Scoping The Horizon

Navigating a shifting policy landscape

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Executive Summary

1.0 Creativity in Context

Deeper contextual understanding is required to better navigate the emerging social world

1.1 This report provides a brief and non-exhaustive overview of the shifting policy and funding landscape regarding the Arts and the Cultural and Creative Sector. This involves considering the **general policy and funding landscape and the CCS conditions.** Forthcoming reports also consider **Creativity In Context** and the implications for research and innovation activities, and some of the implementation challenges.

1.1 **Scoping The Horizon** foregrounds the need for stronger contextual understanding at a time when technological changes embed us - our emotions, expectations, expressions - in human-machine-collectives of unprecedented scale. Life and work in complex and multi-dimensional scalable systems also changes the way we approach citizenship. As we move through such systems, our roles are subject to change; if we limit our understanding of stakes (consumer or citizen, state or market or civil society), we will fail to comprehend **the multiple roles we play as we move across value chains and societal sectors**, and engage with each other in and across human-machine networks.

1.3 Recent EU initiatives, such as STARTS (Science, Technology & the Arts) or CAPS (Collective Awareness Platforms) have succeeded in activating independent cultural actors and encouraging them to act as stakeholders addressing science and new technologies in and beyond artistic fields. As a result, an ecosystem has emerged in which the arts have begun to play **a core rather than complementary role in addressing societal challenge**s, and general methodologies for multidisciplinary engagement involving the arts have been tested in a variety of settings.

1.4 In order to build on these outcomes, we need to **close the gap that continues to exist between the experimental approaches common**

across the arts and a focus on technology-centred solutions that continue to characterise both public policy and innovation management in tackling societal challenges. This gap means there has been **insufficient attention given to the contextual aspects of innovation** in tackling societal challenges, as well as a reluctance to reconsider **the narratives steering innovation trajectories** and a wider misunderstanding of **anticipatory assumptions within policy making.**

1.5 We learn from the Arts and Humanities that it is crucial to explore the impact of such changes - and the societal challenges that arise from them - through the lens of individual and collective experience: what impact do these changes have on the ways in which we live, work, and anticipate individual and collective futures? And how can we best position ourselves and organisations in these new socio-technological landscapes? To do so, we must **further examine creative capacities in the context of the collective dimensions of critical engagement, mutual learning, future agency and the design of spaces for collaborative action and generative engagement**.

2.0 Dynamic Policy Landscape

Taken together, a number of recent policy developments are reshaping the funding landscape

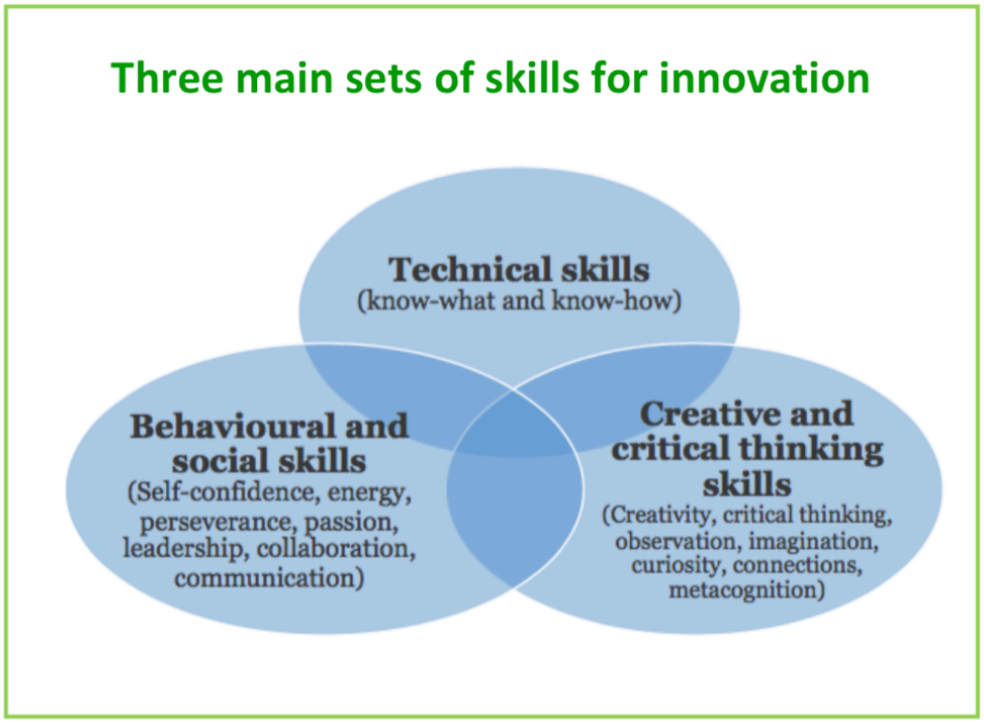
2.1 Over the last two years, there have been several shifts in the policy landscape that are likely to have a strong influence on the direction of research and innovation activities in the next 10 years. The CCS sector is increasingly being considered as an industrial sector by the European Institutions – along with health; security; digital, industry and space; energy, climate and mobility. This report considers some recent developments (Summer 2019) from the following policy areas:

- European Institute of Technology Knowledge & Innovation Communities
- OECD Learning Framework 2030
- OECD Culture & Local Development
- UNCTAD Creative Economy
- OECD Automation, Skills Use and Training
- Horizon Europe

2.2 The **European Institute for Innovation and Technology**, one of the important cross-sectoral instruments of the European Commission to support economic growth, has recommended the establishment of a Knowledge and Innovation Community (KIC) for the CCS sector. With the potential to build on the work undertaken over the last decade on strengthening support for the CCS sector, the proposed KIC-CCS is also rooted in earlier foresight studies where it was noted that for transformative research and innovation to occur, there is significant need to establish collaborative contexts and citizen-based participatory ecosystems where, for example, policy experimentation for market creation and new knowledge systems for socio-economic ends might thrive.

Such a KIC-CCS would "…*provide researchers and students in many disciplines (including arts, culture, cultural heritage, cultural industries, humanities, economics, business and social sciences, ICT and applied hard sciences) and entrepreneurs of the CCS and other sectors with the knowledge and skills necessary to deliver innovative solutions and to turn them into new business opportunities*. It may be anticipated that the establishment of such a KIT-CCS could **consolidate crossover innovation trajectories** and provide the basis for **stress-testing transdisciplinary approaches** that **generate transformational innovation outcomes**.

2.3 The **OECD Learning Framework 2030** offers a vision on the future of education systems. The approach is to identify a number of Key 'Transformative' Competences so that: "*To prepare for 2030, people should be able to think creatively, develop new products and services, new jobs, new processes and methods, new ways of thinking and living, new enterprises, new sectors, new business models and new social models. Increasingly, innovation springs not from individuals thinking and working alone, but through co- operation and collaboration with others to draw on existing knowledge to create new knowledge. The constructs that underpin the competency include adaptability, creativity, curiosity and open-mindedness.*" Under the general umbrella of the OECD Innovation Strategy for Education & Training, one strand focuses on Skills & Education for innovation and the required skills are shown below.



One cluster of skillsets shows that Innovation goes beyond content and procedural knowledge in a particular domain. People need to think critically, to challenge assumptions and conventions, and to be able to come up with new ideas and make connections. Two years ago, the **OECD Centre for Educational Research & Innovation (CERI)** established a Working Group to consider **Creativity & Critical Thinking in Higher Education**. A new project has been established to test their approach, namely: Fostering and assessing students' creative and critical thinking skills in higher education. This echoes broader discussions on transversal skills and in **designing contexts where the importance of transfer to innovation is crucial in framing third mission and social impact strategies**.

2.4 The recent **OECD Culture & Local Development** conference looked at how cultural and creative sectors transform local economies in various ways and produced a background document and a guide on maximising impact for local governments, communities and museums. While these stakeholders have formulated policies to support these sectors as drivers of inclusive growth, greater understanding is required on how culture and creativity can transform and foster development, what are the needs of these sectors and what are effective policy responses.

It is noted that: *"The **intrinsic value** of culture relates to the ability for people to know themselves better and understand each other better. The **instrumental value** of culture relates to its contribution to the quality of life in many of its components. At the age of creative society, the quality of culture helps making people reflexive and creative. Undoubtedly, this is a specific form of creativity, based on curiosity and imagination. This **artistically based creativity differs from the scientific-based creativity; its process is more horizontal, it does not result from a process of trial & errors but from a process of exploration and reflexivity.** The top-down logic of the traditional welfare state can face difficulties to integrate a turbulent cultural demand based on local proximity, partnership, remix and bifurcations".*

Regarding how culture can contribute to local development, two perspectives are described. The first perspective starts from the fact that **global cultural flows interact with the local environments** and must be taken into consideration. The **second perspective** deals with the articulation between intrinsic cultural value and instrumental cultural values where: *"The potential for reflexivity and creativity resulting from cultural experiences - or their intrinsic cultural value - can also appear in areas considered as non-cultural, such as those of health, inclusion or urbanism. Their combination is far from easy: there may be oppositions between artistic and professional logics, notably in financial terms."* A major consideration to be kept in mind is the need to connect the intrinsic with instrumental values of culture in order to make local areas more creative and sustainable.

2.5 The 2018 **UNCTAD Creative Economy** report observes that: *"The trade in creative goods and services shows there is some resilience to be found in the creative economy. Equally, there is significant scope to activate creative economies by leveraging digital disruption and new technologies. The evidence is clear – digital and creative convergence is paving the pathway into the future".* As well as country specific reports, *a* number of meta-trends are also identified including screen time, machines, new realities & tech strategy, visual content, online advertising and fashion forward.

2.6 The 2018 **OECD Automation, Skills Use and Training** report examines automation and its interaction with training and the use of skills at work. It is noted that earlier work by Frey and Osborne (2013) suggested that 47% of jobs in the US are at high risk of being automated and identified 'bottlenecks' to automation (ie tasks difficult to automate) as: *"…social intelligence, such as the ability to effectively negotiate complex social relationships, including caring for others or recognising cultural sensitivities; cognitive intelligence, such as creativity and complex reasoning; and perception and manipulation, such as the ability to carry out physical tasks in an unstructured work environment."* However, rather than seeing jobs where social and cognitive intelligence play a larger role as '*bottlenecks*', in a **European context this could present the basis for many opportunities**.

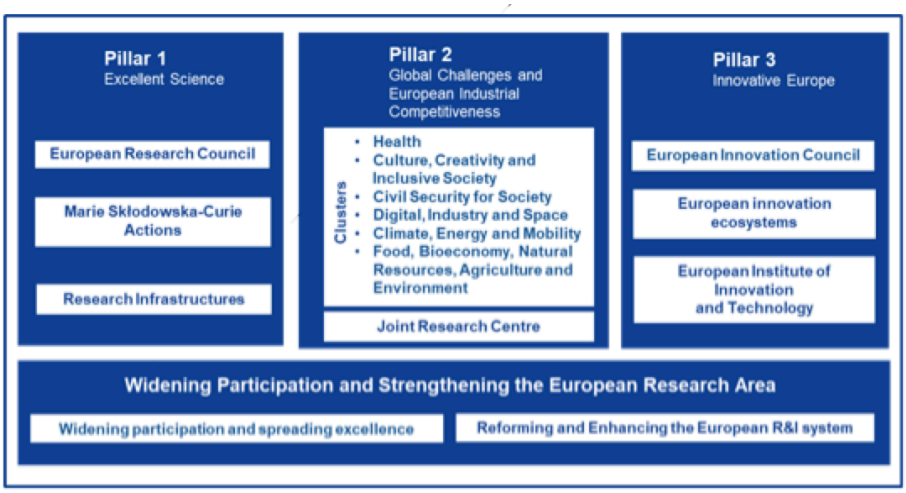
Examined within a broader context than the influence of automation, a 2017 **NESTA Future of Skills** report notes that: ""*Creative, digital, design and engineering occupations have bright outlooks and are strongly complemented by digital technology.*" and *"There are good reasons to believe that interpersonal skills will continue to grow in importance — not only as organisations seek to reduce the costs of coordination but also as they negotiate the cultural context in which globalisation and the spread of digital technology are taking place",* This report also observes that: *"Our findings also confirm the importance of higher-order cognitive skills such as originality, **fluency of ideas** and **active learning**…The results point to a **particularly strong relationship between higher-order cognitive skills and future occupational demand**. Skills related to system thinking — the ability to recognise, understand and act on interconnections and feedback loops in **socio-technical systems** — such as judgement and decision making, systems analysis and systems evaluation also feature prominently."*

However, the report notes that: *"Today, educationalists speak about a '**40-year gap**' between experts who are exploring where the world of work and the state of learning will need to be in 15 years' time, practitioners in the trenches and parents, whose conception of 'good' education is framed by their own earlier experiences. The result is a structure that resembles sedimentary rock: each layer has its own assumptions and expectations. But there is little holding the layers*

together, and once in place, ***they can limit policy change and future choices****."*

2.7 Building on the achievements and success of the previous programme (Horizon 2020) and keeping the EU at the forefront of global research and innovation, the European Commission is proposing a new Framework Programme (2021-2027), Horizon Europe – with a proposed budget allocation of €100 billion. At the time of writing, very little is concretely known regarding the forthcoming **Horizon Europe** structure and programme as this has still to be negotiated. However, some general observations can be made. There will be 3 pillars in support of the policy objectives to give greater coherence, both between and within pillars:

- The "**open science**" pillar focussing on excellent science and high-quality knowledge.
- The "**global challenges and industrial competitiveness**" pillar supporting research relating to societal challenges, reinforce technological and industrial capacities through five clusters (health; inclusive and security society; digital and industry; climate, energy and mobility; and food and natural resources).
- The '**open innovation**' pillar aiming at making Europe a frontrunner in market-creating innovation.



