



WHITE PAPER DIGITAL INTELLIGENCE

A CRITICAL CAPABILITY TO THRIVE
IN THE DIGITAL AGE

An IS Lab production



IS Lab

IN A DIGITIZED AND
HYPER-CONNECTED
WORLD, NEW
GENERATIONS MUST
BE PREPARED WITH
THE SKILLS NEEDED TO
LEAD A HEALTHY AND
ACTIVE LIFE TO NEW
STANDARDS.

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EDITORIAL

THERE IS A REAL URGENCY TO DEVELOP ITS DIGITAL INTELLIGENCE!



Imed Boughzala

Professor in Management Information Systems at Institut Mines-Télécom Business School



In a digitized and hyper-connected world, new generations must be prepared with the skills needed to lead a healthy and active life to new standards. In this sense, education and teaching play a crucial role in the development of digital intelligence, and its learning is therefore part of the missions of IMT-BS.

A technological emergency

Technologies are developing at a sustained pace: practices and professions are changing, computing and data storage capacities are huge, energy consumption is becoming enormous, and the use of rare minerals is growing.

The strong arrival of artificial intelligence in our life implies the need to become digitally intelligent in order to be able to act but also to interact with it.

A societal emergency

Today, the intrusion of technology is taking place in all spheres of daily life: within family, at school, at the country level, between nations... with threats for individuals and organizations (addiction, over-information, disinformation and technostress, cyber-attacks, cyber-harassment, computer intrusion, identity theft, misappropriation of information ...).

Faced with this major societal turning point, social responsibility and ethics are key to better management and innovation. Developing digital intelligence is becoming an essential condition for individuals and organizations to be able to cope with societal changes and disruptive innovations. There is an urgent need to develop it and wisely use it. For a citizen, and the example is striking during the Covid-19 crisis, one speaks about digital citizenship in the use of technology in a context of global society. ☺

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GLOSSARY

2. GLOSSARY

DARQ: Distributed Ledger, Artificial intelligence, Extended Reality, Quantum Computing

DI: Digital Intelligence

AI: Artificial Intelligence

CI: Cultural Intelligence

EI: Emotional Intelligence

CQ: Curiosity Quotient

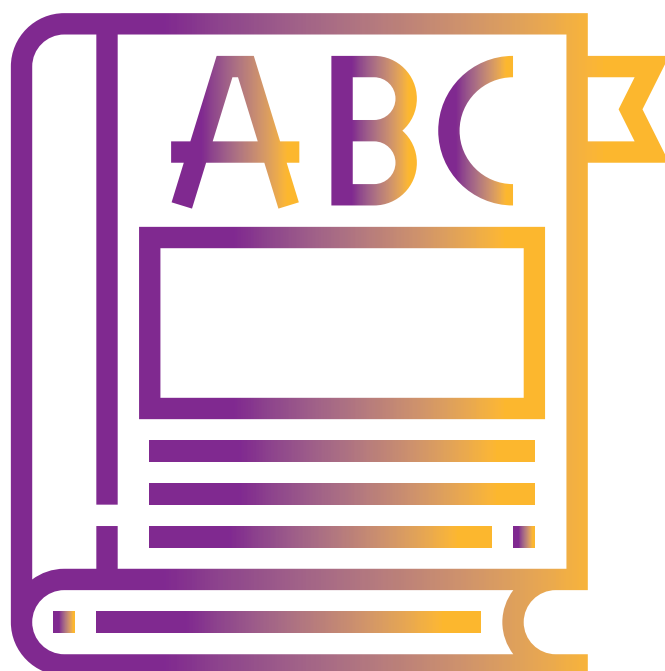
DQ: Digital Quotient

EQ: Emotional Quotient

ICT: Information and Communication Technologies

IQ: Intellectual Quotient

SMAC: Social, Mobile, Analytics, Cloud



3

EXECUTIVE SUMMARY

3. EXECUTIVE SUMMARY

YOU MUST HAVE ALREADY BEEN CONFRONT WITH ONE OR MORE OF THESE SITUATIONS, WHERE YOU THOUGHT THAT YOU LACKED SOMETHING TO OVERCOME THEM:



You have received an email from someone whom you don't know, asking you to get in touch with him/her to have a serious relationship or to help him/her in **transferring money** received from an inheritance or other sources.



Alternatively, you have received an e-mail from, supposedly, your bank asking you to click on a link **to verify your digital identity**.



Or an email from a **hacker** threatening to block your account if you don't pay several Bitcoins to his/her account.



You may for instance have had a **problem finalizing an online payment** when booking an airline ticket online.



Or a **bug** during the installation of software.



You may have clicked on the **wrong button or link** and felt the stress rising.



Or you **accepted terms of use** on a platform without reading it and then regretted it.



