



Vision, Insights and Trends for Awareness and Leadership in Media

D 1.2 Handbook of Convergence and Media Ecosystems in Europe

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This version includes annex of the deliverable (D1.2_V2.0).

It contains, in addition of the first version:

- A cartography of convergence of media projects
- One SWOT analysis on traditional media
- One SWOT analysis on new media
- One SWOT analysis on Cultural and Creative Industries

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Introduction

Vital Media presentation

Recent research activities in the ICT area, in particular in digital content and media sectors, has resulted in a number of technological enablers which allow the creation of new products and services. This has established a new converged social media environment in Europe as a playground for a large number of stakeholders, to ultimately enable creation of the related business, new jobs, and revenues benefiting from these developments. However, the main drivers of the new media and content technologies are the big industries, whereas the main users of these technologies are small enterprises / SMEs, which are creating product and services to reach the end customers – European and world-wide citizens. We can still observe a gap in discussions between the large technology providers and the small technology adopters, preventing the establishment of common strategies for the technology take up towards a more efficient creation of the new innovative product and services. Therefore, there is a clear need for the establishment of a common European community in the area of convergence and social media, in order to lay-down common research and innovation strategies, by involving important players from academia and research institutions, policy makers, end users, etc.

Accordingly, one of the main goals of the [VITAL MEDIA project](#) is to enlarge the community in the social media area at the European level, at level of the national and regional clusters, through collaboration amongst the NEM Initiative and the clusters. The enlarged community was animated through a number of discussions at workshops to be organised at all mentioned levels and through cooperation within [an innovative online collaboration tool](#), aiming to widely discuss and establish research and innovations roadmaps for the area, by strong cooperation with research and academic institutions active in the area, covering the identified gaps between the technology providers, their users/ adopters, and research.

To do so, one of the objectives is to identify relevant and active actors (clusters, policy makers, regulators, industrials, academics and research agents) willing to get involved in the project and to cooperate beyond in the Convergence and Media European community, more specifically:

- To identify and gather relevant convergence and social media stakeholders in Europe
- To achieve a better impact in this sector through so-called [ambassadors](#) in European countries
- To gain a better understanding of the media ecosystems in Europe

Handbook explanation

This handbook is meant to be disseminated at large scale through several European initiatives and platforms and is destined to an audience interested in acquiring a snapshot of the media ecosystem in Europe. All the projects mentioned in this handbook have been funded by the European Commission.

Firstly, the handbook presents the current projects related to the convergence of media and CCI until May 2018. It aims at mapping and identifying the European projects in the field of media in the framework of specific European calls (H2020-ICT).

Secondly, it presents the key figures of existing European media ecosystems and competences in VITAL MEDIA ambassador territories which are considered as a “prioritised countries” (section II.2.).

Finally, the analysis provides guidelines and recommendations by taking into account the evolution of the projects in the field of media and focusing on the prioritised countries.

Understanding media

The handbook is based on the NEM Initiative vision. The view of NEM is to consider that media and creative content forms, delivered seamlessly over technologically transparent networks, converge to a collaborative cross-sector. However, this has to be seen in the light of innovation and competitiveness to consider the scope of the convergence of the media and CCI sector. Accordingly, the EU Framework Programme for Research and Innovation seems to be the most relevant European programme to grasp the issues of the connected, converging and interactive Media & Creative Industries.

Innovation, R&D and Europe's global competitiveness are at the heart of the identified projects where the media and CCI sectors find areas of convergence on these issues. Here, the concept of media refers to all communication channels through which news, entertainment, education, data or promotional messages are spread including newspapers, magazines, TV, radio broadcasts, internet, telephone, emails, commercials, and data storage material¹. The definition of CCI given by the UNESCO is: “sectors of organised activity whose principal purpose is the production or reproduction, promotion, distribution and/or commercialisation of goods, services and activities of a cultural, artistic or heritage-related nature.”²

These guidelines and recommendations have been established to take into account the evolution of the Media and CCI sectors in the upcoming European calls for proposals and to foster a stronger cohesion of the different sectors in Europe with the digital single market³.

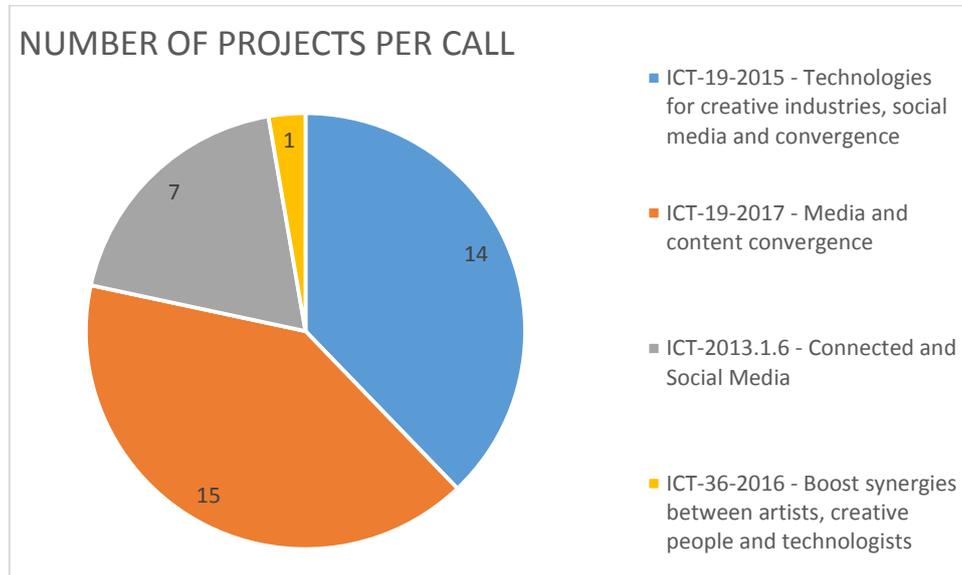
¹ <http://www.businessdictionary.com/definition/media.html>

² <http://www.unesco.org/new/en/santiago/culture/creative-industries/>

³ « The Digital Single Market denotes the strategy of the European Commission to ensure access to online activities for individuals and businesses under conditions of fair competition, consumer and data protection, removing geo-blocking and copyright issues. » <https://ec.europa.eu/digital-single-market/en/policies/shaping-digital-single-market>

I. Media European Projects

This section gives an overview of the current and past calls in media sector. In total 37 projects have been identified.



We have identified 3 ICT calls for proposals addressing the convergence of media:

- ICT-19-2017 - Media and content convergence;
- ICT-19-2015 - Technologies for creative industries, social media and convergence;
- ICT-2013.1.6 - Connected and Social Media.

The term “convergence” appeared for the first time in 2015 with the call proposal ICT-19-2015. Prior to 2015, the idea of convergence in media sector was referred to by the collective use of the terms “connected” and “social media”. The European Commission has recently launched a call for proposals directly aimed at the convergence of media and content. This indicates the European Commission’s awareness of the sector shift in the European media ecosystem. The maps in section I.1.3 however show a significant geographical disparity in European projects between western and eastern and south-eastern Europe.

The call for proposals ICT-36-2016 – “*Boost synergies between artists, creative people and technologists*” has been scanned for its relevance to combine the creative people and the technologists in a project. Out of its 3 projects, only one has been identified relevant for its convergence of content. Vertigo project clearly showcases the impact of the collaboration between artists’ communities, technologists and innovation stakeholders. This offers a great opportunity for each sector in term of business model, creative and technology content and enable the cross-fertilisation of the sectors.

I.1 Running EU projects on Media

This section presents the current European projects in media sector. Out of 37 projects, 25 are still running and will be the focus of this handbook.

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2 IMMERSE (Coordinated by BBC)

2 IMMERSE

From 2015-12-01 to 2018-12-30.

2-IMMERSE is a collaborative project co-funded by the European Commission's Horizon 2020 Research Programme. [Partners](#) in the project include broadcasters, producers, rights holders, technology companies and universities. They design, build and test four prototype experiences involving live performance and sport. The project's ambition is to deliver technology enabling services 'to immerse' audiences in shared and personalised multiscreen experiences.

2-IMMERSE is developing [prototypes](#) of multiscreen experiences for any device environments. These experiences will merge broadcast and broadband content with the benefits of social media. One example, and the first prototype, intended to enhance the viewing of performance in the home, can be seen in [the video here](#).

To deliver the prototypes, 2-IMMERSE is building a platform based on a relatively new specification for television called HbbTV2.0. The project will thus highlight the capabilities of the HbbTV2.0 specification and contribute towards its evolution.

2-IMMERSE explores the benefits and [challenges](#) of object based broadcasting; that is where content objects are rendered at the client device (the television) rather than prior to transmission at the broadcaster.

2-IMMERSE is intended to be of interest to four key groups, and this website offers elements for each one:

- General Public – the prototypes, which could be exciting visions for multi-screen experiences, are outlined in non-technical language.
- Academics – deliverables and journal articles detail the papers for those who require rigorous presentation of scientific results.
- Programme makers and commissioners – both the prototypes and the deliverables present exemplars of production practice, as well as object-based experience design and production workflows plus tools with which to explore these.
- Production engineers and suppliers – key deliverables outline concise and convincing presentations of exploitation opportunities and potential business models for ITC suppliers, broadcasters, production houses and public venues.

More information: <https://2immerse.eu/>



From 2016-01-01 to 2018-12-31.

The ABC_DJ project seeks to provide European creative agencies in the field of audio branding with sophisticated ICT supporting tools. As a result, they will be able to offer branding services and products of such high quality that they can successfully compete with the current big players, independently of their respective size – be it a big agency, a SME or a one-man business.

Secondly, European creators of music, (independent) labels as well as respective multipliers are actively included into the audio branding value chains. They enjoy support and novel schemes from the monetisation of their works in various areas of licensing, synch and especially instore music. Thus the pool of music effectively exploitable for branding agencies and brand clients grows significantly.

The high number of creative micro-businesses and SMEs is tailor-made for an approach where many audio branding agencies serve the (diverse) needs of many brands, as opposed to the current “one-sound-fits-all” situation.

Planned project results :

- Audio branding tool – desktop application for the visualisation and communication of music. Various possibilities to visualise a song’s properties with respect to: other songs, brand context, musical features etc. via underlying filter functions. Representations will include charts, ‘colour fans’ etc., as well as a pre-listening function.
- Playlist generator tool – desktop application for the production, visualisation and export of sophisticated playlists. An underlying set of rules supports dramaturgies, time schedules, prevention of monotony, as well as direct combination of non-matching changes in loudness or rhythm etc.
- Cockpit unit – instore client tool – two-piece software application (agency and instore) for content deployment, remote real-time monitoring and maintenance of an existing instore music implementation. Full set of functions in the interface on the agency-side, reduced set of functions on the store-side, connected to the instore player (hardware & software).

More information: <http://abcdj.eu/>



From 2016-02-01 to 2019-01-31.

The Audio Commons Initiative aims at *bringing Creative Commons audio content to the creative industries*. Significant amounts of user-generated audio content, such as sound effects, field recordings, musical samples and music pieces (among others), are uploaded to online repositories and made available under [Creative Commons](#) licenses. Furthermore, a constantly increasing amount of multimedia content, originally released with traditional copyright licenses, is becoming public domain as its copyright expires. However, the professional creative industries (e.g. videogames, film and music industries) are not yet using much of all this content in their media productions.

There are a number of reasons why such content is not yet extensively used in the professional sector. A major one is the lack of a shared culture within the creative industries of open content and its potential use. But there are also technical and practical issues that do not facilitate this usage. Despite the amount of Creative Commons audio content available in online repositories such as [Jamendo](#) or [Freesound](#), other potentially useful content remains scattered around the web (if available at all) and typically not properly labelled with specific licenses or reachable through search engines. Also, the nature of this content, coming from a variety of sources and from authors with different levels of expertise, results in unstructured (or not uniformly structured) mass of resources, limiting its potential retrieval and reuse possibilities. Moreover, no tools are easily available to search and incorporate *Creative Commons* audio content in the production workflows of the creative industries.

The Audio Commons Initiative therefore aims to promote the use of open audio content and developing technologies, in order to support an envisioned ecosystem of content repositories, production tools and users (the [Audio Commons Ecosystem](#)). These technologies should enable the reuse of this audio material, facilitating its integration in the production workflows of the creative industries.

The Audio Commons consortium is formed by leading research institutes in sound and music computing and key players in the creative industries.

In order to make Creative Commons audio content reusable in the creative industries there are some clearly defined issues that can be faced through the research and development of new technologies and improvement of existing ones. The Audio Commons Initiative, as a supported research and innovation action, devotes a special emphasis on researching the following topics:

- **Intellectual property and business models:** commonly understood frameworks for publishing and master rights to particular audio and music recordings are challenged

within the ACE's framework. The research aims to make those challenges understandable, and ultimately, useful for the industry. Research into emerging business models created by ACE interaction with publishers/creators/consumers is also being carried out.

- **Audio Ontologies:** an important part of the research in Audio Commons is focused on defining an ontology for the unified annotation of audio content able to allow proper representation and retrieval of content in different use cases of the creative industries.
- **Semantic description of audio content:** improving the state-of-the-art in sound and music description and semantic representation technologies.

More information: <http://www.audiocommons.org/>



BLOOMEN (Coordinated by Worldline Iberia SA)



From 2017-09-01 to 2020-08-31, ongoing project.

Musicians, writers, photographers, film makers – they all create the bits and pieces that make information offerings relevant and interesting. Yet, there are not any reliable platforms to compensate such work. This project wants to explore future solutions – for rights management, for fair & secure compensation.

Bloomen has defined three use cases to work on: Music, media content and WebTV. It investigates, develops and evaluates new software and platforms. The goal is to contribute to concepts which are beneficial for all stakeholders.

The ultimate goal of Bloomen is to extend the use of the blockchain technology to handle different online user transactions, provide an innovative way of content creation, sharing, personalized consumption, monetization and copyrighting.

Blockchain technology could help to resolve a number of these challenges by connecting content producers directly with consumers, as well as by making the organisations at the heart of the industry operate more efficiently. For example, the Ujomusic platform used the blockchain technology for selling new music online and distributing automatically user payments to the contributors of the song: singer, compositor, producer, etc.

However, the opportunity goes beyond simply enforcing payment for content; it could help digital rights to be identified and managed more effectively across the industry, and appropriate compensation paid to the right content owners, as well as seamless personalization (through anonymized unique identification of users) in the consumption of content.

This new approach can apply not only to music, but specifically to almost any form of information content, in various forms.

There is a huge opportunity e.g. for news media to understand how the introduction of a layer such as blockchain technology would enable new ways to collaborate, create, share, distribute and compensate for news media items, even down to texts, photos, visualizations, news videos and of course items like music files or entertainment video/film.

More information: <http://bloomen.io/>

COGNITUS (Coordinated by BBC)

COGNITUS

Converging broadcast and user generated content for interactive ultra-high definition services

From 2016-01-01 to 2018-12-31.

The three-year COGNITUS project brings together experts in video broadcasting, processing and analytics, with the aim of enhancing conventional ultra-high definition (UHD) broadcasts by combining it with quality user generated content (UGC).

The project began with a thorough study of the technologies available for UHD content creation and consumption, with emphasis on how these can best function in a media landscape increasingly dominated by social networking. Since content creators and consumers are increasingly one and the same, it makes sense to engage audiences prior to broadcast. Therefore, there was given a particular focus on potential social networking schemes to involve users in broadcast event planning.

The project demonstrates the viability of its aims through two different use cases drawn from real events, such as large sporting events or concerts, and tests these through use case demonstrators. Both provide examples of the fascinating and potentially unlimited new services that could be unleashed by interweaving UHD broadcast technology with interactive UGC.

The end goal of COGNITUS is to deliver compelling evidence for the validity, effectiveness and innovative power of user-involved UHD content creation. To do so, the project needs to demonstrate the significant role that user-involved UHD content creation can play in creating an immersive and interactive broadcast experience.

More specifically, the project aims to:

- Develop technologies that support the generation of interactive UHD media
- Harvest the full potential of both professional HD content and UGC
- Test the viability of combining user generated content into broadcasts for interactive UHD experiences at large scale events
- Consider methods to incentivise users to share their content with broadcasters
- Enable the production of UHD content from varying qualities of source media
- Enable user interaction in broadcast event planning
- Develop a system of quality metrics for measuring the user experience

More information: <http://cognitus-h2020.eu/index.php/concept/>

COMPACT (Coordinated by Insight centre)



From 2017-05-01 to 2019-10-31.

The Compact project intends to empower Local Public Administrations to become the main actors of their cyber-resilience improvement process by providing them with effective tools and services for removing security bottlenecks.

