



"Industry 4.0 and Italian agri-food"

Relatore: Ermanno Bonaldo



Fai-Cisl Via Tevere, 20 Roma - 15 novembre 2019



This project is funded by
the DG Employment,
Social Affairs & Inclusion
of the European Union

The Italian economy

The Italian economy has finally embarked on a path of growth with more lively rhythms thanks also to the manufacturing industry. The 'Food and Beverage' industry is also growing and continues to lead the national manufacturing sector.

Exports recorded good growth rates in the first part of the year, against an international backdrop which, in addition to the constant support of European monetary policy, benefited from a better evolution of demand from emerging countries.



Food turnover € 140 billion

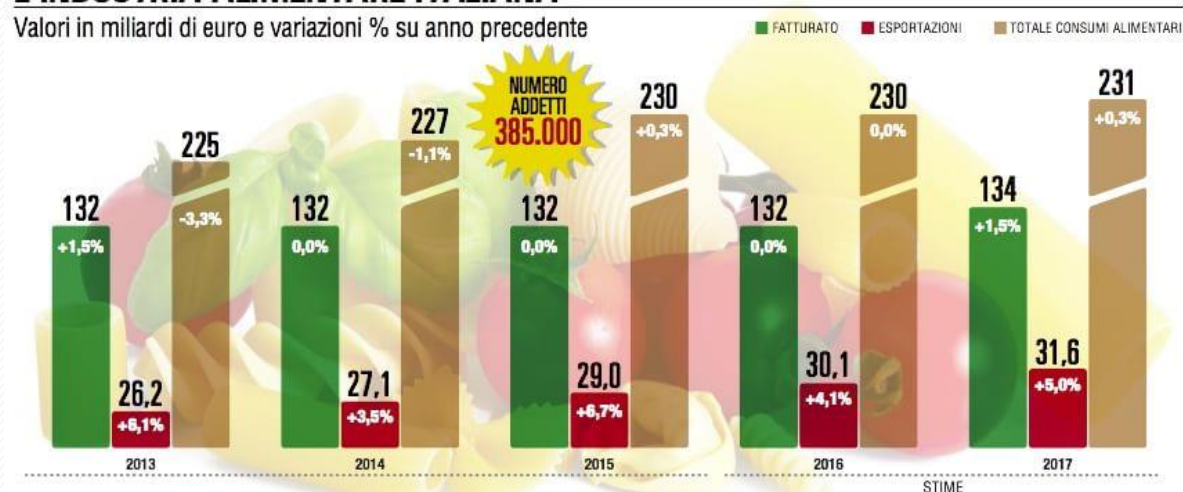
The 2018 turnover of the food industry reached 140 billion euros. It therefore marked a growth of 2% out of the 137 billion recorded in 2017. It should be remembered that, in the four-year period 2013-16, it had stood still at 132 billion.

Food exports 32.9 billion euro (+ 3.0%)

The 2018 export of the food industry, according to reliable estimates, reached 32.9 billion euros, with + + 3.0% on the previous year.

L'INDUSTRIA ALIMENTARE ITALIANA

Valori in miliardi di euro e variazioni % su anno precedente



N.B. Le variazioni % 2013-15 sono calcolate sui dati effettivi e completi, non coincidono esattamente quindi con quelle effettuabili sugli arrotondamenti riportati

