

Industry 4.0



CERTIFIED PRODUCTIVITY SPECIALIST (CPS) COURSE



OBJECTIVES OF INDUSTRY 4.0

- ✓ Understand the concept of Industry 4.0 and its implications towards productivity
- ✓ Understand the benefits and challenges of Industry 4.0
- ✓ Discover how to kick start and move towards Industry 4.0
- ✓ New Business Model - Technology

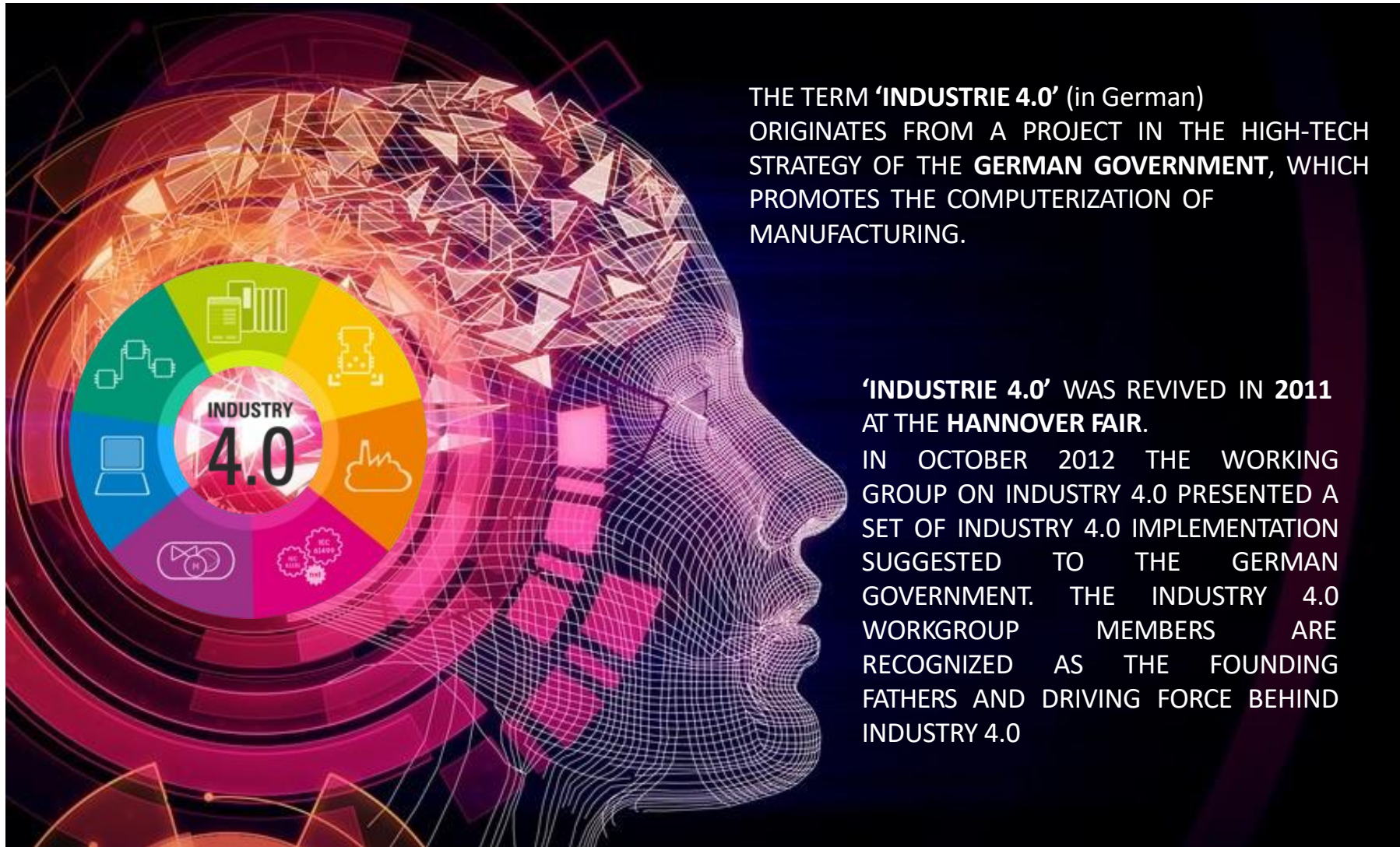


WHAT IS INDUSTRY 4.0?



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THE TERM '**INDUSTRIE 4.0**' (in German) ORIGINATES FROM A PROJECT IN THE HIGH-TECH STRATEGY OF THE **GERMAN GOVERNMENT**, WHICH PROMOTES THE COMPUTERIZATION OF MANUFACTURING.

'**INDUSTRIE 4.0**' WAS REVIVED IN **2011** AT THE **HANNOVER FAIR**.

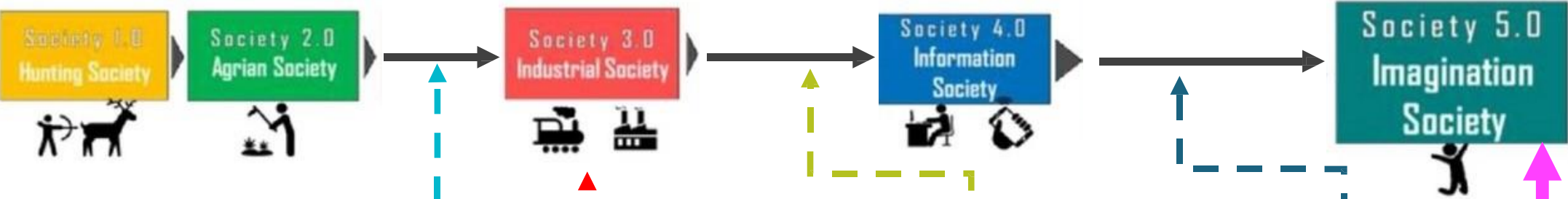
IN OCTOBER 2012 THE WORKING GROUP ON INDUSTRY 4.0 PRESENTED A SET OF INDUSTRY 4.0 IMPLEMENTATION SUGGESTED TO THE GERMAN GOVERNMENT. THE INDUSTRY 4.0 WORKGROUP MEMBERS ARE RECOGNIZED AS THE FOUNDING FATHERS AND DRIVING FORCE BEHIND INDUSTRY 4.0



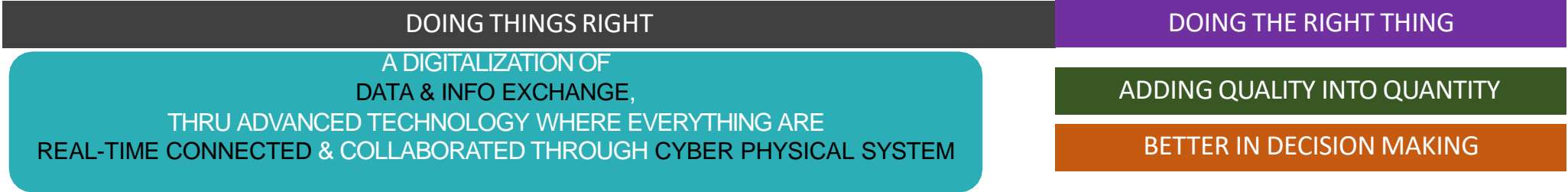
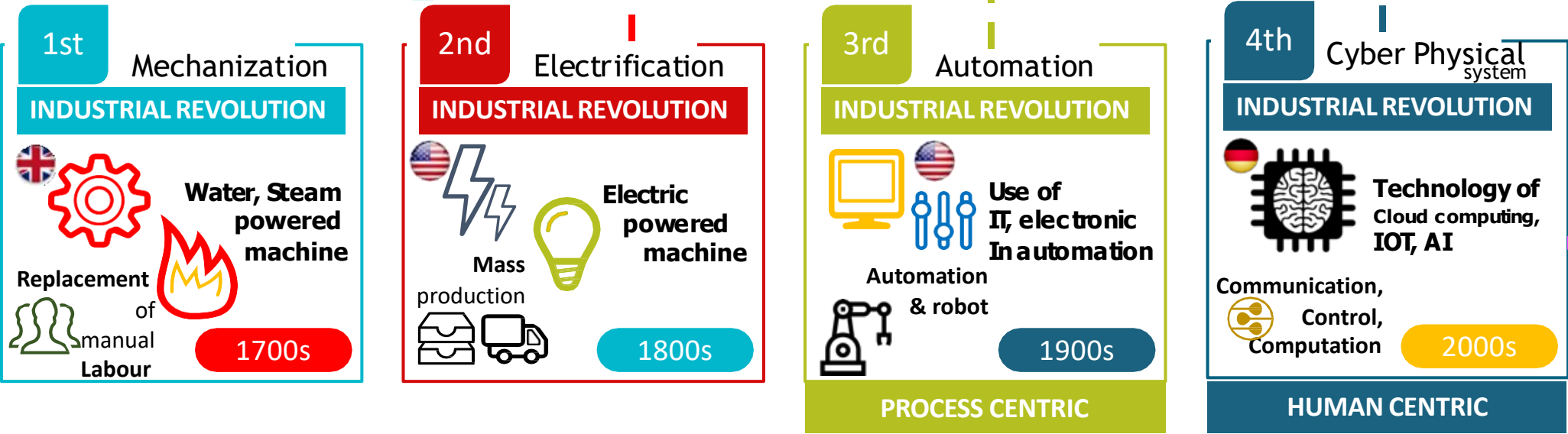
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EVOLVEMENT OF SOCIETY



EVOLVING TECHNOLOGY





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4.0
INDUSTRIAL
REVOLUTION



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CYBER PHYSICAL SYSTEM

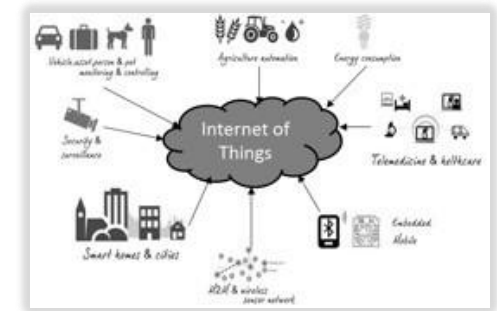
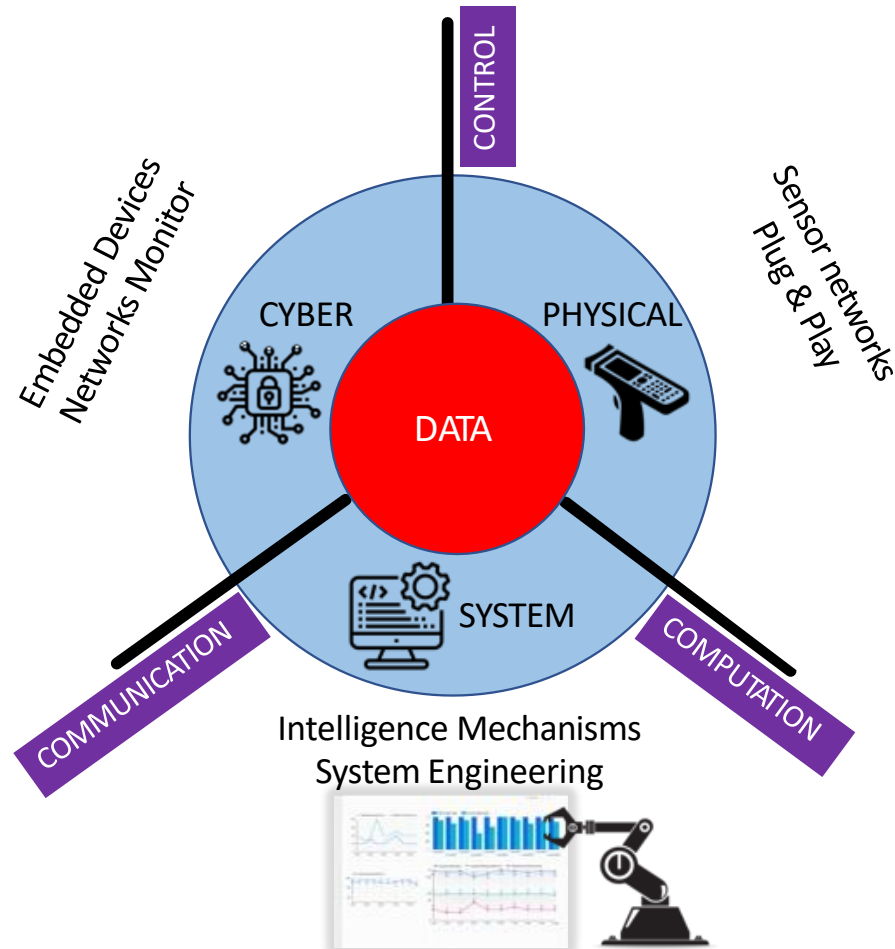


SHORT RANGE

- RFID
- BLE / Bluetooth
- Wifi
- Mesh Tech

LONG RANGE

- NB-IOT, -M
- Lora/Sigfox
- 3G/4G/5G



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4. Five foundational technologies –

Resources will be focused on building technological capabilities in 5 foundational 4IR technologies, which are able to support the deployment and optimisation of other 4IR technologies.



6. Governance – The National 4IR Policy will be governed by the National Digital Economy and 4IR Council, chaired by the Prime Minister to optimise resource allocation and coordination in elevating the country's readiness for 4IR.

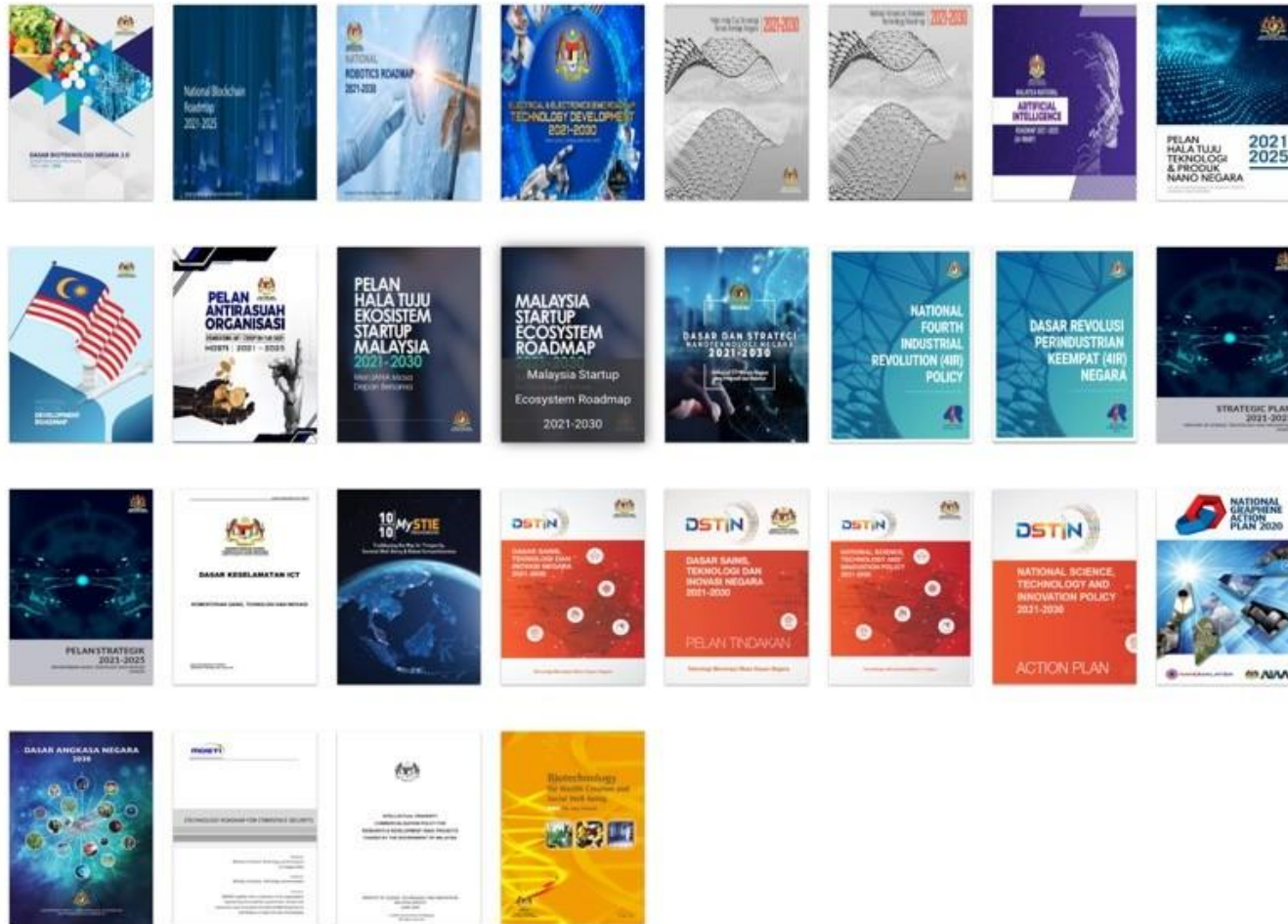
5. Ten key focus sectors – Deployment of 4IR technologies will be focused on 10 key sectors, along with 6 supporting sectors, to deliver benefits to the *rakyat*, creating new socioeconomic growth opportunities for the economy:



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List of Related Policies



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WHY INDUSTRY 4.0?



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Tren Pertumbuhan PENDUDUK DI MALAYSIA

PURATA KADAR
PERTUMBUHAN PENDUDUK
TAHUNAN 2015 - 2040

1.67%



Jumlah Penduduk Bandar & Luar Bandar



SASARAN KADAR Urbanisasi RFN3

Kadar Urbanisasi
sebanyak
77%

2020

Kadar Urbanisasi
Tidak Melebihi
85%

2040



Sumber: Data-Data Asas Malaysia, DOSM
 Rancangan Fizikal Negara ke-3, PLAN Malaysia, 2016





Kos Perumahan Yang Semakin Meningkat

Peningkatan 9.8% harga rumah antara tahun 2007-2016 berbanding peningkatan pendapatan isi rumah iaitu hanya 8.3%.

Bagi tempoh 2016-2017, hanya sebanyak 35% daripada isi rumah mampu memiliki rumah berharga melebihi RM250 ribu, dan hanya 24% daripada pembinaan projek perumahan baru adalah berharga kurang RM250 ribu.

Bagi suku ke-2 tahun 2017, hampir 82% unit rumah tak terjual merupakan rumah berharga melebihi RM250 ribu.
 Sumber: BNM – S4 2017

Peningkatan Penjanaan Sisa Pepejal

37,000 tan sampah dibuang setiap hari iaitu kira-kira 13.5 juta tan sampah telah dibuang setiap tahun.

Dianggarkan sebanyak RM2.2 billion diperuntukkan setiap tahun bagi mengurus pembuangan sampah.

Sehingga tahun 2016, lebih 185,000 surat peringatan telah dikeluarkan oleh PPSPA kepada pemilik premis yang gagal melaksanakan pengosongan sisa di punca.

Sumber: Perbandaran Sisa Pepejal dan Pembersihan Awam (PPSPA), 2017

Peningkatan Penggunaan Sumber Air

Pada tahun 2013, penggunaan air di Malaysia adalah 10 billion liter sehari yang mana penggunaan air di kawasan Lembah Klang sahaja adalah tiga (3) billion liter sehari.

Sumber: Dasar Perbandaran Negara Kedua, PLAN Malaysia, 2016

CABARAN DAN ISU Perbandaran Di Malaysia

Peningkatan Kos Sara Hidup di Bandar-Bandar

Terdapat lebih kurang 2.7 juta isi rumah B-40 dengan pendapatan purata sebanyak RM 2,537.00 sebulan manakala 2.67 juta isi rumah M40 berpendapatan antara RM 3,855.00 hingga RM 8,135.00 sebulan, yang mana 83.0% daripada jumlah tersebut menetap di bandar-bandar.

Perkara ini menyukarkan mereka untuk memiliki tempat kediaman yang berdekatan dengan tempat bekerja.

Sumber: Dasar Perbandaran Negara Kedua, PLAN Malaysia, 2016

Peningkatan Pemilikan Kenderaan

Sehingga Jun 2017, jumlah kenderaan berdaftar di Malaysia berjumlah 28.2 juta berbanding 20.2 juta pada tahun 2010. Peningkatan sebanyak 28.4%.

Bagi tempoh Jan – September 2018 sahaja, terdapat pertambahan sebanyak 454,971 unit pemilikan kenderaan berdaftar di Malaysia.

