design, as well as real-life experience of broadcast production.

The ultimate aim of the project is to develop and launch a product (or solution) that will enable virtual connections of any studio, control room and on-site production across multiple locations, and live feedback from the audience straight into the production chain via 5G acquisition.

For this purpose, the VIRTUOSA project received a grant of €2 million from the European Union's Horizon 2020 research and innovation program, 'Fast Track to Innovation'.

Nevion is leading the project – what special expertise and experience are you bringing to the table?

The VIRTUOSA project fits into Nevion's core expertise of real-time media transport over IP networks. Nevion is bringing to the table a wealth of experience in creating solutions that enable distributed live production and virtualization of resources.

One of the keys to the success of the VIRTUOSA project will be the ability to orchestrate real-time signals across LANs, WANs and 5G networks. Nevion's orchestration and SDN control software, VideoIPath, will be used to deliver that essential capability.

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Is 5G the missing link in viable remote production? Tell us about its advantages and the potential it can unlock

It is no secret that broadcasters are looking to do more with less – create more content with fewer resources. One aspect of achieving that goal is to become more light-weight and nimble in the process of acquisition, and to centralize the production to make optimum use of equipment and production staff.

The trend for IP based remote production fits squarely within that framework. With 5G though, the acquisition becomes even more portable (e.g. fewer cables) and more mobile. This means that broadcasters can set up on site more quickly and cost-effectively almost anywhere, to handle breaking news for example. It also means that events that require tracking over considerable distances, e.g. sports such as cycling, road running, or cross-country skiing, could become easier to cover.

5G can also be used as back-up link for more conventional remote production connections, which is expected to be more versatile and economical than traditional diverse routing over fixed connectivity.

How will you solve the critical issues of timing and security of pairing?

One of the purposes of the VIRTUOSA project is precisely to investigate the performance of timing distribution over 5G connectivity, and in particular whether the intra-5G network timing distribution will be sufficient for all of the standard IP requirements. That said, separately, Nevion has been investigating how real-time production can work effectively with latency that historically has often been considered unacceptable, and it is clear that there are additional ways to reconcile timing downstream, so this area is not critical.

Security is important in several levels. The key areas are authentication of the devices, encryption of the content and secure control channels. There are both existing and emerging standards that can be applied to this area, and it is anticipated that the VITUOSA project will investigate these also.

Are there any extra considerations from a management/orchestration point of view with 5G?

A key area of exploration within the ongoing work on 5G is that of interfacing to the control API of the 5G orchestration. There is potential within the future technical capability of 5G for dynamic setup and teardown of connectivity. Using an API into the 5G orchestration system would potentially allow a media orchestration system such as Nevion's VideoIPath to create end-to-end media flow provision over a hybrid of fiber and 5G IP connectivity. This feature, like many elements of the 5G technical potential, would rely on service providers being willing to open this capability and provide it as a service.

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What will it take to persuade carriers to put aside a 'custom slice' to enable the guaranteed quality of service that 5G live contribution requires? You are competing for bandwidth against some very big potential payers!

The first point to make here is that a 'custom slice', i.e. dedicated bandwidth, may not always be required. For example, where 5G is used as a backup connection for contribution, using 5G 'as is' may well be good enough, in the same way as the Internet, with its fluctuating bandwidth, can provide good enough connectivity as a backup. It's largely down to the balance between the cost of the bandwidth vs. the probability of it being needed.

Of course, where 5G is used as the main connectivity, a guaranteed bandwidth will be required. That's when a 'custom slice' would need to be negotiated with telecom service providers.

The biggest challenge when we start talking about Custom 'QoS' slice provision with dedicated bandwidth is whether service providers will see a sufficient large potential market in these services to make them worthwhile providing. Broadcast contribution alone is unlikely to provide sufficient stimulus for this, but combining forces with other 'niche' areas such as emergency services, more generic dynamic event-based data requirements and maybe military applications could make this approach viable.

In the context of remote production (which is what the VIRTUOSA project is primarily looking at), the 5G connectivity is typically needed in a very specific location and for a very time-delimited period. This makes the case for the allocation of bandwidth much easier to make in that it is less likely to be in competition with other uses.
Of course, it will also be down to pricing.

It is not the purpose of VIRTUOSA to investigate this aspect of 5G in broadcasting – it is looking at the technical aspects. The working assumption for the project is that there is a strong business case for broadcasters to use 5G, and they will work to overcome the issue of competition for dedicated bandwidth.

When will 5G-enabled remote production become practical? What barriers are still to be overcome?

The technical issues surrounding the transport of media over 5G networks can be overcome in fairly short order. The VIRTUOSA project for example is set to run for just 24 months.
The biggest issues will be the speed of roll-out of 5G and its performance (actual vs. theoretical), providing sufficient capacity and geographical coverage.

Finally, Nevion has been an IABM member for some time. What are the most valuable IABM services from your perspective?

As a neutral organization for the professional broadcast sector, IABM can facilitate information and knowledge sharing across the industry and stimulates valuable debate in a unique way. For Nevion, which has always believed in industry collaboration (through the adoption of standards or business partnerships) this debate serves to cement that process.

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YOUR

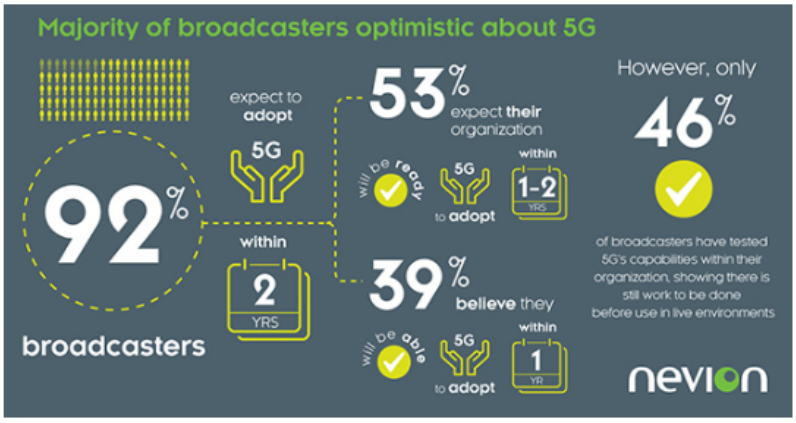
Majority of broadcasters optimistic about 5G

Fri 12, 06 2020

New survey finds 92% of broadcasters expect to adopt 5G within two years

Oslo, Norway, 9th June 2020 – A global poll of broadcasters conducted by OnePoll on behalf of Nevion, the architects of virtualized media production, has found that over a third (39%) of respondents expect their organization will be ready to adopt 5G within a year, while a further 53% believe they will be able to do so within the following year.

The survey found that 94% of broadcasters think that their country has the infrastructure ready to adopt 5G. Yet, despite this optimism, only 46% of broadcasters have tested 5G's capabilities within their organization.



Andy Rayner, Chief Technologist, Nevion, commented: "It's positive that broadcasters are expecting to move forward at pace with 5G. However, there is still a lot of work to be done before it can be implemented into live environments, and given the current climate worldwide, testing and developments may have slowed down. Over the next year or so, it will be a case of broadcasters looking in earnest at the potential of 5G in the value chain and testing the technology's capabilities within their organizations – something over half of broadcasters are yet to do."

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As broadcasters explore 5G's potential use cases, almost two-thirds (65%) would consider adopting it for remote production, while 61% would consider using it for distribution as a potential replacement for DTT, satellite or cable. Broadcasters would also consider using 5G technologies for OTT services (33%) and contribution (29%).

While broadcasters are mainly considering 5G for remote production, only one-fifth (20%) think 5G's ability to provide a more portable and flexible primary link for (some) outside broadcast production is its biggest benefit.

"Even though the infrastructure isn't quite there yet, 5G's use for remote production could be extremely beneficial in the future beyond connecting cameras to the local outside broadcast production facility," added Rayner. "It can, for example, serve as a flexible way to take signals from the venues or locations back to the central production facility."

Looking at the expected advantages of 5G, 42% think the biggest benefit will be providing a cost-effective back-up for contribution links.

"As broadcasters contemplate using 5G in production, they must consider a number of issues, such as getting dedicated bandwidth, as well as how to handle timing and security. Investigations are currently underway in each of these areas with the 5G-VIRTUOSA project helping to uncover the potential of 5G technology in live production," added Rayner.

Broadcasters also expect 5G to be advantageous to the end-user with 34% saying they think that the biggest benefit will be improving the viewer experience. For example, 5G is likely to improve immediacy through lower buffering or provide better download speeds no matter where they are or what device they are watching on.

Andy Rayner will be presenting a webinar on June 10, 2020 on the subject of "Will 5G transform broadcasting?". More details about this webinar can be found **here**.

For more information about Nevion and its solutions, please visit the **Nevion website**.

About Nevion

As the architect of virtualized media production, Nevion provides media network and broadcast infrastructure solutions to broadcasters, telecommunication service providers, government agencies and other industries. Increasingly based on IP, virtualization and Cloud technology, Nevion's solutions enable the management, transport and processing of professional-quality video, audio and data – in real time, reliably and securely. From content production to distribution, Nevion solutions are used to power major sporting and live events across the globe. Some of the world's largest media groups and telecom service providers use Nevion technology, including AT&T, NBC Universal, Sinclair Broadcast Group Inc., NASA, Arqiva, BBC, CCTV, EBU, BT, TDF and Telefonica.

For more information please visit **www.nevion.com**. Follow Nevion on Twitter @nevioncorp

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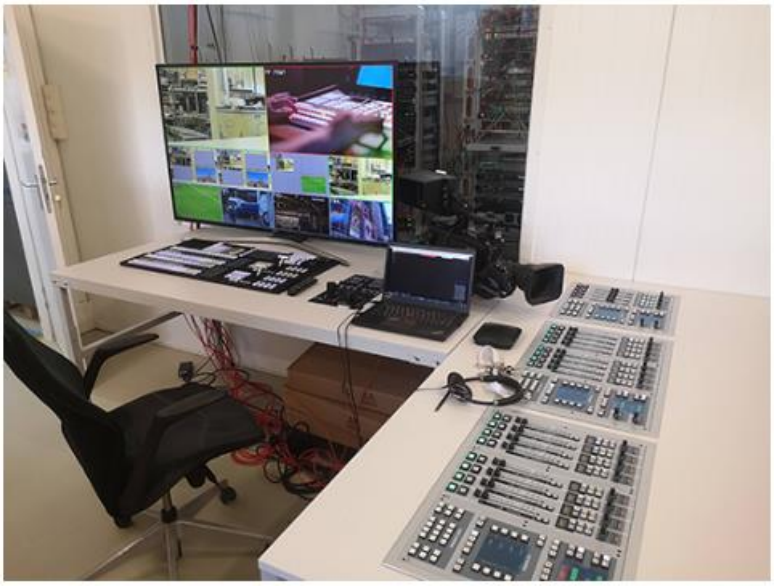
5G-Virtuosa project completes initial technical IP-based studio set-up

Thu 18, 06 2020

Products from multiple vendors integrated in a SMPTE ST 2110 compliant environment

Oslo, Norway, 16th June 2020 – The participants of **5G-Virtuosa**, the EU-funded project exploring 5G and virtualization in broadcast production, announced today that the first technical step of the initiative has been completed at Nevion's Service Operations Center (SOC) in Gdansk, Poland. The step involves the integration of multiple products from various vendors, with most of the work done remotely because of the COVID-19 situation.



The purpose of the EU project VIRTUOSA is to explore "Scalable Software Defined Network Architectures for Cooperative Live Media Production exploiting Virtualized Production Resources and 5G Wireless Acquisition". In practical terms, this means demonstrating through real-life examples how 5G can be combined with virtualization concepts to enable broadcasters to produce live content (such as sports or music coverage) more efficiently and cost-effectively across locations, to meet growing consumer demand.

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The project participants are: **Nevion AS (Norway)**, **Mellanox Technologies LTD (Israel)**, **LOGIC media solutions GmbH (Germany)** and **IRT – Institute for Broadcasting Technology (Germany)**.

The first phase of the project involves setting up an IP-based studio, built on industry standards (SMPTE ST 2110 and NMOS) and integrating equipment from multiple vendors, including: video cameras, a vision mixer, and a server from Sony; a multiviewer from TAG Video Systems; an audio mixer from Stagetec; a media analyzer from Telestream; IP switches from Mellanox; a PTP-compliant time and frequency synchronization from Meinberg; software-defined media nodes from Nevion; and all of it managed by an orchestration and SDN control system from Nevion.

The set-up has now been transferred to IRT's premises in Munich, Germany, where tests will be carried to ascertain the compliance of the complete set-up to industry standards.

Markus Berg, Head of Future Networks at IRT explains: "After a slight delay because of the COVID-19 situation, we are pleased that we are now in a position to start testing. The set-up is the fundamental building block that we will be using to create the 5G remote production planned for later phases of the project. The compliance to standards is a key part of the tests, and very important for IRT, as an internationally renowned research and innovation center for audiovisual technologies."

The 5G-VIRTUOSA project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 866656.

About Mellanox Technologies

Mellanox Technologies (NASDAQ: MLNX) is a leading supplier of end-to-end Ethernet and InfiniBand intelligent interconnect solutions and services for servers, storage, and hyper-converged infrastructure. Mellanox intelligent interconnect solutions increase data center efficiency by providing the highest throughput and lowest latency, delivering data faster to applications and unlocking system performance. Mellanox offers a choice of high-performance solutions: network and multicore processors, network adapters, switches, cables, software and silicon, that accelerate application runtime and maximize business results for a wide range of markets including high performance computing, enterprise data centers, Web 2.0, cloud, storage, network security, telecom and financial services. More information is available at: **www.mellanox.com**

About LOGIC media solutions GmbH

LOGIC is a German-based media infrastructure architect and distributor of professional broadcast and telecommunication equipment. Almost 20 years of experience on the market and excellent connections to the German media companies makes LOGIC one of the leading value-added reseller not only in regards to IP based productions. Solutions based on traditional SDI technology as well as services within the cloud can be covered with the portfolio and team LOGIC provides to their customers. For more information please visit **www.logicmedia.de**

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About Institut für Rundfunktechnik GmbH (IRT) -Institute for Broadcasting Technology

With more than 60 years of experience, the IRT is a world-renowned research and innovation center for broadcasting and media technology. It observes, evaluates and develops new technologies in the digital audiovisual media with the aim of strategically adapting the idea of broadcasting to new market environments. Around 100 employees conduct research in Munich in close cooperation with shareholders and clients for innovative solutions in the fields of Next Generation Audio, Future Video, Artificial Intelligence, Metadata, All IP / IT, IP Distribution, Portals and Services, Accessibility and 5G. Its shareholders are the broadcasters ARD, ZDF, Deutschlandradio, ORF and SRG / SSR. In addition, the IRT works together with a large number of customers from the broadcasting, media and industry sectors. The cooperation with international research partners offers access to worldwide trends and developments. In cooperation with universities, the IRT promotes the training of junior staff. More information is available at: **https://www.irt.de/home/**

About Nevion

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EE Times

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The 5G Opportunity for Broadcasters Remains Tenuous

By John Walko 07.01.2020 0

When the mobile communications industry started its long evolution to the 5th generation (5G), one of the early significant applications identified was broadcasting. 5G was seen as equally applicable for both delivery of content and its production, notably for outside broadcast but also in a studio. However, this low hanging fruit has yet to start ripening in any serious way.

"There are some deployments we can point to, but on the whole what we are seeing are complementary applications rather than 5G being ready for any meaningful distribution of media content," Peter MacAvock, Head of Delivery, Platforms and Services at the European Broadcasting Union's Technology and Innovation Division told EE Times.