Fonte: Elaborazioni Centro Studi Federalimentare su dati ISTAT

Aims

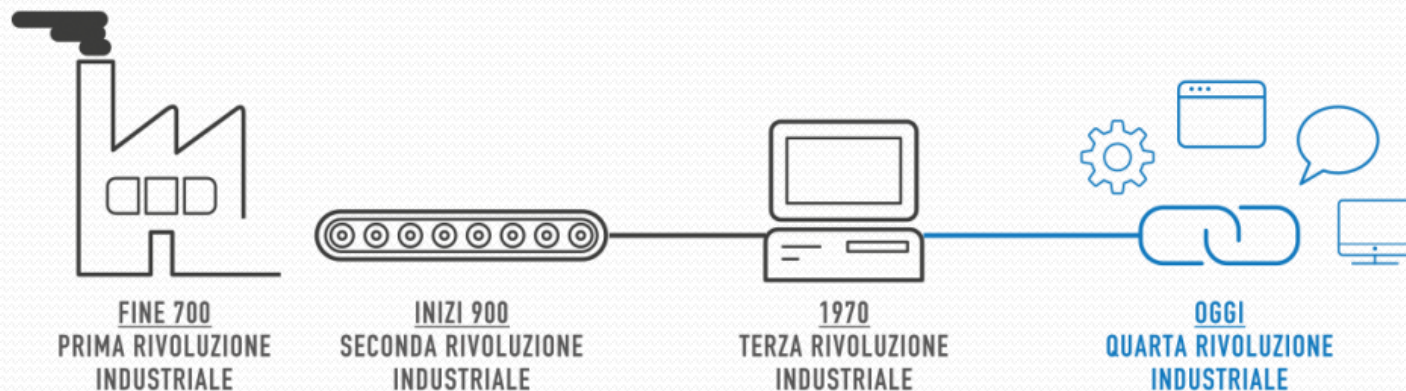
The objectives of the food industry are directed to the ever greater promotion of the Italian food model and its very rich food and wine proposals on foreign markets. The stagnation of the internal market requires, more than ever, to seek beyond the frontiers the development spaces that the sector absolutely needs. The exports of Italian beverages have grown in the last decade by more than 52 points higher than that achieved in parallel by national exports as a whole.



What is Industry 4.0 and why it is important to know how to deal with it


Factories are increasingly digital and interconnected: the fourth industrial revolution has also begun in Italy, the second largest manufacturing country in Europe. With some risk and many opportunities. In 2019, the Conte government partially confirmed and partially reduced the Industry 4.0 plan launched in 2016.

Industry 4.0 arises from the fourth industrial revolution, the process that will lead to fully automated and interconnected industrial production.



Therefore the investment cycle appears to be strengthening, thanks also to the presence of incentives connected to Industry 4.0, the great challenge of manufacturing companies towards the digitalization of processes and functions.





The Industry 4.0 Plan is a great opportunity for all companies that want to seize the opportunities related to the fourth industrial revolution: the Plan provides for a set of organic and complementary measures capable of promoting investments for innovation and competitiveness. All the measures that proved effective were strengthened and addressed in a 4.0 logic and, to fully respond to emerging needs, new measures were envisaged.

Knowing how to meet this challenge, however, does not only concern the government, but above all concerns entrepreneurs. For this reason, the paradigm has changed: measures have been designed in order that each company can activate automatically without resorting to tenders or branches and, above all, without dimensional, sectoral or territorial restrictions. What the government proposes, by committing important resources in the coming years, is a true pact of trust with the world of companies that want to grow and innovate.

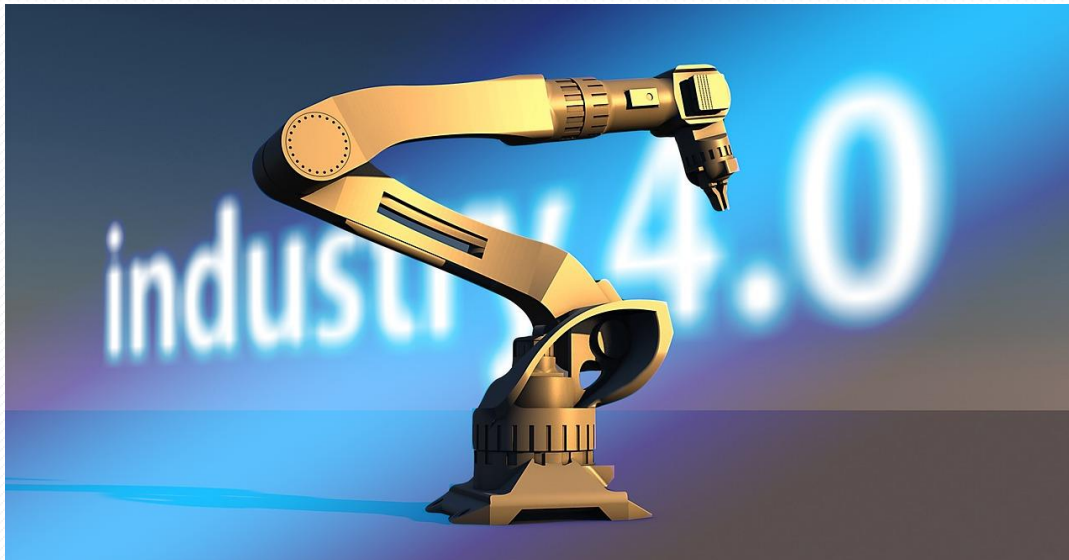
Industry 4.0 invests all aspects of the life cycle of companies that want to acquire competitiveness, offering support in investments, in the digitalization of production processes, in the enhancement of workers' productivity, in the formation of adequate skills and in the development of new products and processes.