Wilayah Persekutuan (Kuala Lumpur, Putrajaya, Labuan) sahaja mencatatkan pemilikan kenderaan tertinggi iaitu 6.3 juta diikuti Johor (3.6 juta), Selangor (2.9 juta) dan Pulau Pinang (2.6 juta).

Sumber: Malaysian Automotive Association – September 2018

Pemeliharaan Alam Sekitar

Suhu di Malaysia telah meningkat sebanyak 0.18 darjah celsius setiap dekad sejak tahun 1951.

Fenomena kenaikan paras air laut juga merupakan satu cabaran baru.

Sumber: Dasar Perbandaran Negara Kedua, PLAN Malaysia, 2016



- The **world economic growth** is increasingly driven by **digitalisation**.
- **Consumer behaviour** has evolved to prioritise quick and convenient experiences which is **powered by the internet and mobile phones**.

MyDIGITAL is designed to complement national development policies such as the Twelfth Malaysia Plan (RMKe-12) and *Wawasan Kemakmuran Bersama 2030* (WKB 2030). **Digital economy** was identified as a **key economic growth area (KEGA)** in realising WKB 2030, to make Malaysia a **country which is developing sustainably with fair economic distribution as well as equitable and inclusive growth**.



“Ins” and “outs”

The demand for some jobs will rise over the next five years, while for others it will shrink.

Increasing demand		Decreasing demand	
1	Data analysts and scientists	1	Data entry clerks
2	AI and machine learning specialists	2	Administrative and executive secretaries
3	Big data specialists	3	Accounting, bookkeeping, and payroll clerks
4	Digital marketing and strategy specialists	4	Accountants and auditors
5	Process automation specialists	5	Assembly and factory workers
6	Business development professionals	6	Business services and administration managers
7	Digital transformation specialists	7	Client information and customer services workers
8	Information security analysts	8	General and operations managers
9	Software and applications developers	9	Mechanics and machinery repairers
10	Internet of things specialists	10	Material-recording and stock-keeping clerks
11	Project managers	11	Financial analysts
12	Business services and administration managers	12	Postal services clerks
13	Database and network professionals	13	Sales rep., wholesale and manufacturing, technical and scientific products
14	Robotics engineers	14	Relationship managers
15	Strategic advisors	15	Bank tellers and related clerks
16	Management and organization analysts	16	Door-to-door sales, news, and street vendors
17	FinTech engineers	17	Electronics and telecoms installers and repairers
18	Mechanics and machinery repairers	18	Human resources specialists
19	Organizational development specialists	19	Training and development specialists
20	Risk management specialists	20	Construction laborers

Source: Future of Jobs Survey 2020, World Economic Forum.



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DIGITAL ECONOMY

Malaysia defines digital economy as:

“Economic and social activities that involve the production and use of digital technology by individuals, businesses and government.”

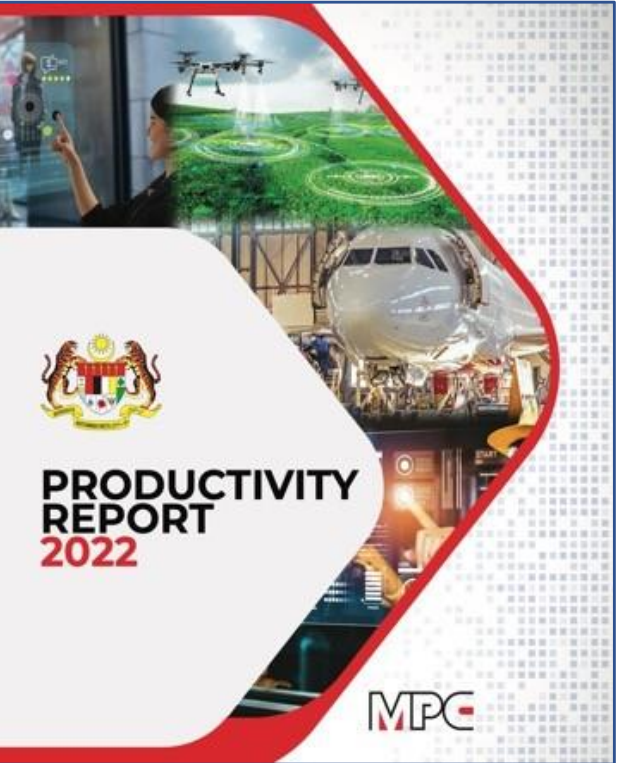


As digital technologies become more prevalent, the digital economy will become the foundation of the modern economy.

Accelerating the digital economy is no longer an option but
crucial for Malaysia.



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MALAYSIA'S PRODUCTIVITY GROWTH, 2001 – 2022*



Note : 2009: Global financial crisis; 2013: Financial crisis; 2021: COVID-19 pandemic; *2022: Projection
Source: Department of Statistics Malaysia (DOSM)

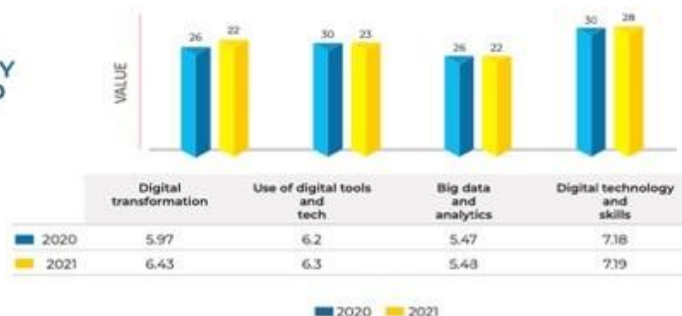


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FIGURE 10

MALAYSIA'S PERFORMANCE IN DIGITAL TECHNOLOGY ADOPTION, 2020 AND 2021



Source: IMD World Competitiveness Yearbook (WCY)

FIGURE 11

*MALAYSIA'S PERFORMANCE IN DIGITAL INFRASTRUCTURE, 2017 - 2021

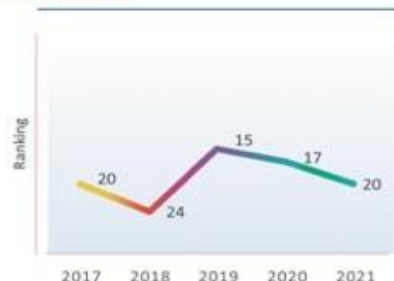
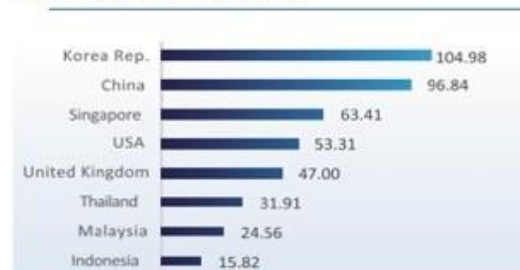
Source: IMD World Competitiveness Yearbook*,
Ookla's Global Median Mobile Download Speeds (November 2021)**

FIGURE 12

**INTERNET SPEED IN MALAYSIA IN COMPARISON WITH SELECTED COUNTRIES



However, in terms of digital infrastructure, Malaysia's performance kept declining over the years, where Malaysia fell from 15th position in 2019 to 20th in 2021. Malaysia still lagged in mobile download speed. Based on Ookla's Global Median Speeds in November 2021, Malaysia's mobile download speed stood at 24.56Mbps, behind South Korea (104.98Mbps), China (96.84Mbps), Singapore (63.41Mbps), and even Thailand (31.91Mbps).

Based on data accumulated from two MPC's flagship digitalisation programmes, namely Productivity1010 and Industry4WRD Readiness Assessment (RA), **80% of the Malaysian companies are still at Level 1 and Level 2 of Technology Adoption.** Level 1 and Level 2 refer to the most basic level in technology adoption, which is equivalent to Beginner and Observer in Productivity1010 and Newcomer and Conventional in Industry4WRD RA.

FIGURE 13

80% OF MALAYSIAN COMPANIES STILL AT LEVEL 1 AND 2 OF TECHNOLOGY ADOPTION IN MALAYSIA



FIGURE 14

69% OF MALAYSIAN COMPANIES STILL AT BEGINNER AND OBSERVER LEVEL (P1010)



FIGURE 15

90% OF COMPANIES STILL AT THE BASIC LEVEL OF INDUSTRY4WRD READINESS ADOPTION



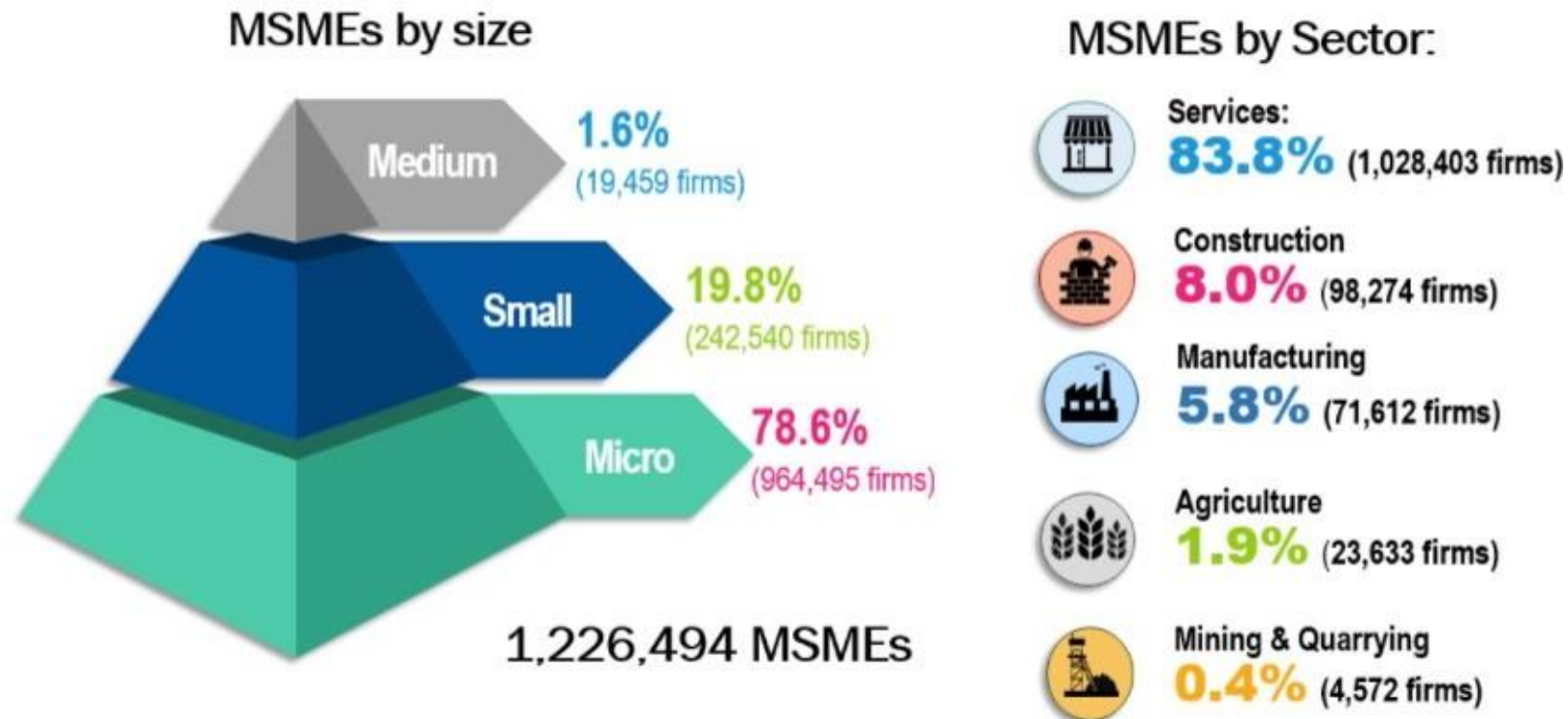
Source: MPC's analysis based on Productivity1010 and Industry4WRD Readiness Assessment database, December 2021

The government is committed to accelerating technology adoption by the public and private sectors. The aspiration is to achieve 50 per cent of technology adoption at levels 3 to 5 by 2025 in Malaysian firms. MyDigital, Malaysia's long-term all-inclusive digitalisation initiative, aims to transform the country into a digitalised nation by 2030. Implementing MyDigital will enable Malaysians to enjoy an improved quality of life, optimise business resources, and provide more quality and effective products and services.

MPC recognises a massive room for improvement in business digitalisation. MPC has identified several challenges: the low take-up rate of digital technology programmes among businesses, the lack of commitment to remain persistent in digital transformation, and limited success stories and best practices among SMEs to inspire and motivate other SMEs to adopt digital technology. The lack of awareness of the benefits gained from digitalisation is widespread among businesses.



MSMEs are the backbone of the economy, representing 97.4% of overall business establishments in 2021



Source: Malaysia Statistical Business Register, Department of Statistics, Malaysia

Note: Data as of 28 February 2022

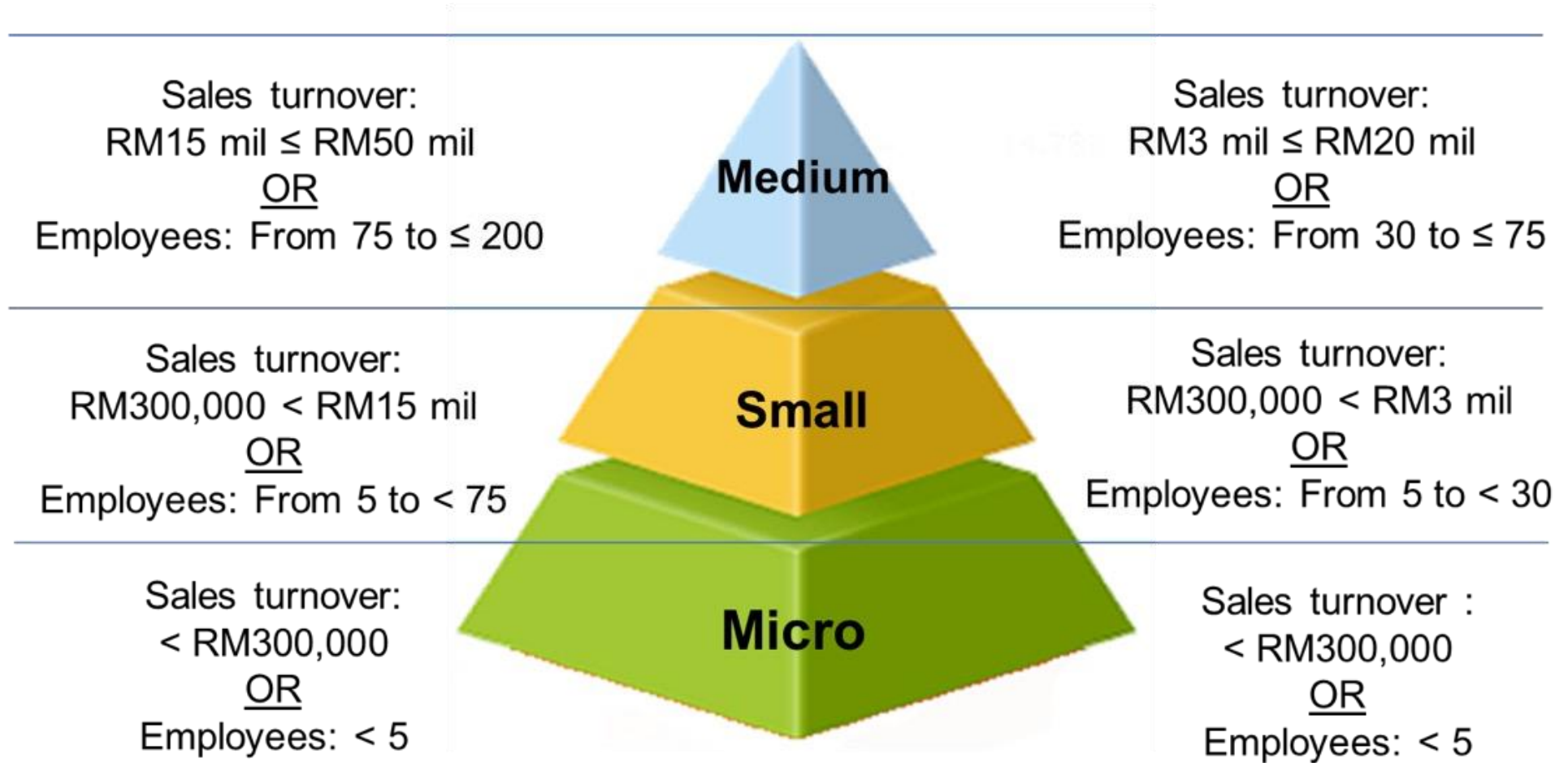


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Manufacturing

Services and Other Sectors

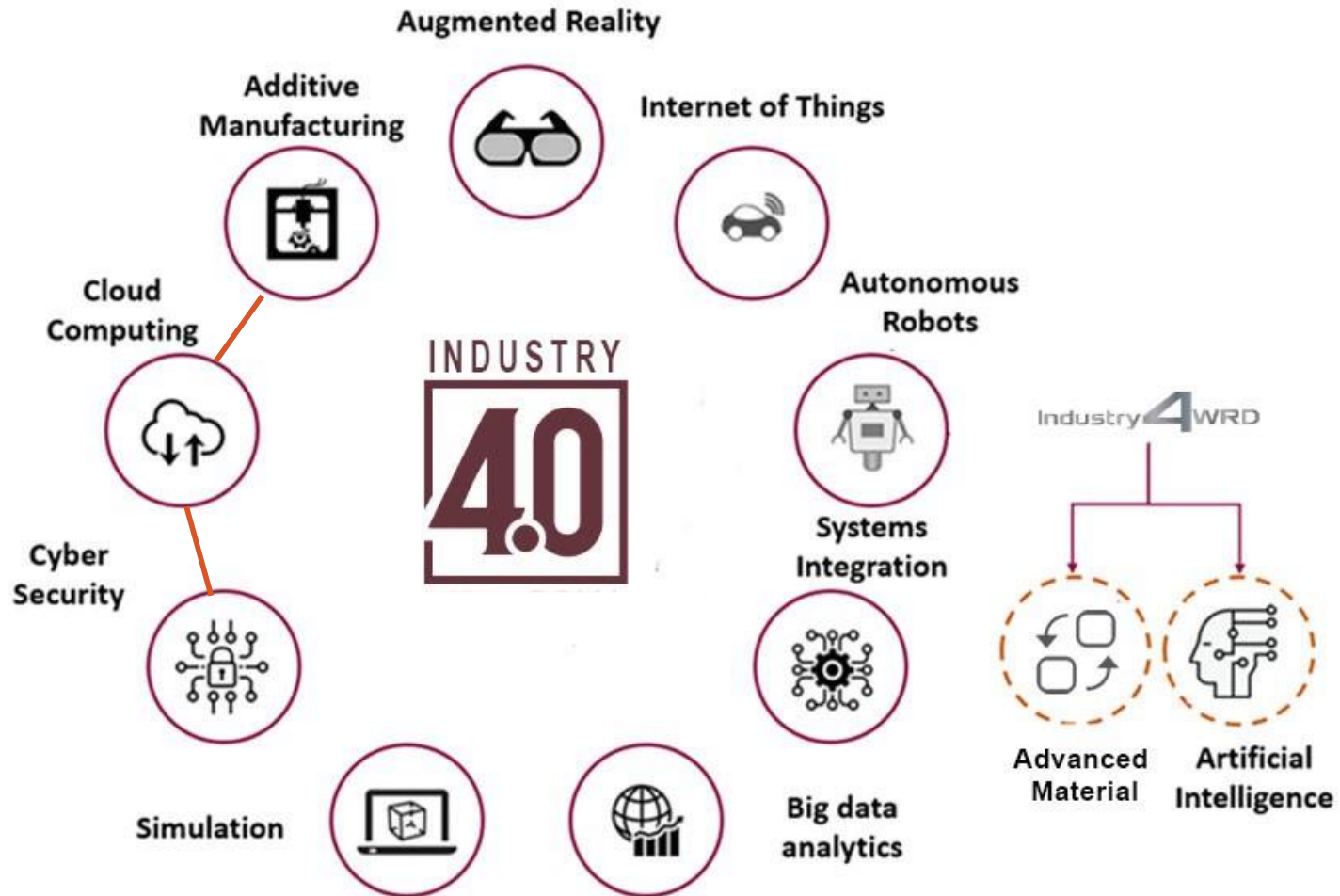


TECHNOLOGY PILLARS OF INDUSTRY 4.0



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ADVANCED MATERIAL



Advanced Materials

New materials and nano-structures are being developed, allowing for beneficial material properties, e.g. shape retention and thermoelectric efficiency. Together with additive manufacturing technologies, it will allow for massive customisation and development of products that were not possible until now.

