

WORLD
MANUFACTURING
FOUNDATION

BACK TO THE FUTURE

MANUFACTURING BEYOND COVID-19

SMART ENTERPRISES AND SERVICES

Relationships with governments,
trade unions, workers

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INTRODUCTION

The worldwide crisis caused by the coronavirus pandemic has no equal¹ in the history, even though pandemics have always existed and have been an integral part of human developments, particularly since people started travelling around. The fault lines of the world (social divides, lack of fairness, absence of cooperation, failure of global governance and leadership) now lie exposed as never before, and the companies feel the time for reinvention has come. The changes won't be linear and discontinuities will prevail.

COVID-19 is therefore one of the greatest challenges the world has faced in recent decades. It has transformed people's lives at unprecedented scale, impacted every industry, and co-opted enterprises' ambitions for growth and innovation.

Naturally, with the rapid slowdown in our possibility to travel and to move around, in our neighborhoods as well as internationally, for private as well as for business reasons, the huge challenge of continuing our operations comes to the fore. In this section, we will try to blend the rapidly growing needs of players involved in manufacturing, exporting and to some extent in construction, in order to operate 'smartly', particularly by remote control at a distance, taking advantage of today's disruptive developments in digital technologies. In the light of Covid-19, the control of remote operations by modern digital tools is a particularly crucial need today.

This paper will offer a looksee at the new technologies and a discussion of new opportunities, with emphasis on new business models. The focus of attention will be the offering of solutions to Italian Small and Medium Size Enterprises (SMEs), a vital sector forming the bulk of the Italian industry, since the next conference will be in Italy, in the heartland of Italian SMEs. Naturally, we are keeping throughout a vigil eye on the needs both of developing countries as well as of those under development.

Our study case:

Italian Small to Medium-size Enterprises

Most of the Italian industry is made of Small and Medium-Size Enterprises (henceforth SMEs), a peculiarly Italian phenomenon: generally small or smallish, most often led by a single owner/entrepreneur, an SME frequently resembles more a Renaissance artist's workshop rather than what could be considered today a modern company. Yet, they are highly dynamic and entrepreneurial and often very successful on the global scene. They certainly are the backbone of the Italian economy: a total of 5 M SMEs employs 15 M people or 80% of the overall Italian workforce active in some form of industrial companies (excluding those working in education, in the Public Administration, etc.), with a yearly turnaround exceeding 2 000 Bn €. For the most part they are in good financial health. According to EU standards, they can be broadly subdivided into (i) 'micro' enterprises (less than 10 employees with yearly revenues of less than 2M€); (ii) small enterprises (less than 50 employees, less than 10 M € in yearly revenues; and (iii) medium-sized companies (less than 250 employees with revenues of less than 50 M €).

This form of Italian capitalism typically has the following characteristics: (i) small companies, (ii) family owned, (iii) led by an individual entrepreneur, not by employed managers, and (iv) very strong in manufacturing, particularly of traditional products.

Italy is the second largest EU producer of manufactured goods, after Germany; very strong globally in virtually all markets; the country in the world with the highest net balance between exports and imports of traditional manufactured products, such as packaging machines, high-level boats and ships, furniture, eye-glasses, automotive components, clothing, high-quality food and beverage, etc.

This sector is not in decline overall and numerous 'false myths' abound: those who had a good entrepreneurial formula before the latest crisis are coming out well (e.g. bicycle manufacturers, health care) whereas the sudden decline of certain sectors showed signs of difficulties even earlier (e.g. tourism), particularly in sectors



where there was an unreasonable and unsustainable growth (e.g. some parts of the fashion or retail industry).

However, the Covid-19 situation has exacerbated certain pre-existing trends, so corrective action is needed:

- Gradually, move up-market in their positioning: leave the traditional product range to embrace higher quality, more sophisticated goods with a bigger value-added (e.g. imitate Ferrari...)
- Broaden the product offering to also include more services and life-cycle product support
- Adopt wholeheartedly the numerous new and disruptive technologies and more generally innovations – naturally digitalization, but the field is much broader.