Decent work for everyone

The business of the future will not be able to do without the contribution of a human workforce, but the introduction of digitalisation in our economies, over time, excludes less productive companies from the market with a consequent evolution of the economy itself. Companies that innovate a lot and immediately are more competitive, increase their productivity, access new markets and consequently can take on more. Companies with technological delays face many difficulties and see the end of some traditional jobs, often leading workers to lose their position. The first step is to push companies towards technological innovation and digital culture, through incentive and awareness-raising measures on the importance of innovation.



The Industry 4.0 plan helps companies to take this path. A job that must have the aim of bridging the gap between those who have already taken up the challenge of innovation and the majority of the system, which has not yet considered the importance of technological development even in traditional sectors and which risks for this to exit the market. For this reason, the provision by companies of skills and digital tools represents a fundamental junction.



Every year the Italian food industry invests 10 billion on innovation

The Italian food industry never forgets innovation and research: every year the 58,000 companies associated with Federalimentare allocate 10 billion euros to these important items, equal to 8% of the total turnover.

In the food industry, the second most important manufacturing sector in Italy, digital innovation enters more slowly than the average due to the still 'artisan' profile of processes and productions. Investments related to Industry 4.0 are mostly linked to mechanisms of defense of intellectual property and corporate data. Here enters the whole issue of traceability, crucial for the sector, which digital is pushing a lot. The development of new skills and professional updating are fundamental: the training activities involved, in fact, 1,035 companies, 82% small and micro, in 18 regions, 5,408 workers for a total of 37,621 hours and a total expenditure of 8 million euros, 70% of which is financed by Fondimpresa, the inter-professional fund for continuous training of Confindustria, Cgil, Cisl and Uil, and the remaining 30% with company resources.


Anche nell'era tecnologica le risorse umane saranno sempre più importanti. Ovviamente, dovranno essere sempre più qualificate e ci si dovrà concentrare e vincere la sfida sempre più spesso proprio su temi come la formazione, l'istruzione mirata, la qualificazione, la specializzazione, lo stimolo della competenza. Al centro del successo del settore Food c'è il capitale umano qualificato e da qualificare per promuovere nuovi talenti in grado di coniugare tecnologie e innovazione con tradizione e artigianalità.



Industry 4.0 and Italian agri-food

Talking about Industry 4.0 in the Italian agri-food sector means embracing a very large sector such as type of products and processes and extremely fragmented and varied: Food & Beverage is in fact by its nature a sector of SMEs often specialized in highly characterized and localized productions of excellence, and for this it typically requires extreme flexibility and scalability of the applications.