As shown in the diagram above, it has now been decided that under the Global Challenges Pillar, the second cluster will be ***'Culture, Creativity & Inclusion'***. This marks a significant change from previous programmes

and an acknowledgement of the growing importance of the CCS sector. This also means that specific budget is allocated for this cluster, provisionally up to 3bn euro. Other parts of Horizon Europe also remain of interest, for example in Cluster 3 (with a focus on Digital Industry & Space) where: *"The overarching vision is a human-centred approach, going hand in hand with European social and ethical values, social inclusiveness, and the creation of sustainable, high quality jobs including through social innovation. From the outset we must involve and empower workers, consumers and firms to make sure that they have access to, and take up, these technologies (reflecting gender and other diversity issues where appropriate).* ***Due regard will be paid to the impact of technologies and industrial transformation on people and societies. The interaction of science, technology, social sciences and humanities will be important in this respect."***

3.0 Cultural & Creative Industries Sector

The Cultural & Creative Sector is increasingly recognised as a distinct industrial sector

3.1 In less than a decade, EU policies have moved towards a broader understanding of culture and creativity accompanied by an increasing willingness to support CCS and their contribution to growth and innovation in the wider economy. The EC recognises CCS as a high growth sector generating surplus in trade as well as a resilient sector in face to the economic crisis. The contribution of the sector to achieving the EU competitiveness goals is evident:

- CCS are at the **forefront of the digital and media convergence** creating crossover opportunities;
- Business services is going to be taken into account in the design of industrial policies and CCS are essentially service industries, notably business support services;
- As the "*EU companies cannot compete on low price and low-quality products*" so **added value services** from CCS are required to generate experience, entertainment, aesthetic, value, meanings;
- The Creative Europe programme (2014-2020) focused on reinforcing the competitiveness of CCS. A Guarantee facility for the sector is planned to address investment issues.

3.2 The cross-sectoral dynamics of the Cultural & Creative Sector (CCS) offer key models and testbeds for the creation of products and services that are highly relevant to other sectors currently affected by rapid technological transformation. Because of their commitment to experiment with new methods and technologies and the interest in the realms of individual experience, CCS play a central role as experience-economy-paradigms guide change in other sectors. However, while CCS policy has replicated sectoral approaches (theatre vs games, film vs journalism, architecture vs software development etc) with some success (witness the growth of gaming industries and the growing interest in game-based approaches to design, education, and organisation), **CCS actors are not yet in a position to fully embrace such a role as mediators to facilitate complex transformation processes**. Through a multilayered approach, emerging policy can not only address the needs of CCS but pave the way for CCS actors to adopt an active role in the co-creation of policy and governance frameworks capable of initiating cross-innovation dynamics both across and beyond CCS.

3.3 Being at the crossroads between arts, business and technology, CCS are in a strategic position to trigger crossovers with other industries and stimulate innovation. **Creativity is a multi-disciplinary process, and innovation is often the result of interactions between multiple disciplines.** It is worth remembering, however, that: *"Although creativity goes hand in hand with innovation, it is not innovation.*

While creativity is the ability to produce new and unique ideas, innovation is the implementation of that creativity—that is the introduction of that "new" (idea, solution, process, product, service...) into the real world (Gutzmer 2016)." CCS enterprises and organisations are at the frontline of the experience and networked economy, where skills in entertainment, communication, networking, as well as in staging experience, in engaging/inspiring people, in managing risks are very much in demand. A strong "content" industry is a prerequisite in the development of digital services as access to creative productions is an important element of market success.

3.4 The creative and cultural economy however still faces major challenges. One challenge is skills: in particular, in relation to **how to**

match graduates with the skills demanded by CCS and **how to match CCS skills with the demand for competences** by the wider economy. Indeed, creative employment is growing, but it is crucial that it grows in sectors and locations where it can be utilised. Linked to this challenge is the ability to apprehend international markets and make the most of digital tools to develop and export CCS products and services.

3.5 Based on value chain analyses, the 2017 report on '*Mapping the creative value chains'* showed how digitisation has given rise to crossover innovation trajectories by challenging existing balances and sectoral relations by providing alternative models to create, produce, promote or distribute. Equally, the need to create and raise awareness on the **added value of cross-sectoral collaboration** with support for greater creative experimentation was seen as crucial in overcoming existing fragmentation by generating stronger connections. And crucially, this requires the **clustering of new skillsets and capacity building across the CCS with innovative curricula on creative entrepreneurship and the smarter inclusion of CCS data in stress-testing ideas and opportunities.** With stronger co-operative models for CCS microSMEs and stronger collective representation, this greater level of reciprocity could form the basis for more sustainable crossover innovation and economic growth.

3.6 Seen from the public sector perspective, many **local administrations** have welcomed and embraced the contributions from creative thinking, with cities such as Copenhagen or Barcelona now appointing Chief Design Officers - not only to spearhead these initiatives, but to link their cities in cross-country municipal networks that in turn facilitate the emergence of new economic geographies crucial for future developments in CCS. Elsewhere, when some of these co-creation approaches are poorly implemented, the results are less impressive. The innovation capacity of cities is related to some key dimensions including: entrepreneurial culture, institutional capacity, cultural vibe, environmental awareness, social activism and integration. Design can be seen as an enabling factor of such capacity by **supporting the creation of an infrastructure that hosts and coordinates value generation in citie**s.

3.7 The EC funded **DesignScapes** project is currently (Summer 2019) producing a Green Paper and makes a number of concrete suggestions, noting that: *"… it is witnessed by multiple sources, including the most recent Eurobarometer 2015 and 2016 surveys, showing that* ***only 12-13% of EU enterprises make a strategic use of design*** *within their business models and an additional 18% adopt design related methods and tools within their production and value generation processes."* This Green Paper has three core stands, namely:

> ***1: Design for value generation***
> *Design cannot be limited to the adoption of a toolbox of methods and tools, but rather be an approach to orient innovation to generate value.*
> ***2: Design as support for the innovation capacity of cities***
> *Design can be seen as an enabling factor of such capacity by supporting the creation of an infrastructure that hosts and coordinates value generation in cities.*
> ***3: Design as a new policy competency***
> *Creating the conditions for design (as well as innovation) to unleash their potentials is tightly connected with the parallel diffusion of a design and innovation prone mindset in policy makers and civil servants.*

3.8 Just as with data-enabled economists and 'market designers', urban planners also need **a far broader engagement with creative intelligence**, reshaping interaction and scalable contextualisation if they are to be helped to succeed. And just as culture is broadly understood as the centrifugal input into the creative sector, Arts Education performs a critical role in shaping and steering the next generation of artists, creative thinkers and designers whose influence is increasingly felt not only within the creative industries but far beyond, with an average of 60% of those graduates ultimately working in other sectors.

3.9 This artistic and creative intelligence can be found horizontally across the CCS sector and remains an under-used resource. With the selection of a small number of focus areas, these resources can be identified, further structured and consolidated with a view to securing a more active role in creating more generative outcomes. Indeed, **a deep understanding of values and commensuration, pragmatics and**

contingencies lies at the core of artistic and creative intelligence, however defined, and is in the DNA of microSMEs who must be highly adaptive just to survive. If the grand challenges, wicked problems and new missions are to be tackled, then surely we need a renewed and more focused input from this perspective. To this end, ***it would be wise to 'repackage' the CCS offer so that the points of connection will become clearer***. If we are able to reshape a small number of focus areas from the CCS, they could then be re-presented in crossover innovation contexts, as well as within national and European contexts. If these are further integrated into co-creation activities, the potential becomes clearer.

4.0 So, looking forward and thinking about how we might use artistic and creative intelligence to engage meaningfully with citizens and researchers, this requires some consideration of:

- Technology in Context
- The Contextualising Role of the Arts
- Co-Creation and Capacity Building with Public Administrations
- Creative Skills and Creative Experimentation with CCS Work-field

A forthcoming report (Winter 2019) will consider in more detail the implications of this shifting policy landscape and the location of new research and innovation trajectories.

Dynamic Policy Landscape

"We have to navigate a social world with palaeolithic emotions, medieval institutions and god-like technology"
E.O. Wilson, The Origins Of Creativity

We are embedded in human machine networks

Technological changes embed us - our emotions, intuitions, expectations, and expressions - within human-machine collectives and assemblages of unprecedented scale.[1] We need urgently to comprehend and re-design such embeddedness to address the societal challenges of our time. Simple analog-digital dichotomies are misleading. The societal challenges of Europe's digital societies do not lie solely in the creation of new technical infrastructures (internet, data-driven business models) but in comprehending and co-designing the forms of life that become possible when we connect everyone and everything in the same networks. If we want to rely on autonomous systems that can learn, we need to know much more about how to build institutions and organisations that learn - otherwise, machine intelligence will soon outpace human intelligence in key areas of life and labor.

Navigating through these networks is not straightforward

Life and work in scalable systems also changes the way we approach citizenship. As we move through such systems, our roles are subject to change; if we limit our understanding of stakes (consumer or citizen, state or market or civil society), we will fail to comprehend the multiple roles we play as we move across value chains and societal sectors, and engage with each other in and across human-machine networks.

While the policy community continues to encourage multidisciplinary approaches and workable processes to address these issues, few deliver the required impact. There is a need to integrate anticipatory approaches from the arts, technology studies, and the social sciences

[1] Many recent publications cover these topics, see for example Rushkoff, D., (2019) Team Human, W.W. Norton & Co, New York; Zarkadakis, G., (2015) In Our Own Image, Pegasus Books, New Work; Susskind, J., (2019) Future Politics, OUP, Oxford; Hayles, N. Katherine (2017). Unthought. Chicago: University of Chicago Press.

and humanities. As noted in a recent report from the Research, Innovation & Science Policy Experts Group (RISE)[2]

> *"In the coming years, the fifth Industrial Revolution will emerge. The physical, digital, and biological worlds will blend, creating technologies with the potential to know more about us than we do ourselves. The controllers of these technologies and data will be powerful actors. Europe must step up and give a direction to these technologies and their use and deployment, to shape the future. Otherwise, we risk that other research and innovation leaders, or private entities will shape our future society. To do this effectively, we will need more contributions from the 'forgotten' sciences: humanity and ethics."*

The Arts and Humanities perspective has never been more in demand

Recent EU initiatives, such as STARTS (Science, Technology & the Arts), have succeeded in activating independent cultural actors and encouraging them to act as stakeholders addressing science and new technologies in and beyond artistic fields. As a result, an ecosystem has emerged in which the arts have begun to play a core rather than complementary role in addressing societal challenges, and general methodologies for multidisciplinary engagement involving the arts have been tested in a variety of settings. There is now a need to consolidate this work and to establish and clarify those approaches most likely to be of value when tackling societal challenges.

In order to build on these approaches and outcomes, we need to close the gap that continues to exist between the experimental approaches common across the arts and to consider technology-centred assemblages that continue to characterise both public policy and innovation management narratives when tackling societal challenges. This gap means there has been insufficient attention given to the **contextual aspects of innovation** in tackling societal challenges. This necessarily involves attention to the potential of such arts-based approaches and a critical assessment of the (individual, collective and institutional) rationales that prevent the focus of innovation actors from blending both technological and non-technological dynamics of

[2] EC (2019). 101 ideas on the future of research and innovation in Europe. Research, innovation and science policy experts group (RISE). Brussels

innovation.[3] There is an ongoing need, as seen in the ClickNL Knowledge & Innovation Agenda (KIA)[4], to identify, describe and assess this multiplicity of methodologies, examine best practices and establish those contexts of transdisciplinary intervention that can yield integrative results.

The current acceleration of technological change - autonomous systems, artificial intelligences, decentralised technologies - seems to suggest that we stress the role of technology even more, overwhelmed by the complexity of new technical infrastructures that cut across national boundaries and call into question established governance frameworks. But what we learn from the arts is that it is crucial **to explore the impact of such change** - and the societal challenges that arise from such change - through the lens of individual and collective experience: what impact do these changes have on the ways in which we live, work, and anticipate individual and collective futures? Which clusters of skillsets can best anticipate these futures? And how can we best position ourselves and organisations within these new socio-technological landscapes? To do so, we must further examine creative capacities in the context of the collective dimensions of critical engagement, mutual learning, and the design of spaces for collaborative action and generative engagement.

Over the last two years, there have been several shifts in the policy landscape that are likely to have a strong influence on the direction of research and innovation activities in the next 10 years. The Cultural & Creative Sector (CCS) sector is increasingly being considered as an industrial sector by the European Institutions – along with health; security; digital, industry and space; energy, climate and mobility.

Below we consider the current developments (June 2019) from the following policy areas:

- European Institute of Technology Knowledge & Innovation Communities

[3] See for example the proposed Arts, Humanities and AI Centre at Oxford: https://www.theguardian.com/education/2019/jun/19/oxford-receive-biggest-single-donation-stephen-schwarzman

[4] See ClickNL KIA at https://www.clicknl.nl/en/knowledge-and-innovation-agenda/

- OECD Learning Framework 2030
- OECD Culture & Local Development
- UNCTAD Creative Economy
- OECD Automation, Skills Use and Training
- UN Strategic Development Goals (SDG)
- Horizon Europe

European Institute of Technology Knowledge & Innovation Communities (EIT-KIC)

EIT Knowledge & Innovation Communities have been successful in bringing people together and aligning interests for a shared vision

The European Institute for Innovation and Technology is one of the important cross-sectoral instruments of the European Commission to support economic growth. It strengthens the Knowledge Triangle for specific industrial fields according to their individual needs. As part of the EIT Strategy 2021 - 2027, four Potential Future Thematic Areas are put forward. When considering potential thematic areas for new Innovation Communities, the EIT has identified the CCS as being of significant importance:

> *"An EIT Innovation Community in this area will catalyse bottom up and top down initiatives at regional, national and EU levels, avoiding duplication and putting in place the necessary integration. It will provide researchers and students in many disciplines (including arts, culture, cultural heritage, cultural industries, humanities, economics, business and social sciences, ICT and applied hard sciences) and entrepreneurs of the CCS and other sectors with the knowledge and skills necessary to deliver innovative solutions and to turn them into new business opportunities. An Innovation Community on CCS will attract and retain world-class talent, and develop new skills and collaborations in education, research, practice and business at international level."* [5]

With the potential to build on the work undertaken over the last decade on strengthening support for the CCS sector, the proposed KIT-CCS is

[5] https://eit.europa.eu/sites/default/files/eit_potential_future_thematic_areas.pdf

also rooted in earlier foresight studies such as the so-called Bohemia Study[6] where it was noted that for transformative research and innovation to occur, there is significant need to establish collaborative contexts and citizen-based participatory ecosystems where, for example, policy experimentation for market creation and new knowledge systems for socio-economic ends might thrive.

It may be anticipated that the establishment of such a KIT-CCS could **consolidate crossover innovation trajectories** and provide the basis for **stress-testing transdisciplinary approaches** that **generate transformational innovation outcomes**.