You felt like you were **being spied** on: your mouse cursor was moving by itself and you had trouble controlling it.



You read something you thought was true before you realized, too late, that it was a **Fake News**.

3. EXECUTIVE SUMMARY

All these situations are only illustrations to show how the lack of knowledge and skills around digital technologies is becoming a problem that it is increasingly crucial to solve by learning how to use it in a serene and efficient way.

Indeed, these situations are developing around a notion that is called **digital intelligence**: a *“capacity to acquire, interpret and apply knowledge related to digital technologies in order to mobilize it in an effective, responsible and sustainable way”*. It allows us to thrive in a highly evolving technological environment but also to innovate in a responsible and sustainable way. It is gradually being built and cultivated and it combines the know-how and know-being.

For individuals, it serves to take advantage of the potential of digital technologies in order to develop the ability to interact effectively with it, using tools such as Slack, Wikipedia, LinkedIn, or a chatbot like Your.MD or company robots such as Pepper and NAO.

It is also a **key skill** for organizations wishing to transform own selves. Recruiting digitally intelligent individuals is a guarantee of success today for organizations wishing to develop and achieve a responsible and sustainable digital transformation

It allows the society to take advantage of emerging digital technologies such as Artificial Intelligence and Quantum computing. Developing digital intelligence is an asset for society - even a condition - to cope with societal changes and disruptive innovations.



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*L'ordinateur quantique, la
prochaine révolution informatique ?*
by France 3

3. EXECUTIVE SUMMARY

It manifests itself in several dimensions of skills to be acquire:

Digital Rights

The ability to understand and uphold personal and legal rights, including the rights to privacy, intellectual property, freedom of speech and protection from hate speech.

Digital Literacy

The ability to find, evaluate, utilize, share and create content as well as competency in computational thinking.

Digital Communication

The ability to communicate and collaborate with others (online humans and machines) using digital technologies and media.

Digital Empathy

The ability to be empathetic and build trustful relationships with others (online humans and machines).

Digital Security

The ability to detect cyber threats (e.g. hacking, phishing, scams, malware), to understand best practices and to use suitable security tools for data protection.

Digital Safety

The ability to manage online risks (e.g. cyberbullying, grooming, radicalization) as well as problematic content (e.g. violence and obscenity), and to avoid and limit these risks.

Security aims to prevent voluntary acts (theft, aggression, acts of incivility), which could be translated in French to **sûreté**. Conversely, **safety** aims to prevent involuntary acts (fire, accident, natural disaster), which could be translated in French to **sécurité**.

3. EXECUTIVE SUMMARY

Digital Use

The ability to use digital devices and media, including the mastery of control in order to achieve a healthy balance between life online and offline.

Digital Identity

The ability to create and manage one's online identity and reputation. This includes an awareness of one's online persona and management of the short-term and long-term impact of one's online presence.

For three goals:

1

Digital Citizenship

To use digital technology and media in a safe, responsible and ethical way.

2

Digital Creativity

To create new knowledge, technologies and content to transform ideas into reality.

3

Digital Entrepreneurship

To create new opportunities in the digital economy by stimulating entrepreneurship, jobs, growth and impact.

It is strengthened over time through exercise, experience, as technologies will continue to evolve, and generations will continue to change.

4

THE SOCIETY AND DIGITAL IMPACT

4. THE SOCIETY AND DIGITAL IMPACT:

Today, technology is an integral part of our lives.

For several decades, technology (in the broadest sense) has been invading our daily lives. With the beginning of the democratization of electricity in the 1920s (in France), radio and household appliances have arrived. We will have to wait until the Second World War that they became widespread beyond the wealthiest households. It was also after the war that new fields began to emerge or become more democratic, notably information technology, robotics and nanotechnology.



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Rather slow at the beginning, these technologies gradually found their way into businesses and then into homes. However, it is surprising to note how high-tech products are no longer just occasional tools today. On the contrary, they are now used all the time, even while we sleep, in our homes, outside, in our vehicles, on our clothes, and even on and under our skin. Yet, it is interesting to wonder whether these technologies would not overtake the men who seem to have lost control of it in the end.

The day that Albert Einstein feared has arrived!



I fear the day when technology will surpass our human relations. The world will have a generation of idiots.

4. THE SOCIETY AND DIGITAL IMPACT:

Today we talk about the **“Flynn Reverse Effect” of Richard Lynn and Edward Dutton, as opposed to the “Flynn Effect”**. The Flynn Reverse Effect refers to a regression in the average IQ test score since the 1990s. Researchers identify several causes, but it is impossible to say that any one of it is more likely than the others.

It is therefore incorrect to claim that digital technologies have an impact, to a greater or lesser extent, on IQ and that it is therefore essential to learn how to use it correctly.