Peter MacAvock

"The potential for 5G is just enormous for most aspects of this sector, but we need to be pragmatic about some of the time-scales here. Some in the broadcasting sector are, and have been, harboring unrealistic expectations of the performance improvements that could be achieved in the short term."

The EBU has been the primary representative for public sector media (PSM) organizations for nearly 70 years and has over 100 broadcasting groups as full members. The organization is promoting numerous technology projects focusing on both the communications side as well as issues related to media production.

Addressing the latter opportunity, he noted while this may be 'less sexy', it is equally important for the effectiveness of the entire broadcasting 'experience'.

MacAvock stressed "there also needs to be some serious discussions about the economics of delivering content."

He has in the past argued that 5G is unlikely to replace DTT (Digital Terrestrial Television) because the economics of the latter have emerged and been refined and perfected over many years, while attempts to develop multicast over cellular have yet to succeed.

MacAvock also noted that 5G is different and thus special for the broadcasting (and other) sectors in that it has been designed to embrace verticals outside of the mainstream telecoms space.

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"Indeed we at the EBU and the sector in general have been really active in ensuring that 5G will meet our sector's needs and requirements, through numerous representations to the 3GPP."

The first serious nod to the sector was in 3GPP's Release 14 with the inclusion of eMBMS (evolved Multi Broadcast Multicast Services), that covered broadcaster — friendly features such as free-to-air reception — including on SIM-free devices) and modes to allow operation at HTHP (high tower high power) transmitter sites.

This so called 'LTE Broadcast' would enable multiple users in the same cell to access the same live stream, rather than the network having to serve multiple unicast streams. However, it never really took off.

Operators were reluctant to deploy the technology unless compatible smartphones were launched and sold in volume, while handset suppliers held back until they could see sufficient compatible services being offered.

The breakthrough as far as 5G is concerned came with Release-15 in early 2018, but the really important "LTE-based 5G Terrestrial Broadcast", which is built on top of the LTE core network, is only scheduled to be finalized with Release-16. However, as previously reported, this has been delayed due to issues around arranging meetings as a consequence of the Covid-19 outbreak.

And the next iteration, Release-17, now rescheduled for the middle of next year, will incorporate 5G Broadcast; it relies on a more versatile 5G core.

The 3GPP continues to include provisions in wireless standards supporting TV broadcasting on cellular networks. (Source: EE)

The report interestingly cautions that "the inclusion of a feature in 3GPP specifications is a necessary step but it does not guarantee that this feature will inevitably be implemented in 5G networks and devices."

MacAvock was speaking exclusively to EE Times following the publication of a report from the EBU, published in June, that focuses predominantly on the distribution side of the equation.

The report brings into sharp focus that 5G is nowhere near prime-time for broadcasters, and that the sector has significant "structural barriers" to overcome so as to realize the potential.

Right from the start, the report highlights that "for the time being, the only way of delivering nonlinear services to portable and mobile devices is by means of unicast connections." It then stresses that "this is not satisfactory, both from the media services providers and user perspectives, due to deficits regarding quality of service (QoS), coverage and costs. 5G as specified by the 3GPP may be an opportunity to bridge this gap."

Quite a lot of the 60 pages of the report focus on whether broadcasters would be able to deploy 5G technology to deliver both linear, and non-linear broadcasts, and supporting them with

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Quite a lot of the 60 pages of the report focus on whether broadcasters would be able to deploy 5G technology to deliver both linear, and non-linear broadcasts, and supporting them with enhanced media services, which are a combination of both. The latter refers to content that is offered "on demand."

The study considered delivery to mobile handsets, tablets and in-car infotainment devices, but sections also consider whether and how 5G could be relevant for delivering programs to domestic TV sets.

The main conclusion emphasizes that, technically, 5G may be able to meet the distribution requirements of both PSM and commercial media providers "if a combination of 5G Mobile Broadband and 5G Broadcast is used."

5G Broadcast is a technology that uses FeMBMS (Further evolved MBMS) to deliver media using 5G specs. The standard offers broadcaster the full spectrum for HPHT applications in downlink-only mode. It differs from 5G Mobile Broadband in that the latter relies on 3GPP specifications based on the new 5G-NR radio access network and 5G core network, and are deployed by mobile network providers.

So unlike the LTE version, the new standard will allow media organizations to operate dedicated 5G Broadcast networks independently of mobile operators. Thus, a free-to-air transmission mode would allow linear services to be made available to all mobile devices, irrespective of a user's mobile network.

The report's conclusion then adds a hugely important proviso. "To achieve this in practice, collaboration between stakeholders across the media value chain is required. In addition further investigations into cooperative models between broadcasters and mobile network operators in terms of joint use of spectrum and site assets would be useful. Such cooperation may deliver the cost benefits and the economies of scales required to trigger the device and infrastructure ecosystem for 5G broadcast."

Such cautious language from the EBU may be necessary, but some of the "stakeholders" may need rather more persuasion.

New, novel, business models will have to be devised to achieve scale and foster collaboration, and that will be necessary not just amongst European broadcasters, but will need to encompass harmonization between inter-continental broadcaster and mobile broadband providers.

The report's 60 pages offer several suggestions and options of how this could be achieved, from both a technology and business perspective.

The EBU maintains the most straightforward option for 5G Broadcast to coexist with digital terrestrial television (DTT) would be for 5G Broadcast to deploy 5MHz channels with the same channel centers as the 8MHz DTT raster. But it acknowledges that other regions may differ and that changes may be necessary.

The report is also surprisingly realistic about the potential of 5G Broadcast. It notes that as of today, no 5G networks nor devices available for 5G support the technology. It also points out that the operating models of MNOs and handset makers are unlikely to change this position anytime soon, since this would require hardware modifications involving significant investments. "Should broadcasters wish to make use of 5G Broadcast, they will need to actively take the steps necessary to introduce it, for example by creating a convincing business perspective for all involved market partners, ideally in large/global markets."

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This is the second major report covering 5G opportunities for broadcasters over the past six months, which suggests the organization — and thus broadcasters — are fully on board. Originally, the EBU was busily lobbying for DTT to retain its spectrum from the onslaught of the mobiles invasion.

And, perhaps coincidentally, during the same week, we had the results of a survey, commissioned by Nevion, a specialist developer and supplier of software designed solutions for broadcast production gear based in Oslo, Norway.

Andy Rayner

The survey revealed that an overwhelming 92% of broadcasters expect to adopt 5G technology within the next two years and that the sector set to benefit most will be remote production.

61% of respondents said they would consider deploying 5G for distribution as a potential replacement for DTT, satellite or cable.

Interestingly, only 20% of those participating in the study considered 5G's ability to offer a more flexible and portable primary link for (some) outside broadcast production is its biggest benefit.

"I was not particularly surprised at the responses to most of the topics in our survey. Unless and until you get some real infrastructure in place, you are really only working on 'best efforts.' And in reality, what we have today is decent bundled LTE, which went through its testing process some five years ago," Andy Rayner, Nevion's chief technologist told EE Times.

Rayner said his take is that "one of the earliest benefits from 5G will be the prospect of a faster and more flexible way to transmit signals from outside broadcast venues to the central production facility." Once we have the infrastructure, of course.

One statistic in the poll did raise Rayner's eyebrows. "Forty-six percent of broadcasters maintain they have actually tested 5G's capabilities within their organization. I suspect that is too high a figure. And even if correct, many of such projects are likely to have been put on hold due to the Coronavirus crisis."

Rayner most definitely concurs with the EBU's MacAvock when it comes to the huge influence 5G will have on the way the media industry produces content, whether in a studio or outside. "We are going to see and benefit from really exciting innovations in this sector of the broadcasting industry."

He stresses everything Nevion is currently working on is open standards based. By way of an example, he notes the pan-European project the company is heading up — dubbed 5G Virtuosa.

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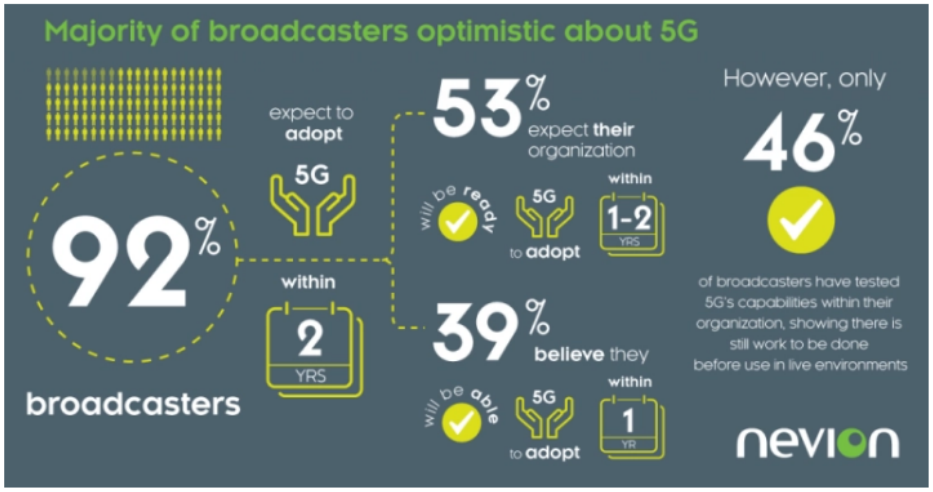
The project is set to explore and demonstrate how 5G can be combined with virtualization concepts to allow broadcasters to create live content more efficiently and cost-effectively.

The participants in addition to Nevion include Mellanox Technologies (Israel) and two German groups — Logic Media Solutions and the IRT, the country's Institute for Broadcasting Technology.



In mid-June, the participants said the project's initial goal had been reached successfully. It involved setting up an IP-based studio, built on industry standards, and integrating equipment from numerous vendors including video cameras, a vision mixer, servers, a multiviewer, audio mixer, time and frequency synchronization gear, and software-defined media nodes — all of it managed by an orchestration and SDN control system developed by the Norwegian group.

The set-up has been completed at Nevion's Service Operation Centre in Gdansk, Poland, and will soon be tested at the IRT's facility in Munich, Germany.

Nevion did add a proviso — some of the latter stages of the work have had to be done remotely because of the pandemic situation.

Once testing is completed and shown to be standards compliant and work, the set-up will serve as the fundamental building block for developing and creating remote production equipment.

Rayner noted there many such 5G-related projects under way globally, with European countries well represented due to generous funding from initiatives such as Horizon 2020.

"5G means different things to different people. For me it represents a toolkit of technologies – some already in use, some still in the pipeline," said Rayner. He added that for him, the 'gold offering' from the networking technology is the potential of network slicing, which could mean a dedicated, functional layer on a shared infrastructure.

"This could be seen as broadcasting's 'holy grail' — deterministic, always available, on-demand broadband."

But of course, Rayner stresses, this can only become viable, and a commercial reality, if everyone in the loop — from the very large players to the start-ups, are ready to grasp both the technical and commercial advantages.

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Five Broadcast Trends to Watch in 2020

7 April 2020

The broadcast sector is likely to experience significant technological changes over the next year as IP adoption gains momentum and COTS hardware begins to be used for more applications.

We'll also see new developments such as 5G, start to take hold. Nevion's chief technologist, Andy Rayner, considers 5 trends the broadcast industry should look out for in 2020 and beyond.

Nevion's chief technologist considers 5 trends the broadcast industry should look out for in 2020 and beyond.

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Major increase in IP production facility roll-out

This year, we'll see IP production become more mainstream, moving from the early adopter phase to the early majority phase. Until now, the main driver for the move to IP has been broadcasters needing new facilities and recognizing that it made no sense to use SDI for these. Circumstances effectively made them early adopters of IP technology.

Last year was a breakthrough year for IP in the facilities, with a substantial number of projects being initiated and completed. It was the first year that the full "tool-kit" (i.e. technology working together) became available. Earlier projects have had to rely on "fixes" to solve some of incompatibilities or the lack of conformity to standards of some equipment (e.g. using SMPTE ST 2022-6 instead of SMPTE ST 2110 for video transport).

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There have also been a number of ground-breaking projects that have transformed production workflows. One such example is our project with Germany's PLAZAMEDIA, which relies on Nevion Virtuoso and VideoIPath to create virtualized control rooms that can be configured on-demand for any type of production. This transformation of workflows makes a compelling business case for a move to IP even in existing facilities. Consequently, over the next year, there will be a significant increase in the number of organizations moving to IP primarily to transform the economics of their live production rather than just avoiding building in obsolescence.

The start of significant facility federation

In 2020, we can expect to see many more projects that don't just consider a single facility in isolation but are looking to leverage the benefits of distributed or federated facility production.

With the coming of age of technology and the ubiquity of IP across both LANs and WANs, the opportunity now exists to consider multiple facilities and locations as unified and federated production capabilities. This delivers real tangible economic benefits in terms of increased productivity and cost savings, by enabling broadcasters to share resources (both technical and human) between locations and reduce travel, for example.

The use of COTS and cloud in the real-time production chain

COTS is already well established in the playout world where bit rates are much lower and latency is less critical, however, this will be the year that COTS hardware begins to seriously make inroads in the delivery of real-time functionality, paving the way for an eventual move to public or private cloud delivery.

This trend is driven by higher speed interfaces becoming more affordable; cloud providers working on their offering (e.g. providing transport integrity between processes); and the work of the Video Services Forum (VSF) looking to define the levels above the traditional media transport layers.

Meanwhile, the VSF is also starting work on standardize the hand-off between virtual functions in the broadcast chain, paving the way for functionality being delivered by processes (e.g. in the cloud) rather than equipment.

JPEG XS for inter-facility connectivity

We were thrilled to be part of one of the world's first official uses of JPEG XS last year.

With its high image quality, even in multigenerational (concatenated) compression cycles, its decent compression ratio and its ultra-low latency, JPEG XS is very suited for both WAN and LAN applications. In the LAN environment, it is the only realistic option for compression and therefore will become the de-facto standard for inter-facility connectivity. For WAN, JPEG XS will become the obvious option for distributed or federated production (for continuity and consistence with LANs), as well as being a good choice for contribution (over WAN) or remote production, as an alternative to JPEG 2000.

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5G rollout

A major trend for the year ahead will be the expansion of 5G networks which will provide significantly more overall bandwidth for mobile media delivery using enhanced mobile broadband (eMBB). This will be followed by more investigations into the use of 5G for broadcast.

At Nevion, we're currently leading an EU-funded consortium, called VIRTUOSA, which is exploring how 5G can be combined with virtualization concepts to enable broadcasters to produce live content (such as sports or music coverage) more efficiently and cost-effectively across locations, to meet growing consumer demand.

In 2020, broadcasters will start looking in earnest into the potential of 5G in the broadcast value chain. Further ahead, 5G could eventually be used for broadcast distribution (as an alternative to DTT or satellite for example), but for this, it would require point-to-multipoint (multicast) capabilities that are still absent from current deployments (it's still point-to-point). When that happens, that could subsume any vestiges of point-to-multipoint delivery.

All in all, with so much technological innovation and new initiatives on the cards, and as we begin to scratch the surface of 5G, I expect this year to be an exciting one within the world of broadcast.

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Taking a step towards a fully-fledged 5G broadcasting environment

Partners of an EU-funded initiative have completed the first technical phase of setting up an Internet Protocol (IP)-based studio by integrating multiple products from various sources.

SCIENTIFIC ADVANCES

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Thanks to the rising demand for premium content like live sports events and various services such as video on demand and mobile TV, the media and entertainment industry is focusing on how to reduce production costs while increasing efficiency. The EU-funded VIRTUOSA project is addressing exactly this issue. Proposing the virtualisation of network and production resources that is powered by 5G technology, the project is set to make media production more cost-effective and scalable.