We believe that in this context the innovation adoption process will always be incremental, where a key factor will be to ‘enflame’ the passion, the creative genius of the small entrepreneur. Our SMEs will have to become industrialized in a high-tech but still handcrafted way. The following steps will be crucial in this transformation and modernization process:

- Make the internationally developed technologies readily available and accessible to the Italian SMEs
- Train the young professionals, particularly university graduates, in order to enable them and to encourage them to act as transformation agents in small companies.
- Regrettably, the academic world is not encouraging its best graduates to enter small firms; frequently, they highlight only their negative aspects.
- The mainstream considers the SMEs as yesterday’s players, on the way to extinction, which we believe is not true.
- Larger players should not look at the SMEs ‘from above’, as mere suppliers or outsourcers, but rather as strong partners with a solid know-how, with whom to develop long-term cooperative relationships which will strengthen their overall competitive advantage.
- Very frequently, in fact, the innovations come from these small suppliers or subcontractors. We know

that often the Italian SMEs work better as suppliers for major international firms, rather than for some domestic ones.

In this position paper, we will highlight in more detail some key global trends and offer suggestions for future developments.

CONTEXT

The pandemic will accelerate systemic changes that were already apparent prior to the current crisis. First of all, (i) the partial retreat from globalization: policymakers and business leaders are now questioning whether global supply chains have been stretched too far and they are asking whether they should reduce their economic interdependence. According to Parag Khanna: “Regionalism was clearly overtaking globalism before the pandemic exposed the vulnerabilities of our long-distance interdependence”. This trend could hurt some developing countries, which rely on exports to fuel their growth. (ii) The growing of escalation between the US and China: under President Donald Trump, the United States has shifting from trade liberalization to protectionism. Trump administration imposed tariffs on imports of steel and aluminum for US\$ 200bn² on Chinese products. The trade war spread in technology and telecommunications industries. (iii) The rising nationalism and the subsequent fear of immigration: from the UK to Italy and other European countries, recent elections have shown that nationalist and populist parties are attracting an increasing number of voters. National security and public health concerns are providing new rationales for protectionism. (iv) The acceleration of automation: robotic process automation has transformed and transforms our lives. The Global Industrial Automation Market is expected to grow at a CAGR 2019-2026 of around 7.2% and reach the market value of around US\$ 287.9bn by 2026.

In some Developing Countries, the phenomenon of mandatory Local Content⁴ (LC), while on the one hand



totally understandable in order to develop local economies, provide jobs and training to the rapidly growing populations, often creates unrealistic market conditions that make the targeted industries uncompetitive and less innovative over time. LC policies often tend to act as drain on the rest of the economy, increasing prices, reducing diversification and competition.

The impact of the COVID-19 pandemic on such policies is significant, since it stops or slows down the technology transfer and the training of the local workforce. It also reduces the possibility of providing alternatives, for example importing skilled and better trained labor on short notice.

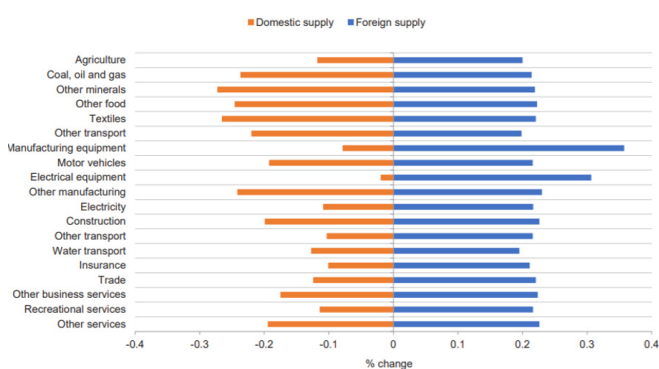


Figure 1: Change in source location of inputs in other sectors resulting from an LC in the communications sector (Source: OECD)

Digital technologies which are nowadays integrated and intelligent, have acquired even a greater weight of importance in the Covid context. There are no more realities that are digital or not. Every business today should be a digital business. And the pandemic has demonstrated this concept as never before. The current challenge for many companies is to transform and adapt to the digital requirement as soon as possible.

We are also witnessing the reshoring phenomenon⁵ defined as the decision to relocate a manufacturing activity either back to the home country (back-reshoring). The pandemic unveiled in many countries their lack of self-sufficiency for needed products. As a consequence, raise in the political debate, urging measures to better protect the national production of these goods. Many companies also experienced dramatic exposure to supply chain disruptions during the pandemic. In an

ideal scenario, supply chains are dynamic, optimized, controlled in real time and organized through digital interconnection. Unfortunately, the reality is far from this and many companies have been caught unprepared from this point of view.