A number of networks and groups have indicated just how the CCS might usefully respond to this highly welcome initiative, with the **European Creative Business Network** (ECBN)[7] and the **Arts+** initiative[8] making a number of substantial and well-argued observations. The **UAS4Europe** network of Universities of Applied Science has also noted[9] that:

> *"Transdisciplinary applied research involving different stakeholders of the whole R&I value chain is a backbone of European R&I programmes and is an absolute necessity to tackle complex global challenges. UAS are important breeding grounds for this type of research and provide excellent impact-oriented research results. …initiatives should be taken to stimulate a renewed dialogue between the fundamental science- oriented research universities and the more practice-based actors such as UAS, SMEs ,start-ups." and further that "*

Through a multilayered approach, the proposed KIT-CCS could not only address the specific sectoral support needs of CCS but also pave the way for CCS actors to **adopt a proactive role in the co-creation of policy and governance frameworks capable of initiating cross-innovation dynamics** both across and beyond CCS. Such crossover approaches are becoming widespread and for example in the

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[6] New Horizons: Future Scenarios for Research & Innovation Policies in Europe, FORESIGHT, European Commission Directorate-General for Research and Innovation, 2017 and esp. Targeted Scenario No. 19: Towards a New Knowledge System, see https://ec.europa.eu/research/foresight/index.cfm?pg=strategic

[7] See http://ecbnetwork.eu/ecbn-calls-to-make-CCS-a-priority-in-the-eu-research-and-innovation-programme-2021-2027/

[8] The Arts+ Innovation Summit (2018), European Manifesto on Supporting Innovation for Cultural and Creative Sectors, see https://www.buchmesse.de/en/press/press-releases/2018-10-11-european-manifesto-supporting-innovation-cultural-creative-sectors

[9] UAS4Europe, (2018) Position Paper on Horizon Europe, Brussels

Netherlands new clusters are being identified and formed between the crossover trajectories of different sectors.

A decision on the establishment of such a KIT-CCS is likely to be taken in Summer 2019.

OECD Learning Framework 2030

The **OECD Learning Framework 2030**[10] offers a vision on the future of education systems. The approach is to identify a number of key 'Transformative Competences' so that:

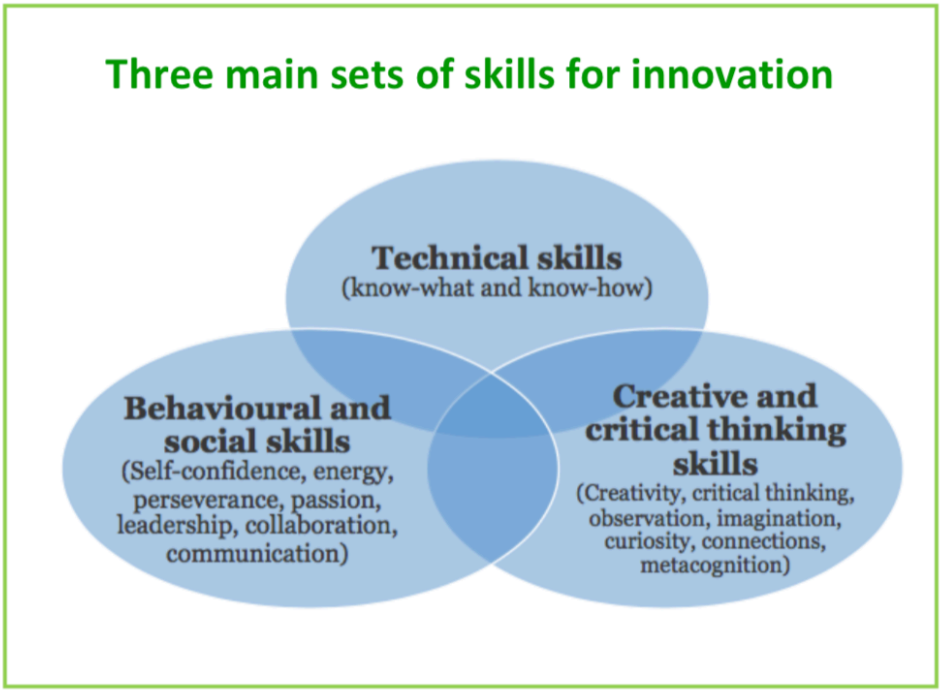
> *"To prepare for 2030, people should be able to think creatively, develop new products and services, new jobs, new processes and methods, new ways of thinking and living, new enterprises, new sectors, new business models and new social models. Increasingly, innovation springs not from individuals thinking and working alone, but through co- operation and collaboration with others to draw on existing knowledge to create new knowledge. The constructs that underpin the competency include adaptability, creativity, curiosity and open-mindedness."*

Under the general umbrella of the OECD Innovation Strategy for Education & Training, one strand focuses on **Skills & Education for innovation**. The required skills are shown below and the work examines how education and training systems can foster the dispositions and skills that are conducive to innovation.

Figure 1. Three main sets of skills for innovation (OECD)

One cluster of skillsets shows that Innovation goes beyond content and procedural knowledge in a particular domain. People need to think critically, to challenge assumptions and conventions, and to be able to come up with new ideas and make connections. In 2017 the **OECD**

[10] OECD, (2018) OECD Learning Framework 2030, OECD



Centre for Educational Research & Innovation (CERI)[11] established a Working Group to consider **Creativity & Critical Thinking in Higher Education**. A new project has been established to test their approach, namely 'Fostering and Assessing Students' Creative and Critical Thinking Skills in Higher Education'. This project looks at these issues within undergraduate education and within teacher education in general.

The project aims to establish a community of practice on these topics, monitor pedagogical intervention and document work and activities. This is based around a new international rubric shown below on both the longer and shorter versions. The intention is that this project will yield new insights into those approaches that have the best outcomes. The simplified version is shown below (Figure 1).

Figure 2. Rubric on Creativity & Critical Thinking (OECD)

A number of observations on the rubric were given by those working in the field of Critical Thinking (CT). A leading expert noted that:

- If one aims at employing the abilities of critical thinking in daily-life situations, an integrated, trans-disciplinary or inter-disciplinary

[11] Presentation by Assoc. Prof. Daniela Dumitru, PhD University of Bucharest, Romania at OECD CERI Meeting 6-7 September 2018.

OECD rubric on creativity and critical thinking

	CREATIVITY Coming up with new ideas and solutions	CRITICAL THINKING Questioning and evaluating ideas and solutions
INQUIRING	• Make connections	• Challenge assumptions
IMAGINING	• Generate ideas and play with unusual and radical ideas	• Find several perspectives on the problem
DOING	• Produce, perform or envision something personally novel	• Evaluate solution justified on logical, ethical or aesthetic criteria
REFLECTING	• Assess the novelty of a solution and of possible consequences	• Reflect on uncertainty/limits of chosen solution/position

course ***integrating the disciplines socially is by far more suitable*** than a classical course in Critical Thinking

- It is necessary that the actual ***use of critical thinking abilities take place under guidance*** of a professor/trainer and within a formal environment
- It is acceptable to think that there are certain principles which we can transfer, but which are few and *we* ***cannot claim that CT skills are transferable***

Indeed, some general observations have been made by the European University Association who have suggested that the interaction between creativity and critical thinking was not perhaps straightforward. While both are interested in a developmental approach and both are aiming to develop an aptitude rather than simply specific skills, nonetheless there are tensions between the two:

- between individual and group, ego or group centric
- between attitudes/emotions vs justification, normative
- little transfer between domains for one but not the other
- between focus on process vs product

This raises the question: Is Critical Thinking a pre-requisite for Creativity?

This raises the following question: **Is critical thinking a pre-requisite for creativity?** The answer being, yes, if it is part of an approach based on inquiry.[12] The discussion is interesting and relevant as it resonates with wider organisational and societal concerns:

- How indeed can we (re)balance critical thinking and creativity?
- And rather more fundamentally, how can we blend and balance creativity and critical thinking in an engaging way within existing and new complex information spaces?

Further context was provided by the earlier HEInnovate initiative[13] that examined learning and entrepreneurship and contributed to the pan-European EntreComp[14] framework. As ever with learning, the underlying issue is transfer; in this case, how can we bring skillsets together and how can we transfer these skillsets and dispositions (habits of mind) to those disciplines, fields and contexts where it is most necessary (social/economic/political). A similar initiative was undertaken in the DigComp 2.1 Digital Competence Framework for Citizens.[15]

The Critical Thinking & Creativity rubric is one attempt to examine what may be possible but this project does not really address the complex dynamics between the two subjects. The wider **OECD Learning Framework 2030** on examining different skillsets (behavioural/technical/creative) and the need for a *'broader set of knowledge, skills, attitudes and values in action'* is actively looking at how this might be brought together in useful ways. The approach taken is noticeably broader than that of the Critical Thinking and Creativity group. A distinction is made between domain-specific skills and domain-generic skills, where the former can become the latter when used across several domains or settings and becoming a habit of mind that can be applied to new fields. In this regard, this approach notes that:

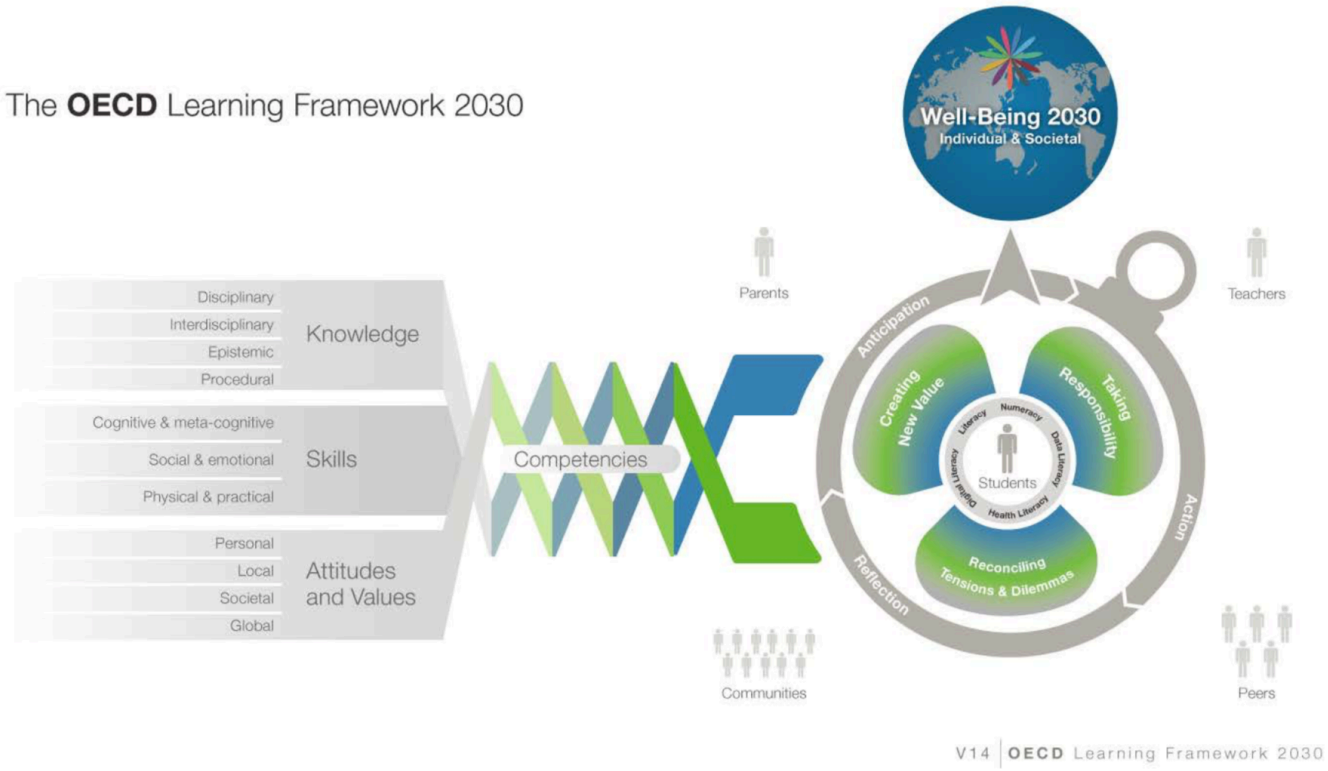
[12] Presentation by Congman Rao, Northeast Normal University Changchun, P. R. China at OECD CERI Meeting 6-7 September 2018.

[13] FIXME

[14] European Entrepreneurial Competence Framework, see https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/entrecomp-action-get-inspired-make-it-happen-user-guide-european-entrepreneurship-competence

[15] DigComp 2.1: The Digital Competence Framework for Citizens with eight proficiency levels and examples of use, see https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/digcomp-21-digital-competence-framework-citizens-eight-proficiency-levels-and-examples-use

*"**The concept of competency implies more than just the acquisition of knowledge and skills; it involves the mobilisation of knowledge, skills, attitudes and values to meet complex demands**. Future-ready students will need both broad and specialised knowledge. **Disciplinary knowledge** will continue to be important, as the raw material from which new knowledge is developed, together with the capacity to think across the boundaries of disciplines and "connect the dots". **Epistemic knowledge**, or knowledge about the*



*disciplines, such as knowing how to think like a mathematician, historian or scientist, will also be significant, enabling students to extend their disciplinary knowledge. **Procedural knowledge** is acquired by understanding how something is done or made – the series of steps or actions taken to accomplish a goal. Some procedural knowledge is domain-specific, some transferable across domains. It typically develops through practical problem-solving, such as through design thinking and systems thinking."*

The approach addresses the need to find new solutions in a rapidly changing world, considering environmental, economic and social challenges, noting that unless steered with a purpose, the rapid advance

of science and technology may *'…widen inequities, exacerbate social fragmentation and accelerate resource depletion.'*

Figure 3. Learning Framework 2030 (OECD)

The approach identifies three 'Transformative Competencies', namely:

- Creating new value
- Reconciling tensions and dilemmas
- Taking responsibility

Enabling agency within students is considered a key aim and the concept of co-agency underpins the learning framework, where this involves *" …interactive, mutually supportive relationships that help learners to progress towards their valued goals."*

OECD Culture & Local Development

The recent (Winter 2018) OECD Culture & Local Development conference looked at how cultural and creative sectors transform local economies in various ways:

- Generating economic growth, productivity, exports and employment;
- Diversifying the economy and contributing to urban regeneration;
- Promoting cities and rural regions as destinations to visit, live, work and invest in;
- Strengthening local cultural identity and diversity;
- Supporting social cohesion and integration of marginalised groups;
- Contributing to well-being.

