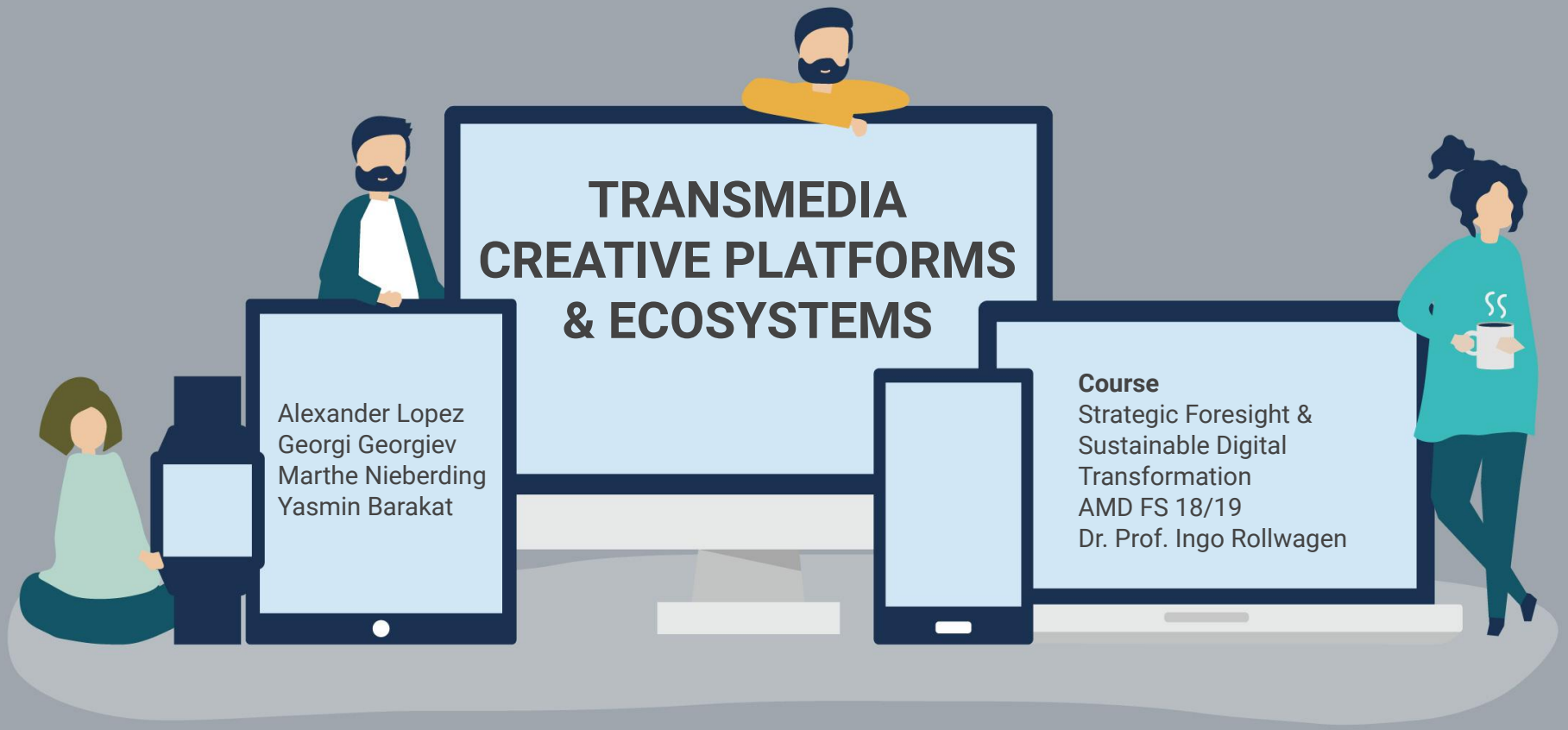

TRANSMEDIA
CREATIVE PLATFORMS
& ECOSYSTEMS
Alexander Lopez
Georgi Georgiev
Marthe Nieberding
Yasmin Barakat
Course
Strategic Foresight &
Sustainable Digital
Transformation
AMD FS 18/19
Dr. Prof. Ingo Rollwagen

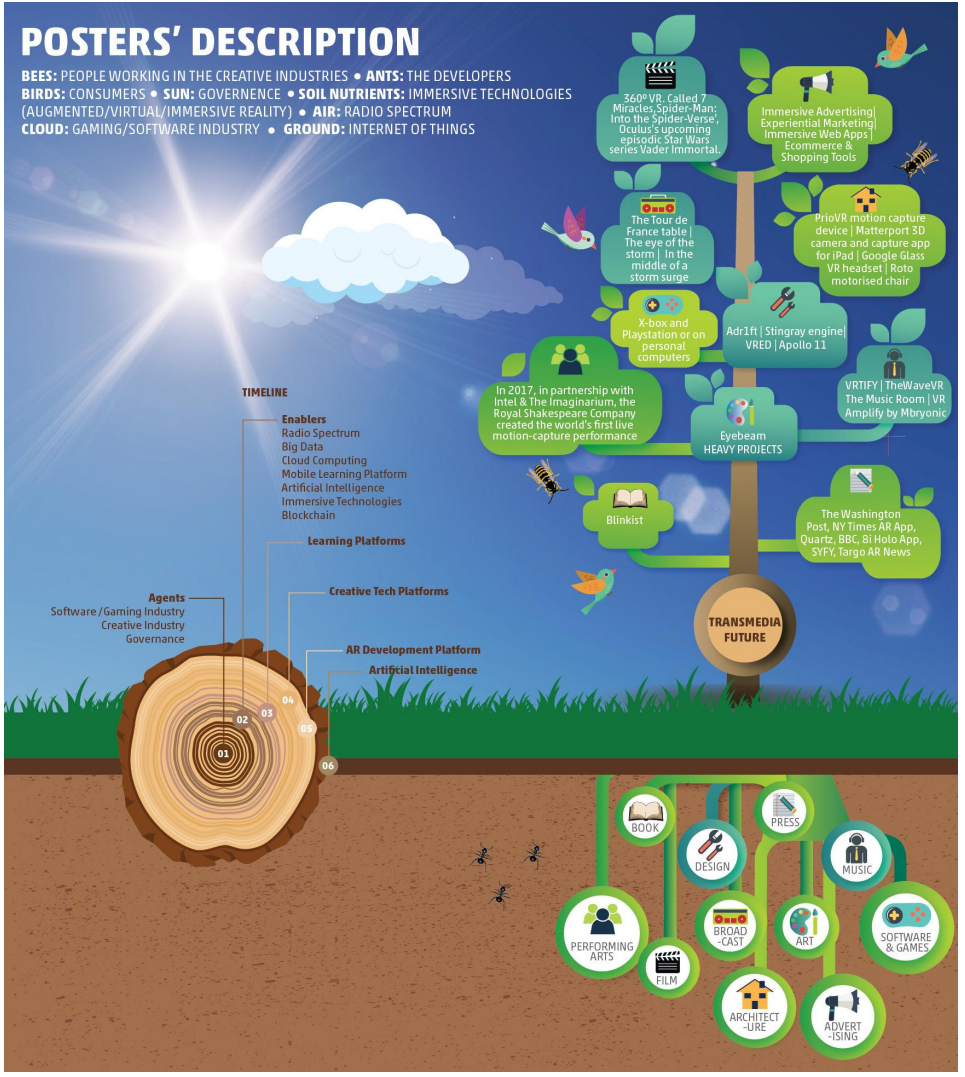
Dynamic | Transmedia Creative Platforms & Ecosystems

'**Transmedia Creative Platforms & Ecosystems**' illustrates the potential in building interactive networks among creative and gaming/software industries, enabled by emergent technologies resulting in cohesive ecosystems across different economies.

Education will play an integral role where students and users will be put at centre-stage to the development of technologies. Making up the platform, user needs centred-design on learning will be the driving force towards Transmedia ecosystem.

As a result, new forms of learning methodologies and interactions through gaming and new forms of integration of different technological strands and opportunities will evolve.

The diagram on the right is an illustration of the technological strands that will help create the ecosystem.

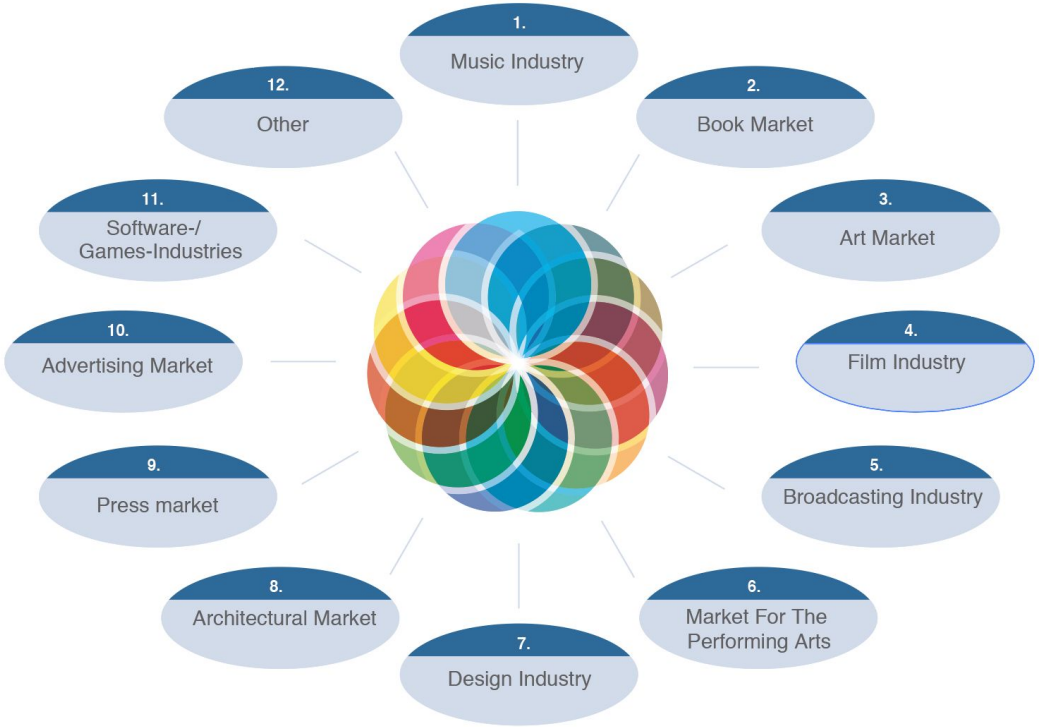


Actor/Agent 1 | Creative Industries

+ Who drives the development/dynamic with impulses based on which resources (financial, human, organisational, natural resource capital) . + For whom are these developments most important. + Result: Actor network

Creative Industries: Creativity has the power to unleash the human potential for innovation, fulfilment and wellbeing. The creative industries only channel this energy into tangible production. We are currently at the onset of the ***Fourth Industrial Revolution**, which will allow the creative industries to gain more significance through their properties in the near future and become one of the economy's main driving industries. Through the rise of digital transition, new jobs and skills will be created. Job fluidity within the creative industries will contribute to the circularity of the economy in regards to the sustainable digital transformation.

***The Fourth Industrial Revolution:** A new era that builds and extends the impact of digitization in new and unanticipated ways .

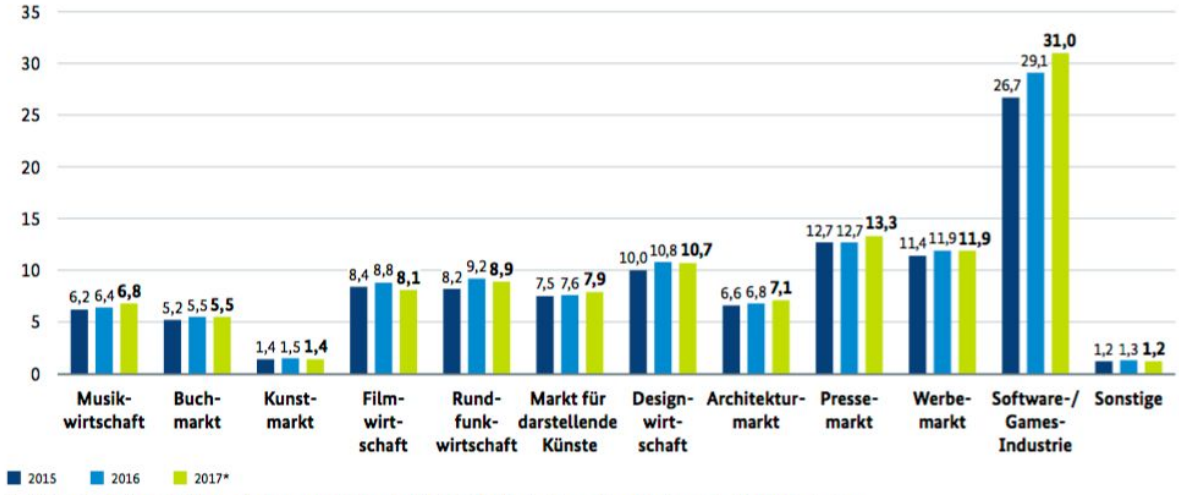


Actor/Agent 2 | Software/Gaming

Software/Gaming Industry:

Gaming is the running of specialized applications known as electronic games or video games on game consoles like X-box and Playstation or on personal computers (in which case the activity is known as online gaming), but also on social media. The term "gaming" originated as a synonym for "gambling" although most electronic games today do not involve gambling in the traditional sense.

Contribution of the submarkets to the gross value added of the cultural and creative industries 2015 - 2017 in Germany



Actor/Agent 2 | **Software/Gaming** *continued*

Software/Gaming Industry:

The diagram of the Cultural and Creative Industries in Germany 2017 clearly shows the leading position of the **Gaming/Software industry** in comparison to the other creative industries.

It has the highest sales, the most hired employees and companies. The profit earned in 2017 (the gross value added) is 27,33% of the whole creative economy, indicating great prospects for the **Gaming/Software industry** as an influential actor in the future.

	Number of companies	Sales * (in million euros)	Gross value added * (in million euros)	Core Employees *	Social insurance employees	Marginally employed	Mini-independent *
Cultural & Creative Industries (CCI)	**254.657**	**158.578**	**102.409**	**1.157.683**	**903.026**	**310.051**	**319.622**
Overall Economy	*3.289.461*	*6.190.332*	*2.954.696*	*35.454.434*	*32.164.973*	*7.806.047*	*3.120.875*
Proportion of NPP to overall economy	*7,74%*	*2,56%*	*3,47%*	*3,27%*	*2,81%*	*3,97%*	*10,24%*
Breakdown by sub-markets, absolute and share values							
1. Music industry	14.197 4,62%	8.858 5,00%	6.822 5,99%	51.667 4,01%	37.470 3,82%	14.675 3,93%	22.177 5,44%
2. Book market	17.254 5,62%	13.572 7,66%	5.451 4,79%	70.895 5,50%	53.641 5,46%	16.471 4,42%	28.540 7,00%
3. Art Market	12.616 4,11%	2.151 1,21%	1.442 1,27%	17.997 1,40%	5.380 0,55%	3.882 1,04%	26.053 6,39%
4. Film industry	19.013 6,19%	9.523 5,37%	8.057 7,08%	60.989 4,73%	41.976 4,27%	22.955 6,15%	40.173 9,85%
5. Broadcasting industry	18.071 5,89%	10.484 5,91%	8.930 7,84%	42.930 3,33%	24.859 2,53%	1.766 0,47%	28.821 7,07%
6. The performing arts market	19.419 6,33%	4.851 2,74%	7.891 6,93%	43.679 3,39%	24.260 2,47%	19.476 5,22%	46.378 11,37%
7. Design industry	59.548 19,40%	19.428 10,96%	10.738 9,43%	150.118 11,65%	90.570 9,22%	60.779 16,29%	69.869 17,13%
8. Architecture market	39.605 12,90%	10.829 6,11%	7.050 6,19%	127.411 9,88%	87.806 8,94%	19.279 5,17%	27.260 6,68%
9. Press market	31.569 10,28%	29.855 16,84%	13.318 11,70%	146.762 11,39%	115.193 11,73%	81.751 21,91%	34.839 8,54%
10. Advertising market	28.490 9,28%	28.344 15,99%	11.931 10,48%	152.768 11,85%	124.278 12,66%	102.467 27,47%	27.657 6,78%
11. Software / Games industry	39.016 12,71%	38.005 21,44%	31.010 27,23%	408.382 31,68%	369.366 37,61%	27.863 7,47%	44.425 10,89%
12. Other	8.183 2,67%	1.343 0,76%	1.228 1,08%	15.362 1,19%	7.179 0,73%	1.698 0,46%	11.701 2,87%
Cultural and Creative Industries (with double count)	**306.980**	**177.244**	**113.867**	**1.288.958**	**981.978**	**373.063**	**407.893**

Note: * Values are (partially) based on estimates. Share values calculated on the total value of the cultural and creative industries with double counting. Green marked values are the top 3 values per indicator, red marked values are the three lowest share values per indicator.

Actor/Agent 2 | Software/Gaming *continued*

Gamification

What is Gamification?

Gamification is a technique where designers insert gameplay elements in non-gaming settings so as to enhance user engagement with a product or service. By weaving suitably fun features such as leaderboards and badges into an existing system, designers tap users' intrinsic motivations so they enjoy using it.

The Appeal of Gamification in UX Design

Gamification, as a 21st-century UX phenomenon, is a powerful tool for designers to drive user engagement for several reasons. Firstly, you use it to inject fun elements into applications and systems that might otherwise lack immediacy or relevance for users, and incentivize them to achieve goals.

Learning gamification from World of Warcraft

One of the most popular games on the planet, developed by Blizzard Entertaiment, can teach you a lot about gamification and what we crave for. So what made this game so popular? As Jane McGonigal writes in her book—"blissfull productivity".

> *Blissfull productivity is the sense of being deeply immersed in work that produces immediate and obvious results. The clearer the results and faster we achieve them, the more blissfully productive we feel.*

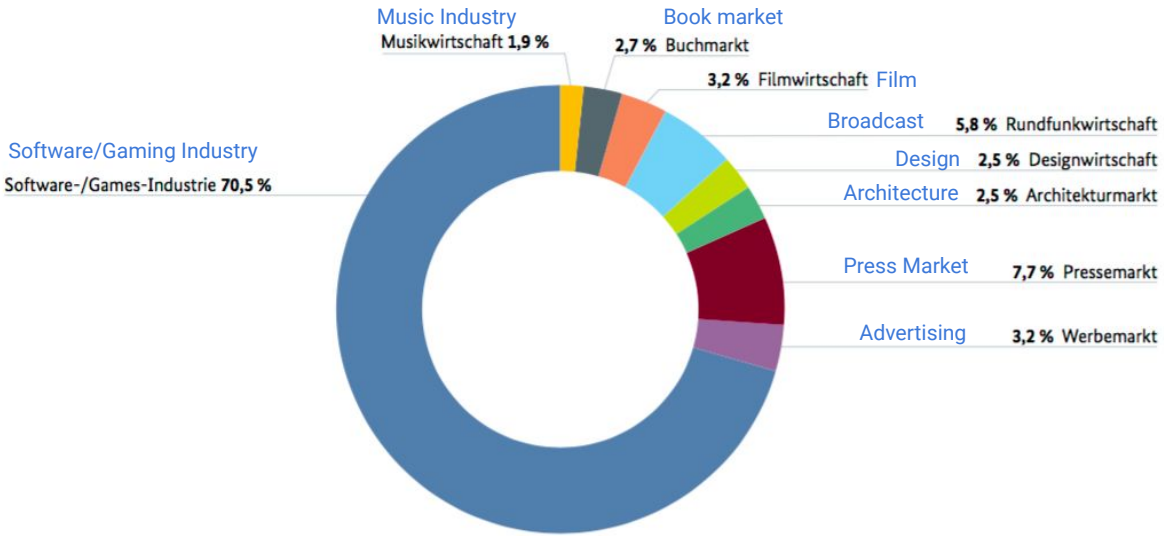
Your primary goal in World of Warcraft is self-improvement

A kind of work that all of us love. So in the game, you get an avatar, and your job is to make that avatar better, stronger and richer in many ways possible: more experience gain, better armor, more abilities, more skills and a bigger reputation. And each of these traits are displayed on your avatar.

