



B20 Italy

Digital Transformation

Digital Use Cases Library

2021

B20 Italy developed a Digital Use Cases Library with 3 objectives



Promote **Development of Digital Skills** and **Awareness on Tech.**, especially for MSMEs



Support the B20 Digital Transformation Task Force in the **Advocacy Process**



Provide a **Legacy of B20 Italy** to be integrated by future B20 cycles

Use Cases
contribution
from Task Force
members was
**Beyond
Expectations**

80+

Digital Use Cases
Selected

20+

Organization
S
Contributing

25+

Technologies
Covered

10+

Industries
Represented

Thanks to
Task Force
Members
for their
contribution



SCHAEFFLER



CONFINDUSTRIA



Microsoft



CONFINDUSTRIA SERVIZI
INNOVATIVI E TECNOLOGICI

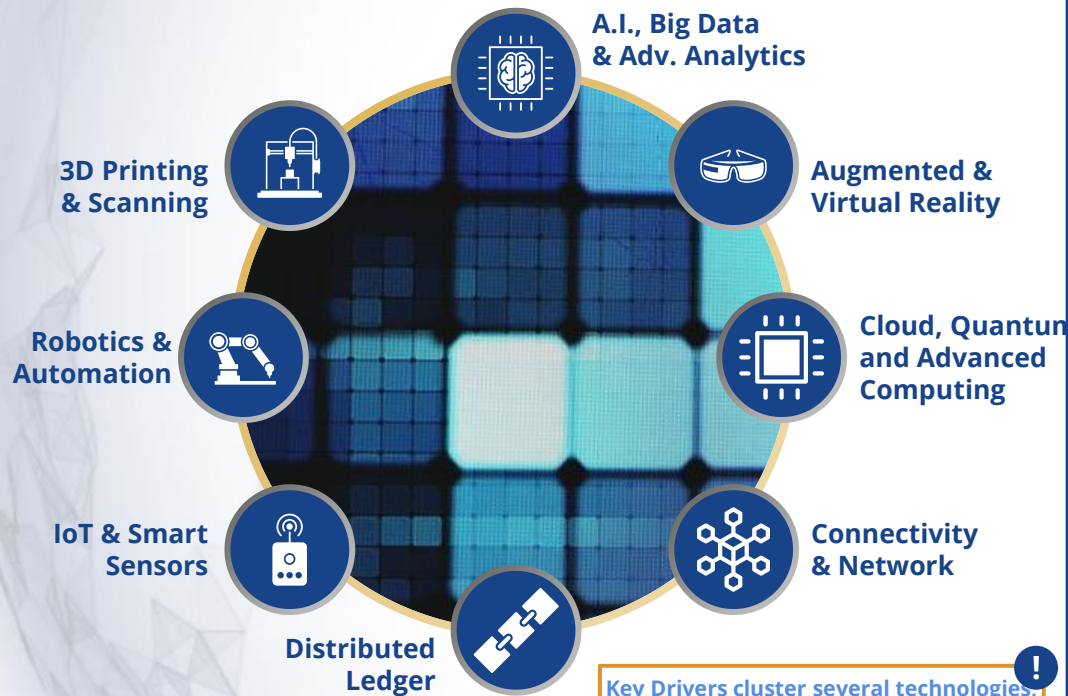


Union of Mediterranean Confederations of Enterprises



Use Cases Library Framework: Transformation Drivers vs. Industries Matrix

Identified 8 Key Digital Transformation Drivers ...



Key Drivers cluster several technologies, including non-cutting-edge ones, which serve as enablers for MSMEs inclusion

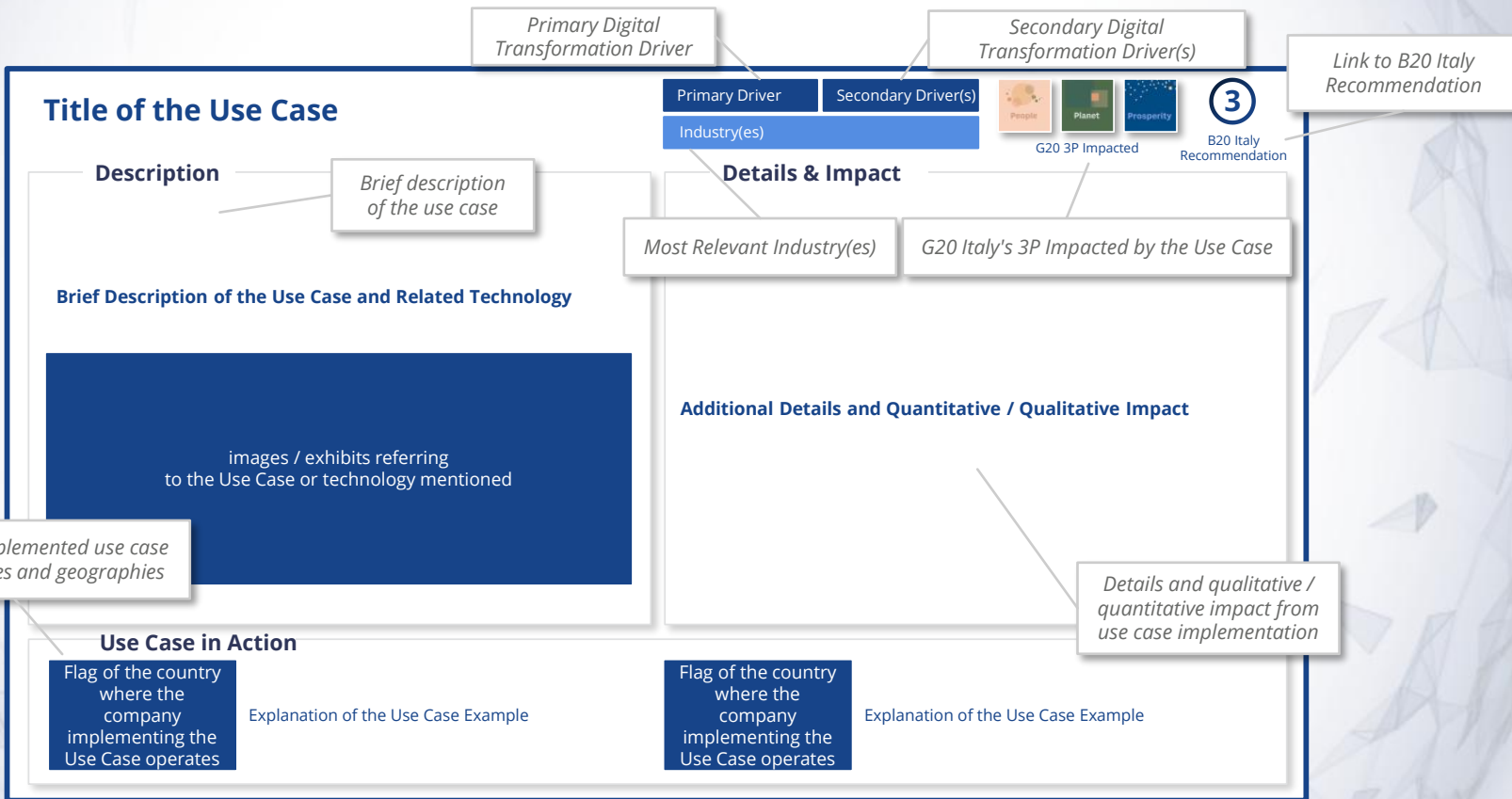
Note: Inspired by UNCTAD frontier technologies

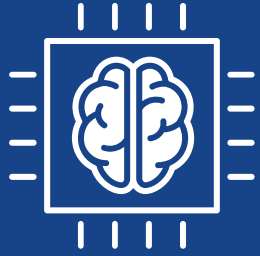
... to cover multiple Industries

-  Consumer Goods
-  Energy & Utilities
-  Finance, Banking & Insurance
-  Healthcare & Life Sciences
-  Industrial Goods
-  Logistics & Mobility
-  Public Administration
-  Technology, Media & Telecom (TMT)

...

Each Use Case has been detailed with a **Homogenous Template**





















**80+ Digital Use
Cases Included
in the Library**

























Use Cases Referring to: A.I., Big Data & Adv. Analytics

	Use Case	Secondary Digital Driver(s)	Relevant Industries	B20 Italy Rec ¹	G20's 3P ²	
1	Advanced Customer Relationship Mgmt.	-	Consumer Goods	③		
2	Advanced Reputation Management	-	All	③		
3	Advanced Search Tool	-	All	③		
4	AI-driven Healthcare Diagnostic Aid Tools	-	Healthcare & Life Sciences	③		
5	A.I. for Industrial Energy Analytics	IoT	Energy & Utilities, Industrial Goods	③		
6	A.I. Powered Diagnosis Supporting Precision Medicine	Advanced Computing	Healthcare & Life Sciences	③		
7	Assisted Sale Force	-	All	③		
8	Automation and optimization of the mobile radio network	Advanced Computing	TMT	③		
9	Checkout-Free Stores	-	Consumer Goods	③		
10	City Digital Twin	IoT	Public Administration	③		

1. Reference to relevant B20 Italy Digital Transformation Task Force's Policy Recommendation 2. G20'Italy's 3P (People, Planet, Prosperity) positively impacted by the Use Case











Use Cases Referring to: A.I., Big Data & Adv. Analytics

	Use Case	Secondary Digital Driver(s)	Relevant Industries	B20 Italy Rec ¹	G20's 3P ²		
11	Computer Vision and Digital Monitoring	Robotics & Automation; Advanced Computing	Energy & Utilities, Industrial Goods	3			
12	Corporate Account Onboarding	Connectivity	All	3			
13	Digital Eye-Tracking for Disability	IoT	Healthcare & Life Sciences	1			
14	Digital Bot Assistance	Connectivity	Consumer Goods	3			
15	Driver State Monitoring System	IoT	Consumer Goods, Logistics & Mobility	3			
16	FPSO Digital Twin	IoT	Energy & Utilities	3			
17	Hiring With Artificial Intelligence	-	All	3			
18	Industrial Digital Twin	IoT	Industrial Goods, Energy & Utilities	3			
19	Partially Autonomous Vehicles	IoT	Logistics & Mobility	3			
20	Predictive Maintenance	IoT	Industrial Goods, Energy & Utilities, TMT	3			

1. Reference to relevant B20 Italy Digital Transformation Task Force's Policy Recommendation 2. G20'Italy's 3P (People, Planet, Prosperity) positively impacted by the Use Case



Use Cases Referring to: A.I., Big Data & Adv. Analytics

	Use Case	Secondary Digital Driver(s)	Relevant Industries	B20 Italy Rec ¹	G20's 3P ²
21	Predictive Maintenance on Energy Plant	IoT	Energy & Utilities	③	
22	Real-Time Route Optimization	-	Logistics & Mobility	③	 
23	Road Condition Monitoring	IoT	Logistics & Mobility	③	
24	Robo-Advisor	-	Finance, Banking & Insurance	③	 
25	Smart Region for Tourism Management	IoT	Public Administration	③	  
26	Traceability in the Gold Mining Chain	Connectivity	Industrial Goods	③	  

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1 Advanced Customer Relationship Mgmt.

A.I., Big Data & Adv. Analytics

Consumer Goods



G20 3P Impacted

B20 Italy Recommendation

Description



Digital means and Artificial Intelligence enable more effective and efficient methodologies to **collect, track and analyze consumer data** favoring companies in extracting insights that can be leveraged to offer tailored promotions, up / cross-sell products, and enhance loyalty programs

At the same time, it is possible to deploy technologies also to **improve client experience**, offering **seamless** customer journeys and enhanced in-store navigation

Details & Impact

Advanced customer relationship management, through digital technology and applications, enables:

- **Effective loyalty management system** providing insights into shopping habits and transforming the traditional loyalty scheme into an intelligent, personalized and dynamic experience
- **Personalized websites, applications and flyers** combining advanced analytics and customer-oriented design
- **Enhanced store navigation** for customers through digital technologies directing them to desired products
- **Geo-located marketing activities and personalized in-store interactions** with customers also exploiting IoT communication

Use Case in Action



US coffee distributor launched a reward program based on **digital CRM** which resulted in 26% rise of profit margins and 11% of revenues for loyal customers



German retailer launched a **location-based advertising campaign** via marketing app with pop-up invitations to shop at marketplaces and stores



An Italian Cloud operator part of a telecommunication group has developed a solution that allows to control and optimize customers' digital experiences across touchpoints – At the same time, it also developed a Cloud application for a Banking Group to show the group's territorial presence on different channels

2 Advanced Reputation Management

Description

Artificial intelligence, using **Natural Language Processing (NLP)** models, helps companies understand and decipher stakeholders' **opinions about brand** on social media, websites and online forums

Automatic monitoring of online reputation enables companies to respond and ask for reviews at the right time, identifying false and negative online mentions to resolve them as soon as possible



Details & Impact

Manual tracking of customer feedback, social media reactions, negative comments and press on the web can be extremely resource intensive

A.I. enables to intelligently investigate online conversations, detecting a huge variety of analytical dimensions, with the purpose of monitoring **brand health**, understanding stakeholders's perception about **brand's reputation**, and optimizing **brand messaging**. Impacts include:

- **Higher resource efficiency** thanks to automatic identification of brand perception through AI, with lower need for human intervention
- **More precise industry insights**, through detailed monitoring of key online resources
- **Increased possibility to identify emerging opportunities and challenges**, even when a brand is not mentioned directly

Use Case in Action



Italian energy utility developed a brand reputation platform for **data-driven decision making**, to understand stakeholders' perception about brand reputation worldwide



British software company offers a brand reputation software to learn **how companies' brands are perceived** across a set of online sources, and to analyze key trends around the business

3 Advanced Search Tool

Description



An **advanced search tool** for information is a digital solution to **find content and information in real-time and efficient way**

Simplifying the management interface and enhancing the functionality of search engines makes them easier to integrate, configure and manage

The solution can act as an aggregator of information from heterogeneous data sources, generating a list of results in seconds

With the Entity Extractor function it is possible to automatically extract the descriptive metadata of any text, improving the identification and retrieval of content and making it faster

Use Case in Action



An Italian Cloud operator part of an Italian telecommunication group has integrated its solution for an international broadcaster to give their customers a tool for searching information about **technical troubleshooting and shows schedule**



An **Italian Cloud operator** part of an Italian telecommunication group provider has developed a solution for a multinational food company to **search products** with the supply chain database

Details & Impact

Constantly Updated

The solution can always keep up in terms of performances and new features thanks to constant updates of electronic libraries and integration with the main search engines

Always Customizable

It offers advanced crawler configurations with monthly and annual schedules, manages priorities and automatic update times - The use is optimized for both desktop and mobile

Intelligent Mix of Approaches

Mixes different kind of approaches to the search, using the traditional full-text search but also conversational search and semantic search (understanding when to use what)

AI-driven Healthcare Diagnostic Aid Tools

A.I., Big Data & Adv. Analytics

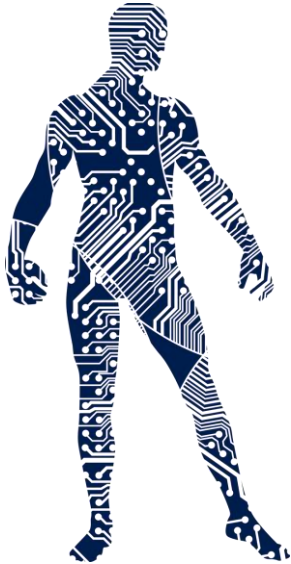
Healthcare & Life Sciences



G20 3P Impacted

B20 Italy Recommendation

Description



AI-driven healthcare diagnostic aid tools use software to **analyze health data faster, with increased accuracy, and to identify potential health issues and corresponding treatment options**

In this context, healthcare professionals take final decisions to ensure adequate human supervision

Aid tools can significantly alleviate the burden for healthcare practitioners and facilities, **lower the cost of healthcare provision and reduce errors, while improving access to treatments**

Details & Impact

AI-driven healthcare diagnostic support can offer significant improvements for healthcare systems, medical facilities and doctors, as well as for patients, through:

- **Improved speed and scale** in healthcare provision, allowing for more efficient healthcare services, also reaching more patients
- **Increased accuracy** in identifying health issues and corresponding treatment alternatives, resulting in better health outcomes
- **Reduced burden on healthcare professionals**, who are often understaffed, through the automation of repetitive activities
- **Decreased healthcare costs** through standardization and digitalization of procedures, scale effects and operational synergies

Use Case in Action



Danish startup offers an AI-powered software that guides physicians through patient consultations, to reduce workload and increase accuracy of healthcare provision



Hungarian startup built an AI-based software to analyze cancer tumors and recommend the right "targeted" therapy for every patient



Danish health-tech startup developed AI-driven algorithms to automate the analysis of x-rays, helping radiologists to make faster and more accurate decisions

5 A.I. for Industrial Energy Analytics

A.I., Big Data & Adv. Analytics

IoT

Energy & Utilities, Industrial Goods



3

G20 3P Impacted

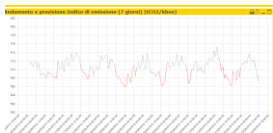
B20 Italy Recommendation

Description

Exploiting **real-time data** and **machine learning** techniques allow businesses to deploy **energy analytics tools** to **monitor and forecast the energy efficiency** of industrial plants, helping technicians **detect anomalies** and suggest **corrective actions**



Data from assets are **historicized** and emission index **predicted** by a forecasting model



Using the predicted values, site operators get a **plant status report**. By confronting real values with predictions they **can detect deviations, thus anomalies** in the energy consumption



In the event of a suspicious situation, a **dashboard can be used to check equipment status**: graphs can show the variation of KPIs against set targets

Details & Impact

Energy analytics with artificial intelligence could contribute to:

- **Reduce CO2 emissions** as a step towards carbon neutrality
- **Decrease the environmental impact** of industrial processes
- **Increase energy efficiency** of processes, systems and plants

Since machine learning leverages **historical datasets** to feed and train predictive models, a significant amount of data describing the problem must be available and **accessible upfront** to let the algorithm effectively learn from it

Design, implementation and deployment activities should be performed with the support of **integrated and cross-functional teams** (e.g., both from IT functions and business/expert disciplines)

Use Case in Action



Italian Oil and Gas Company developed a proprietary **tool for energy efficiency** and deployed it in its onshore and offshore sites in Italy and Angola