In order to fulfil its mission, COMPACT has the following objectives:

- Making the PA personnel aware of the basic cyber security threats they are exposed to.
- Improving the skills – both technical and behavioural – of the PA personnel via innovative training techniques that are well received by the (non IT-expert) workforce.
- Providing protection tools against basic cyber security threats, i.e. those with a higher impact on LPAs.
- Creating a LPAs level information hub, for favouring reliable and timely exchange of information among LPAs on cyber security guidelines and best practices, as well as on Indicators of Compromise (IoC).
- Creating a link between COMPACT LPAs level information hub and major EU level initiatives, for supporting LPAs to improve cyber-resilience in a complex European context.

COMPACT adopts an iterative development, integration, and prototyping strategy, where various system components are integrated and combined in several phases to implement the overall approach. The project adopts a service oriented integration approach towards the delivery of the COMPACT platform.

COMPACT services relies on the evolution of existing systems, frameworks, and prototypes developed in other projects or selected among existing open source software. These solutions will be tailored and extended in order to fulfil the requirements for and implement the COMPACT services, which in turn will be integrated into the COMPACT system.

The COMPACT services are validated in relevant environments (i.e. with real data provided or validated by the users), while the integrated system is deployed and demonstrated in the operational environments provided by the partners LPAs users.

COMPACT project innovates at technological level and at process level which is an important dimension in engaging LPAs' employees in the improvement of cyber-resilience.

At technological level, COMPACT innovates in real time security monitoring, security awareness training, information sharing, cyber-security gamification, risk assessment, and threat intelligence.



At process level, COMPACT adapts the Plan-Do-Check-Act cycle for LPAs to do iterative removal of security bottlenecks and achieve compliance with EN ISO/IEC 27001 and BS ISO/IEC 27005.

More information: <https://www.compact-project.eu/en>

Content4All (Coordinated by Fincons Group AG)



From 2017-09-01 to 2020-08-31.

Content4All aims to make more content accessible to the sign language community. Therefore, the consortium develops the necessary technologies and algorithms to achieve automatic sign-translation capabilities. The end result makes use of a photorealistic 3D human avatar for sign-interpreted content creation and enables low-cost personalization of content for deaf viewers, without causing disruption for hearing viewers.

CONTENT4ALL demonstrates automated sign-translation applied to a real-world television broadcasting scenario, which is envisaged to lead to new approaches and innovations in the area in the long-run. The team consists of the Fincons Group AG, the University of Surrey, the Fraunhofer Heinrich Hertz Institute, the Swiss TEXT AG, Vlaamse Radio- en Televisieomroeporganisatie and HFC Human-Factors-Consult and is funded by the European Union.

More information: <http://content4all-project.eu/>

CPN

From 2017-09-01 to 2020-02-29.

Europe is scattered with media companies, large and small, that represent an enormous amount of cultural diversity. On a daily basis, millions of news content items have to find their way to millions of users. The CPN project takes up the challenge of developing a new approach to personalise the daily news offer, allowing both large and small media companies to better target their content to media consumers. As a media consumer, you will be able to better receive news, in the right format at the right time, and in a fitted context.

CPN will provide media users with a seamless and reliable news experience on different platforms and media companies with effective news distribution solutions. Therefore, it develops a virtual open platform (with reference architecture) where on the one hand, media professionals are able to receive faster and more targeted cross-channel news and information distribution solutions, and on the other hand, users are able to experience more attractive and engaging news and information.

To make this happen, it aims to create novel services targeting content personalisation and real-time analytics on the platform. This will provide users with personalised news feeds, insights into the impact of news and information in their daily lives, while at the same time break them free from the filter bubble, which can contribute to more nuanced and factual opinions in larger society.

Throughout the duration of the project, the project will iteratively test and validate the solution in operational real-life environments in different countries (Belgium, Germany, Cyprus, and Italy) by setting up large scale pilots.

More information: <https://www.projectcpn.eu/>

EASYTV (Coordinated by Universidad Politecnica de Madrid)



From 2017-10-01 to 2020-03-31.

One of the many challenges people with various degrees of disabilities face (visually or hearing impaired) is their inability and difficulty to access mainstream products and services thus being excluded from enjoying audio-visual services on an equal basis as people without disabilities. Marginalising people with disabilities on this level is a critical and problematic issue, especially in today's "Information Society", where access to information should be freely available to all, in order for each individual to be able to reach his/her maximum potential, personally, professionally and socially. While these challenges have been identified, they have not been addressed yet efficiently since existing solutions still inherit characteristics of the analogue TV or just focus on traditional TV viewing.

In this context, the EasyTV system aims not only to ease the access to multimedia services, by offering novel media delivery mechanisms but also to move one step further, by enhancing interaction based on a multi-language approach, and adapt it to the user's preferences providing personalised content in an integrated single multiterminal platform. Specifically EasyTV is based on four pillars: a) improved access services for enhanced multimedia visual and sound experience for people with disabilities, b) improved personalisation of the content experiencing and interaction, towards a hyper-personalised experience to all, c) novel technologies to break the sign language barrier (based on crowdsourcing techniques) and d) improvement and development of voice and gesture/gaze recognition to control the TV set and TV applications (e.g., eye movement or head movement) in the form of a universal remote control.

Different testing with users will establish a close cooperation by exchanging experiences among the different partners and user groups, in order to enhance the whole evaluation and validation process of the EasyTV technology.

More information: <http://www.fabiodisconzi.com/open-h2020/projects/211087/index.html>

FIRST STAGE (Universitaet Bremen)

Fast and easy **previsualisation** for creative industries

From 2016-06-01 to 2019-05-31.

The goal of the EU-project first.stage is to research, design, develop, evaluate, and showcase natural user interfaces that improve previsualisation in film, animation, and the performing arts by speaking the language of the artist rather than that of a technician, providing efficient workflows, and offering the high degree of control required by practitioners. This set of previs tools should be easy to use — requiring less training than current software, efficient — requiring less man-hours, and effective — offering the same level of precision and control as the specialist tools employed at the moment. It should further support distributed teamwork, as production teams are often spread over many places and only meet in person for short bursts.

For the creative industries the use of previsualisation as a design tool is both an established and a brand new trend. Previs has long been established for high-end productions, which are the ones in which a lot of money and the know-how of technical staff that come with it, are involved. For smaller productions, lower budget animation and theatre and performing arts shows in general, professional digital previs tools have not been an option. That does not mean that pre-visualisation has not been used, just that the tools employed have been far away, both in affordability and ease of use, from an ideal solution.

The first.stage project aims to change that in a substantial way, by providing not only tools that are affordable to smaller studios, filmmakers, theatres and other companies working in the medium of visual narrative art, but also by making these tools easy and intuitive to use.

Specific objectives of the project

1. Understand the requirements
2. Research and develop methods and tools for content creation
3. Research and develop content layout and animation methods and tools
4. Test and evaluate the developed methods and tools
5. Disseminate the results

More information: <http://first-stage.eu/>

FuturePulse

From 2017-09-01 to 2020-08-31.

Music is one of the fastest evolving media industries, currently undergoing a transformation at the nexus of music streaming, social media and convergence technologies. As a result, the music industry has become a mixed economy of diverse consumer channels and revenue streams, as well as disruptive innovations based on new services and content distribution models. In this setting, music companies encounter daunting challenges in dealing successfully with the transition to the new field that is shaped by streaming music, social media and media convergence. The availability of huge music catalogues and choices has rendered the problems of recommendation and discovery as key in the competition for audience, while the continuous access to multiple sources of music consumption have resulted in a dynamic audience, characterized by a highly diverse set of tastes and volatility in preferences which also depend on the context of music consumption.

To serve the increasingly complex needs of the music ecosystem, FuturePulse develops and will pilot test a novel, close to market music platform in three high-impact use cases:

- Record Labels
- Live Music
- Online Music Platforms

The project aims to help music companies leverage a variety of music data and content, ranging from broadcasters (TV, radio) and music streaming data, to sales statistics and streams of music-focused social media discussions, interactions and content, through sophisticated analytics and predictive modelling services to make highly informed business decisions, to better understand their audience and the music trends of the future, and ultimately to make music distribution more effective and profitable. FuturePulse offers these capabilities over a user-friendly, highly intuitive and visual web solution that enables the immersion of music professionals in the realm of music data, and supports them to make highly informed and effective business decisions.

In response to the industrial needs of the music industry the FuturePulse project has identified the following six specific technological and innovation objectives:

- Objective 1: Deliver a single tool for collecting and accessing music data from a diverse set of sources.
- Objective 2: Deliver a set of data-driven services for estimating the current and future popularity of songs, artists and genres.
- Objective 3: Deliver a set of services for enhanced audience analysis and management.



- Objective 4: Integrate music data collection, mining, and visualization in a scalable Software-as-a-Service (SaaS) platform.
- Objective 5: Perform large-scale pilots on three clearly defined music segments.
- Objective 6: Develop and execute a comprehensive dissemination and exploitation plan and pave a clear path to market.

More information: <http://www.futurepulse.eu/overview>

HDR 4EU

From 2017-07-01 to 2020-06-30.

HDR technology can provide a never before seen increase in contrast, colour and luminance, producing images of unsurpassed realism and immersive potential, and is lauded in the creative sector as a truly transformative consumer experience, representing “the most exciting format to come along since color TV”. All the possibilities that the HDR format could offer, in terms of market growth for companies and improved user experience for the viewer, depend upon the existence of a fully functional HDR ecosystem. But we are currently a long way from such an ecosystem, as stated in very recent reports from several international organizations and standardization bodies, due to open challenges happening at all stages of the production chain, from capture to display.

The main goal of HDR4EU is to position EU companies in the creative sector as world leaders in the emerging HDR format by producing a set of professional tools, techniques and guidelines allowing for an HDR ecosystem to emerge, yielding a notably superior viewer experience in terms of image quality and content personalization. HDR4EU aims to:

- Showcase close-to-market and pilot versions of new technologies addressed to HDR content, catering for different communication and delivery platforms, and highlighting the feasibility and possibilities of an end-to-end HDR pipeline.
- Allow a user to have the best possible HDR experience on the outlet of their choice (cinema, TV, mobile device, AR/VR headset) by producing tools to meet new user expectations in hyper-personalized content consumption, using data and metadata generated during production, coming from the display device and its viewing environment, and taking into account individual characteristics and preferences.
- Provide content creators with tools to fully exploit the expressive possibilities of their media with HDR technology, making HDR media and HDR content converge onto an overwhelmingly better, at a whole different level, viewer experience.

More information: <http://www.fabiodisconzi.com/open-h2020/projects/211069/index.html>

HRADIO)))

From 2017-09-01 to 2020-02-29.

HRadio aims to leverage the full potential of hybrid technology for radio – enabling the integration of cost-effective broadcast distribution with new online features on not only mobile applications, but also on portals, connected radios and in the car.

The project identified three main challenges and opportunities for radio in the digital era:

Technical integration: Today's radio devices lack integration. It's often up to the listener to decide which technology delivers the best and most cost effective user experience. Application developers for mobile platforms need to be enabled to gain better access to embedded tuner hardware in order to integrate broadcast and broadband seamlessly into the applications.

Service harmonisation: Broadcasters are forced into a competition with sophisticated services such as music streaming, on demand content and general information services. In order not to be perceived as the "old" radio service, broadcasters must be able to provide an integrated service for the listener, which matches the expectations of end users.

User engagement: Radio applications on mobile platforms enable to get in direct contact with their listeners and increase audience engagement. Besides enabling more interactive features, such as personalisation, targeted advertising, games and voting's this also opens up the possibility of measuring exactly the number of people currently listening to the program and analysing their behaviour, as each stream is sent out individually to the end user.

HRADIO has set its main focus on the sustainable facilitation of new radio services based on multi-level technology convergence (hybrid radio). The goal is to realise attractive new radio services, enabled by technologies such as infrastructure and development libraries. This allows broadcasters to deliver time- and location independent linear radio services seamlessly linked with personalized on demand content, where and whenever the listener demands it.

More information: <https://www.hradiio.eu/projects/>

HYPER360 (Coordinated by Ingegneria Informatica Spa)



From 2017-10-01 to 2020-09-30.

Hyper360 is aimed at introducing a complete solution for the capture, production, enhancement, delivery and consumption of an innovative free viewpoint video (FVV) media format to the OTT media sectors, through careful validation and large demonstrations. Envisioning increasingly immersive experiences, the convergence of omnidirectional (360°) and 3D content will extend current short productions of 360° videos with novel and powerful storytelling opportunities. Furthermore, leveraging on the – inherent to the selected format – capabilities, the broadband delivered content will be offered with additional audio-visual functionalities, bringing together more types of digital content, and adapted according to the viewer's preferences offering unique experiences upon content consumption. With novel content through the fusion of modern formats (360° and 3D), the European media sector can gain an edge over global competition, reduce the global players' market share and even penetrate global markets that have been unreachable until now, both through content and service provisions.

In this context, the principal goal of Hyper360 is built on top of existing technological expertise on 360° video, on 3D human appearance and performance capturing and personalisation (FOKUS/CERTH), integrated (ENG) and commercialised by the industry (ENG, DRK), validated within two scenarios by our broadcasters (RBB, RTI) with existing experience in 360° productions and broadcasts, and prepare its market entry through careful planning and outreach (EUROKLEIS) as well as capitalise on its incubation capabilities (DRK) to create new job opportunities.

More information: <http://www.hyper360.eu/>

Immersive Accessibility project (ImAc) (Coordinated by Fundacio Privada I2CAT)



From 2017-10-01 to 2020-03-31.

The goal of Immersive Accessibility (ImAc) is to explore how accessibility services can be integrated with immersive media. Accessibility is regarded as an afterthought, rather it should be considered throughout the design, production and delivery process.

ImAc explores new deployment methods for these services (Subtitles, Audio Description, Audio Subtitling, Sign Language) in immersive environments. It moves away from the constraints of the current technology, into a Hyper-Personalized environment where the consumer can fully customize the experience to meet his personal needs. For example, it may be more appropriate for subtitles to be read out-loud or the Audio Description presented as text. The key action in ImAc is to ensure immersive experiences are inclusive across different languages, addressing the needs of those with hearing and low vision problems, learning difficulties and the aged. These services can also be consumed by a wider audience, for personal convenience, learning language and language therapy – accessible content can add significant value to these related areas.

ImAc is a prototyping platform where end-users with special needs are able to define from the start what services they need and how they want it, following a user-centric design. The project aims to match these expectations to what is possible with current and future technologies and have an open dialogue between end-user and technology developers, which is crucial for a meaningful development and technology deployment.

The objectives of the project are:

- Create accessible and fully personalised services for all citizens
- Deliver novel resources for the broadcasting industry to provide adapted content ensuring accessibility in immersive environments
- Demonstrate the tools and platform in open pilots
- Work towards standardisation of accessibility data in an immersive content environment
- Maximize impact on society delivering real and useful solutions

More information: <http://www.anglatecnic.com/imac-project/>



From 2017-10-01 to 2020-03-31.

VR and other forms of immersive media have the potential of disrupting the entire media industry with new user experiences that are more immersive and interactive compared to current video, cinema and TV. In order to reach a mature state beyond the current niche markets the quality of experience of VR media has to be improved in several ways.

Immersify develops key tools for allowing the next generation of immersive media applications. First, by developing advanced video compression technology tailored for the needs of the VR video it is possible to deliver and display the huge files that appear as a result of increased resolution, frame rate and better image formats. Second, it allows the widespread of immersive content, and facilitates its distribution and exhibition by supporting multiple devices and environments such as PC- and mobile-based head mounted displays, multi-display systems, and dome, immersive cinemas and deep spaces. And third, it allows content creators to produce highly personalized content with seamless interactivity by developing the required tools to combine high quality video, 2D/3D CGI, and interactive elements.

Immersify aims to perform demonstrations in the world's most important art and film festivals (Ars Electronica and Cannes Film Festival), to produce showcase content to demonstrate the creative and technical possibilities of the new formats, and to introduce innovative products (transcoders, media players, SDKs) in the market.

Immersify is concentrating on four challenges:

- A new technology for the video compression of data, which is currently virtually exploding due to higher resolutions, frame rates and constantly improving image formats.
- Media players and formats should be able to support as many different technical environments and devices as possible.
- Creative individuals working with high-quality videos, CGI in 2D and 3D, as well as interactive elements ought to have the option of combining them with each other so that users are in a position to enjoy totally customized experiences.
- Present the ongoing progress of R&D in the form of demos at the Ars Electronica Festival and the Marché du Film in Cannes, where specially developed content and innovative market-oriented products will showcase Immersify's creative and technical capabilities.

More information: <https://immersify.eu/>

INVID (Coordinated by Centre for Research and Technology Hellas (CERTH) – Information Technologies Institute (ITI))



From 2016-01-01 to 2018-12-31.