Actor/Agent 3 | Governments

Governance: Certainly the Governments are huge players and decision-makers in fostering and elevating particular industries. Whether it is through government spending or regulatory framework. If we take a look at Germany alone, they have invested 70,5% in the **Software-/ Games Industry**, which is the highest number spent on innovation.

Distribution of innovation spending in the German cultural and creative industries in 2017



Strength and Degree of Diffusion/Relevance

Within the business community context

+ Potential new actors, changes in the agency + Degree of social /societal diffusion (group of individuals, communities, whole subsystems, parties, the whole society)
+ Geographical and spatial patterns of diffusion of the dynamic

Blockchain technology will open up opportunities for the industries to share their knowledge and ideas while maintaining their intellectual property rights. It will make it possible for “transparent” transactions to be made, and maintain trust from all stakeholders.

While working in the “Transmedia Platforms Ecosystem”, the industries will still maintain their own character even though they will be merging and exchanging resources with other industries.

Interest in learning through playing will increase, as a result a higher grade of creativity will be born.

Circular economy could take a new form and meaning, for example if a test product is produced and it is not useful anymore, another industry could use it because it is more aligned with their end goal. That way, waste will be decreased and Circular Economy will be integrated in the “test” and “ideation” phase.

Learning by playing! Ideas could come up in unexpected situations.

The exchange and access to cross industries in transmedia platforms, will allow creators to develop new ways of creative thinking and working together.

Possibly, we will tap into new forms of learning techniques within the workplace and across industries. Learning will take a new form, unleashing new skills that we didn’t know existed in our mind due to AI and other enablers that will be more embedded in our lives.

Space will be another key factor, using visual enablers like VR/AR/XR will require a new form of working space to take full advantage of these enablers in the most effective and efficient way.

The rise of communities amongst industries, that are merging together. For example in Gaming, you need a script, music, story telling just like in the movies.

Strength and Degree of Diffusion/Relevance

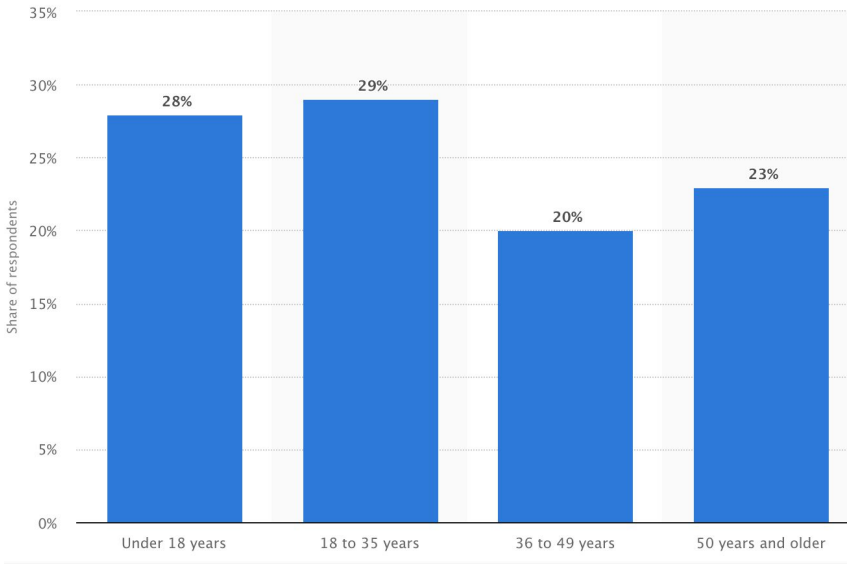
Communities in societies

+ Potential new actors, changes in the agency. + Degree of social /societal diffusion (group of individuals, communities, whole subsystems, parties, the whole society) + Geographical and spatial patterns of diffusion of the dynamic

Potential New Actors:
Youngsters **under the age of 18 years old** could be key actors now and in the future because they are born during the age of digitization. They have easy access to the world, exchange knowledge through platforms and a part of a community online. They rely heavily on online education to aid them in school, and learning skills such as languages through applications.

Present: Their constant reliance on the internet is making them pioneers in digesting educational information that was only accessible if you are in university before the age of the internet. Therefore, we anticipate that they will be included in shaping the circular economy with the creative industries. They will be part of the ideation phase, and their current skills will help in shaping the 4th Industrial Revolution.
Future: They will add immense value in the future to the Transmedia Platform Ecosystem. They will be more adaptive, due to their divergent style of thinking.

Age breakdown of video game players in the United States in 2018



This graph presents the results of an annual survey among a representative group of video game users regarding their age. In 2018, 29 percent of the responding video gamers were 18 to 35 years old.

Strength and Degree of Diffusion/Relevance

Communities in societies

+ Potential new actors, changes in the agency. + Degree of social /societal diffusion (group of individuals, communities, whole subsystems, parties, the whole society) + Geographical and spatial patterns of diffusion of the dynamic

Potential New Actors:
Young adults **between the age 18-25 years old** are part of a community online too, if we take the trend of E-sports for example it is evident that their love for these games have turned into a profiting business. If we look at the diagram on the right, we see that the revenue generated is continuously rising since 2016. It is interesting to see how the players of E-sports are starting to maintain a lifestyle similar to athletes. So the gaming industry is also converging with sports and wellbeing.

Social Diffusion: Communities are being created in societies through platforms across the board, this is a shift happening and directly influencing the declination of the “middle-players”.

Geographical distribution: No spatial limitations, since online accessibility is enabled.

Strength and Degree of Diffusion/Relevance

Education & Learning

+ Potential new actors, changes in the agency. + Degree of social /societal diffusion (group of individuals, communities, whole subsystems, parties, the whole society) + Geographical and spatial patterns of diffusion of the dynamic

***Students** are the new 'leaders'*

To prepare the future generation for the 4th Industrial Revolution, we will see a shift where the teachers will become more like facilitators. They will integrate creative teaching methods to develop the students' inner wealth and add data science knowledge through gamification.

High school students will create communities amongst themselves, and in different countries. They will exchange knowledge and help each other to achieve their goals during their educational years. Possibly in their future careers too.

Online platforms are set up by university students on Social Media, which promise anonymity and act as a mechanism for mental support system. They help each other with their feedback, but some comments could be crucial and have negative effects. This could be taken further, where the "admin" works with an Artificial Intelligence technology to screen the negative comments that might cause harm. In the Transmedias' Ecosystem, AI will identify the students problems and this will be tackled through play with the other creative industries. For example, working with the Music Industry to create an album. This will be an outlet for therapy, and will give a sense of belonging.

Counselors job role will be limited, as it is a challenge to make students have the courage to speak about their problems. By sharing it online anonymously, it creates a sense of security and openness.

Schools might start implementing gamification tools for students to discover their skills and interests at an early stage. School will be a playground for experimentation and fueling ideas related to pressing worldly issues.

Students will possess and harness different skills set which will be aligned with future jobs needed.

The government might invest money on the Gaming Industry to specifically design immersive games to tackle world environmental issues. This could be used in the education sector and across industries, to get perspective and possible solutions from the new generation. This will add value for the students, as it will broaden their horizon and allow them to engage in big conversations. It could eventually give a sense of purpose, and ignite curiosity.

Strength and Degree of Diffusion/Relevance

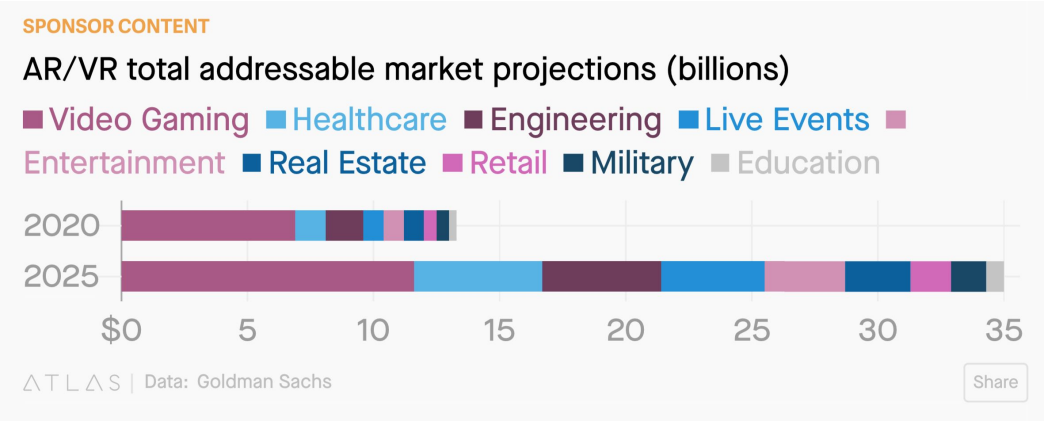
Education & Learning

+ Potential new actors, changes in the agency. + Degree of social /societal diffusion (group of individuals, communities, whole subsystems, parties, the whole society) + Geographical and spatial patterns of diffusion of the dynamic

***Users** are the new 'leaders' too*

Users, such as educators from governmental institutions will play an integral role in Transmedia's ecosystem. They will be working together with people in the gaming industry to create new teaching methodologies.

This will position the educators as users and learners as well. They will learn new ways of communicating, and will receive coaching and guidance on how to use the gaming software and methodologies in teaching.



Emergent Links

+ Emergent links/blind spots/: ***Links between industries and functionalities which have not been established***

Integrating the creative industries into an ecosystem will give them the great opportunity to link their properties to other industries. This will drive the economy into a new solid direction. Since there is an existing link between the creative industries and education, companies like **LEGO® Education** understand the wealth of this connection. Hence, why they delve further into higher education and science. Technology, Engineering, Transportation and logistics industries, even Tourism could take a great advantage from a possible linkage too.

Additionally, wellbeing is an interesting emergent link. The importance of it is increasing in companies and in governments where they use the healing benefits of arts in social programmes, national defence related matters or just for the wellbeing of their employees.

Emergent Links *education & learning*

+ Emergent links/blind spots/: ***Links between industries and functionalities which have not been established***

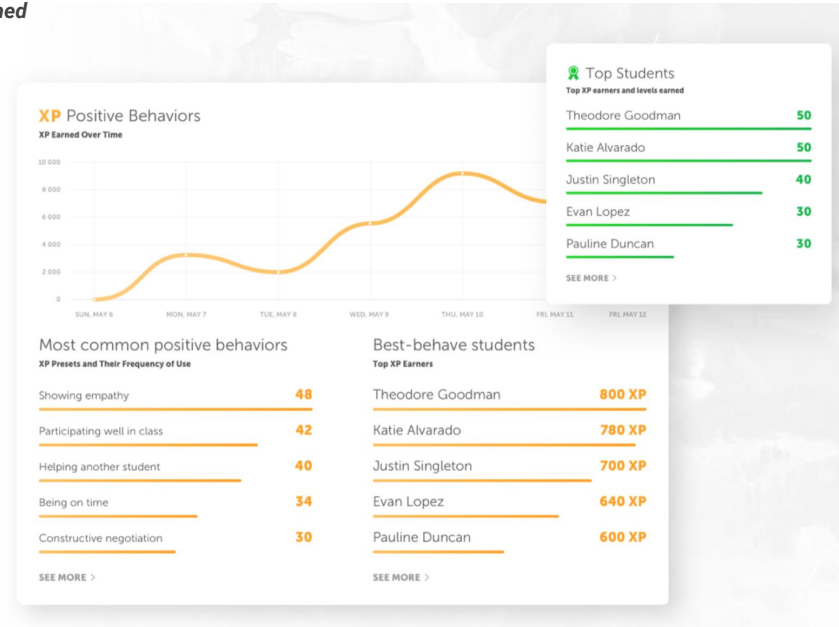
The Software/Gaming Industry *will converge with Educational Institutions*

Education may not belong to institutions anymore. Teachers will act more as facilitators or coordinators. Bringing professionals to share their expertise, and integrating students in developing projects/ideation period. *Perhaps companies will have a department dedicated for the education of the new generation.*

High school students will learn project management, and creative problem solving skills so they are able to implement it throughout their lives. *A convergence between business skills and creative design thinking.*

New jobs might emerge in the educational sector, such as 'empathy' and 'agile' professionals where he/she will be responsible to add value and soft skills for the teachers and students. As a result, a new way of communication will result between educators and students.

Mental health will be crucial, but it will be tackled in a different way. Counselors will not be needed, as each person will have a different form of a support system due to the rise of community digital platforms.



Classcraft is an Engagement Management System (EMS) that fosters positive school climate and educational outcomes by getting kids excited about school and improving engagement, personalized learning, and SEL. *This tool uses gamification methods.*

Emergent Links *education & learning*

+ Emergent links/blind spots/: ***Links between industries and functionalities which have not been established***

Communication tools and methodologies *will be necessary to connect these industries together.*

The big question is: how can these industries communicate and understand each other's language?

We might observe a new form of industry, which will be focused solely on designing softwares that work together with offline hands on methodologies to connect these different economies together. This will help them identify the user's core needs/wellbeing/work process and build a cohesive ecosystem across industries. The approach will open up their minds, instil curiosity and give them the confidence to share their knowledge.

The form of learning will change

New form of learning methodologies will emerge such as "serious gaming". This will be done playfully and gamification will lead the way of learning. Users will learn in a different way, empowered and supported by new means and forms of "trans-media". Users will consume knowledge differently and will need to acquire new skills to digest information and communicate it.

Emergent Links *education & learning continued*

+ Emergent links/blind spots/: ***Links between industries and functionalities which have not been established***

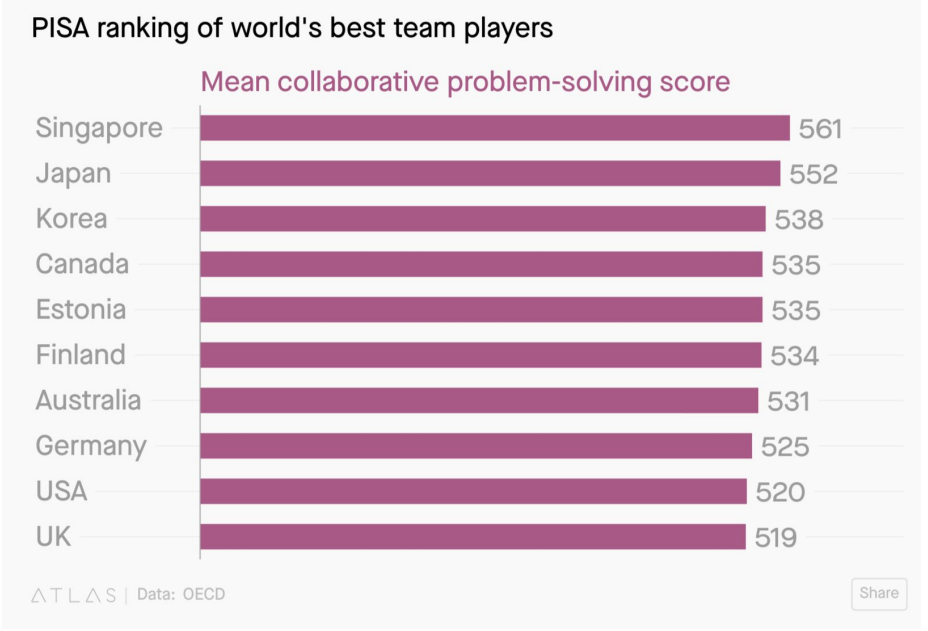
Quotes & statistics *that highlight the importance of soft skills*

"Unless educators focus on teaching the skills that are uniquely human—independent thinking, teamwork, and caring for others—kids don't stand a chance."

Jack Ma, former head of Chinese e-commerce giant Alibaba, at the World Economic Forum in 2018

"The advent of AI should push us to think harder of what makes us human. If we are not careful, the world will be educating second-class robots and not first-class humans."

Andreas Schleicher, head of the education division at the Organisation for Economic Cooperation and Development (OECD)



Temporal Reach Gaming Industries & Transmedia

2019

Gaming industry's sale will continue to rise | Governments will continue allocating and increasing their fundings for this industry | Community platforms are rising eg. MasterClass, Wework, Autodesk, Quartz, +Acumen | Gamification is incorporated in most of the technology we utilize in our daily lives, including it's rise in the workplace | The emergence of E-sports

2021

The interest in Circular Economy becomes more prevalent due to the environmental and economical instability | Governments will increase their support in products that are manufactured sustainably | The Creative Industries will have more interest in each other, hence their "skills" cross-engagement will increase | The gaming industry will have new enablers and developments.

2023

The existence of third parties that connect industries together will decrease, due to the rise of community-based businesses and platforms across the Creative Industries. This will help industries to connect directly to the people and understand their needs better | The new developments/technologies produced by the Gaming industry will be used in the Creative Industries in the design and production process

2025

We will start to see a shift where the Creative Industries will start working together by exchanging thoughts, ideas and merging talents

2028

Gamification will be strongly integrated into our daily lives, personally, socially and at work to aid in our creative thinking and increase efficiency

2030

Transmedia Creative Platforms & Ecosystems will be the norm. The technological enablers, creative industries and gaming/software developers will create a harmonious ecosystem. As a result, new products will be produced and new skills will be acquired due to the "fourth" industrial revolution. We may even tap into sensations we didn't know existed before, as the user will create a new relationship with technology

Temporal Reach Gaming Industries & Transmedia

Education & Learning

2019

Experimentation with learning skills via immersive technologies for eg. in the health sector students work on 3D models. Andre Chow, a surgeon who founded the VR training tool called Touch Surgery, “The first time I learned to take an appendix out was literally by taking an appendix out.” | **WeWork** is turning data about occupants into a core business asset. | ClassCraft is an Engagement Management System (EMS) that fosters positive school climate and educational outcomes by getting kids excited about school and improving engagement, personalized learning, and SEL *(based on gamification methods)*

2021

Intercultural communication will become essential and will be embedded in the learning process in education | Learning space will take a new form, where it will be more efficiently utilized and different from how we know it now

2023

The idea of having an Avatar might become the norm, this could be used in virtual classrooms allowing access to education for everyone in the world | Different forms of art will be embedded in the curriculum to add value in education, through “free art form” students will have a safe space to be innovative and discover their inner wealth.

2025

Learning space and technology will become one | Skills including communication might be learnt from AI Avatars

2028

AI Avatars might replace counselors, where students might feel more comfortable to confide in | Education will not be held in one physical space, it will be anywhere and everywhere | Tourism & education might intersect

2030

There might be a blurry line between fake and real, as a result a course/workshop might be offered to help people differentiate between the two worlds

Reflections According to the World Economic Forum

In collaboration with Mckenzie Published in 2018

Artificial intelligence (AI) is changing value chains for creative content from start to finish, which is having positive and negative impacts on society. AI helps creators more effectively match content with audiences by learning and classifying users' preferences, thus enabling providers to recommend specifically tailored content. AI is being used to create content in creative industries, including music, art, fashion and film. It can likewise aid production by performing tasks that are too difficult or time-consuming for humans. These positive advances are disrupting value chains across the creative economy, but they also have negative impacts. For example, disinformation and misinformation on social media are exacerbated by algorithms that encourage viral sharing. As a result, the appropriate level of responsibility of AI developers is being debated.

Augmented and virtual reality (AR/VR) can transform storytelling and the way content is experienced, but business incentives to do so may not fully align with individual well-being. AR and VR – immersive technologies – can dramatically alter the experience of content consumption. They have the capacity to promote new and meaningful feelings, skills and understanding, which can make content more powerful than when presented through traditional media. As the cost of immersive technology decreases, creators are enabled to redefine storytelling and narrative content in an entirely new medium. In the current environment, consumers are spending an increasing amount of their leisure time using screen-based devices. Given that immersive technology has the potential to be more engaging and capture more intimate personal data from users, there are risks that the business incentives of developing immersive media may run counter to practices that protect individual well-being.

The creative economy and the platform economy are converging, redefining the relationship between creators, publishers and technology companies, and introducing difficult governance issues. Publishers can use technology to expand audiences, but technology platforms – companies that match businesses with customers – also have a large impact on the way content is discovered. A few providers are responsible for the majority of referral traffic, and just five companies take in almost 80% of global mobile advertising revenue. This is redefining the relationship between publishers and platforms. As platforms become more involved in editorial decisions (influencing and deciding what type of content is seen and why), publishers' accountability moves towards technology platforms. Frameworks for governing this new dynamic are not yet sufficiently developed.