European automotive leading firm, with more than 100 production plants in 21 countries, relies on techniques such as laser beam welding, hot stamping, cold stamping, roll forming, hydroforming. The company **introduced A.I. technology to decrease the related energy footprint**

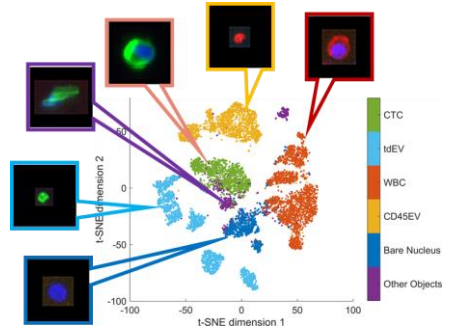
6 A.I. Powered Diagnosis Supporting Precision Medicine

Description


Precision medicine aims at providing tailored medical treatments to individual characteristics of each patient and in a targeted way, **reducing the harmful side-effects of mass medicine**

A key enabler for the widespread application of precision medicine to cancer is the **ability to correctly analyse and interpret** the patient's blood **Circulating Tumor Cells (CTC)** and other **biomarkers** that can convey an exhaustive landscape of the metastatic activity

Artificial intelligence applied to the analysis of CTC can provide very **detailed information**, that could be used for **therapeutic decisions**



Use Case in Action

 **American healthcare company** offers an established clinical tool for Circulating Tumor Cells enumeration, which drastically improves accuracy in the **prediction of survival** rates for different types of cancer

A.I., Big Data & Adv. Analytics C., Q. and Adv. Computing

Healthcare & Life Sciences




G20 3P Impacted

B20 Italy Recommendation

Details & Impact

A.I. offers unique opportunities for the development of non-invasive tests for advancing research and precision medicine. It allows to:

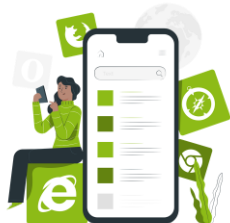
- Implement an **AI-based, standardized, fully automated and scalable workflow** for classification, enumeration and sorting of single cells leading to beneficial effects on cancer patients, health care systems, and society as a whole
- Introduce additional biomarkers (e.g., tumor derived extracellular vesicles) for **multi-parametric analysis** of patient's blood, enabling an exhaustive and comprehensive assessment of the cancer evolution with a **non-invasive approach**
- Create a **secure database of patient samples processed by A.I.** potentially to be stored on a cloud infrastructure to support the discovery of **meaningful and actionable correlations** among images, genomic data and clinical data

 **Image-based circulating tumor cells sorting technology** is currently used in research environments by several hospitals and clinical centers in Italy, to **advance research** in cancer-related studies and experiments



7 Assisted Sales Force

Description



Digital applications can be designed to **improve the efficiency of sales force** and back-office operations

Sales Agents can access pricelists, products documentations, discounts, offerings directly from the digital app; during the sales cycle, they can **build the contract** based on customers needs, show them the final offer and let them **digitally sign** the contract

Back-office operations can follow the sales process from **within the company's CRM**, assist the sale and retrieve signed contract to start the production.

Solutions can be both **mobile applications** available for tablets and smartphones (Android, iOS or via Web Browser) and a **webapps** for desktops or laptops (Web Browser)



Details & Impact

Digitalized Sales Process

- Simple and intuitive UX let you build an offerings for your customers with few clicks

CRM Integration

- The solution works as an interface for the contents available and builds on your company CRM - No need to align or move data from another platform back to your CRM

Real Time Updates

- Works in cloud, the app is always showing the latest content provided via CRM and/or online data repositories

Digital Signature

- Leverage graphometry of devices allowing your staff and customers to sign contracts - It can also provide other digital signature features integrating the customer's digital signature provider

Use Case in Action



*An **Italian Telco provider** offers a solution for an Italian Web company that needs to provide their agents with a simple way to **select and propose products** to customers*



*An **Italian Telco provider** provided a solution for an **Electronic Store franchise** that wants to dematerialize documentation collected from the in-stores sales corners*

Automation & Optimization of Mobile Radio Network

A.I., Big Data & Adv. Analytics

TMT



People



Planet



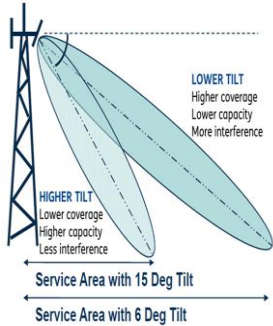
Prosperity



B20 Italy Recommendation

G20 3P Impacted

Description



Through **Self Organizing Networks Paradigm**, it is possible to guarantee the best possible quality of deployed mobile network resources

In this context, one of the most effective approaches involves acting on the electrical tilts so that the **underlying territory is fully covered by the radio signal**, each customer has the availability of band needed and the maximum number of customers each antenna can serve is not exceeded

The **optimal value** of the tilt of each antenna is defined by the experts taking into account several factors: however, from a purely mathematical point of view, finding the best configuration represent a huge challenge as there are billions of alternative solutions

AI Reinforcement Learning algorithm can find the **optimal configuration** of the tilt to be implemented in a few hundred iterations

Details & Impact



Increased Sustainability and Improved Service Delivery

The problem of minimizing the number of antennas, postponing the activation of new cells or nodes as much as possible, limiting energy consumption and electromagnetic emissions, while increasing the quality of service for customers, is solved through an A.I. Reinforcement Learning algorithm aimed at optimizing the mobile radio network

Use Case in Action



An **Italian electronic telecommunications group** has developed proprietary solution using an **A.I. Reinforcement Learning algorithm** to optimize the mobile radio network

9 Checkout-Free Stores

A.I., Big Data & Adv. Analytics

Consumer Goods



G20 3P Impacted

B20 Italy Recommendation

Description



Checkout-free technology leverages **computer vision, smart sensors** and **deep learning** to trace which products are taken by customers and associate them to their virtual bag

Whenever a consumer takes a product off the shelf, it is **added to his/her virtual cart**; if he/she later puts it back, the good is automatically removed from the list (as visual A.I. allows the automatic recognition of goods)

Consequently, when they are done with shopping, customers can just leave the store. **The total spend is charged on their credit cards**, while the **receipt is usually available on mobile apps**



Details & Impact

Checkout-free stores provide several advantages for customers, businesses and Governments:

For customers:

- **No time wasted** waiting in line
- **Enhanced experience** with smoother customer journey

For businesses (e.g., physical stores):

- **Reduced cost** thanks to the automation of cash-out activities
- **Greater data availability** for advanced analytics, product selection and marketing purposes

For Governments (mainly indirect benefits):

- **Wider adoption of digital payments**, encouraging traceability of (digital) payments and discouraging illicit tax-related practices
- **Full digitization** of state aid mechanisms (e.g., vouchers and coupons), directly applicable on credit cards

Use Case in Action



American first online retailer uses deep learning algorithms, cameras and sensors in groceries shops to track what customers buy. **Customers scan a QR code and can simply leave the store**; the payment is **automatically charged on their credit cards**



Chinese convenience store concept features **image recognition systems, smart sensors** and **dynamic shelves**. Customers access the store using a mobile app, scan the products and can just walk away



Israel-based innovative startup is developing a solution that leverages **A.I. software** powered by **machine learning** and **ceiling-mounted RGB cameras** to dynamically track both customers and items in stores



G20 3P Impacted



Description

Urban digital twins are **virtual representations of cities' physical assets**, leveraging on data, advanced analytics and machine learning techniques to help stimulate models that can be updated and changed in real-time as their physical equivalents evolve



Use Case in Action



An Irish city is working with a technology service provider to develop a large-scale digital twin to reimagine how digital can support citizens to visualize and engage on new development projects in their local communities



An Italian electronic telecommunications group has developed an urban Intelligence Platform for Smart Cities Governance

Details & Impact

A city digital twin delivers:

- **Virtual replica of the city** including its processes connecting the different stakeholders of the city
- **Link between the underground network and the city's-built surface**, allowing for complex analyses on a simulation environment
- **What-if and scenario analyses of the potential impact of new city-related projects**, also in terms of sustainable development goals, using **georeferenced real time data** (IoT) and monitoring trajectories according to specific thresholds and parameters
- **Insights into the impact of disruptions such as the pandemic in the retail industry** to understand the direct consequences on the different commercial activities to monitor and support them accordingly

11 Computer Vision and Digital Monitoring

AI, Big Data & Adv
analytics

Robotics & Automation
Adv Computing

Energy & Utilities, Industrial Goods



G20 3P Impacted

B20 Italy
Recommendation

Description

The technology consists of **A.I. algorithms and data platforms** able to **collect and analyze aerial images** (e.g., from drones, helicopters and satellites) to produce automatic monitoring, **enabling businesses to:**

- Track site construction progress
- Identify potential issues on assets and people
- Control on-the-ground activities incl. optimize maintenance

A.I. solutions can also analyze video streams (online and real-time) to identify risk conditions related to safety of field operators during work activities leveraging different sources

Typical data sources

- Field-workers **body-cams**
- Vehicles **dash-cams**
- Construction **fixed-cams**



Use Case in Action



Computer vision algorithm for **object detection** and counting applied to **solar construction progress monitoring**



Computer vision algorithm for **anomaly detection and classification of issues** on multiple assets



Computer vision algorithm for **detection of unsafe behaviors and events in construction sites** and power plants using fixed cameras (smart & standard)

Details & Impact

Main benefits include:

- **Time savings** because of human direct analysis supported (or even replaced when applicable) by **automatic imaging processing**
- **Reduced operational risks of on-the-ground activities** due to limited (up to none) human intervention
- **Early prevention** of issues with **digital continuous monitoring**
- Improved **emergency response** and reduced accidents
- **Standardized reporting and monitoring**, leading to overall **cost reduction** and easier accessibility

12 Corporate Account Onboarding

A.I., Big Data & Adv. Analytics

Connectivity



G20 3P Impacted

B20 Italy Recommendation

Description

For many banks, the manual handling of **onboarding documents** ranging from passports to legal documents implies **large systemic costs** and **poor customer experience**

To solve this, applying **natural language processing and hybrid A.I.** technologies to **automatically read, understand and process** human language within complex documents would save processing time while increasing efficiency

The solution can be applied to both front-end customer interfaces or to back-end internal operations, for instance to **speed up account onboarding cycles, increase returns and delight customers**

Example Corporation Income Statement For the year ended December 31, 2018	
Sales (all on credit)	\$500,000
Cost of goods sold	380,000
Gross profit	120,000
Operating expenses	
Selling expenses	35,000
Administrative expenses	45,000
Total operating expenses	80,000
Operating income	40,000
Interest expense	12,000
Income before taxes	28,000
Income tax expense	5,000
Net income after taxes	\$ 23,000
Earnings per share (Based on 100,000 shares outstanding)	\$ 0.23



Details & Impact

An **intelligent document extraction engine** can substantially expedite document-heavy account onboarding by:

- **Classifying and sorting** documents from multiple sources through the automatic detection of texts and images
- **Automatically converting and cleaning** noisy or skewed documents that typically come in various formats
- **Accurately reading and extracting** relevant information from unstructured sources
- **Exporting** processed data to third-party or downstream systems seamlessly

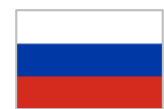
The solution can read **all kinds of documents regardless of complexity**, including invoices, powers of attorney, articles of association, financial statements and much more

Implementers can expect to see **80% extraction accuracy**, which leads to **faster onboarding cycles by up to 90%** and **cost savings of 50-70%**

Use Case in Action



A **Spain-based global bank** reduced the onboarding cycle from **3 days to 15 minutes**, and with **90% accuracy** in data extraction. They **reduced costs by 80%**, translating to a saving of millions of euros



Russian SME bank saw a **4x reduction in passport processing time**, with greater than **92% accuracy**. For invoices, it achieved a ca. **50% success rate** in conversion to payment (a performance **1.5 times superior to global competitors**)

13 Digital Eye-Tracking for Disability

Description

Eye-tracking technology, paired with smart devices, **helps people with severely limited mobility** control computers through the eye-movement, in the same way able-bodied users navigate with a mouse



High-quality camera sensors and **artificial intelligence algorithms** track and analyze eye movements, enabling users to perform several tasks including **surfing the web, sending emails, making phone calls** and **playing computer games**: using eye-motion only, users can navigate a cursor and perform additional functions like select, scroll and zoom



Details & Impact

Eye-tracking implementation can make substantial impact on the quality of life of people with disabilities through advanced technologies such as artificial intelligence and smart sensors; e.g., by:

- **Empowering them in their own personal activities**, thus giving back some independence
- **Stimulating interaction with the environment**, thus helping them in maintaining high levels of neural activity
- **Allowing them to express with accuracy** their own needs and feelings, thus overcoming the barrier of physical limitations
- **Providing a source of recreation and entertainment**, thus preventing pathologies such as depression or self-isolation

Use Case in Action



US-based company introduced the **world's most advanced eye-driven tablet communication system**, using a smart eye-tracking camera to determine where the user is looking on the screen



Sweden-based tech company makes specially designed **computers** that can be **controlled with eye movement or touch**. It currently develops leading eye-tracking technology for laptops, games, virtual reality, and cars



Danish devices manufacturer enables users to navigate through smartphones, tablets and computers with only the look of an eye. **Hands-free navigation** also features user logins, **gaming experiences** and **cloud-based interactions**

14 Digital Bot Assistance

A.I., Big Data & Adv. Analytics

Connectivity

Consumer Goods



3

G20 3P Impacted

B20 Italy Recommendation

Description



Digital bots are **technologies that enable communication by recognizing speech and text**, understanding intent, interpreting different languages, and **answering in ways that mimic human responses**

They are often used in low value-added **company-consumer interactions** allowing **smarter allocation** of personnel to ensure lower costs, while offering better service quality to customers (e.g., reduced waiting times)

Details & Impact

Conversational A.I. technologies are associated with three types of use cases: **personal, customer or enterprise assistants**, and their implementation results in in **multiple benefits**:

- **24/7 support availability:** A.I. enables on-demand self-service at any hour
- **Higher customer engagement:** A.I. can represent a customer channel to be leveraged to tailor and increase engagement
- **Lower operating costs:** adaptive and machine-learning technologies reduce the need for manual upgrades or interventions
- **Easier scalability:** as offering evolves and scales, digital bots can easily handle larger number of tasks and increased volumes

Use Case in Action



US technology company** launched a **voice-controlled digital assistance** developed to interact with **smart speakers and home devices



*A **Cloud operator** part of an Italian telecommunication group has developed an **intelligent virtual assistant** for a **banking group** that provides information about procedures and products and support customer service; the same provider created a tool for public administration to automate the reservation of clinical exams*



***Dutch banking corporation** leverages a digital bot **assistant** on both its **desktop and mobile app** to **redirect customer** towards most appropriate technical support office*

15 Driver State Monitoring System

A.I., Big Data & Adv. Analytics

IoT

Consumer Goods, Logistics & Mobility



G20 3P Impacted



B20 Italy Recommendation

Description

A.I. based in-vehicle vision system for automobiles enables the prevention of casualties on the road arising from driver drowsiness and inattention. It also provides the required visibility into vehicle operations and performance by generating **machine learning-based actionable insights** that help avoid risky behaviors



Details & Impact

Solution

- **Camera-based system**
- **Analytics dashboard**

Features

- **Robust software** - it works with headgear/eyewear/face mask
- **Interface** - for vehicle parameters and other on-board sensors
- **Voice alert for violations**
- **Value added features** – harsh acceleration/over-speeding alert

Impact

- **Reduced harsh braking and acceleration** by 20%
- **Decreased over speeding** by 30-50%
- **Lowered fuel consumption** by 2-3%

Use Case in Action



German multinational automotive company supplies **state monitoring system on cars** to alert the drivers when signs of drowsiness or distraction are detected

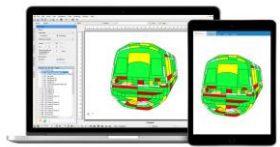


American logistics solutions provider offers **end-to-end cloud connected solutions** enabling driver state monitoring system

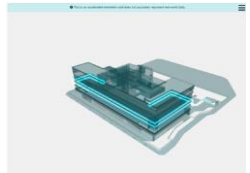
Description



Floating Production Storage and Offloading (FPSO) are physical platforms able to drill out and store large amounts of oil. These platforms are essential for the oil industry as they perform all the whole upstream cycle



They are located in **hostile environments**, subjected to winds, rain, tectonics, high salinity and other adverse conditions, so exposed to a high rate of corrosion and damage



To increase the facility efficiency and reduce the need for costly corrective maintenance, a **digital technology capable of visually and mathematically model end-to-end the FPSO operations can be implemented** to enable safe simulations and advanced analyses

Details & Impact

Among the key benefits:

Visibility: precise and detailed identification of the assets requiring maintenance, through an interface that shows the status of each piece of equipment over time

Remote sensing: sensors capturing the platform status in real-time, including corrosion and other relevant data

Wear prediction: using historical data from the sensors, an artificial intelligence algorithm can generate the prediction of corrosion of pipes and surfaces

Decision-making support: advanced recommendations are displayed for better and safer maintenance and on-the-ground activity planning

Use Case in Action



*Global group of energy and petrochemical companies introduced **digital twin technology** to monitor its **Brasilian FPSOs**. The company, for each FPSO, is able to track the status of the entire structure with an intuitive visualization, demonstrating the state of each section of the platform. Alerts are used to feed a corrosion prediction system that indicates when a specific area needs maintenance*

17 Hiring With Artificial Intelligence

A.I., Big Data & Adv. Analytics

All



4

G20 3P Impacted

B20 Italy Recommendation

Description



A.I. enables companies to achieve **greater levels of ethical, objective, and effective hiring**. According to the intrinsic nature and requirements of each job, A.I. offers **predictive insights into candidates' fit and performance**



Organizations will also be able to **guide talents on their candidate journeys** through automation and sophisticated tracking, improving interactions with them and enabling a desired employer brand



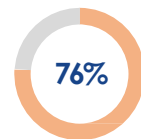
A.I. solutions for hiring also foster more **inter/intra-departmental cross-collaboration** and effective **talent management** decisions