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VIRTUOSA partners have recently completed the first stage of their initiative at project coordinator Nevion's Service Operations Center in Gdansk, Poland. This stage covers "the integration of multiple products from various vendors, with most of the work done remotely because of the COVID-19 situation," according to a press release on the project website. "The first phase of the project involves setting up an IP-based studio, built on industry standards (SMPTE ST 2110 and NMOS) and integrating equipment from multiple vendors," it adds. These include video cameras, a vision mixer, servers, a multiviewer, an audio mixer, a media analyser, time and frequency synchronisation gear, and software-defined media nodes.

As noted in the same press release, project partners have transferred their system to the facilities of project partner Institute for Broadcasting Technology (IRT) in Munich, "where tests will be carried [out] to ascertain the compliance of the complete set-up to industry standards." Quoted in the same press release, Markus Berg from IRT comments: "The set-up is the fundamental building block that we will be using to create the 5G remote production planned for later phases of the project. The compliance to standards is a key part of the tests, and very important for IRT, as an internationally renowned research and innovation center for audiovisual technologies."

Reduced production costs

The VIRTUOSA (Scalable Software Defined Network Architectures for Cooperative Live Media Production exploiting Virtualised Production Resources and 5G Wireless Acquisition) project will run until August 2021. It "will enable virtual connections of any studio, control room and on-site production across multiple locations, and live feedback from the audience straight into the production chain via 5G acquisition," as explained on the project website. "It will allow media production facilities, equipment, resources, and talent to be shared across locations, supporting Cooperative Live Media Production with real-time transport and processing of live media over IP with up to 100Gbit/s."

Project partners believe that their initiative will cut live media production costs by 30-40 %. VIRTUOSA's network architecture uses IP technology, software-defined networking technology, network function virtualisation, high-performance computing and cloud computing. Virtualisation, which refers to the process of creating a software-based or virtual representation of applications, servers, storage and networks, reduces IT expenses while boosting efficiency. With an IP-based remote production system that uses 5G, broadcasters will be able to set up on-site more quickly and effectively almost anywhere. Examples would be handling breaking news or covering live sports events that require tracking over significant distances, like cycling or road running.

For more information, please see:
VIRTUOSA project website

Keywords

VIRTUOSA, live media, broadcasting, virtualisation, 5G, Internet Protocol

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Taking a step towards a fully-fledged 5G broadcasting environment

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20/07/2020

Thanks to the rising demand for premium content like live sports events and various services such as video on demand and mobile TV, the media and entertainment industry is focusing on how to reduce production costs while increasing efficiency.

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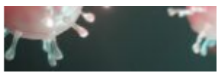

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More information

Full news

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PROYECTO VIRTUOSA: EL 5G AVANZA EN EUROPA

Nevion ayudará a los organismos de broadcast y proveedores de servicios a revolucionar la forma en que hacen negocios, transformando los flujos de trabajo de difusión utilizando tecnología de red IP y conceptos de IT como la virtualización.

Las soluciones Nevion se utilizan para impulsar los principales eventos deportivos y en vivo en todo el mundo. Algunos de los grupos de medios y proveedores de servicios de telecomunicaciones más grandes del mundo usan la tecnología Nevion, incluidos AT&T, NBC Universal, Sinclair Broadcast Group Inc., NASA, Arqiva, BBC, CCTV, EBU, BT, TDF y Telefónica.

El propósito del proyecto VIRTUOSA, financiado por la UE, es explorar a través de ejemplos de la vida real cómo la comunicación inalámbrica 5G (la quinta generación de tecnología de red celular) se puede combinar con conceptos de virtualización de la industria de TI para permitir a los organismos de broadcast producir contenido en vivo (como cobertura deportiva o musical) de manera más eficiente y rentable en todos los lugares, para satisfacer la creciente demanda de los consumidores.

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"El proyecto involucra a cuatro actores internacionales líderes de la industria con competencias complementarias: Nevion AS (Noruega), Mellanox Technologies LTD (Israel), LOGIC media solutions GmbH (Alemania) e IRT - Institute for Broadcasting Technology (Alemania). Estos socios aportan al proyecto experiencia en, entre otras, redes IP que incluyen SDN (redes definidas por software) y virtualización, transporte de medios, arquitectura de red y diseño de sistemas, así como experiencia de la vida real en la producción de transmisiones", comentó **Olivier Suard**, Vicepresidente de Marketing de Nevion.

"El objetivo final del proyecto es desarrollar y lanzar un producto (o solución) que permita conexiones virtuales de cualquier estudio, sala de control y producción en el sitio a través de múltiples ubicaciones, y comentarios en vivo de la audiencia directamente en la cadena de producción a través de 5G", añadió Suard.

Para este propósito, el proyecto VIRTUOSA recibió una subvención de 2 millones de euros del programa de investigación e innovación Horizon 2020 de la Unión Europea, "Fast Track to Innovation".

"El proyecto VIRTUOSA se ajusta a la experiencia central de Nevion en el transporte de medios en tiempo real a través de redes IP. Nevion está aportando una gran experiencia en la creación de soluciones que permiten la producción distribuida en vivo y la virtualización de recursos. Una de las claves del éxito del proyecto VIRTUOSA será la capacidad de orquestar señales en tiempo real a través de LAN, WAN y redes 5G. El software de control de SDN y orquestación de Nevion, VideoIPath, se utilizará para ofrecer esa capacidad esencial", explicó Suard.

Finalmente, Suard concluyó: "VIRTUOSA no tiene el propósito de investigar este aspecto de 5G en el broadcasting, sino de los aspectos técnicos. La suposición de trabajo para el proyecto es que existe un sólido argumento comercial para que los organismos utilicen 5G, y trabajarán para superar el problema de la competencia por el ancho de banda dedicado".

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CONTENT DELIVERY

How Broadcasters Can Transition to an All-IP Environment Incrementally

By Olivier Suard, Vice President of Marketing, Nevion

The transition to IP in live production environments is well underway with over 40% of global broadcasters having already made moves towards IP in 2018 according to research carried out on behalf of Nevion. There are several reasons for this move, not least that IP allows broadcasters to do more with less, offers a greater degree of flexibility and is cost-effective. However, before beginning the transition to IP, broadcasters must consider a number of factors.

CONNECTIVITY AND PROCESSING

Currently, no broadcaster operates in an all-IP environment. Rather, it's likely they will have a mixture of SDI and IP equipment connected to an all-IP network. Even in cases where broadcasters have moved facilities, most of the equipment is likely to remain based on SDI technology for quite some time. While SDI/IP adaption equipment can be used to connect the SDI equipment to the IP core network, connecting a lot of this equipment to an IP network may be expensive. Furthermore, it might not be necessary, as that equipment will often be used together within the confines of a studio or control room. In these 'baseband islands', converting SDI signals to IP and back to SDI may be superfluous.

The most cost-effective way to distribute signals between baseband equipment may then be to use baseband routing technology. Similarly, signal processing, such as audio embedding onto SDI signals or SDI frame synchronisation, may be best done directly on baseband equipment rather than converting to IP, processing and converting back to baseband. Some may argue that broadcasters should, therefore, keep the existing large Master Control Room (MCR) matrices to handle this. This, however, is likely to be overkill in many cases. Also, if all the equipment needs to be connected centrally, it doesn't help solve the cabling headache.

For that reason, the most cost-effective distribution and routing is likely to be compact SDI routers located within the baseband islands. As these routers take on part of the job done by the MCR routers, they also need to offer a high level of redundancy and include SDI processing capabilities. These baseband islands can then be connected to the rest of the IP network through adaption equipment.

EXISTING FIBRE TECHNOLOGY

Traditionally, the transport of baseband signals beyond studios has been handled by fibre, with technology providing the interface onto and from the fibre. As the industry moves to IP, the requirement for high data-rate transporting will continue to grow – with uncompressed HD requiring a minimum of 10GbE data rates. Fibre remains ideally suited to transport signals any distance longer than a typical patch cable.

Although IP is transported over fibre, the conversion of baseband to optical links is still a less costly solution than baseband to IP conversions. Hence, if equipment located far away is baseband, it can be a more cost-efficient solution to transport the signals through baseband EO converters. As a result, optical transport technology will continue to be relevant in an IP world and any investment in that technology for the transport of signals today is an investment in the transport network of the future – using fibre to transport IP as well as baseband.

ORCHESTRATION AND CONTROL IN MIXED ENVIRONMENTS

While adaption equipment can ensure that the SDI world is connected to the IP world, and vice versa, a crucial issue is how to orchestrate and control flows between the two environments. Most media network management and control systems have been developed for SDI technology and cannot manage IP. Conversely, IP network management systems don't handle SDI. This is particularly problematic where the preferred option of a broadcaster is to keep some form of SDI routing in the network, for example, within specific studios. This calls for a versatile orchestration and SDN (Software Defined Network) control system that can handle both SDI and IP environments.

Such systems hold a complete view of the network and can control both IP and SDI routers, as well as adaption equipment and other appliances. As a result, this type of orchestration and SDN control system can provide deterministic paths through a mixed SDI/IP network infrastructure. In turn, this makes it possible for broadcasters to have the mixed SDI/IP environment most suitable for them. In other words, with the right orchestration and SDN control systems, broadcasters don't need to go to an all-IP network at once, and they can choose equipment based on functionality and cost, not SDI or IP connectivity. This flexibility makes for a more cost-effective transition to IP.

BROADCAST CONTROL

Production staff are typically used to a specific broadcast control interface and are often reluctant to move away from it. However, popular broadcast control systems are not designed to control IP networks. The solution is to ensure that the broadcast control system can interface with the orchestration layer which is typically done via APIs provided by the broadcast control system and implemented in the orchestration system.

A tight coupling of the familiar broadcast control systems and the orchestration layer ensures that production staff can maintain their existing method of working, even as the underlying network technology evolves.

SMOOTH MIGRATION TO IP

Realistically, only those broadcasters moving to new facilities and starting with a 'greenfield' site have the luxury of building an all-IP network from scratch. Broadcasters who are building out capacity using IP, or adding new IP studios or control rooms, need to maintain their core SDI network, for both practical and financial reasons.

Ultimately, the transition from baseband to IP needn't be an all-or-nothing decision for broadcasters. Adaption equipment and orchestration are the key to ensuring that the transition can be achieved smoothly and without affecting production.

Visit https://nevion.com and www.magnasys.tv

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Newsletter abor

Equipment Business Productions Technology

5G, Broadcast, IP, Software / IT, Technology: 24.06.2020

5G-Virtuosa-Projekt: IP-Studio läuft

Bei 5G-Virtuosa geht es um die praxisnahe Erprobung von 5G und Virtualisierung im Broadcast-Bereich.

Jessika Volk und Hacl Cengiz über das 5G-Virtuosa-Projekt.

Nevion, Mellanox, Logic Media und das IRT kooperieren im Rahmen des EU-geförderten Projekts 5G-Virtuosa, um dort praxisnahe 5G und Virtualisierung im Broadcast-Bereich zu erproben. Nun gibt es handfeste erste Schritte: Im Service Operations Center (SOC) von Nevion im polnischen Danzig wurde ein Studio-Setup vorinstalliert und nun physisch nach München ins Institut für Rundfunktechnik (IRT) transferiert.

5G VIRTUOSA

EU-gefördertes Projekt 5G-Virtuosa: 5G und Virtualisierung im Broadcast-Bereich.

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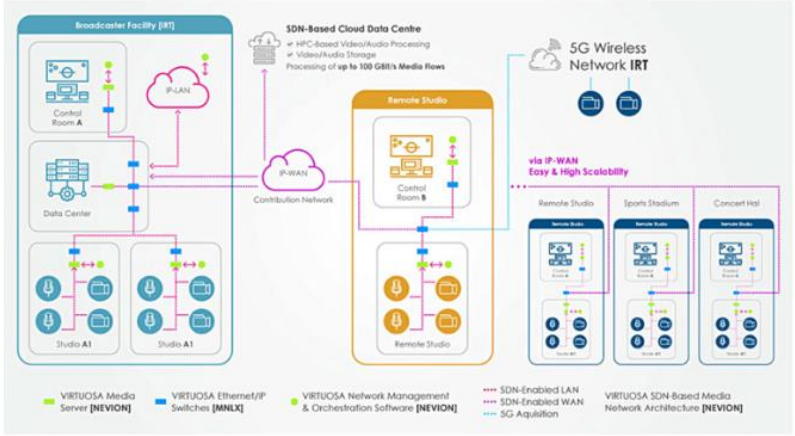
Das 5G-Virtuosa-Setup steht jetzt am IRT.

Bei der Installation wurden Produkte verschiedener Hersteller in einer SMPTE-ST-2110-konformen IP-Umgebung integriert. Aufgrund der Covid-19-Beschränkungen wurde die Einrichtung zunächst im SOC von Nevion aufgebaut, Konfiguration und Abnahme wurden dort in einem Remote-Workflow realisiert. Anschließend wurde der Testaufbau ans IRT transportiert, und dort finden nun die Erprobungsarbeiten statt.

Firmenvideo von Nevion zu Virtualisierung in der Live-Produktion.

5G-Virtuosa

Ziel von 5G-Virtuosa ist es, »skalierbare Software-definierte Netzwerkarchitekturen für kooperative Live-Medienproduktion unter Nutzung virtualisierter Produktionsressourcen und drahtloser 5G-Akquisition« zu erforschen und zu erproben. In der Praxis soll anhand von realen Beispielen demonstriert werden, wie 5G mit Virtualisierungskonzepten kombiniert werden kann, um Rundfunkanstalten in die Lage zu versetzen, Live-Inhalte, wie etwa Sport- oder Musikberichterstattung, effizienter und kostengünstiger standortübergreifend zu produzieren.



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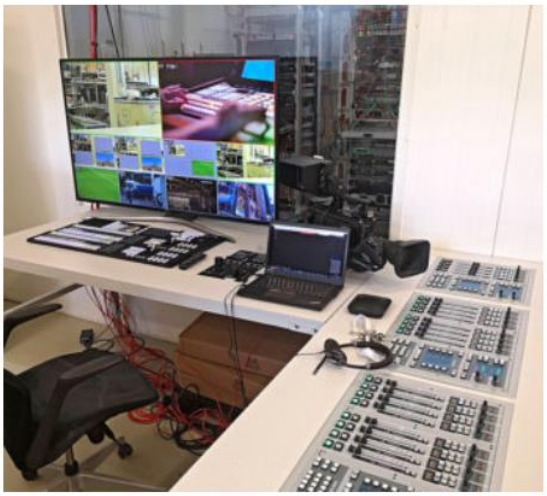
Eingesetzte Geräte



Setup des 5G-Virtuosa-Projekt.

In der ersten Phase des Projekts ging es um die Einrichtung eines IP-basierten Studios, das auf Industriestandards (SMPTE ST 2110 und NMOS) aufbaut und Geräte verschiedener Hersteller integriert. Videokameras, ein Bildmischer und ein Server von Sony wurden mit einem Multiviewer von TAG Video Systems, einem Audiomischer von Stagetec, einem Medienanalysator von Telestream, IP-Switches von Mellanox, einer PTP-kompatiblen Zeit- und Frequenzsynchronisation von Meinberg, Software-definierte Medienknoten von Nevion kombiniert, das alles verwaltet und kontrolliert von einem Orchestrierungs- und SDN-Kontrollsystem von Nevion.

Praxisnahe Erprobung

Der Aufbau wurde von Danzig nun in die Räumlichkeiten des IRT in München überführt. Dort werden nun Tests durchgeführt, um die Übereinstimmung des gesamten Aufbaus mit den Industriestandards zu überprüfen.