OPPORTUNITIES AND RECOMMENDATIONS

Indeed COVID-19 outbreak is posing a number of challenges to enterprises of any size due to its unique global impact, its non-simultaneous eruption and the specific containment actions defined by policy makers, rather frequently not only country specific, but even region specific.

SME in particular have had to handle a number of decisions in a short time-frame. Even if most of them had in place relatively developed contingency plans, such plans have had to be revised and updated. However, an SME non-operating in critical value chains (i.e. health, food, energy and logistics) and with production facilities in only one country, once such a country decided to enter into lockdown, had to shut down production and limit support to shipping goods already available and provide remote technical and commercial support.

While other challenges have had to be faced and overcome (such as safeguarding employees, sourcing raw materials from alternative suppliers, revising formulations to replace raw materials involved in COVID-19 containment actions, etc.), this paper focuses on the impact on production, installation and commissioning. More in detail, it intends to review best practices and examples adopted as short-term responses and provide guidelines for more long-term business model adaptation. While the viewpoint is global, the primary focus is on the needs of Italian SMEs, for reasons stated above.

Short-term response – What the industry did during the first outbreak

- Expediting of ongoing projects carried out entirely or partially remotely. It required:



- Setting up basic technical capabilities at supplier facility as well as other partners involved (i.e. external laboratories;
 - Require suppliers to re-think their office space to comply to company protocols;
 - Increased trust to be built on the value chains
- Commissioning from remote of simple equipment. It required:
 - Detailed documentation;
 - Ideally Ethernet connections to equipment to verify in real-time progress of set-up and installation.
 - Training and re-qualification of suppliers. It required:
 - Remote training via videoconference
 - Train the trainer approach (also to tackle language barrier);
 - Supporting videos;
 - Test samples shipped for review and approval.
 - On site services such as repairs leveraging on local crews support with remote. It required:
 - More detailed procedures;
 - Adequate kick off meeting and support in selection of local crew;
 - Ongoing support to third party inspector from remote;
 - Review of QA/QC results.

Note: alternatively, it required increased logistics costs to transport non-conforming equipment to be rectified instead of sending the repair team on site.
 - Commissioning from remote of complex equipment.

Long-term opportunities - Business model review

In the longer term, enterprises have an opportunity to re-think the way they provide services and, while not losing contact with market and customers, many procedures and approaches can be revised. While there is no “one size fits all” strategy, the following is a proposed

preliminary walk-through to guide the enterprise into a positive change.

1. Mapping of activities
2. Selection of activities that may be re-engineered, prioritizing those that:
 - Already partially re-engineered during COVID-19 Outbreak by the enterprise or by competitors;
 - Are characterized by high travel time and expat cost in their cost structure;
 - Are more routine.
3. Deep dive on top 3 to 5 prioritized activities with the involved departments and possibly with close partners by:
 - Describing the as-is approach;
 - Looking at the enabling technology available from the “enabling technologies” section;
 - Designing the to-be approach;
 - Listing the skill gap of the team at the headquarters as well as of the local partner.
4. Enabling technologies selection
 - Merge all requirements in terms of technologies and attempt, likely with external support, to set up a platform for internal usage or upgrading existing company platform;
 - Evaluate pay-as-you-go vs. buy options as well as pros and cons of leveraging on existing standard solutions vs. creating dedicated ones;
 - Plan the required investments.
5. Bridge the skill gap
 - Merge all requirements in terms of skill gap and attempt to identify within the organization, possibly in other departments, such missing skills;
 - Evaluate different options, which include training of existing workforce, leverage on external support, invest in a startup, hire new professionals;