Details & Impact

Finding the right talents who have the right fit, skills, and motivations is crucial to the success of any firm

A.I. solutions play a pivotal role in enabling **efficient hiring processes** and **conceiving in-depth candidate insights** through data analytics, also enabling recruiters to make more informed, objective, and impactful talent decisions

Moreover, this type of solutions can be further digitalized by enabling organizations to **screen candidates through video assessments and video analytics**. This enables more personable interactions and helps recruiters better evaluate candidates through behavioral insights



Of hiring time saved to pre-screen all talents effectively



Cost saved in the sourcing, evaluation, management, and matching of talents

Use Case in Action



Singaporean corporate training firm needed in-depth candidate insights to match applicants to the right courses and **a robust talent management system**; predictive analysis for each candidate's potential was made and the entire **end-to-end hiring process** was digitally transformed



Australian firm required to virtually **pre-screen candidates' skills and experiences**; so, it implemented A.I. to greatly improve time efficiency. The solution also gave **behavioral insights**, allowing recruiters to make more informed hiring decisions

18 Industrial Digital Twin

A.I., Big Data & Adv. Analytics

IoT

Industrial Goods, Energy & Utilities



G20 3P Impacted



B20 Italy Recommendation

Description

A digital twin is a **virtual representation** that serves as the real-time digital counterpart of a physical equipment, process, system or production plant. Through **smart sensors/IoT** and **artificial intelligence** algorithms, operational data and process parameters are collected and sent to an advanced analytics model for calculations and elaborations



The digital twin can be used to **run complex simulations**, **test different performance profiles** and **evaluate potential improvements**, with the goal of generating critical insights to apply back to the real system

Details & Impact

Digital twins enable multiple opportunities for businesses:

- **Improved Overall Equipment Effectiveness (OEE)** through increased availability and throughput, as optimized with virtual simulations and tests
- **Reduced operational risks** in setting equipment parameters and adjusting plant variables, thanks to "what-if" scenarios conducted virtually with accurate analyses on effects/implications
- **Lower conversion costs** as a result of higher efficiency within processes, systems and plants
- **Enhanced insights** into product performance, process balance, system functioning, advancing R&D efforts and findings

Use Case in Action



*US leading multinational conglomerate offers digital twin services ranging from asset and **operations management** to **maintenance prediction** and **performance optimization***



*German-based analytics company offers **digital twin simulation software** that uses machine learning, IoT and advanced analytics to help customers **optimize business processes***



*Swiss engineering company provides a simulation software able to build **detailed virtual models of large-scale operations** systems and run those simulations using only a portable computer*

19 Partially Autonomous Vehicles

Description



Partially Autonomous Vehicles (PAV) are vehicles **requiring low human's interaction to operate**. Thanks to Artificial Intelligence, the vehicle is capable to drive and steer autonomously requiring only human supervision

PAV enables **passengers during cruises to perform tasks** as the vehicles autonomously navigate roads, safely and seamlessly

Details & Impact

The **taxonomy** for automated and autonomous driving comprises six levels (L0-L5), currently the industry reached: **L2 – partial autonomy**

A wider adoption of partially autonomous vehicles would generate **great impact** on people lives and societies at large, including:

- **Fewer incidents**, as a consequence of sophisticated algorithms calculating and avoiding potential obstacles
- **Reduced traffic**, facilitated by the ability of cars to locate other vehicles and choose quicker alternative routes automatically
- **Limited idle times** while travelling and commuting thanks to autonomous vehicles handling the route end-to-end
- **More sustainable cities**, through increased network efficiency and improved automotive performance within the transportation system

Use Case in Action



US leader in the autonomous vehicles sector features fully electric cars that work by converting energy from lithium-ion cells. The company reported **near to present its first fully automated vehicle**, requiring no human interaction at all



Japanese automotive manufacturer leader developed an **innovative technology** with 3D mapping navigation and advanced sensors and cameras, which **features hands-free driving mode**



Australian based self-driving startup is developing the **world's first ground-up, fully autonomous vehicle fleet** and the supporting ecosystem required to bring this technology to market

Description



Data is gathered from machines and **sensors** with the goal of **determining when maintenance should be performed**



Operations and maintenance staff have direct access to data through any internet-enabled device



Artificial Intelligence anticipate the need for maintenance interventions **based on the actual condition of the equipment**, rather than average or expected life statistics

Details & Impact

Like in most advanced analytics systems, it is important to have enough **reliable historical data** to train algorithms. Firms without strong data cultures, might incur in longer adoption time

Partnering with software vendors can be a key success factor to implement predictive maintenance, and to drive a consistent machine monitoring program across the company

Algorithms with underlying expert knowledge provides for successful machine learning

Easy handling and decisive information suitable for different users

Benefits can include **50-70% reduced downtime** by preventing incidents through timely and more efficient intervention and **>20% maintenance cost reduction**

Use Case in Action



*Germany based, global automotive and industrial supplier, offers an innovative automatic condition monitoring system for a wide range of machines and systems to **reduce downtimes** and **increase the profitability** significantly*



*French gas producer and distributor monitored its 112 plants and achieved a reduction of **unplanned maintenance** by 95% over three years*



*Japanese tire producer offers a tire monitoring program enabled by **smart sensors** for customers to take better care of their vehicles*

21 Predictive Maintenance on Energy Plant

A.I., Big Data & Adv. Analytics

IoT

Energy & Utilities



G20 3P Impacted

B20 Italy Recommendation

Description

Leveraging **data** and **A.I. platforms** to connect operating industrial assets, providing predictive and real-time visibility into operational performance, including asset health, risks, and recommending actions is key to **optimize production and reduce maintenance**



Data from sensors and multiple other sources are integrated in a **"single source of truth"**

A **control room**, as a hub for data and digital solutions, provides access to all the relevant information regarding processes

Technicians can perform actions such as access specific information, monitor real-time performance, receive alerts and recommended actions **based on predictions**

Details & Impact

Since machine learning models learn and work by leveraging historical information, a **significant amount of data** describing plant and equipment **should be available**

Design, implementation and deployment activities should be performed by **integrated cross-functional teams** (e.g., from IT, technical staff at the site and business departments)

To deliver **time and cost-effective solutions**, **"tailoring" paradigms** can be used, in which state-of-the-art tools from the market provide a common layer of standardization; they are connected, customized and fit to the specific location

Plant digitalization should be supported by wide change management programs to provide the necessary **support for the staff involved** in the digital transformation process, helping improve their **skills** and ensure new **digital technologies** are **adopted effectively**

Use Case in Action



Italian oil and gas Company has fully digitalized the maintenance planning and execution of an onshore plant in Italy and an offshore plant in Angola

22 Real-Time Route Optimization

A.I., Big Data & Adv. Analytics

Logistics & Mobility



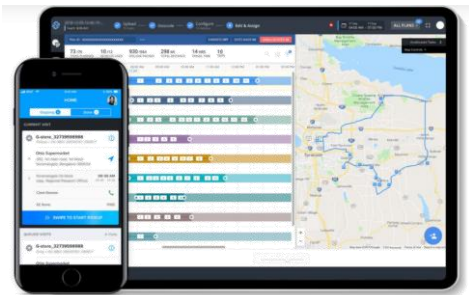
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G20 3P Impacted

B20 Italy Recommendation

Description

Route Optimization is the process of **finding the most cost-effective route**, given a set of specific parameters and boundaries



Logistics route optimization software employs **AI-based technology** to simultaneously **test various scenarios** and consider **business constraints** such as vehicles and drivers' availability, traffic congestion, and road conditions to provide the **best possible route for the fleet**

Details & Impact

Real-Time route optimization leads to **benefits along three areas:**

- **Demand management:** advanced algorithm helps companies provide more accurate route forecasts and allow for timely deliveries to better serve customers' demand
- **Idle time management:** additional planning efficacy can compress deliveries in a limited number of journeys for the same district, thus freeing time slots for additional deliveries
- **Cost management:** effective route planning reduces on-the-road-time, and enhance trucks load factors increasing corporate efficiency and revenues

Use Case in Action



*US online route and schedule planner offers platforms for **deliveries and field service scheduling**. It enables companies maximize efficiency for their entire fleet, also matching vehicles and riders*



*Canadian smart logistic startup aims at **optimizing transportation** with the most innovative routing software, enabling **timely deliveries**, reduced distance traveled, and lower carbon footprint*

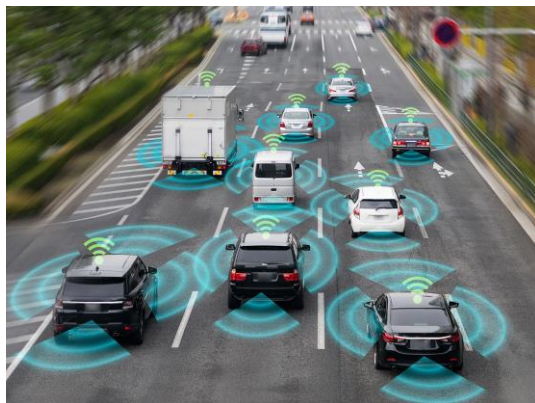
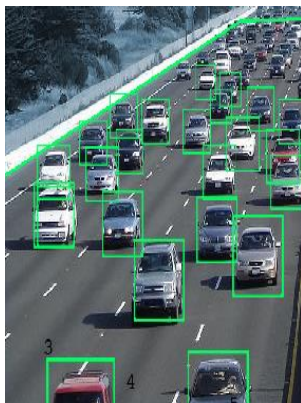


*Brazilian SaaS transportation management startup develops a solution that generates **optimized delivery plans**, improves customer service and reduces transportation costs by up to 30% on average*



Description

Collecting and analyzing **road surface conditions using Internet-of-Things (IoT) sensors**, together with the development of a machine learning model, help local authorities with repair/maintenance of assets, and allocation of resources



Details & Impact

Enabling technology:

- **Small sensor units** installed on vehicles, converting cars into low-cost real-time smart devices for the inspection of roads (data is collected through the ordinary circulation of vehicles)
- **Smartphone's accelerometers and GPS sensors**

Main advantages:

- **Remote operations and maintenance** reducing current road inspection services
- **Safety and compliance** relying on up-to-date and objective information on the surface state of all roads, rather than on visual inspection or complaints from citizens
- **Data sharing** making available data collected to third-parties in a standard format and through a centralized repository

Use Case in Action



Italian automotive company developed smartphone's accelerometers and GPS sensors to detect and classify irregularities of the road surface while you are driving



Belgium municipality monitors the surface state of roads, on the basis of tire-road noise and vibration data collected by ordinary vehicles, resulting in maps of road surface state.

Description

Robo-advisors are **digital software** that provide automated, **algorithm-driven financial planning services** with no need for human supervision

Typical Robo-Advisors **collect data** from clients about their financial situation, future expectations and risk propension and use available historical data to offer **financial advice** and **invest** clients' assets



Details & Impact

Benefits of using Robo-Advisors for financial planning include:

- **Cost savings for customers:** usually annual fees are significantly lower compared with the typical rate charged by traditional financial planners
- **Cost savings for financial firms:** online platforms can offer high quality services without requiring managers handling smaller accounts
- **Enhanced availability:** 24/7 access to the funds and real time monitoring of results as long as the user has internet connection
- **Affordability:** minimum capital required to open an account is typically lower than on traditional offerings
- **Time advantage:** operations get executed instantly, with no need to physically communicate with the financial advisor

Use Case in Action



US-based personal finance company's** robo advisor is a free product which has no minimum balance required. Launched in 2019, it includes features like **goal planning** and **automatic rebalancing



***Swiss investment broker and robot advisor** offers banking, investment, and lending services, with additional features based on capital invested (e.g., **tax-loss harvesting**, **risk management** and **portfolio construction**)*



***British robo-advisor company** provides low-cost **portfolio construction services**, allowing users to **choose among** General Investment Account, ISA, Junior ISA, Pension, or even Socially Responsible Investing*

25 Smart Region for Tourism Management

A.I., Big Data & Adv. Analytics

IoT

Public Administration



G20 3P Impacted

B20 Italy
Recommendation

3

Description

A **Smart Region** can track and provide near-real time **intelligence** to local Public Administrations to understand the **behavior of thousands** of visitors, optimize the regional value proposition to **increase the positive GDP impact of tourism** and address the related **logistical challenges**. This solution leverages a complete set of **IoT, smart sensors, data stream processing and Big Data technologies**



Use Case in Action



In a **Basque regional Public Administration**, for both the local administration and the private sector (e.g., companies and businesses) addressing consumer, financial and logistic challenges, an A.I. powered platforms provides a key tool to **understand and influence the behavior of visitors**, with full respect of data privacy regulations

Details & Impact

These systems typically have **three layers**:

- **Data acquisition**: card transactions and operations with POS terminals (data is collected from telecom operators and IoT devices)
- **Data processing**: anonymization and feature extraction
- **Exploitation**: descriptive, predictive and decision support tools

A real implementation registered the following results:

No. of transactions: **8,5 million** per year

Total expense monitored: **€ 408 million** per year

No. of entities / shops: **10.000** per month

Number of users / cards: **370.000** per month

26 Traceability in the Gold Mining Chain

A.I., Big Data

Connectivity



3

G20 3P Impacted

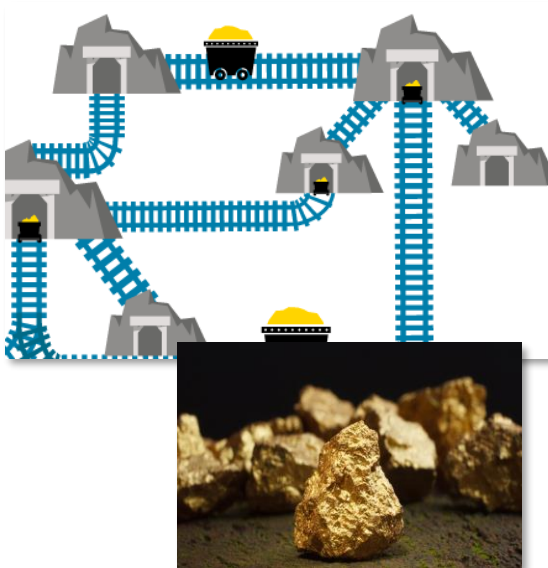
B20 Italy Recommendation

Industrial Goods

Description

Technological platform can allow the **automation of traceability, management and information control** in the gold mining chain

The digital platform considers the existing operational models, regulatory frameworks and technological developments



Details & Impact

Being able to **understand the traceability of gold throughout the mining chain**, from extraction up to marketing and export, and at the same time **having a greater knowledge of the returns** from the sale of gold is **extremely important for public authorities**

The scope of this technology is to **guarantee the traceability of the extraction, management and commercialization of gold**, from the single miner until the gold reaches the hands of an exporting trader

Technology allows **greater end-to-end control**; thus, authorities can have greater visibility along all the value chain steps, and the opportunity to **make informed decisions based on reliable data**










Use Case in Action



Columbian national mining agency and ministry of mines and energy developed a digital traceability solution of related processes



Use Cases Referring to: Augmented & Virtual Reality

	Use Case	Secondary Digital Driver(s)	Relevant Industries	B20 Italy Rec ¹	G20's 3P ²
27	Augmented Maintenance	IoT	Industrial Goods, Energy & Utilities, TMT	③	
28	Augmented Medical Assistance	A.I.	Healthcare & Life Sciences	③	 
29	Augmented Tele-maintenance with Intelligent Virtual Assistant	A.I.	Industrial Goods	③	
30	Experiential Virtual Tour	A.I.	Public Administration	③	 
31	Predictive Monitoring Applied to Flooding	A.I.	Public Administration	④	  
32	Virtual Reality Training	A.I.	Consumer Goods, Industrial Goods, Public Administration	④	 

1. Reference to relevant B20 Italy Digital Transformation Task Force's Policy Recommendation 2. G20'Italy's 3P (People, Planet, Prosperity) positively impacted by the Use Case

27 Augmented Maintenance

Augmented & Virtual Reality

IoT

Industrial Goods, Energy & Utilities,
TMT



G20 3P Impacted

B20 Italy
Recommendation

3

Description

Augmented reality allows the overlaying of **virtual graphics onto natural surroundings** with the help of smart devices (e.g., tablets, glasses, lenses) to improve human performances



The use of augmented reality for maintenance in plants and production systems can **support industries' workers** during planned and unplanned interventions, also avoiding to have maintenance expertise on-site and reducing vendors/assistance travel times

Details & Impact

AR-powered solutions for maintenance **allow users to enhance their field of view with real-time superimposed digital information**; main use cases are for:

- **Operators to remotely receive instructions** and/or service inspection information to maximize efficiency and lower in-site expertise
- **Operators to be virtually equipped** with remote assistance support maintenance process, reducing in-house maintenance-related travel cost by 40-50% and vendors related cost by 20-25%
- **Operators to get access to real-time data** before interventions, decreasing equipment downtime by 5% due to more efficient troubleshooting

Augmented maintenance can enhance **situational awareness**, accelerate **troubleshooting**, and reduce repair times, leading to cost savings for companies

Use Case in Action



*Swedish multinational networking and telecommunication company integrated **augmented maintenance** in its US-based 5G Smart Factory achieving 10% Maintenance Labor reduction*



*American first aircraft manufacturer uses **AR instructions** for airplane wiring schematics in their field of view, allowing them to be hands-free and generating **up to 40% increased productivity***



*Australian aircraft manufacturer developed **augmented reality technology** designed to allow an on-site aviation technician to **collaborate with product expert remotely***



Description



Augmented Reality in healthcare comprises solutions which **simulate and assist professionals for medical purposes** including simulative surgery training, pain management and rehabilitation

Key drivers of the growing AR adoption in healthcare sector are:

- Increasing demand for **high quality and tailored medical services**
- Need to **reduce healthcare costs**
- Increased **adoption of connected devices** in the healthcare sector

Details & Impact

AR applications in the Healthcare sector vary across multiple uses:

- **Medical education:** theoretical learning is made more effective for starting-out healthcare professionals with the deployment of intelligent digital devices (e.g., virtual simulations, data visualization)
- **Digital assistance:** advanced support during triage is given to doctors, for instance by overlapping diagnostic images of a particular lesion directly onto the patient
- **Enhanced surgery:** digital visors can guide surgeons during interventions and provide real-time relevant information on the patient's health parameters

Use Case in Action



UK software company created an AR/VR interactive mobile **surgical simulator** that guides students through **virtually recreated medical interventions**



Swiss unicorn offers **VR solutions** to accelerate **human's ability to recover**, learn and adapt through advanced neuroscience and digital therapeutics



Canadian healthcare simulation company, through immersive virtual reality, offers a **complete simulation lab** that allows to recreate and **experience realistic clinical situations**



US medical software company provides virtual training platforms for doctors to rehearse **ultra-complex neurological procedures**

Augmented Tele-maintenance with Intelligent Virtual Assistant

Augmented & Virtual Reality

A.I.