THE FLYNN EFFECT

The Flynn effect refers to the increase in scores on tests calculating an observed IQ by comparing a given population over several generations, observed until the early 1990s. But a new study, carried out in 2016 by Richard Lynn and Edward Dutton, showed that in Western countries, IQ tended to decrease (**e.g. in France the average IQ decreased by 4 points between 1999 and 2009**).

There are several causes for this: living conditions, education, genetic selection, immigration, environmental modifications, **massive use of electronic tools**, family environment, etc.

Until about 20 years ago, having two television screens was almost a luxury. Today, it is not only extraordinary (unless you want two 4K screens), but with the rise of laptops, tablets, smartphones and consoles, it is not uncommon for a household to have close to a dozen screens. And that doesn't necessarily mean to be “geek”. **This multiplication of screens** is symptomatic of the spread of high technology all around us.



4. THE SOCIETY AND DIGITAL IMPACT:

Today, digital technologies are becoming more and more democratic and yet a major question arises: is humankind ready to welcome and work with these new technologies?

Let us analyse this question from the perspective of the Dunning-Kruger effect, also known as the “**overconfidence effect**”, according to which those who are less qualified in a field will overestimate their skills.

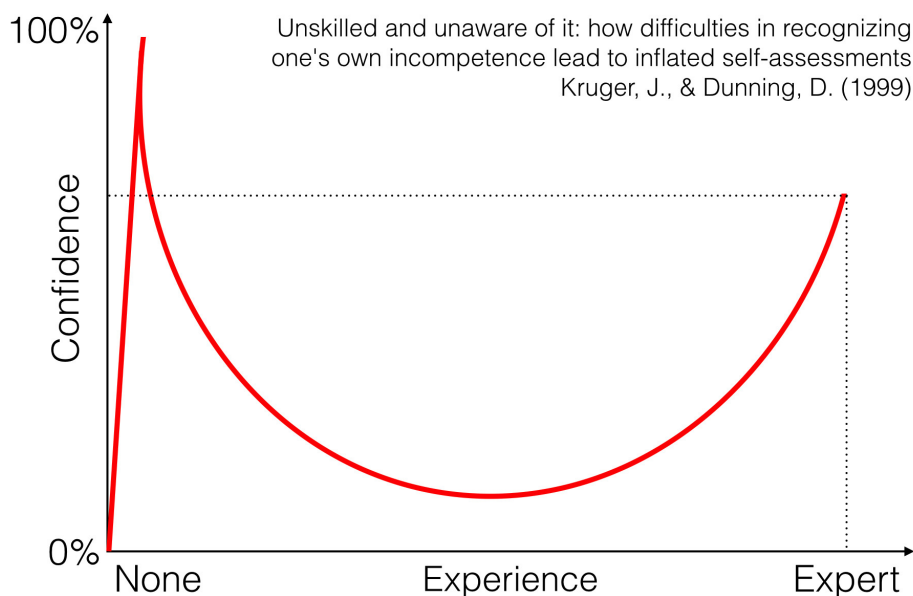
One might wonder whether the overconfidence of people who do not know how to use digital technologies might not lead them to make mistakes and take more risks with it. The latter can have a significant impact on a person's life, such as stealing personal information (e.g. accepting cookies that record our preferences, communicating personal information such as a credit card number that can be reused on a fraudulent site, or coming into contact with a suspicious person without knowing it).

DUNNING-KRUGER EFFECT

To demonstrate this phenomenon, American psychologists David Dunning and Justin Kruger conducted a series of experiments, the results of which were published in 1999.

“In four studies, the authors found that participants in the bottom quartile for tests of humour, grammar and logic significantly overestimated their performance. While they scored the lowest, in the 12th percentile, they estimated that they were in the 62nd percentile. At the same time, subjects with true skills tended to underestimate their skills.”

Dunning-Kruger Effect



4. THE SOCIETY AND DIGITAL IMPACT:

We often talk about digital technologies without really distinguishing it from all the technologies available to individuals and organizations.

Digital technologies are indeed technologies that are within the reach of each of us (obey to the finger and the eye), that make information accessible to all and that generate, collect and process new data (geolocalizations, emotions, relationships, physiological states, recommendations...). They can be grouped into two families:

SMAC

The first is called SMAC, a term born in the early 2010's to encompass the technologies that have enabled the consumerization of IT: Social, Mobile, Analytics and Cloud:

- **Social:** social networking, Community management, Crowdsourcing, Social feedback and recommendations, Chatbots ...
- **Mobile / Mobilité:** BYOD (Bring Your Own Device), Ubiquity (anyone, anywhere, anytime, anything, anydevice, no contact payment...).
- **(Business - Big Data) Analytics:** real time data collection, data value creation...
- **Cloud:** Processing and storage capacities, Pay as You Go model.