- Critical role is that of the support to be provided at a local level. Options include:
 - I. Invest on developing closer ties with local partners and train one of more of their workers to be able to support on site the activities to be carried out from headquarters;
 - II. Agree with customer on training its employees to provide onsite support. This may result in a modified price of services to be rendered, with more value left with the customer, without endangering supplier's margins;
 - Plan the required training program. Technical skills are just as important as soft skills, reduced mobility in fact will force traveling crew to stay away from home for longer shifts; the project leader will have to be trained on increased team-work and team morale management.
6. Evaluate partners
- Evaluating critical partners in the value chain by looking at their contingency plans;
 - Include in new suppliers' assessment and audits also their capability to manage uncertainty and require an analysis of the first lockdown response as potential source of ideas.
7. Communicate and monitor change
- It is important to inform within the organization as well as externally about the new approach. Likely define this approach under a new branding or project (i.e. "enterprise name 2030", "closer than you think",);
 - set up an enterprise-wide monitoring board to make sure that not only return on investment targets are met, but also other KPIs.
- I. Economic performance: ROI,
 - II. Customer satisfaction: non-conformity specific KPIs (number of, average time to resolve, type of non-conformity, costs in sorting them out, etc.);
 - III. Product improvements resulting from acquired

experience in implementing new business model;

- IV. HSE implications by reducing number of workers involved onsite and hence less interference with other crews;
- V. Environmental impact due to less traveling, more work from headquarters/work from home.

CONCLUSIONS

In the short term, in the face of the pandemic, the challenge is to rescue existing enterprises and the industrial ecosystems, and to prepare them for the medium to long term. For enterprises to survive and to recover better after the current crisis, they need to rethink their business models, and adapt to the evolving trends. New business models need to be flexible and adaptable to absorb the shocks caused by the crisis and the disruption of global value chains. For instance, manufacturers, grassroots initiatives and fabrication yard have consolidated their technology and knowledge to develop personal protective equipment, components and COVID-19 clinical care equipment, such as mechanical suction pumps and ventilators. Such firms have demonstrated the capacity to innovate and to respond to changes rapidly. Likewise, the development of new systems to operate manufacturing plants from a distance, by some form of advanced remote control.

The post-COVID-19 manufacturing sector has now an opportunity to rethink the industrial ecosystem and to benefit from the new wave of technology development. There is a lot to be gained by becoming green, circular, scalable, highly adaptable to specific local needs, and reliant on digital technologies and big data to enhance the traceability of processes, materials, visibility and opportunities for distributed manufacturing. These new opportunities are likely to arise due to investors looking to diversify supply bases to enhance production resilience. Similarly, shorter value chains leading to distributed manufacturing of final goods and digital platforms can



enable new applications and services as well as improve bottom-up access to industry value chains.

In order for the manufacturing sector to benefit from these opportunities, a comprehensive approach is needed to prepare for the new realities, contain and respond to the shocks, and gradually adapt, recover and transform to the new normal while adopting suitable, sustainable and cost-efficient technologies. To achieve this, it would be important to implement programs aimed at promoting new business models; preparing strategies for strengthening innovation systems; engaging in knowledge-sharing forums; and implementing country level and global data management strategies, to allow stakeholders to assess markets and gain competitive advantage.

ANNEX

ENABLING TECHNOLOGIES

Target Application/Scope:

1. Provide remote services, e.g. installation of machineries and complex plants;
2. Remote quality control;
3. Transparent and practical inspection;
4. Expediting

The pandemic has not slowed innovation, rather it is amplifying it to historic levels. But the immediate need for technology innovation is only one half of the equation. People's (and worker's) values are shifting. This imbalance—when business value is misaligned with people's values—is what we call “tech-clash.” One of today's realities is that technology is no longer an option—it is a requirement to connect employees, consumers, and business partners. Technology tools are enabling people to stay connected with friends and family and continue working. When technology fails, it leaves people cut off and frustrated. From tech-clash to trust: organizations need to focus on value and values. In the future, people

and workers don't just want more technology in products and services; we want technology that is more human. Companies that take the lead with a shared-success mindset—and invite collaboration with customers, employees, ecosystem partners, governments and the public—will create new opportunities for growth in a way that benefits all.

This annex, which focuses primarily on the development and application of new disruptive technologies, does not differentiate between the needs of developing countries vs. those of countries which are already developed, in the belief that most often – naturally, not always – the technology breakthroughs start in developed economies and are then adopted worldwide.

1. Best available technologies (stand-alone or combination)

The business challenge is to improve productivity and safety by leveraging best available technologies to enable an improved worker experience, enabling teams to adopt streamlined work practices, integrated work identification and execution, real time problem resolution and synthesis of disparate data sources to diagnose and prioritize activities throughout the work management lifecycle.