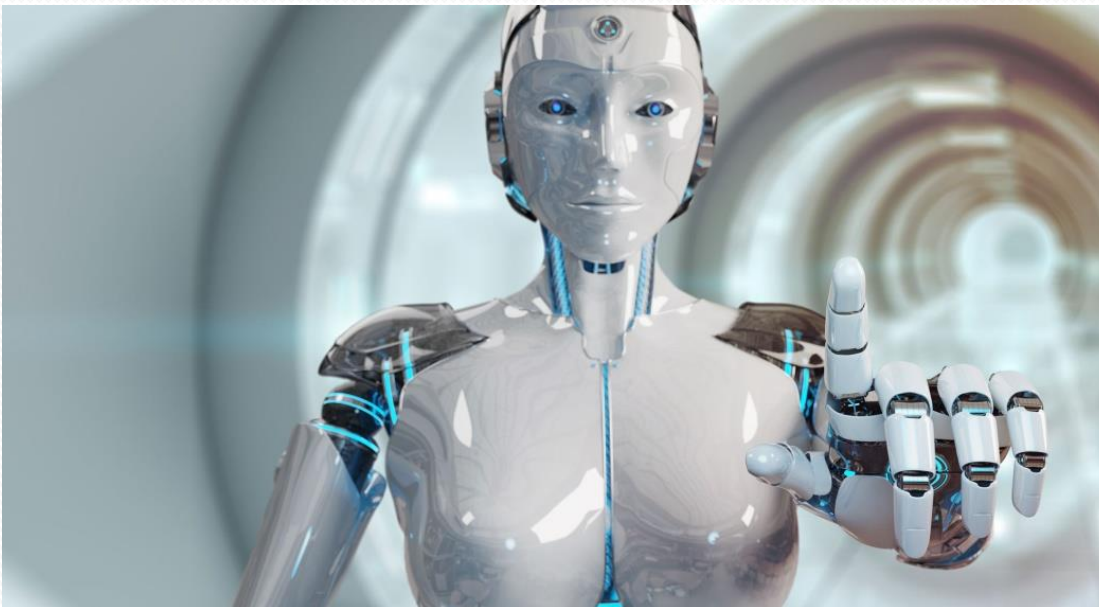




It is therefore above all the Cobots that can give a competitive advantage to the entire Italian agri-food chain: collaborative robots are anthropomorphic industrial robots designed to work side by side with men, after applying the best practices to reduce the risks of the application you can avoid physical barriers and create new systems to produce where man-machine interaction is the key. These manufacturing companies typically have small production batches, changing the requirements of the finished products continuously, it becomes impossible to use industrial robots as they are difficult to reprogram quickly. Also the collaborative robots are light and easy to reprogram, thus allowing rapid changes with minimal installation times and efforts. In particular, Cobots can find complete application in the primary, secondary and tertiary production and packaging phases.

Practical applications of collaborative robots in agri-food processing

The labeling, packaging, boxing and palletizing processes are only the most immediate among those for which the integration of collaborative robots can improve the efficiency of the production process, increasing productivity and reducing costs in compliance with current legislation and standards quality. But Cobots can also intervene in the pick & place, quality control through scanning and optical vision systems, the processing of food products (from cutting to decoration) and any other repetitive task throughout the production process.