There is a need better to clarify raw intrinsic and instrumental values of culture

The main outcome from this focus was a background document[16] and a guide on maximising impact for local governments, communities and museums[17]. While these stakeholders have formulated policies to support these sectors as drivers of inclusive growth, greater

[16] OECD (2018) Culture and Local Development, OECD

[17] OECD (2019) Culture and Local Development: Maximising the impact, OECD

understanding is required on how culture and creativity can transform and foster development, what are the needs of these sectors and what are effective policy responses? The report makes a number of useful points:

The intrinsic and instrumental values of culture

Culture has increasingly cooperated with other services such as education, health, employment and welfare. Culture is recognised for both its intrinsic value and its instrumental value. The intrinsic value of culture relates to the ability for people to know themselves better and understand each other better. The instrumental value of culture relates to its contribution to the quality of life in many of its components. At the age of creative society, the quality of culture helps making people reflexive and creative. Undoubtedly, this is a specific form of creativity, based on curiosity and imagination. This artistically based creativity differs from the scientific-based creativity; its process is more horizontal, it does not result from a process of trial & errors but from a process of exploration and reflexivity. The top-down logic of the traditional welfare state can face difficulties to integrate a turbulent cultural demand based on local proximity, partnership, remix and bifurcations.

New conditions on the cultural goods market

In parallel with the effects on the consumption of cultural goods, the same elements lead to new conditions in the production of cultural goods.

- *The cultural productions occur in networks of firms where larger corporate entities (Ali Baba, Amazon, Tencent, Apple, etc.) coexist with numerous small and specialised firms but where the output content and design are constantly changing.*
- *The labour markets associated with these sectors tend to be very 'turbulent'. Many artists and technicians are engaged in temporary and freelance forms of work, where their working practices are quasi systematically coordinated within temporary project-oriented teams.*
- *Artistic and cultural services and products compete first based on their novelty and recognition, and only after on their costs. In*

order to deal with risky and unstable markets, firms are increasingly integrated in extended inter-firm networks.

- *In that context, local flavours reflected by a cultural service or product are highly relevant and contribute to the branding and production of local economies. This explains why thriving areas are often places where artistic and cultural producers emerge, tied by an organic solidarity.*

How then can culture contribute to local development? Two perspectives are brought into view:

Culture is currently on the agenda of cities, regions and territories. Where international or global perspectives put more emphasis on the technological dimension of culture, the local perspectives remind us that culture matters first as social capital. It reflects an identity that allows the originality and distinction of a local area. It gives rise to the trust and cooperation necessary to produce cultural goods, if the diversity of cultural expressions is respected. The idiosyncratic nature of the cultural product leads to competitive advantages for the territory, as consumption can only occur by visiting the site, as in the case of the performing arts or cultural tourism, or by mirroring the authenticity of the cultural goods. In this context, two perspectives allow us to understand how culture can contribute to local development and how local governments support this relationship.

Global cultural flows must also be taken into consideration

*The **first perspective** starts from the fact that global cultural flows interact with the local environments. Global cultural flows, illustrated by companies like Netflix, Spotify or Live Nation, are characterized by the magnitude of their technological, communication and financial resources; their potential investment for creating activities and jobs; and the osmosis between their own value chains with other sectors of activity. Local culture brings out talents and allows for experimentation. These two types of cultural flows gain from cooperation: global flows because they find in the local cultural environments the talents they need; and local flows because they can find the financial and communication resources necessary for their sustainability. Such links are not spontaneous and need to be*

nurtured. The transformation of global festivals, from periodical to permanent local activities or the relations between visual artists, craftsmen and designers testify the relevance of such connections.

*The **second perspective** deals with the articulation between intrinsic cultural value and instrumental cultural values. The potential for reflexivity and creativity resulting from cultural experiences - or their intrinsic cultural value - can also appear in areas considered as non-cultural, such as those of health, inclusion or urbanism. Their combination is far from easy: there may be oppositions between artistic and professional logics, notably in financial terms. The evaluation of the results expected from instrumental values is often hampered by the dichotomy between producing short-term outputs and the long-term expected outcomes.*

Creative place making requires local governments to consider interactions and sharing

The report goes on to highlight the role of local government in promoting culture as a lever for development:

How can local governments face the challenge of making culture a lever for local development? The current debate on Creative Place Making, puts the different actors - individuals, companies, NGOs, public, users, amateurs, and governments - in permanent interaction. The values that are produced are interdependent whatever the specific domain of their realization, e.g. cultural or no cultural. Careers develop, ideas transfer, money flows, and products and contents move, to and from, around and between the non-profit, homemade and commercial cultural subsectors. To make a creative place, governments must activate talents in various directions, preserve their works and inspire new ones. In this ecosystem, the role of a local government cannot be 'to organise' from the outset an ecosystem, which probably results from a long sedimentation of institutions and practices, but rather to make it more responding to new challenges.

More precisely, local governments cannot directly manage and control activities resulting from many changing interactions. However, they can care about the quality of their environment and insert the incentives that will induce both creativity and accountability. Creative place making requires local governments to

understand concepts of art and culture that change from the silo visions of the art world to consider projects whose contours refer to interactions and sharing. They need to understand communities, not just of those who are already visible, but also those who live on the margins or who use the place occasionally. In summary, local governments will probably have to behave more and more as brokers and enablers.

Two major considerations need to be kept in mind to implement this challenging agenda:

- *The need to **intertwine as strongly as possible** the financial, exposition and communication resources from the global drivers of culture that cross their own areas, with the local drivers of culture that makes talents emerge and activities nurturing creativeness; and*
- *The need to **connect the intrinsic with instrumental values of culture** in order to make local areas more creative and sustainable.*

UNCTAD Creative Economy

Digital and creative convergence is paving pathway into the future

The recent UNCTAD 2019 Creative Economy Outlook[18] report provides a detailed study of shifts in the creative economy worldwide, with country specific reports also available. They observe that:

Today uncertainty is pervasive and impacts all areas of the economy, creative and otherwise. In some cases, borders are becoming blurred, while in others, trade walls rise. Traditional political and trade allegiances are also shifting. Meanwhile, the planet's environmental systems are under immense pressure. In this context, what role is there for the creative economy?

The trade in creative goods and services shows there is some resilience to be found in the creative economy. Equally, there is significant scope to activate creative economies by leveraging digital

[18] UNCTAD (2019), Creative Economy Outlook: Trends in international trade in creative industries 2002-2015, UNCTAD

disruption and new technologies. The evidence is clear – digital and creative convergence is paving the pathway into the future. The uptake of this opportunity in developing countries will be determined by a complex mix of demand, policy, funding, skills development and the prioritization of the digital agenda.

Digital disruption looks set to completely re- shape trade, and the world as we know it. For developing countries, it will shift markets and jobs. Coupled with increased infrastructure needs and the mismatch between education and the job market – and the required soft skills – it is critical that developing countries plan by paying attention to emerging trends and move quickly, and sustainably, to catch the digital headwinds.

The report identifies a number of meta-trends, including:

***Screen time**: Multi-screening, or the use of multiple devices at the same time, means that people may be watching content on one screen, engaging in social media commentary on another, and making purchases on a third, all simultaneously. Viewers become instant consumers. This has implications for marketing and advertising (a creative service) and for film, television, as well as the on-demand and content production industries17 which are all striving to create more immersive entertainment environments (Newman, 2017).*

***Machines, new realities & tech strategy:** There are some projections that AI, AR, VR, and blockchain will play a crucial role in shaping the creative economy (for example, see WEF, 2017). Generally, AI could have a pervasive impact on all types of companies involved in E&M and could become the industry's new battleground, according to PwC (2018) and McKinsey&Company. 18 Current projections for AI spending are set to top $30 billion19 by 2025, and are indicative of a lucrative future. AI could also fundamentally change the entire creative process, says Newman (2017). He provides the example of a new wave of computer- human 'collaboration', where companies are already using AI to create effective movie plot points based on box office performance, and quickly cut trailers. One company's AI technology created a final trailer within 24 hours – far less than the usual 30 days*

needed for a manual edit. But it comes with its challenges, especially regarding the initial cultural biases at the point of coding, which could favour specific geographic locations, genders, and perspectives. AI is not the only high impact trend. The total immersion offered by virtual and mixed reality will also be a disruptor, especially for experiential media. According to the United Kingdom's Creative Alliance, 20 78% of millennials would rather purchase an experience than a product. They also note that millennials respond better to product marketing that focuses on an idea, or lifestyle, rather than solely on a product. Married to virtual and mixed reality, the 'experience economy' will boom, benefiting the creative industries associated with it.

***Visual Content**: Audio-visual content is dominating the digital landscape, leading to the proliferation of many smaller operators, including photographers, videographers, bloggers, music producers and cross-cutting multi-media specialists. This has an impact on labour dynamics and the changing nature of work. Howe (2016) 21 on the creative economy, says: "with lower barriers to entry, amateur creators and performers are flooding the market—but more as hobbyists than full- time professionals. Artists cobbling together freelance gigs alongside a day job is nothing new. But now they're competing against an infinite supply of people ... who will work for peanuts. Aging in are 'new media' occupations at the other extreme: market- driven, entrepreneurial work with erratic income streams and no guarantees. In a nutshell, there are fewer salaried cellists and more royalty-earning YouTube celebrities". The changing nature of work is explored below, but the union between content production and the future of creative work cannot be denied. Developing economies do have an edge here, they are home to a huge population of younger, more tech-hungry consumers, who also want to see themselves reflected in the content being produced. This situation creates an opening for new voices and perspectives from the developing world.*

***Online Advertising**: Online advertising is set to grow exponentially, and with it, sub- services from the creative industries. This includes data analytics, AI, design, audio- visual, augmented, as well as mixed and virtual reality, animation, copywriting and many more.*

Fashion forward: *Millennials lead in setting tech trends, especially those influencing the creative industries, though not equally across the developing and developed worlds. A good illustration is fashion, which will change radically as 'wearables', or the incorporation of technology platforms into clothing and accessory design, becomes more popular among millennials. 22 The relevance of wearables in developing countries remains to be seen, but it could impact the fashion industry. Design from these countries is not only gaining popularity on ramps around the world but has a distinct local flavour and appeal. In this context, wearable innovations created specifically for developing world challenges could be revolutionary. Solar powered, light emitting backpacks and jackets that can charge phones, are but one example of this type of wearable. These innovations could potentially protect and connect people, help create microgrids, light the way in poorly electrified areas, and generally improve daily lives in developing economies.*

Regarding digital transformation, the report notes:

"This new creative-digital ecosystem has led some, such as Hartley, Wen and Li (2015)10 to argue that we now live in the 'creative era'. While this claim may be disputed, the knitting together of information, media, creative content, and the digital sphere is a movement that has allowed for the rapid globalization of ideas and information. In turn, this has unlocked the creative economy's growth potential, although not equally for all.

PwC, in their recent 2018 Entertainment and Media (E&M) report11 recognise there is a new wave of convergence, connections, and trust in the media ecosystem, arguing that the thick borders that once separated E&M, technology and telecommunications – and sectors within them – are dissolving. "Large access providers and platform companies are integrating vertically, while established giants are integrating horizontally. Companies that once offered only technology and distribution are moving into content. The distinctions between print and digital, video games and sports, wireless and fixed Internet access, pay-TV and over-the-top (OTT), social and traditional media are blurring" (2018: 4).

*It is in this **fuzzy terrain** that the future of the creative industries and the strengthening of the creative economy lies. PwC identifies five key drivers of change12impacting creative producers: (1) ubiquitous connectivity, (2) the mobile consumer, (3) need for new sources of revenue, (4) the shift to platforms, and (5) personalisation.*

While these key drives are certainly noteworthy, content remains king, with creative workers often at the forefront of content generation. The internet is also how most people access content, whether for information or entertainment. Content – and access to it – forms the bedrock of the creative economy, the system that turns ideas and creative work into profit."

For the Netherlands, creative goods exports increased 59%, from $6 billion in 2005 to $10 billion in 2014. Design goods, which accounted for the largest share of exports at $4 billion, were composed of fashion goods at $1.5 billion, interior design at $1.3 billion and toys at $1.1 billion. The Dutch creative industry has a particularly strong reputation in interior design and fashion. Another dynamic sector was audiovisuals at $1.4 billion, followed by new media (recorded media and video games) at $1.4 billion combined. The Dutch gaming industry is one of the fastest growing. Publishing (books and journals) stood at $1.3 billion. Imports stood at $10.2 billion, meaning Netherlands posted a creative goods trade deficit of $241.3 million in 2014.

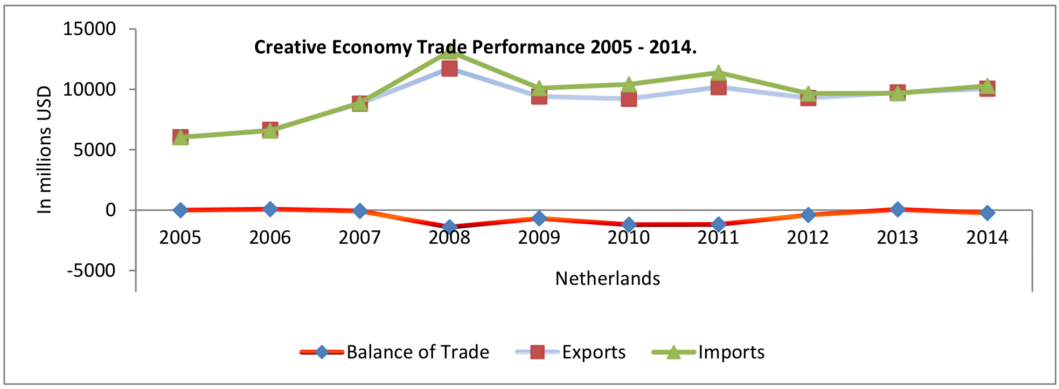


Figure 4. Trade Performance 2005-2014 (UNCTAD)

In 2014, the main destination markets for creative goods exports were Europe (87%), Asia (9%) and the Americas (3%). Creative services exports stood at $63.1 billion. Telecommunications, computer, and information services accounted for the largest share of creative services exports at $41.6 billion, R&D at $11.1 billion, followed by architectural, engineering, scientific, and other technical services at $5.4 billion. The Netherlands is a leading global knowledge economy and one of Europe's most popular creative hubs. The Dutch creative industry is currently gaining considerable international acclaim and has a particularly strong reputation in interior design, gaming, fashion, and architecture.