This means to target:

- **DATA VELOCITY**
Improved availability and access to data to make informed decisions at the point of work execution.
- **ANALYTICS DRIVEN DECISION MAKING**
Effective and rapid decision making to proactively manage field operations.
- **SEAMLESS COLLABORATION**
Enable smarter collaboration to effectively resolve problems and improve knowledge sharing.
- **RELATIONSHIPS AT SCALE**
Enhance relationships between field operations and external stakeholders to achieve positive business outcomes.
- **BOUNDARY LESS WORKERS**
Increased flexibility to choose innovative modes of operation enabled by technology and new ways of working



- **KNOWLEDGE SHARING**

Tools that enable information sharing across industry domains and levels of expertise fill key gaps in workforce knowledge.

- **CLEARLY CONNECTED**

Visibility to the active work activities and ability to improve workflow.

The concept of remote service should be hence designed and built on the following three pillars:

A. AUGMENTED REALITY

View procedural content in augmented reality

Push visual instructions or multimedia content on target facilities and procedures

Attach the digital content to a physical location to support the work

Augmented discrepancy analysis against material inventory

B. DEEP LEARNING (AI)

Automatically identify elements (such as machinery and modules) based on image recognition

Automatically recognize the completion of the procedure steps

Automatically detect procedure mistakes and missing steps

C. USABILITY

Relevant data viewing extension for each recognizable element (e.g. training videos or step by step instructions)

Over the shoulder support extension between workers and back-office specialists

Enhanced collaboration extension with backoffice specialist via desktop sharing, video capture and sketching. BUT, high value outcomes are a result of direct collaboration and co-design at the heart of client's operations where frontline workers works jointly with teams based thousands of kilometers from the realities of the field defining the systems, applications and digital tools, intended for use by the remote workforce. The choice of the right combination of technological delivery enablers (infrastructures, platforms, devices and wearables) is the key foundation of future collaboration

among different teams in different location and for this reason co-design is of the essence.

Perspective of one multi-national company – Solution Integrator for Energy and Infrastructures sector

The technology for remote assistance using mixed reality headsets is becoming increasingly available. There are multiple providers of hardware and software packages, from simple to very sophisticated. Microsoft initially paved the way with its HoloLens headset supported by proprietary software package. It should be noted that Microsoft HoloLens sets are rather costly, although rental may be available in selected geographies. On a positive side, Microsoft provided open system for other companies to develop software for specific applications with HoloLens hardware.

In addition to Microsoft HoloLens, more simple solutions have emerged on the market, with less sophisticated hardware, ready-to-use software, and more reasonable costs. Some examples, as considered by the company, are:

- Eye4Task <https://www.headapp.eu/eye4task/>
- SightCall <https://sightcall.com/technology/wearable-technology>
- RealWear <https://www.realwear.com/>

More solutions (with attractive free trial periods) may be found here: <https://www.realwear.com/blog/these-hands-free-remote-expert-solutions-will-help-your-front-line-mitigate-the-covid-19-pandemic/>

Remote assistance can support variety of activities, such as:

- Equipment installation and commissioning
- Troubleshooting, routine and non-routine maintenance
- Inspection and certification activities
- Site surveys or walk-throughs
- Operators training, although here preference may be given to using off-line virtual reality tools or simulators



Similarly, the choice of technologies to be used for developing countries should have minimum requirements (in terms of infrastructure, cost, accessibility, etc.) to be utilized in an effective and sustainable manner. Therefore, when a United Nation Organization, such as UNIDO that implements projects aimed at supporting and developing SMEs in developing countries, Remote assistance was a clear and straight forward answer.. On one hand, SMEs found themselves in a completely new context without access to essential knowledge or skills to address these challenges, and travel restriction hindered UNIDO's effort for providing knowledge and technical assistance physically, on the other. Remote assistance was the clear strategy that UNIDO adopted, in order to ensure the continuation of technical assistance highly needed enterprises to absorb, adapt and transform into a resilient enterprise. UNIDO developed a simple and effective (web-based and mobile) application to allow enterprises to express their urgent needs, and provide a match with the available UNIDO expertise in different domains and sectors to diagnose and provide needed and urgent technical assistance remotely. In a second stage, UNIDO plans to depend on updated software and hardware to expand the type and scope of technical assistance, while keeping the requirement for operating them as low as possible, In some industries (e.g. oil & gas, utilities, mining) the key obstacle to wide implementation of such solution is remoteness of operative sites and hence poor data connectivity. Typically, remote locations rely on satellite internet and use of remote assistance has been so far limited to emergency cases, in which almost all bandwidth is redirected to support the proper live operation of the remote assistance platforms.