InVID builds a platform providing services to detect, authenticate and check the reliability and accuracy of newsworthy video files and video content spread via social media.

This platform enables novel newsroom applications for broadcasters, news agencies, web pure-players, newspapers and publishers to integrate social media content into their news output without struggling to know if they can trust the material or how they can reach the user to ask permission for re-use. It aims to ensure that verified and rights-cleared video content is readily available for integration into breaking and developing news reports. Validated by real customer pilots, InVID helps protecting the news industry from distributing fakes, falsehoods, lost reputation and lawsuits.

Content verification in InVID relies on three fundamental services that operate in parallel once a new piece of posted multimedia content (image, video) is provided as input by the end user:

- Multimedia forensics, which informs the end user on whether the video has been manipulated at a bitstream level (and hence cannot be considered authentic);
- Identification of near-duplicate content, which informs the end user on whether a posted image or video was reposted in the past (and is hence not original);
- Contextual verification, which informs the end user with respect to the credibility surrounding the publication of posted content (e.g. social media account who made the post, accompanying text) and its consistency (e.g. by crosschecking claimed with inferred location).

Each of the aforementioned services produces an output, in the form of a verification report, quantifying the extent to which the content of interest is not to be trusted. More importantly, this output will be accompanied by supportive evidence that is interpretable by an end-user, e.g. in the case of the near-duplicate identification, the system points the user to previous postings of the same content.

More information: <http://www.invid-project.eu/>



From 2017-09-01 to 2020-02-29.

The MARCONI project aims to bring radio experiences to the next level by enabling fully interactive and personalised radio solutions, integrating broadcast radio with digital and social media, amounting to converged radio experiences. To realize this goal, MARCONI pursues two concrete objectives. First, consumers are able to interact with “live” radio through their preferred communication channel in various ways. Second, radio-makers are given an integrated view on audience interactions and are supported by interaction automation services. The net outcome is enhanced audience engagement.

MARCONI brings together a multi-disciplinary consortium to realize its vision. Several partners focus on AI to automate processing of audio-visuals, text and social media posts. A radio redaction solutions provider is represented in the consortium to guarantee smooth integration in real operational workflows. MARCONI also includes broadcasters which organise large-scale pilots with their respective communities. Finally, strong industry participation (SMEs and radio stations) ensures that the MARCONI market potential is properly exploited.

More information: <https://www.projectmarconi.eu/about/>

Replicate

From 2016-01-01 to 2018-12-31.

REPLICATE has assembled a team of research institutions, SMEs and intermediaries involved in emerging technologies for creative digital representation of real world. The project aims to use Smartphones and their sensors to deliver 3D reconstruction of objects and their surroundings via visual, tactile and haptic user interfaces.

REPLICATE employs emerging mobile devices for the development of a ubiquitous and intuitive platform to create real-world-derived digital assets, implemented in a cooperative environment where human inspiration can be harnessed utilizing Augmented Reality/MR/VR.

REPLICATE assembles a world-class team of creative thinkers from research and private sectors to benefit the Creative Industries through:

- The promotion of a user-centric, mobile-based, 3D acquisition tool to transform real-world scenarios into new forms of creative-assets.
- The development of geometric and semantic decomposition tools that can guide users through the process of disassembling and reassembling sub-elements of objects.
- The introduction of new ways of content creation, access and reusability through crowd-sourcing strategy and the implementation of 3 initial Creativity Incubators.
- The enhancement of creative process in cooperative and co-creative environments through the integration of novel Mixed Reality (MR) user experiences and physical replicates via rapid prototyping.

More information: <http://www.replicate3d.eu/>

SPARK (Coordinated by Politecnico Di Milano)

The logo for 'SPARK' features the word 'SPARK' in a bold, uppercase font. A diagonal line crosses through the letters from the bottom-left to the top-right, starting under the 'S' and ending under the 'K'.

From 2016-01-01 to 2018-12-31.

The SPARK (SPatial Augmented Reality as a Key for co-creativity) project aims at realizing a responsive ICT platform that exploits the potential of Spatial Augmented Reality for supporting and fostering collaborative creative thinking in the design process by reducing language barriers due to diversity of background and sketching skills of the design team members. Spatial Augmented Reality enhances the innovation capabilities of creative industries through the facilitation of brainstorming and the early assessment of design solutions in a Co-Design environment.

This empowers the conception of new ideas, especially in the fields of product and packaging design, where the need to reduce the realization of physical prototypes is strongly felt. The project aims also at validating the effectiveness and efficiency of the SPARK platform on a real operational environment and at fostering its deployment by the SME creative industries.

More information: <http://www.spark-project.net/>

U_CODE (Coordinated by Technische Universitaet Dresden)



From 2016-02-01 to 2019-07-31.

U_CODE (Urban Collective Design Environment) aims to create an environment for urban co-design. Seizing the opportunity offered by emerging technologies to produce new forms of content and user engagement, U_CODE designs and develops a new kind of participatory platform that enables urban designers, architects, and developers to co-design and communicate their projects with the larger public. U_CODE relates the H2020 work programme topic "ICT 19: Technologies for creative industries, social media and convergence" as it devises a new digital collaboration and communication platform for the creative industry.

In the future, professional designers will design cities in close cooperation with the citizenship. Departing from technocratic planning, the shaping of the urban realm will become a democratic process in which all civic stakeholders participate as co-creators and co-designers. From the very beginning of a project, citizen experts will contribute their experience, opinions, and ideas, and keep an active voice throughout the design and development process. Positive public commitment, constructive discussion and high identification with projects will result this new kind of co-creation.

More information: http://www.u-code.eu/copy_of_about



MEDIAROAD PROJECT (Coordinated by AISBL EBU-UER - European Broadcasting Union (EBU))



From 2017-09-01 to 2019-08-31.

Coordinated by the European Broadcasting Union, the MediaRoad project aims to support the transformation of the European media sector by building an ecosystem for innovation involving diverse media associations, public service media organisations, commercial radios and broadcasters, media workers' organisations; academic research institutes and innovation centers, independent producers and SMEs.

Objectives:

- Boost innovation across the European media sector
- Reawaken a “start-up” mentality in the media sector
- Bring together a broad network of media stakeholders
- Bring innovative concepts to fruition and market deployment
- Shape future media policy and be part of the digital transformation

One of the key priorities of the project is to build a diverse Network where European media organisations, researchers, creative and cultural industries, technology experts and entrepreneurs join forces to create their vision for the future together.

The project aims to provide to the European Commission with regular proposals and suggestions to feed into key EU policies like the future framework for research and media innovation and develop a long-term policy vision for the European media sector focusing on audiovisual and radio.

Topics of interest

Data policy, cloud, privacy and security, 5G, investment in training and research, innovation, methodology, AR/VR, digital platforms and European Research Agenda are just some of the “tomorrow’s world” topics this Horizon 2020-funded project will touch upon.

Ways to participate:

- Become official MediaRoad stakeholder
- Participate in the MediaRoad events
- Contribute to the policy consultation and debate
- Connect with media innovation incubators (Sandboxes)
- Subscribe to newsletter on our website to receive project updates and event invitations

More information: <http://www.mediaroad.eu/>

VERTIGO (Coordinated by IRCAM)



From 2016-12-01 to 2020-05-31.

Artistic practices are more and more broadly recognized as potential vectors of technological innovation. One of the main objectives of the STARTS initiative of the European Commission is to catalyze new synergies between all concerned stakeholders: artists, cultural institutions, R&D projects in information and communication technologies (ICT), companies, incubators and funds.

The VERTIGO project provides a major opportunity to develop more inclusive, intercultural, and thus productive and innovative approaches to the participation of artists in ICT research activities and for promoting synergies between creative arts, businesses, research organizations and the society at general. VERTIGO supports and coordinates synergies at the European level through three main action lines:

- A program of artistic residencies as part of ICT R&D projects, through 3 yearly calls for proposals which are selected by an international jury. A total budget of 900 k€ is allocated by the project for funding the participation of artists in at least 45 residencies aiming at producing original artworks featuring innovative use-cases of the developed technologies.
- The organization of a yearly public event in Paris exhibiting the results of these collaborations. It will take place as part of the new Mutations / Creation platform initiated at [Centre Pompidou](#), gathering exhibitions, performances and symposia, and dedicated to exposing and questioning the current challenges of contemporary arts in relation to their technological and scientific ecosystem. The first edition of Mutations/ Creation opens in March 2017 in the framework of the celebration of the 40th birthday of the foundation of the Centre Pompidou and [IRCAM](#).
- The development of the web platform starts.eu, uniting all concerned actors and offering, support to their related actions (matchmaking, communication, organization of third parties' artistic residencies programs, etc.).

More information: <https://vertigo.starts.eu/vertigo-project/>

VRTOGETHER (Coordinated by Fundacio Privada I2cat, Internet I Innovacio Digital A Catalunya)



From 2017-10-01 to 2020-09-30.

VRTogether project offers new ground-breaking virtual reality experiences based on social photorealistic immersive content, which can be experienced together with friends, and demonstrate its use for domestic VR consumption. For this purpose, it develops and assembles an end-to-end pipeline integrating state-of-the-art technologies and off-the-shelf components. Immersive media production and delivery is achieved through innovative capture, encoding, delivery and rendering technologies.

Objectives

- Develop and integrate new media formats that deliver high quality photo-realistic content and create a strong feeling of co-presence in coherently integrated experience.
- Adapt the existing production pipeline to capture and encode multiple media formats and integrate them with state-of-the-art post-production tools.
- Re-Design the distribution chain so such innovative content format can be orchestrated and delivered in a scalable manner.
- Develop appropriate Quality of Experience (QoE) metrics and evaluation methods to quantify the quality of these new social VR experiences.
- Maximize the impact of VR-Together can have on content creators, producers, distributors, tooling companies, service providers and the general audience.

VRTogether's consortium has been strategically set up to consist of partners that cover all stages of the production chain in a well-balanced way. A combination of leading academic institutions (i2CAT -Project Coordinator & Technical Lead-, CWI, TNO, CERTH and Artanim) and industry actors (Future Lighthouse, Entropy, Motion Spell and Viaccess-Orca) that spread over 5 European countries.

More information: <http://vrtogether.eu/about-vr-together/>

X5GON

From 2017-09-01 to 2020-08-31.

The project X5gon stands for easily implemented freely available innovative technology elements that will converge currently scattered Open Educational Resources (OER) available in various modalities across Europe and the globe. X5gon combines content understanding, user modelling and quality assurance methods and tools to boost creating a homogenous network of (OER) sites and provides users (teachers, learners) with a common learning experience.

X5gon deploys open technologies for recommendation, learning analytics and learning personalisation services that work across various OER sites, independent of languages, modalities, scientific domains, and cultural contexts.

X5GON develops services for convergence of OER media which includes full courses, course materials, modules, textbooks, streaming videos, tests, software, related events and any other tools, materials, or techniques used to support access to knowledge. The solutions that are offered to OER sites are fivefold:

- Cross-modal: technologies for multimodal content understanding
- Cross-site: technologies to transparently accompany and analyse users across sites
- Cross-domain: technologies for cross domain content analytics
- Cross-language: technologies for cross lingual content recommendation
- Cross-cultural: technologies for cross cultural learning personalisation

The project collects and index OER resources, track data of users and their progress and use that to drive an analytics engine driven by state-of-the-art machine learning that can improve recommendations through better understanding of users, their progress and goals, and hence their match with knowledge resources of all types. In addition, X5gon implements innovative models and methods for OER quality assessment and assurance, including trust networks between teachers for OER creation and exchange, automatic content validation and user experience.

The project runs a series of pilot case studies that enable the measurement of the broader goals of delivering a useful and enjoyable educational experience to learners in different domains, at different levels and from different cultures. Two exploitation scenarios are planned: (i) free use of services for OER and (ii) commercial exploitation of the multimodal, big data, real-time analytics pipeline.

More information: <https://www.x5gon.org/>

I.3 Mapping of Projects

European Map of the consortium members for each project, giving a first overview of active media regions.



Figure 1: Mapping of project consortium

- Key
- 133 entities running 1 project
 - 12 entities running 2 projects
 - 7 entities running 3 projects
 - 3 entities running 4 projects
 - 1 entity running 5 projects

The Map of projects is based on the running projects represented above. Out of 37 projects, 25 running projects have been identified to appear on this map. In total, 155 entities are active in running project(s) as a partner, a coordinator or both.

This map highlights a significant geographic disparity as we notice that western and south eastern Europe are principally involved in projects, whereas central and eastern Europe is not very active in this programme.

The colour scheme brings to light the most active European regions in terms of projects.

Below is shown a [European map](#)⁴ with the coordinators of IA, RIA, CSA and Collaborative projects giving an overview of the most active leaders in media convergence projects in Europe



Figure 2: Project leaders for each funding scheme

Key

-  Innovation Action (IA)
-  Research Innovation Action (RIA)
-  Coordination Support Action (CSA)
-  Collaborative Project (CP)

The colour scheme highlights the regions that are leaders/coordinator in media convergence projects. This map shows the same geographic disparity as the Project Consortium Map (Figure 1).

⁴https://www.google.com/maps/d/edit?mid=1TDMucCFfv5Jd6Fav_gjiZto790tILezw&ll=46.87722528493683%2C8.958578787255874&z=4

I.4 Results on previous EU projects (2016-2018)

The purpose of this section is to bring out the transition and observe the first results of the media projects. Some of the project results were difficult to take into account in this analysis as the content was not made publically available. Out of 12 past projects, 7 have been identified as CP, 1 as CSA, 3 as IA and 1 as RIA.

ACTION-TV	39
BRIDGET	40
COMPEIT	41
CROWDREC	42
I3 PROJECT	43
IMMERSIA TV	44
MEDIASCAPE	45
MPAT	47
ORPHEUS	48
REVEAL	50
User-Centric Networking	51
VISUAL MEDIA	52

ACTION-TV (Coordinated by the University of Surrey)

ACTION-TV presented an innovative mode of user interaction for broadcasting to relax the rigid and passive nature of present broadcasting ecosystems. It had two key aims:

- a group of users can take part in TV shows providing a sense of immersion into the show and seamless engagement with the content;
- users are encouraged to use TV shows as a mean of social engagement as well as keeping them and their talents more visible across social circles.

These aims were achieved by developing an advanced digital media access and delivery platform that enables augmenting traditional audio-visual broadcastings with novel interactivity elements to encourage natural engagement with the content. Mixed-reality technologies were developed to insert users into pre-recorded content, which was made 'responsive' to users' actions by ingeniously using a set of auxiliary streams. Potentials of media cloud technologies were harnessed to personalise ACTION-TV-enabled broadcast content for a group of collaborating users based on their actions. As a result, content producers, for the first time, were able to generate creative media applications with richer content level user interactivity. Cloud-service providers were able to monetise their infrastructure through leveraging the increased demand for strategically located in-network media processing. Participating users were able to share personalised content with their social peers. In this way, end users gained access to more engaging personalised content as well as socialise themselves with community members having common interests. ACTION-TV supported a range of applications from an individual trying out a garment in a TV advert to a group of users interactively attending a TV talent show with the convenience of staying at home. However, ways of utilising the proposed interactivity concept are endless and only limited by the imagination of inspiring content producers.

No specific website found



BRIDGET opens new dimensions for multimedia content creation and consumption by enhancing broadcast programmes with bridglets: links from the programme you are watching to external interactive media elements. Bridglets can be created automatically or manually by service providers or users, using either archive content or internet sources. A bridglet could be enjoyed on either the main or second screen allowing for immersive augmented reality experiences. During the project a hybrid broadcast/Internet architecture has been developed and reached final standardisation as the MPEG Media Linking Application Framework (MLAF) in early 2017.

The project has developed The Media Linking Application Format which has been submitted to ISO/IEC MPEG and published in early 2017.

A visual scene classification technique based on combination of CNN features with the RVDW aggregation scheme s been developed.

The work on RVDW and local binary descriptors has been published in IEEE Transactions PAMI and IEEE Transaction on Multimedia, substring matching at CVPR 16, while the paper “On Aggregation of Local Binary Descriptors” received the “Best paper award” at the ICME 2016 (

3rd IEEE International Mobile Multimedia Computing workshop). 5 contributions were made to the MPEG CVDS/CDVA standardization work with significant impact.

A novel hybrid format for 3D objects based on SPLats and meshes (SPLASH) was developed and evaluated which combines the advantages of both mesh based splat based formats to improve the 3D models created without significantly increasing the computational power required, a necessary advancement to bring quality 3D models to the second screen.

