

STANDARDS and HUMAN ALGORITHMS: The ultimate solutions for effective Digitization

By Roberto Giardini

Abstract

Digitization has been transforming the fabric of modern industrialization for three decades. The benefits brought by digitization in improving productivity and in creating new businesses are overwhelming. Therefore, the process of transformation will continue and likely will boost in the next decades. More and more players in the market will adopt digital technologies and more and more new digital technologies will be introduced into the market. Like all historic technology transitions, the digital transformation is coming with its own challenges. In this article we will briefly describe the three biggest challenges of the transformation, and we will propose original solutions to overcome them. Solutions that are based on scientific theories and successfully validated on the floor through over 30 years' direct experience.



Roberto Giardini, worked in P&G for over three decades. In last decade he has been Supply Chain and Manufacturing VP for the P&G Health Care business in all regions He led dozens of Joint ventures and Acquisitions, acquiring vast experience in accelerated capability building in challenging business situations.

He has been very successful in leading production lines, departments, plants and end-to-end supply chains all over the world. He worked in Europe, US and Asia in Beauty and Personal care, Health and Paper Industry.

He is a passionate innovator in finding creative solutions that deliver fast and sustainable breakthrough results in any type of supply Chain and Manufacturing organizations.

He is currently a VP in EFESO running several projects on boosting Clients' business results via drastically improving operational excellence.



Challenge 1: THE GENERATIONAL GAP

Like in any other big technology transition, **there is a generational digital gap**. Senior people are less digital savvy than younger people. Senior people tend to resist adopting digital technologies more than younger people. Of course, there are well known exceptions, but this fact is generally true, statistically on large scale. A huge percentage of senior leaders are people who grew up when there were no personal computers, smart phones or internet. They don't fully understand digitization and maybe they don't

even like it. They tend to either resist or ignore the transformation coming. **Time will take care of the generational gap**. New generations of workers will replace old generations and at some point, everyone in the work force will be digitally skilled. However, this might take one or two decades more. **What is the short-term solution for this generational gap? How do we quickly ensure that all people will have the skills and the desire to use new digital technologies?**

Challenge 2: THE COMPLEXITY ISSUE

Both hardware and software - are evolving through innovation in a way that causes two major issues for consumers and key users. The first is obsolescence: **Digital technologies become old very quickly**, as they are replaced by new and better innovations after short periods of time. The second is compatibility: **Different technologies are rarely compatible**. The digital solutions work extremely well when taken in isolation and for a short period of time. They don't really work well over long periods and when they need to be integrated. Complexity increases

confusion **in the users and drives major problems in adoption**, even among skilled digital people. While diversity of digital technologies might be good for maintaining healthy competition, avoiding monopolies and protecting consumers, digital technologies become efficient only when they reach the status of monopolies. **How can we deal with the complexity and confusion generated by too many upgrades of similar digital technologies or by incompatible digital technologies?**

Challenge 3: THE DISCONNECTION WITH THE REAL WORLD

There is a lot of public and scientific interest in the effects that digitization has on the human perception of reality. **Digitization is changing human nature** by transforming the way we exchange information, the way we socialize, the way we think and learn as individuals and as communities, and on the way we make individual and social decisions. Many experts believe that self-learning AI algorithms are taking over the human factor from deciding what kind information

each one of us is exposed to via social media. **AI drives social polarization due self-reinforcing loops of exposure to same ideas. Digitization is causing the opposite of its original intent: it is making humans less exposed to new ideas. This phenomenon has huge social and political impact.** The simplest way to describe the challenge in its fundamental nature, is that digitization drives a disconnection between the real world and the world of information. **It means**



that the facts - what really happens in the real world - become completely independent from the virtual reality. We see it very clearly at individual level with people who create "fake personas" on social media, or with the infamous "fake news". There is a clear scientific theory for this phenomenon. The simple version of the scientific theory can be explained with two concepts. First: **too much information equals zero information.** Excessive information is impossible to be processed by our limited brain capacity. We can't completely verify the source and we can't distinguish facts from fictions (or fake from real), even if we try hard. Second: **The algorithms that manipulate information for us**