Other encountered obstacles to quick implementation are: ATEX restrictions for explosive atmospheres, compatibility with Personal Protective Equipment (e.g. Safety Helmet), hands-free requirement, communication in noisy environments.

When it comes to remote inspection and quality control, the remote assistance platforms may need to be supported by several other enabling technologies, such as live documents management plus digital signature or blockchain, addressing legal and trust issues respectively.

2. Provide existing success cases for sharing and low-hanging fruits for quick implementation

- BT Group in UK, OpenReach support to field service technicians <https://youtu.be/LAMIA34Vnos>
- Airbus support to technicians on the Final Assembly Lines <https://youtu.be/uy-mVI79qE4>
- GE HealthCare support to field technicians on large medical equipment <https://youtu.be/OSrSc4yD-7E>
- Koenig & Bauer support to technicians on large industrial printers <https://youtu.be/wlDZ1lqZqZ8>
- Polaris in the US, support to field technicians <https://vimeo.com/343283021/536b8e0662>
- Terex/Genie field technical support in industrial maintenance <https://www.youtube.com/watch?v=NXaZ8oIFDHQ&feature=youtu.be>
- SNCF/French national railways company
- Live visual assistance to train drivers facing a technical issue while on trip <https://www.youtube.com/watch?v=jaARKEKLaTE&feature=youtu.be>
- Assistance to workers e.g. on the railways network <https://www.dropbox.com/s/pzvlh2abx9v4yam/SNCF%20R%C3%A9seau%20-%20Field%20Service%20Support.mp4?dl=0>
- Live visual assistance to technicians centers
- Bosch <https://youtu.be/P8-whfGeS2Q>
- Valeo <https://www.youtube.com/watch?v=rTTftYfIRrg&feature=youtu.be>

3. Look at mid- to long-term horizon of emerging technologies

The Construction Industry Institute launched this research initiative to explore the future of site operations envisioning the industries of Mars in 2050

Five challenges identified:

- No crane on site
- No people on site
- Maximize information availability
- Eliminate permitting process
- From black to green



This research could provide some intro to the “Look at mid-term horizon of emerging technologies” and existing success cases.

For more information, visit:

<https://www.construction-institute.org/resources/knowledgebase/knowledge-areas/result/topics/rt-tc-04>

4. How to customize technologies to specific Client needs

- How can companies continue to digitize in times of sluggish demand and shaky supply chains? By focusing on cross-function collaboration.
- Using new technologies like industrial internet of things (IIoT), artificial intelligence (AI), robotics, 3D printing, and digital twins, some manufacturers have been able to rapidly shift to the production of medical supplies, such as surgical masks, hand sanitizer, and ventilators. This extraordinary achievement would not have been possible without the digital reinvention of industry
- As companies continue grappling with the adoption and implementation of digital technologies, or with hastening their digital transformations, they may easily lose sight of cross-function collaboration
- As we look toward a post-COVID-19, never normal future, we must also remember that organizational change is just as critical to success as embedding intelligence into products and factories.
- Finding new value by bringing business functions together - When executed effectively, greater collaboration across functional boundaries can not only reduce waste and costs, but also earn measurable financial returns.

For more information, visit https://www.accenture.com/_acnmedia/Thought-Leadership-Assets/PDF-3/Accenture-IndustryXO-Out-Collaborate-the-Crisis.pdf

5. Cybersecurity issues

Cybersecurity issues require BUILDING GREATER CYBER RESILIENCE. The very nature of growing connectedness and adding digital capabilities to enable remote services increases risks for cyberattacks:

- Threats are constantly evolving and have potentially severe consequences such as: loss of production and revenue, damage to assets and infrastructure, leakage of sensitive commercial information and reputational damage, regulatory non-compliance and fines, health, safety and environmental (HSE) risk;
- Given the severity of the associated risks and compliance requirements, cybersecurity is increasingly becoming a high priority on the board and C-suite agenda for operators;
- To alleviate these risks, industry players need to develop a clear understanding of their cybersecurity gaps, apply mitigation steps, and evolve their approach to cybersecurity along with the cyber threat landscape.