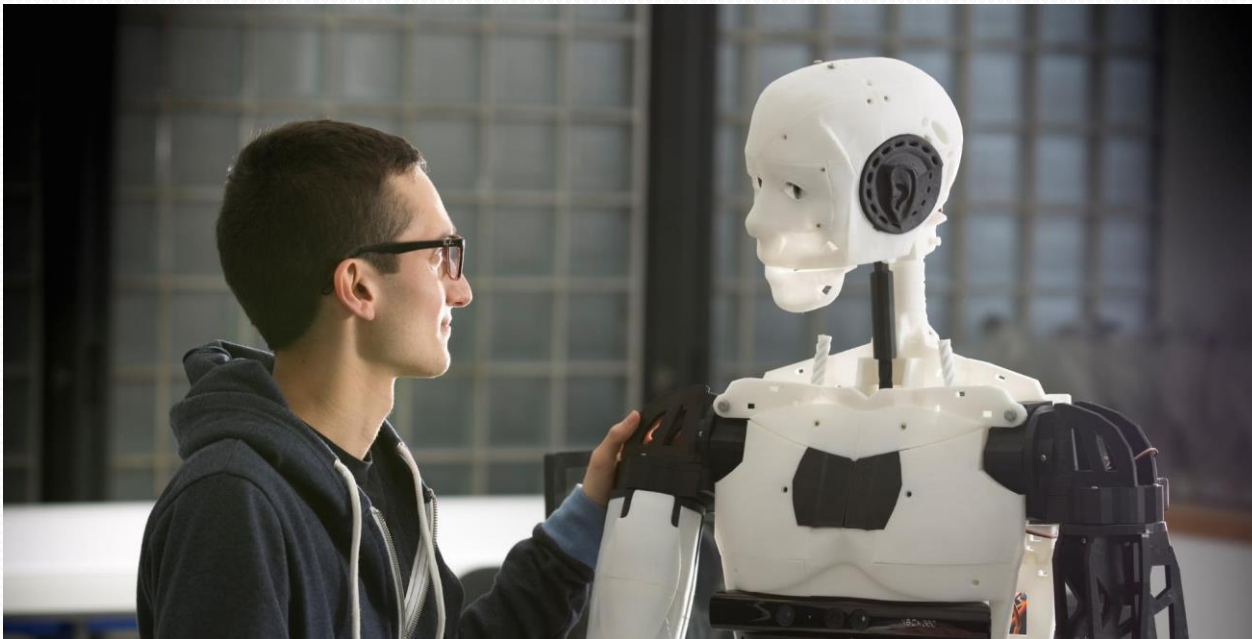


The production advantages of integrating Cobots into food & beverage

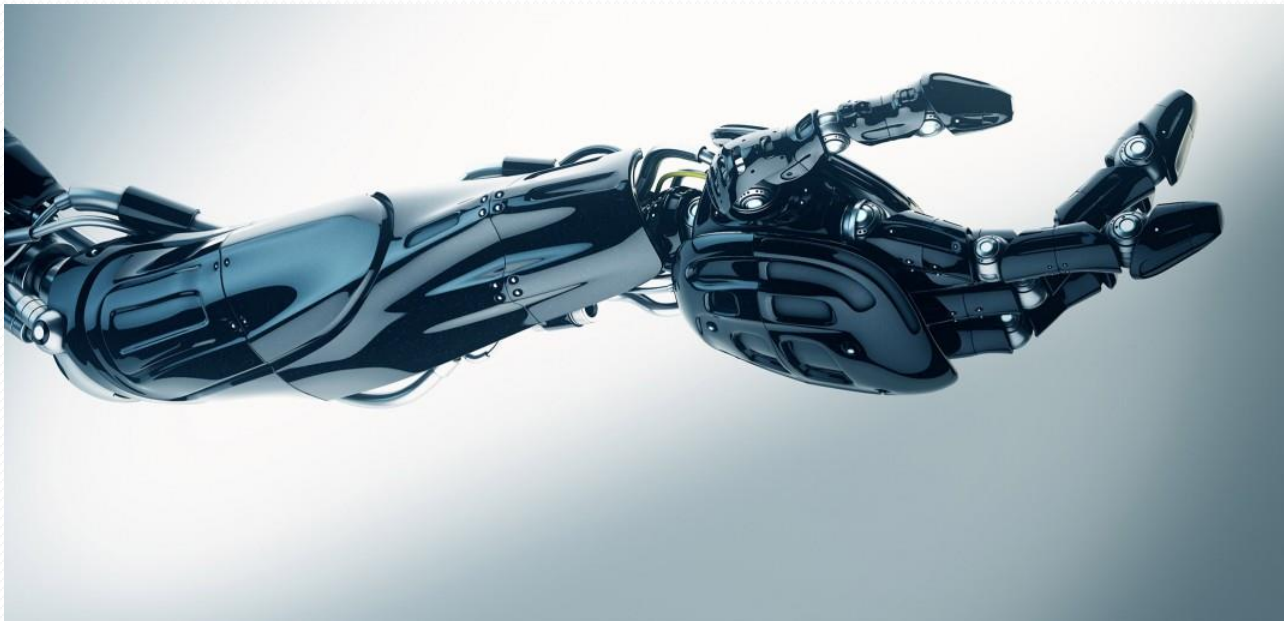
The first of the advantages deriving from the integration of collaborative robots in the production processes of the agri-food sector is the zero reduction of errors, waste, rejects and contamination risks. Cobots can also operate in a wide range of environmental conditions, with temperatures ranging from 0 ° C to 50 ° C, in the absence of oxygen or in the presence of vapors, for which human operators would need extraordinary equipment and safety. The flexibility and ease of programming of the Cobot also allows to reduce downtime and change of application, which has positive effects not only in terms of increased productivity: the reduction of process and processing times also allows preserving the freshness and organoleptic properties of the products, decisive characteristics in the choice by consumers. An aspect not to be underestimated in the use of Cobot is the greater space available and the simplification of the workplace. SMEs often find themselves having to organize work in confined spaces confused by complex automations. With Cobot, implementing the guidelines of Lean robotics creates a simplified working environment thanks to human-machine interaction and at the same time safer for the operator.