OECD Automation, Skills Use and Training

Social and cognitive sometimes seen as 'bottlenecks' to automation

The recent OECD report on Automation, skills use and training[19] examines automation and its interaction with training and the use of skills at work. Earlier work by Frey and Osborne (2013) suggested that 47% of jobs in the US are at high risk of being automated and identified 'bottlenecks' to automation (ie tasks difficult to automate) as:

> *"…social intelligence, such as the ability to effectively negotiate complex social relationships, including caring for others or recognising cultural sensitivities; cognitive intelligence, such as creativity and complex reasoning; and perception and manipulation, such as the ability to carry out physical tasks in an unstructured work environment."*

Examining 32 countries, the OECD report analysed this in greater detail and found one in two jobs likely to be affected by automation but with a wide variance between countries:

> *"33% of all jobs in Slovakia are highly automatable, while this is only the case with 6% of the jobs in Norway. More generally, jobs in Anglo-Saxon, Nordic countries and the Netherlands are less automatable than jobs in Eastern European countries, South European countries, Germany, Chile and Japan."*

[19] Nedelkoska, J. & Quintini, G., (2018) Automation, skills use and training, OECD, DELSA/ELSA/WD/SEM(2018)3

The study further notes that:

"The estimates are based on the fact that, given the current state of knowledge, tasks related to social intelligence, cognitive intelligence and perception and manipulation cannot be automated. However, progress is being made very rapidly, particularly in the latter two categories."

One commentator on the report[20] observed that:

"…just as computers are being trained to accomplish more, we, the public, are being trained to accomplish – and to expect – less. Increasing amounts of customer service require us to interact directly with computers at the other end, whether by filling out forms or dealing with voice recognition systems. At the same time, those humans still employed for social interactions are increasingly scripted and regimented; so that in dealing with a modern bureaucracy it makes no difference whether there is a human or a robot on the other side of the transaction. No doubt real human servants will increase in value as status symbols for the rich, but this is hardly a future to anticipate with pleasure."

The study also found a strong correlation between the use of ICT and educational attainment at the individual level.[21] The study asks:

"Through education one acquires various skills: some foundation ones, such as literacy and numeracy, but also job-specific ones, such as marketing, arts or medical knowledge and some generic skills such as working in teams, being autonomous, managing the work of others. Which of these are actually complemented by the use of ICT?"

While both literacy and numeracy are strongly, and **for the most part monotonically**, related to the use of computers, for other skills three patterns emerge:

[20] https://www.theguardian.com/commentisfree/2018/apr/02/the-guardian-view-on-automation-put-human-needs-first

[21] op. cit p86

"First, positive relationships between computer use and sharing information, teaching, advising, planning work of others, influencing, negotiating and complex problem-solving. Second, negative relationships between computer use and working physically for a long time and between ICT use and using hands and fingers. Third, inversed U-shape relationship between ICT use and cooperating, presenting and selling. In the last set of cases, the use of ICT is most frequent among those with medium intensity in these skills. One could speculate that people who engage in these job tasks very intensely spend significantly more time in direct communication with partners and customers and less in performing these over the computer. In general, computers act as augmenting to the analytical skills which trends we analysed in Section 5, while the use of ICT becomes irrelevant in jobs requiring frequent use of physical skills. ICT use becomes more frequent among those who employ social skills, but not always. Cooperation, presentation and sales require moderate use of ICT when performed frequently."

The study notes that:

"Finally, in order to understand the argument of computer-skill complementarity, it is instructive to point out the relationship between the occupation-specific use of computers and the occupational risk of automation (Figure 7.6). Two observations stand out. First, the relationship is negative, meaning that occupations that use computers more frequently are at lower risk of automation. This suggests that computers are likely augmenting rather than substituting those who use them. Second, the variance in computer use increases with the risk of automation. Occupations that are at low risk are almost without exception intense computer users. At very high levels of risk, one tends to see mainly low users. However, a wide range of occupations in terms of computer use are bunched up between the 40 and 60% probability of automation. This is an interesting group of occupations and further analysis of the other technologies that they employ, in addition to computers, would better reveal what technologies are likely to be labour-substituting. In other words, there is lots of unexplained variance in the risk of automation if we only focus on the

use of computers (or lack of) as potentially labour-substituting technology."

Examining the future of skills in a broader context than the influence of automation, a 2017 NESTA report[22] also considered key trends found in, for example, urbanisation, political uncertainty, globalisation and democratic change alongside technological change. Acknowledging the difficulty in quantifying future trends, the report suggests that in the US and UK, unsurprisingly, low and medium skilled jobs will likely fall, while public sector jobs will rise. In the service industries, *"Creative, digital, design and engineering occupations have bright outlooks and are strongly complemented by digital technology."* In addition:

> *"We find a **strong emphasis on interpersonal skills, higher-order cognitive skills and systems skills** in both the US and the UK. In the US, there is particularly strong emphasis on interpersonal skills. These skills include teaching, social perceptiveness and coordination, as well as related knowledge, such as psychology and anthropology. This is consistent with the literature on the growing importance of social skills in the labour market (Deming, 2015). There are good reasons to believe that interpersonal skills will continue to grow in importance — not only as organisations seek to reduce the costs of coordination but also as they negotiate the cultural context in which globalisation and the spread of digital technology are taking place (Tett, 2017).*
>
> *The findings also confirm the importance of higher-order cognitive skills such as originality, **fluency of ideas** and **active learning**. A similar picture emerges for the UK. The results point to a particularly strong relationship between higher-order cognitive skills and future occupational demand. Skills related to system thinking — the ability to recognise, understand and act on interconnections and feedback loops in **socio-technical systems** — such as judgement and decision making, systems analysis and systems evaluation also feature prominently."*

High order cognitive skills such as originality, fluency of ideas and active learning are in greater demand

However, the report notes (p18) that:

[22] Bakhshi, H., Downing, J., Osborne, M. and Schneider, P. (2017). The Future of Skills: Employment in 2030. London: Pearson and Nesta.

Significant latency in the 40 year gap identified by educationalists

*"Today, educationalists speak about a '**40-year gap**' between experts who are exploring where the world of work and the state of learning will need to be in 15 years' time, practitioners in the trenches and parents, whose conception of 'good' education is framed by their own earlier experiences. The result is a structure that resembles sedimentary rock: each layer has its own assumptions and expectations. But there is little holding the layers together, and once in place, they can limit policy change and future choices."*

When examining skills in more detail for the US, the report confirms the importance of 21st Century Skills but with a strong emphasis on cognitive competences and learning strategies:

"The results also emphasise the importance of higher-order cognitive skills such as Originality and Fluency of Ideas. Learning Strategies and Active Learning – the ability of students to set goals, ask relevant questions, get feedback as they learn and apply that knowledge meaningfully in a variety of contexts – also feature prominently.

Progress towards developing these skills as part of the formal education system has been slow due to difficulties in understanding how they arise and develop over time and how they can be embedded in the curriculum and formal assessments. Nonetheless, a number of initiatives have shown promise and are beginning to shape domestic and international policy dialogue (Schunk and Zimmerman, 2007; Lucas et al., 2013; OECD, 2016a). Strengthening the affective aspects of education and a lifelong learning habit, especially among boys and students from disadvantaged backgrounds who tend to have lower levels of motivation, is a further area of interest for policymakers. The research literature shows that teachers can play an important role – both in raising student expectations and in rewarding the process of learning – for instance, in giving students opportunities to share the results of their work with others or explain why what they learned was valuable to them, though they are unlikely to be su cient in the absence of other policies to promote educational excellence and equity (Covington and Müeller, 2001; Diamond et al., 2004; Weinstein,

2002; Hampden-Thompson and Bennett, 2013; OECD, 2017)."

For the UK, it is noted that:

"Interestingly, systems skills, relatively under-explored in the literature, all feature in the top 10. Systems thinking emphasises the ability to recognise and understand socio-technical systems – their interconnections and feedback effects – and choose appropriate actions in light of them. It marks a shift from more reductionist and mechanistic forms of analysis and lends itself to pedagogical approaches such as game design and case method with evidence that it can contribute to interdisciplinary learning (Tekinbas et al., 2014; Capra and Luisi, 2014; Arnold and Wade, 2015). The combined importance of these skills and interpersonal skills supports the view that the demand for collaborative problem-solving skills may experience higher growth in the future (Nesta, 2017).

Horizon Europe

At the time of writing (Summer 2019), very little is concretely known regarding the Horizon Europe structure and programme as this has still to be negotiated. However, some general observations can be made.

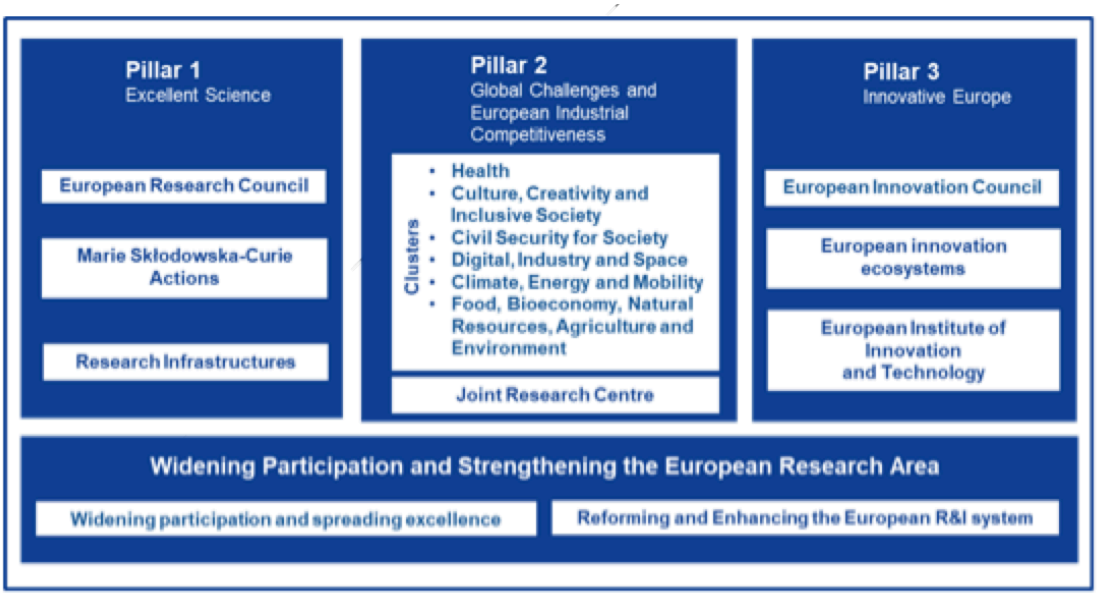


Figure 5. Provisional Horizon Europe Pillars (EC)

Building on the achievements and success of the previous programme (Horizon 2020) and keeping the EU at the forefront of global research and innovation, the European Commission is proposing a new Framework Programme (2021-2027), Horizon Europe – with a proposed budget allocation of €100 billion.

Building on the promise that research and innovation will strengthen the EU's scientific and technological bases; boost the European Union's innovation capacity, productivity and competitiveness; and to deliver on citizens' priorities and sustain our socio-economic model and values, the 3 pillars of this proposal, give greater coherence, both between and within pillars, in support of the programme objectives:

- The "open science" pillar focussing on excellent science and high-quality knowledge.

- The "global challenges and industrial competitiveness" pillar supporting research relating to societal challenges, reinforce technological and industrial capacities through five clusters (health; inclusive and security society; digital and industry; climate, energy and mobility; and food and natural resources).
- The 'open innovation' pillar aiming at making Europe a frontrunner in market-creating innovation.

Horizon Europe will incorporate policy missions to ensure the effectiveness of research and innovation funding by pursuing clearly defined targets. The Commission has engaged policy experts to develop studies, case studies and reports on how a mission-oriented policy approach will work.

The European University Association has noted[23] that:

> *"Regarding the principles of Horizon Europe, EUA appreciates that its input on the need to ensure multi-disciplinarity and guarantee the integration of social sciences and humanities (SSH) across all activities have been recognised as important cross-cutting priorities for Horizon Europe. The overall objectives of Horizon Europe require contributions from science, technology, engineering, mathematics (STEM) and SSH disciplines alike. EUA's vision is that SSH disciplines are seamlessly integrated across the whole programme to address scientific challenges".*

At a recent (Spring 2019) event for European UAS, a number of focal points were mentioned from the DG RTD perspective, with some subtle but important shifts, including:

- Europe only spends 1.3% on R&D, compared to approx 3% in US and 2.5% in China
- Possible that Marie Curie Programme will accept applications from UAS and also *for non-Phd work*
- Regarding Social Sciences & Humanities, the topic of Ethics by Design will become more important

[23] https://eua.eu/news/301:horizon-europe-gets-greenlight-%E2%80%93-time-to-scale-up.html

- While ICT has been disruptive, there will be an emphasis on incremental versus disruptive innovation

Similarly, from the DG REGIO perspective:

- RIS3 spend will be increased and also moving beyond place-based RIS3 with new inter-regional innovation investments
- While emergence failure itself remains implicit, social cohesion and relationship between workfield and UAS is important, with key areas for prioritisation (EDP)
- Interest will be expanded from solely Innovation to the wider context including digitalisation, SMEs, and Skills, the latter at firm-level for the first time.
- *The Vanguard initiative where results can be considered for translation to SMEs includes anticipation of needs and complementary skills.*

Regarding the general approach, the ECBN noted recently that:

> *"These European developments of the last decade took the Cultural and Creative Industries to a new level – in the European dimension but also at regional and local levels" as Bernd Fesel, Director of ECBN, recognizes, but point to the big picture: "While opening the European programmes for CCS in a multitude of ways, the policies for growth, urban development, content and innovation for the Cultural Creative Industries stayed silo policies. As a result, the large potentials of the Cultural Creative Industries to contribute with cross-sector innovations and solutions to the main challenges of Europe ahead – such as climate change, youth unemployment and digital transformations – are not yet unleashed. That must be a top priority of the next EU Commission and European Parliament."*

Recent developments regarding the Open Innovation Pillar and the second cluster of the Global Challenges are discussed below. Other parts of Horizon Europe also remain of interest, for example in Cluster 3 (with a focus on Digital Industry & Space) where:

> *"The overarching vision is a human-centred approach, going hand in hand with European social and ethical values, social inclusiveness, and*

the creation of sustainable, high quality jobs including through social innovation. From the outset we must involve and empower workers, consumers and firms to make sure that they have access to, and take up, these technologies (reflecting gender and other diversity issues where appropriate). ***Due regard will be paid to the impact of technologies and industrial transformation on people and societies. The interaction of science, technology, social sciences and humanities will be important in this respect."***

Open Innovation Pillar

At this time, this pillar has not yet been articulated and this will be included in a future iteration of this report.