DARQ

The second is called DARQ, a term used to define the “post-digital” era:

- **Distributed Ledger:** “also called a shared ledger or distributed ledger technology or DLT, is a consensus of replicated, shared, and synchronized digital data geographically spread across multiple sites, countries, or institutions. There is no central administrator or centralized data storage. A peer-to-peer network is required as well as consensus algorithms to ensure replication across nodes is undertaken. One form of distributed ledger design is the blockchain system, which can be either public or private.” Wikipedia.
- **Artificial intelligence:** it represents all technologies that assist Human beings in tasks accomplished to the best of his ability. They are trying to reproduce his reasoning. These are simulations of processes of human intelligence by machines, computer systems.
- **Extended Reality:** it includes virtual reality and augmented reality among others. One designates the overlay of reality and virtual objects (sounds, 2D, 3D, videos, etc.) by different methods and the other typically refers to computer technology which simulates a user's physical presence in a artificially generated environment by software.
- **Quantum Computing:** quantum computing is all technologies based on the principles of quantum theory. This theory explains the nature and the behavior of energy and matter at the quantum level (atomic and subatomic).

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Demo: The magic of AI neural TTS and holograms at Microsoft Inspire 2019



4. THE SOCIETY AND DIGITAL IMPACT:

To take advantage of these technologies, the organization and more broadly, society needs to operate a number of parallel transitions:

Technological transition:

Technological evolution / progress, democratization of IT adoption.

Energetic/Ecological transition:

Global warming, renewable energy, rare minerals and metals.

Economic transition:

Globalisation, uberization, platformization.

Social transition:

Demographic, generational and cultural.

Societal transition (digital transformation):

A fundamental transition of society that involves revolution/upheaval/metamorphosis organization as a whole, the relationship to knowledge, to material, to the time, values, behaviours...

Digital transformation also known as **digitalization**, refers to a business model driven (approach) by **“the changes associated with the application of digital technology in all aspects of human society”**. It is usually implemented through digitization, i.e. the **“ability to turn existing products or services into digital variants, and thus offer advantages over tangible product”**.

Digital transformation is a radical or incremental change process that starts with the adoption and use of digital technologies, then evolves into an implicit or deliberate holistic transformation of an organization, to pursue value creation. More than computerization, dematerialization, service virtualization and automation. It is definitely a **new culture**. It leads to a **global transformation of organizations** (value propositions, operational processes, internal practices, workspaces, customer relationship, ecosystem...).

According to a study by Forest Consulting in 2018, 60% of digital transformation projects within an organisation fail. This can be due to a lack of reflection on uses, poor skills management, and resistance to change or many other things.

Therefore, in order to be able to succeed in its digital transformation, the organization and its collaborators need to develop a digital intelligence (DI) to carry out successfully digital transformation projects and to take advantage of digital and post-digital technologies. For this, it is necessary to measure own digital quotient (DQ) allows to know own weaknesses and guide future development efforts.

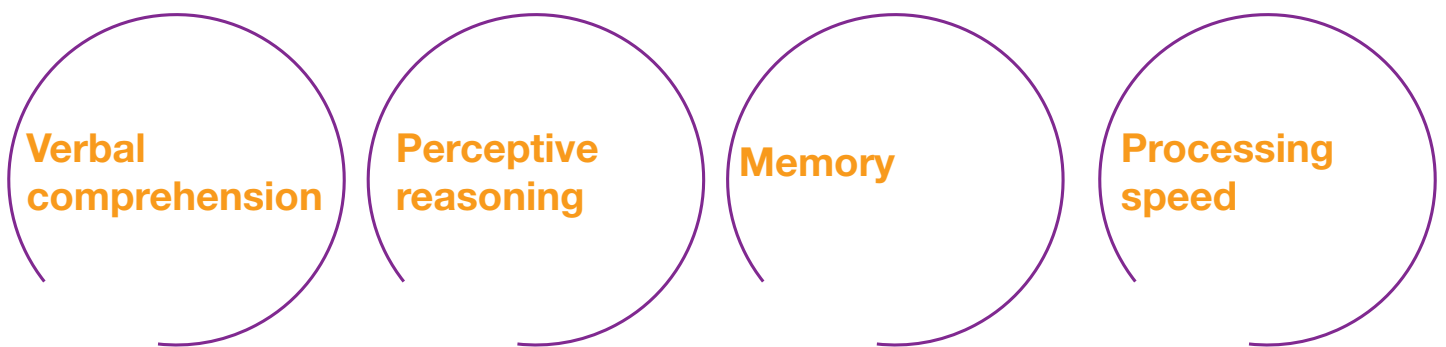
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DIGITAL INTELLIGENCE: AN EMERGENT CONCEPT