With respect to audio, an algorithm for online rendering has been developed which enables the user to change the “viewing” angle by rotating the scene and thus observing it in full 360°

Integration into the BRIDGET applications a complete and fully automatic workflow for 3D model acquisition was implemented and tested which covers all 3D media aspects: data acquisition, modelling/representation, processing, encoding, decoding, and rendering. The off-line extraction (and generation, if needed), at the service provider’s Authoring Tool (AT) and 3D models from 2D/3D video data for broadcast/internet delivery was addressed.

More information: <http://ict-bridget.eu/>

COMPEIT (Coordinated by Lulea Tekniska Universitet)

COMPEIT COMPEIT creates a web-based system for highly interactive, personalised, shared media experiences. Research and development link content-delivery networks with tools for enhancing mediated presence. COMPEIT takes the view that Internet-based distribution will transform traditional broadcasting towards higher levels of interactivity and integration with virtual, mixed and augmented reality, enabled by advanced web technologies and the proliferation of audio/video/tangible devices.

The project addresses:

Quality of Experience in flexible, interactive media production and consumption systems signed for professional collaboration and shared leisure activities. It introduces the next step in interactive broadcasting systems by focusing technologies that enrich social connections, improve the feeling of being together in one shared space and enhance collaboration.

Modular software will be developed based on low-cost, easily accessible web technologies (e.g HTML5, WebRTC, WebGL), leveraging on cloud based software access and distribution.

COMPEIT thus applies WebRTC/HTML5 standards to create innovative connected media components, without extending WebRTC/HTML5 itself. Two key domains are identified for improving quality of experience:

- 1) Spatial Connectedness
- 2) Social Connectedness

The seamless integration of virtual and real spaces and social interactions is facilitated by COMPEIT, as well as the integration of various smart objects that one can make use of in both real and virtual spaces. 'Fluency' is now our concept to describe how easily one can move into and between these spaces and interact with others with different levels of social connectedness, and how easily features and smart objects are controlled - meaning these are quite important functionalities that we want to see integrated to our upcoming second system prototype.

SharedSpaces is an example of innovative WebRTC services increasingly available, inviting users to seamlessly move between real and virtual spaces using a range of previously separated media channels. It adds a spatial quality of experience by representing the users side by side in a shared virtual space. It offers a fun, novel and aesthetically appealing approach by engaging users in multiple locations to manipulate their realtime video-streams, thereby co-creating a shared space, using spatial features to fit their contextual needs. It supports social dynamics by allowing users to draw and paint together and to move and resize video streams. Further, it enhances grounding and social cues by merging video-streams and space, representing users as if they were in the same space. Standard and easily available equipment is used. Our recent user studies show that a seamless integration of space, social dynamics and shared activity benefits the experience of presence, naturalness, immersion/engagement and social connectedness. Our ongoing design research specifically addresses the fusion of spatial connectedness and social connectedness.

More information: <http://www.compeit.eu/>

CROWDREC (Coordinated by JCP-CONNECT)



Vision combining crowdsourcing and recommender systems. The insight is that recommender systems can utilize their own user base as a crowd that can contribute the rich information needed to address the sparse data problem faced by recommender system. By using reciprocal recommendation to identify items that are suited to users, and additionally users that are suited to items, CROWDREC

proposes that it is possible to incentivize users to contribute information on items. The resulting symbiotic user-item relationship will generate richer, high-quality information, resulting in better recommendations. CROWDREC emphasized real-time and context-aware recommendation as contributing to the sparse data problem. Other factors could be important as well, e.g. in video recommendation it is interesting to recommend not only whole videos, but also time-points within specific videos. It is possible that rich information at the time-point level is only possible if recruited users are also interested in specific videos, making them interested in interacting with and tagging videos in their entire length. By activating the crowd, we can move beyond the problem of data sparsity to the problem of addressing low quality data. In addition to contributing, the crowd can also validate information that is used as a basis for recommendations.

More information: https://cordis.europa.eu/project/rcn/110635_en.html

I3 PROJECT (Coordinated by IMINDS)



I3 is a 30 months Coordination and Support Action for “ICT 19-2015”. The main goal of the project is to coordinate efforts in the social media convergence domain, address how research efforts can increase outreach, improve connection within the ecosystem and raising the excellence of Convergence and Social media research outcomes.

The goal encompasses four main aspects that aim to bridge the gap from research and innovation to market deployment:

Technology readiness and business model

I3 provides the tools for the enhancement of technological maturity levels and for the creation of sound and innovative business models. The specific socio-economic impact maximization methodology of i3 will help to identify a value proposition of research projects in the Social Media Convergence domain, and thus prepare the path from research to innovation and finally market deployment.

I3 Ecosystem

The impact of research can be increased in an ecosystem of committed actors. The potential of innovation can be reached with the right tools and methodologies. I3 serves these ends; engaging projects and stakeholders to participate and collaborate in the i3 New Media Convergence ecosystem; determining, together, the best means to become truly innovative; sharing knowledge, coaching and mentoring those innovators needing the extra push in reaching their goals. The result will be a strong network founded collaboration and advanced expertise that will make innovation happen.

Investment & Acceleration

To match research outcomes with market requirements, to find necessary investments, i3 establishes an ecosystem accelerator; a place where the best ideas meet inspired investors. I3 will create opportunities, driving people, providing tools and possibilities. A prize will reward the best idea, the overall result will reward the Social Media domain and its supporters.

Policy

To truly innovate the Social Media Convergence domain, i3 engages the relevant stakeholders and provides the stage for the required debate; policy makers and entrepreneurs active in the sector, promoting a strong collaboration and a constructive dialogue among them. This will lead the participants through a phase of negotiation supported by i3 and finally to a common deliberation and concrete recommendations addressing European Policies for the benefit of the domain.

More information : <http://i3project.eu/what-is-i3/>



Immersive Experiences around TV, an integrated toolset for the production and distribution of immersive and interactive content across devices

Nowadays, broadcast content is consumed both through the traditional TV set and second screens. To integrate immersive displays in this context it is required a novel Content Format Ideation. This project uses omnidirectional video enriched with novel techniques of audiovisual production to deliver **a novel form of Broadcast content that matches the demands of immersive displays, and can be shared with tablet and traditional TV consumers.**

Using a head mounted display it is possible to **render several video streams**, not necessarily omnidirectional, **simultaneously**, smartly inserted within its very large field of view. These inserts can be experienced as **audiovisual portals**, which will appear, grow, cover the whole field of view or disappear, **depending both on the storyteller's choices and end-user behavior**. Using this technique, the solidly proven techniques used to build narratives within an audiovisual production –close shot to show the reaction of the main characters, slow motion to repeat a crucial moment, etc.- can still be used in the context of immersive displays, where cuts between omnidirectional shots would provoke discomfort.

There is a need to define a content format that appropriately fits the opportunities and constraints of immersive displays integrated with traditional TV and second screens. This includes creating a novel content format, but also requires to develop new features, applications, components and services that can be only provided resolving a considerable number of technical challenges in different fields of work.

In ImmersiaTV every technical field of work (content capture, processing, production, distribution, reception, visualization and interaction) is addressed following an iterative and incremental approach. Three technical iterations and several production pilots (1at the end of the first and second iterations and 2 to conclude the third and final iteration) enable a step-by-step progress based on previous consolidated results.

More information: <http://www.immersiatv.eu/about-immersiatv/>

MEDIASCAPE (Coordinated by Fundacion Centro De Tecnologias De Interaccion Visual Y Comunicaciones Vicomtech)



MediaScape
Dynamic Media Service Creation,
Adaptation and Publishing on Every Device

MediaScape takes connected service development to a new level and lays the foundations for advanced connected multi-user services via a standardised approach integrated into the HTML5 paradigm. In this approach, the three main involved actors take advantage of Mediascape: a) the users, b) the broadcasters and c) developers and service providers.

Benefits of MediaScape for the users:

The users will be able move parts of the functionality smoothly from one device to another in an intuitive manner and the application would adapt itself to the device. A user will also be able to handle with different devices being used simultaneously, interacting with a services seamlessly split to the context. The users will be able to manage personal devices together with shared devices (such as TV or an in-car dashboard device) for synchronised experience sharing in multi-user scenarios.

Benefits of MediaScape for the broadcasters:

For the broadcasters, MediaScape facilitates the marriage of the TV, PC and Mobile worlds through a standard solution that includes real-time delivery and synchronisation of media contents and applications across a variety of devices, eliminating them the need for the creation and maintenance of totally different developments to provide this kind of services. With MediaScape, broadcasters will be in charge of creating and providing a single application that reaches all target environments.

Benefits of MediaScape for developers and service providers:

From a developer and service provider point of view, aspects of resource discovery and association, synchronisation and adaptation can be partially implemented with different tools (JavaScript libraries, APIs, etc.). However these implementations are non-standard, non-interoperable, and non-transparent for the user and do not work within TV type devices which currently rely on proprietary and vendor specific technologies. MediaScape opens up these features to a new developer community - the large and creative group of developers working on the Web, and particularly the growing group working with HTML5 for video, audio and real-time web applications. MediaScape makes it as easy to create these kinds of services as it is to create an HTML web page, treating the TV set as just one part of the ecosystem and including the broadcast simply as a new type of resource - thereby enabling much broader participation in their creation, and increasing the range and diversity of potential applications.

GET STARTED

The GitHub repository of MediaScape is <https://github.com/mediascape>. We have published the different APIs developed during the project. The dissemination is addressed in two



different levels. On the one hand, prototypes have been created on top of the different APIs of MediaScape. These prototypes are user-oriented media applications that show the potential of the outcome of MediaScape. On the other hand, Hello World examples have been created and published for each one of the MediaScape APIs.

If you are interested on having particular or more detailed information about the software please contact the Technical Manager: Mikel Zorrilla (mzorrilla@vicomtech.org)

More information: <http://www.mediascapeproject.eu>

MPAT (Coordinated by Fraunhofer-Gesellschaft)



MPAT, the Multi-Platform Application Toolkit, enables content creators, specifically broadcasters and producers of TV programmes, to build HbbTV applications with little or no need for technical knowledge of the technology.

Not able to extract key elements and to summarize the project.

More information: <http://mpat.eu/>

ORPHEUS (Coordinated by Fraunhofer)



ORPHEUS is a European research project dedicated to improving the management of audio content. It will develop, implement and validate a new end-to-end object-based media chain for audio content.

Object-based media is a revolutionary approach for creating and deploying interactive, personalised, scalable and immersive content, by representing it as a set of individual assets together with meta-data describing their relationships and associations. This allows media objects to be assembled in ground-breaking ways to create new user experiences.

ORPHEUS is a H2020-funded EU project involving ten European major players –broadcasters, manufacturers and research institutions. During a 30-month project, we develop, implement and validate an object-based end-to-end media chain for audio content. We are running two pilots to demonstrate both linear and non-linear audio experiences using a custom-built broadcast chain. The first pilot was a live radiobroadcast with enhanced functionalities, including immersive sound, foreground/background control, language selection, and in-depth programme metadata.

To encourage the support of the broadcast industry in adopting this new technology, ORPHEUS is working towards the publication of a reference architecture and general guidelines for successful implementation of object-based audio in a real-life broadcast environment.

The following achievements have been made during the course of the ORPHEUS project so far:

- **CREATION:** Various object-based content productions completed by BR and BBC
- **PRODUCTION:** a variety of capturing, analysing, editing and mixing tools for object-based audio by partners FHG IIS, b<>com, IRCAM, as well as a fully ADM-compatible SEQUOIA DAW by partner MAGIX ORPHEUS AUDIO PROJECT – IBC 2017 Paper 8
- **PLAYOUT:** prototype of fully IP-connected radio studio with implemented object-based features by partner BBC R&D implementing technology by FHG IIS and MAGIX
- **DISTRIBUTION:** content server with encoding capabilities for object-based audio ADM plus PCM/AAC audio streams as well as MPEG-H by FH IIS, BBC R&D, IRT
- **RECEPTION:** implementation of object-based audio decoding and reproduction in browser, iOS app and CE AV-receiver by Elephantcandy and Trinnov, IRT and BBC R&D

The ORPHEUS project demonstrates the advantages of object-based media as an innovative, universal and consequent approach for media production. It also positions this technology as an essential component for emerging cross-media demands, being integrative, scalable and



genuine IP-based. Moreover, it is capable of supporting the transition from linear to non-linear, and both on-air and on-demand listening, using broadcast and IP technology.

ORPHEUS publishes the project deliverables and the reference architecture guidelines on how to implement object-based audio chains on their website at <http://orpheus-audio.eu/public-deliverables/>.

More information: <https://orpheus-audio.eu/>

REVEAL (Coordinated by Intrasoft International SA)



REVEAL project aimed to advance the necessary technologies for making a higher level analysis of social media possible, thus enabling users to reveal hidden 'modalities' such as originality, trustworthiness, reputation, proximity, influence or credibility of information etc.

Not able to extract key elements and to summarize the project.

More information: <https://revealproject.eu/>



This project introduces the concept of User Centric Networking (UCN), which is a new paradigm leveraging user information at large to deliver novel content recommendation systems and content delivery frameworks. UCN recommendation and content delivery systems leverages in-depth knowledge about users to help them find relevant content, identify nearby network resources and plan how to deliver the actual content to the appropriate device at the desired time. These systems also account for influences from users' social networks on their content consumption. The goal of this project was to design a UCN system architecture for user-centric connected media services.

UCN delivers solutions that contribute to the well-being of the European citizens through ubiquitous access to content. UCN technologies and solutions for privacy preserving data collection and exchange protect the privacy of the users and households and at the same time reduce the risk of leakage of end users' highly sensitive personal information.

UCN helps to rebuild the trust in the use of personal information by the network service providers. The monitoring tools and the ability to control the amount of private data exposed to 3rd parties, puts the end user back into control of its publicly available profile data.

More information: <https://usercentricnetworking.eu>

VISUAL MEDIA (Coordinated by Brainstorm Multimedia S.L, Spain)

(Product name: ONMEDIA) - VISUALLY ENGAGING SOCIAL TV CONTENT



OnMedia is an end-to-end, cloud-based solution to create visually engaging Social TV content based on social media feeds.

While television has always been considered a social media, the arrival of internet social media platforms allowed for a deeper interaction between broadcasters and their viewers, who talk freely on the internet about programs and constantly drive opinions about what they are watching on the TV, creating a sort of interactivity because of the conversations. Shows are now proud of becoming trending topics, and broadcasters can take advantage of the social listening tools to improve their audience data, enhance their content in real-time and, above all, vastly improve audience engagement by providing visually advanced imagery to display social content.

OnMedia helps broadcasters to enhance their programming content to drive higher audience ratings and foster loyalty from their audiences, providing a unique, end-to-end solution for social graphics management. OnMedia allows producers, journalists and editorial teams to gather, moderate and build engaging real-time 3D graphics content where simple creative changes can be made in a single interface quickly and easily, even while on-air.

OnMedia is an integrated, stand-alone, modular application which makes it easy to search, filter, publish, visualize and engage with content from the audience. Integrates editorial systems for aggregating and moderating live social content with real-time 3D graphics capabilities to present such data in the most attractive manner, and enhancing the information displayed. On top of that, OnMedia is a flexible, scalable and cost effective solution which can adapt to complexity and needs of each broadcaster. OnMedia allows end-to-end social content management, customization, and publishing to both 3D TV graphics and second screen environments. OnMedia goes far beyond the requirement for displaying live social data in dynamic TV formats, but also provides a missing production flow in traditional broadcast environments.

Never.no gathers the information across the network (feeds, hashtags, polls, etc), generates the structured information out of selected criteria (kind of information, geolocalization...) and then makes this information available for Aston, which then uses the power of its 3D render engine to deliver proper visualization of the data. This takes advantage of Brainstorm's extensive experience in delivering attractive, real-time data driven graphics in high pressure broadcast environments.

OnMedia integrates both neverno's and Brainstorm technologies, delivering all the power of its 3D Graphics Engine to display the information gathered and structured previously from



the internet. The Social Media Engine can select the information, edit the graphics template, publish it and send the graphics to any broadcaster's workflow, or play them out to air directly. This allows broadcasters to deliver structured social media information to air independently from other graphics applications, with the ability to select which information is to be displayed and decide to show it on the main screen or to second screen or mobile applications.

The scalability of OnMedia means it can be adapted to the needs of local and regional TV stations, national broadcasters and production houses. The out-of-the-box solution is a powerful component of the production workflow which avoids expensive use of other resources.