Markus Berg, Leiter des Bereichs Future Networks am IRT, erklärt: »Nach einer leichten Verzögerung aufgrund der Covid-19-Situation freuen wir uns, dass wir nun in der Lage sind, mit den Tests zu beginnen. Der Aufbau ist der grundlegende Baustein, mit dem wir die für spätere Phasen des Projekts geplante 5G-Remote-Produktion erstellen werden. Die Einhaltung von Standards ist ein wichtiger Teil der Tests und für das IRT als international anerkanntes Forschungs- und Innovationszentrum für audiovisuelle Technologien sehr wichtig.«

Firmenvideo von Nevion zu IP-LAN/WAN-Konvergenz.

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Partner

Das **IRT**, ein weltweit anerkanntes Forschungs- und Innovationszentrum für Rundfunk- und Medientechnologie, finanziert von den Rundfunkanstalten ARD, ZDF, Deutschlandradio, ORF und SRG / SSR.

Logic Media ist Medieninfrastruktur-Architekt sowie Händler und Value-Added Reseller von professioneller Rundfunk- und Telekommunikationsausrüstung.

Mellanox bietet intelligente End-to-End-Ethernet- und InfiniBand-Verbindungslösungen und -Diensten für Server, Speicher und konvergierte Infrastrukturen an: Netzwerk- und Multicore-Prozessoren, Netzwerkadapter, Switches, Kabel, Software und Prozessoren.

Nevion bietet Produkte und Lösungen für virtualisierte Medienproduktion in Mediennetzwerk- und Broadcast-Infrastrukturlösungen für Rundfunk- und Fernsehveranstalter, Telekom-Dienstleister, Regierungsbehörden und andere Branchen an. Die Lösungen von Nevion basieren in zunehmendem Maße auf IP-, Virtualisierungs- und Cloud-Technologie und ermöglichen die Verwaltung, den Transport und die Verarbeitung von Video, Audio und Daten in professioneller Qualität in Echtzeit.

Schlagwortsuche nach diesen Begriffen: *5G, Broadcast, IP, Software / IT, Technology*

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Suche Suc

Equipment Business Productions Technology

5G, Broadcast, IP, Software / IT, Video: 22.07.2020

Video: 5G-Virtuosa-Projekt

Jessica Volk und Haci Cengiz beschreiben das 5G-Virtuosa-Projekt. Dabei geht es um die praxisnahe Erprobung von 5G und Virtualisierung im Broadcast-Bereich.

Nevion, Mellanox, Logic Media und das IRT kooperieren im Rahmen des EU-geförderten Projekts 5G-Virtuosa, um dort praxisnahe 5G und Virtualisierung im Broadcast-Bereich zu erproben (Infos).

film-tv-video.de hatte über das Testprojekt, das nun im IRT in München läuft, berichtet. Im Video liefern Jessica Volk und Haci Cengiz von Logic Media Solutions nun weitere Details, worum es bei 5G Virtuosa geht und welche Ziele das EU-geförderte Projekt verfolgt.

Jessika Volk und Haci Cengiz über das 5G-Virtuosa-Projekt.

Hier gibt's weitere Infos.

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8.5. Events

8.5.1. 5G-VIRTUOSA on EVENTS – participated to

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NABSHOW®
April 18 - 22, 2020 | Las Vegas

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BroadcastAsia
9–11 JUNE 2020 | SINGAPORE

BroadcastAsia
CAPTURE THE FUTURE
CANCELLED

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03.12.2019 TAGUNG

FITPRO 19 - AUF DEM WEG ZUM STREAMING-HAUS?

DIE FACHTAGUNG DES NETZWERKS IT UND DES NETZWERKS PRODUKTION IN ZUSAMMENARBEIT MIT ORF UND SRG/SSR

Beginn der Veranstaltung	03.12.2019 10:30h
Ende der Veranstaltung	04.12.2019 15:30h
Veranstaltungsart	Tagung
Veranstalter	IRT
Veranstaltungsort	IRT, München

Beschreibung

Die Fachtagung des Netzwerks IT und des Netzwerks Produktion in Zusammenarbeit mit ORF und SRG/SSR. Die Gebühr für die zweitägige Fachtagung beträgt inklusive Mittagessen, Getränke, sowie Abendveranstaltung €300,- zzgl. anzuwendender MwSt.

PROGRAMM

VIDEO mit Eindrücken und O-Tönen der Tagung

Präsentationen im PDF-Format

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iabm

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Menu

IABM Webinars

IABM Members can access our extensive webinar archive
Topics include technical, sales & marketing and events

Is Virtualization really the key to Scalability Webinar

Mon 20, 04 2020

Broadcast equipment manufacturers have traditionally built applications on COTs or even bespoke hardware in order to get the needed performance.

As their business model has evolved to software or service models, the underlying hardware still needs to be maintained. Virtualization is an excellent way to allow hardware upgrades without downtime, but does it come at too much of a performance cost? Is it truly scalable?

Stan Moote, IABM CTO quizzes Thomas Burns (CTO, Media & Entertainment at Dell Technologies) and Andy Rayner (Chief Technologist at Nevion) about the various approaches to virtualization and containerization, as well as workflow orchestration solutions that are expandable.

View Slide Deck

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IABM Webinar - Focus on 5G

Available On Demand 1 hour, 1 minutes

In 2018, telecoms globally started to commercially deploy fifth-generation (5G) networks as a response to growing demands for data from end consumers and industrial users. 5G is expected to enable telecoms to expand consumer services such as video streaming and VR applications. technology companies worldwide are now racing to develop 5G products and the whole 5G ecosystem.

The current leaders of this race – the US, China and South Korea – have all adopted different strategies to lead in 5G technology development and deployment. In the US, private industry is leading 5G development and American telecoms competing against each other have been the first in the world to offer 5G services commercially.

In contrast, in China the central government is the key promoter of 5G infrastructure, and it views 5G as crucial new growth driver for China's technology sector and the whole economy. Also in South Korea, the central government is working with telecoms to deploy 5G.

IABM's 5G webinar will discuss about the recent moves in the global 5G market and different deployment strategies chosen by different countries and telecom operators.

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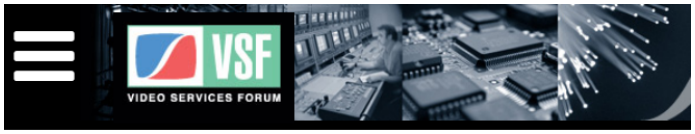

2019 VSF October Meeting Series - New York, New York, USA

October 14 & 15, 2019
Hosted by VSF at the Microsoft Technology Center, 11 Times Square, New York, NY USA

VSF again teamed up with the Sports Video Group (SVG) to hold back-to-back events at the Microsoft Technology Center.

Presentations

- Meeting Agenda (pdf, 225k)

Login is required to access the following meeting documents:

- Meeting Attendee List (pdf, 44k)
- New Technologies in the RIST Main Profile (pdf, 1.02Mb)
  Adi Rozenberg - Video-Flow
- Further Considerations for TR-01, HDR and 2SI profiles, JPEG-XS and need for additional interop workshops (pdf, 275k)
  John Dale - Media Links & Andrew Krupiczka - Disney
- (RIST) Reliable Internet Stream Transport & SVIP Activity Group Updates (pdf, 610k)
  Rick Ackermans - MVA Broadcast Consulting, Wes Simpson - Telecom Product Consulting
- Achieving Low latency in 100% SW in uncompressed (2110 JPEG 2K) workflows (pdf, 8.12Mb)
  Kevin Joyce - TAG V.S.
- Interoperability Events Update & IBC IP Showcase 2019 (pdf, 1.37Mb)
  Jack Douglass - PacketStorm
- Real world challenges faced when building a large IP-based European live sports facility (pdf, 425k)
  Brad Gilmer - VSF
- ST2110 transport over Wide Area Networks Activity Group Update (pdf, 1.49Mb)
  Andy Rayner - Nevion

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VidTrans20 Annual Conference & Exposition
February 25 - 27, 2020
Los Angeles, California

Photos from VidTrans20 Conference & Exhibition held in Los Angeles, CA February 25 - 27, 2020

Conference Program & Presentations

(Login required to access presentations)

- Attendance List (pdf, 87k)

Tuesday, February 25, 2020

Session 1

1. NMOS - What is it and why should I care?
   Jed Deame - Nextera Video

2. Update on new compression standards -- EVC, VVC, AV1
   Matthew Goldman - MediaKind

3. Proposal for Programmatic Configuration of Media Devices with NETCONF/YANG
   Thomas Edwards - Disney

4. Bit-Rate Evaluation of Compressed HDR using SL-HDR1
   Ciro Noronha, Ph.D. - Cobalt Digital

Session 2

1. Panel Discussion: Progress Report: Broadcast Virtualization for On- and Off-Premises Workflows
   Moderator: Andy Rayner- Nevion
   Participants: Claire Southey - AWS, John Mailhot - Imagine Communications, Tomer Schechter - TAG, Michael Bergeron- Panasonic

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IP SHOWCASE

HOME | NEWS | RESOURCES | CONTACT

Summer Sessions 2020

Brought to you by AIMS and VSF

Join us weekly for The Summer Sessions — Media-Over-IP Education series of presentations designed to meet the need for ongoing education in the absence of major trade shows.

Each week a new session will be available for replay where an industry expert will deliver a presentation focused on media-over-IP workflows or use cases and their supporting technologies.

Joined by sponsors, AES, AMWA, EBU, SMPTE, and the Ultra HD Forum, AIMS and VSF have created 15 weekly sessions. Presentations will feature expert commentary and use a wealth of experience and technical knowledge to delve into key aspects of media-over-IP.

Summer Session Schedule

Save the dates on your calendar now! Links will become live on the presentation date.

Date	Title	Speaker
May 29	IP Media Technology Overview	Mike Cronk, Chairman, AIMS
June 5	JT-NM Tested March 2020 – Results and Methodologies Explained	Ievgen Kostiukevych, Senior IP Media Architect, EBU
June 12	What is NMOS? Secure Control Case Study	Jed Deame, CEO, Nextera Video
June 19	Introduction to IPMX	Andreas Hildebrand, Senior Product Manager, RAVENNA
June 26	JPEG-XS and IPMX	Jean-Baptiste Lorent, Director of Marketing and Sales, intoPIX
July 3	NMOS: The API for IPMX	Andrew Starks, Director of Product Management, Macnica
July 10	ST 2110 Testing Fundamentals	Jean Lapierre, Senior Director of Software Engineering, Matrox
July 17	Large Scale Distributed ST 2110 Deployment	Andy Rayner, Chief Technologist, Nevion

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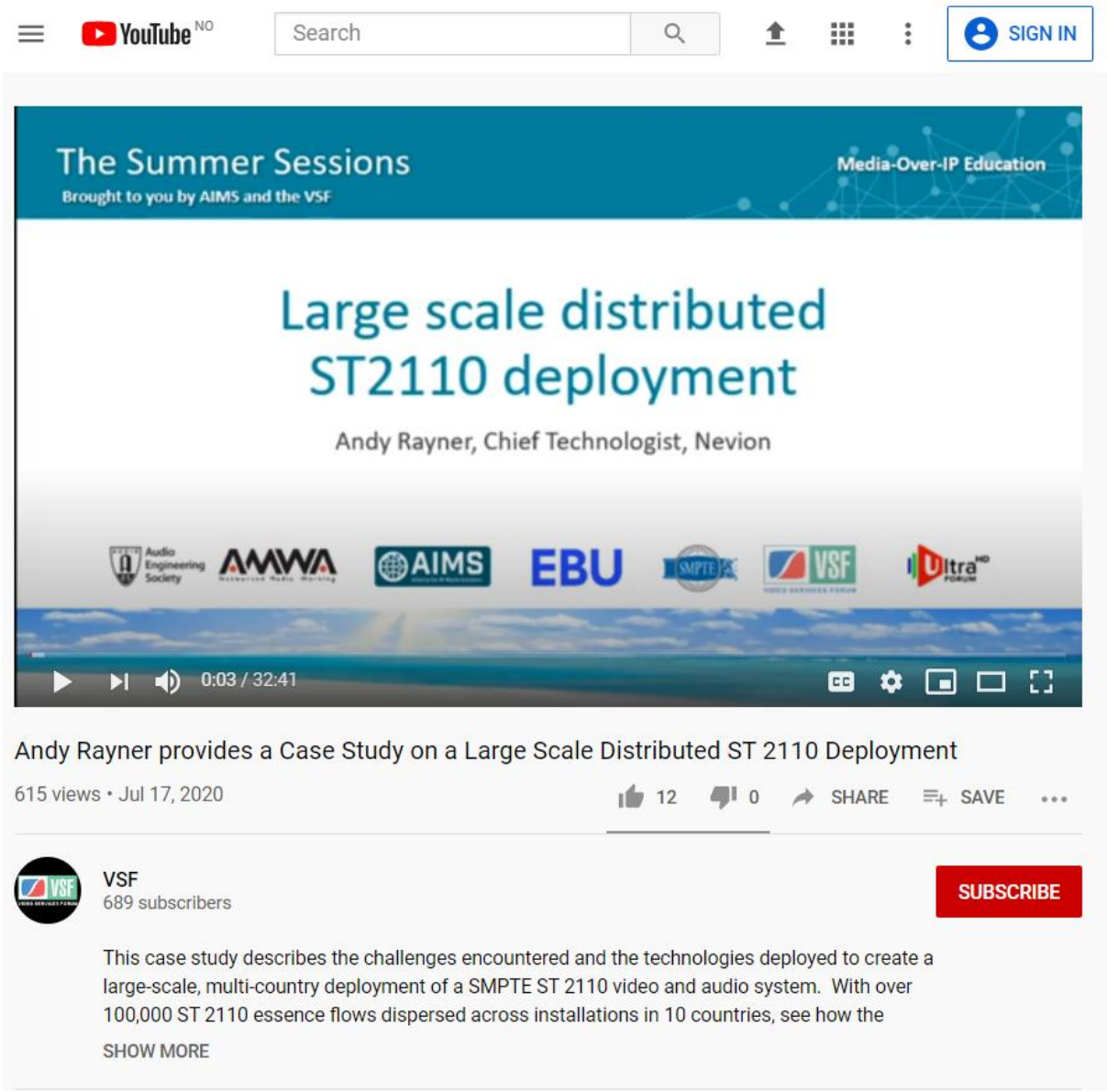

Andy Rayner provides a Case Study on a Large Scale Distributed ST 2110 Deployment

615 views • Jul 17, 2020 12 0 SHARE SAVE

VSF
689 subscribers
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This case study describes the challenges encountered and the technologies deployed to create a large-scale, multi-country deployment of a SMPTE ST 2110 video and audio system. With over 100,000 ST 2110 essence flows dispersed across installations in 10 countries, see how the

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Meeting Registration

Topic	ST2110-WAN: the story so far
Description	Please join us for a one-hour, live meeting of the VSF on Friday, August 14th at 11:00 am EDT. Our speaker will be Andy Rayner, Chair of the WAN IP Activity Group for the VSF. His presentation is: ST2110-WAN: the story so far - Overview of the requirement for essence-based long-haul transport - The History of ST2110-WAN work - The conclusions so far - The outstanding work and anticipated outcome
Time	Aug 14, 2020 11:00 AM in Eastern Time (US and Canada)

VSF
VIDEO SERVICES FORUM

First Name* Last Name*

Email Address* Confirm Email Address*

* Required information

Register

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8.5.2. 5G-VIRTUOSA on EVENTS – own organised

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Nevion webinar recording: Distributed production – federating SMPTE ST 2110 facilities

April 20, 2020 Webinars
IP facilities, SMPTE ST 2110, Distributed production

Distributed (shared) production is the ultimate goal for any workflow transforming IP media network. This allows resources (studios, control rooms, data centers) to be shared across locations, and production teams to collaborate in real-time wherever they might be located. Delivered by **Nevion's Chief Technologist Andy Rayner**, this webinar looks at how SMPTE ST 2110 can be used to enable the federation of facilities needed to deliver distributed production.