Reflections According to the World Economic Forum

In collaboration with Mckenzie Published in 2018

continued

Blockchain is the least advanced of all the technologies – while it holds promise for the creative economy, it requires further development. Blockchain is exciting many creators because of its potential to change the control artists have over their work, in particular remuneration, production rights, third-party monetization and data transfer of creative work. However, not enough use-cases exist to be confident in the ability of the technology to promote positive change. In addition, the costs of developing these use-cases, in terms of resources and inertia, may be too high to be feasible for creative applications.

Multistakeholder collaboration is required for change to be effective. There are reasons to be excited by the adoption of emerging technologies in the creative economy, but also some negative implications that are worth considering. Initiatives exist that try to mitigate harmful outcomes, but addressing them in isolation may leave important voices out of the conversation. The World Economic Forum is providing a platform for the public and private sectors, as well as academics and civil society, to come together and address the issues holistically. In many cases the Forum's Center for the Fourth Industrial Revolution is at the forefront of the discussions. At the same time, there is always room for more informed debate, and recommendations of where attention could be concentrated have been provided for each technology.

The following are the technological enablers that will allow the creation of **Transmedia Ecosystem**

Enabler 1 | Radio Spectrum

Radio spectrum refers to a specific range of frequencies of electromagnetic energy that is used to communicate information. Applications important for society such as radio and television broadcasting, civil aviation, satellites, defence and emergency services depend on specific allocations of radio frequency. Recently the demand for spectrum has increased dramatically, driven by growing quantities of data transmitted over the internet and rapidly increasing numbers of wireless devices, including smartphones and tablets, Wi-Fi networks and everyday objects connected to the internet.

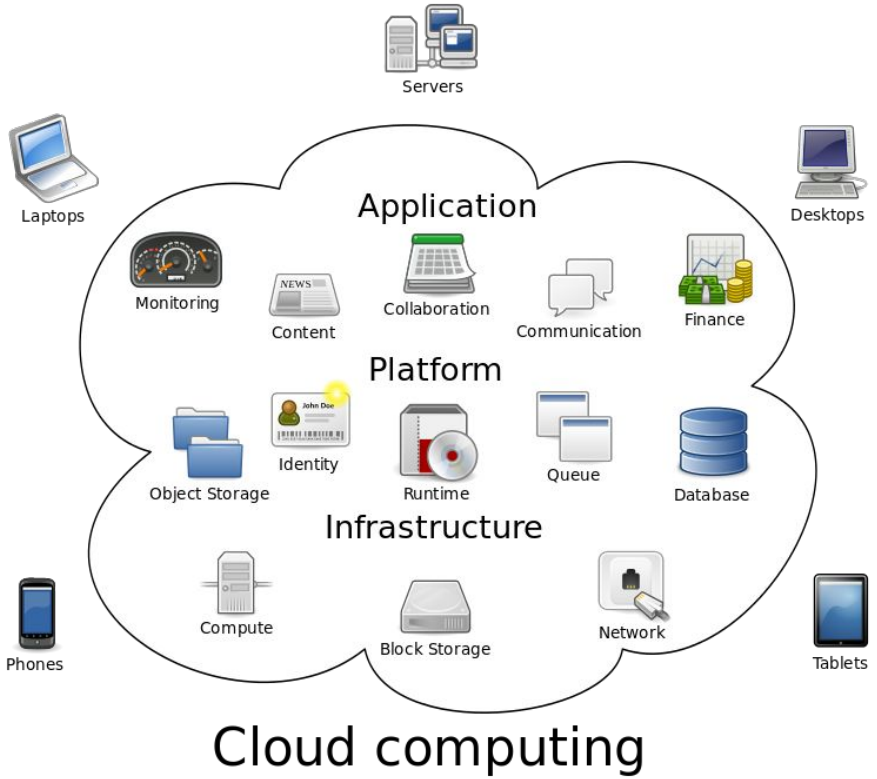
Enabler 2 | Big Data

The amount of data in our world has been exploding, and analyzing large data sets—so-called big data—will become a key basis of competition, underpinning new waves of productivity growth, innovation, and consumer surplus, according to research by MGI and McKinsey's Business Technology Office. Leaders in every sector will have to grapple with the implications of big data, not just a few data-oriented managers. The increasing volume and detail of information captured by enterprises, the rise of multimedia, social media, and the Internet of Things will fuel exponential growth in data for the foreseeable future.

Enabler 3 | Cloud Computing

Cloud computing makes computer system resources, especially storage and computing power, available on demand without direct active management by the user. The term is generally used to describe data centers available to many users over the Internet. Large clouds, predominant today, often have functions distributed over multiple locations from central servers. If the connection to the user is relatively close. Clouds may be limited to a single organization (enterprise clouds,) be available to many organizations (public cloud,) or a combination of both (hybrid cloud.) The largest public cloud is Amazon AWS. Cloud computing relies on sharing of resources to achieve coherence and economies of scale.

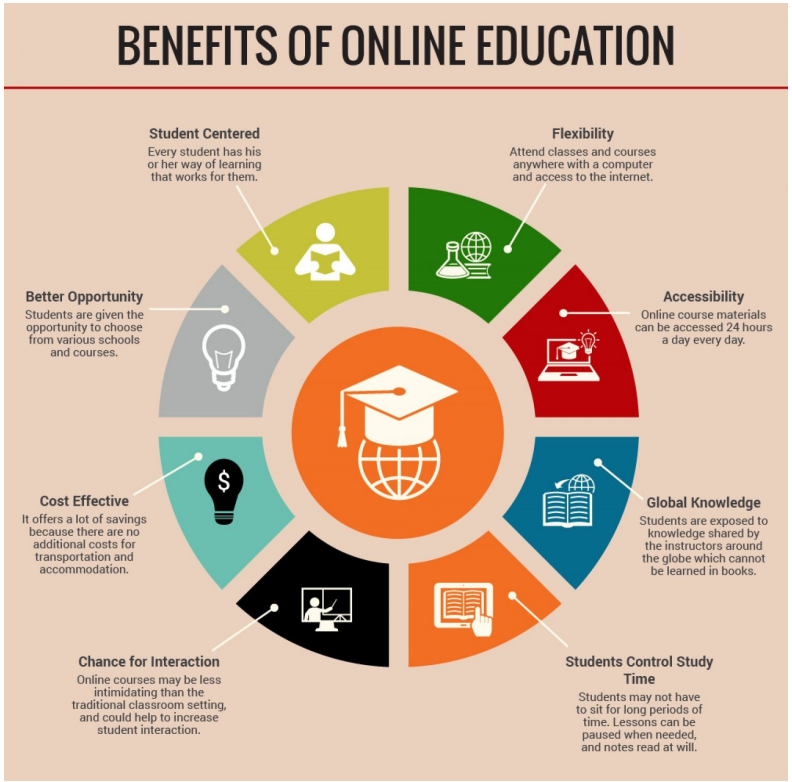
Source: wikipedia



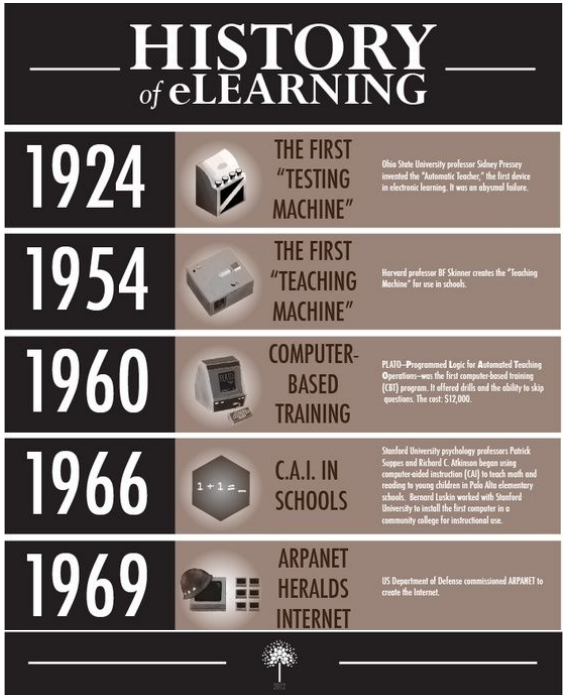
Enabler 4 | Mobile Learning Platforms

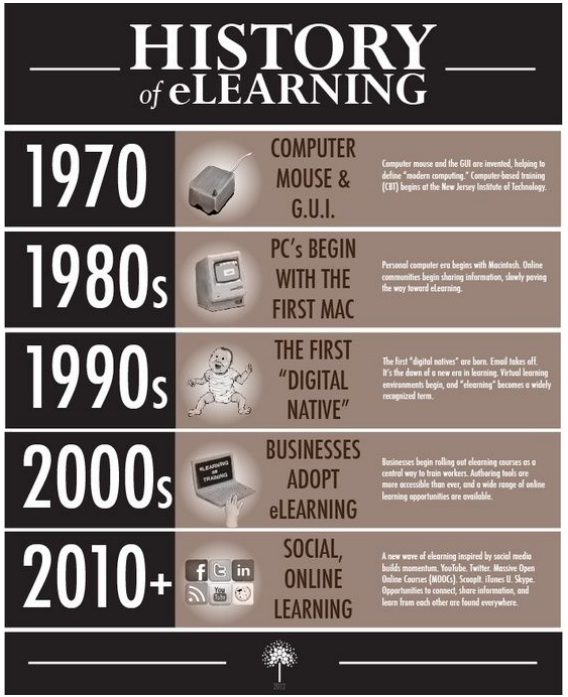
A learning platform is a software application that gives teachers, learners, parents and administrators access to common resources, communication tools and information, not just within the school but outside it too. When used properly, it can reduce teacher workload, minimize expenditure on IT and administration, and enhance learning and teaching both in and outside the classroom.

Learning platform technology is improving all the time: it's now more secure, faster and easier to use, and it links to more and more third-party systems to create a much more comprehensive learning environment student. Learning platforms are likely to play an increasingly important role as more and more teachers and schools look to further develop their use of ICT in all subject areas. By offering communication channels, pedagogical tools and course and school management systems, the best learning platforms give teachers and students a single gateway to using technology both in and outside of the classroom.



Roadmap | Mobile Learning *1924 - 2010+*





Mobile Learning

Future Temporal Reach

+ In which time frame has the dynamic and will the dynamic unfold and has been exerting an impact. +Temporal index: Is the dynamic just at the beginning or is it already in maturation (cross-reference to relevance). + Which patterns of maturation are there (continuous, discontinuous, singular)

2019

Enhance current trends such as Mobile Learning, Serious games, Simulations, Informal Learning, Real-world Performance. Social media and education will be an hybrid to maximize the engagement levels and offer flexibility to the end-users

2021

E-Learning content developers will focus on bit-sized lesson and developing learning modules in spirits to match the routine of the mobile users

2023

According to the latest industry analysis, the global e-learning market size is expected to reach $65.41 billion by 2023, growing at a CAGR of 7.07% 2017-2023. The market research report provides in-depth market and segmental analysis of the global e-learning market by delivery mode, learning mode, type, end-user, and geography.

2025

Global E-Learning market will reach $325 billion by 2025 (Research and Markets) from $107 Billion in 2015 (Forbes)*

2028

Wearable Technology Training. Wearable gadgets are the new rage in the world of technology. Google Glass, Apple Watch, and Oculus Rift are some of the gadgets that have pioneered the rising trend of Virtual Reality in eLearning through wearable gadgets. These wearable tech devices help users to interact with eLearning content in a multi-dimensional and more dynamic way (Clark and Mayer, 2016, p.68). These devices make eLearning more engaging and interactive to individuals. Technological advancements in the field make Virtual Reality more appealing with the help of 3D simulations and scenarios in the eLearning realm

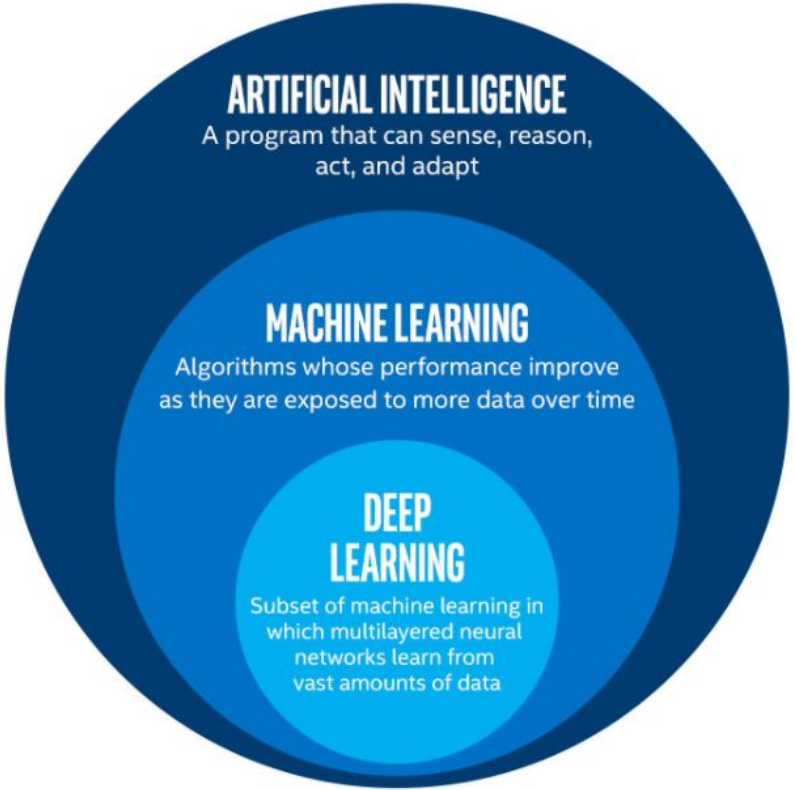
2030

Online learning systems: The report describes as "surprising" the "explosion of MOOCs and other models of online education at all educational levels." These have managed to expand the size of the classroom and accommodate thousands of students, who can be evaluated more easily thanks to artificial intelligence technologies. In fact, there are already programs that generate questions automatically and evaluate short and open answer questions. According to the report, this trend will be consolidated and refined by 2030.

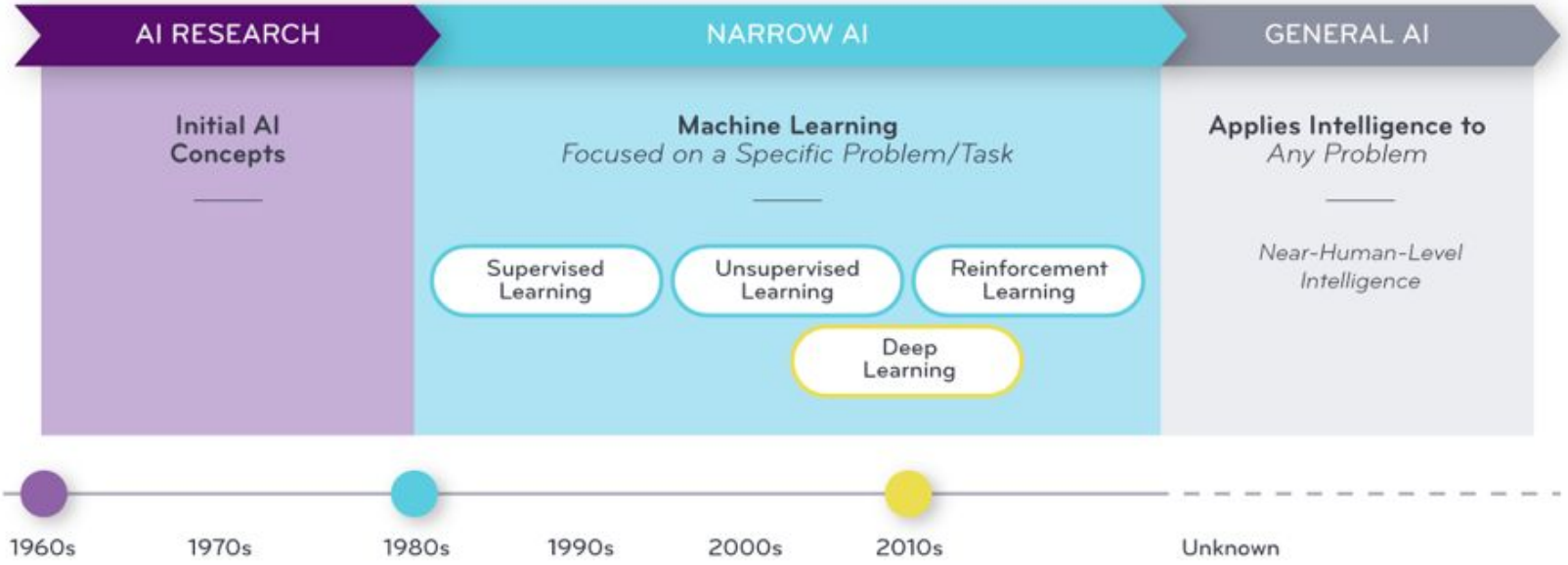
Enabler 5 | Artificial Intelligence

AI is helping creators to match content more effectively with audiences. Algorithms based on neural networks learn and classify a user's preferences—from movies streamed on Netflix, music listened to on Spotify, or products purchased on Amazon. Providers can then recommend content tailored to a specific user.
AI aids production itself by performing tasks that are too difficult for humans. In advertising, it is used to contextualize social-media conversations to understand how consumers feel about products and to detect fraudulent ad impressions. Services such as Amper or Jukedeck compose music with AI, enabling small-scale creators to use high-quality music for their podcasts, videos, and games at low cost.

More disruptively, machine learning has begun to create original content. The implications have been felt across multiple industries. In music, AI has produced instrumental sounds that humans have never heard before. The same team taught a neural network to draw sketches of animals and objects and generate sophisticated images from photography. In fashion, researchers have generated new designs. And in film, scripts have been written, complete with stage instructions, for a science-fiction movie.