KEY FEATURES

- State of the art integrated 3D graphics system with social publishing capabilities.
- Manage user-generated content from a range of social media sources such as Facebook, Twitter or Instagram.
- Easily deploy 3D enhanced social media graphics in AR/VR environments.
- Select, customise, preview and trigger graphical templates within the interface.
- Scalable, modular solutions to adapt to any broadcaster.
- Lens tracking system.
- Live polling.
- Gesture recognition system to manipulate the social media graphics.
- Second screen solution completely integrated with the social media engine.
- Marker based tracking system for virtual studios as a cost effective tracking system.
- Compatible with Analytics and social monitoring applications.

More information: <http://www.visualmediaproject.com/>

II. European Ecosystems & Competences

II.1 Methodology and justification of the focus

The VITAL MEDIA project aims at establishing a European community in the area of convergence and social media. To do so, the consortium decided to lean on the NEM (New European Media) Initiative and benefit from its already existing community and actions to reach out to the general public.

A lack of NEM members in the central and eastern countries (e.g. Hungary, Lithuania, Poland, Czech Republic, Bulgaria, Slovak Rep, Latvia, Croatia, Estonia) has been apparent. Most of them have less than 10 members involved in NEM Initiative. It has resulted in focusing on these regions. This geographic region of Europe represents a large part of creative industries, economic and creative potential which has been identified as one with high integration opportunities. Therefore, the VITAL MEDIA consortium decided to concentrate its efforts on these countries to fully explore the related potential and existing possibilities. In order to have a more efficient strike force, the VITAL MEDIA consortium decided to select [ambassadors](#) in these regions to act on a local level.

Moreover, the map of the running and past projects has shown that these regions are not taking part in the projects and Western Europe seems to be more active in NEM Initiative and projects. Therefore, the following section focuses on certain countries in order to point out the potential of these countries in Media and Cultural Creative Industry sector.

The focused countries are:

- Bulgaria
- Croatia
- Cyprus
- Estonia
- Hungary
- Ireland
- Latvia
- Lithuania
- Malta
- Poland
- Romania
- Slovakia

The following data is based on wide sector sources like Clusters, National Contact Points, Regions & Economic agencies, Creative Europe Desks, NEM Ambassadors and Desk research. Despite providing a template to various sources and requesting specific data, only 7 templates out of 13 countries were completed. In addition, it must be specified that data is

missing due to various reasons, some are available at fee or the sources have not replied by the end of the final writing of the handbook.

Furthermore, this section provides a European overview with general data on:

- Number of companies in the sector (start-ups ecosystem)
- R&D expenditure in the media sector
- Jobs in the media sector
- Large companies in the media sector
- Investors in the media sector
- Snapshot of opportunities / challenges of the media sector at European level

Following the European overview of general data, a section was dedicated to the Central and Eastern countries with the same data:

- Map highlighting the most active regions in the media area
- Data on number of companies in the sector (start-ups ecosystem)
- Data on R&D expenditure in the media sector
- Jobs in the media sector
- Big Companies in the media sector
- Investors in the media sector
- Snapshot of opportunities / challenges of the media sector

II.2 European overview

MEDIA & CCI KEY FIGURES



EU



22 big media companies



Approximately 14,279 media companies




167 Main Investors Since 2018



N/A



N/A

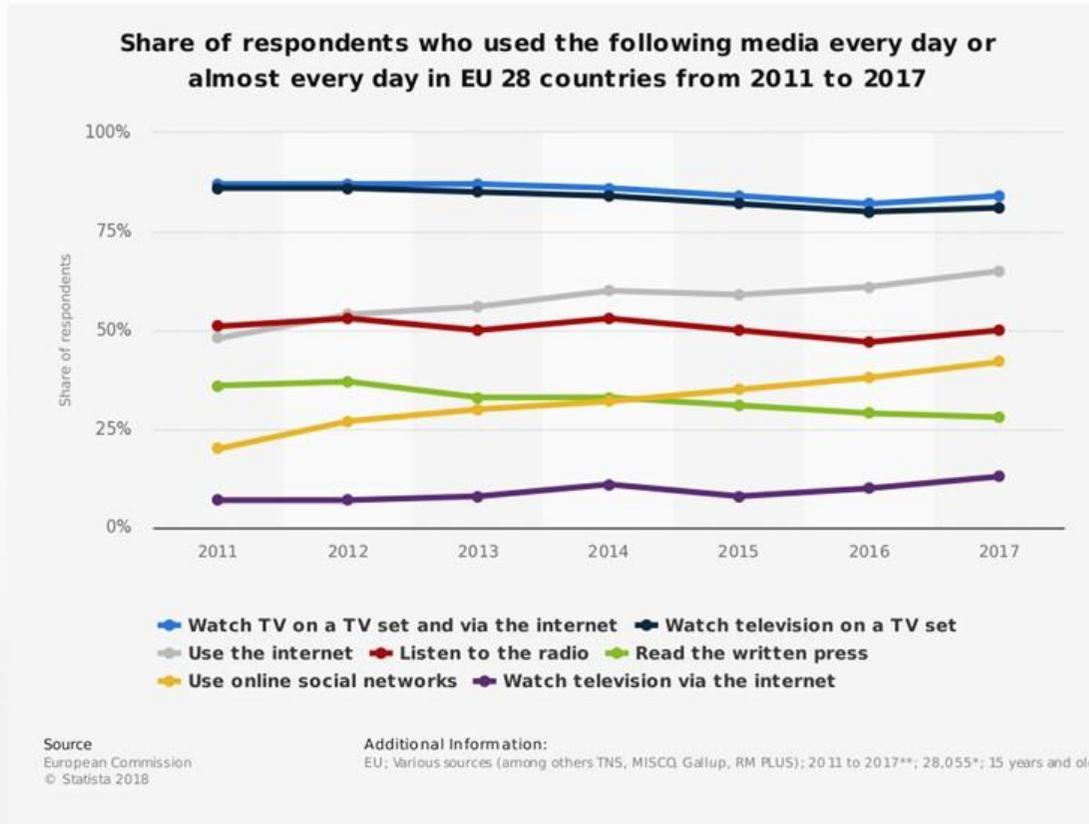
MOST ACTIVE REGIONS

London, Paris, Berlin, Amsterdam and Milan

MEDIA & CCI KEY FIGURES



EU



Opportunities

- Enterprise development
- Consumer-centric businesses can find audiences more engaged
- Seemingly unprecedented choice of free content
- Flexible collaboration and moulding of payment models around consume desires
- Use of cutting edge technology to increase market share and generate growth

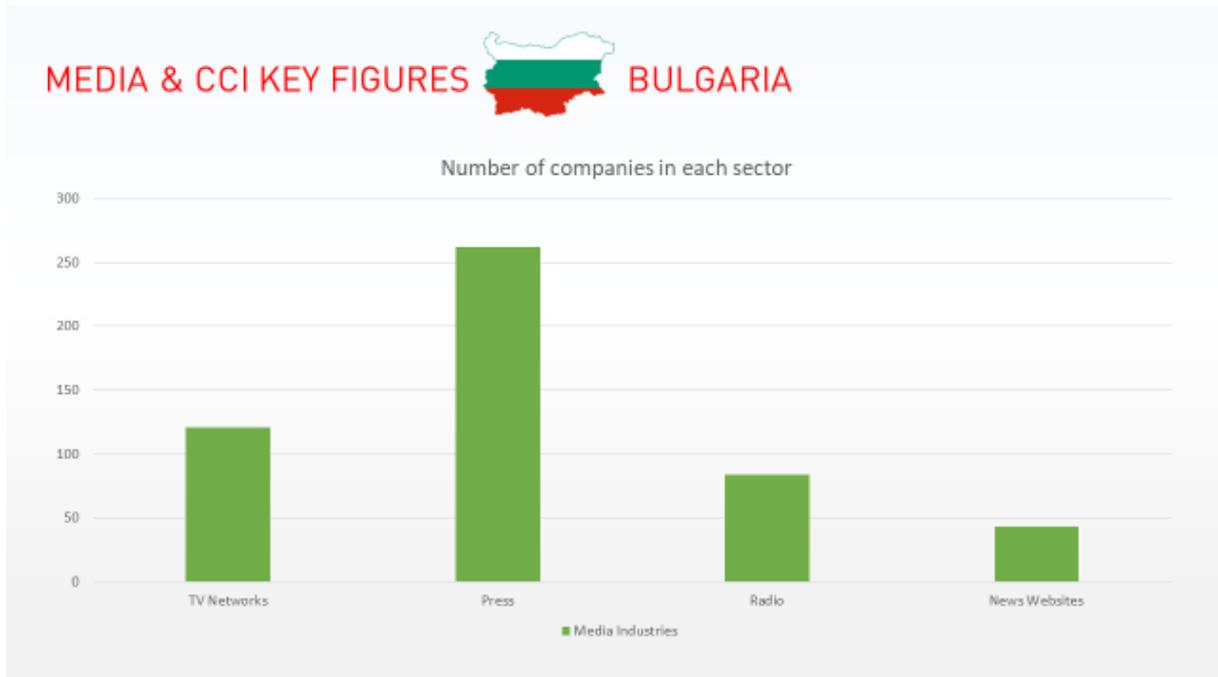
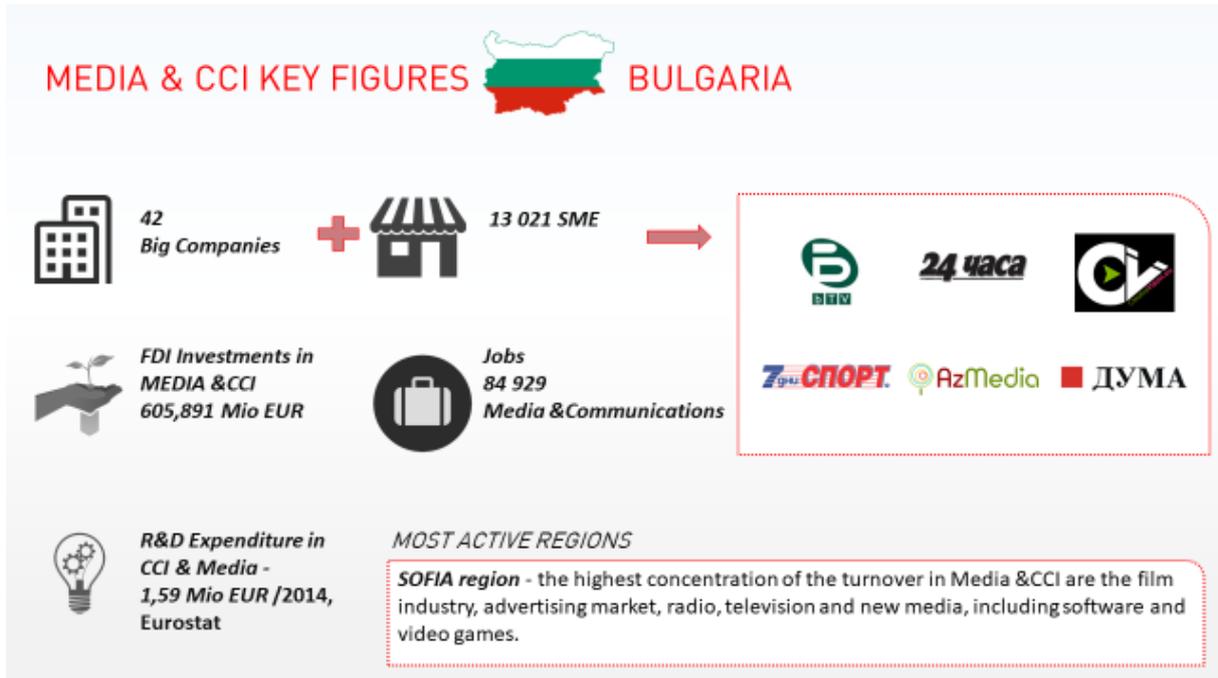
Challenges

- Some parts of Europe are struggling to capital on digital's potential
- Large media conglomerates dominate and make it more difficult for smaller startups
- Investigative journalism is becoming rarer
- Brexit creates global instability
- Misinformation crisis

II.3 Focus on targeted countries

- [Bulgaria](#)
- [Cyprus](#)
- [Estonia](#)
- [Ireland](#)
- [Malta](#)
- [Poland](#)
- [Romania](#)

Bulgaria⁵



⁵ Trust in TV, Radio and Internet as media providers in BG -

http://www.amic.media/media/files/file_352_1042.pdf

An overview of Media landscape-

http://cadmus.eui.eu/bitstream/handle/1814/46789/Bulgaria_EN.pdf?sequence=1&isAllowed=y

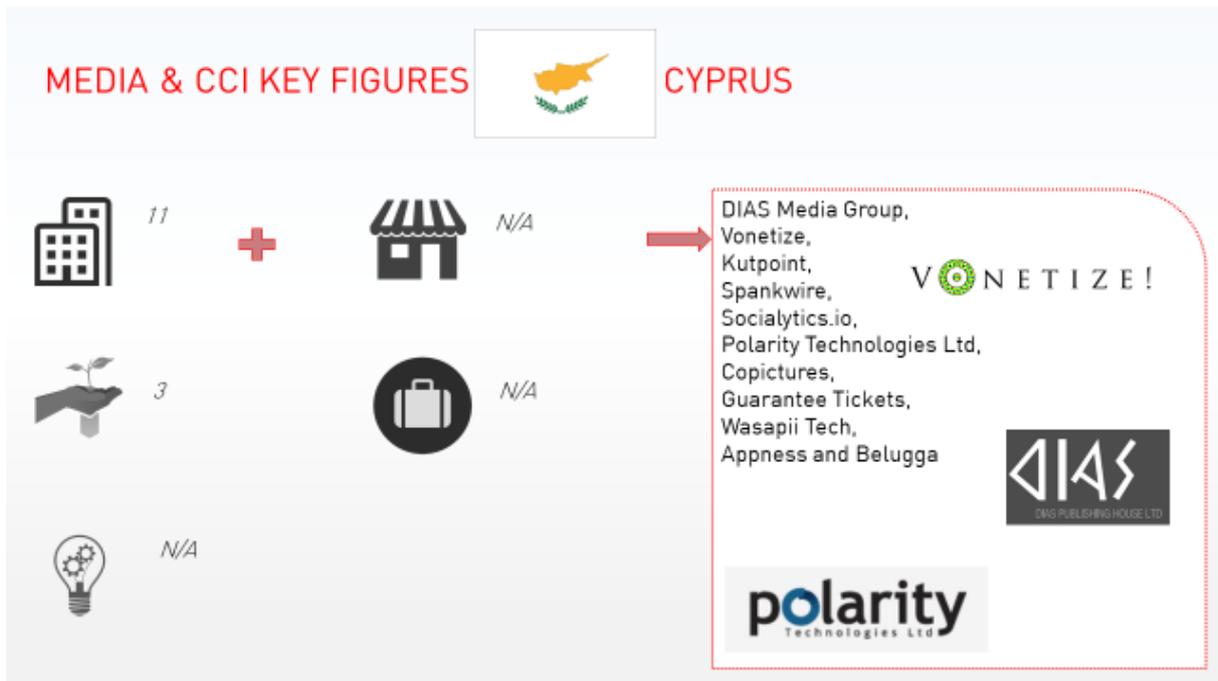
Case study – Sofia as center of CCI in Bulgaria - http://www.sofia2019.bg/sites/default/files/CCI_EN.pdf

TV Network:

- Number of TV Networks – 121 (2016) data NSI
- Total revenue (Turnover) for TV Network sector - 214 358 100 EUR (2016) data NSI
- Income from advertisements – 108 572 830 EUR (2016) data NSI

Radio:

- Number of Radio stations – 84 (for 2016) NSI
- Total revenue (Turnover) for Radio sector – 35 170 230 EUR (for 2016) NSI
- Income from advertisements – 11 880 380 EUR (for 2016) NSI
- Number of Press – 262 (for 2016) NSI
- News Websites – 43 (for 2017) NSI
- Use of Social Networks 50% 2017 Eurostat (% of individuals aged 16 to 74 using Internet to connect to SN)



Data on R&D Expenditure in Media Sector:

This data was not available when any of the sources or experts were consulted

Number of companies in the sector:

This data was not available when any of the sources or experts were consulted

Jobs in media sector: senior media buyer, marketing executive, marketing & social media officer, content writer, graphic designer, cinematographer, social media manager, VP marketing, marketing assistant, customer support, web content writer, account manager, media manager, head of marketing, dubbing, subtitling coordinator, media buyer and creative writer.