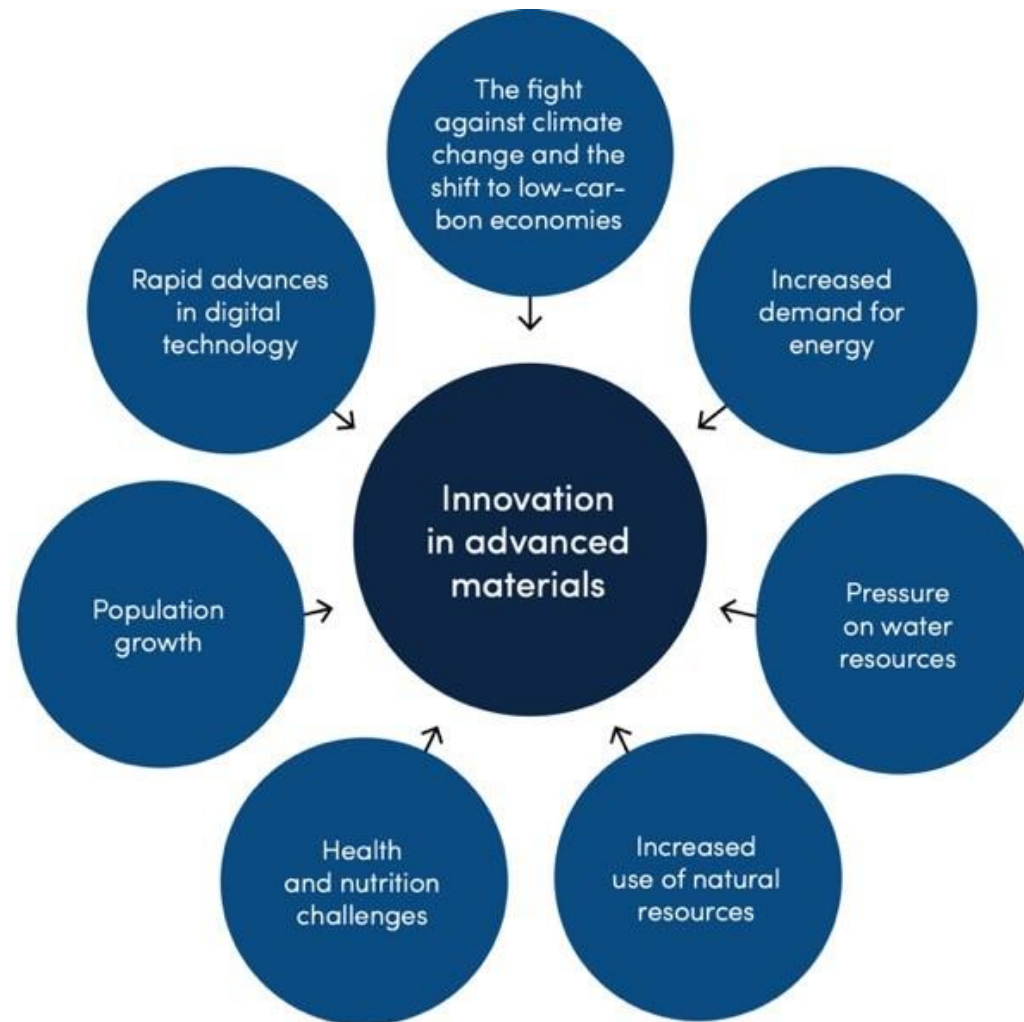


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ADVANCED MATERIAL

Trends stimulating the demand for advanced materials



ADVANCED MATERIAL

Physical performance

Electrical conductivity

Thermal conductivity

Mechanical resistance

Hardness

Efficiency

Optical properties

Magnetic properties

Functional performance

Anti-icing/hydrophobic coating

Self-healing materials

Adjustable polarized lenses

Biodegradability

Biocompatibility

Antimicrobial coating

Superabsorbent materials and impermeability



Advanced materials for batteries



For electro-mobility



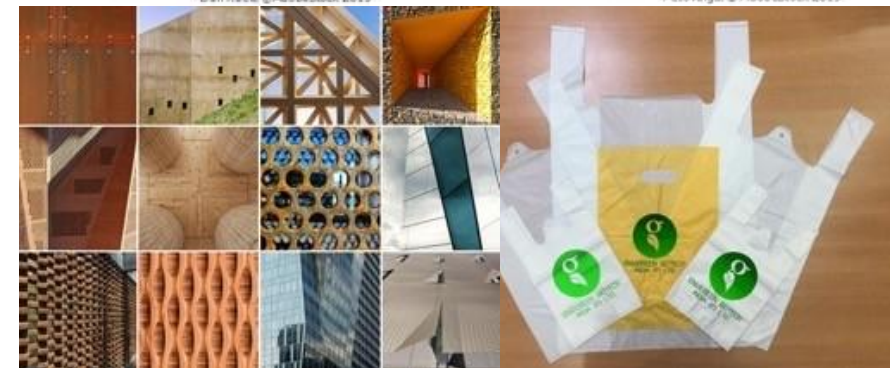
Dan Race, © AdobeStock 2019



For stationary energy storage



Petovarga, © AdobeStock 2019

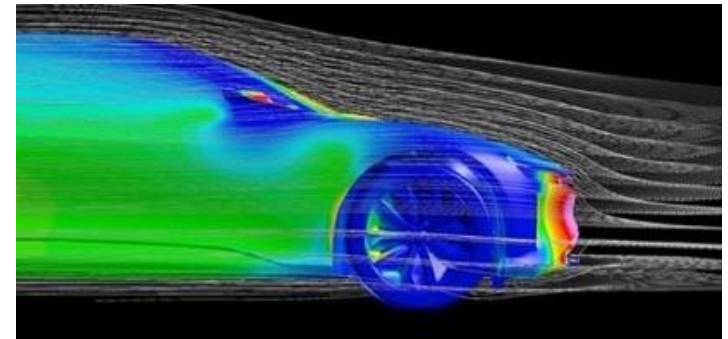
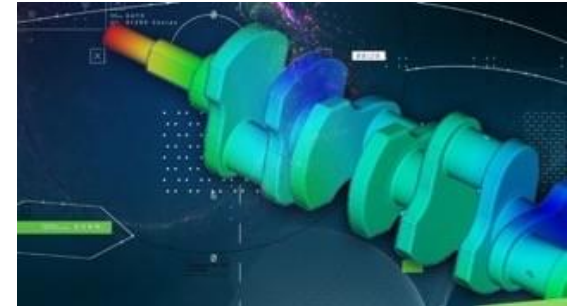


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SIMULATION

- Eliminate the use of prototyping & reduces design cycles
- Reduce design cost
- Reduce destructive test cost
- Eliminate design concepts error
- Optimize design prior to actual fabrication
- Scalability
- Predictive Engineering Analytic on virtual objects
 - components reliability & life span



SIMULATION



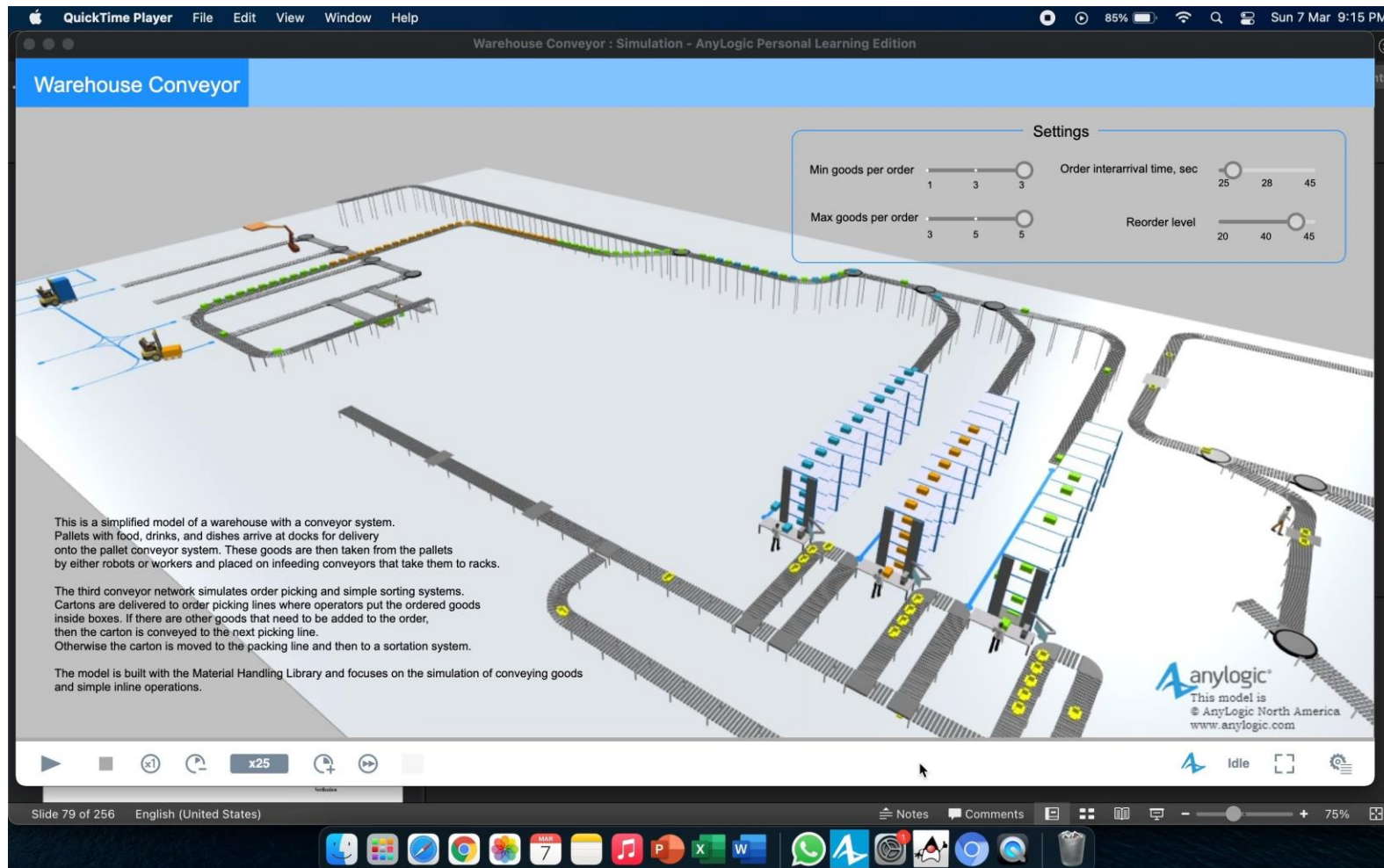
MANPOWER | MATERIAL | MACHINES | METHOD



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SIMULATION



(demo anylogic)

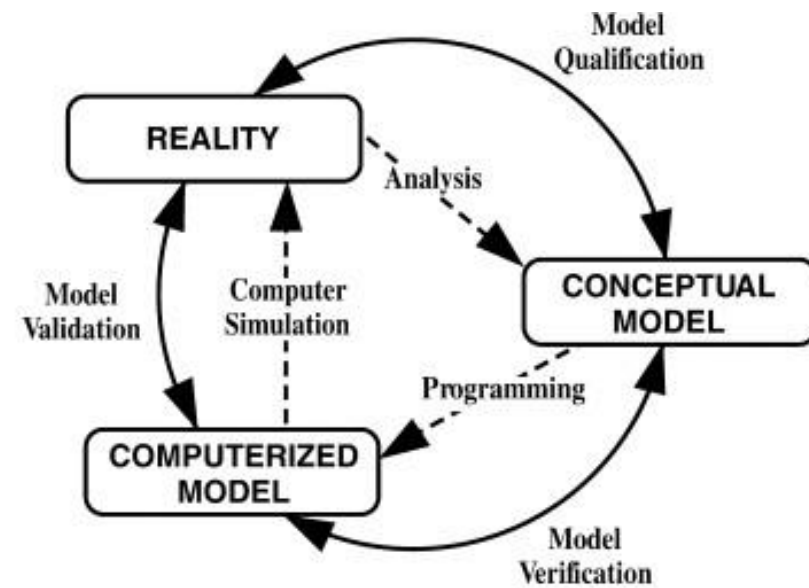
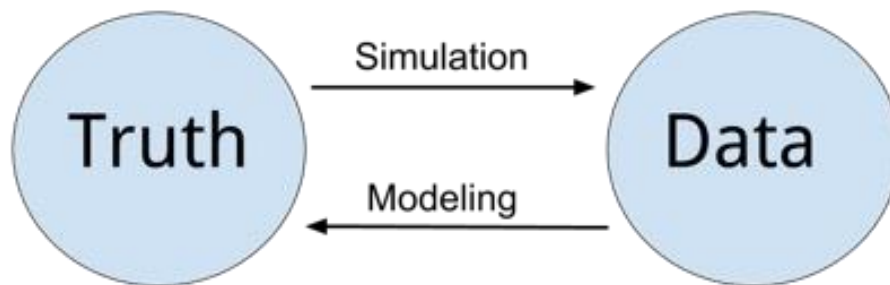


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SIMULATION

DATA SIMULATION



© 1979 by Simulation Councils, Inc.



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ADDITIVE MANUFACTURING

Additive manufacturing (AM) is a term used to describe the technologies that **build 3D objects** from a digital model **by adding layer-upon-layer** of material in different 2D shapes.

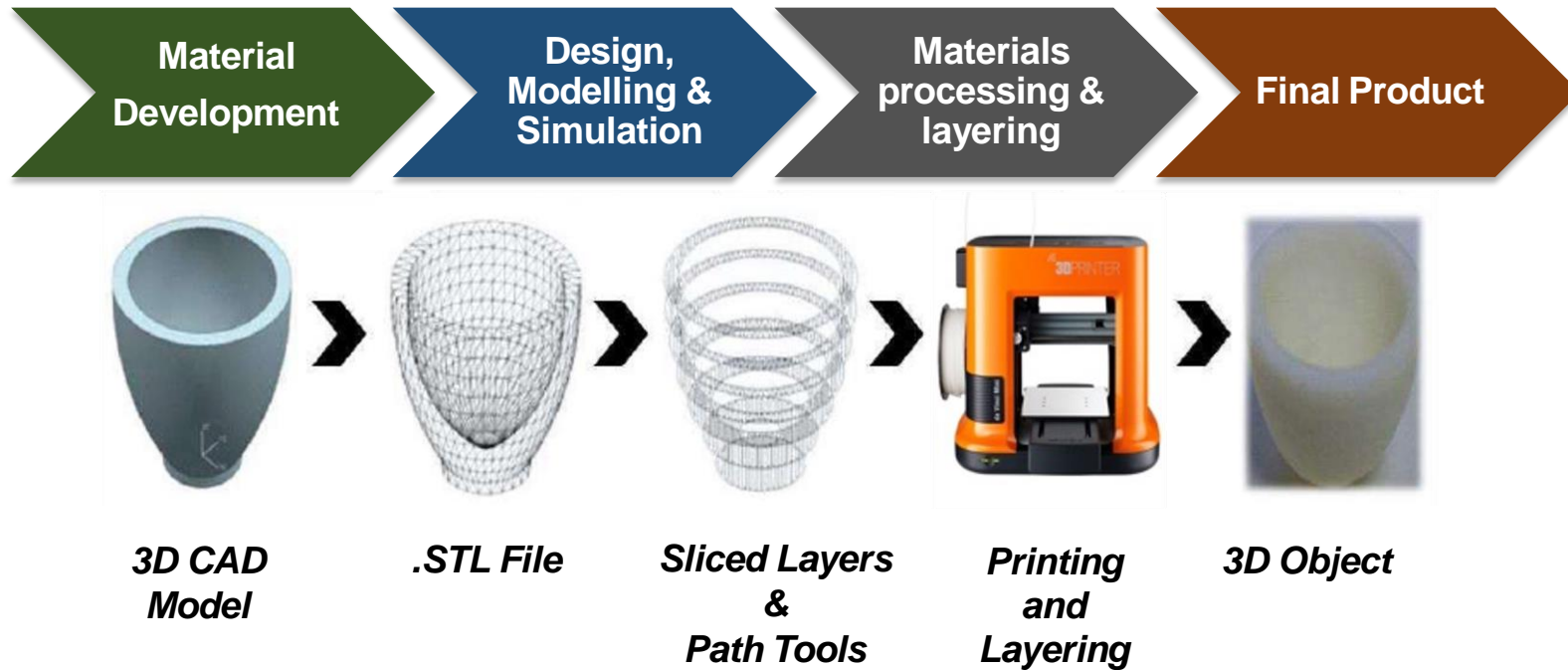


- Powder based
- Liquid based
- Solid based

- From prototyping to real mass production
- Flexibility, cheaper cost, shorten design cycle
- Can produce complex 3D design output