Global Challenges Cluster 2

As shown in Figure 5. above, it has now been decided that under the Global Challenges Pillar, the second cluster will be ***'Culture, Creativity & Inclusion'***. This marks a significant change from previous programmes and an acknowledgement of the growing importance of the CCS sector. This also means that specific budget is allocated for this cluster, provisionally up to 3bn euro.

The following text is from an unofficial early draft document and should not be quoted. It is expected that documentation will become available in Autumn 2019.

Activities in Cluster Culture, Creativity and Inclusive Society focus on challenges pertaining to democratic governance, cultural heritage and creative economy, social and economic transformations. The challenges are interconnected and have been chosen because they respond to the most pressing social, political, economic and cultural concerns and expectations of European citizens. They provide a clear picture of what benefits citizens and different stakeholders can expect from R&I actions supported under this cluster. The key R&I priorities will respond to the following challenges:

1) Enhancing democratic governance

Democracies are more fragile and more vulnerable than in the past. The Freedom in the World Report (2018) shows that democracy across the globe faces its most serious crisis in decades. At the same time, various European surveys show declining levels of trust to the political institutions of democracy. In terms of legitimacy, there are signs of a potential a shift from governance based on expertise, multilateralism, and consensual policymaking towards majoritarianism, unilateralism, nationalism, and polarization. Relevant research can support policy action in favour of democracy, its stability, and its further development with a view to ***enhancing representation, participation, openness, pluralism, tolerance, cultural participation, respect of diversity including cultural expressions, non-discrimination, the protection of fundamental rights and the rule of law.***

2) Promoting Cultural Heritage

Cultural heritage is the expression of the ways of living a society has developed by common values, traditions and beliefs and the different influences it has been exposed to and absorbed over time. It gives a sense of belonging to people and anchors our societies into their past while allowing them to project themselves into the future. Opinion surveys show that cultural heritage is important for the overwhelming majority of European citizens, who also believe that public authorities should allocate more resources to its protection. The EU's "United in Diversity" motto finds a tangible expression in cultural heritage. Historical sites and monuments, cultural landscapes, artefacts, museums, archives, as well as languages, customs, traditions, behaviours, beliefs and values all make up the rich tapestry of European cultural heritage. This makes Europe a vibrant and unique place to tackle future challenges based on its creativity, excellent research and cutting-edge technologies. ***Cultural Heritage needs to make the best use of the opportunities brought by the digital transformation. It needs to combine traditional craftsmanship, cutting edge and digital technologies for the preservation and restoration of cultural goods with innovative techniques in the cultural and creative industries with a view to the creation of jobs, growth and wealth.***

3) Management of social and economic transformations

Together with other challenges like climate change, the transition to a low carbon economy and demographic developments, ***technological advancements pose multidimensional social (economic, ethical, cultural and political) challenges.*** *In the realm of work, productivity and welfare, as well as in the way we live and learn, the impact of automation could be substantial. A full deployment of existing new technologies in the production process could lead to automation rates of one third to two thirds of today's tasks. According to other estimates, approximately 14% of jobs in the OECD countries are highly automatable, equivalent to 66 million jobs. At the same time, there has been an increase in income inequality and labour market polarisation, and a slowdown in convergence in income and employment in most European countries. Inequalities threaten social and territorial cohesion and economic growth. They also create obstacles in participation in political life and can thus undermine the stability of democracies. Against this background,* ***the creative economy has become a powerful transformative force in the world economy. It could drive to a more inclusive society and economy.***

Policy Objectives

Cluster 2 Culture, Creativity and Inclusive Society *aims to foster greater understanding of a culturally and socially rich and diverse Europe and show how it can benefit most from* ***adopting new paradigms, and policies for change in a context of fast paced transformations and international interconnectedness.*** *Although the challenges are great, so too are the opportunities to* ***turn these into strengths*** *through European cohesion, convergence, diversity and creativity across all areas of the economy, society, culture and governance.*

Thus, there is a need for research and innovation that increases our knowledge about the current developments of European societies and that directly develops solutions for the future. ***To promote new thinking and provide solutions to social and economic challenges, the full integration of cultural and creative sectors into research and innovation processes is essential.*** *Approaches should be inter-disciplinary, inclusive, cross-sectorial, cross-national, and comparative allowing the identification of change factors* ***while elaborating innovative theories, applications and policy recommendations for***

moving forward. In doing so, they should also make best use of the ongoing big data revolution in the social sciences and the humanities.

Cluster 2 will address EU priorities on Democratic Change; Jobs Growth and Investment; Migration; Justice and Fundamental Rights; A Deeper and Fairer Internal Market; Making the EU a Stronger Global Actor; Cultural Heritage; cultural and creative industries

Key R&I Orientations

R&I activities in this Cluster will help develop new statistical ***tools and methodologies for economic and social analysis and foresight*** *in all (three) Key R&I Orientations outlined below; render this knowledge base more easily accessible, comparable at EU level, and improve the granularity of its findings, with due focus on distributional and territorial impacts.*

In this context this priority will:

- *Build up evidence and policy recommendations on* ***enhancing democracy and good governance;***
- ***Elucidate the societal – including political, ethical and economic - effects of technological advancements and the impact of drivers of change*** *(such as globalisation, ageing etc.) on jobs, skills, productivity, income, welfare and inequalities.*
- *Develop evidence-based policy recommendations on how economic sectors,* ***including the cultural and creative sectors*** *and the social economy, can address social and economic transformations.*
- *Help develop* ***evidence based policy responses for inclusive growth and upward socio-economic convergence****. Buttress the EU's resilience to economic, social, and financial shocks.*
- ***Develop and test innovative approaches that address social challenges, including via experimentation, behavioural studies and social innovations.***
- *Contribute to the* ***implementation of internationally agreed agendas*** *(SDGs, decent work agenda, etc.) and the promotion of EU core values;*
- *Support the implementation of robust evidence-based strategies in the* ***management of mobility and migration*** *and the integration of migrants in European societies.*

- *Promote the **value, monitoring, protection, access to and sustainable use of European cultural heritage** and its **contribution to the cultural and creative sectors.***
- *Build evidence of the innovation capacity of cultural and creative industries and their role as **innovation triggers** in other economic sectors.*

4.1. Democracy and Governance

*The implementation of these research activities will assist in the re-invigoration and modernisation of democratic governance. The aim is to develop innovations, policies and institutions that expand political participation, social dialogue and civic engagement, gender equality, enhance transparency, accountability and legitimacy, improve trust in democratic institutions, safeguard pluralism, liberties and the rule of law, and protect democracy from multidimensional threats. In the medium to long term, the knowledge, data, scientifically robust recommendations and innovations generated will **enhance decision making on all aspects relevant to democratic governance.***

*R&I will help **address the impacts and explore the potential as well as the challenges of technological and scientific advancements,** including big data, geo-information systems, online social networks and artificial intelligence on democracy. It will also aim to increase transparency and accountability of governments and lead to the development of strategies to counterbalance disinformation and the manipulated polarisation of public opinion.*

*As such, it will also help assess the state of safeguards of democratic systems, **analysing in this context the role of media, including digital media.** Research will also help understand social network communication and build on education and media literacy as gateways to democratic participation. Knowledge generated will lead to recommendations regarding the role of digital technology in participatory democracy and active and inclusive citizenship.*

*R&I will also target **culture's value to democracy,** by analysing relationships between a number of culture and democracy dimensions such as active cultural engagement and democratic openness; political engagement; trust in society and well-being.*

4.2 Cultural Heritage

The implementation of these research activities will result in better access, understanding of and engagement with cultural heritage. They will support the emergence of a sense of belonging based on the common roots and riches of the diversity of European cultural heritage. R&I results will contribute to European integration by ***providing better, wider and more equal access to culture, cultural heritage and the arts****. Knowledge generated will support the emergence of* ***new forms of cultural expression****, at the cross roads between different creative sectors. Horizon Europe activities will also enhance the governance of European cultural heritage institutions and networks. Most importantly, they will improve protection, enhancement, conservation and more efficient restoration of European cultural heritage. Research activities shall increase the quality standards for conservation and restoration of European cultural heritage. R&I will provide solutions for making the EU a world leader in cultural heritage conservation technologies, management, digitisation and curation of digital heritage assets... Finally, R&I will support sustainable growth and job creation through contributing to a European industrial policy for cultural and creative industries including design.*

Support the EU's policy objective in monitoring, preserving and transmitting cultural heritage, fostering cultural and creative sectors and promoting cultural diversity.

- *Share and boost access to and participation in cultural heritage through innovative approaches, new and emerging technologies, including digitisation and* ***increased cultural literacy.*** *Support the use of digitised historical collections and archives for ground-breaking new interpretations of the past.*
- *Build on the* ***role of intangible heritage, traditions, behavioural patterns, perceptions, beliefs, values and identities and new forms of cultural expression in the development of new approaches for more cohesive, and sustainable societies.***
- *Promote* ***new educational and training paths and skills*** *to make the existing cultural heritage protection practices compatible with societal transformation (data society).*

- *Promote policies and projects leading to ensuring **gender equality in the cultural heritage sector.***
- *Develop cutting-edge conservation and restoration technologies and methods and provide innovative, integrated, sustainable and participative management models.*
- *Enhance protection of cultural heritage against natural and man-made disasters and climate change, including risk management and improving the resilience of Europe's cultural heritage in the event of natural and man-made disasters and against the intensifying effects of climate change.*
- ***Connect cultural heritage with the creative, and cultural sectors**, with a view to spurring inclusive growth, jobs, social cohesion and diversity.*
- *Break the boundaries between creativity, production, promotion and access to content, innovative business models and technological advances in the cultural and creative sectors and **link analogue and digital heritage and intercultural cooperation.***
- *Research old and new forms of cultural and artistic expression to promote tangible and intangible heritage and intercultural cooperation and valorise traditional skills and reuse existing assets.*
- *Provide research capacities for European cultural diplomacy and for underpinning the European Union's leading role in international cooperation for preventing illicit trafficking in cultural goods and for the protection of endangered cultural heritage.*
- *Provide adequate and well-designed tools aiming to fight illicit trade in cultural goods and protect cultural heritage in danger, in particular in conflict zones.*
- *Develop new approaches, concepts and practices for sustainable, accessible and inclusive tourism, including **cultural tourism**.*
- *R&I will contribute to sustainable development through research and innovation for the conservation, safeguarding, developing and regeneration of cultural landscapes.*

4.3 Social and Economic Transformations

The implementation of these research activities will contribute to a comprehensive European strategy for inclusive growth, ensuring no

one is left behind, ***including through the accumulation and preservation of human capital in the face of old and new risks****. It will equally support productivity gains and social and economic resilience. The knowledge generated will feed into* ***the design of institutions*** *in line with the above mentioned objectives and will facilitate the assessment of policy needs and outcomes in the field of the societal and economic inclusion of migrants and population of immigrant background. Support sustainable growth and job creation through a European industrial policy for cultural and creative industries including design.*

Research will support policies for inclusive growth and upward convergence via a strategy of social and economic investments, structural reforms and productivity enhancing policies in line with the European Pillar of Social Rights and the EU's policies on smart, inclusive and sustainable growth.

Research will also assess the role of specific sectors as relevant, including cultural and creative sectors and the social economy, for today's social and economic transformations.

R&I will boost the EU's capacity to monitor perceptions of key socio-economic trends and better anticipate needs and developments. Such information is needed e.g. for strategies for inclusive education, training and lifelong learning for high value added skills, which can facilitate social mobility and economic growth.

Another objective will be to ***assess the multidimensional impacts of globalisation and technology****, including digitalisation and automation, on the future of work and skills needs, productivity, employment, taxation, welfare, social services and the public sector; in the wide variety of social, economic and territorial contexts in Europe.*

Activities will bring the benefits of digital transformation to education and training, by making optimal use of emerging technologies (such as AI, data analytics or blockchain) and by providing teachers and educators with the adequate skills, knowledge and awareness of opportunities.

R&I will support the digital transformation and modernisation of public administrations and help them meet citizens' and other stakeholders' expectations regarding user-centric/personalised service provision, including where service provision is threatened by social or spatial challenges.

Activities in this R&I orientation will also support EU migration and mobility policies, both internal and external. Research will focus on analysing past and current dynamics of migration and integration, future trends and projections, societal impacts of migration of refugees and other migrants, and the effects of migration policies. It will help understand and address drivers and transformations underlying migration. Activities will contribute to strengthening mobility and migration governance in Europe and globally, by improving the quality of the data landscape and evidence-based knowledge.

Cultural & Creative Industries Sector

Growing acknowledgement of CCS Sector

In less than a decade, EU policies have moved towards a broader understanding of culture and creativity accompanied by an increasing willingness to support CCS and their contribution to growth and innovation in the wider economy.

Whilst the 2007 Agenda for Culture[24] was the first document that highlights the economic and social contribution of culture investment and industries beyond the intrinsic value of culture and its non-utilitarian function, the Innovation Union initiative of October 2010[25] - one of the flagship initiatives of the EU 2020 Strategy - already makes reference to cultural and creative industries and broadens the concept of innovation. Subsequent policy documents in different fields (from cohesion to industrial policies) further recognise CCS' potential for innovation and growth. The Communication on "An integrated industrial policy for the globalisation era"[26] recognises that "*[…] closer cross-sectoral cooperation can boost creativity and innovation in companies. This requires companies to look beyond their own sectors, so new mechanisms are needed to ensure the cross-fertilisation of ideas and business models*" while calling for appropriate "*policy responses*" to support such cross-sectoral linkages.

CCS gradually recognised as industrial sector

This new and more comprehensive understanding of culture and creativity and their impact opened the way to the development in 2012 of a strategy for the sector[27] as a catalyst for innovation in other economic sectors, from ICT to tourism. The strategy embedded in the Communication on "Promoting cultural and creative sectors for growth and jobs in the EU" spells out the sector's potential to "*trigger spill-overs in other industries*" due to its position at the "*crossroads between arts,*

[24] European Commission. (2007). Communication: European agenda for culture in a globalising world. COM(2007) 242, Brussels.

[25] European Commission. (2010). Communication: Europe 2020 Flagship Initiative Innovation Union COM(2010) 546. Brussels.

