The Digital Transformation of the processes to combat Covid can stop the pandemic and at the same time open up new growth opportunities for Italy and Europe.

A true Digital Transformation of all decision-making processes and related tools, at all government (and non-governmental) levels could greatly help in the immediate fight against the pandemic and therefore save the economy, but at the same time become ground for a strong future economic recovery of the country.
Let's imagine a catapult where the spoon is first pulled back with the weight and then thrown forward with full force.
By investing in a digital revolution, you can initially effectively bring the pandemic under control and then use the same tools to relaunch Italy.

To better explain this theory, it is necessary to explain what Digital transformation is and its intrinsic elements and how this phenomenon can constitute fertile ground for future expansion both in the short term to combat Covid, and in the medium and long term to relaunch the economy and improving health care.

What is digital transformation: it is a profound transformation of an activity (private or public). It is not about optimizing what is normally done. It is not simply knowing how to use the computer well, or installing modern software or having a website.
Digital transformation radically changes the heart of the company or public body. It changes how a product is developed, how it is produced and how it is sold. Change the relationship with your customers / users and suppliers. Sometimes what a company produces also changes.

I use a very current, albeit very simple, example.
Accountant and VAT number with a flat-rate regime.
Normally, when you want to open a VAT number, you look for an accountant, call him or visit them. We agree and the accountant proceeds with the necessary formalities. Receipts are regularly sent to him, he inserts them into software, and when it comes to paying taxes, he processes the bills and sends us the F24 to pay the taxes. We pay the taxes in the bank via internet or presence.
For our part, until the F24 we do not know how many taxes we have to pay except if we have not done the accounts for ourselves. The accountant can serve 20/50 clients per month at a high cost. He has little time to answer specific questions.
An accountant has decided to invest in a great site and an App, not just any app but one with advanced artificial intelligence.
Through the site you communicate effectively with the accountant. You choose the type of VAT number and the payment methods. An automatic mechanism then proceeds to carry out the operations necessary to start the relationship with the accountant.
Through the app you can issue invoices, send them to customers, automatically pay the stamp duty (without having to go to the tobacconist's). An automatic system connects to the tax drawer and the bank. An intelligence system continuously processes the calculations and keeps us constantly updated on how much we have to pay (and therefore how much money to keep in the account), automatically processes the F24s, and, if we authorize it, connects to our bank and proceeds to pay the taxes independently. In case of delay, it processes the fines or asks for the installment.
The accountant can serve an unlimited number of clients, and thus reduce the price of the service. He can also use his time to answer questions about particular cases.
In this way the customer does not waste time in bureaucratic procedures and saves a lot of time in managing the accounts. The app makes our life a lot easier and we know in real time how much taxes we will have to pay. The margins for errors are minimized. Having a VAT number costs less and does not become a bureaucratic and expensive barrier.
In this way, the accountant has not simply improved the way of working by installing software in his office or by reviewing his processes, he has completely changed it. Through automatic systems it can offer a better, faster and more personalized service to each user. He freed up time for himself and his customers by reducing possible errors. Furthermore, by collecting data, you can continue to improve and offer new services.

Strategy: Digital Transformation requires a total change of strategy.

- How do you think about a new product. Before it was necessary to develop a product that would appeal to the greatest number of people, now it is necessary to develop a product that can be customized for each person, for example Nike has developed customizable shoes.
- How the production process is structured. Nike had to connect the website or stores to the factory so that the customization order is sent to the production machines in real time. The same goes for logistics to ensure that the product gets to the right customer as soon as possible.
- How it sells. Before it was sold in a few ways and at the same prices, now it is possible to sell in a variety of ways (wholesale, retail, in stores, online) at different prices depending on what the customer wants, what he buys and his spending power.

The development, the sale, the logistics of a product must all be thought of together as they are interconnected.

Technology: Digital Transformation is based on the most advanced technology currently available. Adopting a tool in itself does not mean doing Digital Transformation, but it, inserted in an elaborate plan, allows the Digital transformation.

Among the main tools we find:
Artificial Intelligence: they are a myriad of algorithms and automatic processes of execution and learning that allow to quickly process previously unthinkable operations.
Before AI, programmers had to predict every single detail and move of users. AI allows information systems to learn and improve based on user needs, using only a few basic rules and information.
Alexa understands us through artificial intelligence even if we use long sentences. AI makes it possible to diagnose diseases often much faster, as well as to drive a car while monitoring millions of parameters.
AI can figure out what's in a photo by breaking it down and analyzing all the details. A car is broken down into a mirror, hood, trunk, roof, seats, doors, handles. The system by putting all these pieces together includes their shape, speed and direction. AI coordinates the advertising offered to us when we browse online, learning from our previous choices through various tools.
Advanced AI systems are called *Learning machines* (when the systems continuously manage to self-program based on the answers they process) and *Deep Learning* (when the systems allow us to analyze extremely complex phenomena and are able to perform calculations and reasoning that are increasingly similar to the brain) .