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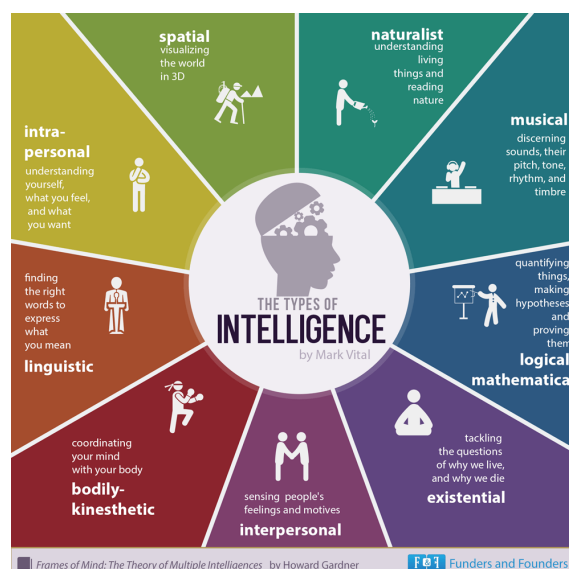
In order to be able to measure digital intelligence, it is essential at first to understand what intelligence is.

Intelligence is “a bio-psychological potential to process information that can be activated in a cultural setting to solve problems or create products that are of value in a culture”. The latter is measured through an IQ test who will evaluate 4 skills:



In order to develop our intelligence, which some consider predetermined, it is essential for an individual to be **curious**. This curiosity quotient [**CQ**], which is equivalent to “the thirst for knowledge of a mind “implies that individuals with large QC are more interrogative and open to new experiences. This intelligence “of curiosity” in addition to being essential to developing one’s IQ, is also essential in the development of digital intelligence or more the digital quotient [**DQ**].

There are several forms of intelligence, each addressing a context. A context is distinguished by the knowledge it mobilizes, the forms of communication it involves... Digital technologies are altering our cultural and socio-economic contexts. They require **Digital Intelligence!**



5. DIGITAL INTELLIGENCE: AN EMERGENT CONCEPT



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L'intelligence culturelle est une compétence clé
by
Xerfi Canal,
Youtube

If human beings are not curious about the advance of new technologies, they can't appropriate it quickly and properly and thus become digitally intelligent. It is not enough to be able to use these technologies, one also needs to be able to interact with it as long as they are will materialize into androids (robots), stuffed with artificial intelligence and sensors. Interact with it, whether through screens today, or with cyborgs tomorrow, requires calling to our emotional intelligence and therefore the emotional quotient [EQ]. According to psychologists Peter Salovey and John Mayer, EQ is *"the ability to perceive and express emotions, to integrate them to facilitate thinking, to understand and to reason emotions, as well as regulating own emotions and of others"*.

When it manifest towards humans from different cultures, we speak about cultural intelligence - IC (this Cultural Quotient should not be confused with the Curiosity Quotient). When it manifests itself towards machines (robots), we speak about digital emotional intelligence, one dimension among others of the digital intelligence.

QD is **gradually and intentionally cultivated through repeated interactions** with digital technologies. First at the individual level and then to be developed at the organizational level. Collective digital intelligence adds to the sum of those individuals who work in an organization (1+1=3).

As mentioned by Bill Gates in an interview, a **high IQ is not necessarily the more important in life** (referring to other forms of intelligence). The quotient DQ, by the way, is essential to integrate easily **AI**, which is now exponentially part of the our lives, and to integrate tomorrow other more advanced technologies such as the quantum, for example. Thus, digital intelligence will make it possible to take advantage of technology such as AI, which is the simulation of human intelligence processes by machines, and computer systems in particular. The specific applications of AI include expert systems, automatic natural language processing (NLP), voice recognition, etc. One of the roles of this AI is found in the **Augmented Intelligence** which improves human intelligence rather than replaces it. It focuses on how including machines that possess some of the qualities of the human capability, such as the ability to understanding language and recognizing images, that can help humans to solve problems, to process information, etc. Increased intelligence, thanks to equipment or added technological capabilities, will lead to **a lot of inequality** related to the possibility of developing or not developing its DQ.

Having a large IQ without increasing QD is not what is expected by the society of tomorrow.



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Bill Gates: IQ isn't everything - here's what you need to succeed, CNBC.com

5. DIGITAL INTELLIGENCE: AN EMERGENT CONCEPT

In order to create a measure of digital intelligence, various studies have been carried out by professionals:

McKinsey

Improving DQ in an **organization** fosters the digital transformation and enhances a chance of embracing digital opportunities to “reestablish profitable growth”.