Cobots and the safety of human operators

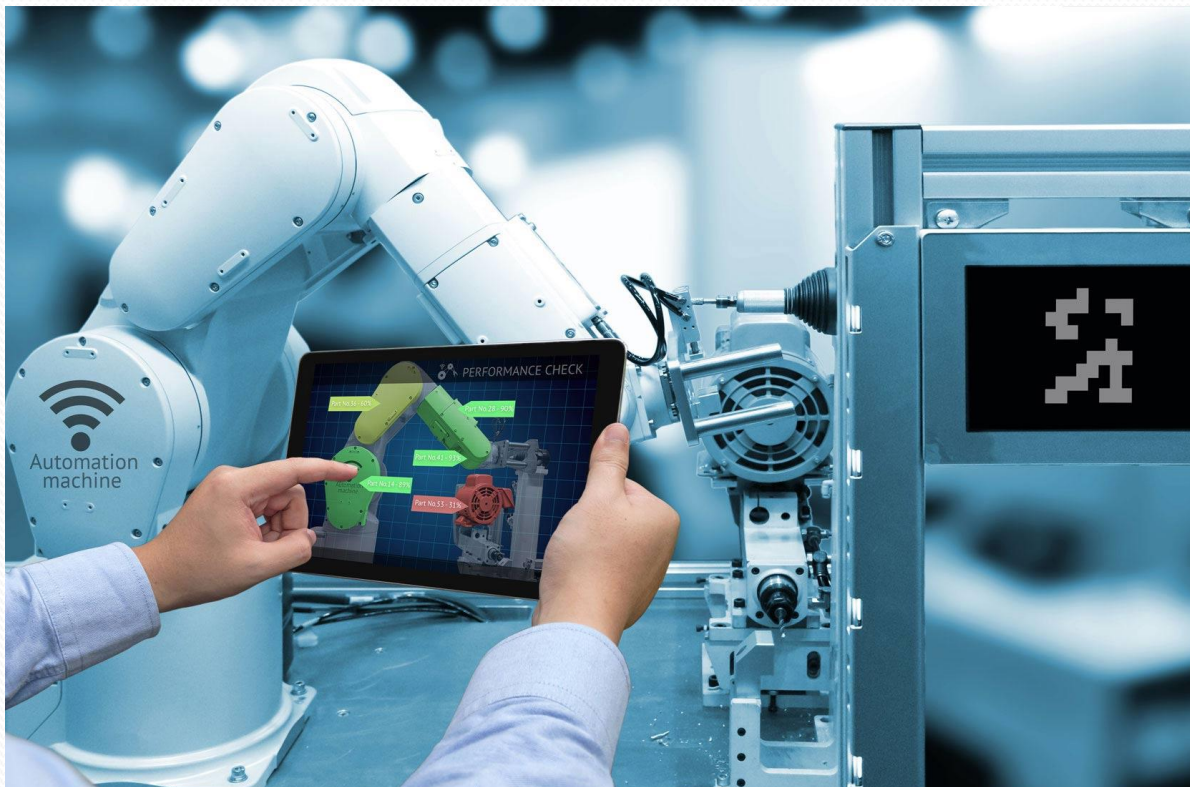
The advantages of Cobots also affect the issue of the safety of human operators. On the one hand, Cobots can take on the task of performing tasks with a high risk coefficient or performed in environments with a high level of physical stress. On the other, collaborative robots can operate alongside human operators, after a careful risk analysis, without barriers and even in limited spaces: the Cobots are in fact equipped with sensors that allow them to recognize people and objects within their range of action and slow down or stop your operations.