Big Data: is the management and storage of millions of data. Nowadays humans and machines produce millions of data every minute. We take millions of photos, we send millions of messages. A plane, a train, a car and now even a washing machine or a fridge produce millions of data per second through which AI systems process analyzes to answer questions, to ensure our safety, to process advertising or improve a product. Big data management and analysis systems must be unlimited and very fast, as well as accessible from anywhere and at any time in total safety.

Block chain: is a modern data certification system. In Italy to buy and sell a house, in addition to the deed of sale, it is necessary to go to a notary who certifies the identity of the seller and buyer, the property and the transaction. To take part in a competition or obtain certain services, the Municipality must issue a certificate of birth or residence. When a

degree is awarded, a pressure stamp is placed on the parchment. The coins are certified by the Bank of Italy using a special non-falsifiable card.
The blockchain is a digital technology that replaces all these certifications. This happens with two mechanisms. The first is that all the information of the transaction is stored in blocks. The second is that the validation of these blocks occurs through the registration of the same on several computers at the same time (consensus mechanism, distributed on all the nodes of the network that are authorized to participate in the transaction validation process).
The main characteristics of blockchain technologies are the immutability of the register, transparency, traceability of transactions and security based on cryptographic techniques.
To change a datum, everyone must give consent. To find out if a data is true, it is sufficient to compare different registers (a process that occurs automatically), allowing data management in terms of verification and authorization without the need for a central authority.
for example, in America a graduate is proclaimed and the information is shared and his preparation is certified, without the need for pressure stamps.

Smart City-GIS (Geographic Information System): are sophisticated systems that allow you to study, monitor and represent the data of a territory in real time. This requires precise information regarding the place where they are located. These are systems that make it possible to integrate information, disciplinarily different and interchangeable, referring to the territory in such a way as to support those in charge of governing that territory in decisions. They help to make decisions supported by a precise knowledge of the territory, allowing to save resources and to provide a quality service to the citizen: the management of phenomena that impact on daily life, such as traffic, both in the management of emergencies and natural disasters are only some examples. In a nutshell, they help administrations anticipate, manage and resolve problems quickly.

How Digital Transformation and its tools can help stop the pandemic:

The pandemic is a global phenomenon that affects every individual directly or indirectly, and it is therefore impossible to be able to deal with it with the classic analog systems designed to deal with small health emergencies or a natural disaster.
To manage millions of operations every day, the State has equipped itself with Big Data mechanisms and a highly advanced IT system. Using sophisticated algorithms (AI), the Revenue Agency pre-compiles the 730/740 for each citizen and monitors all transactions. The same methodology was adopted by INPS. In the private world Apple manages millions of iPhones all over the world allowing each user an exclusive and personalized experience. Google makes extremely targeted advertising appear on our mobile phones, websites or videos, guided by our tastes or desires. Behind this there are sophisticated algorithms, and an extremely vast database. Millions of people buy and sell e-money through the blockchain.
The pandemic affects everyone, and connects everyone with others.
The SARS-Cov-2 epidemic has shown how an event of this magnitude can create enormous direct interdependence (if one individual is positive and infects another) or indirect (through the lockdown resulting from the indifference of others) between millions of people
It is also a smooth and fast situation. In a few days an outbreak can appear in Rome, Matera or Mestre. Through a train or plane, the infection can reach places hundreds of kilometers away in a few hours.
It is unthinkable to want to manage all this through DCPM, television announcements, checking the temperature at each entrance, asking GPs to follow their patients one by one, swabbing the drive in or manually tracing the chain of contagion.

A Digital transformation of law enforcement actions

is necessary It is necessary to radically change the management strategy and dialogue with people, using modern and dynamic processes for managing the phenomenon and adopting advanced technological tools that allow simultaneously to monitor a very high number of people, to adopt a personalized strategy for each, ensuring safety for others and ensuring the privacy of all.

The strategy to combat Covid must provide for the possibility of monitoring every citizen on the territory or who enters the territory, a stochastic forecasting system of the onset of outbreaks and finally to intervene quickly in the event of an emergency.
But it must also predict each of these actions in detail.