ITPro, ieee

An **organizational ability** to synchronize business and IT strategies, govern IT, and execute IT projects and enterprise systems represents organizational DQ.

DQ Institute

Digital intelligence is the sum of social, emotional and cognitive abilities that enable **individuals** to face the challenges and adapt to the demands of digital life.

By researchers in education science:

Adams (2004)

DQ is an **individual's** ability to decode and manipulate information and knowledge by use of digital technology and transfer it into the digital environment.

Battro & Denham (2007)

Digital operations “first the ‘click option’, second the ‘digital heuristics’ (exploration, navigation in the digital virtual space)”. The interaction between a **human subject** and the computer is based on a very simple elementary behavior, the “click option”, a decision “to click or to not click”.

5. DIGITAL INTELLIGENCE: AN EMERGENT CONCEPT

At the individual level, two main measures can be retained. The first one is the one created by DQ Institute, which is called DQ Framework, and which aims to achieve 3 objectives:

1 Digital Citizenship

Use digital technology and media in a safe, responsible and ethical manner.

2 Digital Creativity

Create new knowledge, technologies and content to transform ideas into reality.

3 Digital Entrepreneurship

Create new opportunities in the digital economy by stimulating entrepreneurship, jobs, growth and impact.

5. DIGITAL INTELLIGENCE: AN EMERGENT CONCEPT

In order to be able to achieve these 3 objectives, 8 areas of competence have been identified:

DIGITAL RIGHTS



The ability to understand and uphold personal and legal rights, including the rights to privacy, intellectual property, freedom of speech and protection from hate speech.

DIGITAL LITERACY



The ability to find, evaluate, utilize, share and create content as well as competency in computational thinking.

DIGITAL COMMUNICATION



The ability to communicate and collaborate with others (online humans and machines) using digital technologies and media.

DIGITAL EMPATHY



The ability to be empathetic and build trustful relationships with others (online humans and machines).

5. DIGITAL INTELLIGENCE: AN EMERGENT CONCEPT

DIGITAL SECURITY



The ability to detect cyber threats (e.g. hacking, phishing, scams, malware), to understand best practices and to use suitable security tools for data protection. With link to Digital strategy and digital governance.

DIGITAL SAFETY



The ability to manage online risks (e.g. cyberbullying, grooming, radicalization) as well as problematic content (e.g. violence and obscenity), and to avoid and limit these risks. With link to Digital strategy and digital governance.

DIGITAL USE



The ability to use digital devices and media, including the mastery of control in order to achieve a healthy balance between life online and offline.

DIGITAL IDENTITY



The ability to create and manage one's online identity and reputation. This includes an awareness of one's online persona and management of the short-term and long-term impact of one's online presence.

5. DIGITAL INTELLIGENCE: AN EMERGENT CONCEPT

The other measurement was carried out by The European Digital Competence Framework for Citizens and is very similar to the DQ Framework. This measure is composed of 5 competence domains covering 21 competences:



<https://www.sofiaeducationexperts.com/post/digital-competences-for-creating-collaborating-respecting>

In contrast, one single measure existing at **the organizational level**: Digital QuotientDQ de of McKinsey. It is composed of 4 elements:

- **Culture**: Risk appetite, Test and Learn, Speed and Agility, Collaboration, External orientation.
- **Capabilities**: Connectivity, Automation, Content, Data/Analytics, Customer Experience, Technology.
- **Strategy**: Linked to business strategy, Bold and long-term orientation, Centered around customer needs.
- **Organization and Talent**: Structure, Processes, People

5. DIGITAL INTELLIGENCE: AN EMERGENT CONCEPT



Ability to compare scores with average scores of the population and scores of leading companies digitally.

All the studies converge on a similar vision of digital intelligence: **“Ability to acquire, interpret and apply knowledge related to digital technologies to use them it effectively, responsibly and sustainably.”**.

Characteristics of digital intelligence from existing measurements:

- Exists at **individual and organizational levels**.
- Allows you to **thrive in a highly evolving technological environment**.
- Enables **responsible and sustainable innovation**.
- Builds and **grows gradually**.
- Combines **know-how and interpersonal skills**.

But Need need of measures that **are not based on a rigorous scientific approach** (applicable to **all organizational contexts?** Cover all **areas of expertise?**). In addition, **individual measures** are **addressed to the citizen** and not to a collaborator who can bring added value in an organization. The only organizational measure **does not deeply explain the organizational processes** and the link with the intelligence of individuals. The measures do not make it possible **to define an action plan to cultivate this digital intelligence**.



This is why Institut Mines-Télécom Business School is working on a research and teaching chair to help companies use digital technologies.