Big companies in the media sector: DIAS Media Group, Vonetize, Kutpoint, Spankwire, Socialytics.io, Polarity Technologies Ltd, Copictures, Guarantee Tickets, Wasapii Tech, Appness and Belugga

Investors in the media sector: Fastlane Ventures, Run Capital Investment Fund and Wargaming



Snapshot of opportunities:

- Unprecedented choice of free content
- Opportunity to collaborate flexibly and mould payment models around consumer desires.⁶
- Use of cutting edge technology to increase market share and generate growth.⁷

Snapshot of challenges:

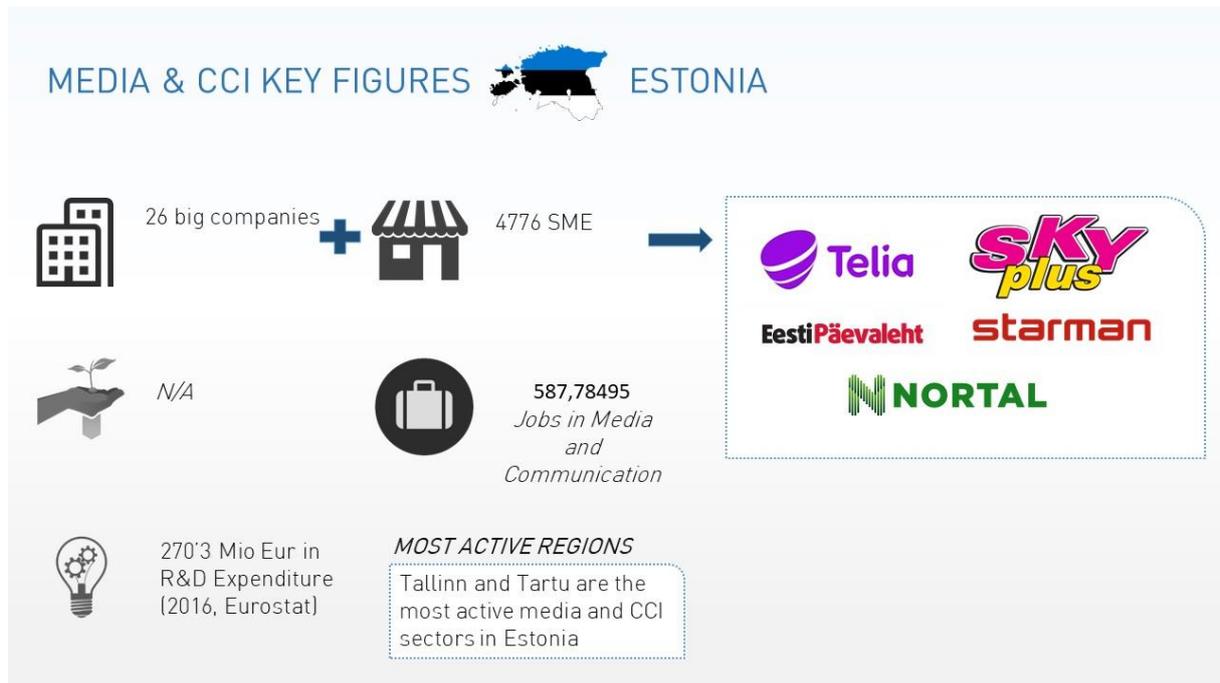
- Strong competition in the Cypriot entertainment and media sector because of the rise of the internet and the appearance of new players in the local and foreign market, increasing the need for innovation and investment in new technologies, together with reducing costs.⁸
- Brexit is also deemed as a threat by Cypriot media companies, global stability and versatility impact Cyprus tremendously.⁹

⁶ Entertainment, Media, Communications & Technology". 2018. Pwc.
<https://www.pwc.com.cy/en/industries/entertainment-media-communications-technology.html>.

⁷ Ibid

⁸ Ibid

⁹ Ibid



Data on R&D Expenditure in Media Sector:

This data was not available when any of the sources or experts were consulted. However the total R&D expenditure in Estonia totaled 270'3 Mio Euro in 2016. (Eurostat)

Number of Companies in the sector:

4.802

Jobs in the media sector:

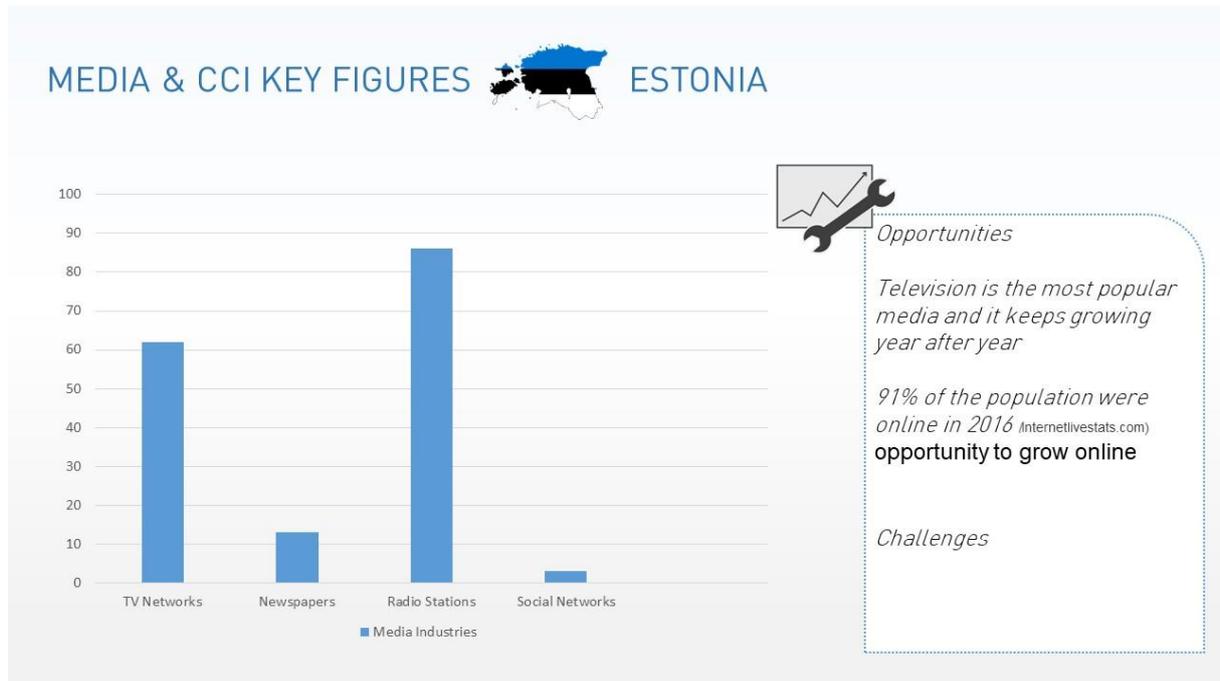
Audio engineer, editor, graphic designer, graphics coordinator, video editor, broadcast engineer, digital marketer, media planner, web content manager, web designer...

Big companies in the media sector:

Telia, Sky Media Group, Nortal, Eesti Paevaleht, Delfi, ETV, Starman, Postimees...

Investors in the media sector:

This data was not available when any of the sources or experts were consulted.

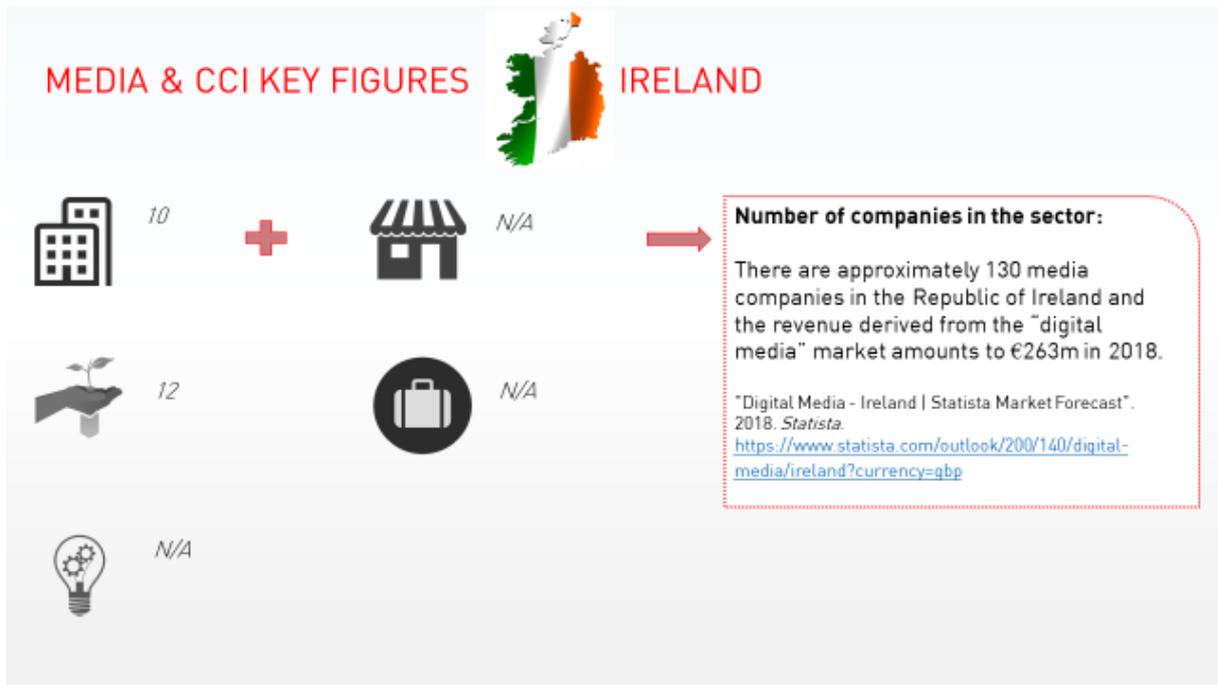


Snapshot of oportunities:

- E-stonia: Named the most advanced digital society in the world. Estonia also has one of the most effective digital business environments.
- The potential move to Estonia of media channels currently based in the United Kingdom
- The media sector is rapidly growing in Estonia. It is characterized by a surprisingly large number of broadcast outlets for the country's small population.

Snapshot of challenges:

- Traditional media has experienced a decline over the past years. Especially in print media.



Data on R&D Expenditure in Media Sector:

This data was not available when any of the sources or experts were consulted¹⁰¹¹

Jobs in the media sector:

advertising copywriter, broadcasting presenter, broadcasting production assistant, broadcasting researcher, copy editor, editor in publishing, graphic designer, information officer, interpreter, journalist (radio or television), reporter, lexicographer, archivist, librarian, curator multimedia writer, newspaper, producer, proofreader, public relations officer, press officer, screenwriter, technical writer, translator, web designer, developer, web editor and writer.¹²

Big companies in the media sector:

RTE, Core Media, Wireless Group, Independent News & Media (INM), Carat Ireland, EMND, Communicorp, The Irish Times, OMD Ireland, Irish International.¹³

Investors in the media sector:

¹⁰ This figure is available at a fee from <https://enterprise-ireland.com/en/> However, when consulted Enterprise Ireland did not respond in time with a quote.

¹¹ Cork and Dublin are the most active media sectors in Ireland. Though Limerick has fewer companies than Cork, they raised more funding.

¹² "Opportunities With Irish In The Media & Publishing Sector | Careersportal.ie". 2018. *Careersportal.ie*. https://careersportal.ie/sectors/irish_skills.php?sector_id=20#.Ws4LGtPwarc.

¹² "The Top Media And Marketing Companies On Top1000.ie". 2018. *Top 1000*.

¹³ "The Top Media And Marketing Companies On Top1000.ie". 2018. *Top 1000*. <http://www.top1000.ie/industries/media-and-marketing>.

AIB Seed Capital Fund, DCU Ryan Academy for Entrepreneurship, Enterprise Equity, Tribal.vc, Dublin Business Innovation Centre, NCB Ventures, Bank of Ireland, Bloom Equity, Brian Caulfield, Independent News and Media, Kantar Media and Bill Liao.

MEDIA & CCI KEY FIGURES



Opportunities

- Huge potential for the digital media industry
- Consumer-centric
- Media and entertainment
- County Louth

Challenges

- The digitalisation of Irish newspapers
- Connectivity and geography
- Brexit
- The concentration of Irish print media



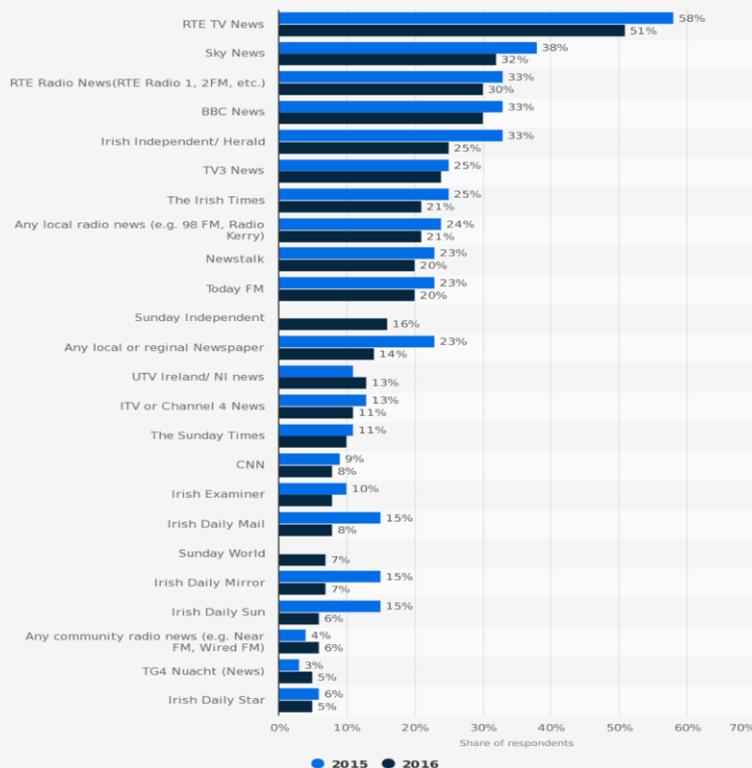
IRELAND

MOST ACTIVE REGIONS

Cork and Dublin are the most active media sectors in Ireland. Though Limerick has fewer companies than Cork, they raised more funding.



Most popular traditional news brands and broadcasters in Ireland in 2015 and 2016



Sources
Reuters Institute for the Study of Journalism;
Broadcasting Authority of Ireland; Institute for
Future Media & Journalism
© Statista 2018

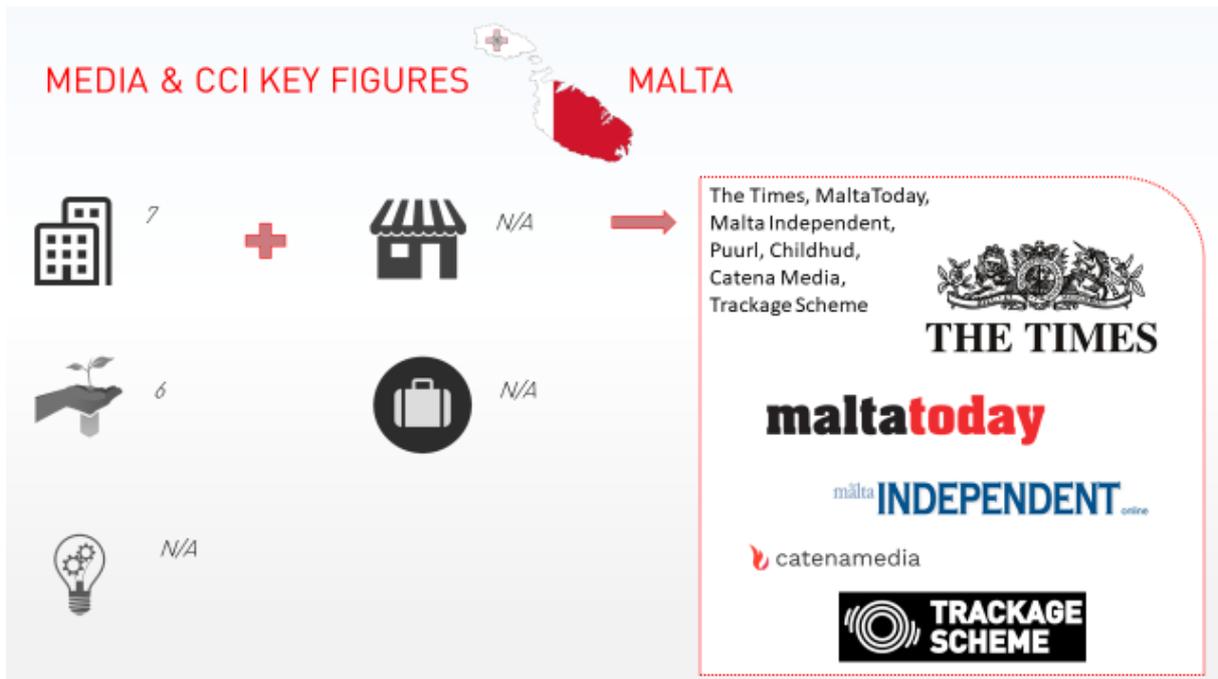
Additional Information:
Ireland: Statista; Institute for Future Media & Journalism; January 29 to February 17, 2017

Snapshot of Opportunities:

- Huge potential for the digital media industry to contribute to enterprise development and encourage high value employment.
- Amy Ball (PWC) states that, “businesses that are consumer-centric will find themselves with audiences that are more engaged, more loyal and spend more per capita. To thrive in the experience-driven marketplace characterised by our latest outlook, companies need to attract and harness the economic, social and emotional power of their consumers.”
- Enterprise Ireland has identified media and entertainment as one of the three areas presenting growth opportunities over the next three years. They identify internet protocol television (IPTV), user generated content for cross media platforms and interactive programming.
- Louth represents a significant opportunity in this space, as it benefits from low costs, a good quality of life and proximity to the capital city, as it raised more funding than Cork.