- How can each person be monitored?
  - use all available diagnostic tools (molecular, antigenic or serological)
  - record the responses on a regional / national database by collecting patient data and the analysis methodology, through an app to
  - check every person who enters the territory
- How is it possible to do the test all?
  - using existing structures in the area such as pharmacies or sampling points as they are structures already organized to carry out this type of operations and are already computer-connected with the regions. It is sufficient to write the operational protocols by
  - stipulating agreements with pharmaceutical companies that provide for co-investments, providing structures that can also be used after Covid, to improve the monitoring service of infectious diseases in the territory.
- How is it possible to predict the birth of outbreaks?
  - using advanced stochastic forecasting systems and artificial intelligence that, case by case, learn and interpret the data in order to recognize the risk factors that give rise to outbreaks
- How is it possible to intervene quickly by providing a personalized response?
  - using algorithms (AI) and GIS representation systems that help operators and politicians to read data on the territory and quickly make the best decisions.
- How is it possible to keep and manage all this amount of data?
  - using technologies for the management of big data and blockchain, through which it is possible to manage an enormous amount of data and at the same time guarantee all transactions in maximum anonymity and security
- How is it possible to pay for all this?
  - The first lockdown cost about 100 billion.
  - A complete Digital Transformation project could cost about 12-15 billion, of which about 6 can be invested in the economic system as expenditure (personnel, tampons) and another 6 as long-term investment (research and development, advanced diagnosis centers, modernization of computer systems).

What actions should the State take to initiate a Digital Transformation of the Covid contrast processes?

The state should:

- BIG DATA and BLOCK CHAIN:
  - create a harmonized system that includes the health systems of the regions capable of handling millions of data per day.
  - develop a dynamic database that has the ability to record multiple epidemiological data and not only for each patient and
  - make the data available, in an anonymous and standardized way to the scientific community, in order to facilitate research.
- ARTIFICIAL INTELLIGENCE
  - superimposing on this structure a series of advanced software capable of
    - reading, monitoring, interpreting millions of data a day
    - predict future scenarios (stochastic forecast)
    - continuously elaborate and re-elaborate suitable intervention strategies for each individual case to
    - represent all these data, scenarios and actions on easy-to-read maps
- STRATEGY
  - develop a simple and effective mechanism to monitor the entire population, for example by increasing x 10 daily buffers using a network of sampling points throughout the territory (pharmacies or existing sampling points)
  - adopt an app through which the patients themselves can enter their data (health condition, medicines taken) and the answers of the tests
  - adopt an app that is not only useful for Covid, but for the regions or the State to offer many other services, thus increasing the interest of users in adopting it to
  - implement an IT updating program o laboratories that provide for a connection of all analysis equipment to regional IT systems (to reduce data entry times and reduce any errors)
  - provide for error control
  - mechanisms develop mini lock down and quick intervention mechanisms to reduce lockdowns

    - develop effective personalized communication using on the one hand computer mechanisms identical to those used by google to advertise and on the other hand the new communication vehicles which are the most used influencers and social channels.
    - adopt incentive systems for those who follow the rules better
- COORDINATION
    - entrust the management of Covid to a highly specialized body managed and directed by qualified people
    - coordinate action with the Regions and with the regional IT systems, avoiding the error of the first wave of adopting an app without the support of the regions that have felt excluded and endangered by having to open the doors to unknown software
    - coordinate actions with all the other State bodies, the Social Partners, the Third Sector and Universities and Research Bodies and Development

What are the objectives of this whole mechanism?

Multiply the capacity of limited resources: Digital Transformation must first and foremost allow the state with limited resources to monitor each situation in detail and adopt the maximum force of contrast with the minimum effort. It is unthinkable nowadays to be able to believe that we are facing a pandemic with old and analog systems. We need tools that multiply the human force of action and the capacity for analysis. We do not have the means to be able to give a personalized answer to each person, nor the research skills to be able to quickly analyze millions of data.
Low-cost airlines manage to make millions of people travel at very low prices and always closing the budget in surplus, against the big companies that are always at a loss despite the price of the ticket. The large pharmaceutical companies can find the method of researching a virus in a few hours or find a vaccine in a few weeks (then it takes months for the testing phase). This is possible because the internal processes have been completely revised and it has been invested in advanced IT systems.

Create and exploit the strength of the proximity network: Digital Transformation must help create a network of points of analysis, for example pharmacies, interconnected, connected to each other and to general practitioners, which will strengthen the mechanisms of proximity medicine and create a mesh through which the virus will have difficulty passing. The mesh consists not only of developing capillary sampling points on the territory, but of a combined health surveillance system made on the one hand by qualified people (doctors and pharmacists) who know the territory, the people in which they live and are able to perceive the changes.
On the other hand, the process must include an analysis system based on artificial intelligence which, by intersecting multiple data, can highlight territorial correlations that the human eye can escape, thus improving diagnostic precision. A system with similar characteristics could be useful. tool not only for Covid, but for the continuous and accurate monitoring of infectious diseases circulating in the territory

Take maximum advantage of the strength of the data and advanced analysis capabilities: A complete database that contains not only the test answers, but all the data of the patient (diseases, medicines taken) as well as analysis methodologies combined with sophisticated Artificial Intelligence systems will allow researchers to find other even more interesting correlations. For example, the correlation between a certain type of disease and the most serious phenomena, or on the contrary a lower incidence of the virus on patients who take a certain type of medicine or have a certain type of diet. The recording of the analysis methodologies not only allows us to compare the data, but

also to identify the strengths and weaknesses of some of these systems and improve our investigative and process capacity. Through the blockchain, the correctness of the data could be guaranteed.