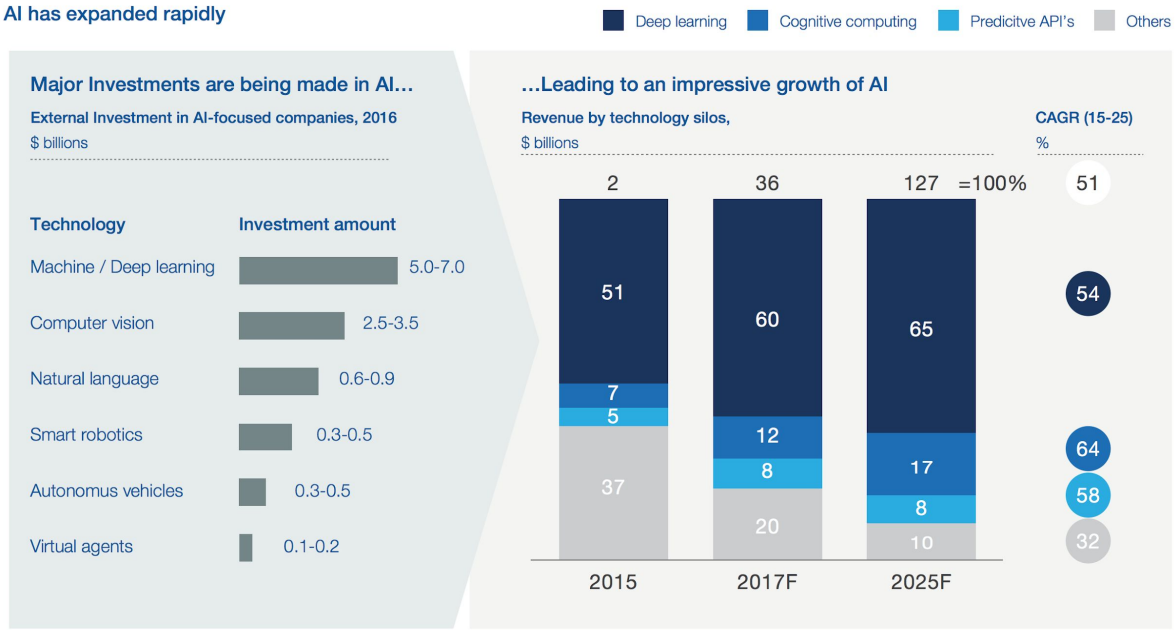
Roadmap | Artificial Intelligence



Enabler 5 | Artificial Intelligence *continued*

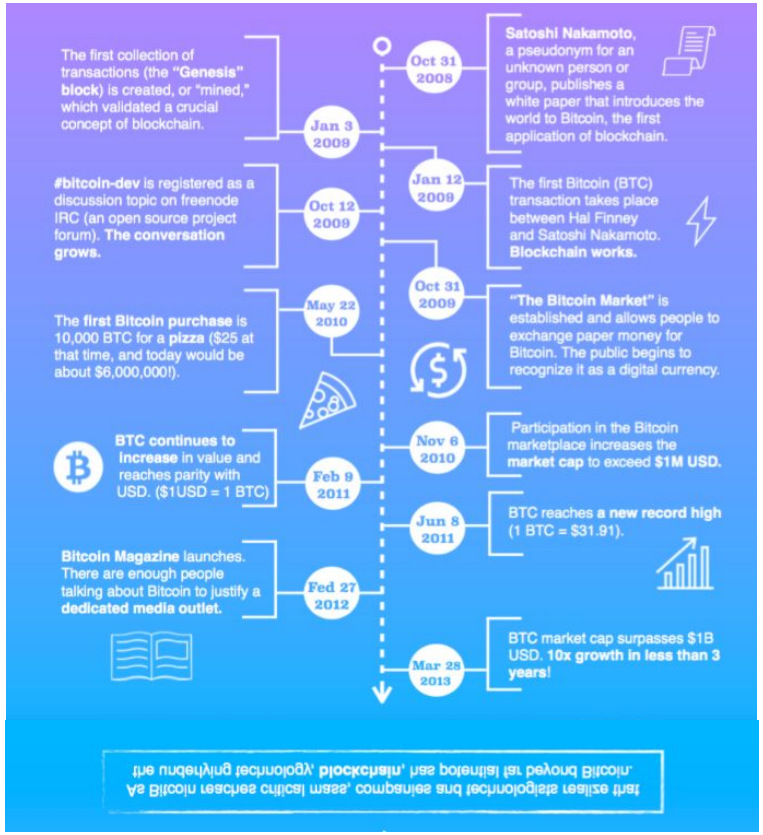
> **AI is set to become the largest driver of tech spend over the next decade.**
>
> **Sarbjit Nahal** – Managing Director, Bank of America Merrill Lynch

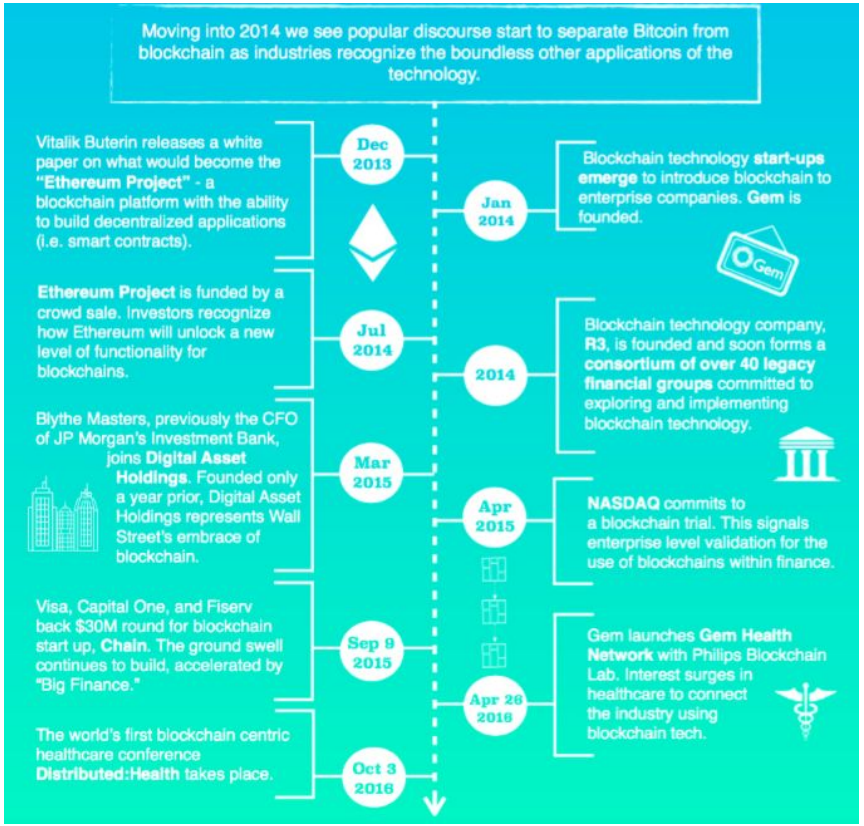
Artificial Intelligence (AI) is an umbrella term for a collection of technologies, ranging from machine learning and rules based systems, to natural interfaces including speech, vision and natural language processing (NLP). While there is disagreement, even among computer scientists, on what constitutes and how to classify AI,30 there is a general consensus that it has come to play a progressively greater role in the creative economy. Market dynamics AI is growing at a rapid pace. According to Bank of America Merrill Lynch, revenue in AI-related technologies is on course to grow from roughly $2 billion in 2015 to about $127 billion by 2025 (a 51% compound annual growth rate/CAGR), with the biggest growth coming from applications of deep learning, cognitive computing and predictive APIs.



Source: World Economic Forum, based on data from capital IQ, Pitch book, Dealogic, McKinsey

Enabler 6 | Blockchain | Roadmap *2008 - 2016*

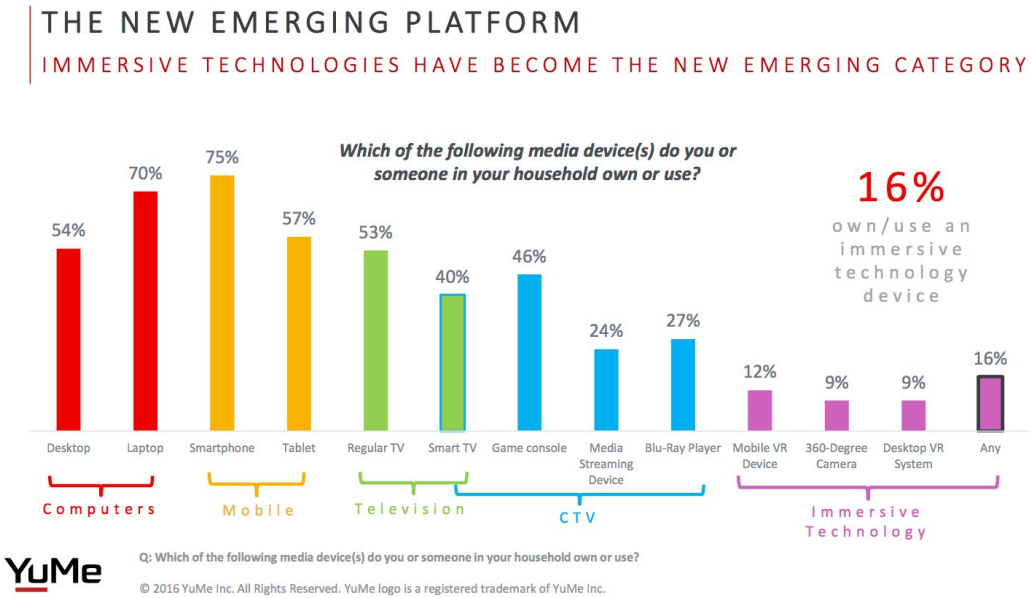




Enabler 7 | Immersive Technology

Immersive Technology is any technology that extends reality or creates a new reality by leveraging the 360 space. Because Immersive Technology leverages the 360 space/sphere, users can look in any direction and see content. Some types of Immersive Technology extend reality by overlaying digital images on a user's environment. Others create a new reality by completely shutting a user out from the rest of the world and immersing them in a digital environment.

Immersive Technology used to be something you would read about in Sci-Fi books or watch in Sci-Fi movies. Today, Immersive Technology has many different applications and can be used by brands and consumers alike in countless ways.



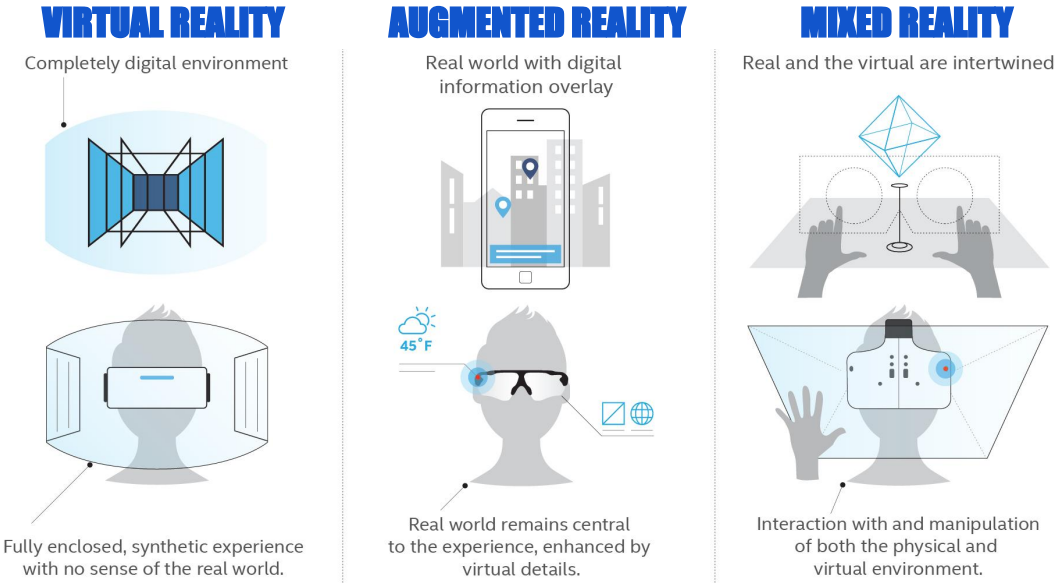
Enabler 7 | Immersive Technology *continued*

Virtual Reality (VR) is the use of computer technology to create a simulated environment and it`s immediately a recognizable component s the head-mounted display (HMD). Major players in Virtual Reality include HTC Vive, Oculus Rift and PlayStation VR (PSVR).

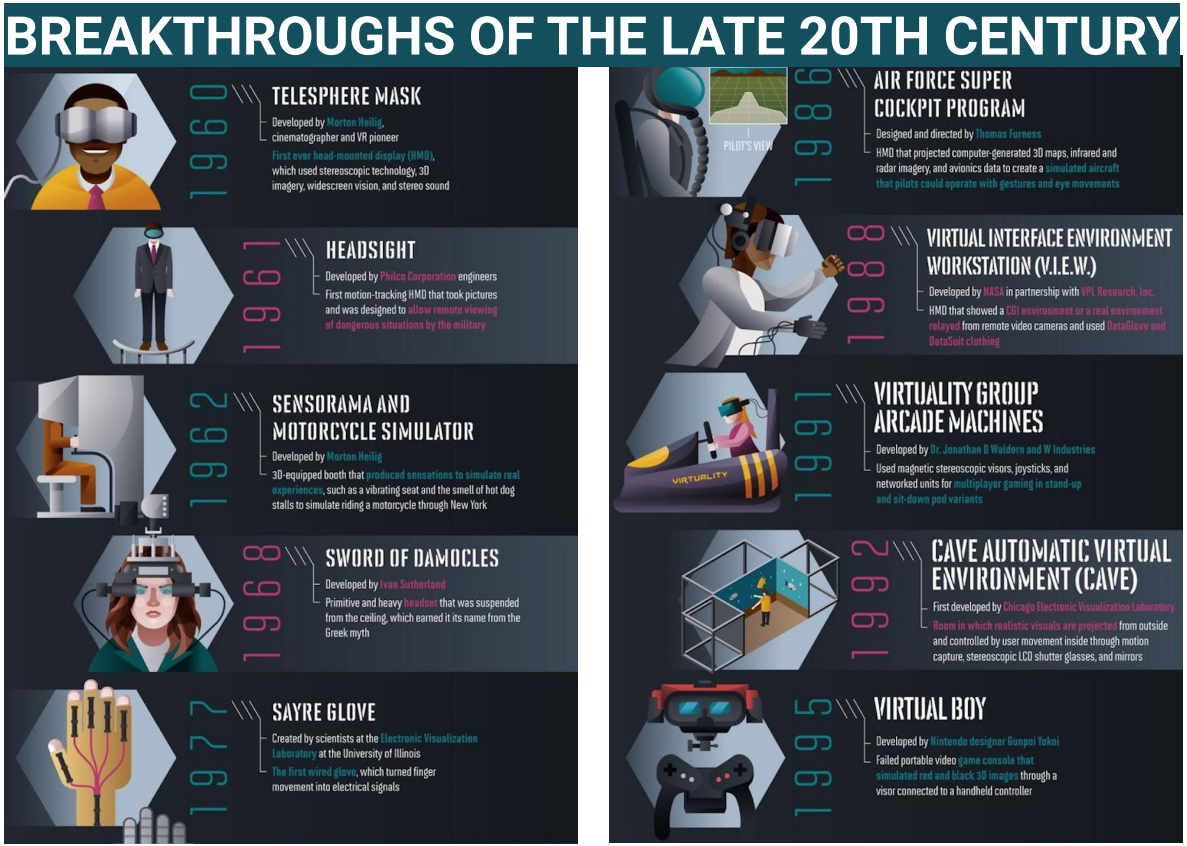
Augmented Reality (AR) is an interactive experience of a real-world environment where the objects that reside in the real-world are "augmented" by computer-generated perceptual information, sometimes across multiple sensory modalities, including visual, auditory, haptic, somatosensory, and olfactory.

Virtual and augmented reality are enabling dynamics and will be relevant for many new experiences and developments in the future of the creative industries. Both will help integrate transmedia creative platforms as well as learning into the creative industries.

XR can be viewed as a manifestation of “The New Aesthetic”, the term coined by James Bridle that references “the increasing appearance of the visual language of digital technology and the Internet in the physical world, and the blending of virtual and physical”.

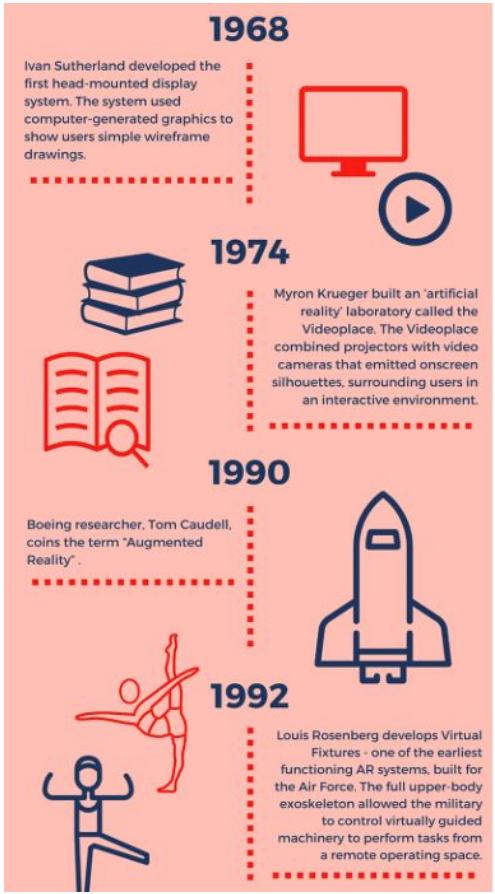


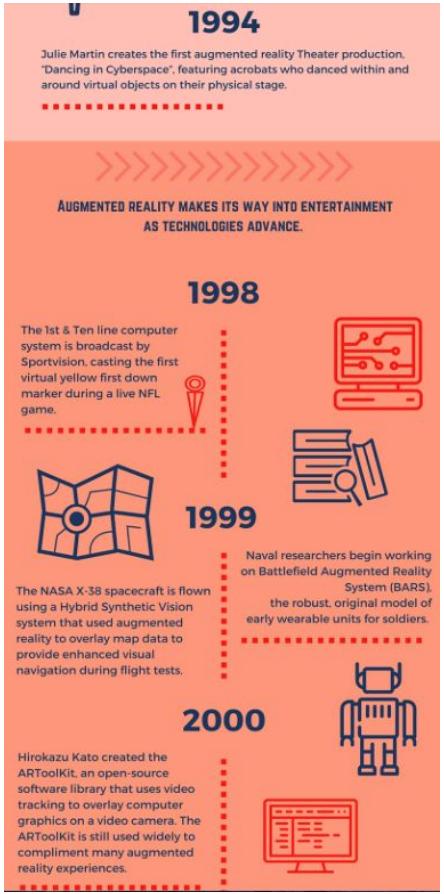
Roadmap | **VR** *1838 -1965*

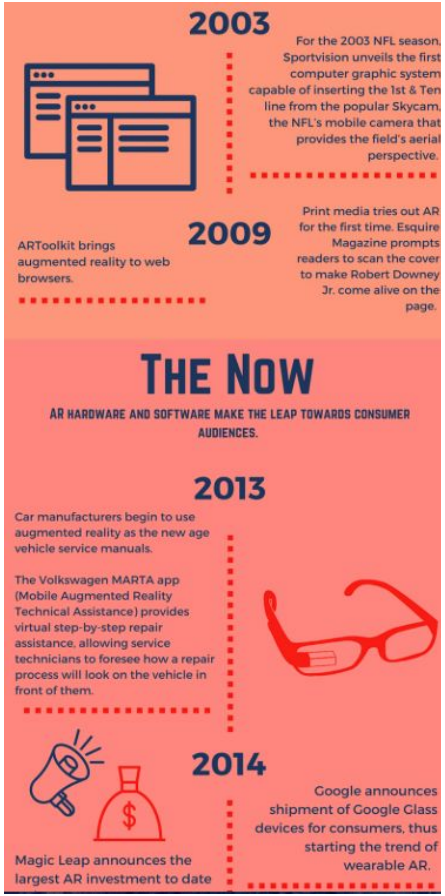


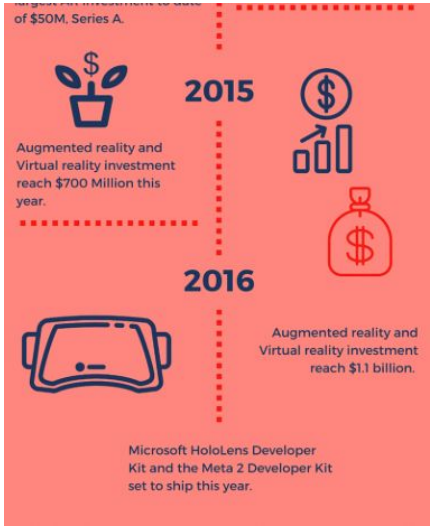
Roadmap | VR *2000s - Present*

Roadmap | AR *1968 - 2016*



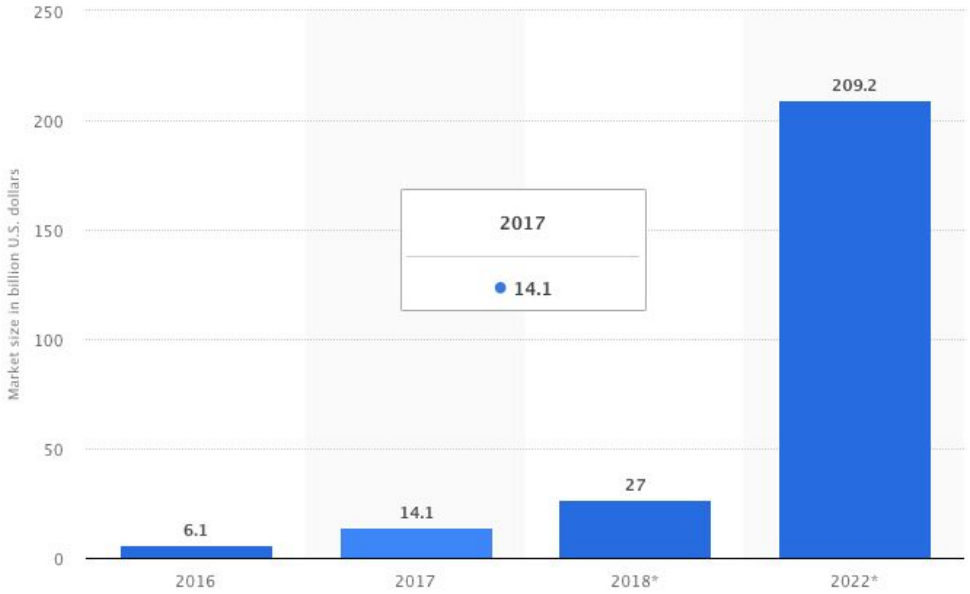






Temporal Reach | **VR/AR** *2016 - 2022*

Forecast augmented (AR) and virtual reality (VR) market size worldwide from 2016 to 2022 (in billion U.S. dollars)



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The statistic shows a forecast for the global augmented and virtual reality market size for 2016, 2017, 2018 and 2022. In 2022, the augmented and virtual reality market is expected to reach a market size of 209.2 billion U.S. dollars.