Industrial Goods



G20 3P Impacted

B20 Italy Recommendation

Description



Authoring: domain experts organize legacy knowledge and create multimedia maintenance procedures (video, text, 3D)



On-site support: operators are equipped/guided by intelligent assistants or remote human experts via videos, text and AR



Integration: each component interacts with each other seamlessly and in orchestration



Intelligent assistance: assistants give support through natural interfaces with information in multimodal formats



Remote expertise: experts provide help with videocalls and free-hand symbols in AR

Use Case in Action



Italian start-up realized a solution for Industry 4.0 based on **image recognition and AR** that detects the equipment and supply contextual information for on-field operators



American company developed a software for remote human support in maintenance where remote experts and on-site operators can enhance their interaction **through Intelligent Virtual Assistant**

Details & Impact

Assisting on-site operators equipped with smart tools can:

- **Boost maintenance**, procedure execution and problem solving related to unexpected technical problems
- **Reduce the number of interventions** and support beginners with limited experience in dealing with maintenance
- **Decrease costs** by maximizing availability of equipment

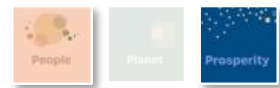
Authoring tools are needed to properly create new multi-media content and to process, organize and index company knowledge

The use of **AR** enables the exploitation of contextual information keeping the focus on the equipment under maintenance

Interaction with intelligent virtual assistants allows natural and effective way to query company knowledge, providing effective remote support

30 Experiential Virtual Tour

Augmented & Virtual Reality A.I.
Public Administration



G20 3P Impacted

3

B20 Italy Recommendation

Description

Combining **conversational chatbot** and **humanistic virtual assistant** with **digital twin**, it is possible to create **experiential digital tours** that allow visitors to be involved in a more engaging and fulfilling tour through **multi-functional features**



Details & Impact

Experiential virtual tours enable visitors to access heritage sites on demand, helping them **save time** and **increasing the reach to educate citizens** about history and culture

Combining the digital twin with a humanistic chatbot enhances visitor experience as the tour can be **personalized** and can also **facilitate any transactions** if needed. Over time, visitor journeys taken on the virtual tour can be analyzed to **improve the visitor experience**

This solution also **lowers operating costs** as it reduces the need of real-life tour guides, as well as of a physical infrastructure (e.g., museum)

Experiential virtual tour are deployed also in the real estate industry. **95% of people are more likely to call/ show interest in** properties with 3D virtual tours available. An average property listing with a 3D tour may close at a **4-9% higher sale price**, up to **31% faster**

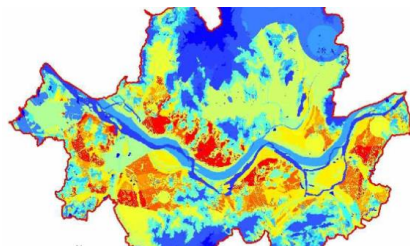
Use Case in Action



*A Singapore government agency, the custodian of national heritage, implemented **experiential virtual tours within six museums**, giving visitors one-to-one guided art experiences in the comfort of their homes*



Description



The service offers innovative visualization environments, through Augmented Reality or Virtual Reality. The visualization of flood scenarios on a virtual 3D model to better protect and prevent floods in vulnerable areas

The solution can be used to determine the response of the watercourse in the event of a flood and simulate the flooding by producing a map of the areas affected by water in terms of water tension and flood intensity

The area is monitored through airborne laser scanners and, where necessary, terrestrial scanners with an indicative density of 50-80 points / m² (with the possibility to reach 150-200 points / sq m) for floodplain areas

Details & Impact

- In order to collect the necessary data for the simulation existing hydrological data are analyzed: flood hydrograms, levels of flow, section of the watercourse corresponding to the structure
- Hydraulic simulation is performed using advanced software that implement a hydraulic model
- The flood maps of the impacted areas on a virtual 3D model represent an indispensable tool for risk mitigation operations and impact evaluation of possible damages
- Simultaneous event of multiple users interact with each other can also be modelled and analyzed

Use Case in Action



*An Italian electronic communications group has developed a service that offer Public Administrations (Municipalities, Provinces, Regions) or owners of structures or infrastructures that intersect waterways to **simulate flooding events and their impact***

32 Virtual Reality Training

Augmented & Virtual Reality

A.I.

Consumer G., Industrial G., Public Admin.



4

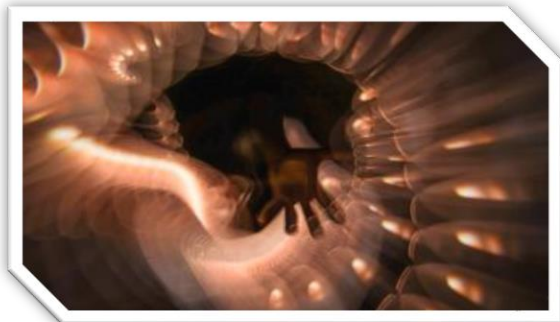
G20 3P Impacted

B20 Italy Recommendation

Description

Virtual Reality (VR) is the use of computer technology to create a simulated environment...

Using special electronic equipment such as smart helmets or gloves fitted with sensors, real-life interactions are recreated virtually and projected into a **fully immersive cyber experience**



Details & Impact

Virtual reality trainings are already implemented across several industries:

- **Fitness:** VR solutions can enable distance training for gyms, fitness centers and personal trainers
- **Schools and University:** VR software enhances learning experiences of students, graduates through virtual settings
- **Corporate:** on-the-job trainings can also be delivered by using virtual immersive environments
- **Military:** innovative trainings provide army with virtual experience of dangerous or life threatening environments in risk-free conditions

Use Case in Action



American gym company creates **virtual reality environment** for fitness training, using only a limited set of machineries



UK-based services provider is a versatile platform using the power of Virtual and Augmented Reality to **recreate museum visiting experiences**








US-based tech company recreates office situations for career development training by **simulating stressful on-the-job situations**



Hong-Kong-based company developed a training system to give professionals the opportunity to **experience life-like scenarios** of complex operations

 Use Cases Referring to: Cloud, Quantum and Advanced Computing

	Use Case	Secondary Digital Driver(s)	Relevant Industries	B20 Italy Rec ¹	G20's 3P ²
33	Cloud Migration	Connectivity	Energy & Utilities, Industrial Goods, TMT	③	
34	Quantum Computing for Batteries	-	Energy & Utilities, Industrial Goods, Logistics & Mobility	③	 
35	R&D of New Crop Protection Products Accelerated through Digitalization	Robotics & Automation	Consumer Goods	③	 

1. Reference to relevant B20 Italy Digital Transformation Task Force's Policy Recommendation 2. G20'Italy's 3P (People, Planet, Prosperity) positively impacted by the Use Case



Description

Cloud migration is the process of moving data, applications or other business elements to a cloud computing environment. One common model is the **transfer of data (or software) from a local, on-premises data center to the public cloud**



Moving workloads to the cloud requires a well-thought-out strategy that includes a **complex combination of management and technology challenges as well as staff and resource realignment**

Details & Impact

Main benefits of the cloud migration:

- **Security:** infrastructure designed to ensure the maximum security, by using the latest technologies and protocols
- **Backup and disaster recovery:** combination of backup and disaster recovery solutions that work cohesively to ensure business continuity
- **Cost saving:** resources, networking and security solutions without infrastructure cost or high investments. No need to purchase hardware such as storage, switch, hypervisor (virtual machine monitor), backup software programs and more
- **Productivity and high scalability:** high efficiency and scalability are enabled by the rapid and flexible increase/decrease of computing resources

Use Case in Action



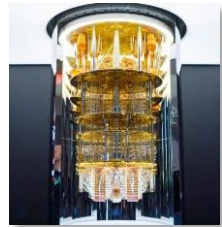
*Italian company in the energy sector uses a cloud application to for its **performance management systems**: indicators are shared, and their values tracked on the cloud*



*Italian telecommunication service provider migrated from a legacy solution based on physical hardware to a cloud environment. Apart from all the other benefits provided by **cloud migration**, the solution allowed the implementation of a **highly secure system** able to provide strong protection of sensitive information, transactions and systems*

Description

Batteries are essential for sustainable energy storage and distribution for multiple facilities such as production plants and electric vehicles



Analyzing the behavior of batteries on a quantum-mechanical level

is critical to understand and advance their performance

Quantum computing can solve historical challenges of batteries (such as duration and life-cycle) by utilizing exponentially faster computing calculations

Details & Impact

Quantum computing is used to **study and research the behavior profiles of batteries in multiple stress and environment conditions**

The model looks for the **optimal configuration in terms of molecule combination, physical shape, and energy transformation** to secure the highest performance possible, at the lowest achievable costs

Advanced algorithms run at unprecedented pace, allowing:

- **Higher batteries performance** by screening and computing all potentially available combination of materials, formats and setups
- **Lower overall development cost** by substantially reducing R&D resources and dedicated effort

Use Case in Action



German automotive manufacturer uses quantum computers to simulate the chemical structure of batteries. The objective is to conceive a "tailor-made battery", a configurable chemical blueprint ready for production



Japanese automotive manufacturer leverages quantum computing research to develop next generation lithium and oxygen in lithium-air (Li-air) batteries with superior features



American leading automotive manufacturer is currently employing quantum technologies to improve the performance of batteries installed on its vehicles

R&D of New Crop Protection Products Accelerated through Digitalization

Advanced Computing

Robotics & Auto.

Consumer Goods



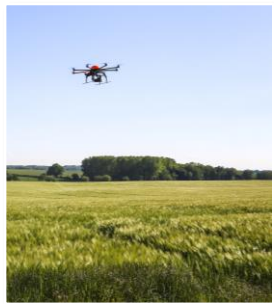
G20 3P Impacted

B20 Italy Recommendation

Description

Protecting crops from diseases and pests is essential to sustainably improve yield on existing arable land

Digitalization can accelerate the global research and development of new crop protection products: technology can enable **automated image recognition** to determine the species and quantity of plants, pests and diseases in greenhouses and fields, and collect relevant **data to analyze, exploiting Advanced Computing**



Details & Impact

Digitalization of crop protection products and systems increases efficiency and efficacy of farmers when they control weeds, fungal diseases and insect pests in their crops, both boosting yield and protecting biodiversity at the same time

Among the potential benefits of this solution:

- Allowing **reliable analysis of diseases and pests** in field trials, through artificial intelligence and machine learning
- Evaluating the **efficiency of new crop protection** products, leveraging comprehensive data sets
- Benefitting from more **resource-efficient processes** thanks to the use of **automation**





















Use Case in Action



*Spanish technology company and a German chemical company started a partnership in 2014, which enables to employ **state-of-the-art algorithms** based on **artificial intelligence, machine learning**, and top-tier **big data environments** to collect and elaborate information to identify the most **effective crop protection solutions***














Use Cases Referring to: Connectivity & Network

	Use Case	Secondary Digital Driver(s)	Relevant Industries	B20 Italy Rec ¹	G20's 3P ²
36	Advanced Customer Engagement in Sustainability	A.I.	All	③	
37	API Digital Ecosystem	Advanced Computing	All	②	
38	Digital Licensing & Permitting	A.I.	Public Administration	②	
39	E-commerce	A.I. & Big Data	All	③	  
40	E-Learning Platforms	-	Public Administration	④	  
41	Mobile Banking App	-	Finance, Banking & Insurance	③	 
42	Money Sharing Apps	-	Finance, Banking & Insurance	③	 
43	National Digital Identity	-	Public Administration	③	 
44	QR Codes for Contactless Interaction	-	Consumer Goods, Finance, Banking & Insurance	③	  
45	Real-time Monitoring Enhanced Operator	IoT	Energy & Utilities, Industrial Goods	③	 

1. Reference to relevant B20 Italy Digital Transformation Task Force's Policy Recommendation 2. G20'Italy's 3P (People, Planet, Prosperity) positively impacted by the Use Case



Use Cases Referring to: Connectivity & Network

	Use Case	Secondary Digital Driver(s)	Relevant Industries	B20 Italy Rec ¹	G20's 3P ²
46	Real-time Monitoring HSE Mobile App	IoT	Energy & Utilities, Industrial Goods	③	 
47	Remote Healthcare Assistance	-	Healthcare & Life Sciences	①	  
48	Secure Healthcare Communication & Collaboration	-	Healthcare & Life Sciences	③	  
49	Sharing Mobility	IoT	Logistics & Mobility	③	  
50	Telemedicine	A.I.	Healthcare & Life Sciences	①	
51	Virtual Counter System	-	P.A., Consumer Goods, Finance, Banking & Insurance, Healthcare & Life Sciences	③	  

1. Reference to relevant B20 Italy Digital Transformation Task Force's Policy Recommendation 2. G20'Italy's 3P (People, Planet, Prosperity) positively impacted by the Use Case

Advanced Customer Engagement in Sustainability

Connectivity & Networks

A.I.

All

G20 3P Impacted

B20 Italy Recommendation

3

Description

Organizations are required to become **profitable** and remain **sustainable** through strategic operations while engaging customers throughout their business activities

Improving **customer engagement on sustainable business initiatives** must be more systematic and **data-driven** with the help of technology. On this, **social media** has become a pertinent platform for customer engagement



Details & Impact

AI, social media and big data analytical techniques can be used to help organizations better engage with customers and communities to improve sensitivity for sustainable business

Social network analysis enables organizations to understand relationships with and among customers, and to identify influencers who can support customer engagement. **Based on Natural Language Processing (NLP) and sentiment analysis, companies can instantly get customer feedbacks**

Positive impacts are:

- **Build up of company and brand value**, attaining long term business sustainability
- Systematic and structured approach **to manage sustainability for companies**
- **Automated customer and community engagement** for business sustainability

Use Case in Action



Italian energy utility provider developed a sustainability content strategy based on A.I. platform for data-driven decision making, to understand stakeholders' perception about sustainable topics



Description

An **Application Programming Interface (API) Digital Ecosystem** proposes a new way to share **digital assets** in the form of APIs, embracing the **API Economy** emerging trend



The main goal of the ecosystem is to **ease the creation of many-to-many digital interconnections** among systems within and between companies and networks

One of the most important basic principles of the ecosystem is **unlocking business value**: a digital asset (information or functionality) that has been created for a specific purpose, can unlock additional value if made available also to other participants, thus enabling new and unpredictable usage scenarios

Use Case in Action



Italian energy utility company developed an enterprise catalogue made up of more than 150 APIs. The Ecosystem is now also able to target external API users ("External Ecosystem") through dedicated API ecosystems targeted to selected categories of business partners, thus exploiting the power of APIs also for the establishment of B2B relationships

Details & Impact

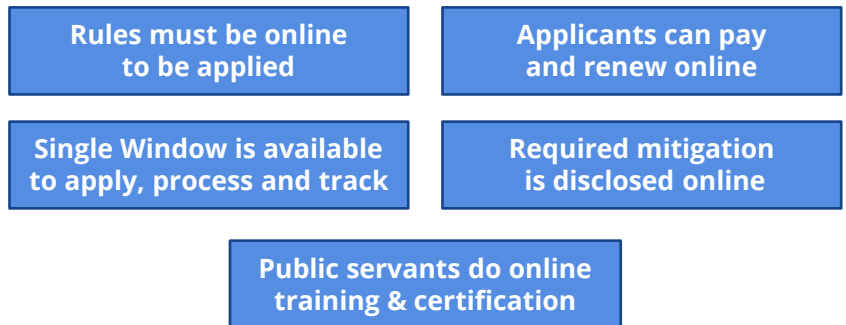
APIs can be utilized by internal business lines or external partners to **establish new digital business relationships and create new services**

API Digital Ecosystem provides its users with:

- **Common API description** guidelines
- **Standardized processes** for API publishing, provisioning (usage request) and lifecycle management
- **Technical guidelines** for API development
- An **Ecosystem Management Board (EMB)** that ensures overall quality and continuous improvement

Description

COVID-19 lockdowns have required the Public Sector to rely more on digital tools to administer services. **Digitalization of licensing and permitting processes increases efficiency, and combats corruption.** Digitalization should start with the adoption by government agencies of best practices, namely:



Details & Impact

- Digitalization can **increase government uptake** of internet-based services, which will in turn **upskill public servants** and introduce the wider public to digital platforms
- Digital licensing can **reduce approval backlogs**, stimulating the economy and **increasing tax receipts**. The World Bank has noted that economies with cumbersome administrative procedures are associated with fewer legally registered firms and a smaller tax base compared to economies with more efficient regulations
- Backlogs in permit approvals can also generate opportunities for corruption. As such, **digital licensing permitting is a crucial digital tool for the rule of law**
- **Bribe requests by municipal agents can be reduced by digitalization.** One recent study in Mexico found that bribe requests fell by 75% following the introduction of an electronic system for business licensing and land usage

Use Case in Action



The **Organization of American States** has established a collaboration with the **Mexican government** to develop a certification for public agencies that implement best practices in digital licensing and permitting



The **Asia-Pacific Economic Coordination (APEC)** has launched an initiative on Digital Permitting & E-Government Measures to Advance the Post-COVID Economic Recovery



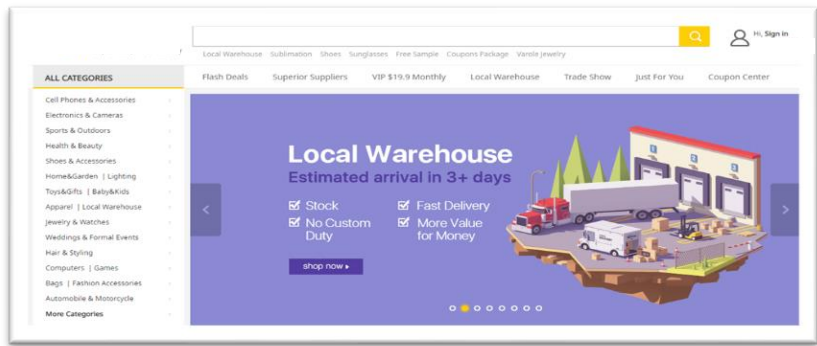
G20 3P Impacted

B20 Italy Recommendation

Description

E-commerce is the business model that migrates physical selling to digital means, enabling consumers to purchase goods, services and data over the internet