Andy Rayner

This webinar, which is part of Nevion's Alternative Broadcasting show 2020, took place on April 17, 2020.

Watch the webinar, below.

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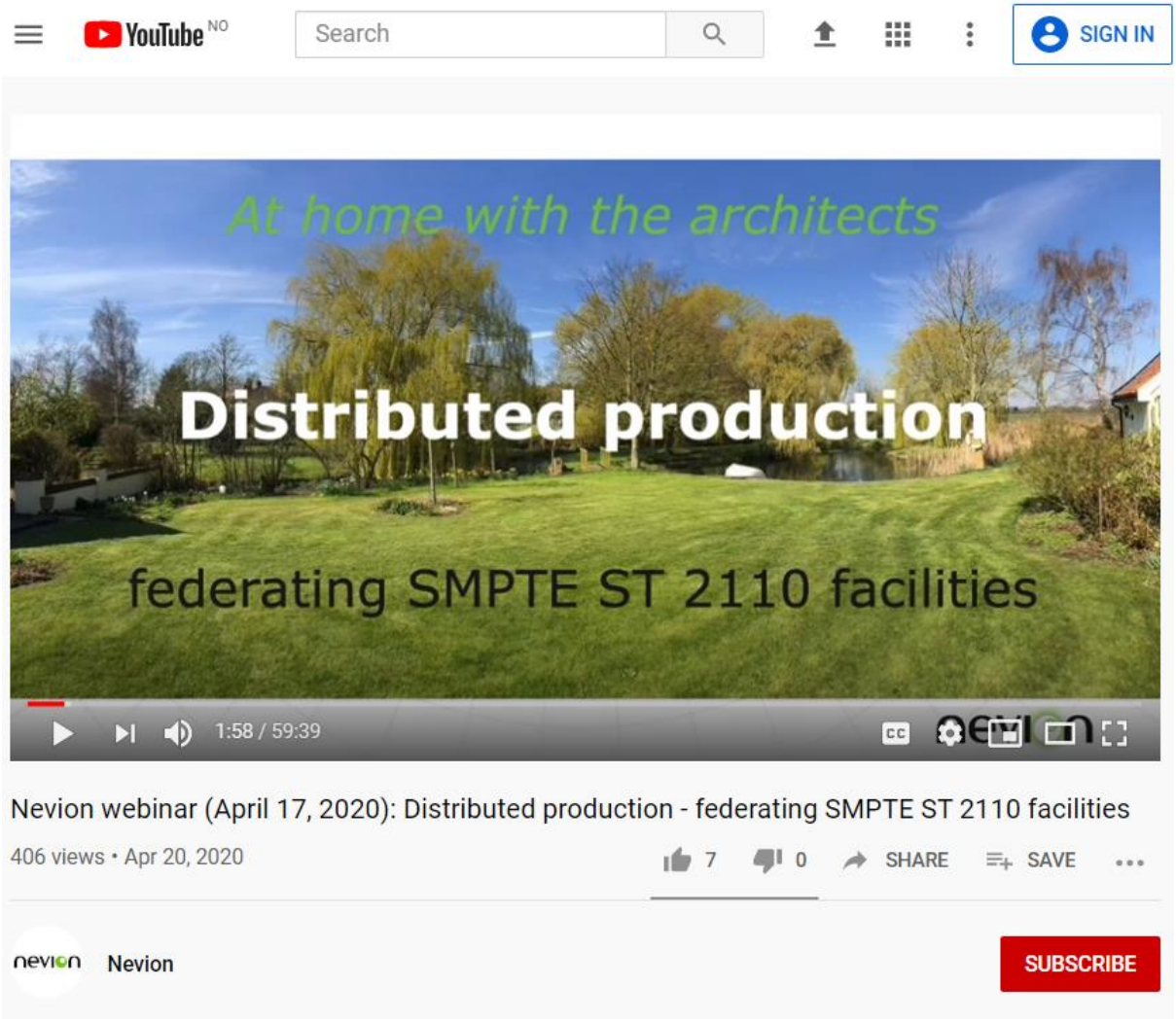

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27.05.2020 EXPERTENGESPRÄCH

LIVE IP - UPDATE ZU RELEVANTEN STANDARDS UND AKTUELLEN ENTWICKLUNGEN

STAY-AT-HOME-SESSIONS MIT IRT-EXPERTEN

Beginn der Veranstaltung	27.05.2020 14:00h
Ende der Veranstaltung	27.05.2020 15:00h
Veranstaltungsart	Expertengespräch
Veranstalter	IRT und ARD.ZDF medienakademie
Veranstaltungsort	Webinar

Beschreibung

Das IRT Expertengespräch liefert eine Übersicht über die neuesten Entwicklungen im Bereich Standards für die Live IP Produktion (SMPTE 2110-x, NMOS...), neue Industrietrends in diesem Bereich und in welchen Teilbereichen noch Arbeit zu leisten ist, um eine allumfassende IP-Live Produktionsumgebung möglichst sorgenfrei einführen zu können.

Referent

Markus Berg: Nach dem Studium der Elektrotechnik (Schwerpunkte Nachrichtentechnik und Mikroelektronik) an der Universität Saarbrücken trat Markus Berg im Januar 1997 ins IRT ein, Abteilung Digitale Netze. Zunächst arbeitete er als Wissenschaftlicher Mitarbeiter im Gebiet der Adaption rundfunkspezifischer Applikationen auf Hochgeschwindigkeitsnetze, und leitete Projekte unter anderem zu den Themen Hochgeschwindigkeitsnetze im Rundfunk, vernetzte Produktion von Film und Fernsehen, und zukünftige All IP Studio/Produktionsnetze. Zwischen 2002 und 2019 leitet er das IRT-Sachgebiet „Netzwerktechnologien", in dem von der IP/IT basierten Studiovernetzung bis hin zur Kontribution über glasfaserbasierter Netze alle rundfunkrelevanten Netzthemen abgedeckt wurden. Seit 1.1.2020 leitet er den Bereich "Future Networks" im IRT, dass die Themengebiete ALL IP/IT (Netzwerktechnologien) und 5G vereint.
Er hält regelmäßig Vorträge auf nationalen und internationalen Workshops und Konferenzen und ist Vice-Chairman des EBU „Strategic Program on Infrastructures & Security", welches sich unter anderem mit zukünftigen Netzwerkstrukturen in Studio- und Produktionsnetzen befasst, sowie Chair der Untergruppe "System Design and Interoperability".

Präsentation

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Nevion webinar recording: The Road to fully Virtualized Production

April 28, 2020 Webinars media networks, Virtualization, Cloud, COTS

Andy Rayner

Traditionally, signal transport and processing functionality has be provided by dedicated hardware. However, this is changing: the functionality has been moving to software in recent years, initially on specialized high-performance hardware platforms, and now on COTS hardware for some functions. In this technical presentation, **Nevion's Chief Technologist Andy Rayner** examines the current state of play, and considers to what extent and how signal transport and processing functionality can be delivered through Cloud – thereby revolutionizing the economics and the workflows of live production.

Watch the webinar, below.

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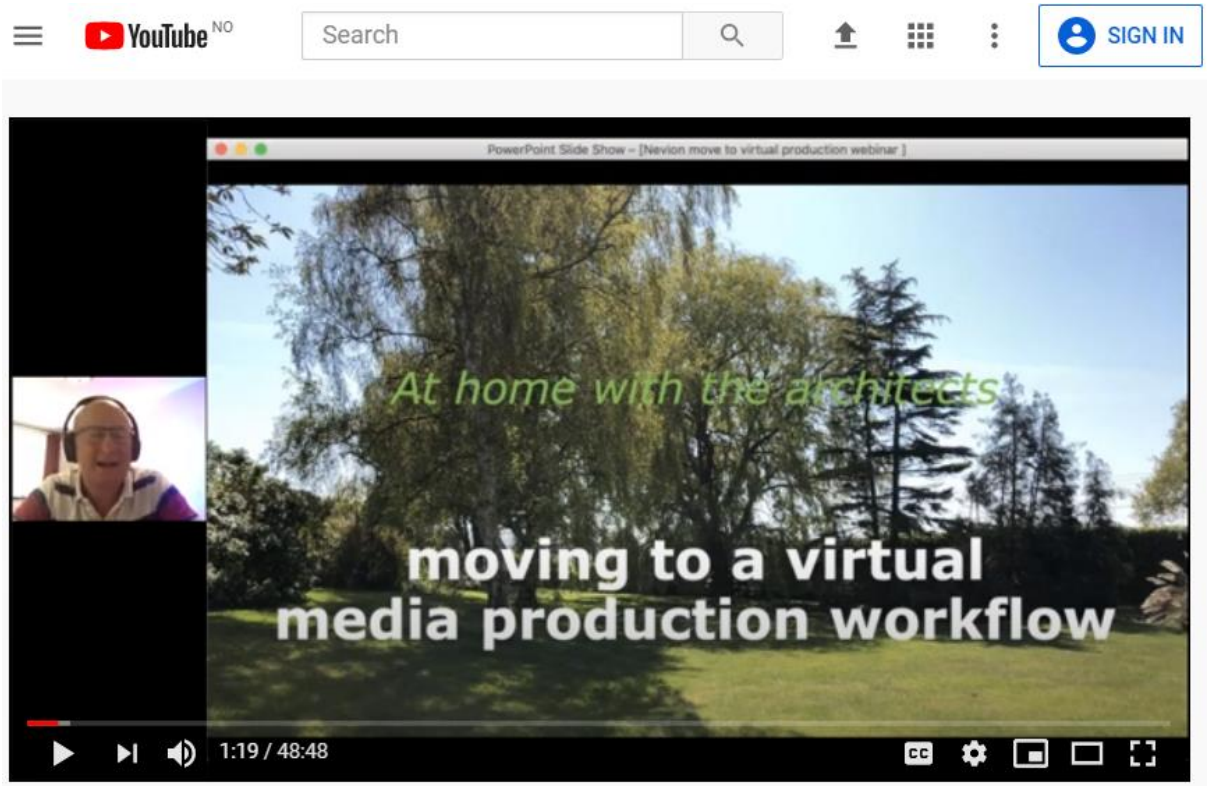

Nevion webinar (April 24, 2020): The Road to fully Virtualized Production

250 views • Apr 27, 2020 2 0 SHARE SAVE

Nevion SUBSCRIBE

Traditionally, signal transport and processing functionality has be provided by dedicated hardware. However, this is changing: the functionality has been moving to software in recent years, initially on specialized high-performance hardware platforms, and now on COTS hardware for some functions.

SHOW MORE

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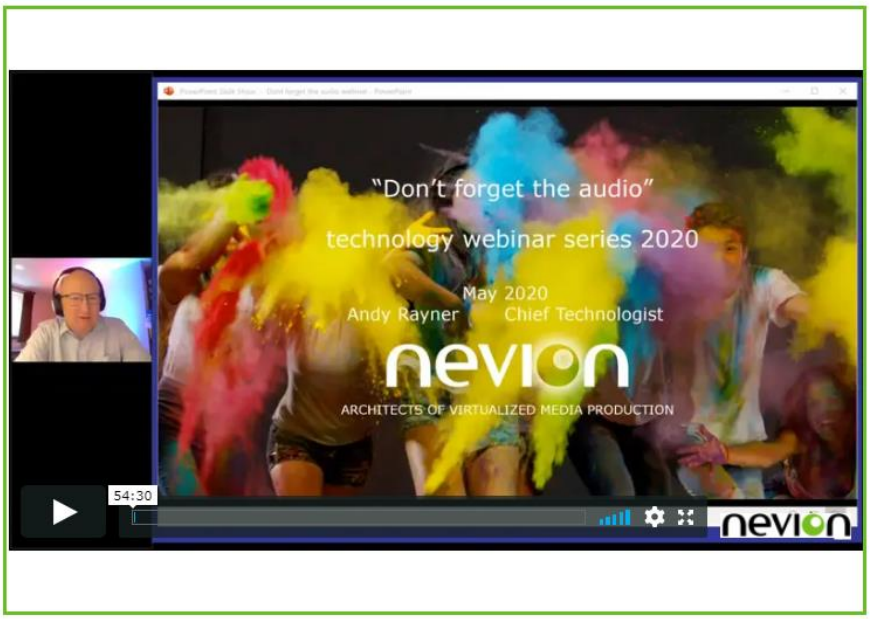
Nevion webinar recording: Don't forget the audio!

May 18, 2020 Webinars media networks, Virtualization, Cloud, Audio over IP

In the move to IP, the bulk of the attention is focused on handling video, as it is perceived as the biggest challenge due to the sheer volume of data involved. However, in many ways, handling audio is far more complex. This webinar, presented by Nevion's Chief Technologist Andy Rayner, looks at the often-overlooked issues surrounding handling audio in a live IP production environment including standards and scalability.



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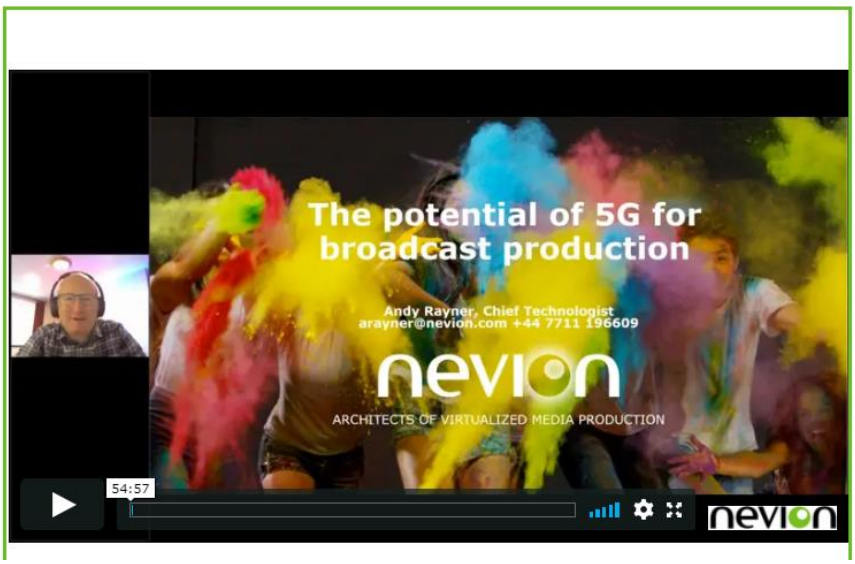
Nevion webinar recording: Will 5G transform broadcasting?

June 10, 2020 Webinars LiveIP, Cloud, 5G, Live Production

The advent of 5G (the Fifth Generation of Cellular Network Technology), with its promise of significantly greater bandwidth, faster data communication, lower latency and customizable performance, is creating a lot of excitement in the broadcast industry for both production and distribution. But will 5G live up to expectations? In this webinar, Nevion's Chief Technologist, examines the possible applications of 5G, and considers the technical issues that need to be addressed for the technology to deliver on its potential.