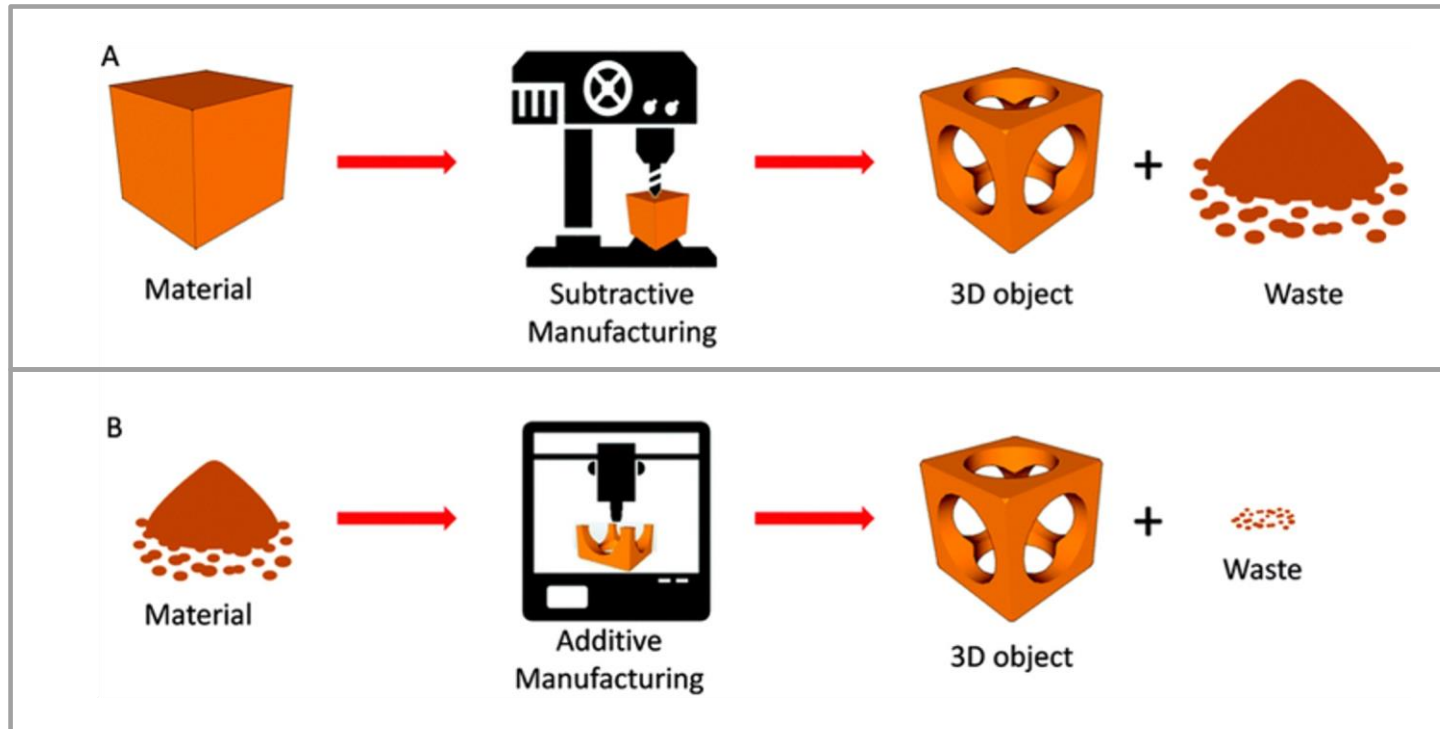


ADDITIVE MANUFACTURING



ADDITIVE MANUFACTURING

A: Subtractive Manufacturing



B: Additive Manufacturing

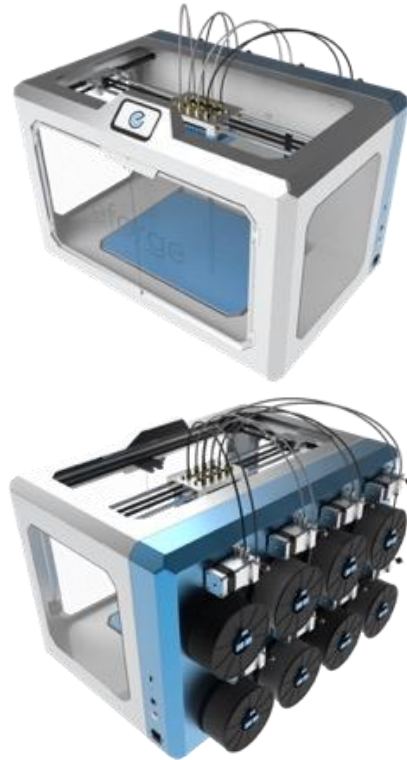


ADDITIVE MANUFACTURING

3D PRINTER



MULTICOLOR
ELECTRONIC 3D PRINTER



LIQUID 3D PRINTER



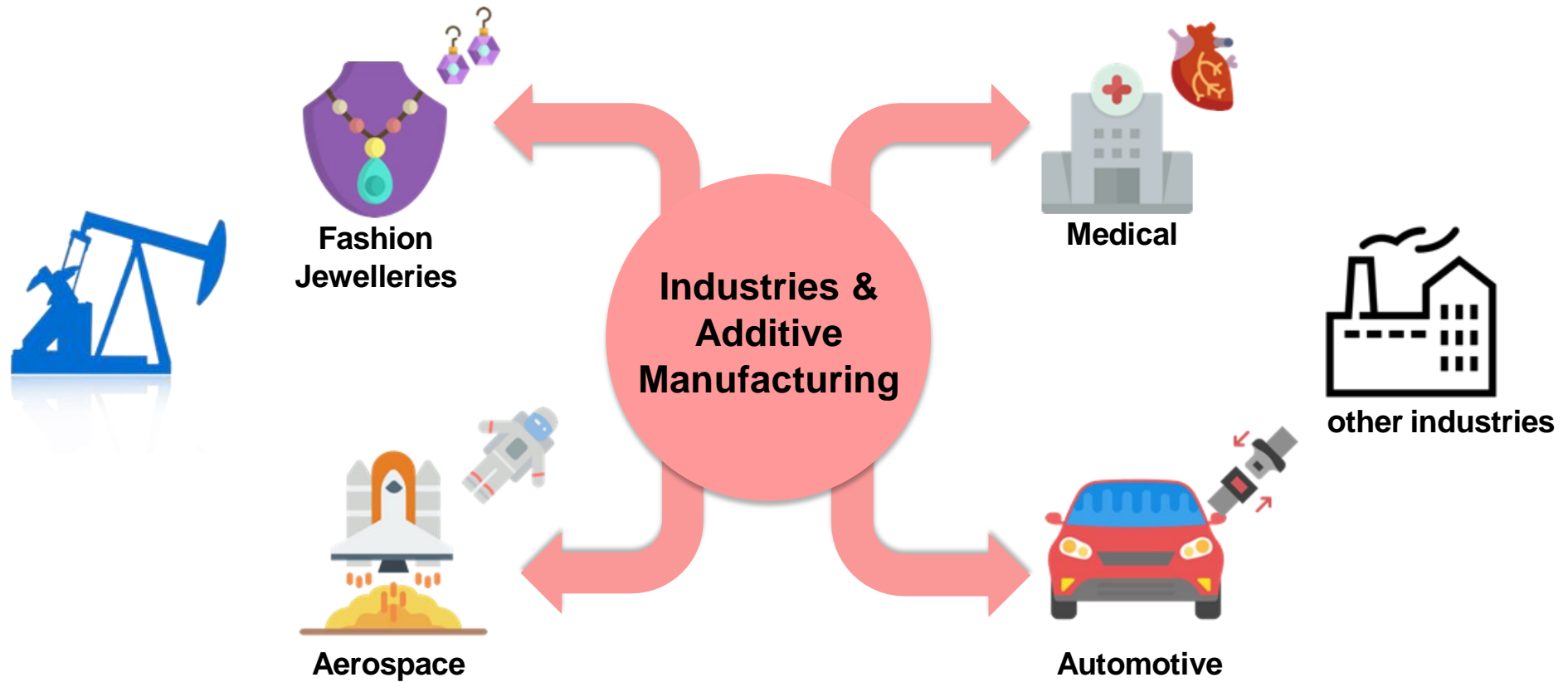
METAL 3D PRINTER



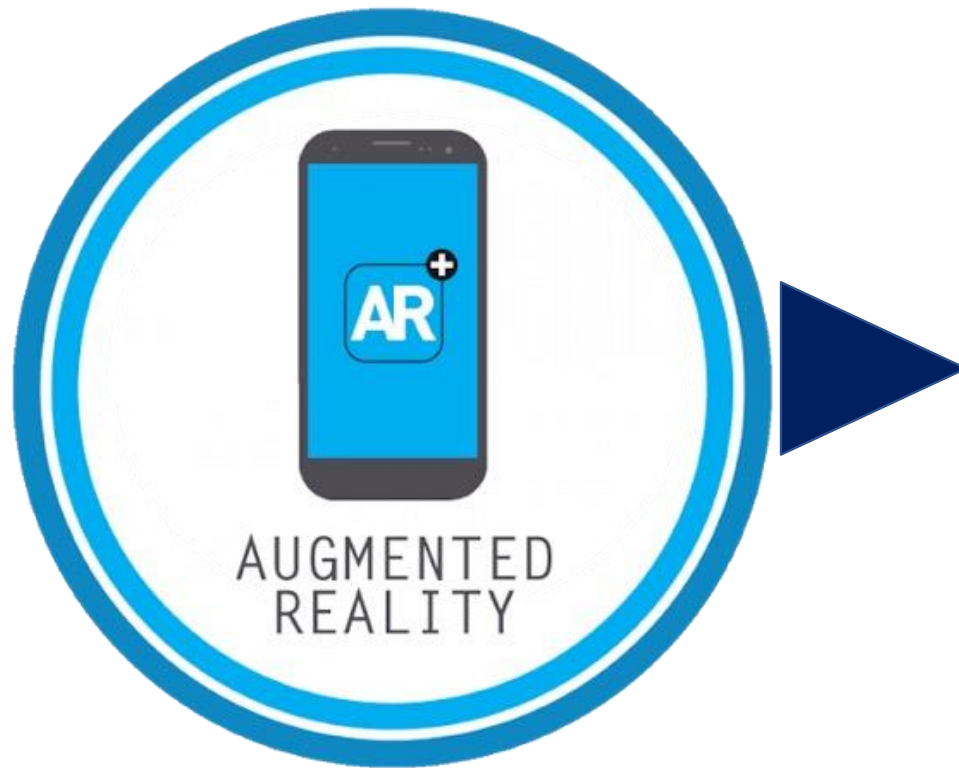
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ADDITIVE MANUFACTURING



AUGMENTED REALITY



DIGITAL INFORMATION
(computer/mobile Generated Data)
AUGMENT

+

REAL WORLD
(physical/real world environment)
REALITY



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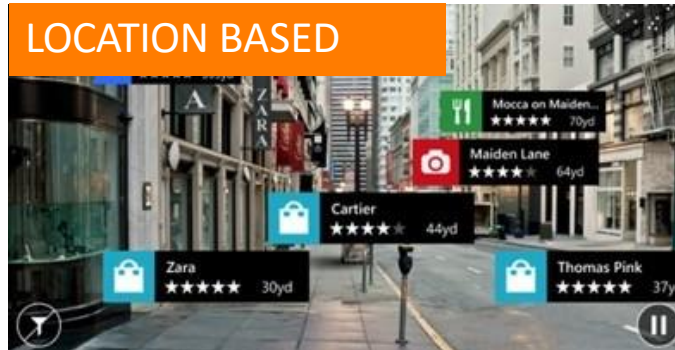
AUGMENTED REALITY

MARKER BASED

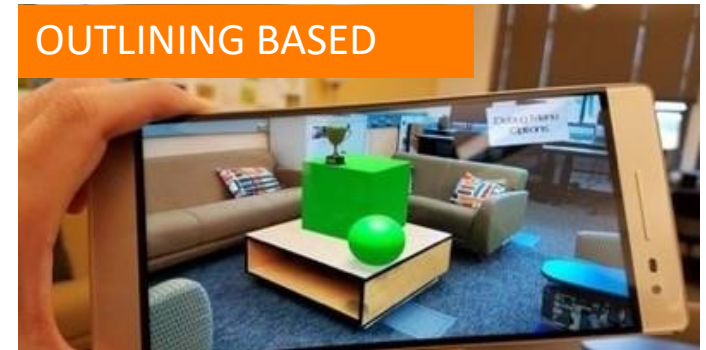


MARKERLESS BASED

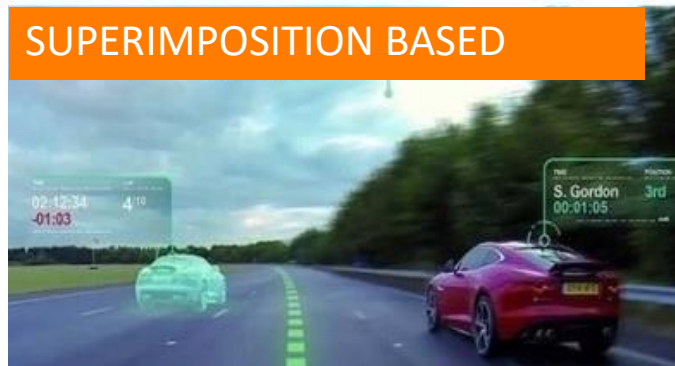
LOCATION BASED



OUTLINING BASED



SUPERIMPOSITION BASED



PROJECTION BASED



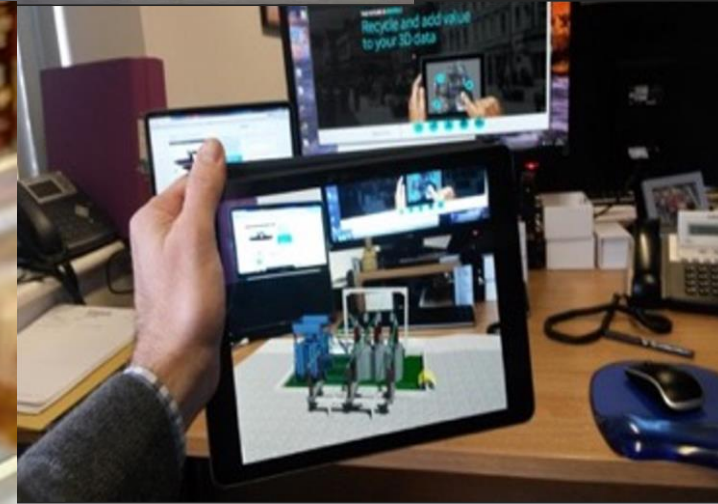
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AUGMENTED REALITY

Marketing
Travel Navigation
Maintenance & Repair
Shop Floor monitoring
Training & Work Instructions
Entertainment
Medical
Education & etc

REAL TIME GUIDANCE
ERROR PROOF
REAL TIME TRIGGER
INTERACTIVE
INNOVATIVE
INTUITIVE



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AUGMENTED REALITY



1. **AR apps can be used for product promotion.**
2. **AR apps can be used to create advantages for a product.**
 - see what is inside the packing box
 - try new products—virtually—looking at them at all angles
 - compare assorted colors and models of an item to decide which suits better
 - order products via the app



AUGMENTED REALITY

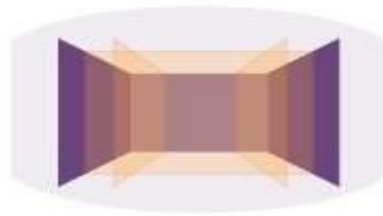
Virtual Reality

Primarily uses a headset to create an immersive 3D experience.



VIRTUAL REALITY (VR)

Fully artificial environment



Full immersion in virtual environment

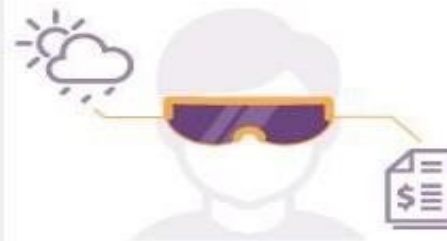


AUGMENTED REALITY (AR)

Virtual objects overlaid on real-world environment

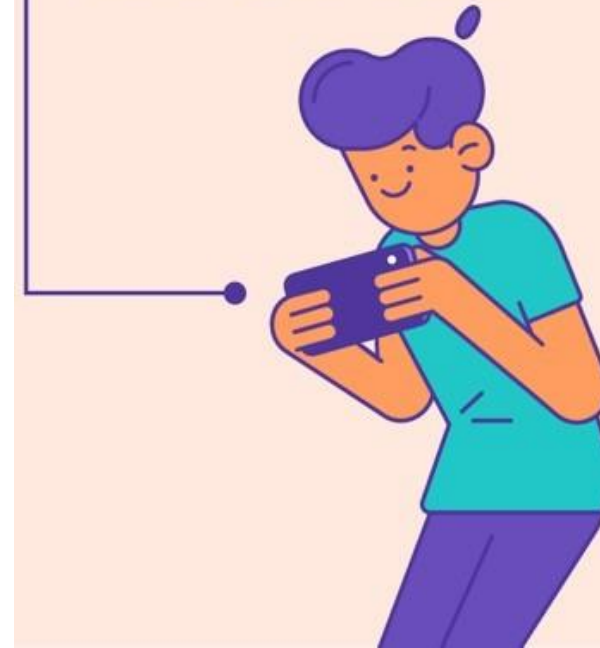


The real world enhanced with digital objects



Augmented Reality

Overlays digital images onto your view of the real world, often through a smartphone.



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AUGMENTED REALITY

FIRST LOCAL AUTHORITY TO USE
AUGMENTED REALITY MURAL

MUAR STREET ART



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AUGMENTED REALITY

NO. OF VISITORS

DAY & TIME OF VISITING

COMMENTS TO IMPROVE

CREATE A
TOURISM
BUSINESS
INTELLIGENT



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AUGMENTED REALITY



Ministry of Agriculture and Food of the Moscow Region

If you walked onto the RusMoloko dairy farm near Moscow, in Russia,

INCREASED THE MILK PRODUCTION



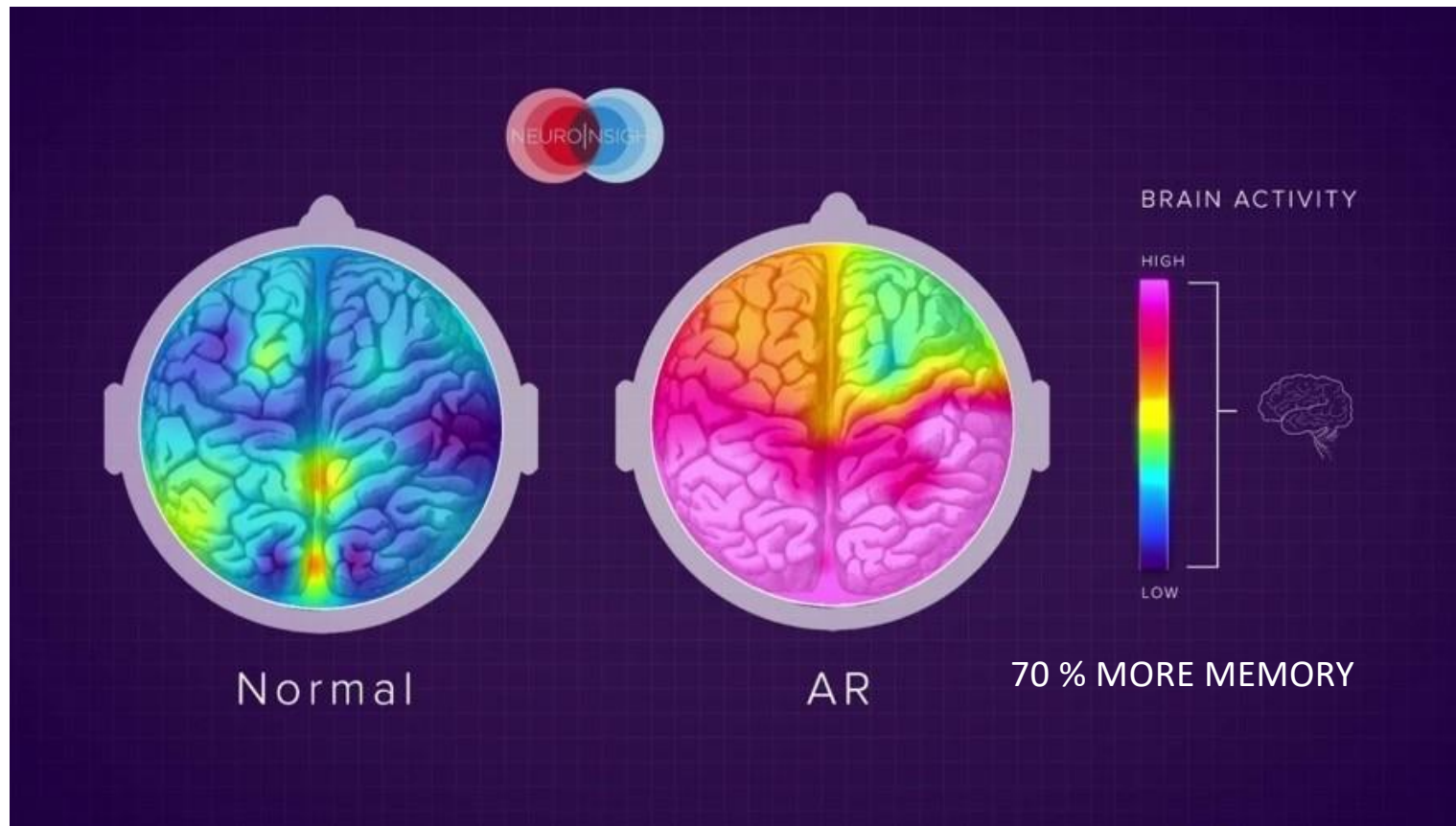
The VR goggles were made to fit the cows' heads, *Source: Ministry of Agriculture and Food of the Moscow Region*



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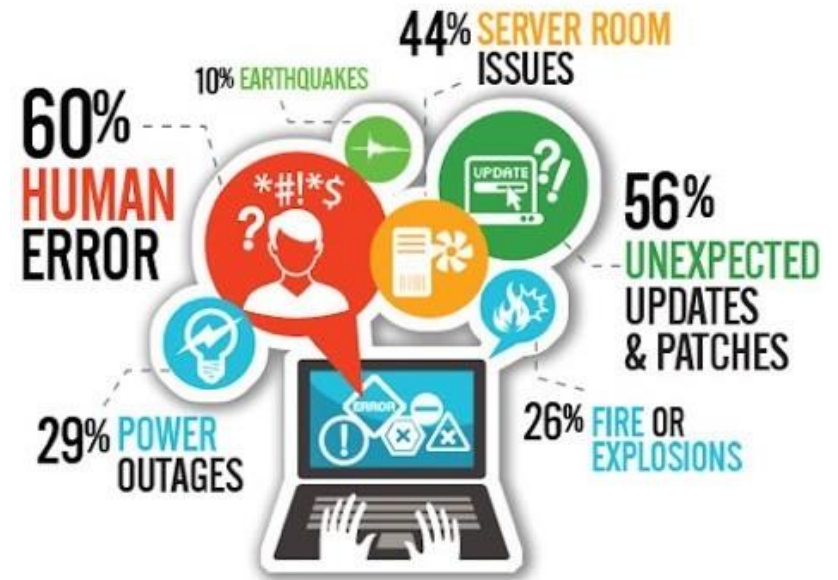
AUGMENTED REALITY



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CYBER SECURITY



Cyber security

refers to the body of technologies, processes, and practices designed to protect networks, devices, programs, and data from **attack**, damage, or unauthorized access.