[26] European Commission. (2010). An Integrated Industrial Policy for the Globalisation Era: Putting Competitiveness and Sustainability at Centre Stage COM(2010) 614, Brussels.

[27] European Commission (2012), Communication on Promoting cultural and creative sectors for growth and jobs in the EU, Brussels.

business and technology […]. They fuel content for ICT applications, creating a demand […] (and) have also direct impacts on sectors such as tourism and are integrated at all staged of the value chain of other sectors such as fashion and high-end industries […]". This approach is also embraced by the new funding programme for culture 2014-2020 ("Creative Europe").[28]

The EC recognises CCS as a high growth sector generating surplus in trade as well as a resilient sector in face to the economic crisis. The contribution of the sector to achieving the EU competitiveness goals is evident:

- CCS are at the **forefront of the digital and media convergence** creating crossover opportunities;
- Business services is going to be taken into account in the design of industrial policies[29] and CCS are essentially service industries, notably business support services;
- As the "*EU companies cannot compete on low price and low-quality products*"[30] so **added value services** from CCS are required to generate experience, entertainment, aesthetic, value, meanings;
- The Creative Europe programme (2014-2020) focused on reinforcing the competitiveness of CCS. A Guarantee facility for the sector is planned to address investment issues.

There is clearly a momentum building up across all relevant DGs of the European Commission (DG GROW, DG EAC, DG CONNECT and DG REGIO), as well as other European bodies. The European Parliament has set up an intergroup on CCS, and the Council of the European Union highlighted the role of public policies in developing entrepreneurial and innovation potential of cultural and creative sectors in its 2015-2018 Work Plan for Culture.[31] National policies have a much stronger integration of CCS in their industrial and innovation policies than ever before. Austria, Finland, Germany, Netherlands, Greece, the United

[28] European Commission. (2011). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on Creative Europe - A new framework programme for the cultural and creative sectors (2014-2020), COM(2011) 786/2.

[29] See European Commission (2014), Communication : For an Industrial Renaissance. COM(2014) 14/2. Brussels, p. 7

[30] See European Commission (2014), Communication : For an Industrial Renaissance. COM(2014) 14/2. Brussels, p. 8

[31] http://data.consilium.europa.eu/doc/document/ST-16094-2014-INIT/en/pdf

Kingdom, Malta, France, Cyprus, Denmark, Portugal and Belgium all have integrated CCS in their national competitiveness and innovation policies).[32]

At a local and regional level, it is estimated that around 134 European regions have included CCS as one of their strategic priorities (as economic or scientific domains or as policy objectives) for 2014-2020, often linked to other priority sectors and notably tourism and ICT[33]:

- Overall, there is a strong policy support on CCS incubation (at company level) and support to creation/production (at value chain level). However, CCS support to scaling up and internationalisation of creative SMEs is lacking. Similarly, policy tools and programmes support marketing and promotion of CCS products and services are often overlooked.
- Few programmes actually support research, innovation and development for CCS, despite the specificities of the sector in that regard (making ample use of both technological and non-technological forms of innovation).
- The chronic under-financing of CCS has not yet been sufficiently addressed.

The cross-sectoral dynamics of the Cultural & Creative Industries (CCS) offer key models and testbeds for the creation of products and services that are highly relevant to other sectors currently affected by rapid technological transformation. Because of their commitment to experiment with new methods and technologies and the interest in the realms of individual experience, CCS play a central role as experience-economy-paradigms guide change in other sectors.

CCS as mediators to facilitate complex change processes

However, while CCS policy has replicated sectoral approaches (theatre vs games, film vs journalism, architecture vs software development etc) with some success (witness the growth of gaming industries and the growing interest in game-based approaches to design, education, and organisation), **CCS actors are not yet in a position to fully embrace**

[32] See KEA (2009), The impact of Culture on Creativity, but also OMC Handbook report on CCS policies http://ec.europa.eu/culture/library/reports/policy-handbook_en.pdf

[33] Based on http://s3platform.jrc.ec.europa.eu/map (own analysis) and https://ec.europa.eu/jrc/sites/default/files/JRC95227_Mapping%20Smart%20Specialisation%20Priorities.pdf

such a role as mediators to facilitate complex transformation processes. First-generation CCS frameworks aimed to demonstrate the effectiveness of policy that seeks and fosters commonalities between once-separate sectors (such as theatre and software development). As daily experience of platform economy products and services has accustomed to the transfer of "theatrical" forms of presentation into a wide array of professional and even industrial arenas (think virtual reality in car design, augmented reality in journalism, motion capture / eye tracking in retail), it is now time to widen the focus of CCS policy beyond CCS as sole field of impact and innovation.

Supporting CCS in shaping the rapid transformation of Europe's digital societies also offers opportunities to **transfer methods from across CCS to the formulation of policy**. Conventional sector-based cascade-models of knowledge and skills transfer have to be complemented by new models drawn from open and co-creative innovation methods. The opening of research processes is already a key priority of European policy and considered highly relevant to the nourishing of a culture both "*open to the world*" and of course open to actors from across Europe.[34] Europe has many internal divides, some linked to the sobering realities of economic difference, others to the seemingly soft (but in fact equally influential) differences in the cultural imaginations of its member states. Both frame what happens, and can happen, in CCS and elsewhere across Europe's digital societies. **If policy wants to foster these dynamics, it will have to open its own analytical frameworks to multidisciplinary visions.** An earlier publication by LERU[35] remains relevant as it examined the *'process of cross-fertilization between science and creative arts'* and pointed towards the MIT programme on Art, Culture and Technology (ACT)[36] as an example of leading creative research, a connection now bearing fruit with, for example, the forthcoming (2019) journal on Artistic Intelligence and with the recently

[34] EC (2016) Open Innovation, Open Science, Open to the World - a vision for Europe. Brussels: European Commission, https://ec.europa.eu/digital-single-market/en/news/open-innovation-open-science-open-world-vision-europe

[35] Buekrs & Nugteren (2012) Creative Arts and Research-Intensive Universities: A Crucial Partnership, LERU, Briefing Paper No. 2

[36] Also see the MIT Program in Art, Culture & Technology (ACT) is an academic program and centre of critical art practice, intelligence and discourse within the School of Architecture and Planning at the Massachusetts Institute of Technology.

started COST Action on Advanced Practices.[37] The relevance to current discussions is clear:

> *"Obviously also creative arts has a prominent role to play in this mission as it is the perfect drug to cure the lack of an interdisciplinary approach in many educational programmes. This cannot be done by simply imposing the paradigms from the field of arts, but by* ***cultivating the dialogue between the ideas, models and concepts*** *of both the humanities and the sciences."*

Cultivating the dialogue between the ideas, models and concepts of both the humanities and the sciences.

Through a multilayered approach, emerging policy can not only address the needs of CCS but pave the way for CCS actors to **adopt an active role in the co-creation of policy and governance frameworks capable of initiating cross-innovation dynamics** both across and beyond CCS. There is significant potential for a more substantial role for growing the CCS sector by:

- raising awareness of the opportunities offered from **re-balancing societal value and economic potential** across multiple sectors
- providing a **deeper understanding** of citizen-driven innovation and emerging economies of meaning
- stimulating **more reflective and sustainable understanding** of the opportunities offered by recent and emerging technologies and thereby **better contextualising the deployment of creative and artistic intelligence**
- supporting policy makers in their decision-making at regional and national levels with access to better data and instrumental multi-perspective tools

And they all have in common **a need to better instrumentalise co-creation instruments** and to better understand the **multi-perspective and cross-disciplinary locus** for their deployment.

[37] CA18136, (2019) European Forum for Advanced Practices, COST. Initially, the European Forum for Advanced Practices is an inclusive research network originating from universities, NGOs and community-based organisations, independent research entities, museums, and a wide range of arts academies. EFAP's broad goal is to establish a dialog across the boundaries that often separate these contexts and to promote exchange with a focus on emergent forms of artistic- and practice-based research. See https://www.cost.eu/actions/CA18136/#tabs|Name:overview

Strengths of the Cultural & Creative Sector

It has become widely understood that the cultural and creative industries (CCS) provide a substantial bedrock for the European economy and offer significant opportunities whereby the role of culture and creative intelligence can stimulate the kind of **crossover innovation** that our changing society increasingly requires. In order for the CCS sector to be better represented within regional, national and European growth trajectories, far greater insight is required into sectoral framework conditions, interactions with research and innovation processes, knowledge gaps and clustering of emergent skills needed to boost growth and employment, especially for microSMEs.

CCS have become well established in both an economic and policy context as important assets in strengthening Europe's economic structure and maintaining its competitiveness in the global economy. Beyond its own intrinsic value, culture greatly contributes to social and economic development. Culture has become a transversal area playing a key role in generating new forms of innovation, contributing to companies' competitiveness and entrepreneurship as well as to urban regeneration, fostering attractiveness, and enhancing social integration. The study entitled "*The Economy of Culture in Europe*", carried out for the European Commission in 2006[38] showed how culture drives economic and social development and cohesion, and in particular also innovation and new developments in the ICT sectors and innovation in general.

Since then, methodologically refined estimations on the contribution of culture to GDP have been carried out: TERA in 2014[39] concludes that the core creative industries in the 27 countries of the European Union generate EUR 558 billion in value added to GDP, approximately 4.4% of total European GDP. The creative industries represent approximately 8.3 million full-time equivalent jobs, or 3.8% of the total European workforce. In addition, a recent study carried out for the European

[38] KEA European Affairs (2006), "The Economy of Culture in Europe", Study for the European Commission, DG Education and Culture. http://ec.europa.eu/assets/eac/culture/library/studies/cultural-economy_en.pdf

[39] TERA (2014) for the Forum D'Avignon, http://www.teraconsultants.fr/en/issues/The-Economic-Contribution-of-the-Creative-Industries-to-EU-in-GDP-and-Employment

Commission by KMU Forschung Austria and VVA[40] shows that the CCS (wide definition, including high-end and fashion)[41] make up 7.5% of all persons employed in the European economy and generate 5.3% of the total European gross value added and that CCS have been more resilient to the economic and financial crisis compared to the rest of the economy.

Business literature and qualitative observations increasingly show that, beyond specific B2B relations (e.g. trade of creative services), CCS' competences are being integrated at different stages of the industrial value chain with positive effects on innovation and economic performance.[42] For instance, it is estimated that firms with stronger B2B links with the creative industries are more innovative: firms that spend twice the average amount on creative inputs are 25% more likely to introduce product innovations.[43] In UK, every pound invested in design as part of the Design Leadership Project generated £4.12 net operating profit, £20 net turnover, £5.27 net exports.[44] In Denmark, the Danish Design Council found that the gross revenues were around 22% higher for companies that invested in design than for those that did not. In Germany, recent research concluded that two thirds of creative enterprises support their clients in the initial phase of innovation processes and significantly contribute to the development of new ideas and products. The survey also showed that creative firms are primarily asked to provide support services at the "top" of the client company's

[40] KMU Forschung Austria and VVA (2016) "Boosting the competitiveness of cultural and creative industries for growth and jobs", study on behalf of the European Commission, June 2016. http://ec.europa.eu/growth/tools-databases/newsroom/cf/itemdetail.cfm?item_id=8900&.

[41] Including the following subsectors: advertising, architecture, archives, libraries, cultural heritage, books & press, cultural education, design, visual arts, music, performing arts & artistic creation, radio & TV, software & games, video & film, fashion industry (fashion design & manufacturing)

[42] See: Bakhshi, H., McVittie, E., Simmie J. (2008) Creating Innovation - Do the creative industries support innovation in the wider economy? NESTA. London; Chapain, C. et al. (2010) Creative Clusters and Innovation. Putting Creativity on the Map. NESTA; Frontier Economics (2012) Creative Industry Spillovers – understanding their impact on the wider economy. Report prepared for DCMS; UK Design Council (2013) Changing Behavior by Design. See also a recently published paper on the topic: Calero, C. et al. (2014) Can Arts-Based Interventions Enhance Labor Market Outcomes among Youth? Evidence from a Randomised Trial in Rio de Janeiro, IZA DP No. 8210.

[43] Bakhshi, H., McVittie, E. and Simmie, J. (2008), Creating innovation, do the creative industries support innovation in the wider economy?, NESTA Research Report July 2008, NESTA, London.

[44] See: http://www.designcouncil.org.uk/projects/growth-design

innovation chain and, in addition to this, trigger innovative processes at its "bottom" (mainly in sales and marketing).[45]

Indeed CCS-driven innovation has been found to occur through value chain linkages and/or when sectors rub up against each other thanks to co-location.[46] Crossovers between CCS and manufacturing create high value-added products and services embodying Europe's heritage and culture; the authenticity of this synergy requires that heritage, design, innovation and creative expressions remain collocated with the 'making'. The decoupling of design from manufacturing - caused by offshoring - risks eroding the competitiveness of Europe's production. Their value is befogged by long distance value chains. The current literature on reshoring is stressing the importance of reconnecting all the value creation stages of production to rebuild competitive manufacturing capabilities in Europe.[47] Being at the crossroads between arts, business and technology, CCS are in a strategic position to trigger crossovers with other industries and stimulate innovation. **Creativity is a multi-disciplinary process, and innovation is often the result of interactions between multiple disciplines.** It is worth remembering, however, that:

> *"Although creativity goes hand in hand with innovation, it is not innovation. While creativity is the ability to produce new and unique ideas, innovation is the implementation of that creativity—that is the introduction of that "new" (idea, solution, process, product, service...) into the real world (Gutzmer 2016)."* [48]

CCS are at the frontline of the experience and networked economy, where skills in entertainment, communication, networking, as well as in staging experience, in engaging/inspiring people, in managing risks are very much in demand. A strong "content" industry is a prerequisite in the development of digital services as access to creative productions is an important element of market success.

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[45] Fraunhofer ISI, Prognos AG (2012). The cultural and creative industries in the macroeconomic value added chain – report compiled on behalf of the German Federal Ministry of Economics and Technology.

[46] Fraunhofer ISI, Prognos AG (2012). The cultural and creative industries in the macroeconomic value added chain – report compiled on behalf of the German Federal Ministry of Economics and Technology.

[47] Bailey D. and Lisa De Propris (2014) Recession, Recovery and Resilience? Regional Studies 11/2014, pp. 1757-1760.