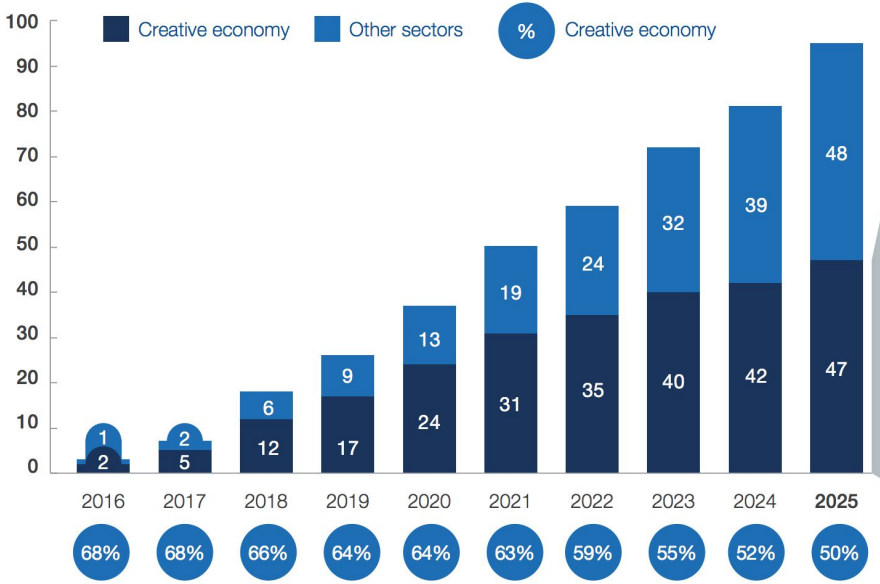
Temporal Reach | VR/AR 2016 - 2025

VR/AR market sizing

Projected VR/AR growth, 2016-2025

Revenue

$ billions



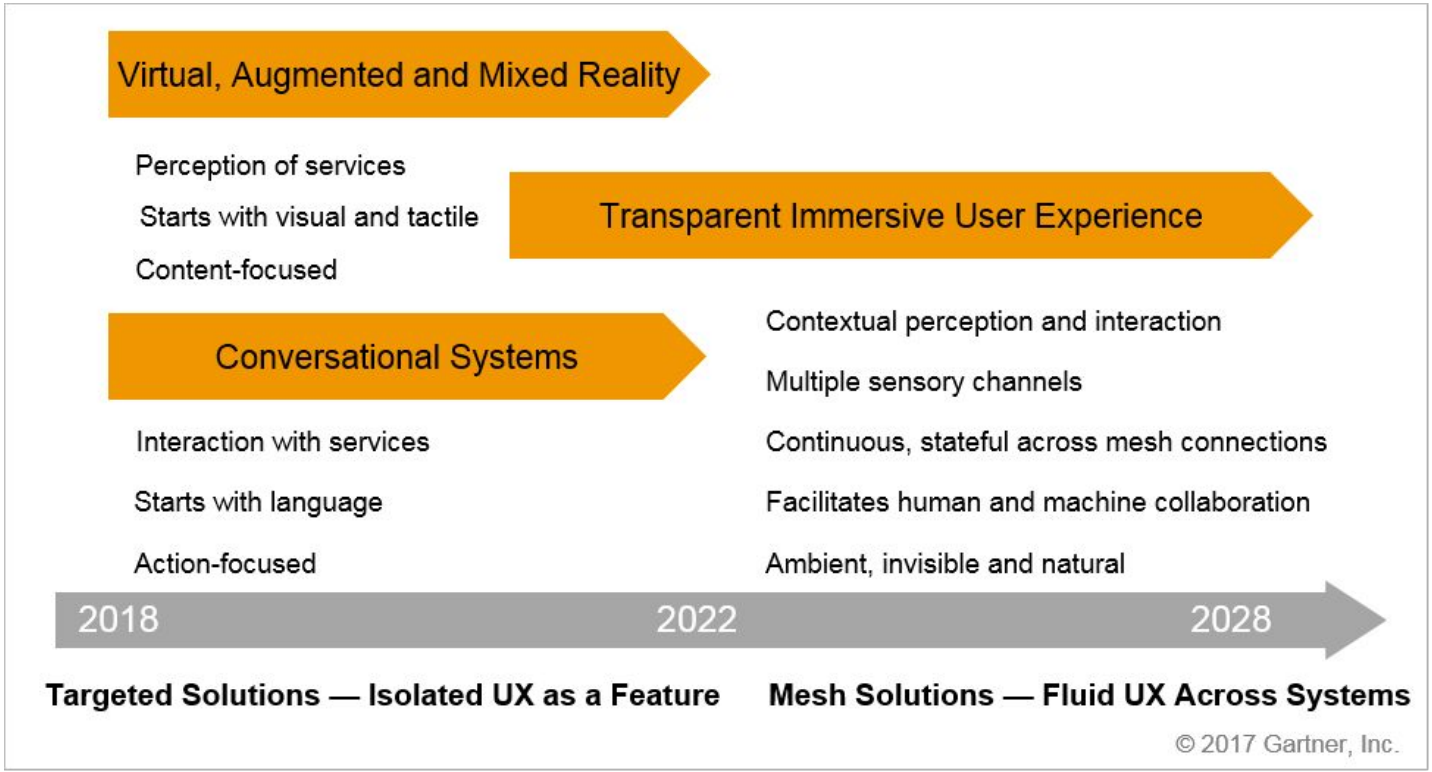
Breakdown of creative industries

Creative industries

$ billions, 2025E

Source: World Economic Forum, Data courtesy Goldman Sachs

Temporal Reach | AR/VR/MR *2018 - 2028*



Immersive Technology
Future Temporal Reach

2019

The creative industries are more interested and aware of AR/VR. | More virtual mobile platforms will be created.

2021

An increased use of phone applications having integrated AR/VR . | A rise of 'Immersive Technology' trainers to teach other industries on how to best utilize it.

2023

The use of AR/VR will be integrated in the daily life. | The way humans interact with technology will radically change. Emerging immersive technology will spur more natural and immersive interactions in the digital world, leading to companies having a completely different interaction with consumers than they do have currently.

2025

Everything will be visualised, and information will widely available and easily digested by different people with different backgrounds. | People from different industries will be transparent about their issues, because they know there is a community on the internet that could help from their own personal experience (eg. Quora, Quora, Gutefrage.net) | | The industries will be open to work with people who are not highly educated, rather those who possess more skills where they can bring new ideas in. | Blockchain will encourage transparency about creative ideas, without the fear of intellectual property. For example, Elon Musk Tesla shared his idea with the world, so other car industries can get inspired and use his methodology | AI will connect people together, and will customise everything according to people's needs | Having access to different resources on the internet, that in a normal daily life they usually wouldn't due to perhaps budget, space limitation, country etc.

2028

Co-working will take place in the virtual dimension. Ideas will be visually communicated in a new way.

2030

With the help of AI and using the properties of AR/ VR, there will be reconstructed and visualised historical events from the past.

Emergent Properties

+ With/from the alternatives and cross impacts, can we get emergent properties? + From the interrelation of various dynamics or the contradicting developments in them? (study/think about this). + These properties which emerge newly. + A novel situation/new trend created by unforeseen recurrent events. ***Note:*** *These events can also be called weak signals. Emerging patterns can transform the existing process substantially; most times, emerging patterns have little consequences or die off. Whereas a high degree of uncertainty is associated to the amplification/dissemination of an emerging pattern, it is not excluded that it will replace the current mainstream pattern in the future.*

VR/AR/XR Visualization: Through the technical development of immersive technologies, the visualization of all things can happen like never experienced before. This could impact social media in a new way.

Education Technology: The visualization of things simplifies learning processes and increases the interest in learning itself.

Blockchain Technology: Blockchains that are immediately valid as digital contracts offer transparency to the agents.

New forms to channel creativity: The way creative products are created will change as a whole new way of thinking can be achieved in collaboration with, for example, engineers and designers.

Emergent Properties | AR | Education Technology

There are a lot of benefits to the usage of AR and VR in education, and there are many forms of application. Today, many software development companies are ready to offer you skilled developers that can create VR and AR apps.

AR can be used for learning, and it is a more reliable approach to the learning process. Thus, using AR and VR, students can perceive information in a better way, have more interest in subjects, and so on. Augmented reality shows its large practicality, unlike virtual reality, since AR doesn't require the availability of complex equipment. To use AR, you just need to have a mobile device like a smartphone or a tablet.

AR-based apps for education can also help students study the information more thoroughly, regardless of what subject it is — whether it be history, math, chemistry, or geography.

- Visualization: AR means a switch from abstract things to concrete objects of situations.
- Interactive Learning: AR means active learning stimulating further exploration about the subject.
- Gamification: AR is fun and helps students understand and learn things easily.
- Get to know more with less stress: AR helps more information about the topic saving students` efforts.
- Small but great investment: AR does not require big investments from any side.

Emergent Properties | VR | Education Technology

Opportunities

- Visualization of concepts that are otherwise impossible to produce. Better visualizations leads to better understanding and improves knowledge retention rate.
- The increase in interest and engagement. While VR and AR technologies are still new, people are tempted to use them more, even if it's for learning something new. Besides, reliving a mixed reality experience is more fun.
- Motivation through interest. VR and AR provide an exciting way to make people interested in learning and becoming successful professionals.
- The in-depth understanding of the complicated material. In many fields, the educators have already incorporated VR into college and university curriculum to provide better instruction for engineers, doctors, and even editors.

Threats

- The deterioration of human interaction. VR isolates the user within a virtual world, which often precludes personal interactions that are an integral part of a traditional learning process.
- The hardware and software deficiencies. While the quality of virtual reality content leaves a lot to be desired, hardware functionality issues can halt the educational process altogether.
- The extreme upfront investments. While AR can be accessed through any portable device with a camera, VR headsets are expensive.
- The limited amount of content. There are tools allowing instructors and students to create AR experiences in class and at home. High-quality VR experiences are few and far between, as they require more time and money to develop.

Emergent Properties | AR | Education Technology

Opportunities

- Accessible learning materials: Anytime, anywhere. AR replace paper textbooks, physical models, posters, printed manuals, etc. It offers portable and less expensive learning materials. As a result, education becomes more accessible and mobile.
- No special equipment is required.
- Higher student engagement and interest.
- Improved collaboration capabilities: AR apps offer vast opportunities to diversify and shake up boring classes. Interactive lessons, where all students are involved in the learning process at the same time, help improve teamwork skills.
- A faster and more effective learning process.
- Practical learning.
- Safe and efficient workplace training.
- Universally applicable to any level of education and training.

Threats

- A lack of necessary training.
- Dependence on hardware.
- Content portability issues.
- Industry controlled by one sex, imposing a certain view.

Emergent Properties | VR/AR

How Immersive Technologies affect the creative economy

Content – and access to it – forms the bedrock of the creative economy, which is the system that turns ideas and creative works into profit, either for individuals, businesses or society. The creative economy is at the intersection of creativity, culture, economics and technology, so it could be entirely reshaped by new technologies that promise to disrupt our interaction with content.

At Davos in 2015, the United Nations unveiled a VR film that followed the life of a Syrian girl in a Jordanian refugee camp, an experience that moved some to tears. The ability to connect more deeply with 'imagined communities' and experience alternate identities – cultural, national or gender – opens up the possibility of a shared vision of humanity that has so far eluded us. " VR can help create empathy and compassion in a world that needs it more than ever," said UN Secretary-General Ban Ki-moon, who is using VR to help spread awareness of areas affected by wars and natural disasters.

Emergent Properties | VR/AR | Challenges

Aligning business metrics with consumer well-being

Designers of software increasingly rely on the collection of personal data for business growth. Companies use the data to personalize content, including advertising, and as a result have an incentive to collect more data by keeping users on their websites and apps. At the same time, analytics is sophisticated enough to respond to real-time user behaviour. Members of industry have detailed how frequency of use can be increased by applying psychological techniques that nudge individuals into spending more time with their devices. 67 Evidence shows that more of our leisure time is devoted to screen-based interaction, even while the time we spend on other activities has stayed constant.

These practices may accelerate as immersive technology enters the mainstream, but two trends should be monitored. To begin with, consumers may be uncomfortable with the way personal data is collected and used. In a study spanning six countries, the World Economic Forum has shown that 47% of people have stopped or avoided using a service because of inadequate user controls over their personal data, a figure that rises as high as 70% in China. 68 Immersive technologies could allow for more intimate data collection, from tracking eye movements to facial expressions.

The second trend is the link between screen-based interaction and well-being. One longitudinal study of a major social network found a negative association with increased engagement and individual well-being,69 while teenagers in the US who devote six to nine hours a week to social media are 47% more likely to say they are unhappy than those who use social media less.

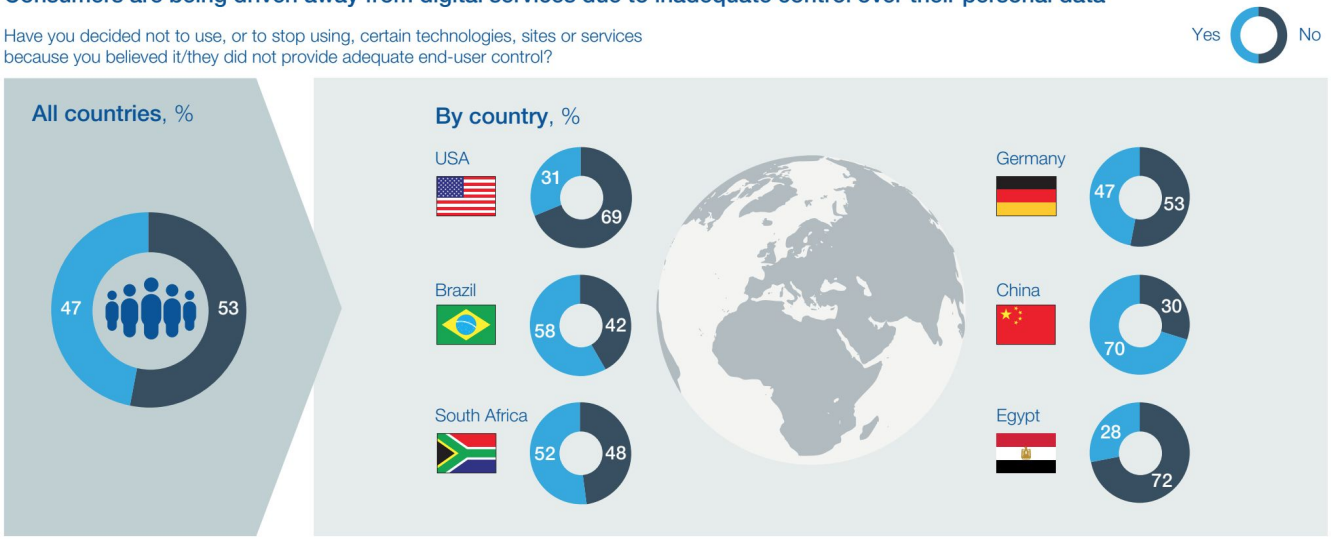
If technologies prioritize engagement over other metrics, it may be harder for users to be conscious and deliberate in using them for good. If we are to use AR and VR devices to inform, entertain, educate and work together, then multistakeholder debate about their ideal design becomes more important.

Emergent Properties | VR/AR | Challenges

Aligning business metrics with consumer well-being

Consumers are being driven away from digital services due to inadequate control over their personal data

Have you decided not to use, or to stop using, certain technologies, sites or services because you believed it/they did not provide adequate end-user control?



Sample size: Brazil=1,049; China = 1,057; Egypt = 1,013; Germany = 1,052; South Africa = 1,015 ; USA = 1,081

Source: Valuing Personal Data and Rebuilding Trust, World Economic Forum

> **Our internal stats show that our content is viewed, on average, eight times per piece of content. That is an extraordinarily high repeat rate.**
>
> **David Anderman** – Strategic Adviser, Jaunt VR

> **Companies take a brute force, data-driven approach to A/B test different features of a product and iterate to the point that is maximally difficult to avoid.**
>
> **Adam Alter** – Associate Professor of Marketing, Stern School of Business, New York University

Emergent Properties | VR/AR | Challenges

Talent development

Indications suggest a paucity of workers in immersive technology, whose qualifications are either in short supply or concentrated in other industries. Currently, the gap can be quantified only with informal measures, such as surveys of companies describing talent shortages64 or data showing that demand for freelancers with VR expertise is growing at a 30- fold year-on-year rate. AR and VR growth may be held back by a lack of funds; many professionals are using personal capital to expand their companies.

> **Virtual reality opens a portal to a state of transcendence, providing a layer of experience never felt before.**

Lynette Wallworth – artist, Studio Wallworth

Emergent Properties | Blockchain

How can creative industries benefit from blockchain?

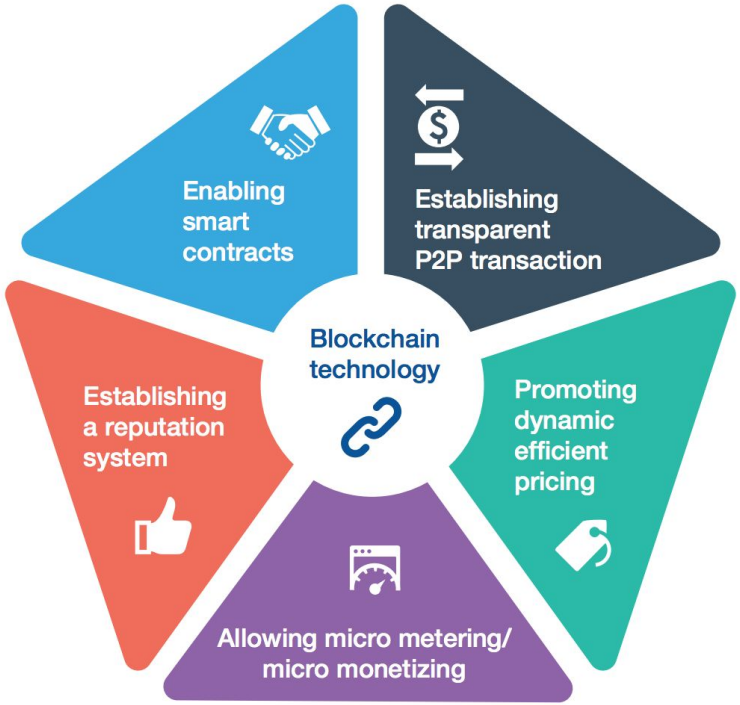
Augmented and virtual reality offer an entirely new medium for creators to work with. Because this technology has the potential to become the “envelope” for all content, it is likely to redefine narrative conventions that have existed for decades.

At the monetization phase, blockchain has the potential to change the level of control artists have over their work. The technology could allow artists to program their intellectual-property rights, revenues, and royalties into smart contracts that quickly and transparently allocate revenue to contributors. By removing the intermediaries between artist and consumer, blockchain may solve data and money issues in creative content—basing precisely how much to pay artists on actual consumption and eliminating complexity in paying them. The technology could also affect production rights, third-party monetization, and data transfer of creative work, enabling the repurposing of creative content while safeguarding the intellectual property of artists.

According to one poll, 46 percent of audiences associate virtual reality with novel experiences and 60 percent with high-end gaming. But artificial and virtual reality have the capacity to provide truly transformative experiences by promoting new and meaningful feelings, skills, and understanding.