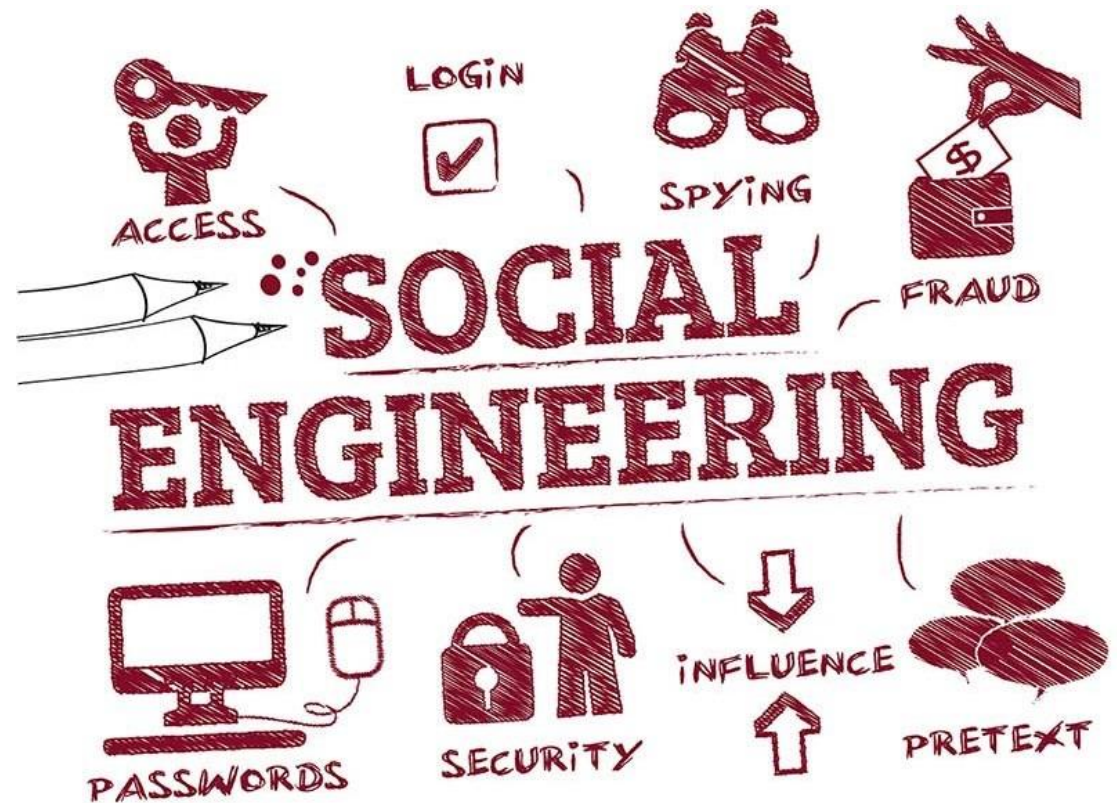


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CYBER SECURITY

malicious activities accomplished through human interactions. It uses psychological manipulation to trick users into making security mistakes or giving away sensitive information.

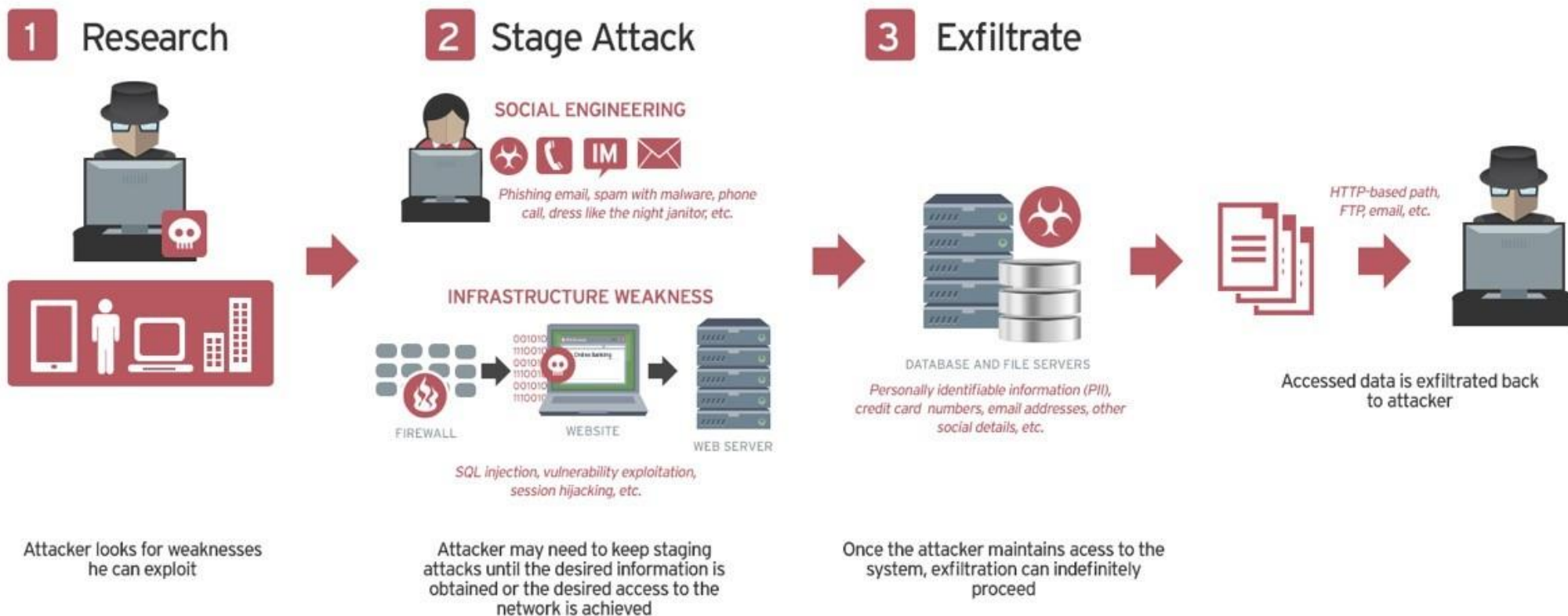


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CYBER SECURITY

How Data Breaches Occur

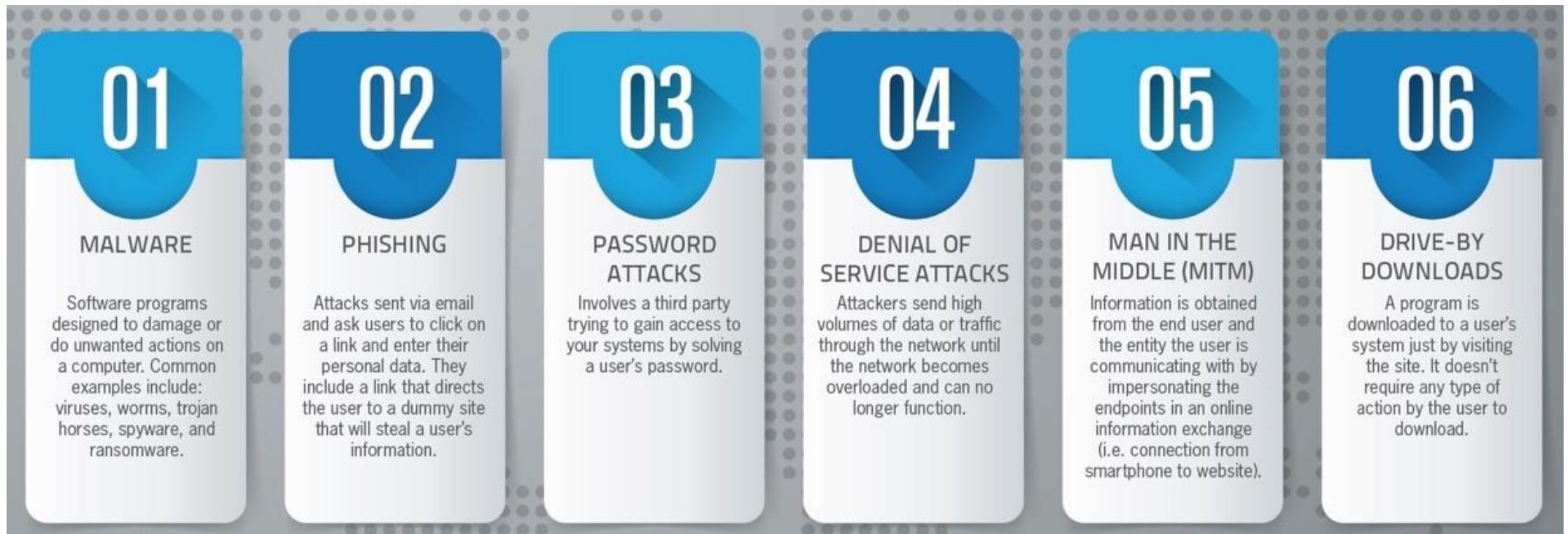


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CYBER SECURITY

6 common cyber attacks



CYBER SECURITY



5 COMMON TYPES OF PHISHING



EMAIL PHISHING

Scammers create emails that impersonate legitimate companies and attempt to steal your information.



SPEAR PHISHING

Similar to email phishing, but the messages are more personalized. For example, they may appear to come from your boss.



CLONE PHISHING

Scammers replicate an email you have received, but include a dangerous attachment or link.



WHALING

Scammers target high-ranking executives to gain access to sensitive data or money.



POP-UP PHISHING

Fraudulent pop-ups trick users into installing malware.



CERTIFIED PRODUCTIVITY SPECIALIST (CPS) COURSE



CYBER SECURITY

7 TIPS FOR AVOIDING A SPEAR PHISHING ATTACK



1

Be **skeptical**.



5

Be smart with your **passwords**.



2

Be aware of your **online presence**.



6

Keep your **software updated**.



3

Inspect the link.



7

Implement a **company-wide data security strategy**.



4

Don't click the link.

VARONIS



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CYBER SECURITY



CYBER SECURITY

IT DISASTER RECOVERY PLAN

CREATE AN EFFECTIVE DISASTER RECOVERY PLAN IN 5 SIMPLE STEPS

1.	IDENTIFY CRITICAL OPERATIONS You first step is to identify what operations are critical to the function of your business that their interruption would impact your ability to operate.
2.	EVALUATE DISASTER SCENARIOS Work with different departments to identify different disaster scenarios. Determine your priorities, recovery objectives and timeline.
3.	CREATE A COMMUNICATION PLAN Develop a plan of action that assigns articulated roles to specific people and departments.
4.	DEVELOP A DATA BACKUP & RECOVERY PLAN A strong plan includes solutions to fixing the problem and instructions on how to contain the existing disaster along with how to monitor for further intrusion.
5.	TEST YOUR PLAN Make sure there are no gaps in the plan and strengthen with additional steps to increase efficiency.



EMERGENCY
CONTACT

EXTERNAL
CONTACTS

NOTIFICATION
NETWORK

SCOPE OF
WORK/AREA

DR TEAMS &
RESPONSIBILITIES

DR LEADER

DISASTER
MANAGEMENT
TEAM

NETWORK TEAM

SERVER TEAM

APPLICATION
TEAM

DATA & BACKUP

RESTORING IT
FUNCTIONALITY

IT SYSTEMS

NETWORK
EQUIPMENTS



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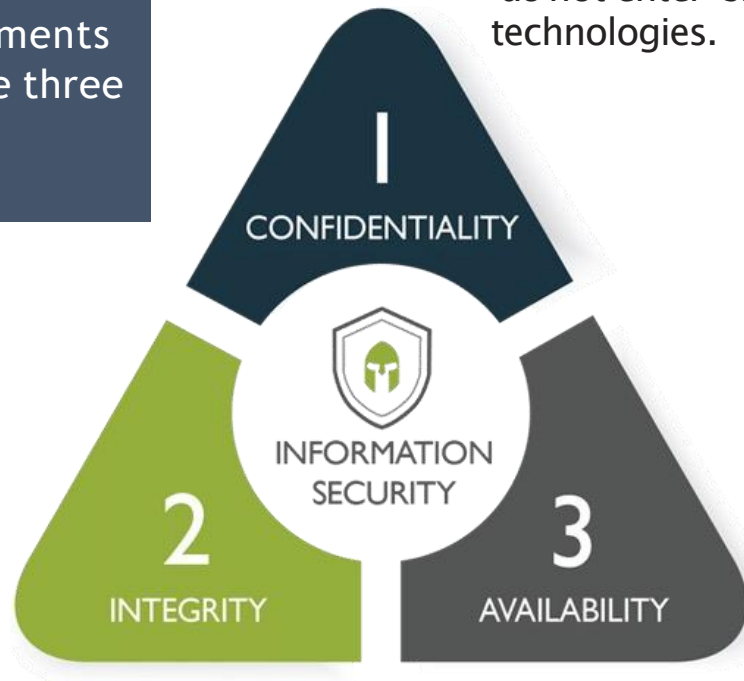


CYBER SECURITY

The CIA Triad is a *model designed to guide an organisation's policies on information security*. The elements of the triad are considered the three most crucial components of security.

limit what people can do with that data.

the ability to copy, move or alter data should be restricted. This protects the integrity of your data, ensuring that those authorised users are accessing the right data at all times...



to restrict who can access it.

This includes policy, of course (the equivalent of that 'do not enter' sign), but should also extend to security technologies.

not to over complicate access for those who need it.

Complicated security measures can be a bottleneck to access, particularly if systems aren't properly maintained or if problems aren't immediately rectified. Including ensuring the appropriate bandwidth is available and having backup and disaster recovery methods in place.

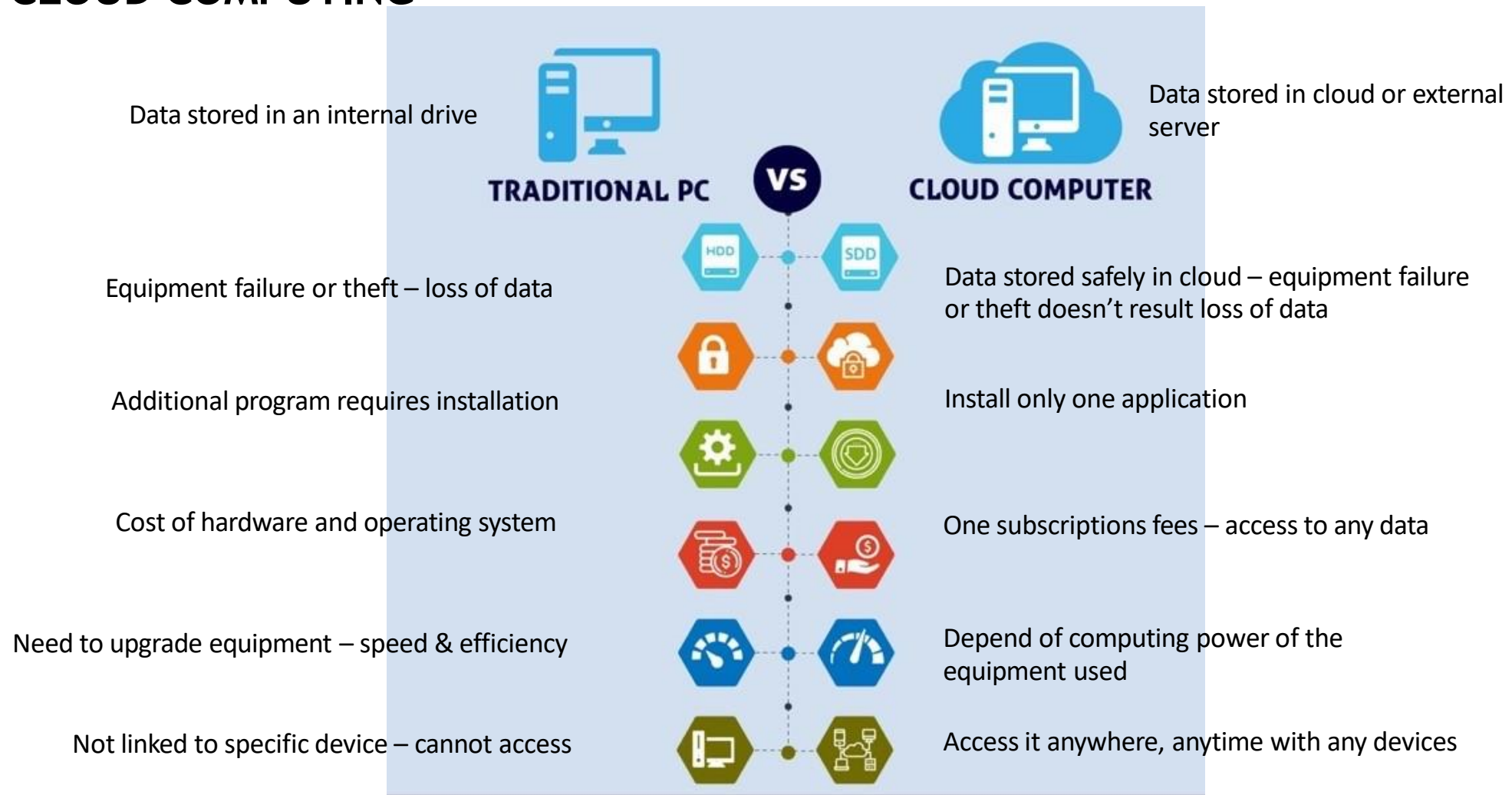
So the CIA triad make a good team - **but they can't work alone!**