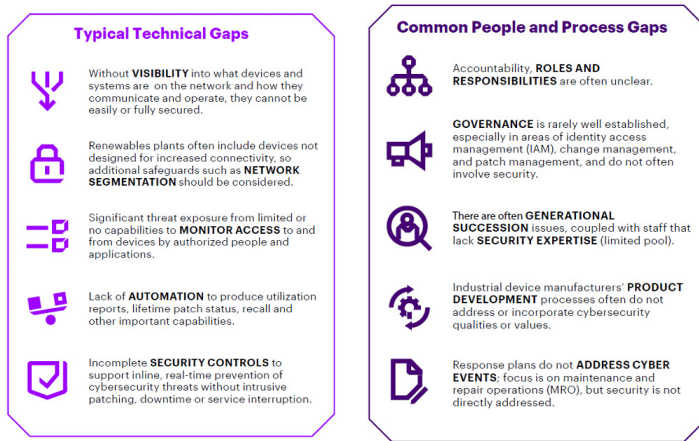
Electronic monitoring, remote control of assets, lack of cybersecurity for sensors leave manufacturers and operators open to new cyber threats. In addition, as assets are geographically dispersed, often in remote locations and left unmanned puts these assets at higher risk to attack that could go unnoticed.

Regulators around the world are recognizing the need to protect assets from cyber threats, in particular if being part of critical Infrastructure and as demonstrated by recent regulations, including the EU NIS Directive on cybersecurity, the ICS standards and leading practices such as ISO27001, IEC 62443, NIST 800-82 and NERC-CIP.

To comply with emerging security requirements, operators need a clear understanding of the gaps in their security practices to address those weaknesses across their people, processes and industrial control systems (ICS). However, driving cybersecurity investments should not only hinge on compliance with existing regulations, but also look for leading practices and resilience against attacks.



Figure 1. Typical technical, people and process gaps.



Source: Accenture⁶

Example: Success case in power generation/renewables

RETHINKING CYBERSECURITY: A PARADIGM SHIFT

As renewables operators look to evaluate how they can boost cyber resilience, three key paradigm shifts are needed.

Bridging the maturity gap between IT security and OT security.

IT security extends from the cloud through to connected IT devices and is more mature than OT security. However, as the lines between IT and OT continue to blur, attempting to simply replicate security models from IT to OT should be avoided. Two key differences between IT and OT are impact and criticality, and those should be measured in both the digital and physical domains.

Bridging the security maturity gaps between operations, other functions such as business development and engineering, and third parties.

Renewables operators need to close security gaps within their organizations, in their supply chains and with their interfaces to OT/IT third party providers. Sealing these gaps is crucial, as malicious actors can exploit the weakest point in the network as a gateway to higher-value areas.

Building trust between IT operations and production operations.

I look to build synergy between IT and the business for greater collaboration, coordination and commitment. For successful threat mitigation, creating value and providing protection should be viewed as complementary rather than competing agendas.



Source: Accenture⁷



ENDNOTES

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³GlobeNewswire. Industrial Automation Market to Hit US\$ 287.9 Billion by 2026. Retrieved from: shorturl.at/bqsC6

⁴“Part of a broader set of ‘localization’ policies that favour domestic industry over foreign competition, requiring companies and the government to use domestically-produced goods or services as inputs” - Local content requirements OECD

⁵Barbieri, P., Boffelli, A., Elia, S. et al. What can we learn about reshoring after Covid-19?. Oper Manag Res 13, 131–136 (2020). Retrieved from: <https://doi.org/10.1007/s12063-020-00160-1>

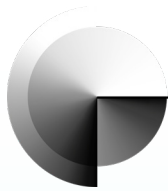
⁶Accenture. Building Greater Cyber Resilience in Renewables. Retrieved from: https://www.accenture.com/_acnmedia/PDF-125/Accenture-Cybersecurity-Renewables-Services.pdf

⁷Idem.



This white paper, published in November 2020, is part of the Back to the Future: Manufacturing Beyond Covid-19, an initiative by the World Manufacturing Foundation, aimed at analysing the impacts of the Covid-19 pandemic on the manufacturing sector and outlining key findings for a resilient manufacturing sector in the new normal.

For more information on the project and to read other topic-focused white papers that are part of the initiative, visit <https://worldmanufacturing.org/report/whitepaper-back-to-the-future/>



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