It employs multiple technologies such as connectivity, A.I., Big Data, blockchain, and cloud, to transform traditional offline businesses into digitized sellers, with better efficiency, higher productivity, and broader market access



Details & Impact

The pandemic has further accelerated digital transformation of traditional businesses leveraging both basic and advanced technology:

- **Connectivity:** the support of increased broadband capacity and ICT infrastructure connects sellers' goods or services within online stores and enables people to buy them anytime and anywhere
- **Smart product recommendation:** through A.I. and Big Data, e-commerce platforms can recommend suitable products to the right customers, based on previous purchases, search history, and online browsing habits. They provide a personalized shopping experience to online shoppers with improved customer retention
- **Smart inventory:** A.I., big data, and other smart technologies improve efficiency in inventory control and workflows. For example, they provide the latest inventory information with smart data management, making inventory planning seamless and easier

Use Case in Action



Chinese cross-border e-commerce unveiled a decentralized e-commerce SaaS powered by A.I. and Big Data, empowering MSMEs with a simple tool to benefit from the international trade fairly



Argentine Wine producer unveiled an export strategy, focusing on e-commerce to ensure the presence in digital ecosystems, and to respond to the global online shopping trends



The pandemic escalated the adoption of e-commerce for South Korean fashion brands, to mitigate the risk of virus infection upon human interaction



92% of Indonesia's digitized MSMEs believe e-commerce has helped ease their logistics operations while 94% said sales improved due to digital commerce



People



Planet



Prosperity

Description



An online learning platform (e-learning) is an **internet-connected portal** that offers **learning materials and lessons** to individuals such as students or workers who can take online courses at their own pace

Learning platforms can cover a wide range of subjects and connect the learner with teachers both in **live chat** (e.g., groups or one-to-one interactions) or through **recorded videos**

E-learning can be offered through **multiple digital channels**, from laptops to mobile devices, such as smartphones, tablets or smart glasses



Details & Impact

E-Learning Platforms provide **several advantages** compared to traditional ways of learning:

- **Tailored and on-demand education:** recorded and modular courses provide opportunities for individuals with different interests and learning paces to stay always up to date
- **Time savings:** people can learn with no constraints of location nor hours, thus letting also workers to participate with no rigid/mandatory time schedules
- **Cost savings:** e-learning substantially reduces costs to serve in terms of infrastructure, learning materials and human capital, and leverages economies of scale

Use Case in Action



American leading bank offers free access on a dedicated educational platform to deliver custom courses, projects, and personalized coaching to users and workers looking to reskill



UK department of education launched the online **platform 'The Skills Toolkit'** during the pandemic to **help people build skills** particularly relevant for the current working environment



Singapore's minister of education program aims at equipping the workforce with **basic digital skills** and to encourage employers to invest in job-specific skills training

41 Mobile Banking App

Connectivity & Networks

Finance, Banking & Insurance



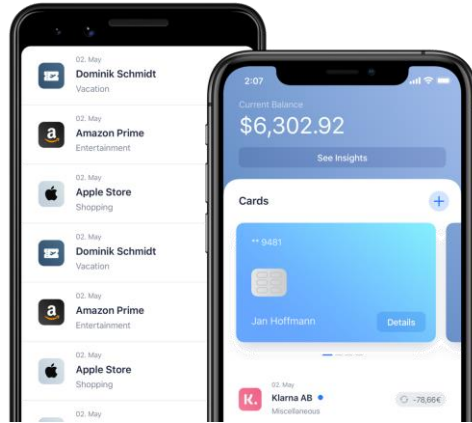
G20 3P Impacted

B20 Italy Recommendation

Description

Mobile banking is a service offered by a bank or by other financial institutions that allows customers to **conduct financial transactions, monitor account balances and manage investments remotely** using a mobile device such as a smartphone or tablet

Mobile banking operations usually run through applications officially provided by the financial institution



Details & Impact

Mobile Applications in Banking result in **many benefits** to both customers and financial intermediaries:

For customers

- **Increased availability:** 24/7 access to funds and financial activities
- **Enhanced customer experience:** through reduced congestion in physical stores, as well as less time required to execute operations
- **Higher control of personal finance:** transparent access to balances allowing customers to have clearer visibility on expenses

For banks (or other financial intermediaries)

- **Enriched and personalized offering,** with opportunities also for companies to analyze data for cross/up selling of services
- **Data analytics solutions** to investigate trends in customer preferences to design and implement new products and features

Use Case in Action



*Myanmar-based leading finance company provides extremely **user-friendly mobile banking**, built and designed to work on a smartphone, with **instantaneous balance updates** and intelligent notifications*



*US-based service company offers a secure digital banking suite to provide customers with a **safe and consistent user experience** across mobile and online banking channels*



*UK-based personal financing company offers **innovative mobile banking**, conveying easiness of usage and economic advantage to offer a product that is **intuitive, affordable and secure***

42 Money Sharing Apps

Connectivity & Networks

Finance, Banking & Insurance

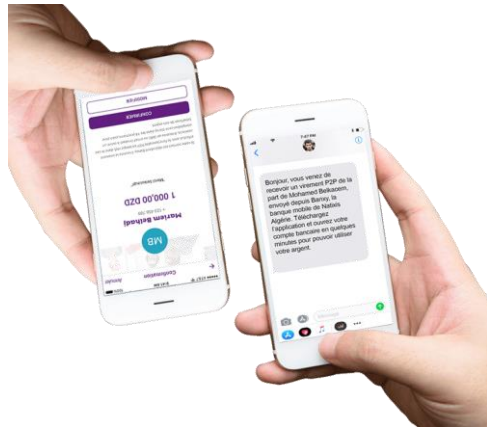


3

G20 3P Impacted

B20 Italy Recommendation

Description



Money sharing apps are downloadable applications that allow users to **send funds to other people and businesses** with a single tap on their smartphone

Mobile apps are **simple, user-friendly** and designed to work on **mobile devices** and other portable tools. Users can **select the country or currency** and immediately send funds to other registered portfolios

Details & Impact

Money sharing apps introduce several advantages for customers:

- **24/7 accessibility and availability of funds**
- **Rapidity of execution** and immediate processing of transactions
- **Contactless customer experience** with secure authentication and easy-to-use intuitive interfaces
- **Substantially lower fees** when compared to traditional money transfer options (e.g., bank transfers and checks)
- **No minimum financial amount required for transfer**, favoring everyday use, also for small financial transactions

Use Case in Action



*Belgium financial services company offers money transfer options to **bank accounts, cash pick-up locations** and **affiliated mobile wallets** in most world currencies*



*UK-based money sharing app enables users to send and receive funds with **no transfer fees**, charging only a minimum margin on the currency exchange rate*



*German mobile banking app features an option for **international money transfer services**, allowing users to **send and receive funds** from people in most world currencies*



*US leading tech devices company makes it possible for customers who own an **affiliated debit or credit card** to **send money to contacts with no fees***



Description



A “**Digital Identity**” is the **online persona of an individual**, represented by a collection of validated digital data. Approximately **1.1 billion people** around the world have no proof of identity, and **45% of those** without an identity are among the poorest 20% on the planet

Digital Identities are trusted virtual credentials issued formally by Governments to allow individuals to prove their identity, authenticate reliably, transact and access online services provided by both public and private sectors, and also work as a mean for authorization and consent

Data stored on digital identities can contain **inherent characteristics** (e.g., name, date of birth, gender), **biometrics** (e.g., thumbprint, iris), **acquired attributes** (e.g., address, medical records, education history)



Details & Impact

Many benefits can arise from National Digital Identities for both individuals and companies:

- **Streamlined and faster access** to e-government services
- Digitized processes for **civic duties** (e.g., digital voting)
- **Enhanced privacy** while engaging in online activities
- **Increased cybersecurity and trust**, also reducing identity theft
- **Superior UX¹** during registration and authentication processes online

Digital Identities also improve **productivity** for both Governments and businesses while facilitating **KYC² procedures**, overall **traceability**, and **trust**

1. User Experience 2. Know-Your-Customer

Use Case in Action



*Australia developed a **digital driver license**; the solution reached more than **two million downloads** in the first 12 months (3x the estimates)*



*Estonian **eID** enables citizens **identification**, **paperless** contracts, communication with authorities, and **automated** information flows*



*Singapore offers **access** to over 340 Government agencies and businesses with 1,400 digital services through its **Digital Identity System***



*An **Italian Cloud operator** part of an Italian telecommunication group developed a solution for a company that needs to **digitalize signature processes** and documents*

Description



Quick Response (QR) codes are two-dimensional matrix barcodes that contain data or information pointing to a website or an application. Data is stored in **standardized algorithms** and **URLs** that can be read through **QR code scanners** or any other device with a **camera**

Nowadays, **most of the smartphones come with in-built QR code scanning** that enables the end-user to read the information in just a few clicks, without paying any additional cost

Details & Impact

The **QR codes** technology provides **multiple advantages**:

- **Condensed space management**, reducing or eliminating the need for product labels (and related costs)
- **Increased information**, giving customers access to a wider range of data versus paper-based solutions
- **Hands-free interaction**, requiring no touch nor physical activity to access/visualize information
- **User-friendly interface**, featuring extremely easy and intuitive usage and sharing
- **Enabler for additional services**, such as payments (e.g., seamless and secure authentication, verification and financial transactions)

Use Case in Action



Indian fashion e-commerce company uses QR codes on product delivery packages to push sales. When scanned, **QR codes** redirect the customer to a **coupon**, acting as an **incentive** for additional purchases



UK software company offers **contactless menu platforms** that help restaurants to create and manage both **online and printed QR code menus**, providing safe and **hands-free** solutions for end customers



Sweden apparel firm uses **QR codes** on all its products to **track** internal processes, **environmental impact and sustainability** measures from raw materials to final deliveries to the customer

Real-time Monitoring | Enhanced Operator

Connectivity & Networks

IoT

Energy & Utilities, Industrial Goods



3

G20 3P Impacted

B20 Italy Recommendation

Description

The initiative aims to introduce a series of **applications accessible remotely and in mobility**, running on industrial devices, with the goal of **increasing operational efficiency and safety** as well as **facilitating maintenance activities**



Details & Impact

The mobile solution allows to cover the following functionalities:

- **Notifying equipment anomalies:** deviations can be traced directly with the mobile device and used to share maintenance alerts
- **Collecting data:** operators can gather information directly with the mobile device and send them to the central logger system
- **Accessing maintenance checklist:** operators, by using mobile applications, can access a list of tasks, tracking overall progress
- **Consulting documents:** operators can search and consult documents during field activities thanks to the integration of a central repository
- **Giving technical support by remote:** operators can reach colleagues for technical support by using a unique device

Use Case in Action



Italian oil and gas company has fully developed six use cases and this digital solution is currently implemented in its industrial sites



Description

Health, Safety & Environment (HSE) Mobile Apps are digital tools **accessible on mobile** by operations and maintenance staff to **consult security policies, and to promote health and environmentally-friendly procedures**



Details & Impact

Real-time monitoring of HSE through mobile applications leads to the following benefits:

- **Processes digitalization**
- **Replacement of paper checklists**
- **Facilitated unsafe condition reporting**
- **Integration between HSE systems**
- **Enhancing and promoting HSE culture**
- **Engagement of internal and external staff**
- **Access anytime, anywhere to HSE rules and contents**

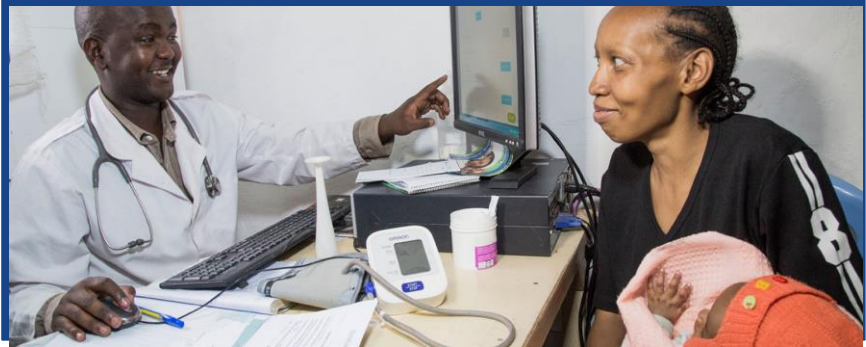
Use Case in Action



Italian oil and gas Company has developed a digital app, available on 77 sites, to monitor field control checklist and commitment on safety rules adoption and to promote HSE culture via mobile edutainment (quiz and video)

Description

Technology has the power to transform healthcare around the world, and especially in **least developed countries**. Through smarter and faster learning, machines **help in analyzing and researching disease and treatment options**, and **support healthcare workers in reaching those who need them**, and in communicating with chronic patients who require continuous care



Details & Impact

Today, **connectivity and cloud infrastructures supporting healthcare facilities are being used largely**, with several benefits:

<h3 style="text-align: center;">Improve Health Outcomes</h3> <ul style="list-style-type: none"> • Care compliance • Preventative screenings & care • Health & wellness activation 	<h3 style="text-align: center;">Increase Revenue & Lower Costs</h3> <ul style="list-style-type: none"> • Prevent leakage • Work flow • Appropriate service utilization 	<h3 style="text-align: center;">Improve Patient Experience</h3> <ul style="list-style-type: none"> • Preferred channel & timing • Personalized content • Improved access to providers
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Use Case in Action



*A leading international healthcare group partnered with an US software company to better support **1,000 practitioners and reach 2,000,000 patients**. The implemented digital solution is able to offer several services: practice administration, patient record management, group and individual messaging for medication, appointment reminders, outbreak alerts, and even calendar appointments*

Secure Healthcare Communication & Collaboration

Connectivity & Networks

Healthcare & Life Sciences



G20 3P Impacted

B20 Italy Recommendation

Description

Healthcare providers face an uphill battle to increase **quality of care and patient outcomes**, while simultaneously improving efficiency and maintaining compliance in an unforgiving regulatory environment

Better **communication and information sharing** are instrumental in helping healthcare organizations not only in meeting these challenges, but also in **optimizing workflows** and **save critical emergency time**



Details & Impact

Healthcare organizations need messaging technology that offers security and functionality found in the consumer-grade messaging apps. That is where secure enterprise messaging helps **unlocking many benefits**:

- **Better patient care and collaboration** through reliable and secure sharing of files and information
- **Improved compliance** with international regulatory requirements (e.g., HIPAA, GDPR)
- **Increased workplace efficiency** and clear channels of communication among geographically-diverse users
- **Low cost-per-user and unlimited scalability** for future growth or expansion
- **Protection against cybercriminals** accessing sensitive organizational and patient data
- **More control to IT administrators** to safe-guard the sharing of information within the organization

Use Case in Action



One of Singapore's leading providers of healthcare services for women and children protects the privacy of patient data and enhances internal communications by implementing HIPAA/GDPR compliant solution



*A group of four local medical facilities in Germany saved critical time for emergency responses - **45 minutes** per response - by implementing this technology*



*U.S.-based obstetrics and gynecology consortium with more than 40 locations and 300,000 patients improves patient care and achieves **HIPAA compliant** using a secure enterprise messaging system*



Description

Sharing mobility, representing one of the pillars of the sharing economy, is the practice of moving from one place to another **using shared vehicles and transportation means**, including car sharing, bike sharing, scooter sharing, but also car pooling and other solutions

Sharing systems usually feature user-friendly **apps and digital mechanisms** to check users' ID and driving license, as well as tailored **reward programs** to increase customer loyalty



Details & Impact

Sharing mobility can have **powerful impact** both on the users and on the society at large:

Users:

- **Reduced running costs** by avoiding maintenance, fuel, insurance and other expenses related to vehicles' ownership
- **Parking and circulation** advantages, with no or limited restrictions and free-everywhere parking slots
- **Enhanced travel accessibility** for all society levels, by eliminating the capital investment needed to own a private vehicle

Society:

- **Reduced pollution** by lowering the number of registered vehicles on the ground and featuring electric bikes/scooters as alternatives
- **Limited traffic congestion** by incentivizing bike-sharing and specific car-pooling initiatives
- **Increased efficiency across streets** by systematically reducing the number of parked vehicles in urban shared spaces

Use Case in Action



Italian car sharing service allows customers to rent a car on a **minute-based convenient tariff** using only their smartphones



American leading peer-to-peer car rental marketplace offers the opportunity to rent people's cars everywhere and for **any distance** or time needed



French leading bike rental platform obtained impressive results, moving **from 1.5% bike trips** at the time of its adoption to a **500% increase in urban utilization**

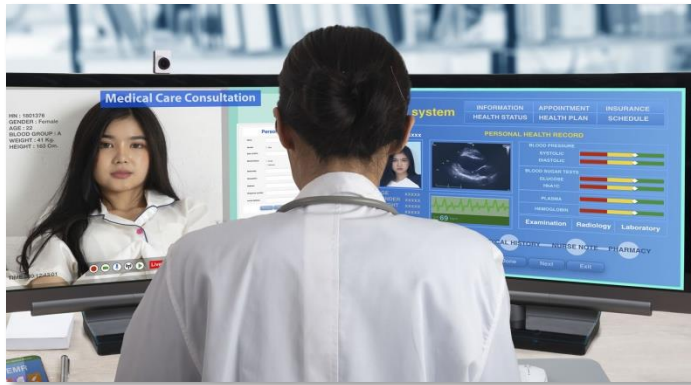


US-based peer-to-peer motorcycle rental community shows users available models and related rental price, **directly connecting owners and riders**



Description

Telemedicine includes modules of televisit, teleconsultation, remote and video assistance to bring **healthcare services** directly to the **patient's home**. This service allows healthcare professionals to evaluate, diagnose and treat patients in **remote settings** using telecommunication technologies