Emergent Properties | Blockchain

How can creative industries benefit from blockchain?



Force 1: Enabling 'smart contracts'

Blockchains can host "smart contracts" to help artists manage digital rights and allocate revenue shares to contributors to the creative process. Such smart contracts have the potential to replace conventional contracts, which can be esoteric and leave some artists with little power over the terms for the content they generate.

Royalties could be designed to be more inclusive, offering fairer terms for composers, lyricists, and musicians—all stakeholders involved in the creative process. PeerTracks is an example of a service for artists to seek immediate royalty payments and ownership of their content. The service works by attaching a smart contract to every song an artist uploads and dividing the revenue according to the terms the contract stipulates.

Emergent Properties | Blockchain

How can creative industries benefit from blockchain?

Force 2: Establishing transparent peer-to-peer transactions

One of the biggest appeals of blockchain is its public nature. All of the transactions for a creative work could be seen and validated, including who accessed the work and how much revenue the work is generating at any point in time. This will allow stakeholders to have a better sense of the overall value of the creative work that is being produced, all in the form of a digital ledger provided in the blockchain.

Furthermore, blockchain will make it transparent who the owner of the creative material is. Services such as Ascribe.io offer to attribute ownership of creative works securely. The service works by providing each creative work with a unique cryptographic ID, verified with the blockchain. This means ownership can be traced and creative content securely shared.

Force 3: Promoting efficient, dynamic pricing

Creative content can be mispriced. By tracking the demand for creative content, pricing could be more dynamic. Prices for creative content could fluctuate according to supply and demand. Moreover, artists could control prices and have the ability to set prices themselves without having to go through a complex web of intermediaries.
As the blockchain could provide records of who has been granted access rights to creative works, this could then be harnessed to price creative works dynamically. Perhaps more important, because artists will be closer to their creative work than before, they may have a stronger voice in the pricing scheme and could, therefore, provide discounts on their works at certain times.

Emergent Properties | Blockchain

How can creative industries benefit from blockchain?

Force 4: Allowing ‘micrometering’ or ‚micromonetizing’

Digital music stores such as iTunes allow consumers to purchase individual song tracks. Using blockchain, snippets of creative works could be made available for a price, for example, a few seconds of a song for use in a movie trailer. This kind of “micrometering” works by having the blockchain record the precise components of the creative work that were used, defining the smallest consumable unit of creative content.

This could have huge implications: Why purchase unneeded parts of creative material? Already, services such as Streamium are disrupting the traditional method of artists being remunerated through intermediaries by offering micrometering payment services. In advertising, Brave allows Internet users to pay content providers they support in Bitcoins in exchange for an ad-free experience.

“It allows users to support content creators of their choice and reduce unwanted ads,” says Mike Belshe, cofounder and CEO of BitGo.

Force 5: Establishing a reputation system

Blockchain can help link reputations to specific “addresses” on the blockchain, thus allowing both producers and consumers of creative content to verify one another. This could encourage stronger collaboration and better behavior, by promoting cooperative terms for content creators and consumers alike. Participants who repeatedly don’t fulfill terms in a contract or try to game the system would have their actions recorded, acting as a deterrent against bad behavior.

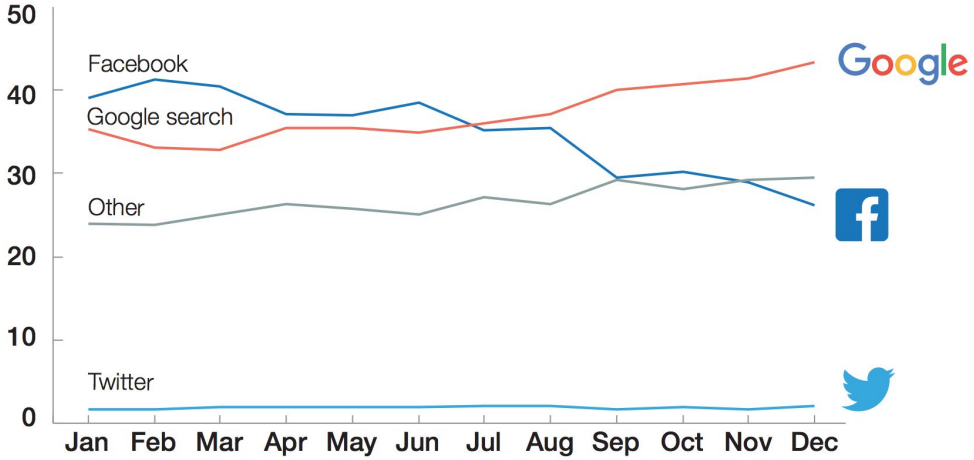
Emergent Properties | Platform Economy

The creative economy & the platform economy are converging

Technology platforms are the main referral sources for digital publishers, with Facebook and Google responsible for about 70 percent of online referral traffic. This relationship is affecting both the editorial elements (what type of content is seen and why) and monetary elements (where the revenue accrues) of information and entertainment content.

Two companies are responsible for around 70% of online referral traffic

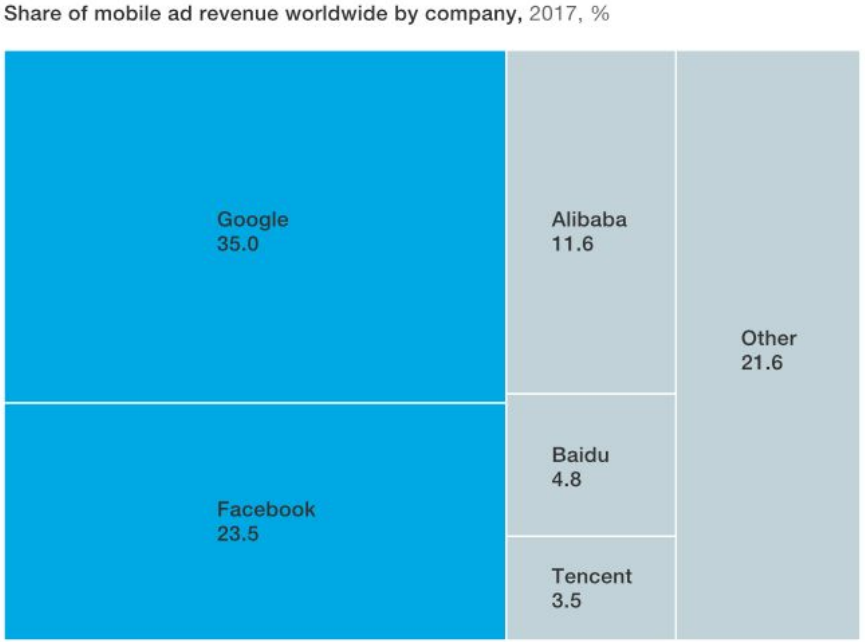
Digital publishers' referral sources
2017, % referral traffic



Emergent Properties | Platform Economy

The creative economy & the platform economy are converging

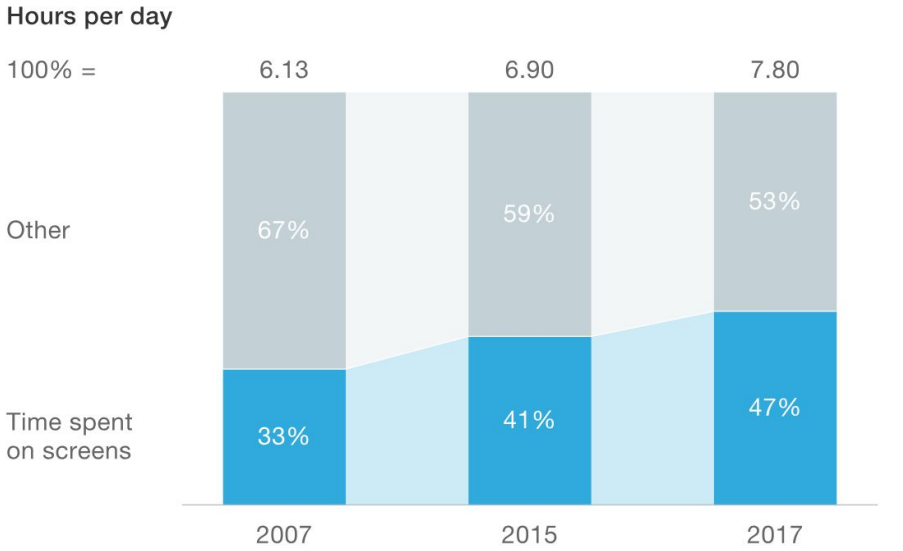
The monetary benefits of this new relationship do not accrue entirely to content creators and publishers. Five companies take almost 80 percent of global mobile-advertising revenue, and by some estimates almost 90 percent of the growth is going to just two companies, Facebook and Google.



Emergent Properties | Online Learning Platforms

The education sector does not rely on schools material only, some universities foster outside learning by paying a subscription fee for their students, staff and faculty. For example at New York University, they have a membership with the online learning platform Lynda. Which has been bought by LinkedIn for $1.5 billion, in April 2015.

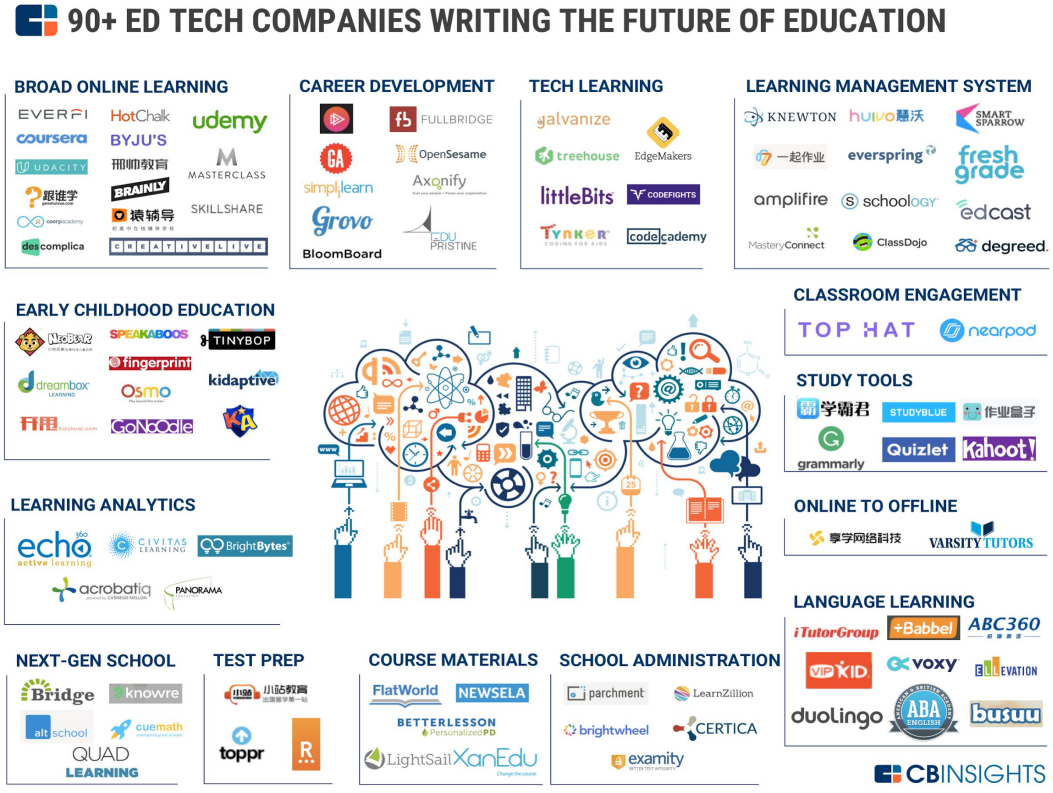
The term “e-learning” has only been in existence since 1999 when the word was first utilized at a CBT systems seminar. Other words also began to spring up in search of an accurate description such as “online learning” and “virtual learning”. However, the principles behind e-learning have been well documented throughout history, and there is even evidence which suggests that early forms of e-learning existed as far back as the 19th century.



Source: World Economic Forum; data provided by Adam Alter, NYU Stern School of Business

Emergent Properties | Online Learning Platforms

The rise of the online learning platforms in the recent 10 years has paved the way for a whole bunch of diverse education tech start-ups, offering a wide range of online education opportunities.
From the already well established broad online learning platforms like **Coursera** and **Udemy**, offering massive online open courses through language learning platforms like **Duolingo** till online platforms for teaching programming like **Galvanize** and **LittleBits** and **Fullbridge** and **Pluralsigh**t, which provide enterprises and individuals with educational content for professional advancement, including financial training.
The diagram shows the 90+ ed tech companies according to 'CB insights' divided in 14 categories.



Emergent Properties | Storytelling Platforms

PLATFORM	ELEMENTS	UNIQUE FEATURES
Film	Moving image, audio, non-interactive, fixed interaction time, passive viewing	Popular, reaches a wide audience, commercial
Episodic Shows	Moving image, audio, non-interactive, fixed interaction time, passive viewing, shorter, episodic	Quick; episodes extend the duration of the transmedia work over time. changes the nature of how audience engages. overall extended narrative
Gaming	interactive, animated/moving graphics, music, sound effects, no fixed interaction time,	players become an extension of the story world: they can act as a character, manipulate the world, and possibly form their own narrative
Toys (action figures, costumes, trading cards)	playable, physical, tactile	hands-on media, collectible, allows players to become part of the world physically. helps form ideas of collective identity and competition and passion! (i.e. trading card collections)
Music (Song)	only audio, fixed interaction time, single media environment (just sound).	sing-alongable
Artwork (Photography, Painting, Installation etc.)	only image, no fixed interaction time, single media environment (just image).	highlights key moments, encourages hardcore fans to appreciate and engage further
Literature (Novels)	written word, more detailed, fixed time, but longer than most other media	encourages reader's imagination
Graphic Novels, Comics	written word, images, expressive, fixed time but duration is quite long.	encourages reader's imagination, niche market
Social Media	videos, audio, text, image, networked, quick and fast connectivity, interactive	direct interaction with the personal audience member - personalization. encourages audience participation. bridge between the story world and the real world.

The media landscape today is a complicated network of connected platforms that content is released on to. When we talk about platforms we mean categories or types of media content that can be consumed by audiences. Example of these platforms may be: films, episodic shows (tv, web series), games, literature (comic, graphic novels, books), or even social media (facebook, twitter). Each platform has their own affordance and limitations that, as media practitioner, we need to take into consideration when creating content and stories to be released with each platform.

Emergent Properties | Creative Tech Platforms

The creative tech platforms emerged in the early 90s initially as bond communities for IT geeks. The rise of Internet and its evident potential to revolutionize the world and challenge its whole paradigm required a completely new approach and know-how. The hackers community were one of the first to give impulses in that area, arranging their work as labs and experimenting with soft and hard ware. 20 years later the in the beginning rather subcultural and closed tech communities have expanded to a new level becoming open-access creative hubs, merging with other creative industries and being provided by latest technologies to enable complex designing and producing processes. With TechShop and FabLab as creative tech platforms have been established the first trademarks in that field opening up the gate to a whole new range of perspectives for agents and actors to reshape the future of creation and production.

'A **fab lab** (*fabrication laboratory*) is a small-scale workshop offering (personal) digital fabrication.A fab lab is typically equipped with an array of flexible computer-controlled tools that cover several different length scales and various materials, with the aim to make "almost anything".This includes technology-enabled products generally perceived as limited to mass production.

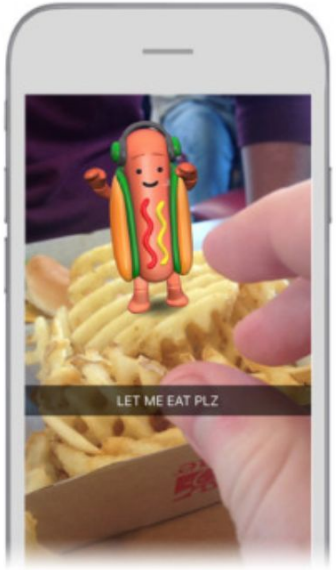
While fab labs have yet to compete with mass production and its associated economies of scale in fabricating widely distributed products, they have already shown the potential to empower individuals to create smart devices for themselves. These devices can be tailored to local or personal needs in ways that are not practical or economical using mass production.

The fab lab movement is closely aligned with the DIY movement, open-source hardware, maker culture, and the free and open-source movement, and shares philosophy as well as technology with them.'

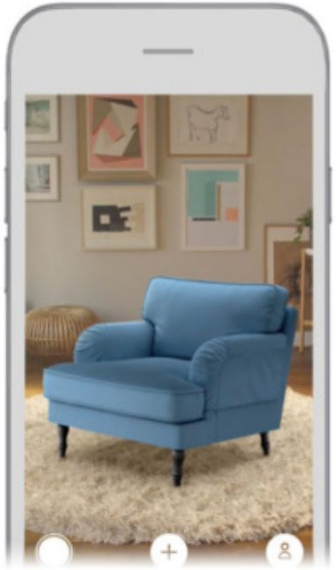
Source: wikipedia

Emergent Properties | AR Popular Applications

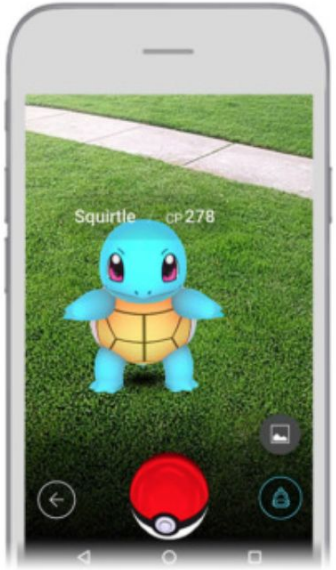
SOCIAL



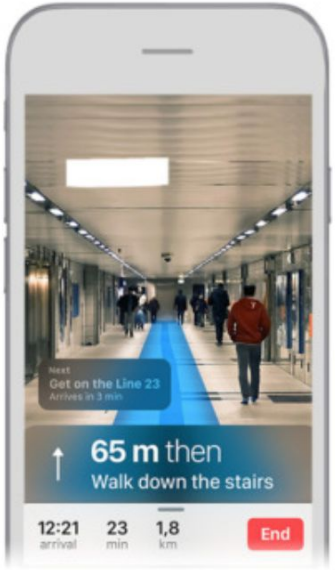
RETAIL



GAMING



UTILITY



Emergent Properties | AR Development Platforms

NAME	ARKit	ARCore	AR Studio	Lens Studio	Sumerian
RELEASE	June, 2017	May, 2017	April, 2017	December, 2017	November, 2017
DIFFERENTIATOR	A11, Early Adoption, Built in AR (Animojis)	Integration with other Google Products	Emphasis on Facial Augmentation	Snapcodes, Templates	Platform-agnostic, In-Browser Dev, Hosts
GOOD FOR...	Sand Box Development for Apple Apps	Sandbox Development for Android Apps	Creating Shareable, Social AR Experiences	Producing Easily-Broadcasted Social AR Experiences	Business & Enterprise Training

Emergent Properties | AR Development Platforms

Apple **ARKit**

ARKit was announced at WWDC in June 2017. AR experiences made with the platform work on any Apple mobile device that's running iOS11 and powered by an A9, A10, or A11 chip. It includes facial tracking and world tracking. The real differentiators come tied to the hardware. ARKit can use the iPhone's camera sensor to estimate the total amount of light in a scene, then apply estimate shading and texture to virtual objects.

There's been an organic MadeWithARKit movement where developers have created **portals**, **games**, **entertainment**, **consumer**, and **social applications**. And while they haven't advertised it (except as Animojis and Face ID), ARKit has built in frameworks for facial augmentation. Expect Apple's technology to encroach on Facebook's competitive advantage soon.

Google **ARCore**

ARCore was announced at I/O in May, 2017. The platform runs on Android devices with the N OS or later, and for developer previews only works with the Google Pixel, Pixel XL, Pixel 2, Pixel 2 XL, and Samsung Galaxy S8.

There's integration with VR building tools Tilt Brush and Blocks to create 3D objects, as well as their "VPS" technology (like GPS but for smaller, indoor spaces). But what's more interesting is the potential for integration with Google Lens, an app designed to bring up relevant information using visual analysis. Those developing ARCore are "working very closely with the Google Lens team." Imagine using Google Lens to recognize a pair of shoes you're considering purchasing. The app checks to see what colors are available in stock. From there you can use AR to see how they look in a variety of colors.