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CLOUD COMPUTING



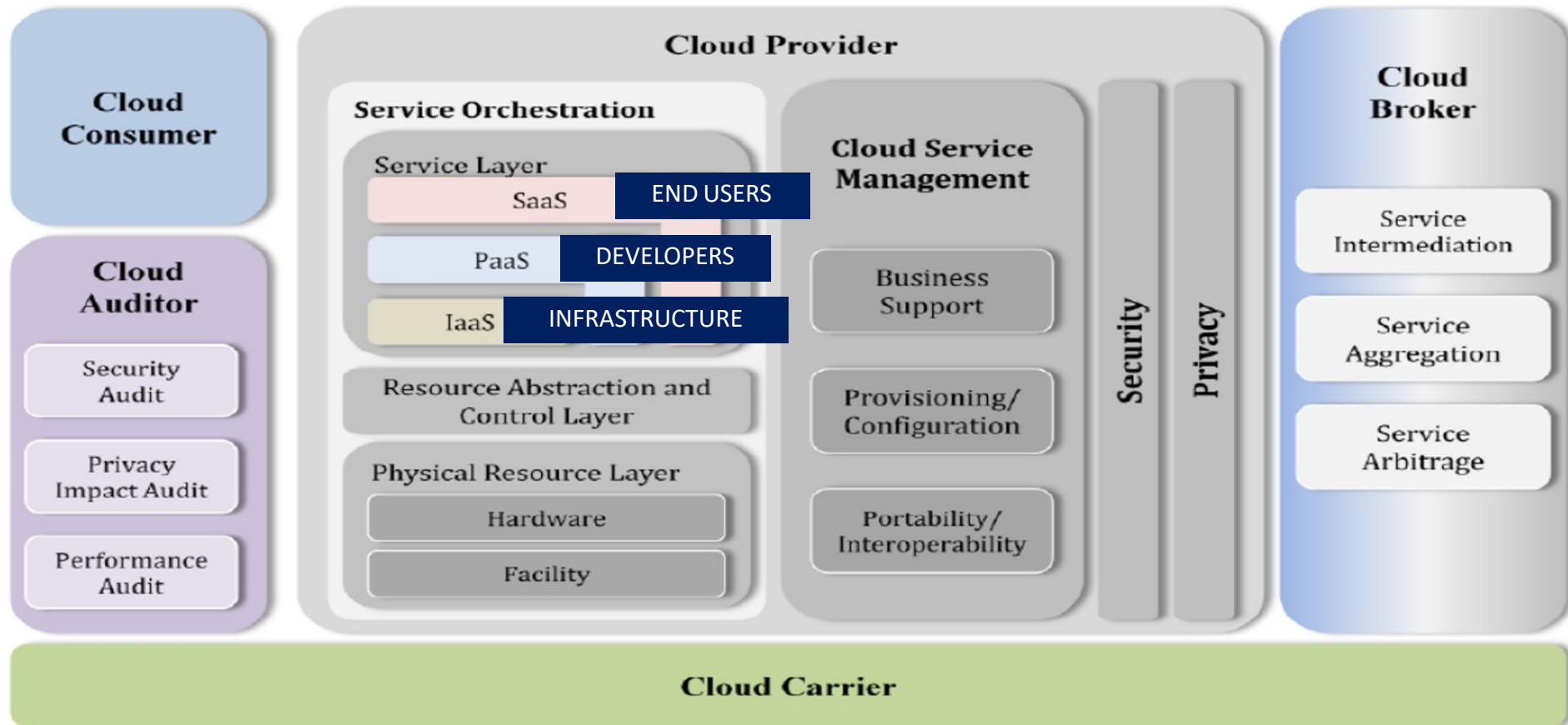
CLOUD COMPUTING



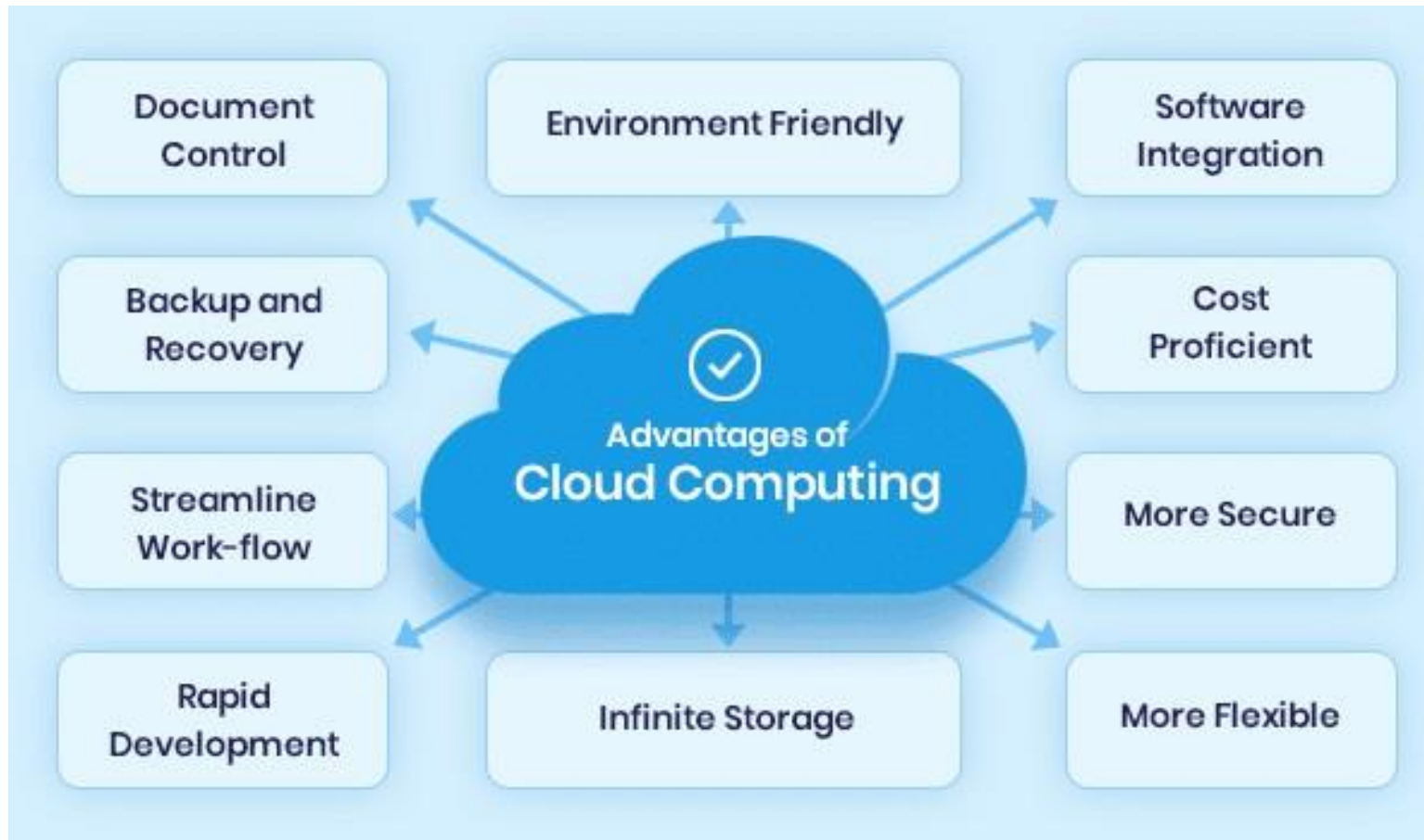
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CLOUD COMPUTING



CLOUD COMPUTING



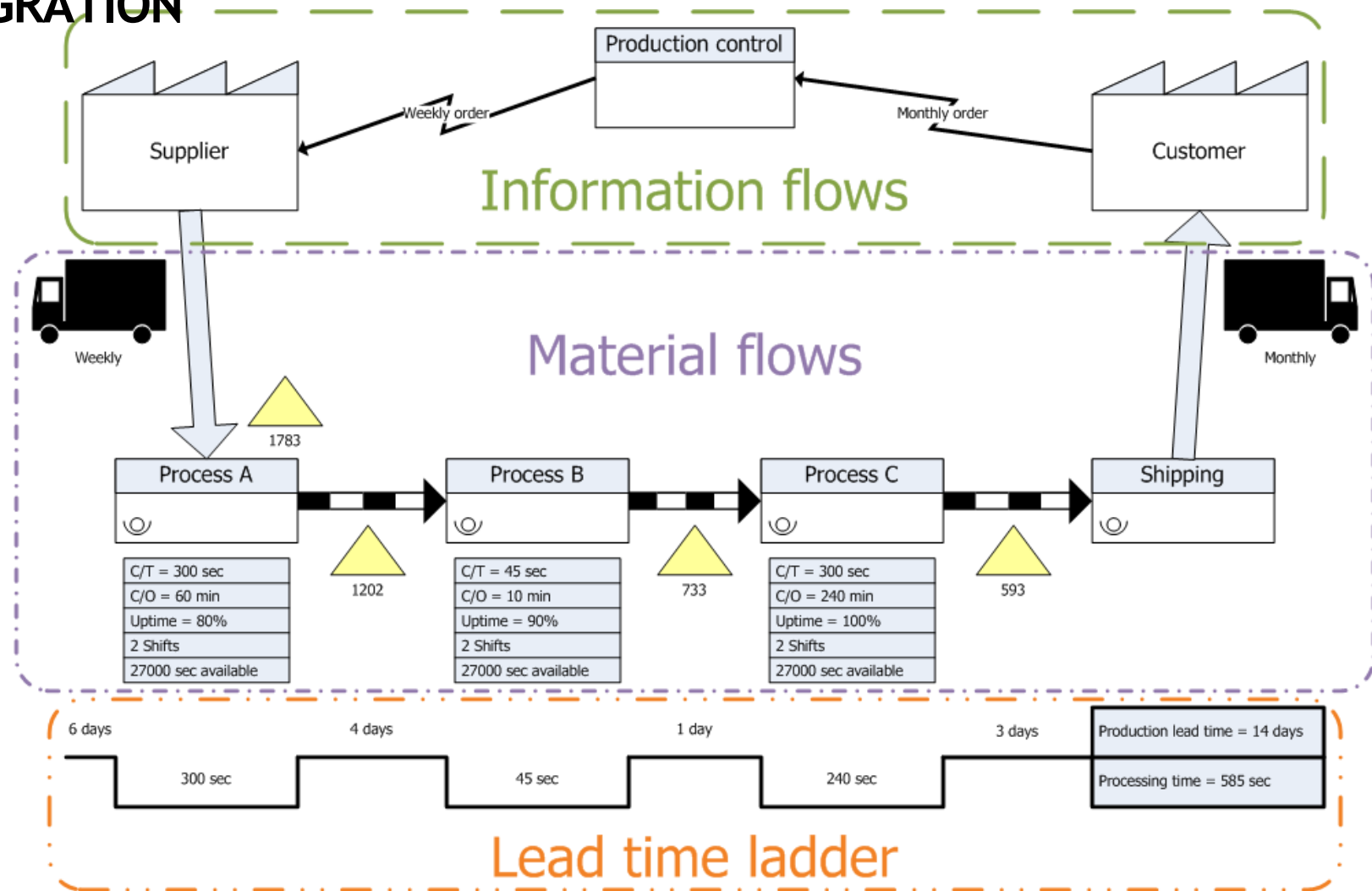
CLOUD COMPUTING

CONS

- ❌ Sites using cloud hosting can still have downtime if the connections between servers aren't working.
- ❌ Lack of root access to the servers means less control.
- ❌ Reliance on shared storage results in much higher disk latency, which may be problematic for web applications.
- ❌ Increased security risks (your data are being shared around multiple servers) if hosting provider doesn't offer advanced security tools.



SYSTEM INTEGRATION

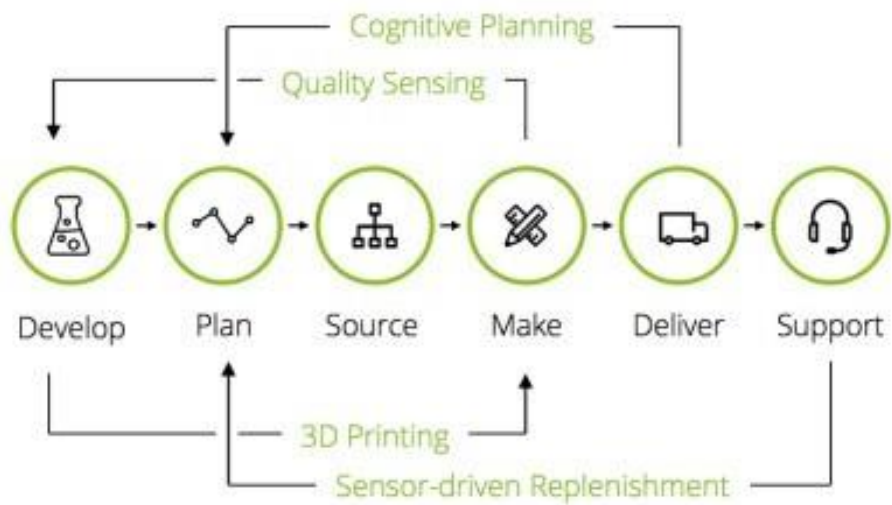


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SYSTEM INTEGRATION

Traditional Supply Chain



Digital Supply Network



DYNAMIC → MULTIDIRECTIONAL COMMUNICATION



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SYSTEM INTEGRATION

PREDICTABILITY

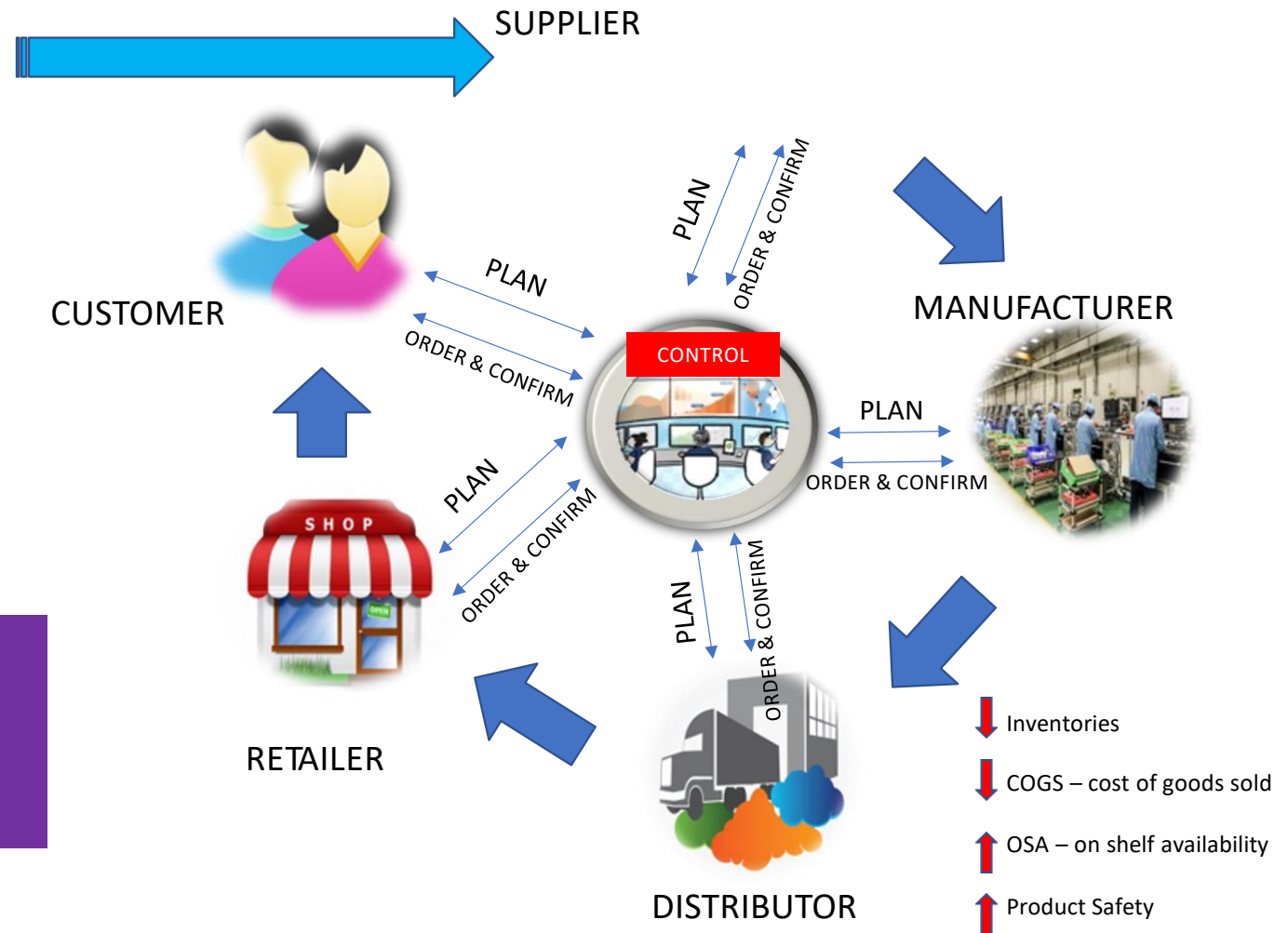
SUSTAINABILITY

TRACEABILITY

VELOCITY

AGILITY

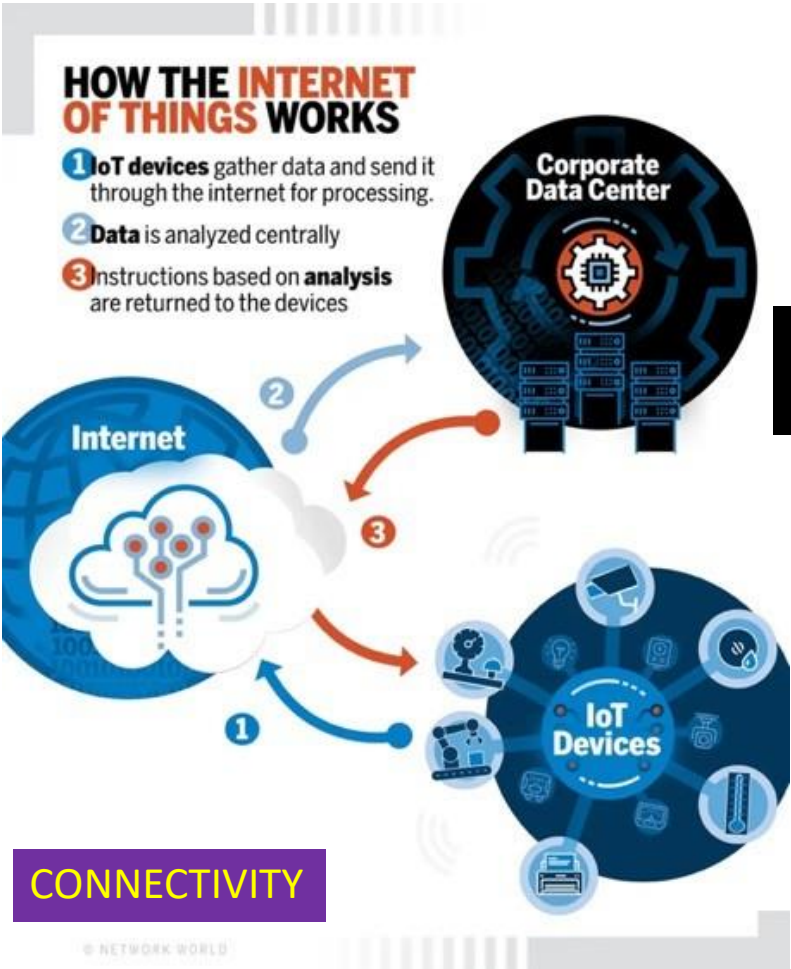
The control center:
Monitor, manage, make decision
(manages execution across entire network)
>>> EFFICIENT, RESPONSIVE, COST-EFFECTIVE