[48] Concilio & Tosoni (eds) (2019) Innovation Capacity And The City, SpringerBriefs in Applied Sciences and Technology, Milan

Skills for the Cultural & Creative Sector

One of the major challenges of the CCS sector is enhancing the skills base

The creative and cultural economy however still faces major challenges. One challenge is skills: in particular, in relation to **how to match graduates with the skills demanded by CCS** and **how to match CCS' skills with the demand for competences** by the wider economy.[49] Indeed, creative employment is growing, but it is crucial that it grows in sectors and locations where it can be utilised. Linked to this challenge is the ability to apprehend international markets and make the most of digital tools to develop and export CCS products and services.

Based on value chain analyses, the 2017 report[50] on '*Mapping the creative value chains'* showed how digitisation has given rise to crossover innovation trajectories by challenging existing balances and sectoral relations by providing alternative models to create, produce, promote or distribute. Alongside enhanced promotion of cultural diversity and improving the regulatory environment, the need for better statistics for data collection and monitoring was also highlighted. Equally, the need to create and raise awareness on the added value of cross-sectoral collaboration with support for greater creative experimentation was seen as crucial in overcoming existing fragmentation by generating stronger connections. And crucially, this requires the **clustering of new skillsets and capacity building across the CCS with innovative curricula on creative entrepreneurship and the smarter inclusion of CCS data in stress-testing ideas and opportunities.** With stronger co-operative models for CCS microSMEs and stronger collective representation, this greater level of reciprocity could form the basis for more sustainable crossover innovation and economic growth.

In the context of an ongoing Delphi study, a recent report from PPMi and KEA European Affairs[51] notes that:

[49] Nadia Danhash, Kai Lehikoinen and Joost Heinsius (2018) Careers in the arts: Visions for the future, ELIA. See, https://www.elia-artschools.org/activities/nxt/nxt-publication---careers-in-the-arts-visions-for-the-future

[50] DG Education & Culture (2017) Mapping the Creative Value Chains: A study on the economy of culture in the digital age. Available at: https://publications.europa.eu/en/publication-detail/-/publication/4737f41d-45ac-11e7-aea8-01aa75ed71a1

[51] See www.ppmi.lt and www.keanet.eu

"Now that the European educators recognised the previously undervalued importance of creative skills, creativity and arts are increasingly more integrated into the skill sets that have to be developed in learners through standard education and through the lifelong learning programmes, in particular to face the digitisation of work and improve interaction between human workers and machines. This trend provides the CCS with numerous opportunities in the realm of education and life- long learning."

On the other hand:

"…the CCS organisations should strengthen their own skills and competences (in particular their digital skills) to remain up-to-date and to ensure an advanced and secure position of the CCS in the society.4 Another positive trend observed in the cultural and creative sectors is their willingness to experiment with atypical forms of work, as well as their propensity to reinvent new business and organisational models to respond to a rapidly changing environment. "

A number of negative trends were also identified such as the sometimes unhealthy work climates and unjust labour conditions as workers of cultural and creative sectors are often inclined to accept weak economic and social conditions, low pay levels and lack of funding to support their artistic research.

One further issue explicitly regarding arts education was also reported:

"Another challenge that the CCS are facing is the access to cultural and artistic education, which is typically mainly available to the representatives of middle- to upper-classes of the European societies. Inequality in access to quality education turns culture and art into a sector governed by and performing for elites. This situation could be partially tackled by allowing validation of competences from informal and non-formal artistic education. Furthermore, more equal access to cultural and artistic education could be ensured by better funding and by provision of a wider range of scholarships. In the next decade, reduction of public funding dedicated for artistic and cultural

education in primary, secondary and higher education can lead to a skills shortage and worsening financial conditions of art schools."

We have seen over the last years a significant interest in the CCS sector as one that can offer fresh perspectives on the many and varied challenges facing us at individual, organisational, societal, economic and political levels. There has been far greater understanding of the economic value of this sector and in many countries this has led to redefinitions and re-appraisals of the perceived and actual value of this sector. But there remain limits to this understanding.

Skills for Reframing Public Value

While economists are not the only group engaging with the contextualised processes of commensuration and the ascription of value, they have developed tools and concepts that can help us understand and locate "value" in CCS. But we also need to **explore how CCS contribute to the comprehension of new and emerging forms of value** that are key to Europe's digital and platform economies. For example, from the policy making perspective, there remains much work to be done when we consider the contribution that can be made from participatory and collaborative approaches.

Seen from the **public sector perspective**, many **local administrations** have welcomed and embraced the contributions from creative thinking, with cities such as Copenhagen or Barcelona now appointing Chief Design Officers - not only to spearhead these initiatives, but to link their cities in cross-country municipal networks that in turn facilitate the emergence of new economic geographies crucial for future developments in CCS. Elsewhere, when some of these co-creation approaches are poorly implemented, the results are less impressive.

The **DesignScapes** project is currently producing a draft Green Paper that is likely to become influential and this makes a number of concrete

suggestions, noting that:

> *"And it is witnessed by multiple sources, including the most recent Eurobarometer 2015 and 2016 surveys, showing that only 12-13% of EU enterprises make a strategic use of design within their business models and an additional 18% adopt design related methods and tools within their production and value generation processes."*[52]

The **importance of cities for design enabled innovation** is also highlighted;

> *"According to this vision, cities play a crucial role, acting as testbed environments for new solutions targeting global challenges, to be commercially exploited at a later stage, and/or being the cradles of emerging, radically innovative practices that disrupt existing markets and create new opportunities for growth and jobs. In fact, it is in the city that innovation is driven by problems that present themselves in the most societally relevant way. At the same time, it is in the city that innovators can find the best opportunities for collective knowledge creation and the required networked learning skills."*

The innovation capacity of cities is related to some key dimensions including: entrepreneurial culture, institutional capacity, cultural vibe, environmental awareness, social activism and integration. Design can be seen as an enabling factor of such capacity by supporting the creation of an infrastructure that hosts and coordinates value generation in cities. By using design in this way, cities become the ideal environment in which innovation is incubated and empowered.
Relevant questions include the following:

- *How can latent design capabilities in urban contexts be captured to become innovation resources?*
- *What should be done to create the local conditions for design to increase its power of igniting transitions, value creation and impact generation processes in our cities?*

[52] https://designscapes.eu/

- *Which design resources can be activated to coordinate punctual initiatives, so as to create an innovation network as urban infrastructure and/or increase its accessibility if already existing?*

The draft Green Paper identifies three areas for future action:

1: *Design for value generation*
Design cannot be limited to the adoption of a toolbox of methods and tools, but rather be an approach to orient innovation to generate value. The issue is ***how to support the production of a broad range of new solutions, creating the conditions for a highly innovative context****. In this sense, design-thinking should not only focus on the intrinsic value of innovative outputs but also on the value of the resources that help generate them.*

2: *Design as support for the innovation capacity of cities*
The innovation capacity of cities is related to some key dimensions including: entrepreneurial culture, institutional capacity, cultural vibe, environmental awareness, social activism and integration. Design can be seen as an enabling factor of such capacity by ***supporting the creation of an infrastructure that hosts and coordinates value generation in cities****. By using design in this way, cities become the ideal environment in which innovation is incubated and empowered.*

3: *Design as a new Policy Competency*
Creating the conditions for design (as well as innovation) to unleash their potentials is tightly connected with the parallel ***diffusion of a design and innovation prone mindset in policy makers and civil servants.*** *This is only part of the broader issue of capacity building for the public sector of the future. In that sense, design is no longer to be simply considered as a (still fundamental) goal of innovation policy but also as a resource to generate innovation.*

Just as with data-enabled economists and 'market designers', urban planners also need **a far broader engagement with creative intelligence**, reshaping interaction and scalable contextualisation if they are to be helped to succeed. And just as culture is broadly understood as the centrifugal input into the creative sector, Arts Education performs a critical role in shaping and steering the next generation of artists,

creative thinkers and designers whose influence is increasingly felt not only within the creative industries but far beyond, with an average of 60% of those graduates ultimately working in other sectors.

The DesignScapes project[53] describes the context of innovation in terms of transition pathways and notes that *"Landscape changes trigger the transition process, but it is the destabilisation of existing regimes that constitutes the key to transitions",* illustrated in Figure 6 below.

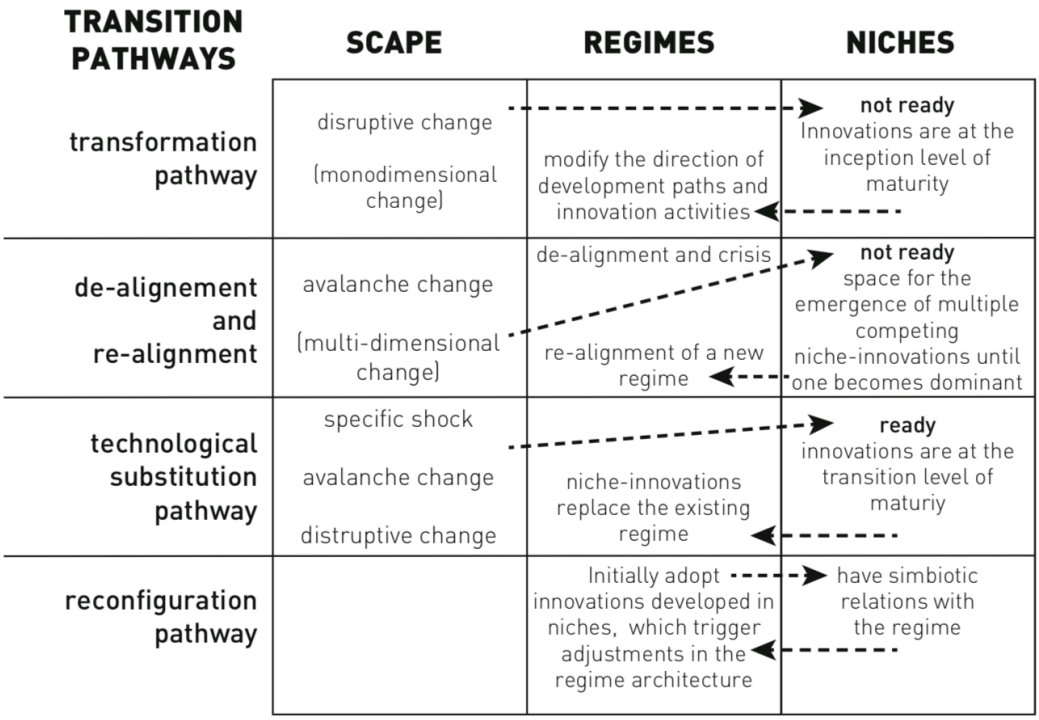

Figure 6. Transition Pathways(DesignScapes)

There is also a useful articulation of the interplay between primary and secondary instrumentalisation:

Primary instrumentalisation

- *De-contextualisation—the 'de-worlding' of innovations. The extent to which innovations are separated from their context (e.g. the gentrification and 'dis- neyfication' of an old industrial district).*

[53] Concilio, G., and Tosoni, I., (eds) (2019) Innovation Capacity and the City: The Enabling Role of Design, SpringerBriefs in Applied Sciences and Technology

- *Reductionism—the process in which the de-worlded things are simplified, stripped of 'technically useless qualities', and reduced to those aspects through which they can be enrolled in a technical network (e.g. automating a tram system).*
- *Autonomisation—dissipating or deferring feedback from the object of action to the actor (e.g. getting rid of or tokenising tenants consultation committees in housing regeneration).*
- *Positioning—the ways in which innovations turn the properties of an object to the laws and agendas of 'technicisation'—(e.g. using social media to create a network of surveillance systems in a city).*

Secondary instrumentalisation *can be seen as the oppositional dynamic to primary instrumentation. It also operates in a dialogue with primary instrumentalisation in four 'moments':*

- *Systematisation—the process of making combinations and connections between innovations and the natural environment. This leaves room for social interests and values to intervene in the innovation process.*
- *Mediation—ethical and aesthetic mediations supply the 'simplified technical object' (innovation) with new secondary qualities that reinsert it into its new social context.*
- *Vocation—'autonomisation' of the innovation is mediated through the acqui- sition of 'craft'. Acquiring vocational identity and skills engages people in a community which can then involve people in the lifecycle of innovations.*
- *Initiative—corresponds to 'positioning' but focuses on voluntary cooperation in the coordination of innovation effort. It has the potential for reducing alienation through substituting self-organisation for control from above.*

This deeper understanding of these various influences already underpins much ongoing work on methods and approaches to problem-framing, question articulation, stakeholder mapping, scenario planning, co-creation, co-design, co-validation and the development of approaches where this can be instrumentalised. One of the larger **perceived and actual deficiencies** in applied research is the relative failure of the Social Sciences & Humanities (SSH) to create generative outputs.

One of the larger **opportunities in the near term** is meaningfully to deploy artistic and creative intelligence to this end. Indeed, the mid-term review of the Creative Europe programme[54] noted that:

> *"Recent developments show the importance of creativity and culture in sustaining healthy democracies, diversity and a shared sense of European identity. Culture plays a unique role in strengthening awareness on common social challenges and, through good storytelling, can bring people together across Europe.* ***Creative Europe has a strong yet untapped potential to support new forms of citizens' engagement across borders which should be fully exploited.*** *"*

This artistic and creative intelligence can be found horizontally across the CCS sector and remains an under-used resource. With the selection of a small number of focus areas, these resources can be identified, further structured and consolidated with a view to securing a more active role in creating more generative outcomes. Indeed, **a deep understanding of values and commensuration, pragmatics and contingencies lies at the core of artistic and creative intelligence**, however defined, and is in the DNA of CCS microSMEs who must be highly adaptive just to survive. If the grand challenges, wicked problems and new missions are to be tackled, then surely we need a renewed and more focused input from this perspective.

How then can we bring about greater coherence at a regional level, whilst also strengthening the CCS sector and demonstrating the added value of creative intelligence within shared regional objectives? There is perhaps a need to provide greater clarity to related sectors about the areas of focus that the CCS can bring to these ongoing developments. To this end, ***it would be wise to 'repackage' the CCS offer so that the points of connection will become clearer***. If we are able to reshape a small number of focus areas from the CCS, they could then be re-presented in crossover innovation contexts, as well as within national

[54] EC (2018) Mid-term evaluation of the Creative Europe programme (2014-2020), SWD(2018) 159 final

and European contexts. If these are further integrated into co-creation activities, the potential becomes clearer.

A subsequent report (Autumn 2019) will consider in more detail the implications of this shifting policy landscape and the location of new research and innovation strategies.