Present | AR Creative Platforms

Augment

Bridging the gap between the **virtual** and **physical** worlds, Augment changes the way we **see**, **imagine**, and **learn** about the world around us. The **augmented reality** (AR) app and platform **enables** students and teachers to **visualize** 3D models in the real environment, in real time, and at scale.

MauAR

CODiNG DAViNCi

Coding da Vinci is the first German open cultural data hackathon. Founded in Berlin in 2014, Coding da Vinci brings cultural heritage institutions together with the hacker & designer community to develop ideas and prototypes for the cultural sector and for the public.

Spark AR Studio

Create interactive augmented reality experiences with or without code, then share what you build with the world.

EON Reality

World leader in Augmented Reality (AR) and Virtual Reality (VR) based knowledge transfer for industry and education, EON Reality's success is tied to its belief that knowledge is a human right and should be available, accessible, and affordable for every human on the planet. To carry this out, EON Reality, since 1999, has developed the de-facto standard for Augmented Reality and Virtual Reality based knowledge transfer software that supports devices from mobile phones to large immersive domes. EON Reality's global app development network, with twenty-two locations worldwide, has created the world's leading AR/VR library for knowledge transfer with over 7,000 applications. Over 36 million people worldwide have downloaded these applications.

The following are technological enablers used currently in the **Creative Industries**

Music Industry

Examples of existing VR/ AR music platforms

VRTIFY - the world's first VR/ AR platform is becoming the YouTube of virtual reality music: the go-to platform for music fans who want to enjoy their favorite artists' work and discover new music, paired with 360-degree video, immersive environments which enhance the music experience, and a comprehensive search function for music and VR locations.

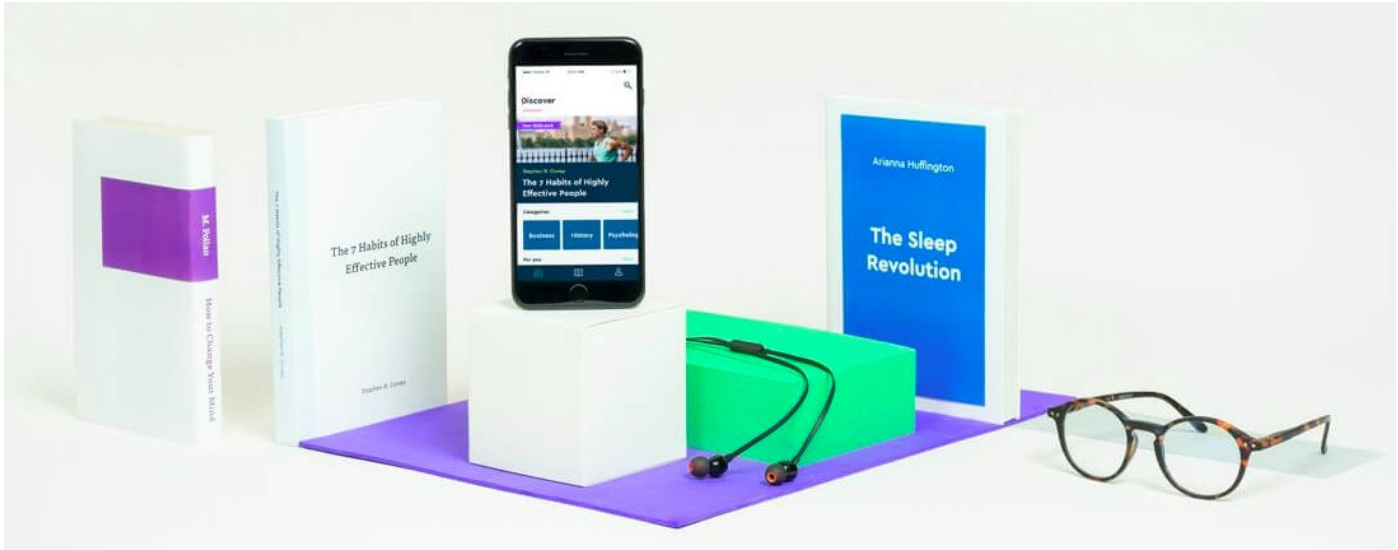
TheWaveVR - a VR platform where users can enjoy music festivals in virtual reality.

The Music Room - HTC VIVE app that allows users to experience playing a musical instrument in the most realistic manner possible.

VR Amplify by Mbryonic - technology platform for artists wishing to showcase their music using immersive power virtual reality.

Book Industry

Blinkist: Founded in 2012 by four friends, Blinkist connects 6-million readers worldwide to the biggest ideas from bestselling nonfiction via 15-minute audio and text.



Art Industry

St. Louis' Moto Museum
St. Louis, September 2013

The Heavy Projects' 'grand-place takeover' Brussels, November 2013

'Augmented reality allows everyday objects to tell their stories, reveal information and interact with users in real time. What transpires as a result is a radical shift of interdependence between the object and the information it conveys.': Nicolas Henchoz, director of the 2013 exhibition 'Gimme More, Is Augmented Reality the Next Medium?' at Eyebeam, New York

Art Industry *continued*

Eyebeam provides space and support for a community of diverse, justice-driven artists. Our annual residency program, highly engaged community of alumni, advanced tools and resources, and shows and events help our artists bring their work to life and out into the world. The platform enables people to think creatively and critically about technology's effect on society, with the mission of revealing new paths toward a more just future for all.

HEAVY PROJECTS is an award-winning and internationally recognized pioneer in the new medium of digital urban art and mixed reality [augmented reality, virtual reality, artificial intelligence] experiences. We build & deploy mixed reality in ways that explore the intersections between philosophy, art, design, and interactivity. *"Artists have begun harnessing AR as a means of expression and social commentary. At the forefront of this burgeoning movement is HEAVY."* [IEEE Spectrum] *"HEAVY rethinks our approach to public spaces and experiences through augmented reality."* [Fast Company]

Broadcasting Industry

The following tech pioneers have created Immersive reality gadgets, which have been utilized by the creative industries for the consumers.

Facebook's Oculus

Google's experimental Cardboard viewer

Microsoft's HoloLens Augmented Reality (AR) system

Broadcasting Industry *continued*

1. The Tour de France table (Video)

Danish TV combined AR with real-time data visualization, touch screens and live virtual set graphics to give us this unique interactive look at the Tour de France. The impressive outcome was a table that allowed the commentators to move the bikers around to showcase different race outcomes.

2. The eye of the storm (Video)

3. In the middle of a storm surge (Video)

This immersive mixed reality video used AR to show us what a storm surge would look like for the Carolina coast. Released just as Hurricane Florence was approaching, the video sent chills down viewers' spines.

Performing Arts

In 2017, in partnership with Intel and The Imaginarium, the Royal Shakespeare Company created the world's first live motion-capture performance, based on the Shakespeare's play *The Tempest*.

https://www.youtube.com/watch?v=BZKtQAIE4e

Since then the performing arts industry has been reinventing itself further and further, using the potential of MR (Mixed Reality) for producing more profound and more visceral experiences. A good performance is not only a joy for the senses, but also a subtle way to connect with your inner world. The AR technologies can make this connection happen with an unmatched intensity, applying elaborate imaginary patterns on real objects or inserting digitally created objects into the real scenery and the VR tools can make the whole experience accessible from everywhere.

Another sample of AR technology applied to a performing art piece:

https://www.youtube.com/watch?v=-2bvmM69A_g

Architecture Industry

The construction industry is known for having very low profit margins and low levels of efficiency. Building a construction project in a virtual reality environment can be extremely useful in this industry. Within a VR space, teams are able to test out a number of stages in the building process without the cost and time factors of regular, real life testing and it will help reduce construction errors. The final structures can be rendered in 3D and the construction workers can experience and explore the space as they would in real life. Another important factor of the construction process is the fact that the viability of an architectural design needs to be tested thoroughly. Up until recently, the viability of a structure could only be tested through scale models and human judgement. As scale models can't completely simulate the environmental factors that a structure is subjected to and human judgment can be inaccurate and flawed, virtual reality offers incredible possibilities.

Below is a list of virtual reality tools that are set to revolutionise the architecture, engineering and construction space and will completely disrupt the workflow in this industry:

1. PrioVR motion capture device
2. Matterport 3D camera and capture app for iPad
3. Google Glass VR headset
4. Roto motorised chair
5. VRSCA – simulating without the lag
6. 3DiO virtual immersive environment
7. Touchable holograms
8. Microsoft HoloLens
9. Daqri Smart Helmet
10. 3D Laser scanner

Design Industry - Immersive Design

Immersive design is the process of designing things using immersive technology. This can include design tools based on virtual reality, mixed reality and digital twins.

1.) Engaging Entertainment. If ever there was a natural application for AR and VR, it's the world of media and entertainment. Augmented and virtual reality allow designers to create a new level of engaging entertainment with the potential for a more intimate and emotional experience.

Meanwhile, games provide another fruitful canvas for immersive storytelling. That's why Autodesk has developed the Stingray 3D game engine and real-time rendering software, which simplifies the game-making process for artists and developers, helping them more easily create mesmerizing worlds. "**Adr1ft**," a game by ThreeOneZero for example, is available on PC and can be played with the Oculus Rift. It was built using the hyper-realistic Unreal Engine**,** and the engaging 3D content was made with our 3D animation software – 3ds Max and Maya.

2.) Better Buildings. The same technologies that are transforming media and entertainment are also set to make an impact on the built environment. The Stingray engine, for example, isn't just for games. As a real-time rendering engine, Stingray can also be particularly valuable in building design, helping professionals better visualize their projects, simulate their designs to suggest how they would work if they were built and operating, and present their ideas to clients.

Design Industry - Immersive Design *continued*

3.) Carefully Designed Cars. A number of designers in the automotive industry still use clay modeling to help grasp what the final product will look like. But what if you could experience a new car design in full scale, rather than as a small-scale clay model? That's precisely what AR and VR environments can do. All the little elements of good car design — for example ergonomic details like how far the driver has to extend her arm to reach the dashboard — can be experienced much more accurately when the designer feels as if they're actually sitting in the car rather than viewing it as a 2D image on a desktop screen.

Autodesk has done some significant exploration in this area with a product called **VRED**, a visualization software that helps automotive designers and engineers create product presentations, design reviews, and build virtual prototypes.

4.) Thorough Training. For industries like construction, manufacturing, and oil and gas, AR and VR have the potential to provide virtual field training, giving users a "you are there" experience before they get wherever it is they're going.

5.) Enhanced Education. What happens when you combine reality capture technology with AR and VR? Exciting opportunities for learning and education. Autodesk has recently been **3D scanning the historic Apollo 11 lunar module**, which has slowly been degrading over time. Capturing that data allows us to preserve a digital copy of the Apollo 11 — but more importantly it allows us to share it with others for educational purposes. When combined with AR and VR capabilities, this means students in classrooms around the country — and around the world — can virtually step into the Apollo 11 and experience it for themselves.

Design Industry - Immersive Design *continued*

Project Aero by Adobe

Immersive media is driving the next wave of creativity and storytelling. It will change the way we work, learn, and play, expanding digital experiences beyond the screen to the world around us. Project Aero, is a powerful new augmented reality (AR) authoring tool that makes it easier for designers to create immersive content.

Advertising Industry

1. **Immersive Advertising –** It's been a while since there has been a major technological shift in the ad industry, but the coming of Immersive Advertising has changed that. But what is Immersive Advertising?Immersive Advertising is an entirely new ad format that leverages Immersive Technology while still being able to use today's current ad channels and ecosystems. This new ad technology takes advantage of a mobile phone's sensory inputs (like its gyroscope, magnetometer, accelerometer). These sensory inputs allow the immersive ad to respond to device motion, which makes it very effective for mobile advertising.Because Immersive Ads are very interactive, they are able to initiate and sustain ad engagement. They also elevate the ad experience for the consumer – a very important factor considering the ad industry has been getting a bad rep for intrusive and irrelevant experiences.

2. **Experiential Marketing –** Experiential marketing is one of the most common implementations of Immersive Technology in business where brands can set up interactive booths in trade shows, county fairs, malls or even sporting events where people can try promotional VR experiences. These promotional experiences can be based on an upcoming movie or show or they can even be a promotional experience for a product.For example, to promote the first season of Stranger Things, Netflix created an immersive experience that put the consumer in a scene of the show where they get to watch the scene unfold in first person perspective. Other more recent examples are movies like Mission Impossible, The Meg, or The First Purge.Another example of experiential marketing can be found in travel trade shows. During events, travel brands & tourism boards would hand out cardboard headsets and encourage people to try them out with a 360 video of the tourist spot they're promoting. Some of these Experiential Marketing installations are so incredibly detailed that brands have even created sets and included props that would help elevate the immersive experience.

Advertising Industry *continued*

3. **Immersive Web Apps –** As mentioned previously, Immersive Ads work best in mobile and it can be flexible as it works either in mobile web or in-app. Immersive Ads allow consumers to explore a brand within an ad unit seamlessly while browsing the internet – all without having to be redirected into a page. What's great about Immersive Technology is that brands don't just have to stop reaching out to their consumers with Immersive Ads. They can provide bigger and deeper implementations of Immersive Ads through Immersive Web apps.For example, if a consumer is exploring an Immersive Ad and is interested to learn more, the consumer can click on a CTA inside the Immersive Ad that will redirect them to an Immersive Web App (IWA). An IWA is a bigger and deeper implementation of an Immersive Ad. Because it works as some sort of landing page, it gives brands an opportunity to further expose consumers to their messaging and target those who are deeper in the sales cycle.

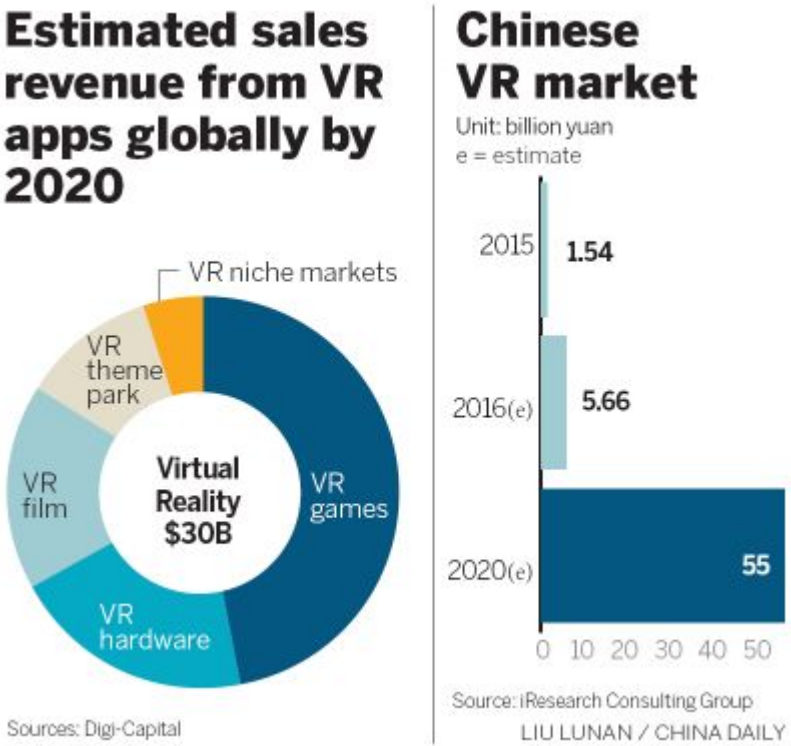
4. **Ecommerce & Shopping Tools –** Immersive Technology has put new meaning to the term "online shopping." As mentioned earlier, more and more stores are using AR apps to allow users to test out their products beforehand. Even with VR, brands like those within the car industry are using virtual showrooms where consumers can look at cars, take virtual test drives and even "sit inside" them. The experience is made even more immersive by letting users sit in actual car seats to make them feel like they're actually inside a car.Other examples of Immersive Ecommerce & Shopping Tools are the Target and Ikea AR apps mentioned before where users can try and see how a product would look like in their homes. This also works for real estate where people looking for homes can decide which homes are worth visiting in person and which homes are not, by taking a virtual tour of the home first. By allowing consumers to "try before they buy", immersive technology makes the online shopping experience much more seamless and interactive.Notice that with these three examples in marketing & advertising, Immersive Technology allows brands to reach consumers in every stage of the consumer purchasing funnel.

Film Industry

In August 2018, Vive Studios announced a world-first, a feature-length virtual reality film created in 360º VR. Called *7 Miracles*, the seven-part VR series immerses users in the world of the Gospel of John, experiencing the story from any angle they choose. Vive Studios put a considerable budget (almost $3.5 million) behind the experience to create a live-action period drama, complete with sets and costumes.

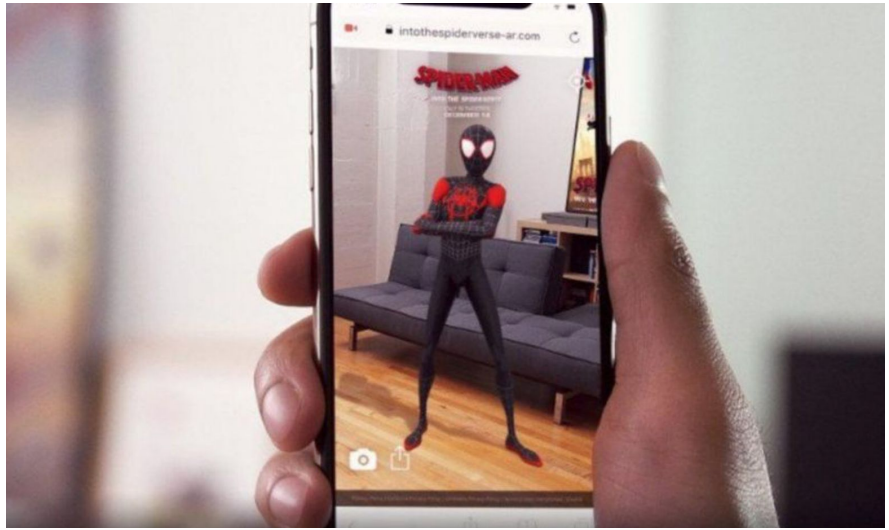
The film premiered at Raindance Film Festival this month and won the festival's 'Spirit of Raindance' award for 'VR Film Of The Festival'.

Chaired by Robert Redford, the Sundance Film Festival is the largest independent film festival in the US. It is bringing that same spirit to VR filmmaking through its New Frontier program. (2018)



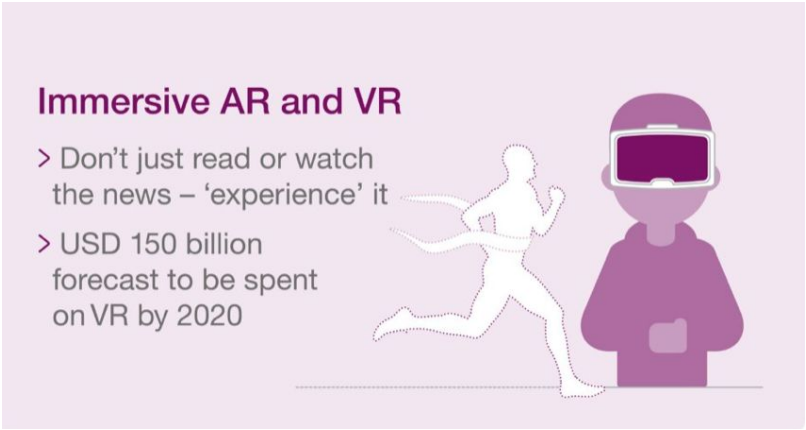
Film is taking a new meaning

- Sony Pictures recently released an AR experience for ‘Spider-Man: Into the Spider-Verse’. The application lets users interact with the superhero, take pictures, and even share them to social media. And it’s all web-based
- Variety reported that Disney employs a VR software called Cardinal that automatically generates VR storyboards out of scripts, helping directors to envision their world during the pre-production stage.
- Some VR films, such as Oculus’s upcoming episodic Star Wars series Vader Immortal, bill themselves as being “interactive”, where the viewer’s choices influence the path of the story – like a choose-your-own-adventure novel or Telltale video game.