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INTERNET OF THINGS



MIDDLEWARE
IOT PLATFORM

SENSORS

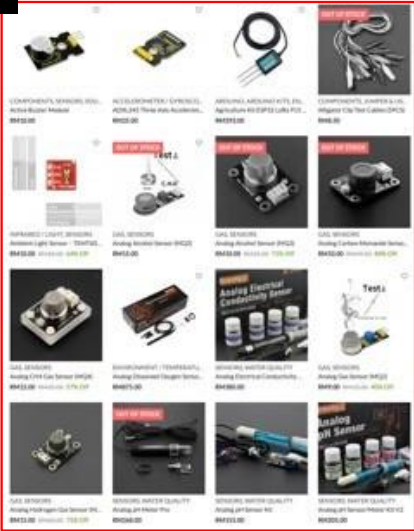
APPLICATION
& ANALYTICS



ARDUINO



RASPBERRY PI



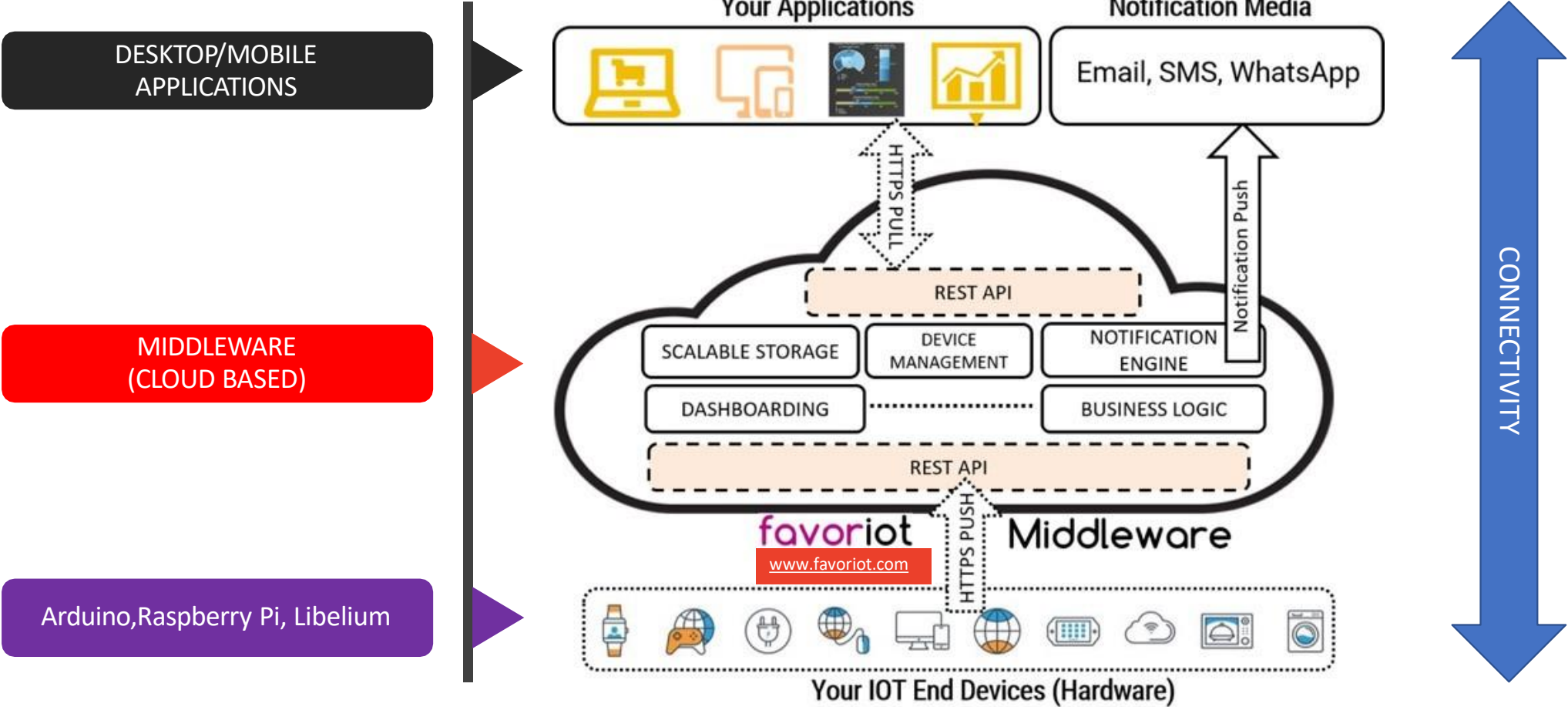
HIBISCUS



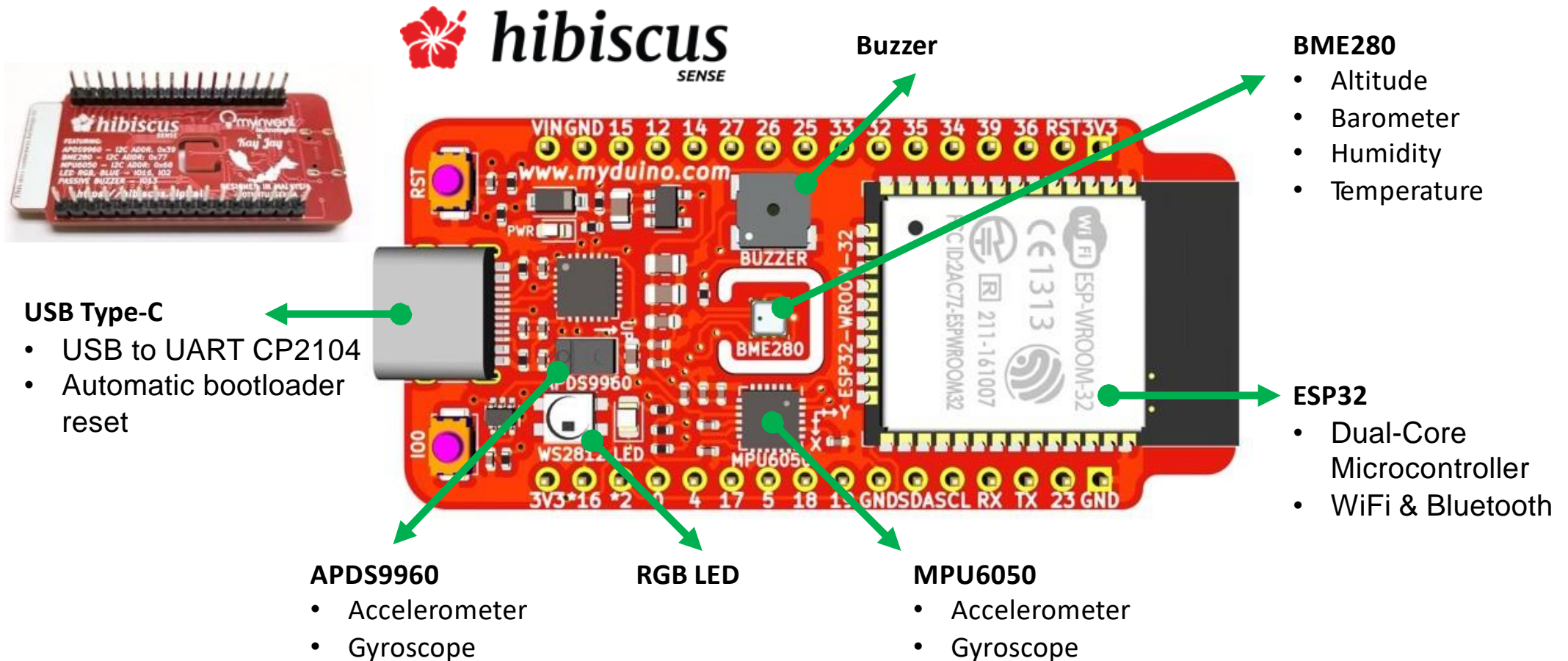
CERTIFIED PRODUCTIVITY SPECIALIST (CPS) COURSE



INTERNET OF THINGS



INTERNET OF THINGS



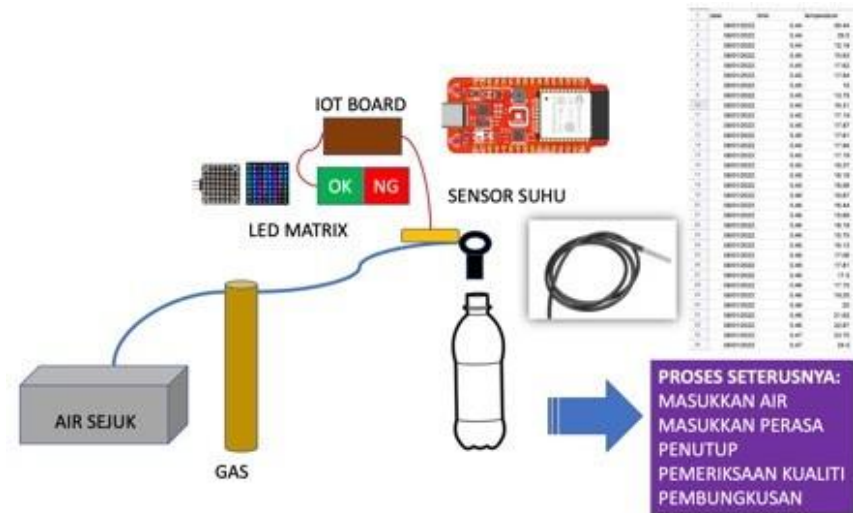
CERTIFIED PRODUCTIVITY SPECIALIST (CPS) COURSE



INTERNET OF THINGS



INTERNET OF THINGS



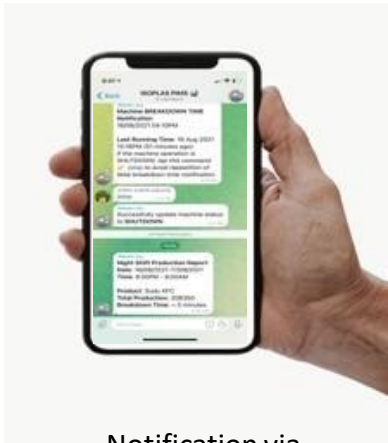
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INTERNET OF THINGS



HIBISCUS



Notification via Telegram to maintenance to response – this will speed up the rescue To the machine and reduces Machine downtime



IOT with proximity sensors

**MONITOR
CONTROL
OPTIMIZE
AUTONOMOUS**

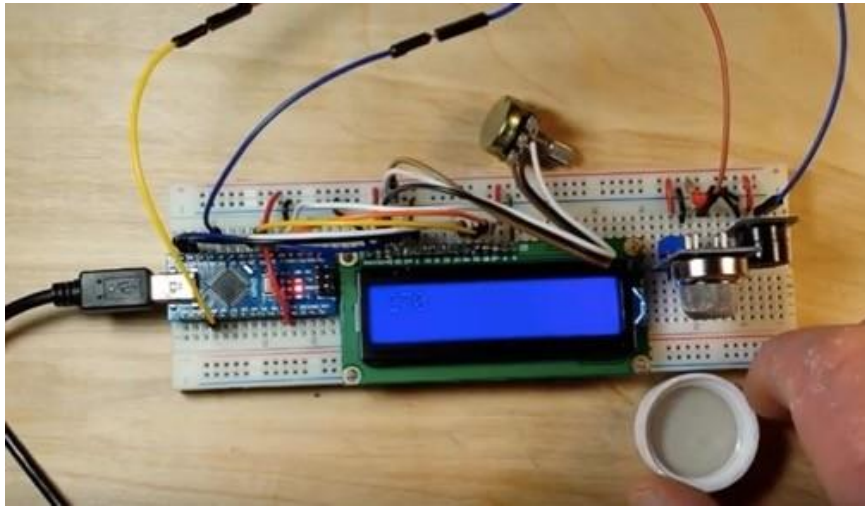
Expected 8%-10% productivity UP



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INTERNET OF THINGS



Ammonia



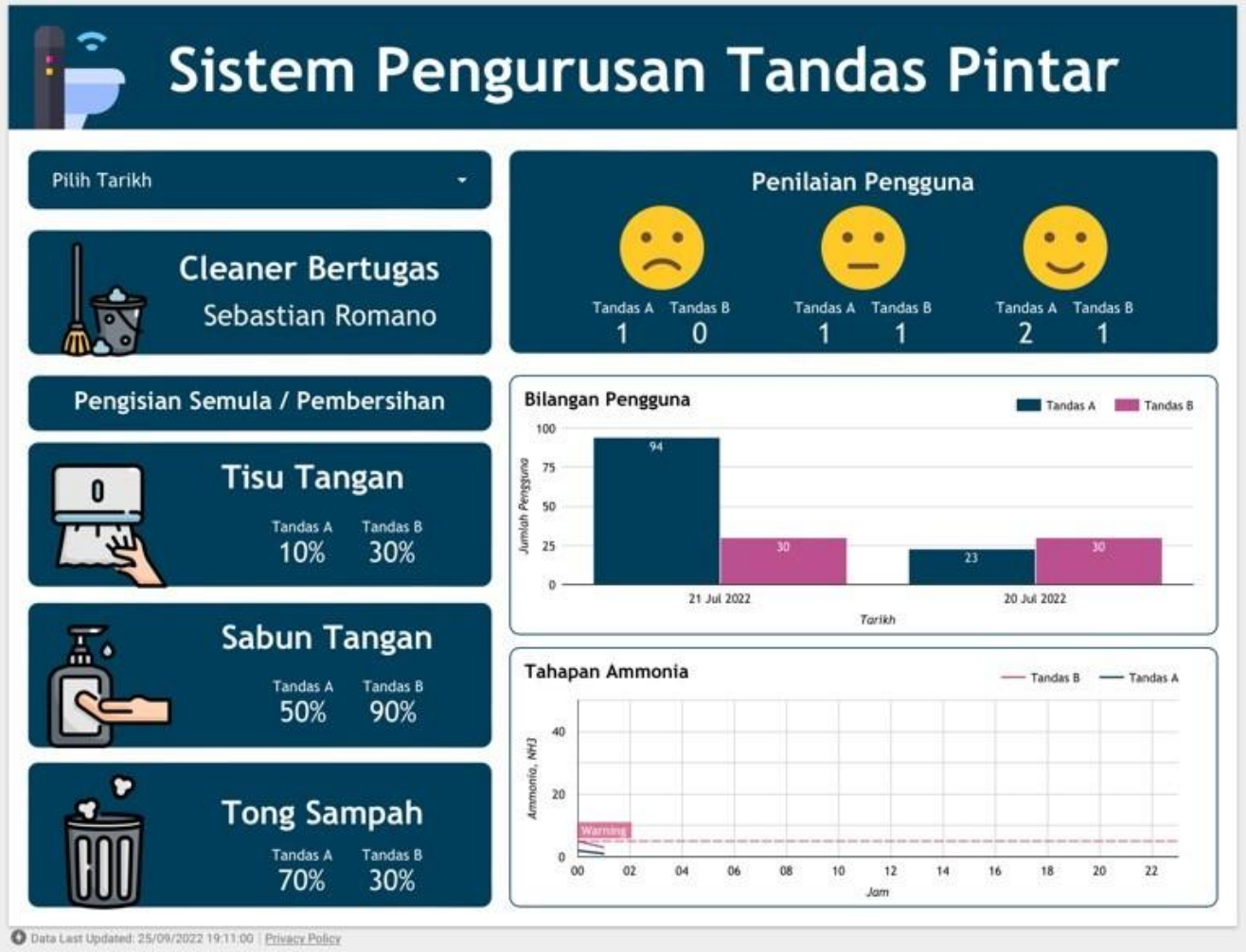
Gas
Sensors



CERTIFIED PRODUCTIVITY SPECIALIST (CPS) COURSE



INTERNET OF THINGS



INTERNET OF THINGS



Terdahulu, sebanyak 1,196,457 akaun pengguna Air Selangor membabitkan 1,292 kawasan di Lembah Klang sekali lagi mengalami gangguan bekalan tidak berjadual apabila empat Loji Rawatan Air Sungai Selangor dihenti tugas ekoran pencemaran sumber air mentah.

Dalam hal berkaitan, beliau memberitahu kerajaan negeri memperuntukkan sebanyak RM2 juta bagi empat unit dron berteknologi tinggi model DJI Matrice 300.

Keempat-empat dron yang akan diurus Lembaga Urus Air Selangor (LUAS) melalui Skwad Pantas LUAS itu akan digunakan mulai November depan bagi memantau sungai di negeri tersebut sekali gus mencegah aktiviti pencemaran sumber air.

Beliau menjelaskan dron tersebut akan digunakan untuk memantau Lembangan Sungai Klang, Sungai Selangor dan Sungai Langat.

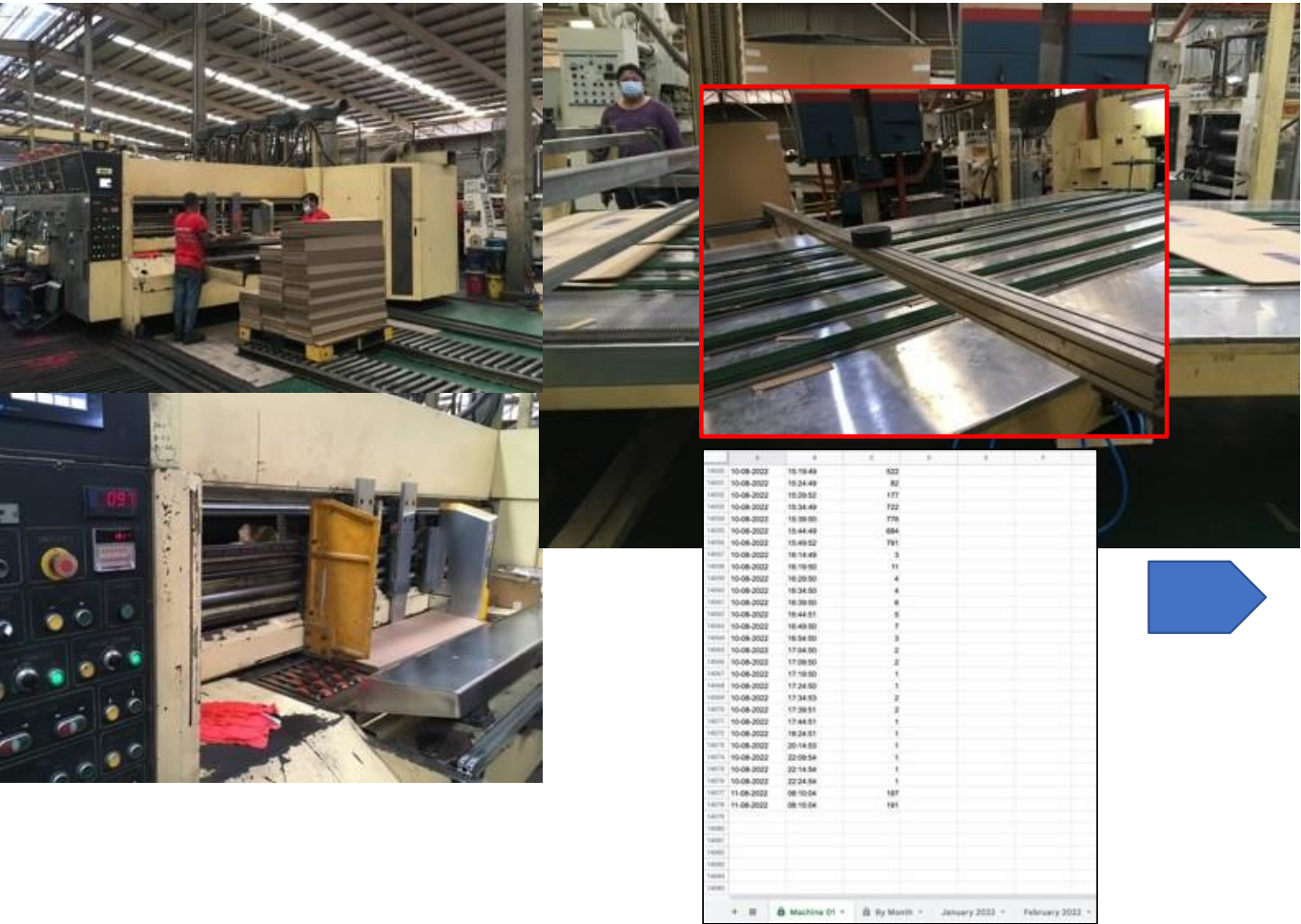
"Dron yang akan digunakan ini juga berkeupayaan untuk mengambil sampel air termasuk di kawasan terpencil dengan lebih tepat.



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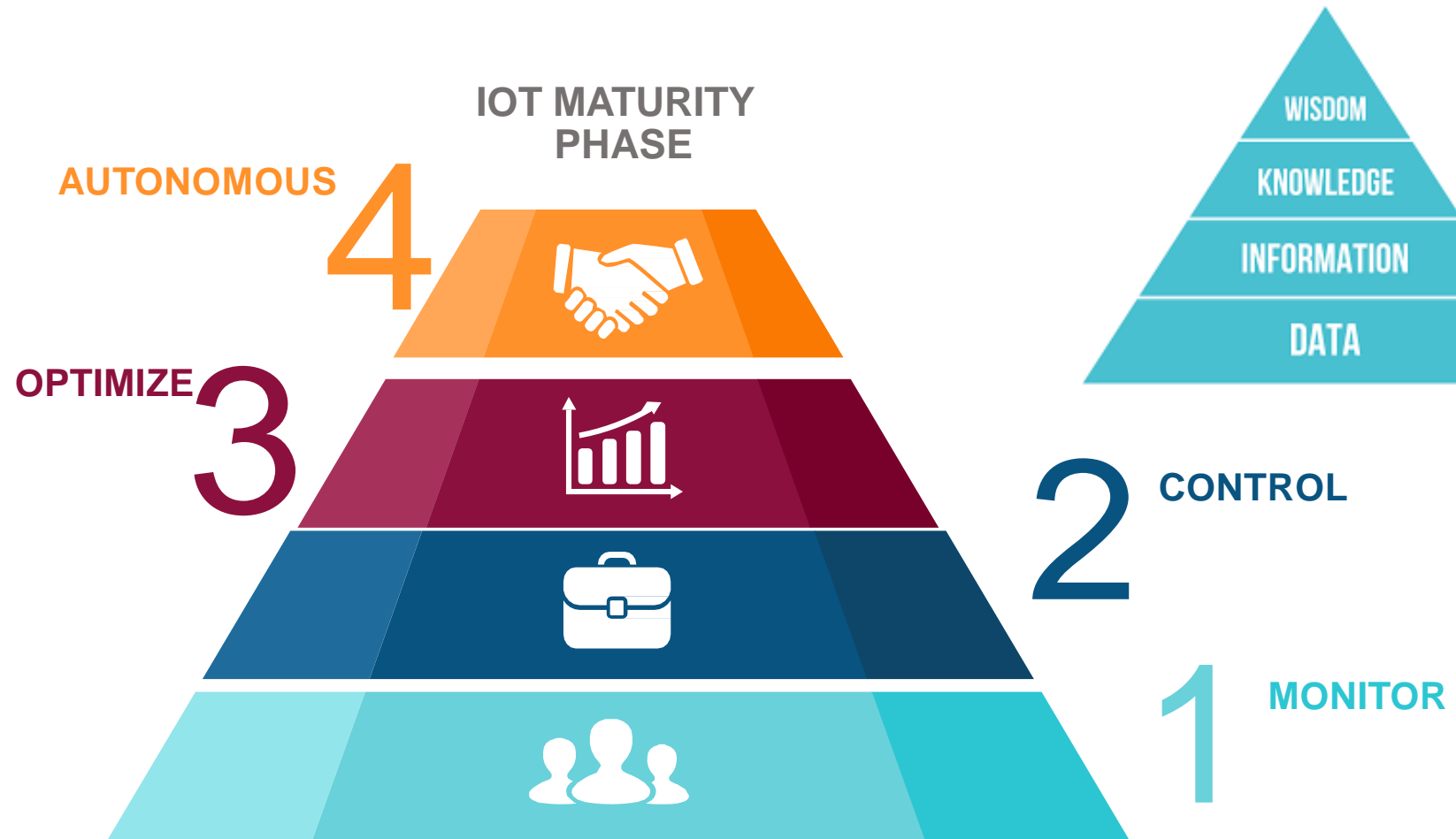
INTERNET OF THINGS



CERTIFIED PRODUCTIVITY SPECIALIST (CPS) COURSE



INTERNET OF THINGS



CERTIFIED PRODUCTIVITY SPECIALIST (CPS) COURSE



BIG DATA ANALYTICS

• Data

- Traditional enterprise data which include ERP transactional data, CRM systems, web transactions, and financial data.
- Usually data volume ranging from Gigabytes to Terabytes.
- Batch data or near real time data
- Structured or Unstructured
- Involves Business Intelligence, analysis and reporting

• Big Data

- Data generated from various non-traditional data source such as sensor data, log data, device data, videos, images and etc.
- Data volumes can go further than Terabytes and up to Zettabytes.
- Often real-time data
- Multi-structured
- Complex, advanced, predictive business analysis and insights



BIG DATA ANALYTICS

Big data analytics is the often complex process of examining large and varied datasets, or big data, to uncover information -- such as hidden patterns, unknown correlations, market trends and customer preferences -- that can help organizations make informed business decisions.