6

DIGITAL CITIZENSHIP IN A COVID-19 CONTEXT, A DIGITAL INTELLIGENCE NECESSARY COMPETENCY

6. DIGITAL CITIZENSHIP IN A COVID-19 CONTEXT, A DIGITAL INTELLIGENCE NECESSARY COMPETENCY

Digital civism:

Civism comes from the Latin word “civis” which refers to “respect for the community of citizen in their lives.” In the case of **digital citizenship**, it refers to “the responsible use of digital technologies by citizens” (i.e. tracing and protection of private data, respect for on others and the community, usefulness of the task and rationalization of the use, mobilization of applications and server solicitation, damping of hardware equipment, digital sobriety..).

A person who does not demonstrate digital citizenship is therefore a person having a non-responsible use of these technologies consciously or not, lacking knowledge or training. For example, a person who uses social networks to disseminate Fake news or to spy on or intimidate others.



On the other hand, digital citizenship largely encompasses digital culture (Digital Literacy), the recognition of private data (vs. public), digital etiquette, awareness of e-reputation issues, the carbon footprint of technologies, programmed obsolescence, net neutrality, cyber security, people radicalization, etc. These elements define the behavior of a **digital citizen in the Democracies**.

Individuals who present themselves as digital citizens use intensively **Information and Communication Technologies (ICT)**, creating blogs to communicate widely and sometimes participate in online journalism, using social networks (e.g. Facebook, Instagram, Twitter...) to share content, paying online, declaring tax online, having fun online while watching movies (e.g. Netflix).



These technologies refer to **telecom networks**, hardware equipment (computers, tablets, smartphones, printers, etc.), **software** (the applications used as private or professional), as well as **data storage and management systems** (databases, application servers, cloud services, etc.).

Today, more digital citizens are using digital technologies (i.e. the SMAC family enriched by the DARQ family) that are within the reach of all of us. It makes information accessible to all and generate, collect and process new data (geolocations, emotions, relationships, physiological states, recommendations, etc.). Therefore to be able to use these technologies, the citizen must show a certain digital intelligence and must be sensitive and aware of **digital sobriety**.

6. DIGITAL CITIZENSHIP IN A COVID-19 CONTEXT, A DIGITAL INTELLIGENCE NECESSARY COMPETENCY

In times of confinement related to COVID-19, and especially if it lasts, lack of digital citizenship and therefore more broadly digital intelligence could make the situation both socially worse, economically or ecologically:

Socially

When some people spread false information that could cause confusion or stress and fear in the population, or give false advice that could endanger the lives of others.

Economically

When digital technologies are used in an exaggerated and unstreamlined way. Telecom networks and satellites are in a great demand, we sometimes go beyond the rise in supposed load of applications to cause degradation or unavailability of services (e-conferencing, e-learning, e-payment, e-administration...), we also generate a lot of data, which must be stored somewhere and processed by a computational capacity. This can cause rising prices and scarcity of computer equipment.

Ecologically and sustainably

When technologies are misused, i.e., unnecessarily or unreasoned way (e.g., excessive use to “kill time”). This could overload and saturate networks, bursting the energy bill and footprint (which is reduced by the lack of mobility of citizens using the means of transport could be compensated or even exceeded by the use of technology).



Finally, sending e-mails to everyone when only one recipient is concerned, using the videoconferencing at all times while a simple audio conference might be enough, watching Netflix all the day while the success of the students (trained online) and the growth of some companies depends on it, downloading or loading data on the cloud... these are examples of many which are contrary to digital sobriety and therefore to digital civism.

6. DIGITAL CITIZENSHIP IN A COVID-19 CONTEXT, A DIGITAL INTELLIGENCE NECESSARY COMPETENCY

Why does this require a certain digital intelligence?



Digital intelligence is the: *“ability to acquire, interpret and apply knowledge related to digital technologies to use it in a way that is effective, responsible and sustainable.”* In addition, it is possible to retain several characteristics of digital intelligence. It allows us to prosper in a highly scalable technological environment. It is built and cultivated gradually and combines know-how and well-being.

This intelligence can therefore be constructed and developed through the education of people. This digital civic education also makes it possible to raise awareness of a greater civic engagement.

How to develop this digital intelligence and the digital citizenship through education and training?