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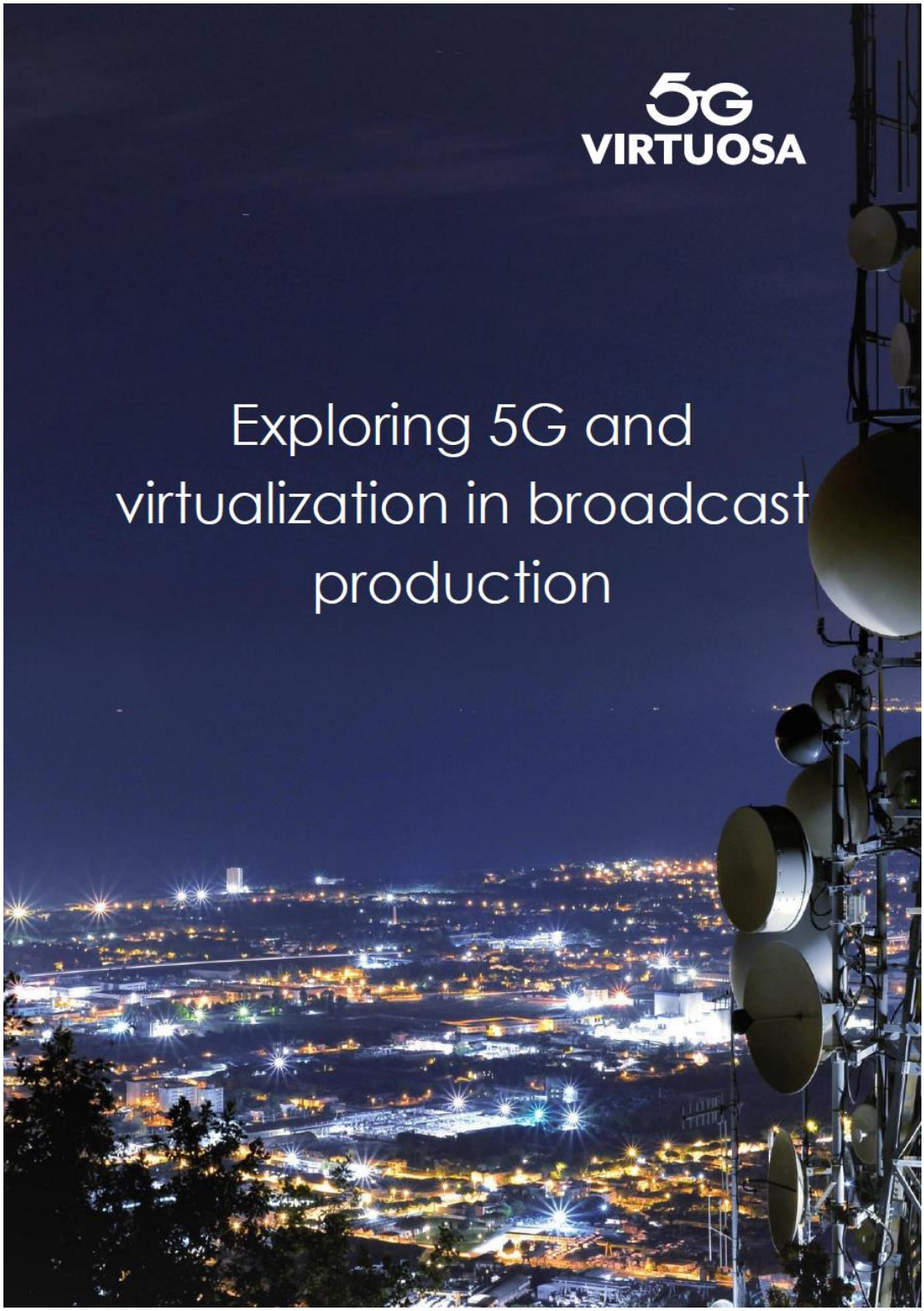
8.6. Communication material

8.6.1. 5G-VIRTUOSA brochure



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Exploring 5G and virtualization in broadcast production

Background

The Media & Entertainment (M&E) industry has been undergoing fundamental changes in recent years, largely as a result of the change in the viewing habits of consumers who now have a huge choice for entertainment.

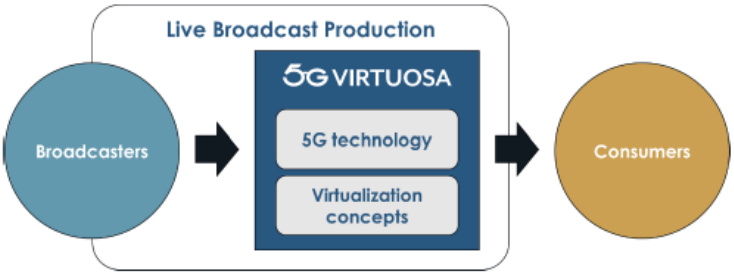
In this highly competitive environment, broadcasters and content producers must meet growing consumer demand for ever more engaging content, in particular by using more live sources and trying to get live feedback from the audience straight into the production chain. The big challenge for them is that they need to produce more content, at a time when they have less time and fewer resources to do so, in many cases using a network infrastructure based on technology (SDI - Serial Digital Interface) that is 30 years old and not suited for the Internet and mobile age.

Purpose

The official title of the EU project VIRTUOSA is:

"Scalable Software Defined Network Architectures for Cooperative LIVE Media Production exploiting Virtualized Production Resources and 5G Wireless Acquisition"

The purpose of the project is to explore real-life examples of how 5G wireless communication can be combined with virtualization concepts from the IT industry to enable broadcasters to produce live content (such as sports or music coverage) more efficiently and cost-effectively across locations, to meet growing consumer demand.



Participants

The VIRTUOSA project is run by a consortium of 4 organizations.

Nevion AS (Norway) - Nevion provides media network and broadcast infrastructure solutions to broadcasters, telecommunication service providers, government agencies and other industries.

Mellanox Technologies LTD (Israel) - Mellanox Technologies is a leading supplier of end-to-end Ethernet and InfiniBand intelligent interconnect solutions and services for servers, storage, and hyper-converged infrastructure.

LOGIC media solutions GmbH (Germany) - LOGIC is a German-based media infrastructure architect and distributor of professional broadcast and telecommunication equipment.

Institut für Rundfunktechnik GmbH (Germany) - The IRT is a world-renowned research and innovation center for broadcasting and media technology with more than 60 years of experience.

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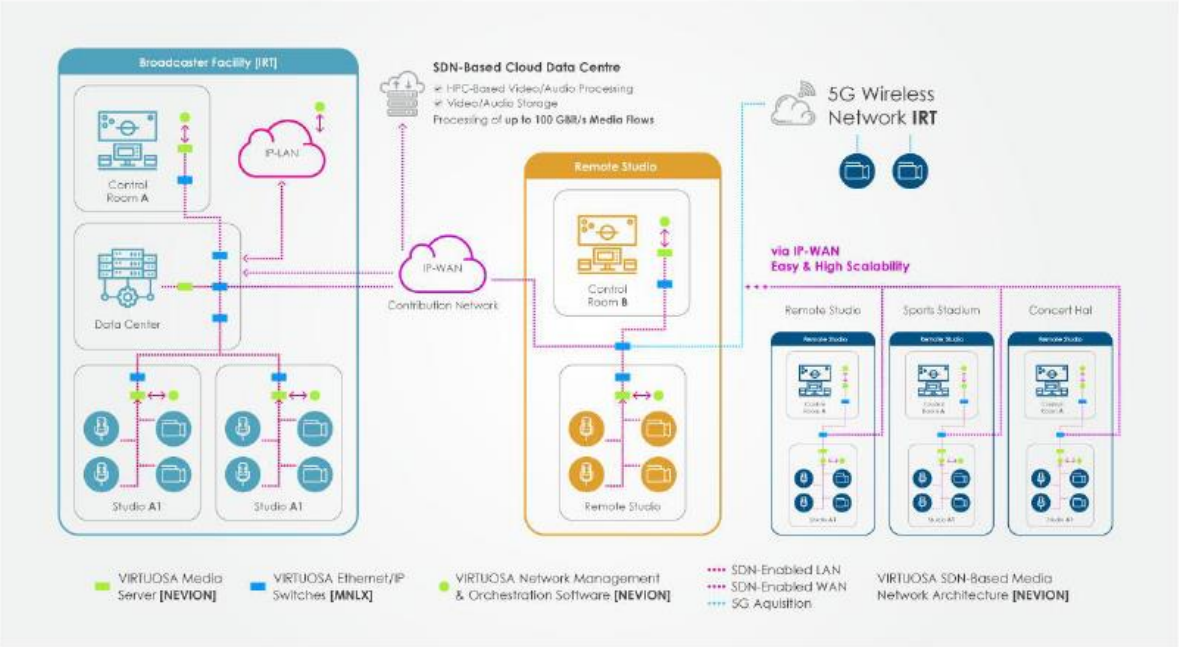
Exploring 5G and virtualization in broadcast production



Solution

The overall objective of the 24-month VIRTUOSA project is to create a market ready product - the VIRTUOSA product (or solution) - fully tested technically, validated in a real operational environment.

The product itself will be based on three core technical elements:

- Architecture: a tailor-made architecture solution for SDN-based LAN & WAN and 5G acquisition
- Equipment: high performance SDN-based media servers and media routers (Ethernet/IP switches)
- Software: media network management and self-service orchestration.

The plan for project VIRTUOSA is to build a real-life live production set-up combining broadcast facilities and remote studios connected by IP networks (both LAN and WAN), combined with remote live contributions from cameras connected via a 5G network.

The solution will involve products from Nevion and Mellanox, as well as 3rd party equipment from various companies, sourced by IRT and LOGIC media.

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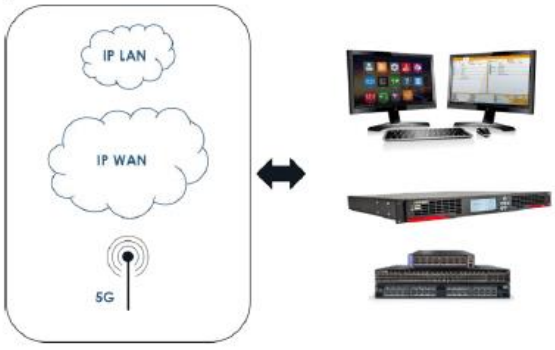

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www.5g-virtuosa.eu

Info@5g-virtuosa.eu

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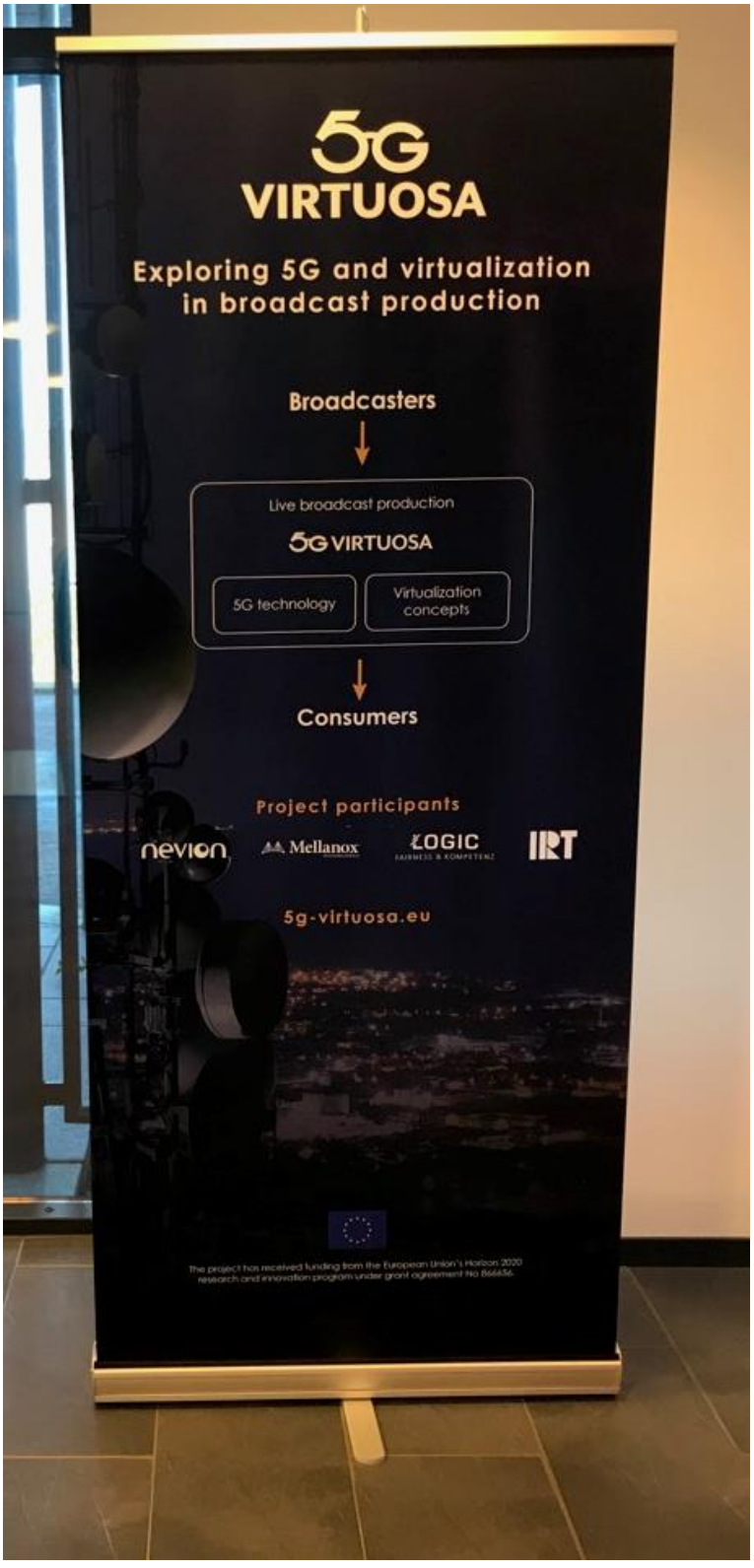
8.6.2. 5G-VIRTUOSA roll-up



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8.6.3. 5G-VIRTUOSA project presentation (power point)

A short power point presentation (ten slides), with speaker notes, introducing the VIRTUOSA project is made available for download (Power Point file) on the VIRTUOSA website (http://5g-virtuosa.eu/documentation/):

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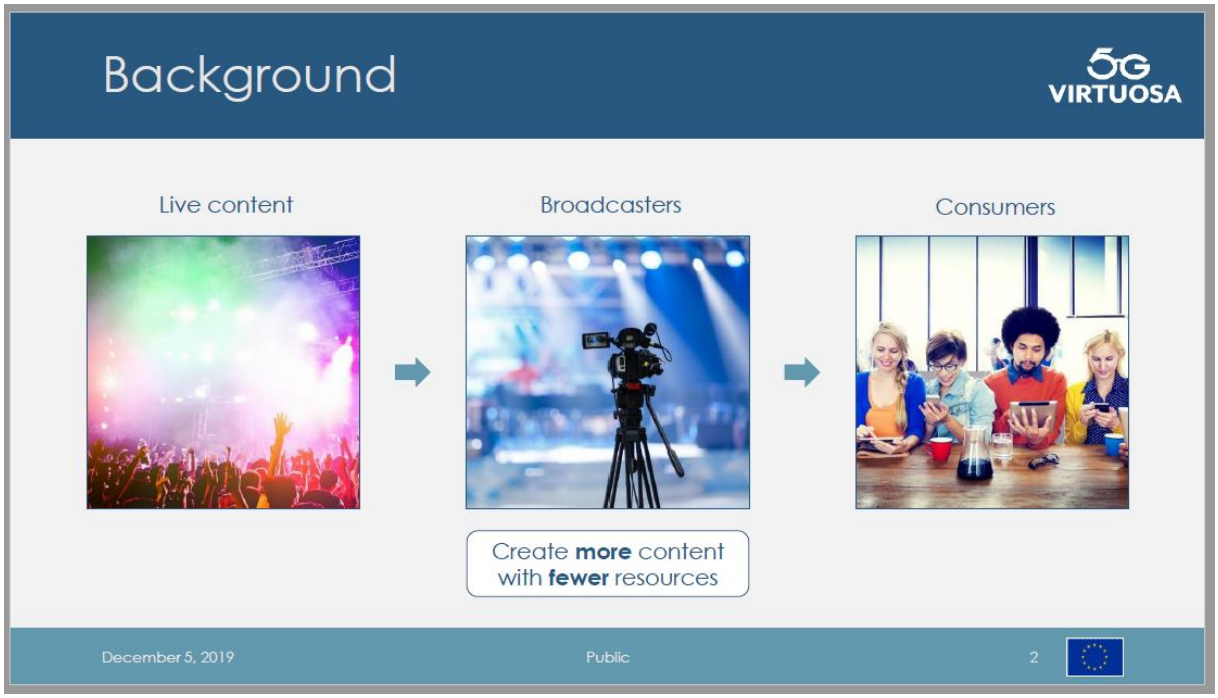

Speaker note:

The Media & Entertainment (M&E) industry has been undergoing fundamental changes in recent years, largely as a result of the change in the viewing habits of consumers who now have a huge the choice for entertainment.