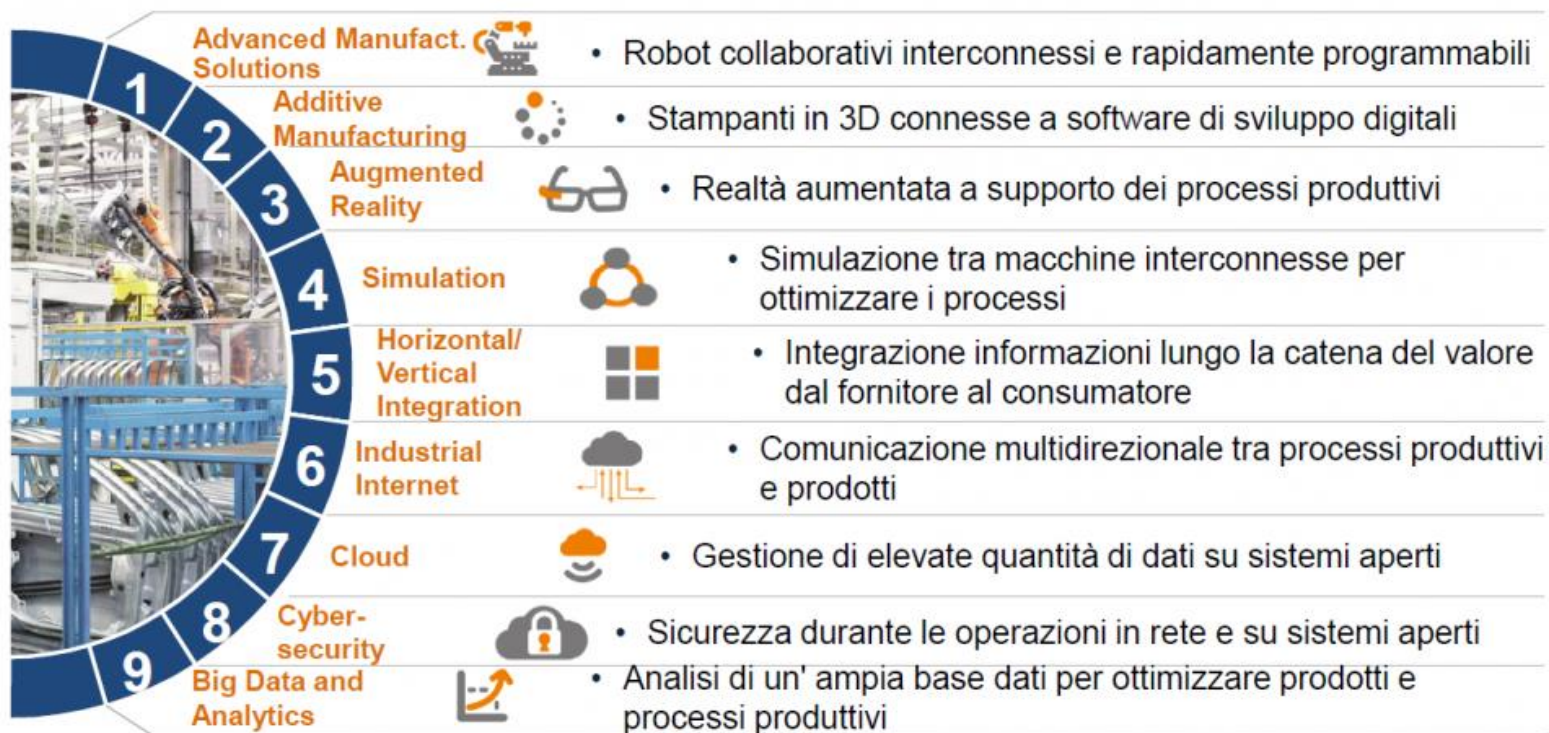
The new digital technologies will have a profound impact in four development directions: the first concerns the use of data, computing power and connectivity, and is expressed in big data, open data, Internet of Things, machine- to-machine and cloud computing for the centralization of information and its conservation. The second is that of analytics: once the data has been collected, it is necessary to derive value. Today only 1% of the data collected is used by companies, which could instead obtain advantages starting from "machine learning", that is, machines that improve their performance by "learning" from the data gradually collected and analyzed.