Details & Impact

- By integrating medical monitoring and wearable technologies, telemedicine applications **constantly check the patient's parameters**, tracking values in an online medical folder
- By facilitating **virtual communications** between patients and doctors, telemedicine allows visits and assistance in **fully remote context**, leveraging on the exchange of audio, video, text and images
- By **sharing clinical documentation on dedicated platforms**, the patient can receive on-demand specialist consultations from professionals for non-critical diseases
- By allowing integration with **devices** and **Artificial Intelligence** tools, telemedicine programs can perform **basic medical diagnosis**, allowing for better monitoring and disease spotting

Use Case in Action



Telemedicine solutions are implemented by different regions of the **national health system**, particularly for emergency management in the **neurosurgery** field, in **integrated trauma assistance systems** and generic tele-consultation processes. Hospitals and specialist centers are connected to the central system, leveraging **third parties' cloud databases** and **proprietary infrastructures**



Description



Virtual counter systems are innovative solutions **capable** of remotely delivering services to citizens, **avoiding** gatherings at municipal offices

Through this innovative system, citizens can get in touch (both through audio and video) with the **corresponding public office** in order to get specialized advice and decisional support, **visualize documents, fill in and sign forms**

Details & Impact

Solutions based on technologies such as **conversational A.I.** allow to revolutionize communication models between citizens and administrations. The main advantages are:

- **Dynamic booking management**
- **Virtual queue management** (e.g., scheduled appointments)
- Audio/video/data **sharing**
- **Higher accessibility** thanks to **multi-channel mode**
- **Lower operational costs** due to reduced travels







Use Case in Action



For a **primary metropolitan city**, a new **virtual counter system** was created with the aim of **safeguarding the health of municipal operators and citizens** during Covid-19 time, by avoiding face-to-face meetings at the office. With the aid of this system, it was possible to carry out all the classic requests for certificates, documentation, administrative acts, in an innovative, simple, immediate way



Use Cases Referring to: Distributed Ledger

	Use Case	Secondary Digital Driver(s)	Relevant Industries	B20 Italy Rec ¹	G20's 3P ²
52	Blockchain-Enabled Supply Chain	Connectivity	Logistics & Mobility	③	 
53	Distributed Energy Grid	Connectivity	Energy & Utilities	③	 
54	Electronic Bills of Lading	Connectivity	Logistics & Mobility	③	 

1. Reference to relevant B20 Italy Digital Transformation Task Force's Policy Recommendation 2. G20'Italy's 3P (People, Planet, Prosperity) positively impacted by the Use Case

52 Blockchain-Enabled Supply Chain

Distributed Ledger

Connectivity

Logistics & Mobility



G20 3P Impacted

B20 Italy Recommendation

Description

A **blockchain** is a **distributed, or decentralized, ledger** - a digital system for recording transactions among multiple parties in a **verifiable and tamperproof way**



A **blockchain-enabled supply chain** allows companies to track assets' origin and movements, record and automate transactions, and show historical interactions among different stakeholders involved in the process

Details & Impact

Through the usage of **self-executing software** (e.g., Smart Contracts) and **Blockchains solutions**, companies can unlock benefits:

Traceability

- Provide companies with a reliable and low-cost tool to track the origin of their products including their underlying components from source to sale in a certified and secured manner

Transparency

- Enable companies to share product information with their clients to ensure authenticity and enhance overall trust (e.g., fully auditable and valid ledger of transactions)

Sustainability

- Help companies foster collaborations - within the same distributed platform - with consumers, producers and peers by improving sourcing, inclusive practices, ethical production and recycling principles

Use Case in Action



Swiss tech startup connects coffee growers and gives coffee drinkers **complete transparency on product's origin and production**, also allowing consumers to reward sustainable farms



Chinese leading retail company deployed **blockchain** technology to **recycle luxury goods, collect donations, and educate buyers** about sustainable consumption



American multinational agricultural company uses **blockchain to trace their products both downstream** to the original source and **upstream** through the distribution network



Description

Distributed (or decentralized) energy grid is the electrical generation and storage performed by a variety of small, **grid-connected** or **distribution system-connected devices**



Energy's peer-to-peer platforms help control power generation and availability among connected users. **Blockchains** play an important role in **re-distributing energy** in excess enabling decentralized Peer-to-Peer (P2P) exchanges

Use Case in Action



US energy provider company integrates smart devices and software to achieve greater efficiency and improve resilience. The company achieved **46% reduction in service interruptions**



Indian energy company sells excess capacity to residential and commercial sites in a dynamic pricing environment, with **blockchain auditing energy transactions** for a fully transparent process



UK energy provider features **cloud-based smart grid platform** and provides fair prices for greener energy solutions; the company uses an innovative **A.I. and data-based software** to balance loads around the grid

Details & Impact

Blockchain-based distributed energy grids can enable:

Improved energy consumption and sharing

Energy providers can utilize blockchains to create a system for the transaction of data which is critical for the distribution of energy. In this context, electricity is exchanged and shared among a diverse set of actors (e.g., suppliers, resellers) optimizing overall energy consumption

Greater network efficiency and reduced energy waste

Decentralized energy grid can provide consumers greater efficiency and control over their energy sources. Additionally, blockchain ledgers provide secure and real-time updates on energy waste

Decentralized energy trading

Blockchain technologies combined with IoT devices enable consumers to trade and purchase (even micro units of) energy directly from the grid



Description

In today's world of cross-border trade, **paper-based processes** are still used due to the **lack of legal digital** documents like electronic bills of lading (eBL). Although there are already **digital solutions** available, those systems are often siloed and fragmented

Enabling **blockchain based technology**, relying on globally-accepted standards and frameworks that support the exchange of electronic trade documents would effectively **support interoperability** and **accelerate digital innovation in global trade**.



Details & Impact

Electronic Bills of Lading, also leveraging distributed ledger technology (DLT), allow users to benefit from proof of **authenticity**. Moreover:

1) Faster processing:

Bill of Lading process is reduced from an average of six to ten days when using paper to less than 24 hours when using digital means

2) Reduced cost:

US \$4 billion savings could be achieved annually if half of today's shipping lines adopt eBLs – according to the Digital Container Shipping Association (DSCA)

3) Innovative service offerings:

The convergence of physical, financial and document chains is facilitated by the automation of key processes

Use Case in Action



A Singapore's collaboration with Dutch port leverages electronic bills of lading





Chinese Smart City Initiative explores cross-border trade and trade financing through eBLs and Letters of Credit



Singapore and Australia trialed a digital verification method for electronic Certificates of Origin
















Use Cases Referring to: IoT & Smart Sensors

	Use Case	Secondary Digital Driver(s)	Relevant Industries	B20 Italy Rec ¹	G20's 3P ²	
55	Digital Control Rooms	A.I.	P.A., Consumer Goods, Logistics & Mobility, Energy & Utilities	③		
56	Digital COVID-19 Tracking	Connectivity	Public Administration	③		
57	Digital Manufacturing to Improve Yield	A.I.	Consumer Goods	③		
58	Digital Smart Ports	Distributed Ledgers	Logistics & Mobility	③		
59	Digital Waste Management	Advanced Computing; A.I.	Public Administration	③		
60	Digital Wind Farms	A.I.	Energy & Utilities	③		
61	IoT-enabled Livestock Management	A.I.	Consumer Goods	③		
62	Smart Factory	Automation & Robotics, A.I.	Industrial Goods	③		
63	Smart Irrigation	A.I.	Consumer Goods	③		
64	Smart Lighting in Poultry Farming	A.I.	Consumer Goods	③		

1. Reference to relevant B20 Italy Digital Transformation Task Force's Policy Recommendation 2. G20'Italy's 3P (People, Planet, Prosperity) positively impacted by the Use Case



Use Cases Referring to: IoT & Smart Sensors

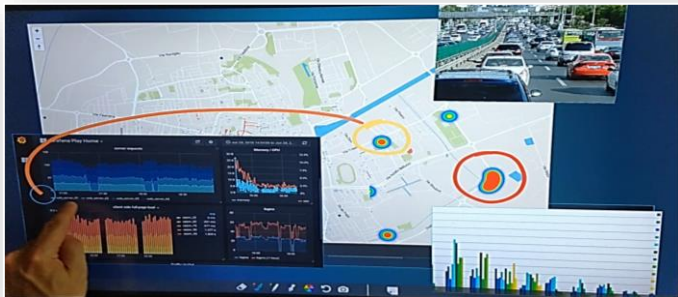
	Use Case	Secondary Digital Driver(s)	Relevant Industries	B20 Italy Rec ¹	G20's 3P ²
65	Smart Lock for Telecom Power Systems	A.I.	Energy & Utilities, TMT	③	
66	Smart Meter Readers	A.I.	Energy & Utilities	③	 
67	Smart Safety for Operators	-	Energy & Utilities, Industrial Goods	③	 
68	Sound-based Predictive Maintenance	A.I.	Industrial Goods	③	
69	Structural Health Monitoring	A.I.	Industrial Goods	③	  
70	Synthetic - General Purpose Sensing	A.I.	All	③	  
71	Traceable and Smart Packing	-	Consumer Goods, Industrial Goods, Logistics & Mobility	③	

1. Reference to relevant B20 Italy Digital Transformation Task Force's Policy Recommendation 2. G20'Italy's 3P (People, Planet, Prosperity) positively impacted by the Use Case

Description

Digital control rooms are sets of technologies that allow **real-time monitoring, management and control** of specific situations, leveraging on a range of IoT sensors installed in a given environment (e.g., cities, regions, plants)

This integrated technology enables to visualize and manage sensors and other connected devices in an easy and intuitive way



Use Case in Action



Italian municipalities use the control room stations to manage multiple services based on different IoT sensors

Details & Impact

Digital control rooms adoption typically results in the following benefits:

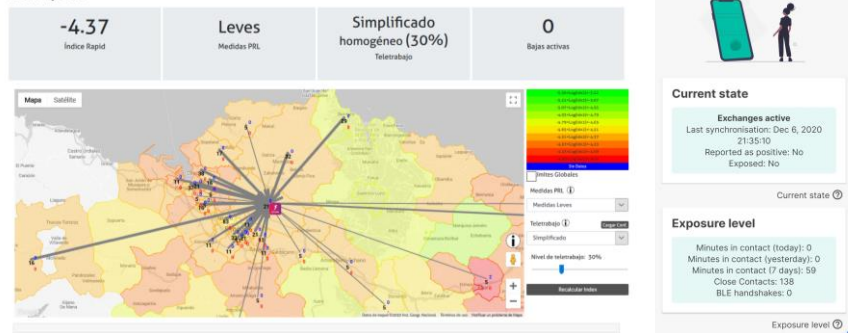
- **Efficiency and effectiveness** of critical actions such as monitoring, control and intervention
- **Augmented intelligence:** real-time analytics can be applied to critical decisions, thanks to software technology that enhances data visualization and reduces intervention times
- **Reduced cost:** some implementers register 50% **reduction of troubleshooting and intervention times**, 30% **cost saving** of resources allocated for monitoring and systems management, 50% **reduction of costs for non-productive times** such as retrieval of documentation or data



Description

Digital COVID-19 tracking tools are **configurable digital solutions, based on technological means, scientific protocols and a wide range of analytical tests**, tailored to the needs and characteristics of the region, to monitor and manage the pandemic evolution, in order to reactivate and revamp the economic activity of countries

Edif.700



Details & Impact

The **digital monitoring system**, also offering a **unified dashboard**, allows to manage the following three key activities:

- Monitoring and prediction of **infection risks** in specific spaces (e.g., buildings, companies) based on **Artificial Intelligence**
- **Privacy-preserving proximity tracing** and verification of distancing measures via **Bluetooth**
- **Digital certificates of analytical tests**, also allowing to check the authenticity of each certificate

Use Case in Action



Pilot use case has been carried out in the **16 centers** belonging to a **Spanish region**

57 Digital Manufacturing to Improve Yield

IoT

A.I.

Consumer Goods



G20 3P Impacted

B20 Italy Recommendation

Description



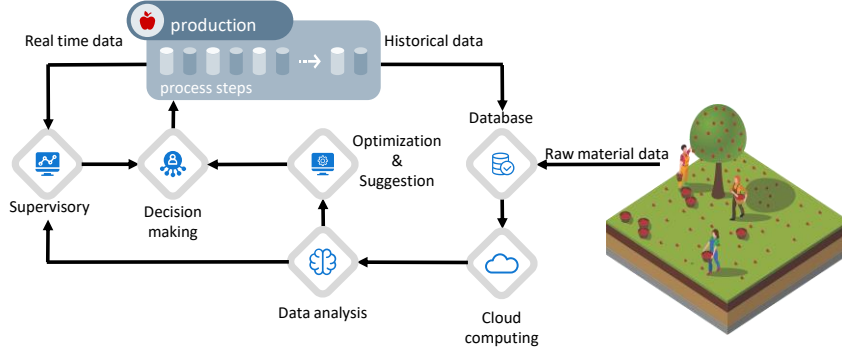
production



yield

Manufacturing settings can be optimized to have better **production yields** leveraging digital technologies. The use of

historical data and **predictive models** with advanced algorithms that **learn** and **suggest** decisions, improves processes to **reduce waste** and **increase throughput**



Details & Impact

Objectives:

- **Learn** from data and process sensor information
- Reach **optimal machine settings for higher throughput**
- **Maximize expected production yields**
- **Reduce inefficiencies** and expected **waste**

Different Benefits:

- **Higher profits:** thanks to improved yield and productivity
- **Stronger decision-making process:** through machine learning and artificial intelligence models
- **Better sustainability:** with reduced raw material waste

Use Case in Action



Global manufacturer improved development and performance of supplier equipment by implementing a digital manufacturing solution



Global dairy processor optimized throughput and quality reaching a 5% increase in yield of its product line



Description

A **Smart Port** is a port that uses automation and innovative technologies including **Artificial Intelligence**, **Big Data**, **Internet of Things** and **Blockchain** to track, analyze and improve its operations



Becoming a Smart Port means developing **solutions to address the current and future challenges** related to trade, transportation and logistics including spatial constraints, pressure on productivity, safety and **security risks and sustainability effort**

Use Case in Action



Esbjerg's port** uses data analytics to identify, monitor and **analyze emissions outputs**. This implementation has already proven impactful, helping the port **reduce its carbon emissions by around 70%



***Antwerp's port** uses **smart cameras and computer vision** to ensure proper mooring, **reduce waiting times** and **optimize maintenance**. Moreover, the adopted **blockchain-based program** allows the digital exchange of phytosanitary certificates*



The port of Rotterdam** features an unmanned container ship terminal with **autonomous cranes** receiving container size information through an **AI-enabled Geographical Information system

Details & Impact

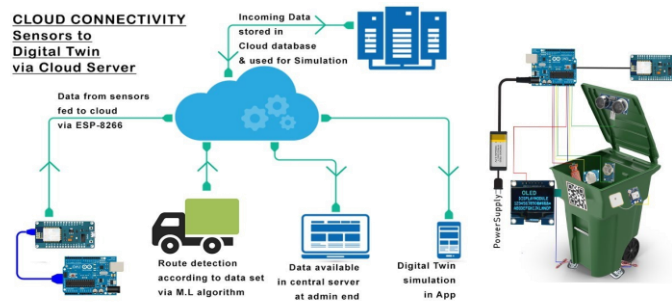
Smart Ports enable several benefits to improve and develop mainly the shipping industry:

- **Artificial Intelligence** and specific algorithms can improve predictability and effectiveness, helping anticipate - with enhanced precision - ships arrival time and potential delays
- **Smart sensors and robotics** applications can accelerate operations and processes, helping ports lower costs and increase the volume of served vessels
- **Big Data and blockchain** can increase safety and health standards as well as productivity levels by digitizing procedures, sharing required documents within parties and expediting inspections
- **Data Analytics** can track in-flows of goods and harmful emissions, helping ports moving towards a more sustainable setup



Description

An increased use of digital technologies is crucial to shift global waste management towards **more sustainable outcomes**. Digital can be leveraged across all steps of the waste management process, enabling **better sorting decisions** and **more efficient disposal/recycling** practices by waste management companies



Typical digital technologies that are currently used in the digital waste management include **robotics, IoT, Cloud Computing, Artificial Intelligence** and **Data Analytics**

Details & Impact

Digital waste management solutions can unleash **great impact on companies and societies** by advancing traditional processes

- Automated robots contribute to waste processing systems **reducing errors, time and associated costs**
- Machine learning improves classification of garbage through intelligent pattern recognition, **improving overall process efficiency**
- IoT sensors, smart weighing mechanisms, temperature and saturation tracking devices communicate with central systems, **optimizing and speeding up the end-to-end collection of waste**

Use Case in Action



French utility company offering **digital integrated systems**, collaborates with **governments** for creating **efficient and sustainable waste management processes**



Slovakia-based global enterprise provides **cost-efficient management** of waste through in-house produced **ultrasonic smart sensors** that monitor and optimize waste collection processes, frequency of pickup, and vehicle load



Finnish utility company provides waste and recycling services that **lower costs and environmental impact**. Its **software suite** contains tools granting efficient fleets and containers management, and optimized collection routes



Description

A **Digital Wind Farm** is a wind power plant that **leverages data, analytics, and software applications** to optimize sustainable energy production

The **continuous monitoring and real-time analysis of data** – including weather conditions, components wear, and energy generation performances – **contributes to build a digital predictive model** to enhance maintenance, improve reliability, sustain efficiency, and increase annual energy production



Details & Impact

Digital wind farms bring several advantages towards an increasingly sustainable energy production:

- **A.I. and data analytics** can help identify patterns and anticipate maintenance requirements, reducing cost and incidents
- **Big Data and simulations** can help monitor efficiency and enhance productivity, also providing the opportunity to test "what-if" scenarios
- **Digital interfaces** can prove to be useful in monitoring and interpreting plant performances, also to identify inefficiencies to address and opportunities to unlock for further efficiency improvement

Use Case in Action



US multinational conglomerate developed the first digital twin for a wind farm in North America. The digital twin lets wind-farm operators **collect, visualize, and analyze unit and site-level data**



Swiss multinational corporation brings digital technology to wind turbines with an innovative system that **increases turbine uptime, lowers operation and maintenance expenses and optimizes the cost of producing energy**