In this highly competitive environment, broadcasters and content producers must meet growing consumer demand for ever more engaging content, in particular by using more live sources and trying to get live feedback from the audience straight into the production chain. The big challenge for them is that they need to produce more content, at time when they have less time and fewer resources to do so, in many cases using a network infrastructure based on technology (SDI - Serial Digital Interface) that is 30 years old and not suited for the Internet and mobile age.

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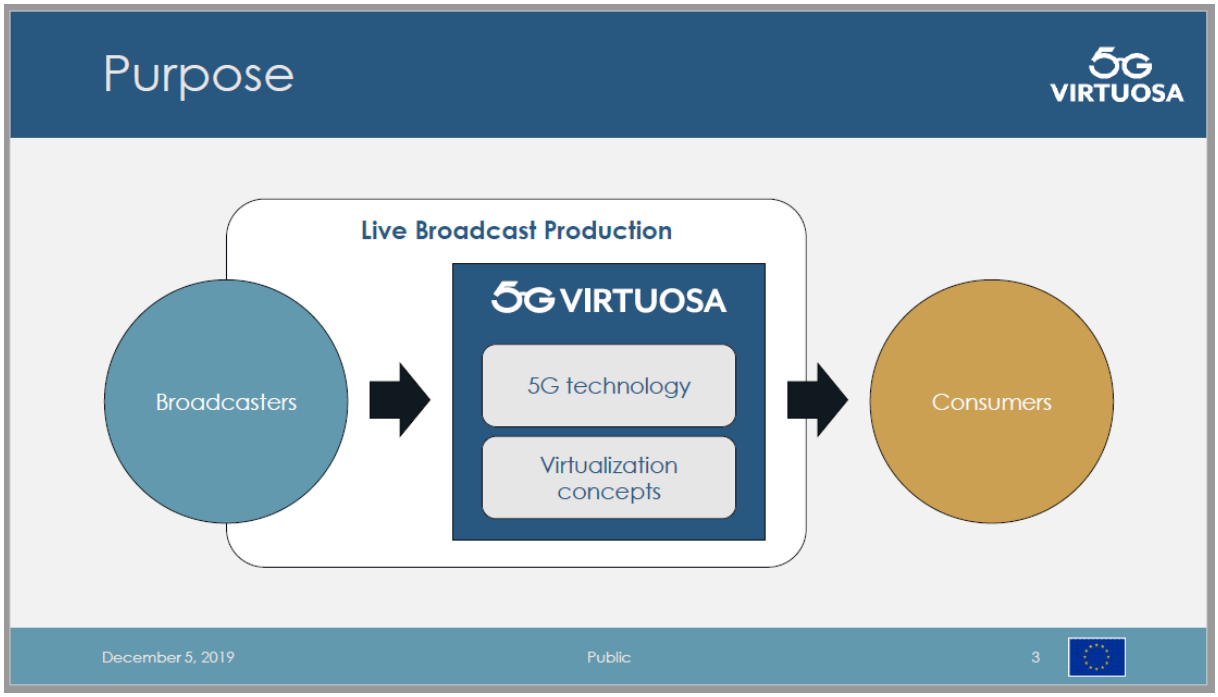

Speaker note:

The purpose of the EU project VIRTUOSA is to explore through real-life examples how 5G wireless communication can be combined with virtualization concepts from the IT industry to enable broadcasters to produce live content (such as sports or music coverage) more efficiently and cost-effectively across locations, to meet growing consumer demand.

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Speaker note:

The official title of the VIRTUOSA project is:

Scalable Software Defined Network Architectures for Cooperative LIVE Media Production exploiting Virtualized Production Resources and 5G Wireless Acquisition

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Speaker note:

The VIRTUOSA project is run by a consortium of 4 organizations:

- **Nevion AS (Norway)** - Nevion provides media network and broadcast infrastructure solutions to broadcasters, telecommunication service providers, government agencies and other industries.
- **Mellanox Technologies LTD (Israel)** - Mellanox Technologies is a leading supplier of end-to-end Ethernet and InfiniBand intelligent interconnect solutions and services for servers, storage, and hyper-converged infrastructure.
- **LOGIC media solutions GmbH (Germany)** - LOGIC is a German-based media infrastructure architect and distributor of professional broadcast and telecommunication equipment.
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Speaker note:

The VIRTUOSA project has received € 2 million funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 866656.

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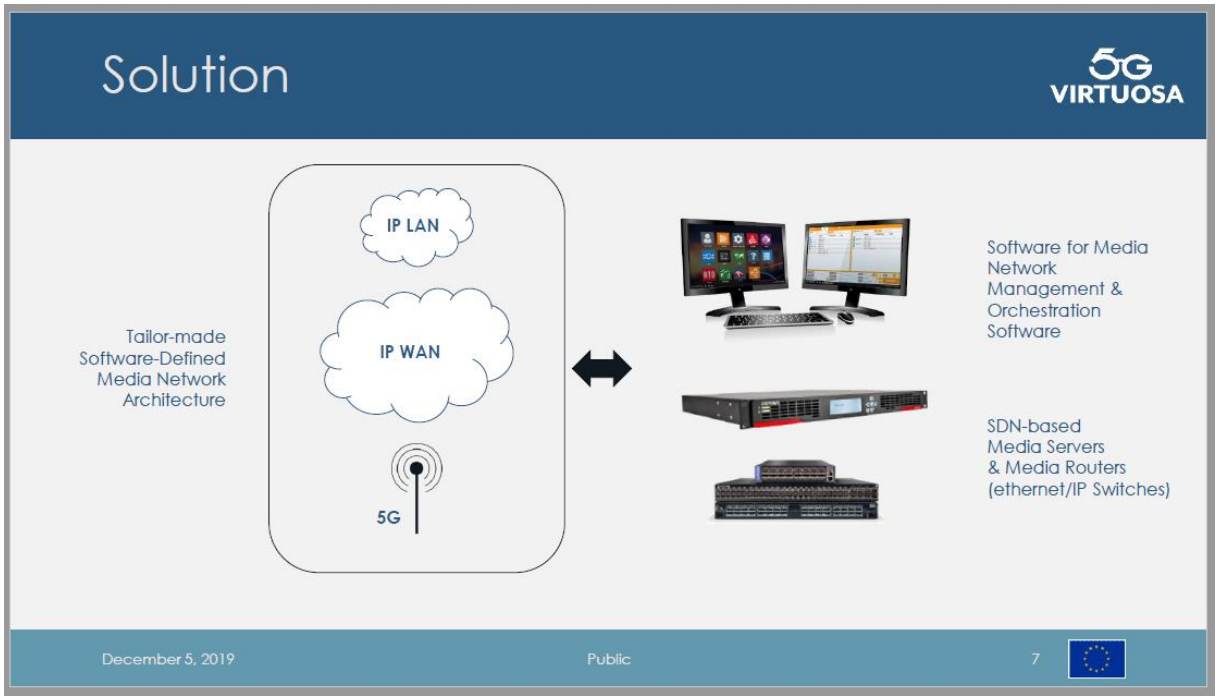

Speaker note:

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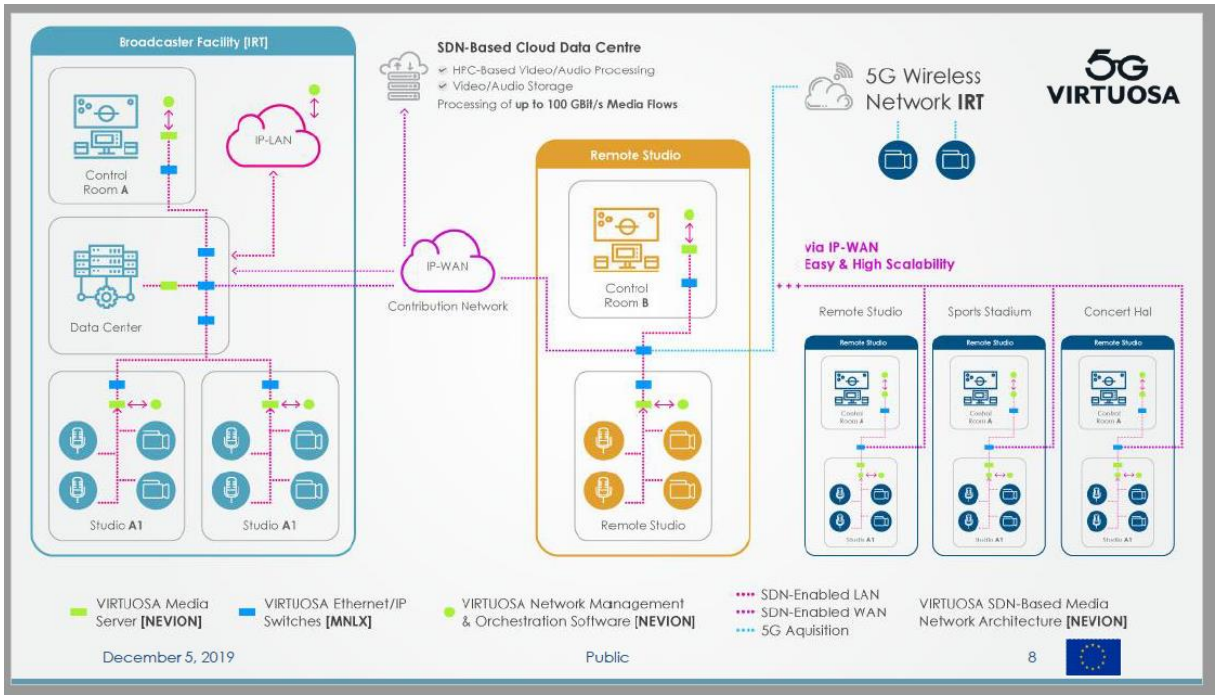

Speaker note:

The plan for project VIRTUOSA is to build a real-life live production set-up combining broadcast facilities and remote studios connected by IP networks (both LAN and WAN), combined with remote live contributions from cameras connected via a 5G network.

The solution will involve products from Nevion and Mellanox, as well as 3rd party equipment from various companies, sourced by IRT and LOGIC media.

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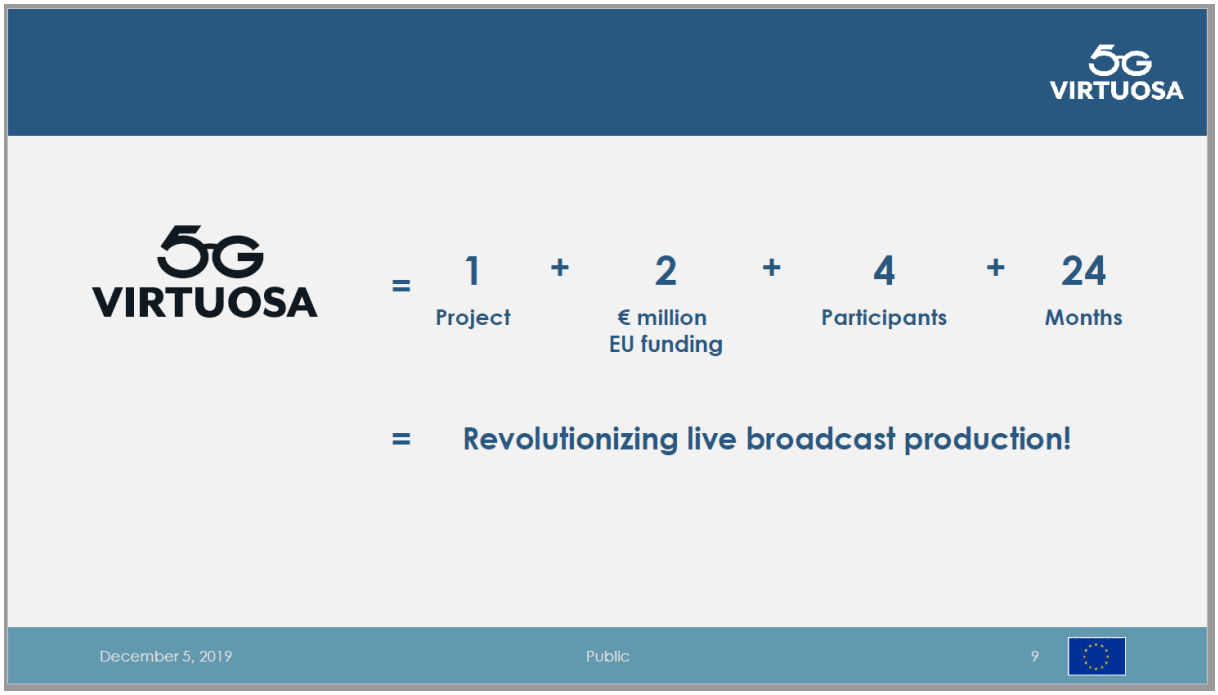