In order to develop digital intelligence and thus digital citizenship, it is important to educate on 7 key points developed by Applied Educational Systems:

- **Digital empathy:** the majority of digital communication is based on textual exchanges. This makes it easier to make a judgment on a message written by a person rather than on his/her intentions. In order to avoid such drifts, which can lead to cyberbullying, it is necessary to educate people. This education could be done through digital emotional intelligence awareness modules.
- **Digital use (Global internet functioning):** educating Individuals about all the internet back office (in terms of applications, infrastructure and networks): sending a 4-mega photo is equivalent to leave two LED bulbs on for an hour.
- **Digital rights issues:** it is important that everyone understands that all data shared on the internet can be stored without their knowledge through programs. These can be hacked and the data can be used for malicious purposes.
- **Digital literacy:** this is to highlight the difference between verified information and “fake news.” These fake news are mostly used for the purpose of making the user clicking in order to collect “views” and therefore money. It is therefore important to train people on how to seek the right information and make the difference between real and false information.
- **Digital Divide:** today, the internet is still a luxury that all populations can’t afford it. It is therefore important to be aware of the fact that information cannot be accessed and therefore all the consequences that this involves. For example, the cost of internet access in Africa is more expensive than in Europe, while that the standard of living in Europe is higher.

6. DIGITAL CITIZENSHIP IN A COVID-19 CONTEXT, A DIGITAL INTELLIGENCE NECESSARY COMPETENCY

- **Digital well-being:** digital is an integral part of our life. It is as important to learn how to use and when not to use it. This permanent access to digital technology can lead to dependency and generate adverse effects on people. It is therefore very important to teach people how to disconnect and detoxify.
- **Securing digital devices:** finally, people need to learn how to secure their digital tools (tablet, computer, smartphone) in order to protect themselves and protect their data.

To develop the digital citizenship of individuals, it is therefore important to teach them how to use all these technologies. This learning will help to develop digital intelligence of citizens and thus give them the keys to interact with technologies under any circumstances. **It is the role of schools and universities everywhere in the world.**



7

DIGITAL
INTELLIGENCE
CHAIR AT INSTITUT
MINES-TÉLÉCOM
BUSINESS SCHOOL

7. DIGITAL INTELLIGENCE CHAIR AT INSTITUT MINES-TÉLÉCOM BUSINESS SCHOOL

The objective of the research and teaching chair is to scientifically and pedagogically address the concept of digital intelligence and **measure the digital quotient** in order to support organizations in the success of their transformation projects:



Imed Boughzala

Holder of the Digital Intelligence Chair at Institut Mines-Télécom Business School

Design and implementation of a maturity tool

Design and implementation of a maturity tool to assess digital intelligence within organizations, involving field researchers, practitioners, experts and partners of the chair.

Creation of a risk prevention model

Creation of a risk prevention model linked to digital transformation by applying predictive methods to analyze data collected from the field.

Building of a repository of Digital Intelligence skills

Building of a repository of Digital Intelligence skills following a field approach (Focus groups, Surveys, Use cases, etc.) to better guide employee training.

Realization of educational projects

Realization of educational projects involving students of the school and partners (challenges, bootcamps, business cases ...) to test new ideas and disseminate best practices in the teaching of the school.

Outreach activities

Outreach activities via scientific publications, workshops and conferences to share progress and produced knowledge with the chair's partners and the different audiences

7. DIGITAL INTELLIGENCE CHAIR AT INSTITUT MINES-TÉLÉCOM BUSINESS SCHOOL

The Chair's contributions will be at the level of:

- **Individual:** the individual will be able to know his or her strengths and weaknesses with regard to digital technologies in order to capitalize on them. He will be aware of the creative and responsible use of these technologies and will understand their inherent risks to better prevent them (Technostress, Infobesity, Confidentiality...).
- **Organizational:** the organization will know which technologies to choose and how to mobilize them wisely. It will be better able to select new recruits with adequate digital intelligence. Finally, it will know how to align its business and digital strategies in order to succeed in a digital transformation project while avoiding risks (ethics, IS vulnerability...).

The ecosystem of the Chair will be composed of:

- **15 lecturer-researchers** working in several specialist fields: IT, technology adoption and use, change management, project management and agility, platform strategy and business models, data management, AI, machine learning, techno-stress, serious games, etc.
- **150 student managers and engineers** specialising in data management, innovation management, IT project management, auditing and IT risk analysis.
- **A network of coaches and professional speakers who are experts in the digital world.**

The School brings together this fertile ecosystem made up of students, researchers and start-ups in a single physical space called IS Lab - Innovation Support Lab - which allows sharing, innovation and experimentation with those involved in the Chair.

Why support the chair?

Your support will allow us **to create and share new knowledge within your company and your ecosystems** on the strategic and innovative concept of Digital Intelligence. You will also be able to **test new concepts and develop your employer brand** by interacting with our high potential student managers and engineers. Finally, your visibility and **your image will be reinforced** thanks to the Chair's promotional activities.

Your donation will be used **to recruit** young researchers, lecturers, coaches and professional speakers; and **to host high-level international "visiting professors"** for scientific animation and collaboration. It will also allow us **to invest in technical means** (supplies, purchase of data and software) and to **support** promotional activities and logistical costs.

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8

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9. PARTNERS

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IS Lab