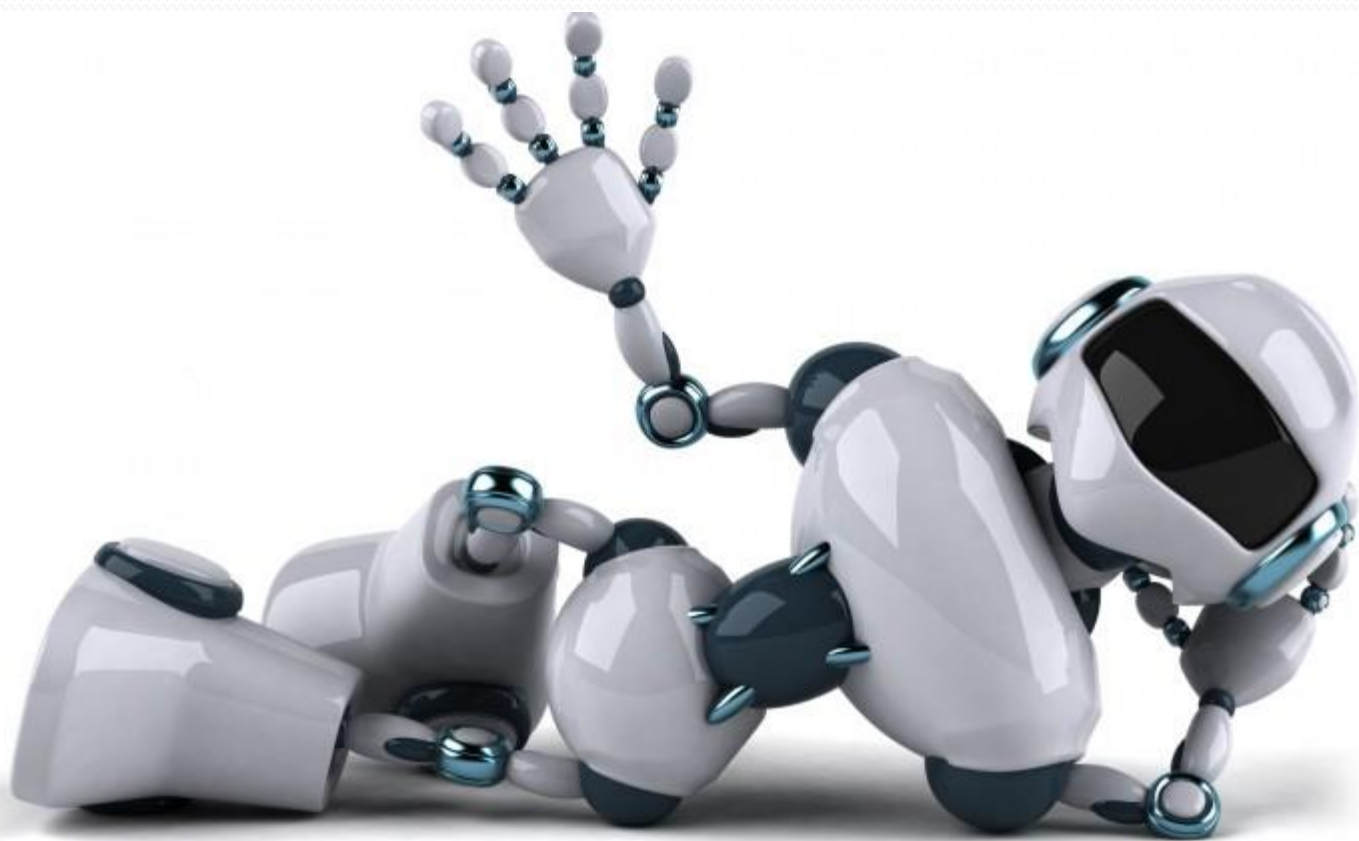


The third direction of development is the interaction between man and machine, which involves increasingly popular "touch" interfaces, and augmented reality. Finally there is the whole sector that deals with the transition from digital to "real" and that includes additive manufacturing, 3D printing, robotics, communications, machine-to-machine interactions and new technologies to store and use energy in a targeted way, rationalizing costs and optimizing performance.



Industria 4.0: Le tecnologie abilitanti





Thanks for the attention



EFFAT

CISL