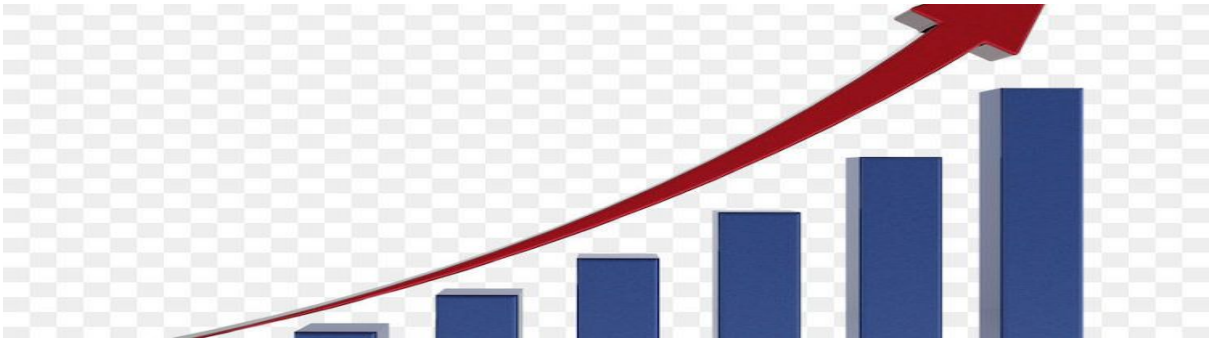
Refine our forecasting capacity: an advanced system based on Machine Learning or Deep Learning approaches, will allow us to develop very sophisticated and precise forecasting systems (of outbreaks, intensive care, deaths) in order to help Decision Makers and operators to intervene promptly and with the most suitable tools.

We can find a parallel in forecasting the weather. Over the years it becomes more and more precise. This is possible thanks to shared data collection mechanisms, the use of increasingly powerful computer systems, and finally thanks to AI that allows continuous model processing by analyzing past errors. Methodologies that a human being would take years to understand.

Improve emergency: responseAI, GIS and Smartcities would allow the above information to be correlated with territorial data in order to facilitate localized lock downs, the management of limited resources on the territory and the consequent assessment of the necessary resources. These systems allow an easier reading of the phenomenon. This idea has distant roots: the ancient Romans understood that the most important thing to conquer a territory was to know it and draw up a map. Without a detailed map it is impossible to win a battle.

Increase collaboration between experts: technology would help to communicate and collaborate better. In this period, the companies continued to work with all employees in Smart Working. It is essential to use these tools to increase collaboration and enhance the best resources in the country. It would be essential to have a permanent virtual table among the major scholars.

Averting lockdowns and restarting the country: an advanced health surveillance system would make it possible to keep the phenomenon under control and not block the country by saving the economy.



How can Digital Transformation become the basis for an even stronger revival of the economy?

The Italian economy is blocked for three big reasons: bureaucracy, high taxes and lack of vision.

Such an operation would force the state to review all organizational and decision-making processes. The adoption of Digital Transformation could be generalized to all processes involving the State: management of taxes, control of tax evasion, management for the opening and management of VAT numbers and in general of all the bureaucracy that is required for companies and in the relationship between the state and companies.

Covid has changed the relationship between companies and employees and in many companies also the relationship with customers and the business model.

Such a transformation in health management would also push other sectors of the state to change. *Lead by example* the British would say.

The sum of the changes that are involving all companies and the change within the state brought about by the Digital Transformation would lead to an infinite number of new scenarios and a strong revival of the economy.

How can Digital Transformation become the basis for a health relaunch?
Finally, an investment of this kind in the health system would certainly guarantee a health 5.0 made up of advanced diagnosis and treatment systems and a decentralization of many services.
Aiming for a network of modern pharmacies integrated with general practitioners by means of an advanced computer system would imply a relaunch of proximity medicine.
The adoption of new methodologies for data analysis and investment in a chain of high-capacity advanced laboratories would provide the state with modern tools to monitor the health of all Italians and adopt effective preventive measures.
The health system would see a leap forward of at least 5/10 years.

Digital Transformation would act as a catapult by launching Italy forward, transforming a tragedy into an opportunity.
Digital Transformation would not be a cost for the State but an investment in the short, medium and long term.
The dynamic, fluid, unknown nature that involves the whole country requires modern, highly technological, fluid and fast tools, but also experienced and highly qualified people.
The state must act immediately, reversing course and preparing a robust response.