Snapshot of Challenges:

- Irish newspapers have yet to capitalise on digital’s potential, as publishers continue to be challenged to monetise online and digital revenues (daily circulation is projected to fall to 392,000 by 2021).
- Connectivity and geography is also a big problem, as Donegal suffers due to its distance from Dublin, Kildare struggles under the shadow of Dublin.
- Brexit is seen as a major challenge for media companies in Louth and Donegal.
- Irish print media is concentrated into few hands.



Data on R&D Expenditure in Media Sector:

This data was not available when any of the sources or experts were consulted

Number of companies in the sector:

This data was not available when any of the sources or experts were consulted

Jobs in media sector:

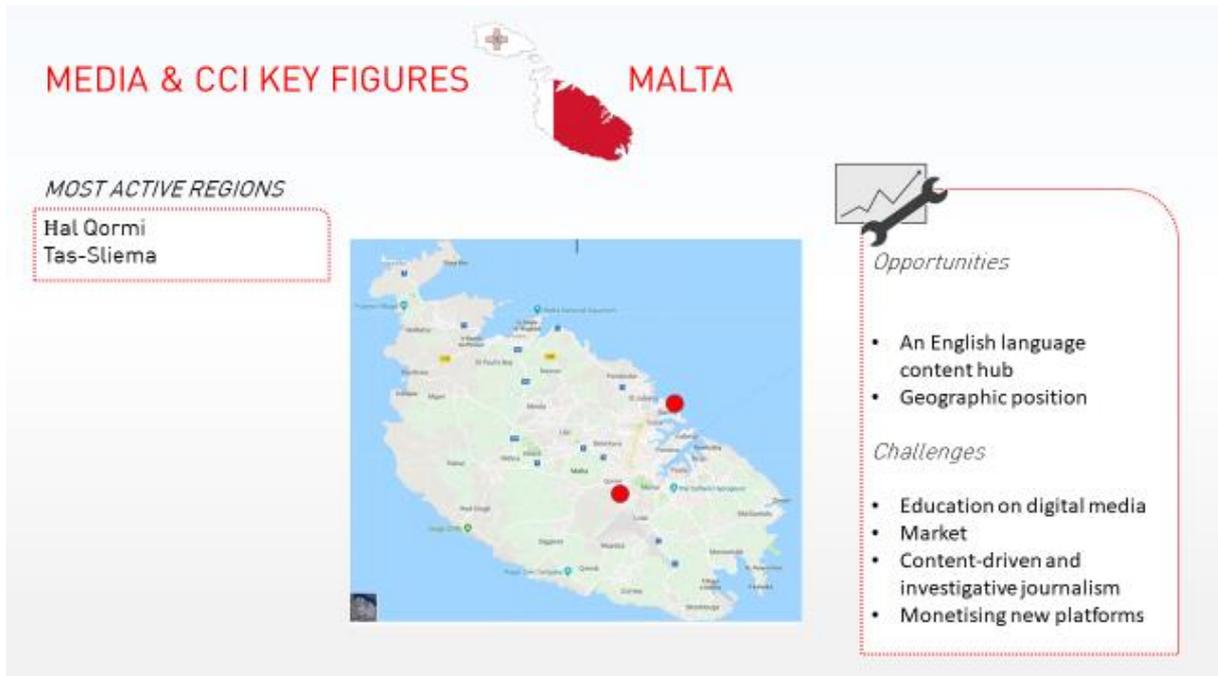
print media specialist, production specialist, graphic designer, SEO specialist, social media manager, video production specialist and audio production specialist

Big companies in the media sector:

The Times, MaltaToday, Malta Independent, Puurl, Childhud, Catena Media, Trackage Scheme

Investors in the media sector:

Apeiron Investment Group, Tom Horsey, Brait, Johan Styren, David Tabizel and Yinni Gottlieb



Snapshot of opportunities:

- There is a definite opportunity for Malta to be a content hub, as specialist content production houses for the iGaming sector have already moved into Malta (driving traffic and managing websites for the large number of iGaming companies operating from the island).¹⁴
- Malta could also position itself as the ideal outsourcing base for international companies (lower cost base than media hubs such as London or Berlin).
- To capitalise on these two opportunities, there is a need for more writing programmes and modules at educational institutions that focus on digital media.

Snapshot of challenges:

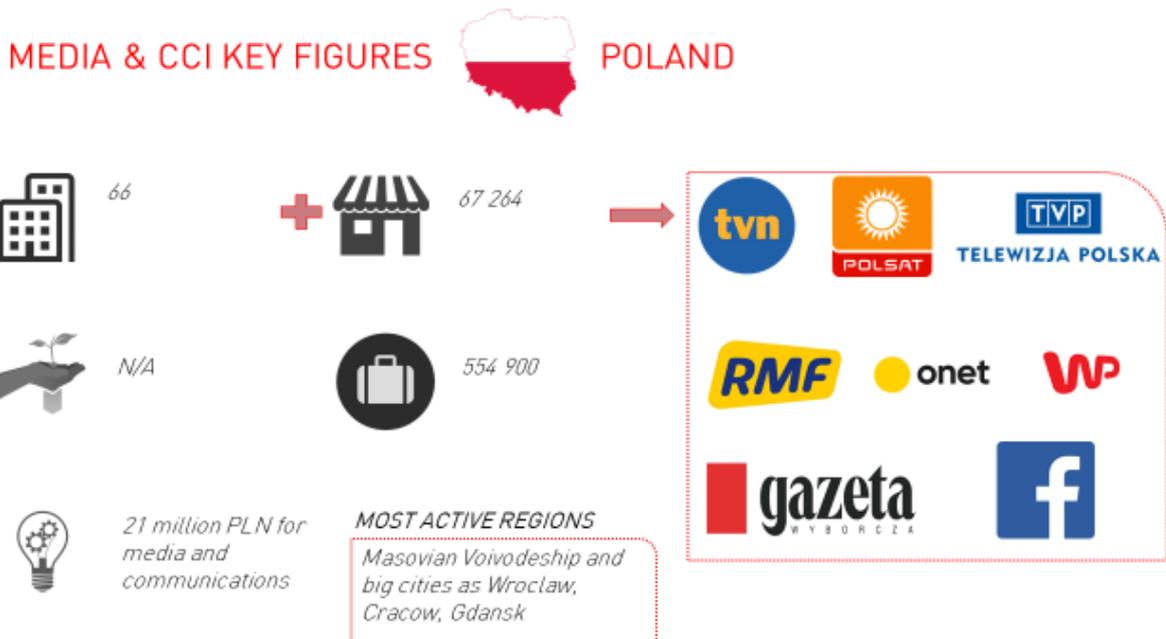
- Market has remained relatively static in recent years, without many new entrants.¹⁵
- Content-driven and investigative journalism are becoming rarer.¹⁶
- Monetising new platforms and bolstering audience bases.¹⁷

¹⁴ Digital Media Sector Profile & Industry Insights - Maltaprofile.Info - Maltaprofile.Info". 2018. *Maltaprofile.Info*. <https://maltaprofile.info/article/digital-media>.

¹⁵ Ibid

¹⁶ Ibid

¹⁷ Ibid



There are no direct data about Media and CCI sector. All data was based on the code of classification of business activities in Poland (PKD). Therefore, we had to select which codes are relevant and conclude what it is the closest of the market. The limit of this method is the data is not precise because sometimes those codes are too generic.¹⁸

Data on R&D Expenditure in Media Sector:

21 million PLN¹⁹ for media and communications are invested in R&D in Media sector.

Number of companies in the sector:

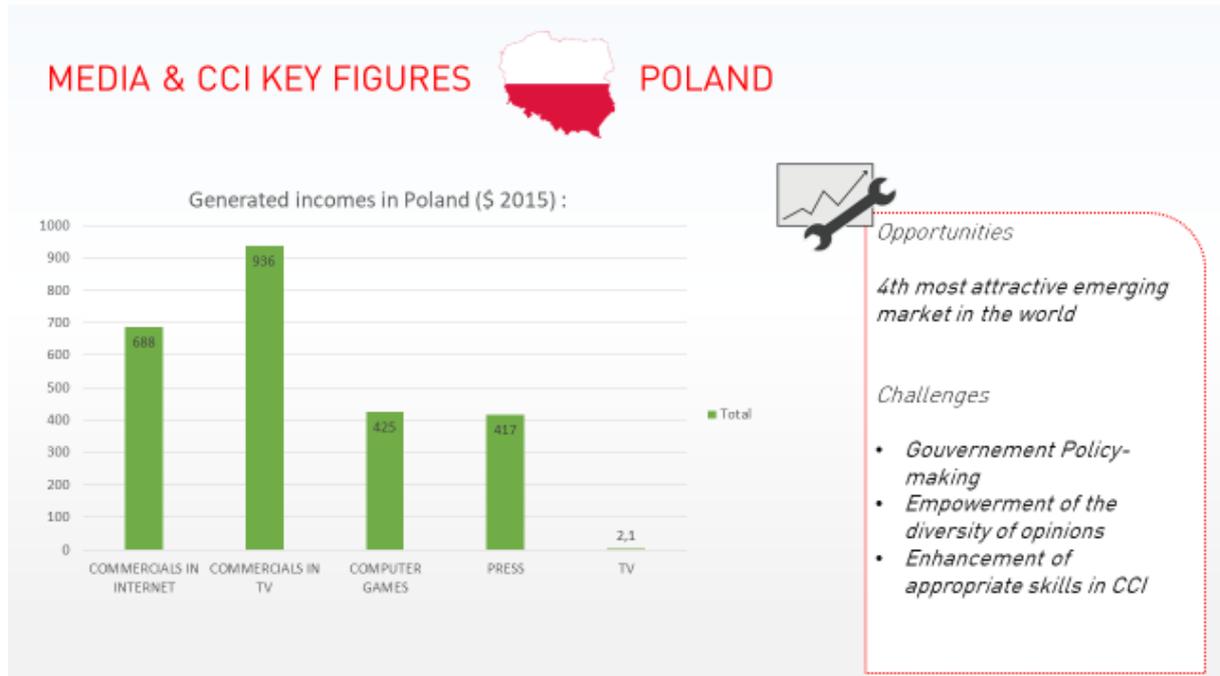
There are 66 big companies and 67 264 SMEs active in the media and CCI sectors.

Investors in the media sector:

This data was not available when any of the sources or experts were consulted

¹⁸ All the data from slide 1 is from the Central Statistical Office

¹⁹ It is about 4,9 million € <https://www.xe.com/fr/>



Snapshot of opportunities:

- There is a definite opportunity for Poland to be ranked 4th in the ranking of the most attractive emerging markets in 2028.²⁰ It may give new possibilities to boost the economic growth and might produce new changes in media sector.

Snapshot of challenges:

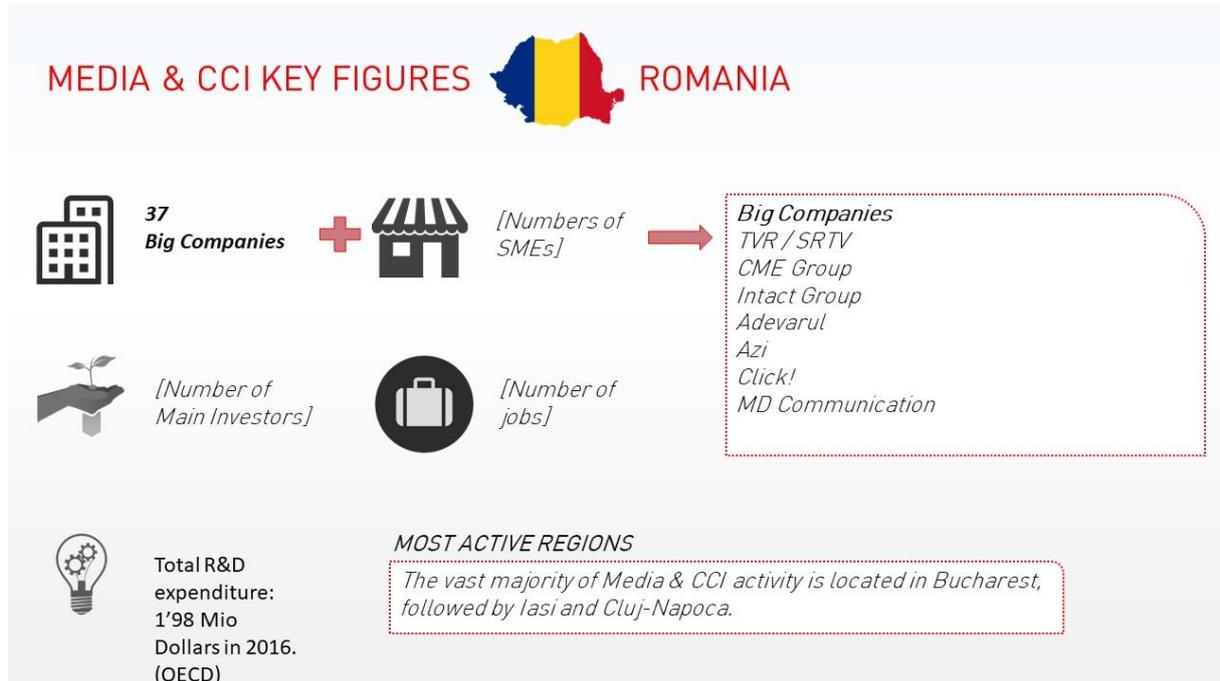
- Government Policy-making : a political crisis has results on attacks both public and private media (about 230 journalists have been dismissed or left) which has been questioning the veracity of news stemming from the Government.²¹
- Empowerment of the diversity of opinions: there is a conflict between media and the Polish government to stay independent and keep their freedom²²
- Enhancement of appropriate skills in CCI: the profile of workforce in CCI has a crucial lack of communication, entrepreneurial and marketing skills.²³

²⁰ <http://wbj.pl/bloomberg-poland-is-the-4th-biggest-emerging-market/>

²¹ <http://www.digitalnewsreport.org/survey/2017/poland-2017/>

²² <https://freedomhouse.org/report/special-reports/assault-press-freedom-poland>

²³ <http://www.artenprise.eu/the-needs-of-cci-employers-and-companies-in-poland/>



Data on R&D Expenditure in Media Sector:

This data was not available when any of the sources or experts were consulted. However the total R&D expenditure in Estonia totaled 1'98 Mio Dollars in 2016. (OECD)

Number of Companies in the sector:

This data was not available when any of the sources or experts were consulted.

Jobs in the media sector:

Social media specialist, community manager, online PR consultant, web copywriter, digital head, social media analyst, web content executive, java developer, graphic artist, graphic designer, interface designer, data manager, Audio engineer, video editor, broadcast engineer

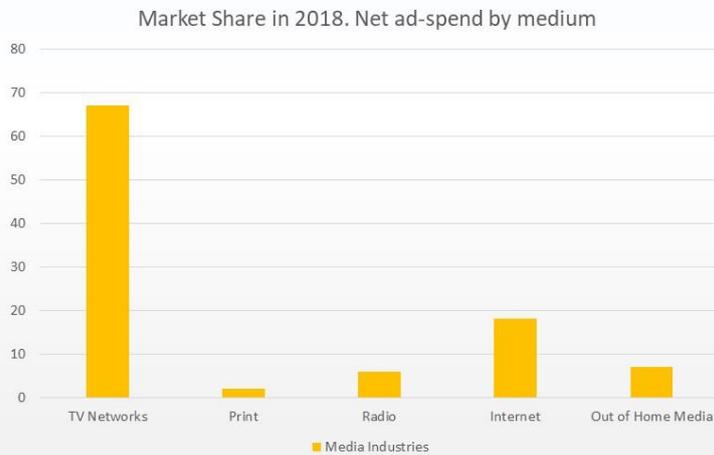
Big companies in the media sector:

TVR / SRTV, CME Group, Intact Group, Adevarul, Azi, Click!, MD Communication

Investors in the media sector:

This data was not available when any of the sources or experts were consulted.