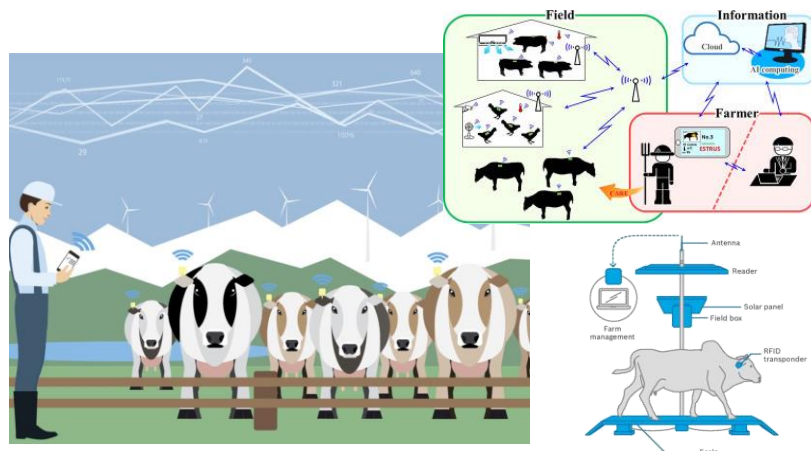


Italian energy provider implemented **IoT and A.I.** applications to increase the power output of wind farms by capturing streams of data for diagnosis and machine health **optimization purposes**



Description

IoT-enabled devices to **track and monitor the health of livestock** through wearable collars, tags, or battery-powered sensors that wirelessly send the data in near-real-time to farmers' devices



Details & Impact

Devices to monitor the location, temperature, blood pressure and heart rate of animals could provide several advantages:

- **Detect illness** in advance to quickly treat animals and prevent spread and increase in severity of the disease
- **Track grazing animals** to prevent loss, while identifying safe grazing patterns
- **Gather and analyze historical data** to identify trends in cattle health or to track the spread of illness
- **Monitor readiness** to mate or give birth, preventing the loss of new calves and optimizing breeding practices

Use Case in Action



Use cases across the globe covered by this solution:

- **Position tracking** and displays it on a map in real time
- **Alerting system** sending real time warnings when livestock is out of zone

- **Feeding plan** tailored for every animal
- **Weight tracking**
- **Conflict prevention** between animals during feeding session



G20 3P Impacted

B20 Italy
Recommendation

Description

A smart factory is a **highly digitized and connected production facility** that relies on **computer-integrated manufacturing, artificial intelligence** mechanisms, and **automated processes** to analyze data and provide optimized functioning

Production is **fully automatized** and **intelligent networks** of sensors enable facilities, machines and logistics - within the manufacturing plant - to be managed without direct human intervention



Details & Impact

Smart Factory implementation provides opportunities and extended **benefits** for companies leading to **operational cost savings and business advantages**, including:

- **More efficient processes** with earlier identification of bottlenecks, scraps and optimization opportunities
- **Better energy management** through sensors and data analysis which provide information, statistics and simulation on waste and energy usage
- **Higher plant flexibility** providing a dynamic environment able to rapidly adapt to changing environment, unexpected demand shocks, and/or personalization needs

Use Case in Action



German-based automotive leader implemented smart factory including robotics, **3D printing** and **data analytics**, and managed to **cut the time** needed to deploy new product features **by almost 80%** and reduce quality issues by 5%



US motorcycle manufacturer leader was able to reduce its 21-days manufacturing process down to 6 hours, while also **reducing operating costs by USD 200 mln** by implementing smart factory principles and automated processes



Finnish telecommunication company, leveraging 5G, doing so it **improved productivity by 30%**, and **time-to-market by 50%**



Description

Smart irrigation systems are deployed to tailor **watering schedules and runtimes automatically to meet specific landscape needs**, using local weather data or soil-moisture to adjust irrigation schedules



Details & Impact

These systems collect data and establish **irrigation strategy** through two kinds of sensors:

- **On-site soil moisture sensors** determine the moisture level in the soil, evaluating which is the best moment to start/stop irrigation phase
- **Evapotranspiration (ET) controllers** use four weather parameters, such as temperature, wind, solar radiation and humidity to make irrigation runtime adjustments

Main advantages:

- Research studies indicate **substantial water savings** (i.e., from 30 to 50 percent), depending on crops' categories

Use Case in Action



Many Use Cases have been identified globally, including:

- *Near-real-time collection of **soil tension sensor data** with mobile platforms*
- **Water needs anticipations** to schedule irrigation accordingly and optimize resources usage
- *Integrated solutions that enable **remote control and manage drought compliance**, water budgets and flow management*

64 Smart Lighting in Poultry Farming

IoT

A.I.

Consumer Goods



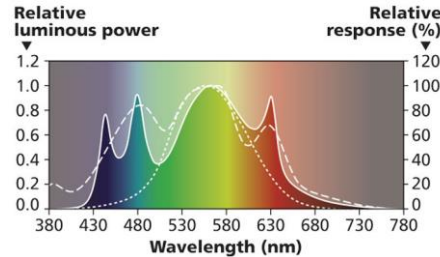
G20 3P Impacted

B20 Italy Recommendation

Description

Chickens raised using a **poultry LED lighting system** have been found to produce **higher quantity and quality of eggs**, to reach maturity at a faster rate and enjoy an improved health as compared to chickens raised under traditional light sources

Intelligent and automated lighting management systems in poultry farming further **improve production yield, while minimizing business owner effort**



Details & Impact

Staff in poultry farms have to manually check the light condition from time to time and manually switch ON/OFF the light when needed

Collecting data and control lighting sources from remote can **help businesses owners to easily make the poultry warm, comfortable, secured and safeguarded**

Features:

- **Alerting about lighting status condition**
- **Remote provisioning and configuration** of a bulb led light through web application
- **Autonomous light Dimming** based on weather condition

Advantages:

- **Higher yields and better products**
- **Accident risk reduction**
- **Support decision making in lighting management**

Use Case in Action



International tech firm offers centralized lighting solution tailored for each specific kind of poultries, such as Broiler, Breeder and Layer, acting on photoperiod, intensity, and color spectrum management to sustain the poultry farming process



Description

To ensure operations continuity, telecom carriers **must have backup power sources** in their stations to hold on communication even during energy outages

The maintenance and safety of such facilities is a highly resource-consuming task because base stations are distributed across area. Moreover, the batteries used in base stations have commercial value, making them targets of theft

A smart lock for Telecom power systems is a **technology able to sense a possible intrusion and proactively engage a lock, powerful enough to avoid most battery theft**



Details & Impact

Smart locks have different characteristics allowing for different benefits:

Enhanced safety: the solution captures vibration and motion sensors data to analyze and engage the lock. The analysis is based on machine learning to identify and trigger the safety lock during intrusions while remain inactive during regular maintenance

Higher autonomy: the safety lock is stand alone, designed to be fail proof and independent of other systems

Better energy saving: the status sensors and theft suppression mechanisms help increasing the life span of the batteries, reducing the overall operation costs

Increased support on decision-making: visualization of batteries' status allows the scheduling of directed maintenances

Use Case in Action



Brazilian telecom supply provider has developed many station management services to organize maintenance and collect critical data focused at improving operations. Smart locks increase the reliability of carriers on their power systems

Description

The **collection of utilities' consumption data** in a cost fitting manner on a global scale is a complex task due to several factors:

- Offline meters reduce interoperability of systems
- Manual meter reading is costly & manpower intensive
- Risky and tedious shutting off of valve in case of leakages

Smart meter readers can facilitate this process with the use of sensors and AI



Details & Impact



Reduced cost of data collection



Better manpower management



Secured data transfer and enhanced safety for operators (turn off valve remotely)



Lowered carbon emissions (due to travel reduction to monitor consumption data)

Use Case in Action



Gas supplier in Japan, willing to digitalize its gas consumption data collection, installed 900,000 Smart Meter Readers onto existing gas meters to eliminate the manual data collection

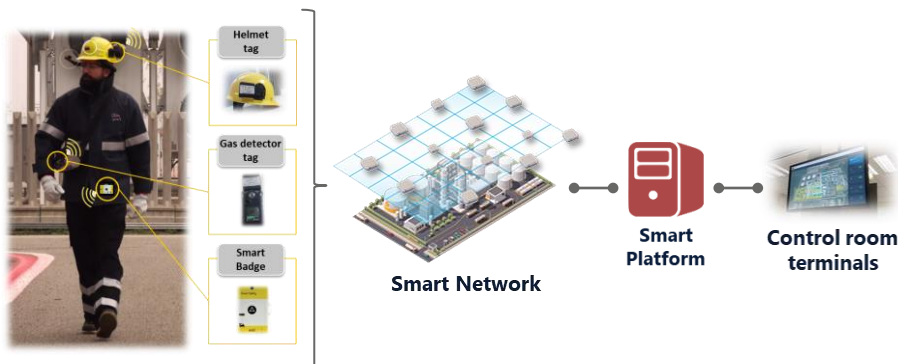


Eastern Asia water company digitized its water consumption data collection to conserve water and identify leaks. The firm installed over 3,000 units onto its existing water meter to eliminate manual monthly data collection



Description

Technological platform that, using the latest generation of wearables digital devices and applications for "**intelligent personal protective equipment**", aims at **increasing the safety level of the operators** and further **increment the efficiency of emergency procedures** within industrial plants



Details & Impact

Solution key elements:

Smart badge: ATEX¹ device used by operator able to communicate with central data repository and send data collected

Smart tag: ATEX sensor associated and installed on PPEs²

Smart network: based on ATEX devices, smart networks are installed on the plant and used to localize the smart badge with an approximation of 2 meters

Smart platform: software that enables to elaborate data coming from smart badges, to identify required actions, and generate proper notifications to operators

1. Equipment for potentially explosive atmospheres 2. Personal Protective Equipment

Use Case in Action

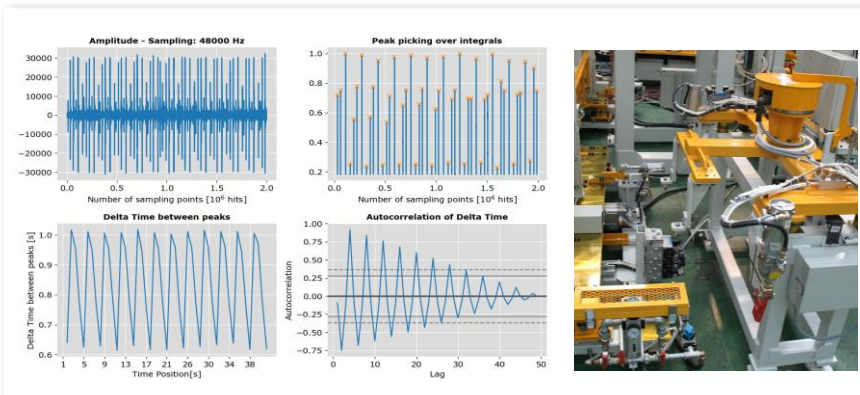


Italian oil and gas company has developed a smart solution to grant increased operator safety and higher visibility on specific operational activities, man down conditions, falls alerts, and rescue requests (SOS)



Description

Sound-based predictive maintenance consists in an early warning system for the detection of anomaly precursors through machine learning approaches aimed at **analyzing and interpreting sounds generated by industrial machinery**



Details & Impact

The collection and monitoring of operating data requires the design of a system of sensors capable of measuring a plethora of variables

The **study of audio signals recorded during operations can represent an effective and alternative technique due to low installation costs and versatility of application on different kinds of machinery**

Components:

- Automatic procedure for segmentation and feature **extraction from audio tracks**
- Predictive algorithm for identifying **potential anomalies during machine operation**
- Integration of machine learning algorithms that allow **machine interfacing and data analysis** (exploration and analytics), and provide **decision support in the treatment of malfunctions** (e.g., early warning with explanations, suggestions on downtime)

Use Case in Action



An Italian manufacturing company, specialized in the production of industrial machines, introduced different types of machines with a single early warning system based on sound analysis to improve efficiency of its maintenance process



People



Planet



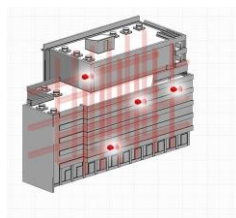
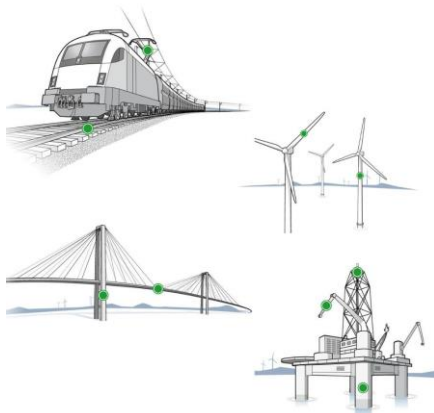
Prosperity

B20 Italy
Recommendation

G20 3P Impacted

Description

Monitoring and assessing the structural condition of a construction/infrastructure, through non-invasive evaluations, using a wide array of connected sensors in order to **detect the location, the extent of a potential damage, and asset remaining life**



Use Case in Action



Two Australian bridges have been integrated with sensors to capture and understand the bridges behaviors. Real time monitoring data management and analysis can predict the remaining service life and structural capacity

Details & Impact

Features

- **Real-time monitoring** of buildings structural conditions
- **Interpretative visual analysis** on sensitive elements and "crack detection"
- **Perspective 3D-modeling** of buildings

Enabling Technology

- **Drones**, to acquire high-resolution photogrammetry
- **Microsensors** installed during construction phase or on the load-bearing walls of already constructed buildings

Main advantages

- **Reduced manual inspection services.** Improved triaging and scheduling of maintenance
- **Safety and compliance.** Reduced delay time from hazard alert to risk mitigation action. In the event of tremors, it is possible to check immediately whether structural damage has occurred
- **Data sharing.** Making available data collected to third-parties in a standard format and through a centralized repository



People



Planet



Prosperity



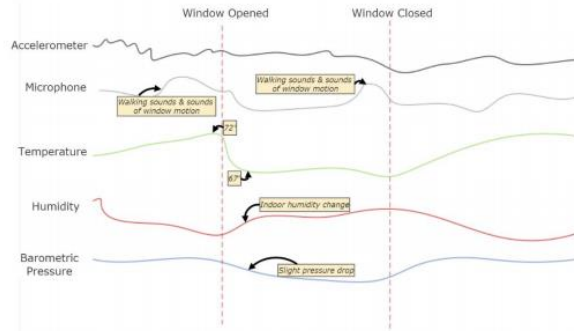
B20 Italy

Recommendation

Description

Traditional IoT approaches rely on direct or distributed sensing of the environment, most often by measuring one specific aspect of it with special-purpose and dedicated sensors

A general-purpose sensing approach involves a single highly capable sensor, which is trained to learn what is occurring, based on different signals gather from the environment



Details & Impact

A **synthetic sensor device** placed within a room, measures **multiple signals** and uses **machine learning algorithms** to process the data picked up, distinguishing between different kinds of events. Raw sensor data are virtualized into actionable feeds

For instance, this device can learn which burner on a stove is lit, whether the dishwasher is running, whether the faucet was left on, even when there is no physical sensor on them

Main advantages:

- **No video or photographic data are required**, Reducing privacy and security concerns
- **Power consumption**, lower need of batteries since devices can be plugged directly into an electrical socket

Use Case in Action



International researchers developed a platform which translates data from a single low-cost IoT device into faucet running, appliance usage and in-house resource usage detection. The system can also inform on water leaks, open doors, sounding alarms and sudden temperature changes

71 Traceable and Smart Packing

IoT

Consumer Goods, Industrial Goods,
Logistics & Mobility

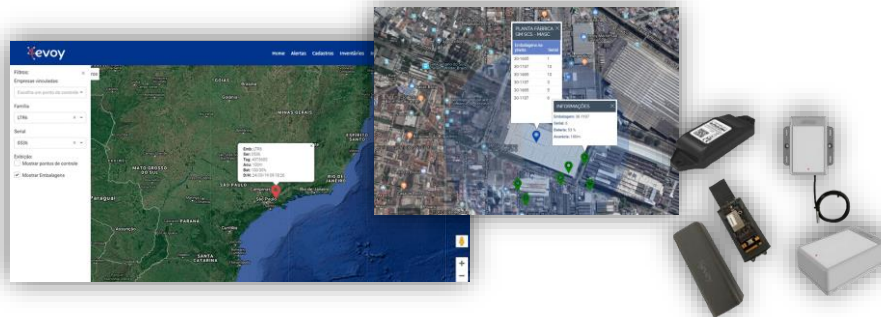


G20 3P Impacted

B20 Italy
Recommendation

3

Description



Any kind of asset can be turned into smart and traceable device by using autonomous technology, global connectivity and a software platform with big data and artificial intelligence

These competencies allow monitoring several asset conditions, including localization and temperature, preventing product loss or damage

Use Case in Action



***French automotive company**, uses smart packing to track packaging for automotive parts such as windshields, preventing misplacement and wasting*

Details & Impact

Traceable and smart packing includes several benefits:

Increased visibility: find assets by geolocation, identify efficiency gaps and improve the routing of products

Enhanced monitoring: measure and analyze turnover time, absence and permanence of assets in one location




















More efficient control: optimize time to manage and control assets with online inventories and accurate decision-making



***Globally**, products as vaccines need to stay at specific temperatures. Smart coolers are being used to transport these critical medicine avoiding wastes and keeping vaccines safe*



Use Cases Referring to: Robotics & Automation

	Use Case	Secondary Digital Driver(s)	Relevant Industries	B20 Italy Rec ¹	G20's 3P ²
72	Automated Storage & Retrieval System	IoT	Logistics & Mobility, Healthcare & Life Sciences	③	
73	Autonomous Pallet Truck Solutions	-	Logistics & Mobility, Industrial Goods, Consumer Goods	③	
74	Mobile Robot Solutions	-	Industrial Goods	③	
75	Real-Time Monitoring Systems	Connectivity	Industrial Goods	③	  
76	Remote Grid Monitoring	IoT	Energy & Utilities	③	  
77	Remotely Operated Robots	Augmented & Virtual Reality	Industrial Goods, Energy & Utilities, Healthcare & Life Sciences	③	 
78	Robotics in Construction	A.I.	Industrial Goods	③	 
79	Robotics in Logistics & Warehousing	A.I.	Logistics & Mobility, Consumer Goods, Industrial Goods,	③	 
80	Robots for Offshore Maintenance	Connectivity	Industrial Goods, Energy & Utilities	③	 
81	Smart Robotic Farming	A.I.	Consumer Goods	③	 

1. Reference to relevant B20 Italy Digital Transformation Task Force's Policy Recommendation 2. G20'Italy's 3P (People, Planet, Prosperity) positively impacted by the Use Case



Use Cases Referring to: Robotics & Automation

Use Case	Secondary Digital Driver(s)	Relevant Industries	B20 Italy Rec ¹	G20's 3P ²
82 Social Robots	IoT	Healthcare & Life Sciences	③	

1. Reference to relevant B20 Italy Digital Transformation Task Force's Policy Recommendation 2. G20'Italy's 3P (People, Planet, Prosperity) positively impacted by the Use Case

72 Automated Storage & Retrieval System

Robotics & Automation

IoT

Logistics & Mobility, Healthcare & Life S.