might be wrong. They are actually always wrong. We don't understand the logic behind the steps followed by the algorithms, and we don't understand the sources of information used by the algorithms. Even if we were to completely understand the algorithm's steps and we were to control the quality of 100% of the information sources, it is not necessarily guaranteed that the algorithms reflect the true nature of the real world. Net excess of information and artificial algorithms drive disconnection with the real world. **What can we do to ensure we are not impacted by the distortion of information caused by the disconnect between real and information worlds?**

SOLUTIONS TO THE 3 CHALLENGES

There are two magic words that represent the solutions for all three challenges: **STANDARDS** and **HUMAN ALGORITHM**. Let's look at each of them separately.

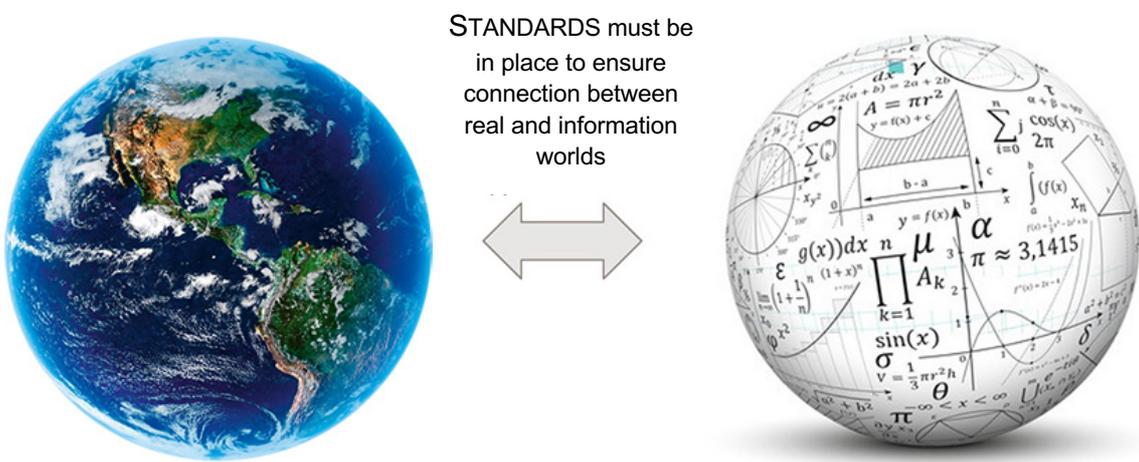
STANDARDS are the fundamental elements of any communication. To **have meaningful communication there must be standards in place that assign a meaning to a certain symbol or sound.** Language itself is a standard. Letters, Words, Grammar are standards. It is impossible to communicate in the absence of common standards assigned to real objects, actions and thoughts/emotions. Similarly, **it is impossible to have meaningful digitization without clear standards that keep constant connection between the information world with the real world.** In the industry this concept has been understood ever since the very beginning of digitization. In fact, the first digital

solutions came with strict recommendations to regularly check consistency between the data in the computer's algorithm and the real-world data via standards compliance and completion. And to regularly validate the algorithms themselves to eliminate contamination or corruption of the original logic. However over time, this well understood concept has been diluted due to excessive digital solutions: too much information and too many mysterious algorithms. Nobody is able to validate the algorithms anymore and nobody knows the algorithms. **Setting standards means that each piece of information processed digitally must have a fixed alter ego in the real world**



STANDARDS are fundamental to fix all three challenges described in this article.