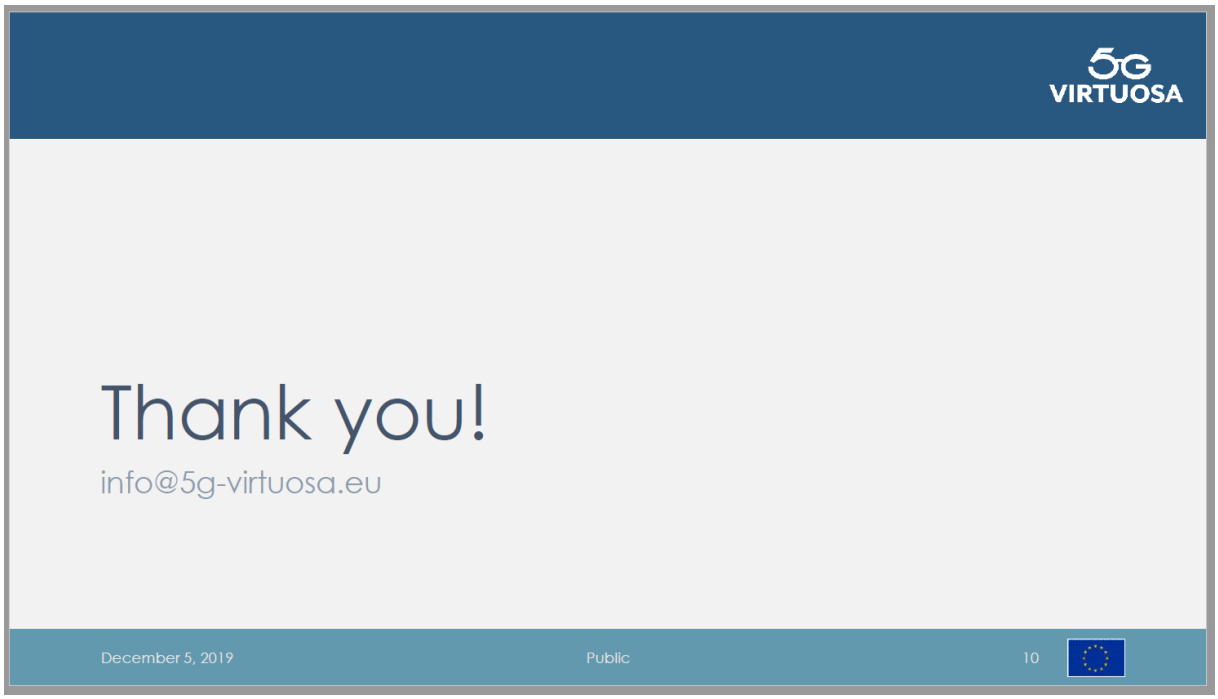

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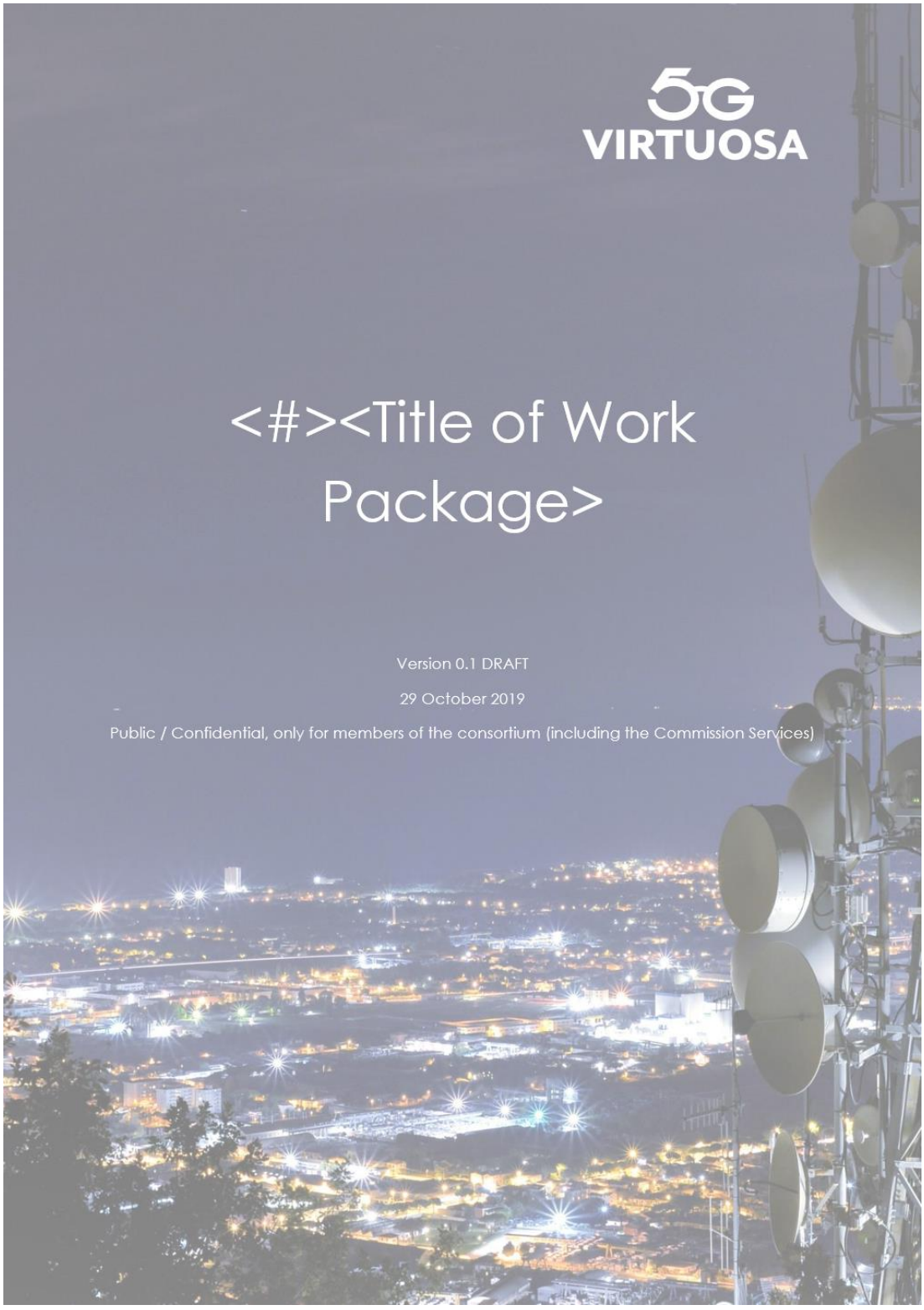
8.6.4. 5G-VIRTUOSA deliverable report template (word)

A basic word template for the creation of deliverable reports is made available for download in the Project Repository:



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Grant Agreement No.:	866656
Project Acronym	VIRTUOSA
Project Title	Scalable Software Defined Network Architectures for Cooperative LIVE Media Production exploiting Virtualised Production Resources and 5G Wireless Acquisition
Project Start Date (and Duration)	1 September 2019 (24 months)

Work Package	<#><Title of Work Package>
Due Delivery Date	1 November 2019
Actual Delivery Date	29 October 2019
Lead Participant for this Deliverable	Nevion AS (NEVION) Mellanox Technologies LTD (MLNX) LOGIC media solutions GmbH (LOGIC) Institut für Rundfunktechnik GmbH (IRT)
Lead Responsible	<name of person>
Dissemination level	Public / Confidential, only for members of the consortium (including the Commission Services)
Status	Version 0.1 DRAFT

History of changes		
Version	**Date**	**Change**
0.1	1 September 2019	

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1. Executive summary

The purpose of this document is ....

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2. Document heading 1

2.1. Document heading 2

2.1.1. Document heading 3

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8.6.5. 5G-VIRTUOSA newsletters

8.6.5.1. 5G-VIRTUOSA newsletter no1, 10 Sep 2019

Nevion-led consortium receives 2 million euro EU funding for 5G broadcast remote production project

Oslo, Norway, 10 September 2019 – **Nevion**, award-winning provider of virtualized media production solutions, announced today that a mobile-5G remote production project by a consortium it is leading has received a grant of €2 million from the European Union's Horizon 2020 research and innovation program 'Fast Track to Innovation'. Project "VIRTUOSA" was selected as the best proposal of a highly competitive call with 225 applications.

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The winning consortium comprises four international leading industry players with complementary competences and a common goal to bring 5G (the Fifth Generation of Cellular Network Technology) Broadcast Remote Production solutions to market: Nevion AS (Norway), Mellanox Technologies LTD (Israel), LOGIC media solutions GmbH (Germany) and IRT – Institute for Broadcasting Technology (Germany).

Nevion's SDN technology provides the means to control media networks more effectively in order to achieve the defined and predictable reliability and performance required for the transport of video, audio and associated data used in live broadcast production.

Attachments

Press Release

Nevion-led consortium receives 2 million euro
EU funding for 5G broadcast remote production project

Download

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8.6.5.2. 5G-VIRTUOSA newsletter no2, 31 Oct 2019

Website and Social media Launch

The VIRTUOSA project is proud to launch its website on October 31, 2019 – in line with the project plan. At the same time, VIRTUOSA is also launching its social media presence on Twitter and LinkedIn.

The purpose of the website and the social media is to keep interested parties informed of the progress of the project. These parties include of course the broadcast and telecom industry, that are set to benefit from the work of the project, but also any member of the public with an interest in the type of businesses and technology involved.

The aim is to keep content as easy as possible to read.

Clearly though, this is a complex project involving advanced technology, so inevitably some information will be technical in nature.

Make sure you bookmark the website and follow VIRTUOSA on social media (see links at the bottom of this page) to stay up to date with the exciting developments of the project.

If you have any questions, don't hesitate to **contact us** .

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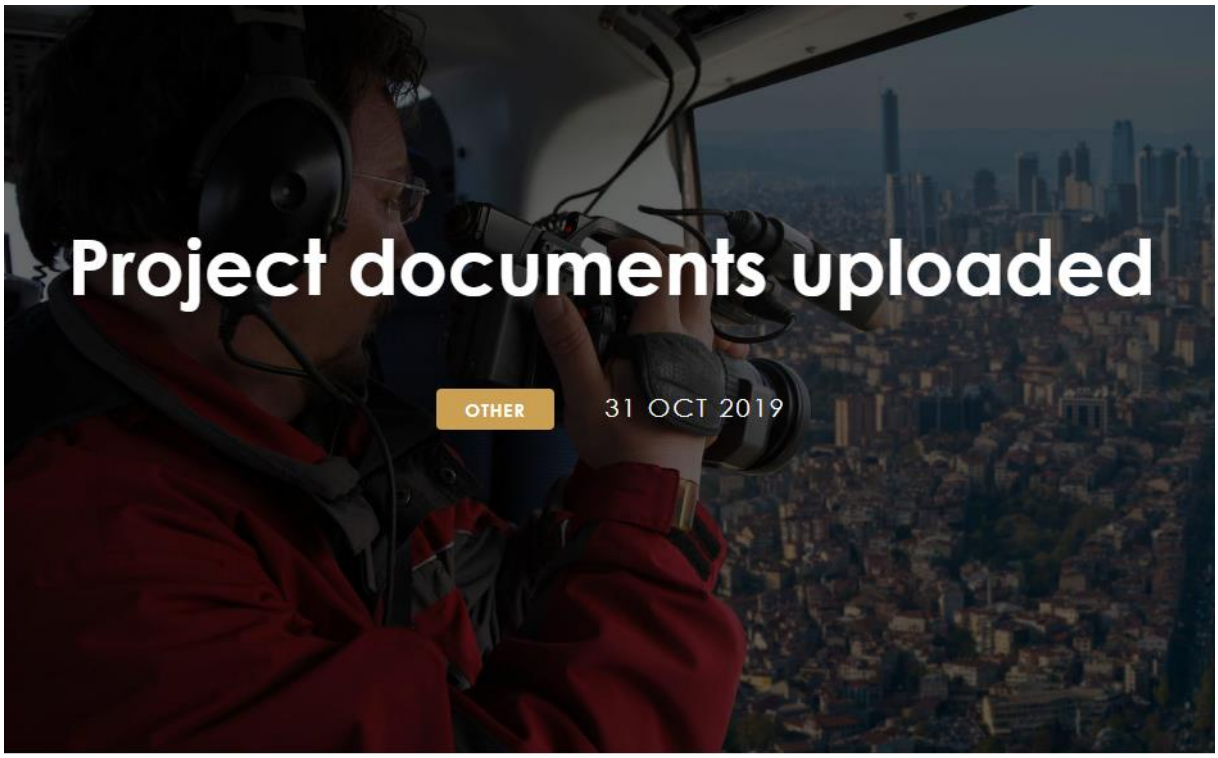
8.6.5.3. 5G-VIRTUOSA newsletter no3, 31 Oct 2019



Project documents uploaded

As part of the VIRTUOSA project, documents will be regularly uploaded to the Document section of this website. At the time of launch, we are providing information about the VIRTUOSA brand, as well as a short PowerPoint presentation explaining the project in simple terms. The presentation includes speaker notes.

Check out the **Documentation page**!

NB: The VIRTUOSA presentation represents the views of the project participants, view and the European Commission is not responsible for any use that may be made of the information it contains.

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8.6.5.4. 5G-VIRTUOSA newsletter no4, 11 Dec 2019

IRT Fachtagung Event

On December 4th, 2019, Nevion's Senior Vice President, Solution Strategy, Martin Walbum introduced the 5G-VIRTUOSA project to an audience of German, Austrian and Swiss broadcasters at an event in Munich (Germany).

The IRT Fachtagung is an annual event that brings together over 200 delegates to discuss technical evolution in the world of broadcasting.

The presentations for the event can be found **here**.

The presentation was very well received and the progress of the project will no doubt be monitored by many who were present at the event.

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8.6.5.5. 5G-VIRTUOSA newsletter no5, 12 Dec 2019

The VIRTUOSA project – how Nevion is helping bring 5G into live production

The IABM (International Trade Association for broadcast & media technology) recently posted on a thought leadership article on its website in which Olivier Suard, the VP of Marketing of Nevion (one of the participants in the VIRTUOSA project) provides background to the project, explains its aims and objectives and considers some of the broader issues around the use of 5G in broadcast production.

The article can be found **here**.

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8.6.5.6. 5G-VIRTUOSA newsletter no6, 16 Jun 2020

5G-VIRTUOSA project completes initial technical IP-based studio set-up

Products from multiple vendors integrated in a SMPTE ST 2110 compliant environment

Oslo, Norway, 16 June 2020 – The participants of 5G-VIRTUOSA, the EU-funded project exploring 5G and virtualization in broadcast production, announced today that the first technical step of the initiative has been completed at Nevion's Service Operations Center (SOC) in Gdansk, Poland. The step involves the integration of multiple products from various vendors, with most of the work done remotely because of the COVID-19 situation.

Next page …

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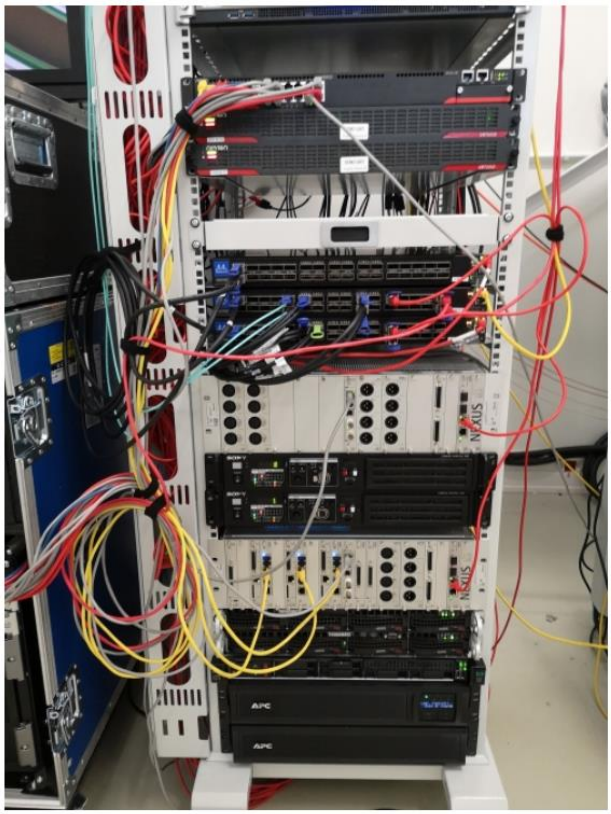

The purpose of the EU project VIRTUOSA is to explore "Scalable Software Defined Network Architectures for Cooperative Live Media Production exploiting Virtualized Production Resources and 5G Wireless Acquisition". In practical terms, this means demonstrating through real-life examples how 5G can be combined with virtualization concepts to enable broadcasters to produce live content (such as sports or music coverage) more efficiently and cost-effectively across locations, to meet growing consumer demand.

The project participants are: Nevion AS (Norway), Mellanox Technologies LTD (Israel), LOGIC media solutions GmbH (Germany) and IRT – Institute for Broadcasting Technology (Germany).

The first phase of the project involves setting up an IP-based studio, built on industry standards (SMPTE ST 2110 and NMOS) and integrating equipment from multiple vendors, including: video cameras, a vision mixer, and a server from Sony; a multiviewer from TAG Video Systems; an audio mixer from Stagetec; a media analyzer from Telestream; IP switches from Mellanox; a PTP-compliant time and frequency synchronization from Meinberg; software-defined media nodes from Nevion; and all of it managed by an orchestration and SDN control system from Nevion.

The set-up has now been transferred to IRT's premises in Munich, Germany, where tests will be carried to ascertain the compliance of the complete set-up to industry standards.

Markus Berg, Head of Future Networks at IRT explains: "After a slight delay because of the COVID-19 situation, we are pleased that we are now in a position to start testing. The set-up is the fundamental building block that we will be using to create the 5G remote production planned for later phases of the project. The compliance to standards is a key part of the tests, and very important for IRT, as an internationally renowned research and innovation center for audiovisual technologies."

Attachments

Press Release

5G-VIRTUOSA project completes initial technical IP-based studio set-up

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