G20 3P Impacted

B20 Italy Recommendation

Description

Completely automated Goods-to-Person system, consisting of high-density storage racks for boxes, smart and collaborative robots with self-navigation capability and fleet management system ensure high utilization and expected throughput



Details & Impact

Solution's elements

- Smart & collaborative **robots**
- **Fleet management system** orchestrating fleets of mobile robots
- High density rack **storage**
- Pick/Put station
- **Analytics** dashboard

Features

- Mixed **storage capability**
- **Flexibility** to handle peak loads
- **Retrofittable** to existing warehouse

Impact

- Enhances **productivity** by **3-4 times**
- Enhances **order accuracy**
- Reduces **space requirement** by multifold

Use Case in Action



American leading provider of warehouse automation systems allows overall building footprint reduction up to 50% versus conventional warehouses, also reducing energy costs by 40% in cooler environments



Italian pharmacy installed a warehouse automation systems to help doctors find the right medicine, also reducing overall inventory surface in the store by 20%



Description

Completely autonomous pallet movers **not requiring any human operator and navigating freely** in a manufacturing or warehousing environment increase overall efficiency



Details & Impact

Features

- **Highly scalable throughput** - incremental ramp-up through robot addition
- **Highly flexible material flow** - can handle complex multipoint process flow requirements
- **Highly collaborative behavior** - can solve erroneous pallet placement
- **Does not require man-free zone** - robot routes are safe for human/other material interactions

Impact

- **Reduced human errors** in handling products
- Enhanced resource **flexibility** and **modularity**
- **Increased efficiency** of the overall system exploiting automation

Use Case in Action



Indian-based consumer products manufacturer automated pallet movements from conveyor output to final staging

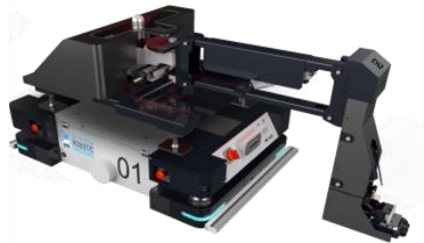


British international corporation automated pallet movement along the whole supply chain, allowing for time savings and efficiency increases



Description

Mobile robots transform production environment into a **flexible, modular process by providing solutions for automating material movement and production line**. Smart & collaborative mobile robots are autonomous in navigating material handling equipment, unit load carrying, trolley tugging, trolley tunneling, and mobile conveying.



Details & Impact

Impact

- **20-30% reduction** in material movement cost
- Enhanced **workplace safety** preventing workers from engaging in potentially dangerous activities

System

- **Automated guided** vehicles & autonomous mobile robots
- **Fleet management system** orchestrating fleets of mobile robots
- **Analytics** dashboard

Features

- **Highly scalable throughput** - incremental ramp-up through robot addition
- **Highly flexible material flow** - handling complex process flow
- **Highly re-utilizable solution** - quickly operating re-start in case of robot failure
- **Does not require man-free zone** - robots' routes are free & safe for human/other material movement

Use Case in Action



Indian automotive manufacturer integrated a fully-automated vehicle assembly line for components and singular parts



American machinery manufacturer completely automated the process of marriage between the engine and the transmission by implementing highly accurate mobile robot solutions



Description



A Real time monitoring system uses sensors, cameras and other data collection devices to **monitor processes and enable informed decision making on key parameters adjustments to ultimately achieve the highest efficacy and efficiency possible**

Monitoring dashboards allow operators to visualize complex data including suggesting corrective actions



Details & Impact

Corporates can benefit from real time monitoring, across four main dimensions:

- **Optimized process parameters** such as temperature and pressure, for improved operational efficiency
- **Reduced energy consumption** through real-time adjustment of power exchanges and energy recovery
- **Higher throughput rate**, enabled by increased productivity within the industrial process
- **Increased overall equipment effectiveness**, including reduction of plant downtime and bottlenecks, and labor force constraints

Use Case in Action



South Africa-based engineering company collects and analyzes manufacturing lines and performance data, then recommends improvements to **optimize procedures and operations**



Swiss multinational corporation uses technological solutions to develop **innovative plant monitoring systems** for maximum efficiency



German energy provider features a **cloud-based Real-Time Process Monitoring System** using thermodynamic analysis to indicate **optimization potential** for efficient and stable plant operations with **reduced CO/Nox emissions**

76 Remote Grid Monitoring

Robotics & Automation

IoT

Energy & Utilities



People



Planet



Prosperity

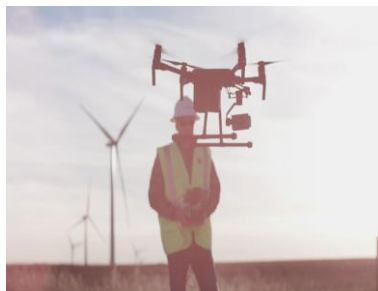


B20 Italy

Recommendation

G20 3P Impacted

Description



Energy companies are choosing to adopt equipment that can be used remotely, in order to increase safety and process efficiency: **camera-equipped and connected drones** are able to inspect areas that can be hazardous to workers, such as reactors, transmission towers, power lines, wind turbines, and solar panels.

This approach is transforming how energy-producing facilities are inspected for the better

Details & Impact

Drones, equipped with **high-definition cameras** and supported by **high bandwidth and ultra low latency connection**, allows for different benefits:

Enhanced safety: high quality videos ensure that remote inspections provide the same experience as a traditional inspection without the safety risk, for example reduction of operator exposure to radiation by 80%

Reduced downtime: according to estimates, introducing drone inspection could reduce downtime during inspections by 80%

Lower inspection times: registered impact shows inspection times reduction up to 83%

Use Case in Action



Swedish producer and retailer of electricity adopted drones to carry out site and equipment inspections. Thanks to drones, the company can inspect the sealing plate of its nuclear plant containment wall in a **safe and efficient way**



Spanish multinational utility company implemented drones to **detect structural incidents** in wind turbine blades and serve as a **guide during maintenance**, saving considerable costs and increasing safety

77 Remotely Operated Robots

Robotics & Automation

A. & V. Reality

Industrial Goods, Energy & Utilities,
Healthcare & Life Sciences



G20 3P Impacted

3

B20 Italy
Recommendation

Description

Remotely operated robots can be implemented for **hazardous industrial environments** in sectors such as **nuclear energy or mining**, as well as for the minimization of potential pollution in sterile environments such as **clean rooms** in hospitals



Details & Impact

Remotely operated robots are aimed at solving situations in risky or difficult-to-access environment under remote human supervision

Requirements and limitations:

- There are no repetitive actions
- Manual expertise is required
- Hard to automate

Solution's elements:

- Use of standard industrial robotic arms
- Teleoperation system with haptic feedback
- 3D vision of the operator
- Easy to train and use

Benefits:

- Advanced worker safety
- Increased precision

Use Case in Action



US national laboratory developed a robot, that accurately reproduces movements of the operator's hands, to handle radioactive materials



European pharmaceutical company has implemented a tele-operated robotic solution that reduces required human assistance in clean environments

Description

While manual labor will always be a huge component of modern construction, technology has been steadily improving since the first pulleys and power tools. **Robots and A.I. can be introduced in every phase of the construction process from conception to infrastructure realization**



Details & Impact

The use of robotics in construction industry can provide different benefits:

Lower execution time: robots are available to work 24h/7, significantly reducing downtimes and, subsequently, the time needed to deliver constructions

Higher efficiency: robots allow workers to do their job faster and more efficiently, also helping them in properly balancing the lifted weight and offering great stability when using heavy tools (e.g., with Exoskeletons)

Increased safety: robots' precision minimizes the possibility for unpredictable mistakes and the chance for accidents. On top of that, the use of remotely controlled robots allows people working in construction to access safely places characterized by high accident risks (e.g., mines)

Use Case in Action



Companies belonging to 6 different countries partnered to develop a robotic solution conceived for accomplishing multiple tasks on vertical or inclined planes of the built environment



American robotics company offers autonomous bulldozers and excavators. A.I. guidance systems direct the equipment to their destination and ensure that the necessary work is completed safely and accurately



Description

Drones and autonomous robots can be powerful levers to **enhance supply-chains** along different tasks within logistics and warehousing: inventory audit, inventory management, cycle counting, item research, buffer stock maintenance, stock taking, intra-logistics, and consumer delivery



Details & Impact

Autonomous solutions including robots are gaining importance in logistics as they have the potential to **replace outdated technologies such as fixed conveyor belts**, conventional **guided vehicles**, and **transportation means** that still rely on human assistance, supervision and guidance

Collaborative autonomous robots are fully enabled by a goal-based automation approach; they are programmed to facilitate, and not substitute, human activities in everyday work such as picking, sorting and shipping

Typical benefits for companies include:

- Reduced **delivery time**
- Full **flexibility** in fast-changing environment
- Improved **reliability** on availability of goods

Use Case in Action



French logistic company is implementing autonomous solutions for the **optimization of transportation and warehousing** activities



German logistics services firm successfully piloted a **project delivering medicine** to islands off German coasts and mountains



American online retailer received in August 2020 Federal Aviation Administration (FAA) **final approval to operate as a drone airline** company

Description



Offshore operations, presenting high risks and costs, are common in the **oil & gas industry**

Robots can be used to **support maintenance** or even **performing activities unreachable for human beings**

Semi-autonomous robots can aid the industry with difficult task by, for example, **painting ship hulls** or **recovering clogged pipelines** without stopping the oil rig or platform operations

Details & Impact

Maintenance tasks of oil rigs or platforms normally involve **high risks** environments for human beings. The use of **semi-autonomous robots** can greatly **reduce risks and costs** and even **increase productivity due to several factors:**

- **Increased resilience:** unlike the robots, manual operations can be greatly impacted by climate changes as strong winds or waves
- **Higher productivity:** semi-autonomous robots can greatly reduce time of operations and even perform tasks human beings can not
- **Lower costs:** savings arising from avoided logistics and hospitality cost due to remote interventions and thanks to reduced downtimes

Use Case in Action



Brazilian oil & gas company utilized robots for painting its Floating Production Storage and Offloading (FPSO) ship hull



Brazilian oil & gas company performed maintenance of 4" pipes leveraging robots



Description

In response to farm labor shortage and increased efficiency need, **smart robotic farming** could be deployed for agricultural purposes to **gather insights on soil health and automate slow, repetitive task for farmers, allowing them to focus more on improving overall production yields**



Use Case in Action



***International startups** produced a weed-yanking autonomous robot which differentiates between weeds and crops, so the former are stripped, and the latter left to grow. As it runs, the system also gathers data that help farmers with soil analysis and environmental monitoring*



***A global company** developed an apple sucking vacuum robot that visually identifies harvestable fruit and physically pick it up without bruising it*

Details & Impact

Technologies involved and their applications:

- **Agricultural drones** can observe a hard-to-reach field and send data about an impending storm, a swarm of pests, or other agricultural pitfalls
- **Biosensors** exploit the use of chemical and gas analyzers to monitor oxygen, carbon dioxide, and ethylene that affect harvest ripening, storage, and transportation
- **Autonomous field plowing, seeding, or navigating tractors and equipment** may use a combination of computer vision, sensors, and GPS to navigate and act as the driver in robotic plowing trucks

Advantages:

- **Higher efficiency and yield** due to machine utilization
- **Lower resource consumption** due to better precision
- **Attracting new generation of workers to the land**, since it can create jobs for people capable of handling technologies
- **Robots can protect human workers** from the harmful effects of handling the chemicals



People



Planet



Prosperity

Description



Social robotics uses autonomous or semi-autonomous machines for interacting with humans simulating social behaviors and rules related to their specific role

The term **Social Robots** identifies systems and software that facilitate an effective communication between humans and robots (using Natural Language, Gestures, Facial Expressions ...)

Details & Impact

Social Robots offer various applications and advantages:

- They offer "**emotionally engaging experiences**", having the ability to express emotions and hold complex conversations with humans
- They can trace and analyze **attitude and emotions** of people, establishing social relations which can help contrasting depression and other psychological disorders
- They can be used in therapies for children and elderly people, indicating patients' **degree of involvement** (nodding, laughing, verbal backchannels, emotions and gaze)
- They allow for **advancements in the healthcare sector** such as telepresence, rehabilitation, environment sanitation, cognitive and physical stimulation and monitoring of bedridden patients






Use Case in Action



An Italian healthcare facility, during the COVID 19 pandemic, used social robots to ensure visual monitoring of the guests on one side and contact of the guests with their relatives on the other side. This approach has proven to be very useful in improving the therapeutic continuity of guests



Use Cases Referring to: 3D Printing & Scanning

	Use Case	Secondary Digital Driver(s)	Relevant Industries	B20 Italy Rec ¹	G20's 3P ²
83	Bioprinting	Automation & Robotics	Healthcare & Life Sciences	③	 
84	Food Printing	Automation & Robotics	Consumer Goods	③	 
85	3D Printing	Automation & Robotics	Industrial Goods, Consumer Goods	③	

1. Reference to relevant B20 Italy Digital Transformation Task Force's Policy Recommendation 2. G20'Italy's 3P (People, Planet, Prosperity) positively impacted by the Use Case



Description



Bioprinting is the use of **3D printing technology** in healthcare applications to fabricate tissue scaffold using **bio-ink**, a special material composed mainly of mediums and stem cells

The printed scaffold are placed in an incubator to allow stem cells to rapidly replicate, thus creating muscle fibers resembling human body structures



Bioprinting techniques allow **enhanced precision** while recreating complex human organs and **favor co-existence and tolerance** in the patient's body

Details & Impact

Bioprinting techniques show promising outcomes in the years to come; some of the most appreciated features that this technology is bringing to the healthcare industry are:

- **Substituting organs' donor** by directly designing and growing needed organs for transplants
- **Repairing damaged body parts** such as ligaments and joints
- **Preventing cell rejection** by taking cultured cells from the patient itself
- **Facilitating drug testing in scientific laboratories**

Use Case in Action



American engineering company aims to revolutionize organ transplants by 3D-printing human hearts



Chinese medical devices company uses 3D printing technology and Nano-bionics to produce high-resembling human organs



Swiss medical devices company is dedicated to 3D-printed teeth implants for the dentistry industry. They capture patients' information by 3D scanning their mouth and turn the scan into 3D software file



US-based tech company offers a 3D printer with the unique capacity to print human cells with 95% viability rate



People



Planet



Prosperity

G20 3P Impacted

B20 Italy
Recommendation

Description

Food printing is the concept of **producing food** processed derivatives **in laboratory conditions using 3D printing**

Meat is the most promising use case of food printing.

The cell-grown meat is produced by taking a stem cell from a cow or chicken egg; then, **the cell is cultured** to grow in lab

A 3D printer is used to **map the structure** of the cultured tissue, and **create a digital blueprint** to generate real-dimensions instances of various products, using **synthetic meat as ink**



Details & Impact

The adoption of food printing have **substantial impact on both consumers and the planet**

For consumers:

- The process of synthetically growing food offers the opportunity to **re-balance nutritional values**, limiting fats and additives
- Cultured food is naturally **free from harmful pathogens** such as salmonella, and involves no **hormones** nor **antibiotics** in the process
- While the natural taste remains unchanged, printed food offers the **option for full customization** of products' flavors

For the planet:

- Synthetic food requires **no intensive breeding**, saving millions of **tons of resources** and harmful emissions every year
- Halting cattle farming, one of the primary causes of rainforest deforestation, have tremendous **impact on CO2 production**

Use Case in Action



American fast-food giant partnered with a European **3D printing** company to create **lab-produced chicken nuggets** to serve to its customers



Israeli restaurant sells traditional and international food courses developed using **only 3D printing** and **cultured meat products**



Spanish food chain produces plant-based meat substitutes through **advanced food printing** and **tissue engineering technologies**



Israeli food company uses a combination of **chef robots** and **3D printing technology** to create and sell **vegan meat**



Description

3D printing is the process of turning a digital model into a three-dimensional physical object using **additive manufacturing**

Three key elements are essential for 3D printing:

- **Digital file:** instructs the printer on how to create the 3D product by providing dimensional attributes for each layer
- **3D Printing machine:** employs physical nozzles and laser pointers to lay down and shape the object
- **Material:** includes plastics, nylon, resins, metal, ceramic or hybrid materials



Details & Impact

3D printing technologies provide **several benefits** to businesses:

- **Rapid prototyping**, allowing more flexible design and easier print of complex products than traditional manufacturing processes
- **Low scrap**, increasing efficiency of production processes given the enhanced machine precision and optimized materials usage
- **Fast production**, replacing traditional assembly because of several components being embedded in one-piece object
- **Additional market opportunities**, enabled by easier customization, faster time-to-market, and "print-on-demand" approach

Use Case in Action



*US-based multinational conglomerate developed an **innovative engine** created by 3D printers which needs no assembly; substantially reducing time, effort and manufacturing incidents*



*French personal care leader company uses additive manufacturing for **functional prototypes**, components for **automation lines**, spare parts and limited series of directly **3D-printed packaging***



*Russian construction company can print an entire building on-site. Its 3D construction printer is capable of **printing a house in 24 hours** and under any weather condition*

The Digital Use Case Library is a **Legacy** of the B20 Italy Digital Transformation Task Force...

...but it should be considered as a "starting point" to be integrated and updated by **future B20 Cycles** to further **promote global awareness on digital skills and technologies**