- **Generational Gap:** Senior people will be able to better understand and appreciate digitization when it is strictly connected to something that exists physically in the real world.
- **Complexity:** Obviously sticking to one standard digital solution would solve the issues of obsolescence and compatibility.
- **Disconnection with the real world:** Standards are the only guaranteed way to ensure the digital world remains connected to the real world. Standards will eliminate distortion of information

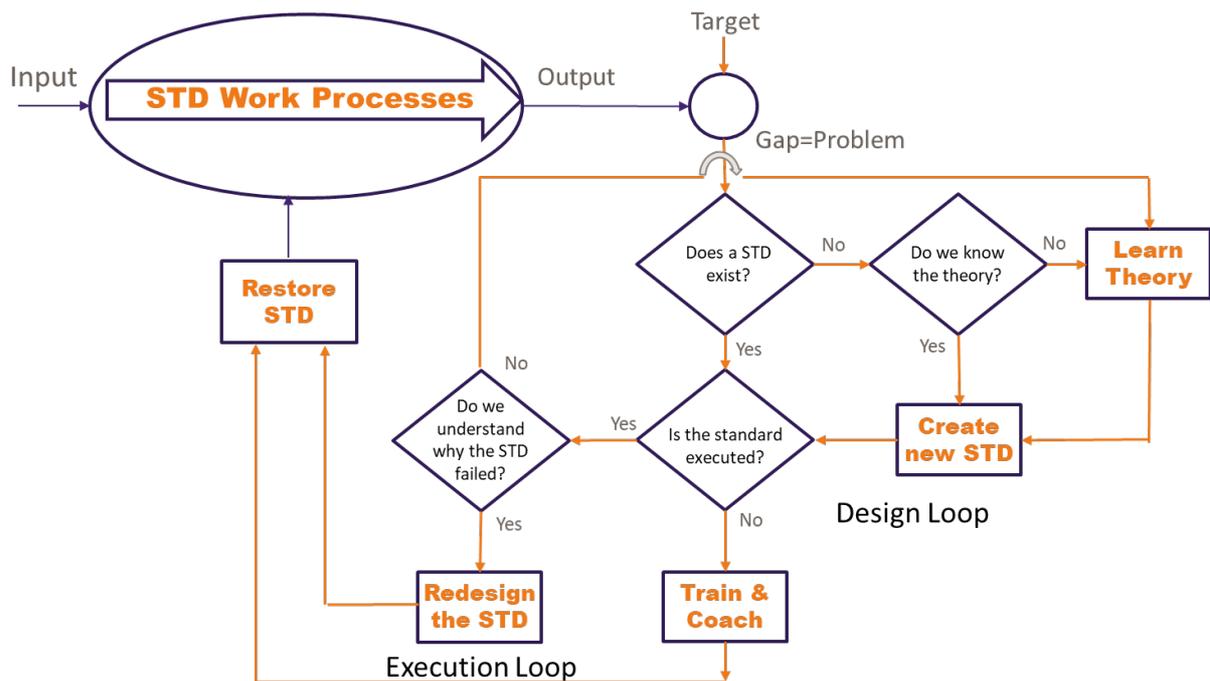


HUMAN ALGORITHM (or **TRANSPARENT ALGORITHM**): Algorithms will be fully utilized without distortions by humans only when they are transparent and well understood. Being transparent and understood is the first step for an algorithm to be validated to accurately represent the functioning of the real world. For this reason,

we should always request that **the algorithms are made public to the users, and we should train the users to not use algorithms for any sort of decision making in the absence of their full understanding.** That's why we normally like to display the algorithm and explain it to the people who will use it.



This is the **HUMAN ALGORITHM** that is proven to work all the time for improving the performance of any complex organization:



HUMAN ALGORITHMS are also fundamental to fix the three challenges described in this article.

- **Generational Gap:** Senior people will be able to better understand and appreciate digitization when the algorithms are public and transparent
- **Complexity:** Transparency will eliminate all fake algorithms and enable people to focus on the good ones, like the one above
- **Disconnection with the real world:** By eliminating the fake algorithms the disconnection between facts and information will be eliminated.

These concepts may seem very abstract however they have a demonstrated profound impact on improving business results when implemented on the floor. **Standards and transparent human algorithms are the foundational elements of any modern capability improvement program. They will set the agenda for the Industry 4.0 era.**

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