MEDIA & CCI KEY FIGURES ROMANIA



Opportunities

Romania's media market is very promising. The TV network market is constantly increasing. Social networks and print papers transitioning to digital are creating many opportunities

Challenges: Media market concentrated in very few hands.

Snapshot of opportunities:

- Rapid growth since 2015
- Potential for growth in digital media
- Low tax, low cost of life
- Most dynamic media market in Eastern Europe

Snapshot of challenges:

- Media ownership is concentrated in only a few hands
- Censorship. There is not direct censorship in Romanian media however self-censorship is common.

II.4 Analysis of data

Overview:

To sum up, 37 European projects were identified as being media convergence projects.

25 are currently running projects - projects which will end after June 2018 - and 12 are ending by the end of June 2018. This has shown that the most active European regions in media convergence projects are mostly located in Western regions.

The running projects are essentially located near the European Megalopolis, around London, Paris, Barcelona and Lyon. In total 156 entities were identified as active stakeholders in media convergence projects. 36% of the entities running one project are concentrated in the blue banana area²⁴. The entities which are running more than 1 project (up to 5 projects) are located in the Western and South-Eastern parts of Europe. None of entities in North or Central, Eastern Europe – except Austria - are involved in more than one project in media convergence at the same time.

Funding scheme:

Funding scheme	Number of projects
FP7 project	7
CSA	4
IA	18
RIA	8
Total	37

81% of the identified projects are funded under the H2020 programme whereas 19% are funded by FP7 programme. Innovation Action (IA), Research Innovation Action (RIA) and Coordination and Support Action (CSA) are key in understanding Media convergence landscape. 49% of the projects are IA projects

²⁴ https://en.wikipedia.org/wiki/Blue_Banana

Past projects:

- 1 CSA
- 3 IA
- 1 RIA
- 7 FP7 projects

Running projects:

- 3 CSA
- 15 IA
- 7 RIA

Another example which reinforces the strong involvement of some regions more than others is that the same stakeholder can be active in more than one project as a partner as well as a coordinator. DE VLAAMSE RADIO EN TELEVISIEOMROEPORGANISATIE (VRT) in Belgium is running 5 projects related to the media convergence two of which VRT has the role of coordinator (CPN and Marconi).

In total 34 entities are leading the project as coordinators, mainly the coordinators lie on the Western part of Europe. In addition, it seems that some entities are very active in many projects. BBC and VRT coordinate 2 IA current projects whereas the University of Surrey coordinated 2 FP7 projects.

Focused countries

We intended to provide overall key figures in the field of media and CCI sector. It has emerged difficult to find out relevant key figures for the targeted countries.

Despite this, these regions provide major opportunities for the European growth, competitiveness and media ad CCI sector. To support it, five common main challenges have been faced:

- **Connectivity & Geography:** it is clear that each region has to face the geographic disparity and deal with the cities which facilitate economic growth and attract all sectors to settle down as well as small countries (eg. Ireland)
- **Support of the media** in digital content transformation
- **Enhancement of skills:** to respond to the need of the companies in media sector and maintain the companies in these regions,
- **Brexit:** Brexit causes an uncertainty on the media sector
- **Freedom of media:** some policy makers questions the freedom of information and investigation which jeopardise the democracy for the European citizens.

Conclusion

According to the Article 10 of the European Convention on Human Rights²⁵, everyone has the right to freedom of expression and to access to information. In this context, working on a new converged social media environment in Europe prepares European citizens to the Next Generation of Internet.

The identified projects cover a wide range of fields (TV, WebTV, radio, digital technologies, music, immersive content, AR/VR, media verification, journalism, cybersecurity, accessibility to the deaf and dumb persons, open education...) that reinforce the idea of convergence of media content with various sectors putting the consumer in the centre of attention. In this respect, to remain in the international competition and follow the shift towards the awareness of the end users, namely the transformation towards a personalised, immersive and interactive media and content, media has to integrate the constant changes in the long run strategy.

However, a crucial key point has to be considered: the diversity of media ecosystems has to be preserved in order to boost the innovation and the economic growth on the whole European territory. This encourages the creation of tech start-ups in places where there are no agglomerates of large companies such as Malta and Cyprus.

The identified projects show that the trend of media use will be more consumer-centric and media will easily adapt to people, such as those who have special needs that could be supported by the digital technology. This goes with the idea of digital technologies enabling people to overcome barriers and can make media more accessible. Nevertheless, the Euroscepticism (Brexit, Poland, Hungary) and the control over content driven journalism (Malta) also questions the European cohesion and provokes an apprehension for European projects putting in jeopardy the future of Europe and democracy. If, for instance, journalists cannot provide content driven websites and inform the European citizens about companies and policy making, what role would digital and personalized media play for the next generations? It then forces the stakeholders to enquire about media content as well as the end user awareness and participation.

The key challenge is to bridge the gap between European regions in order to have equal access to media content while keeping up innovation in this sector. On the one hand, large companies, SMEs and research centres, clusters facilitate and support this digital transformation in the media and CCI sector, and on the other hand, the challenges have to be overcome to enable the stakeholders active in the sector to benefit from the opportunities.

²⁵ https://www.echr.coe.int/Documents/Convention_ENG.pdf

Digital technologies have a massive impact on data beyond the traditional borders, and hence, can control information. To ensure innovation and fair economic competitiveness across Europe, the stakeholders are compelled to reflect upon the future of internet, its governance, its monitoring, its security and its accessibility to provide a fair service to all European Citizens.

To take further actions, Central and Eastern Europe have to be considered and be active in European funded projects as well as start-ups in order to diversify the consortiums and ensure the diversity of media ecosystem in the whole European territory. Moreover, the empowerment of the citizens has to be at the heart of the strategy by providing education, training on media and digital tools.

Annex

To start with, the 37 media projects were collected in a database. The projects' database together with the including charts of the SWOT analysis will show how the convergence of traditional and new media in Europe has evolved taking the hot topics in the media sector into account.

How did we proceed?

Based on the 37 projects, one of the main concerns was to define topics, which identified the key areas where transformations were occurring in the media sector while showing the point of convergence of media. From this reflexion, 4 key areas were determined:

Traditional media: This media topic involves projects that address the issue of the transformation of traditional media such as TV, radio or print publications in respect of use, technologies or standardisation. Most of traditional media tend to have more functionalities by using new technologies that are generally more interactive.

New media: Each form of new media is highly interactive, while traditional media is not. Users of new media are active producers of content and information. Therefore, regarding the new media topic, we have identified projects that prioritised the development and support of these new media.

Content Creation: This media topic involve projects that focus on the production, improvement and emergence of new content. Here, the technology comes in support of new ideas and creativity.

Content Distribution: This refers to the delivery of content to an audience through multiple media supports.

What did we want to show?

This combination will facilitate the dynamic cartography of media topics and make the strengths, opportunities, weaknesses and forces of this sector clearer. The result will give a snapshot of the media convergence sector.

How did we want to show the convergence?

When it came to represent the convergence of media, we wanted to quickly visualise how the projects are structured around the point of convergence. Therefore, two charts were realised to present the transformation in the media sector over two periods towards the convergence.

The first chart is representing the “past media projects”. The past media projects refer to the projects from 2008 to 2018 that are accomplished and mostly launched by the FP7 program, whereas the “running projects” gather the media projects, which started in 2015 in the framework of the H2020 program and are still ongoing.

How to read the chart?

Each project is placed on a chart composed of two perpendicular axes including four senses of direction. Each key area is located at the end of the lines. The vertical axis represents the media sector with new media at the top and traditional media at the bottom. The horizontal axis refers to the content area where the content creation (on the right) and content distribution (on the left) are located. The intersection represents the point of convergence of the four key areas.

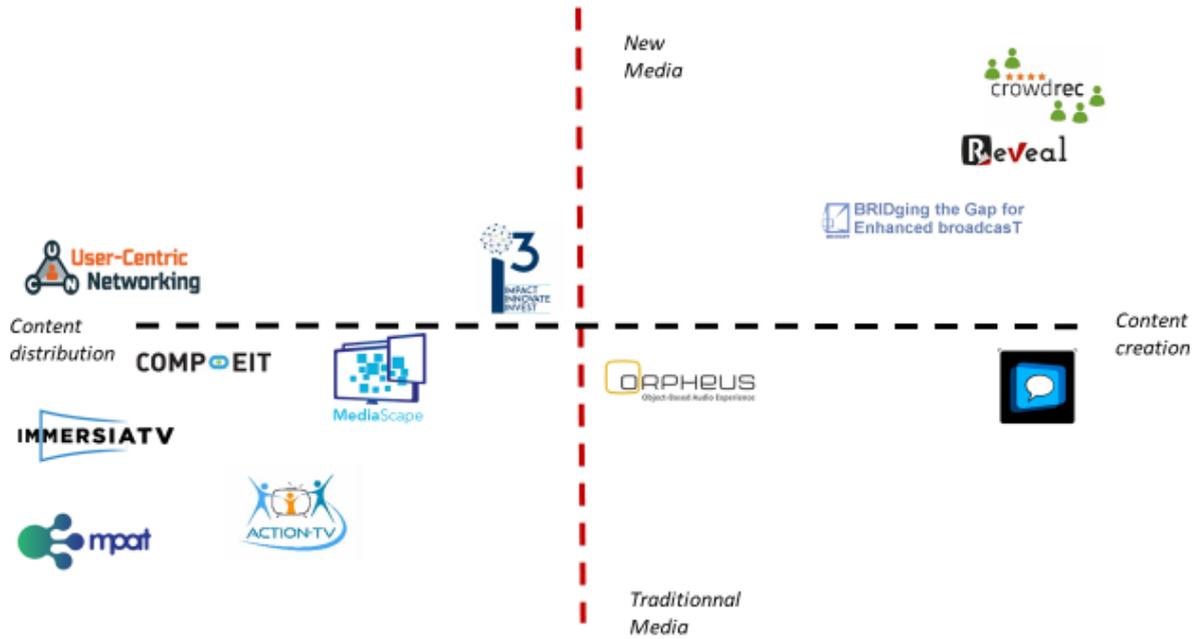
The projects posted at the convergence point are highly convergent since it is difficult to distinguish the four areas and how each key area influences on each of the projects.

Examples:

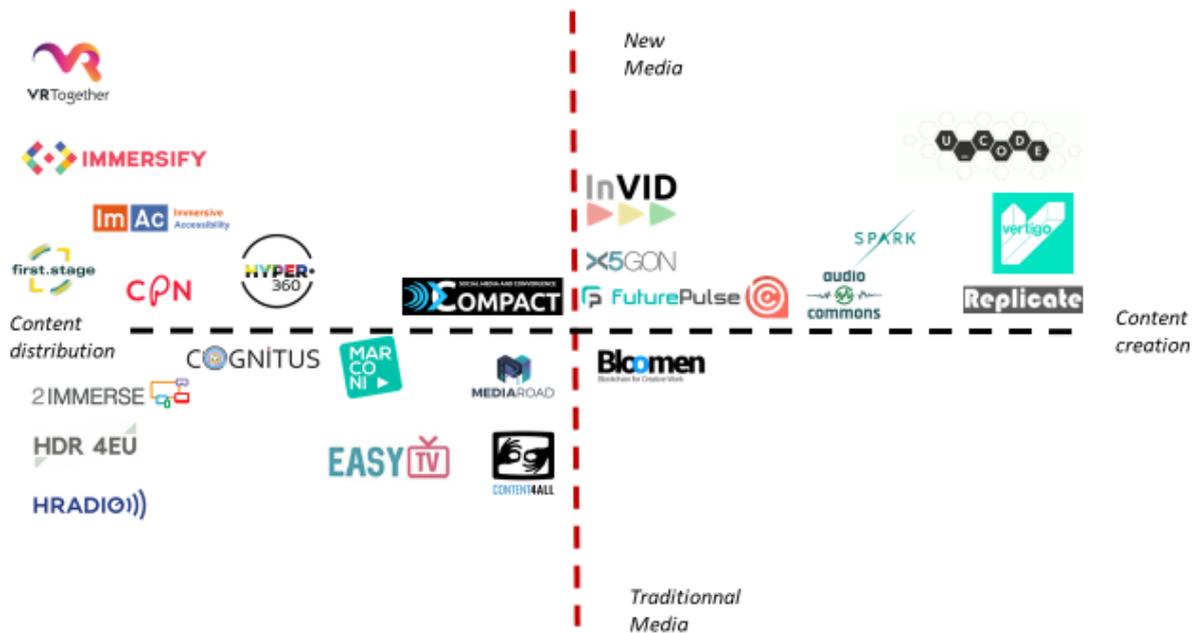
Orpheus project is placed next to the convergence point, the content creation and traditional media. The main impact of the project was on traditional media, because the first pilot was a live radio broadcast (BBC was coordinator). Here the technology enabled to enhance the user experience and create immersive content. In this project, traditional media tended to become more interactive with the support of immersive content. Therefore, we consider this project as highly convergent since the four key areas are integrally linked.

Reveal project is situated at the end of the line content creation and new media. Here the project focuses on media verification due to the rapid spread of fake news on social media. The project enabled users to improve the content by means of tools and services and reinforced the trustworthiness towards journalists and social media. The project was convergent but it does not address itself directly to the sector of traditional media and content distribution, but may have an impact on them. For that reason, we did not place the project near the convergence point.

Cartography of EU media projects from 2008 to 2015



Cartography of running EU media projects



Swot Analyses of traditional, new media and Cultural Creative Industries

Traditional media	Favourable	Unfavourable
Internal	<p>Strengths</p> <ul style="list-style-type: none"> • Great service coverage area for broadcasting (channel of communication already exist) • Most of the audience benefits of a television, radio at home and know how to operate with them. • Content creation: traditional media can produce their own content (movies, series, journalism investigation, audio content...) 	<p>Weakness</p> <ul style="list-style-type: none"> • Can be onerous with regard to operational and production costs (Print, cinema,...) • Content is less interactive (e.g. it does not generate new content with end-users) • Does not enable hypersonnalisation of content
External	<p>Opportunities</p> <ul style="list-style-type: none"> • Investing more in content production/creation for higher quality to share a common story • Synergies with new media (use of new media such as social media to be more interactive, and use the technologies to be more personalised) • Support of R&D projects to the convergence of media (e.g. standardisation of process in media sector) 	<p>Threads</p> <ul style="list-style-type: none"> • Losing younger audience shifting to the new media (youtube, Spotify...) • Missing global regulation seems to boost the companies' growth such as the Web giants (Amazon, Netflix, Google, Apple...). Traditional media is not in capabilities to compete against them without a fairer system. • Budget cuts since 2004

New Media	Favourable	Unfavourable
Internal	<p data-bbox="331 360 450 391">Strengths</p> <ul data-bbox="376 432 1122 608" style="list-style-type: none"> <li data-bbox="376 432 1122 536">• Highly interactive and hypersonnalised. It focuses on user-centric experience by the mean of immersive content and multi-devices. <li data-bbox="376 576 1122 608">• Accessibility at anytime and anywhere to the information 	<p data-bbox="1149 360 1301 391">Weaknesses</p> <p data-bbox="1149 432 1845 496">Need constantly data to improve the services (localisation, hypersonnalisation of content)</p> <p data-bbox="1149 536 2047 600">New media industry reduces the number of journalists (e.g. : USA 68 160 in 2007 to 41400 in 2015)</p>
External	<p data-bbox="331 692 499 722">Opportunities</p> <ul data-bbox="376 802 1093 906" style="list-style-type: none"> <li data-bbox="376 802 1093 906">• New media generates a new market which creates new business model, new content (user generates contents), new skills and career pathway 	<p data-bbox="1149 692 1249 722">Threads</p> <ul data-bbox="1193 802 2040 834" style="list-style-type: none"> <li data-bbox="1193 802 2040 834">• Trustworthiness of information: spread of fake news on large scale

Creative and Cultural Industries	Favourable	Unfavourable
Internal	<p>Strengths</p> <ul style="list-style-type: none"> • It is a rapidly growing economic field with relatively high added value • Cultural Creative Industries (CCI) can create synergies with other sectors 	<p>Weaknesses</p> <p>The main characteristic of CCI is to be a heterogeneous sector which may have negative impacts on :</p> <ul style="list-style-type: none"> • The measurement of CCI sector (e.g the contribution of CCI in the economy growth) • Appropriate CCI development policy due to the diversity of the sector
External	<p>Opportunities</p> <ul style="list-style-type: none"> • Increasing demand for creative products • EU and national support for business and education (culture, press, radio and TV support fund) 	<p>Threats</p> <ul style="list-style-type: none"> • Rapidly changing technologies

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