Press Industry

In the news and journalism space, the use of VR and AR in media has the potential to bring readers and viewers deeper into a story than text, 2D images and even standard video ever could. Promising recent examples of VR media include the UN's 360-degree report from inside a refugee camp in 2015 – a first-of-its-kind, immersive experience that brings you into the story. Tomorrow's new VR and AR applications will rely heavily on fully functioning networks that are capable of supporting multiple data flows with varying performance requirements (also called network slicing) – to support new media services and guarantee a good quality of service.



Press Industry *continued*

Press Industries that are using Immersive Reality in their storytelling

The Washington Post:

App, Android | iOS

Stories:

Elbphilharmonie: http://wapo.st/2FxwYRS

African-American History Museum: http://wapo.st/2HpinJ1

Jack-O-Lantern Carving: http://wapo.st/2HlhbWI

Winter Olympics: http://wapo.st/2HnSIAi

NY Times AR App:

Olympics:
https://www.nytimes.com/interactive/2018/02/01/sports/olympics/nyt-ar-augmented-reality-ul.html

Hidden Figures, T-Brand Studio: *Android* | *iOS:* WSJ Stock Market Visualizations

Quartz :

AR Models:
https://itunes.apple.com/us/app/quartz/id1076683233?mt=8

BBC: BBC launches augmented reality app for Civilisations:
http://www.bbc.com/news/technology-42966371

Sunday Telegraph, Australia **- https://youtu.be/l9_rL7AP3ik**

Apps and Agencies

8i Holo App

SYFY: http://www.syfy.com/apps/happy-a

Targo AR News

Press is Capturing & Analyzing Emotions in Journalism

Journalism 360 Challenge awards $285,000 to 11 projects that advance the use of immersive storytelling in news. **Aftermath VR app by New Cave Media ($20,000 | Project lead: Alexey Furman | Kyiv, Ukraine | @alexeyfurman):** Creating an app that would apply photogrammetry, which uses photography to measure and map objects, to recreate three-dimensional scenes of news events (such as mass shootings or natural disasters) and narrate what happened through voiceover and archival footage.

AI-generated Anonymity in VR Journalism by University of British Columbia ($30,000 | Project leads: Taylor Owen, Kate Hennessy and Steve DiPaola | Vancouver, Canada | @taylor_owen, @katehennessy, @DipaolaSteve): Helping reporters test whether an emotional connection can be maintained in immersive storytelling formats when a character is algorithmically distorted so that their identity is hidden. The tool aims to provide investigative journalists with a means to preserve the confidentiality of a subject, while using an animation to ensure viewers remain emotionally connected.

Community and Ethnic Media Journalism 360 by City University of New York ($27,000 | Project lead: Bob Sacha | New York | @bobsacha): Making immersive storytelling more accessible to community and ethnic media through a program that provides hands-on training and access to equipment. The team also aims to produce a "how to" guide for others on using immersive storytelling to cover local happenings, such as festivals.

Dataverses: **Information Visualization into VR Storytelling by The Outliers Collective ($25,000 | Project lead: Oscar Marin Miro | Barcelona, Spain | @outliers_es, @oscarmarinmiro):** Making it easier to integrate data visualizations into immersive storytelling through a platform that would allow the integration of virtual reality videos and photos with facts. For example, a user could show a map of the Earth highlighting places without water access and linking each area to a virtual reality video that explores the experience of living there.

Facing Bias by The Washington Post ($30,000 | Project lead: Emily Yount | Washington, D.C. | @PostGraphics, @emilyyount): Developing a smartphone tool that will use augmented reality to analyze a reader's facial expressions while they view images and statements that may affirm or contradict their beliefs. The aim is to give readers a better understanding of the bias we all bring to a story and to improve trust in news by creating a personal connection to the content.

Press: The shifts in Journalism

Spatial and Head-Locked Stereo Audio for 360 Journalism by NPR ($15,000 | Project lead: Nicholas Michael | Washington, D.C. | @NPR, @nicktmichael): Developing best practices for immersive storytelling audio by producing two virtual reality stories with a particular focus on sound-rich scenes. The project will explore, test and share spatial audio findings from these experiments.

Immersive Storytelling from the Ocean Floor by the MIT Future Ocean Lab ($30,000 | Project lead: Allan Adams | Cambridge, Massachusetts | @MIT_FutureOcean, @AllanAdamsYG): Developing a camera and lighting system to produce immersive stories underwater and uncover the hidden experiences that lie beneath the ocean's surface.

Location-Based VR Data Visualization by Arizona State University, Cronkite School of Journalism ($30,000 | Project lead: Retha Hill | Tempe, Arizona | @Cronkite_ASU, @rethahill): Helping journalists and others easily create location-based data visualizations in a virtual reality format. For example, users could explore crime statistics or education data on particular neighborhoods through data overlays on virtual reality footage of these areas.

Voxhop by Virtual Collaboration Research Inc. ($30,000 | Project lead: Ainsley Sutherland | Cambridge, Massachusetts | @VCRconnect): Making it easy to craft audio-driven virtual reality stories through a tool that would allow journalists to upload, generate or construct a 3-dimensional environment and narrate the scene from multiple perspectives. For example, a reporter could construct a three-dimensional crime scene and include voiceovers detailing accounts of what transpired in the space.

Scene VR by Northwestern University Knight Lab ($20,000 | Project lead: Zach Wise | Evanston, Illinois | @zlwise, @knightlab): Developing a tool that would make it easier for journalists and others to create virtual reality photo experiences that include interactive navigation, using their smartphone or a camera.

The Wall by The Arizona Republic and USA TODAY Network ($28,000) | Project lead: Nicole Carroll | Phoenix | @azcentral, @nicole_carroll): Examining the audience engagement power of combining an important national story with new technology by documenting all phases of the proposed border wall between the United States and Mexico. The project would use virtual reality overlaid with relevant data and include aerial video, as well as a series of documentary shorts.

Paradigms

- **Gamification:** Play will be the underlying core of our learning and production process. Whether it is used to create a product, or simply to extract creative juices. Through gamification methods, people will have instant gratification which will constantly motivate them to engage and do their best in the given task.
- **New forms of Creative learning:** The enablers will allow us to engage differently with technology and with each other. As a result, a third dimension of collaborations will exist and our understanding notion of visuals, storytelling and problem solving will completely change.
- **Transmedia:** Industries will be working together, and become less proprietary. This paradigm is driven by communities of people, and the technological enablers that are bridging different societies together to create services and products. If we use **Apple** or **Drive Now** as an example, the products were born because of combining the minds of Designers, and Engineers. If more diverse minds work together, by involving different age groups such as school students who are already well versed on the internet new exciting products and services will be produced. Including the elderly above the age of 60.
- **Creative tools:** Agile values and fluidity will be a must for employees to maintain their jobs, or get jobs. The creative tools will include human interactions together using arts and team building. There is a paradigm that is predominant, which is the rise of People and Culture position in companies to foster employees well-being mentally, inclusivity and personal development.

> **The future [of journalism] will require automation editors—someone who is both proficient in journalism and computer science**
>
> **Francesco Marconi** – Associated Press

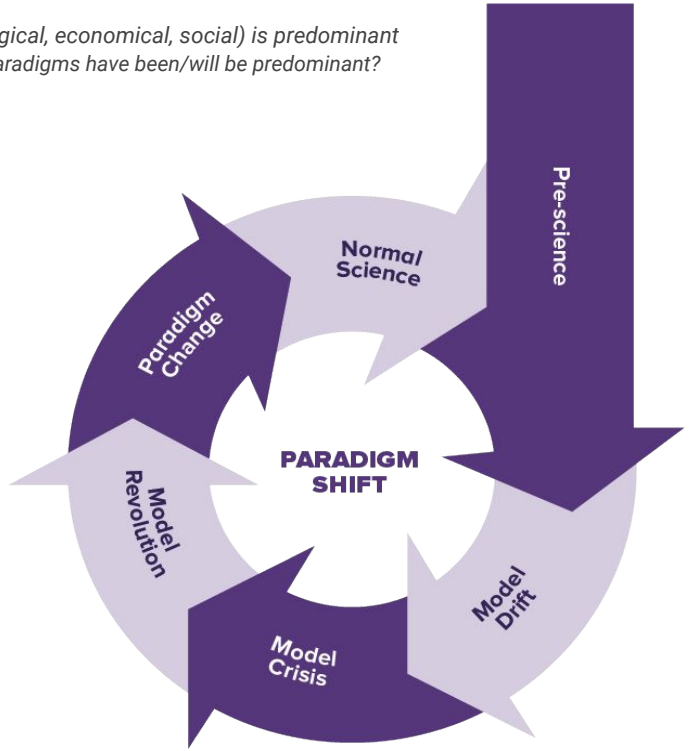
Box 1: Will AI displace or augment jobs in the creative economy?

A recurring question is to what degree human beings and AI can coexist – as AI gets smarter, are we on the brink of a symbiotic relationship that paves the way for human-machine collaboration, or is AI set to displace our jobs? It depends, is the unsatisfactory, yet most accurate answer. Andrew Ng, Baidu's former Chief Scientist, reminds us it is important to cut through the hype. As a general rule of thumb, he says, "If a typical person can do a mental task with less than one second of thought, we can probably automate it using AI either now or in the near future." While routine processes such as recognizing human faces in an image or translating text from one language to another will likely require less and less of a human touch, we will also see AI testing our appetite for AI-created works, from music and film to literature. The question as far as the creative economy is concerned may not be whether or not AI is set to displace us, but whether we have an appetite for all of the work, both routine and creative, that AI will increasingly become capable of producing on its own.

Paradigms *continued*

+ Aesthetic paradigms in regards to sustainability: Which form of sustainability (the triangle between ecological, economical, social) is predominant in the creative industries (is there at all a paradigmatic stance?) + Values + Attitudes to creativity + Which paradigms have been/will be predominant?

- **Stories/story board/ playbook:** Storytelling will be one of the key paradigms, as we witness a time where it takes a new turn and definition. If we look at the game “Red Dead Redemption 2”, it is designed and scripted just like a movie, including screenplay, story, visuals. Another shift we are witnessing is controlling the ending of a movie through gaming, like in Black Mirror: Bandersnatch and
- **Circular/design economy**: We live at a time where there is economical, political and environmental instability. Hence, we will witness a strong shift towards a Circular Economy model. What we can learn from the gaming industry, is how are they able to influence the users to pay money for online tokens? If we can use this notion and implement the psychology behind it which is based on “play” or “gamification”, Circularity will be a success. We anticipate that if all the creative industries join forces to create bigger stories together, they will have a greater power and stronger influence on people.



Thinking in Alternatives & Cross Impact

+ Dialectic structure of the dynamic – (most) dynamics bear the contradicting developments in them. + Change of impact direction.
+ What happens, when drivers/agents of dynamics change (also Wild Cards)? + How are different dynamics (inter) related?

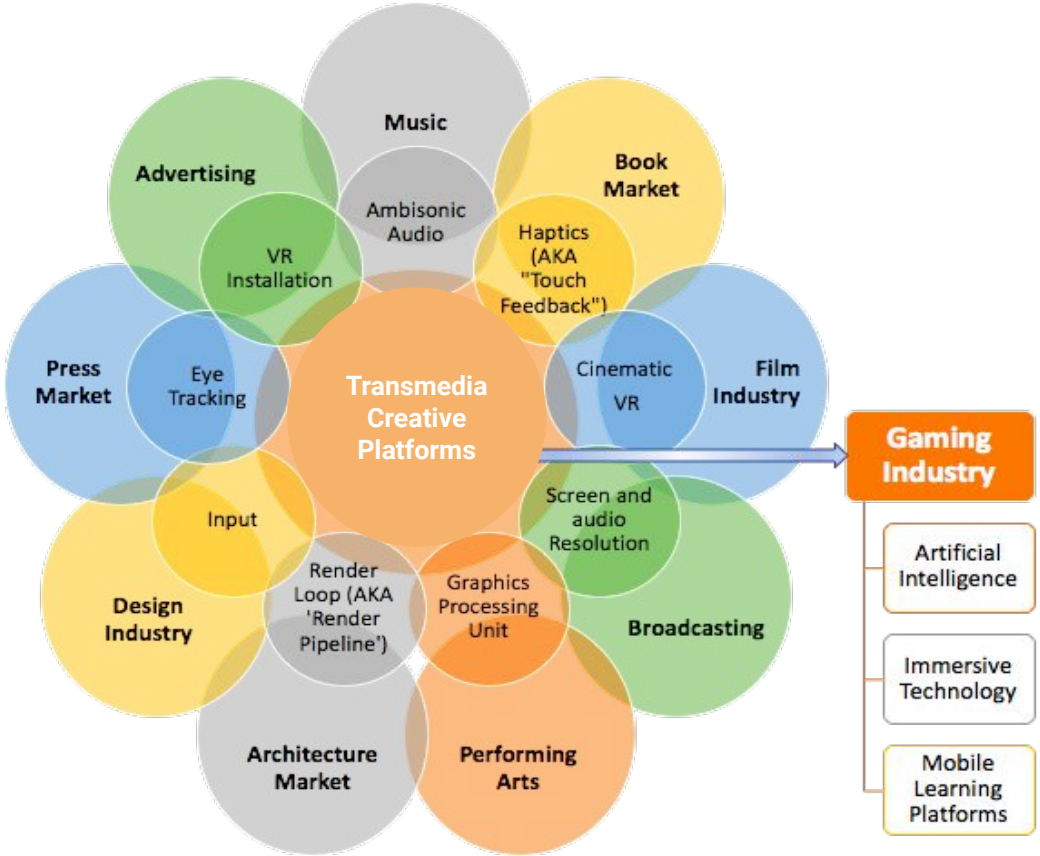
Since the Transmedia Creative Platforms are driven mainly by the creative industries, software/ gaming industry and the government, every change in the balance between the actors/ agents within the core would have a significant impact upon them.

A relatively larger role of the government could instrumentalize the platforms and take advantage of them for political purposes, limiting the freedom of creative expression in favor of more innovation.

A relatively larger role of the creative industries on the other hand could promise a higher degree of creative expression, but without the support of the gaming industry or the government spending/ regulatory framework, the transmedia creative platforms couldn't be a significant player. They will remain just an entertainment lacking innovation and societal purpose.

A relatively larger role of the gaming industry would contribute to a higher gamification of the platforms and make them less accessible for a wide range of creative people and less attractive for a government spending.

Thinking in Alternatives & Cross Impact | Transmedia



Paradoxical Properties

+ *A paradox involves contradictory-yet-interrelated elements that exist simultaneously and persist over time.*

"The idea of Gaming and Learning is a paradox in itself, but through the Transmedia Creative Platforms this will change immensely."

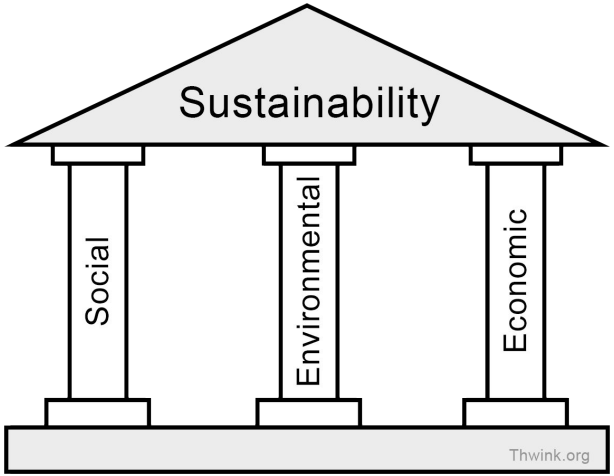
Using the three pillars of sustainability: Social, environmental and economic

On a **social level,** the transmedia creative mobile platforms could possibly connect people of different origins, occupations and societies globally. Helping them to easily build purpose driven communities, but on the down side they will impact their social (interpersonal) intelligence and abilities to build emotional bonds with other people. Moreover, their capacity for empathy will decline due to the mediated personal connection. *We are together, but together alone.*

As for the users they are becoming more visually intelligent, at the same time their memory side of the brain is deteriorating due to our reliance on technology.

On an **environmental level** the use of transmedia creative platforms can reduce the use of material resources and amount of waste, but not the use of energy. In addition, the use of mobile devices can lead to an increased electromagnetic pollution affecting human health. Moreover, there is no real system put in place on the end life of the enablers gadgets.

On an **economical level,** within the creative industries the transmedia creative platforms will contribute to the creation of new occupations, the rise of new businesses and competitiveness between them, new way of perceiving working time. However, they will force a restructure of the existing capital and employment among the established players on the market of the creative industries. Every restructuring entails a higher risk of instability.



STEEPV

Social

- A potential shift from mass to community-based society.
- Building new kind of communities - bridge communities, heterogeneous communities, united by a mutual purpose.
- Connecting different people with the same goal, but still keeping their individuality.
- Integrating vulnerable social groups like migrants, refugees, the mentally/physically challenged, allowing social and cultural barriers to disappear.
- New wave of educators/coaches will rise, where they will be needed across sectors to assist individuals to cope with the digital transformation physically and mentally.

Technological

- Triggering technological innovation, since technology is the biggest enabler of the transmedia creative platforms.
- Contributing to the circularity of the economy, producing energy-saving devices made out of recyclable and reusable parts.
- Working on further reducing the electromagnetic radiation of the mobile devices.
- More implications of AI, enabling the shift from smart to intelligent technologies.

Economical

- New forms of human capital. Bridging communities, attractive for investors.
- A lot of new competitive players on the market like tech start-ups, building their own business ecosystem. More flexible and less prone to the macroeconomic fluctuations.
- Redistribution and decentralization of the capital on the market of creative industries through cryptocurrencies.
- New decentralized forms of funding. *Sustainable banking*.
- More horizontal and less vertical organisation structure.
- More agile management, contributing to a better life-work balance.
- Recognized alternatives to the established higher education. Online education and certification.

STEEPV *continued*

Environmental

- Using less natural resources for creating subjects and spaces.
- Smart use of existing spaces and building new ones within sustainable parameters.
- Triggering the investigation for new sources of energy, since the digital transformation requires a lot of it.
- Elevated risk for depletion of the currently used natural resources.
- Elevated risk for a higher electromagnetic radiation.
- A new threat could be the need for cooling down the increased amount and size of servers, serving the digital transformation. They could negatively impact the climate.

Political

- A big challenge for the politicians to step off the existing paradigm and embrace the new dynamics.
- It will be required to have a new politician profile, less technocratic and more interdisciplinary thinking.
- Dealing more with different and diverse purposeful communities than with the masses.
- The big challenge is to secure and support the freedom of the communities. To grow through creating an appropriate legal frame that regulates new forms of creation and networking in the creative industries.

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Values

- Building communities (the better way to survive in a dynamic, constantly changing world. Threat: they can be less flexible, yet more impactful)
- Integration (integrating the individual properties into the bigger frame of communities and networks between them)
- Sharing knowledge.
- Saving time and resources.
- Transparency.
- Independence of the mind.
- Establishing good ethics, to ensure that the product/service will make good decisions for example AI.

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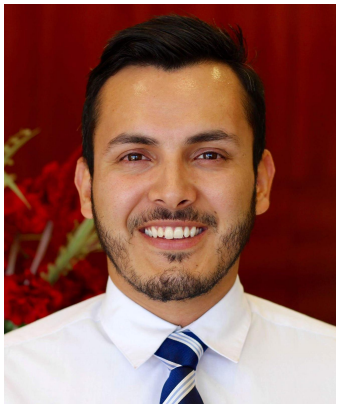
Disclaimer

Team



ALEX LOPEZ

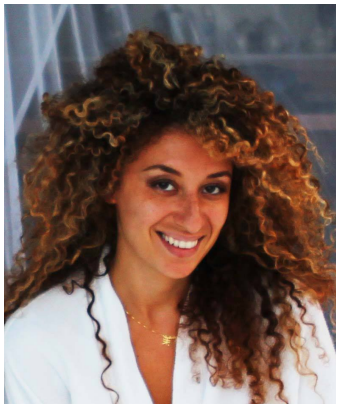
To be the communicator of an ethical world

MARTHE NIEBERDING

Reflection for good.

GEORGI GEORGIEV

Upcycling the past for a better future



YASMIN BARAKAT

“If empathy is at the core of emerging technologies, intercultural communication & sustainability will become the norm.”