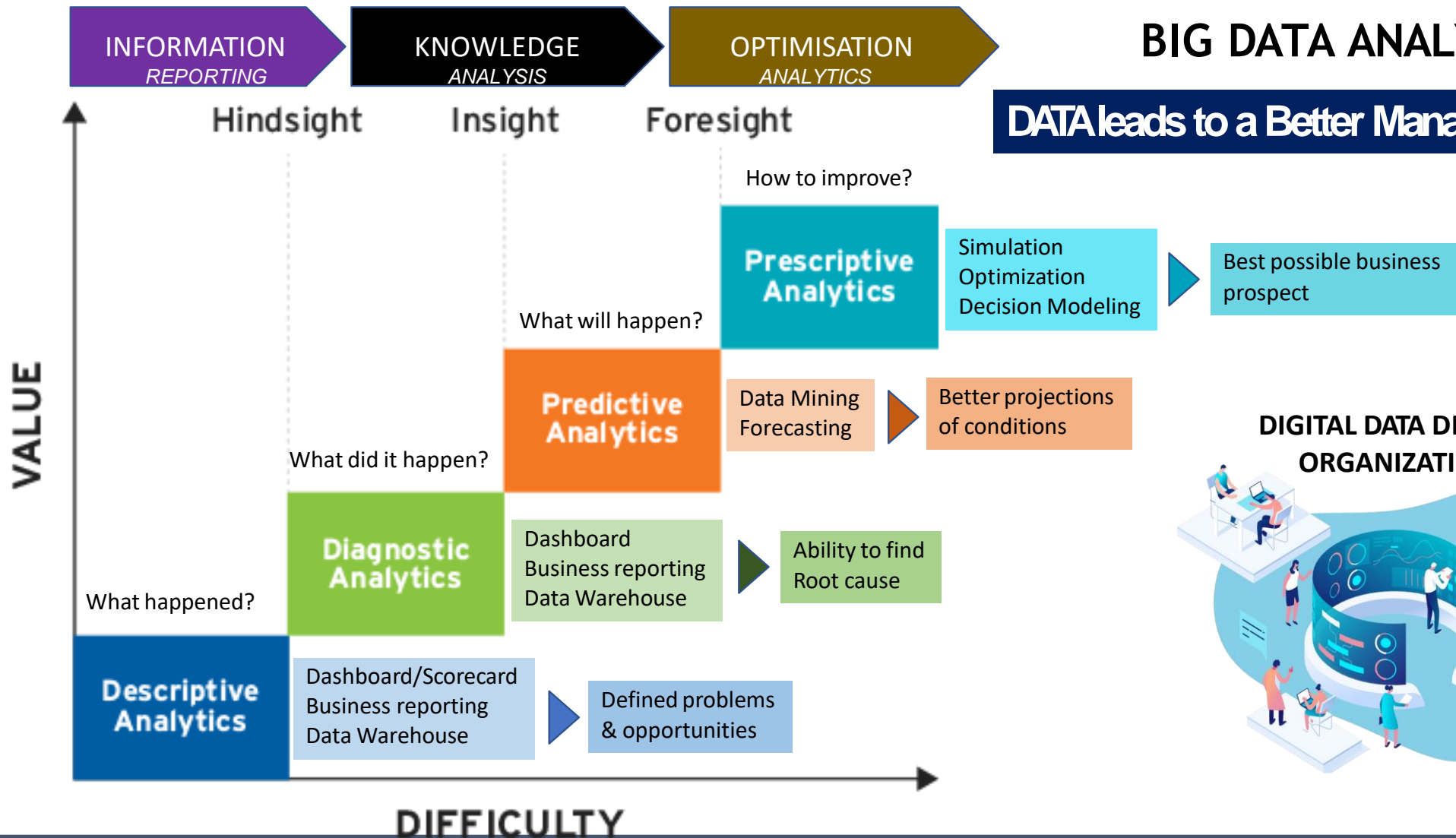


BIG DATA ANALYTICS



BIG DATA ANALYTICS

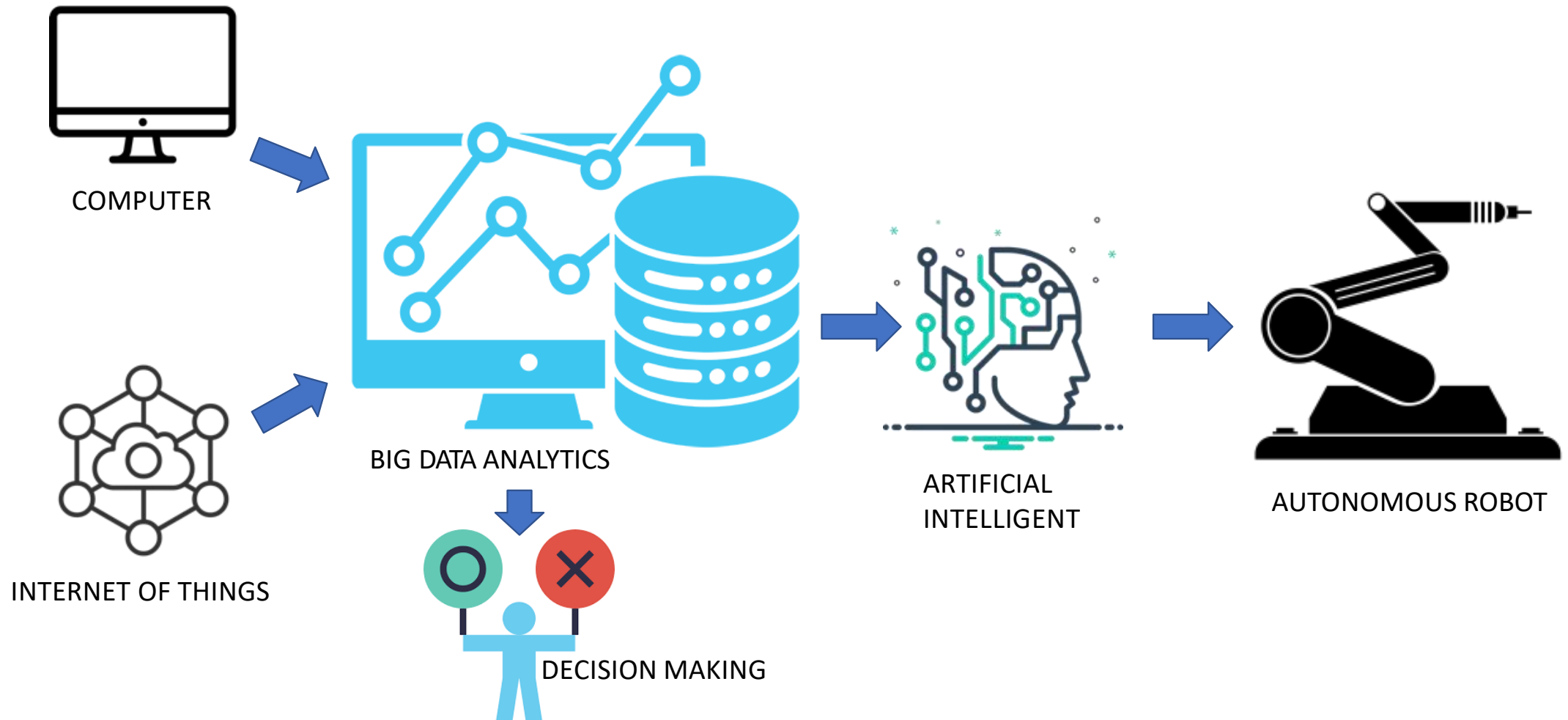
DATA leads to a Better Management



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BIG DATA ANALYTICS



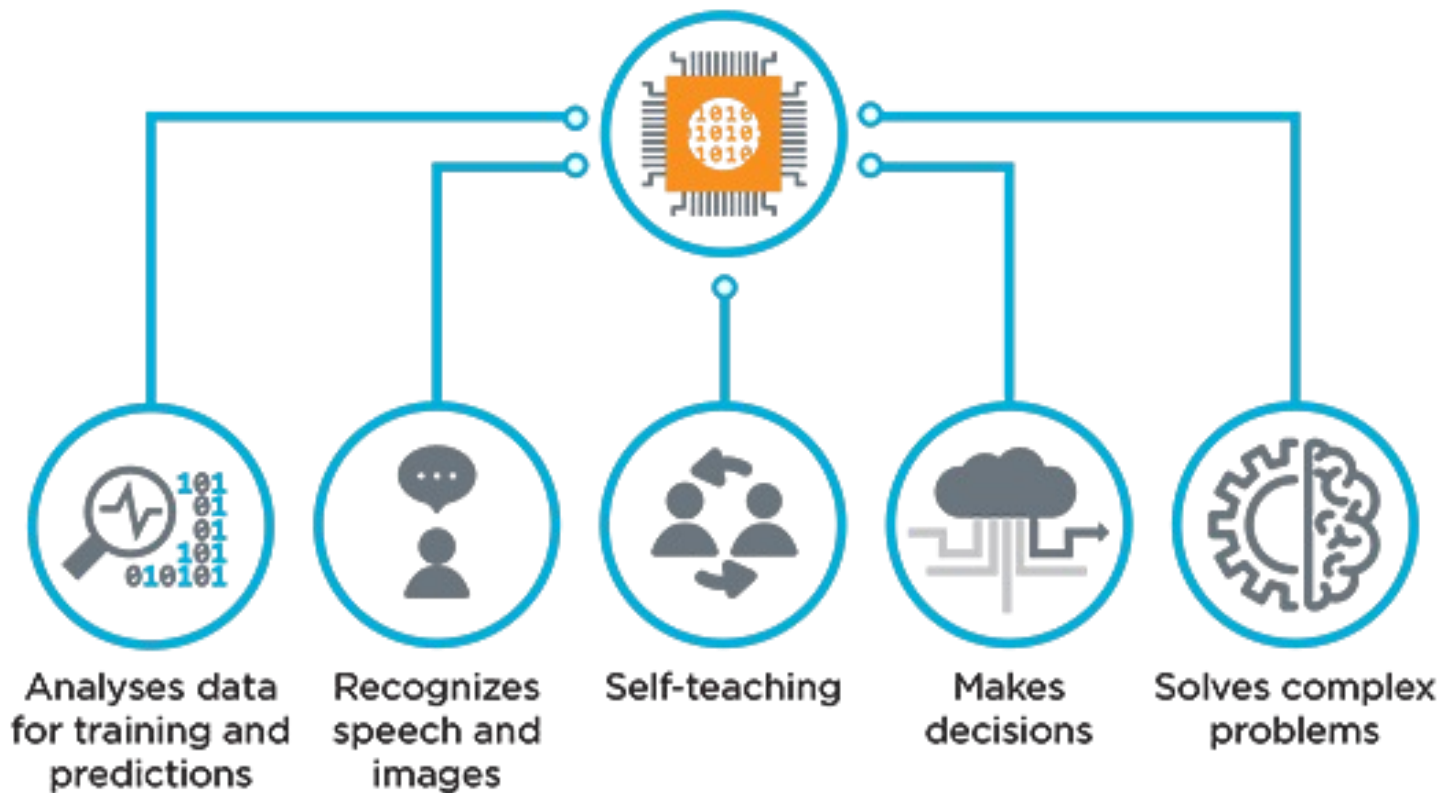
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ARTIFICIAL INTELLIGENCE



ARTIFICIAL INTELLIGENCE



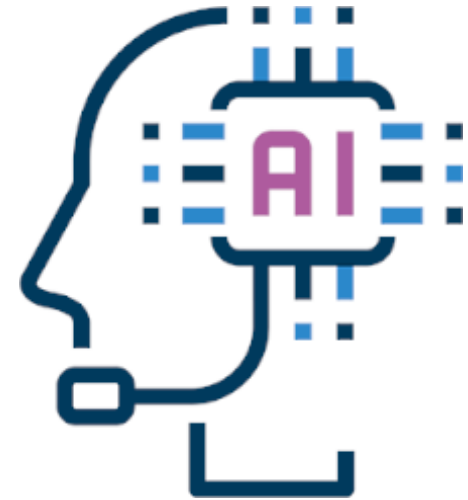
ARTIFICIAL INTELLIGENCE



ANALYTICAL
ARTIFICIAL INTELLIGENCE



HUMAN INSPIRED
ARTIFICIAL INTELLIGENCE



HUMANISED
ARTIFICIAL INTELLIGENCE



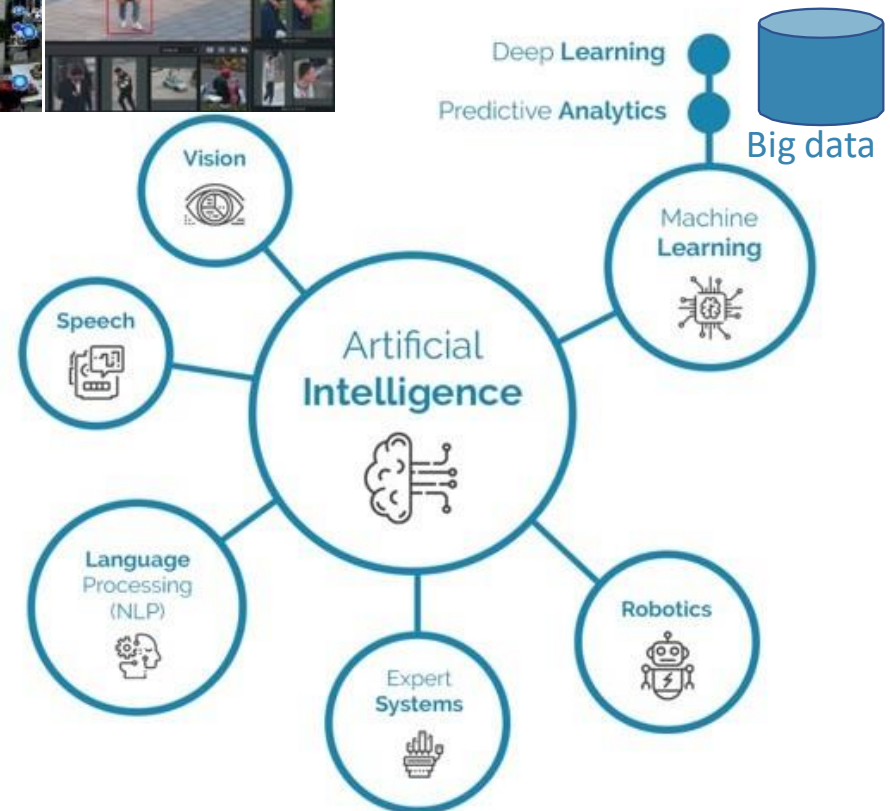
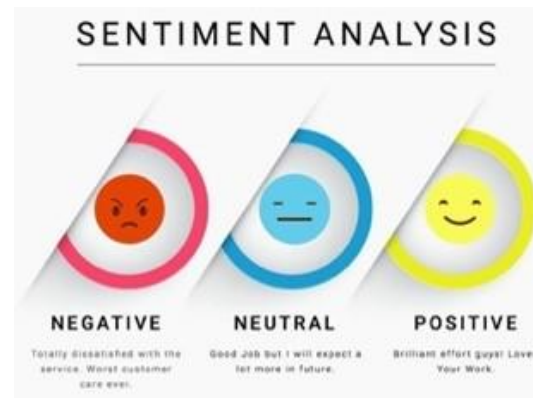
ARTIFICIAL INTELLIGENCE



Identification

Demographic
Analysis

Emotion
Analysis

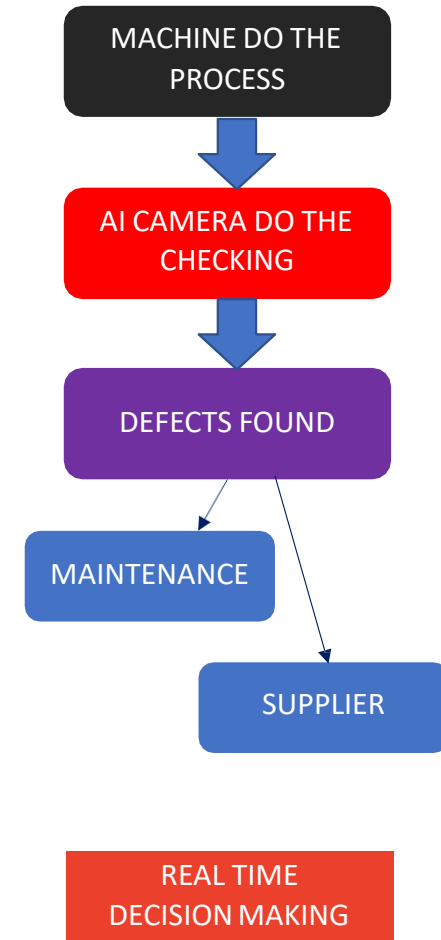
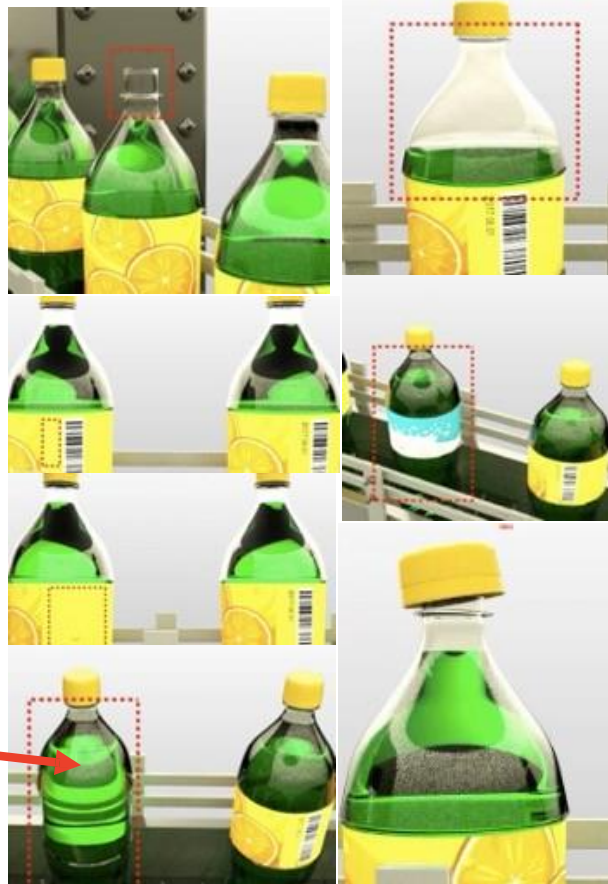


CERTIFIED PRODUCTIVITY SPECIALIST (CPS) COURSE



ARTIFICIAL INTELLIGENCE

AI CAMERA FOR INSPECTIONS



AUTONOMOUS ROBOT



- actuator (motor, servos etc)
- sensors
- controller
- power source
- artificial Intelligent



Dull (repetitive), Dangerous, Difficult, Dear (monitoring project at site)



CERTIFIED PRODUCTIVITY SPECIALIST (CPS) COURSE



AUTONOMOUS ROBOT

Industrial robot

Robot arms are typically **made** of raw materials like steel, aluminium and cast iron. Some special **robots**, like those used in clean room applications, are **made** of titanium. Beginning at the base, these **industrial robots** are assembled of several components, including motors, cylinders, cables and bearings.



Commercial robot

Commercial robots are widely used in the field, as autonomous guided, drones (aerial robot), and in medical applications. The exceptional service offered by **commercial robots** over conventional ways is likely to boost investment and utilization.

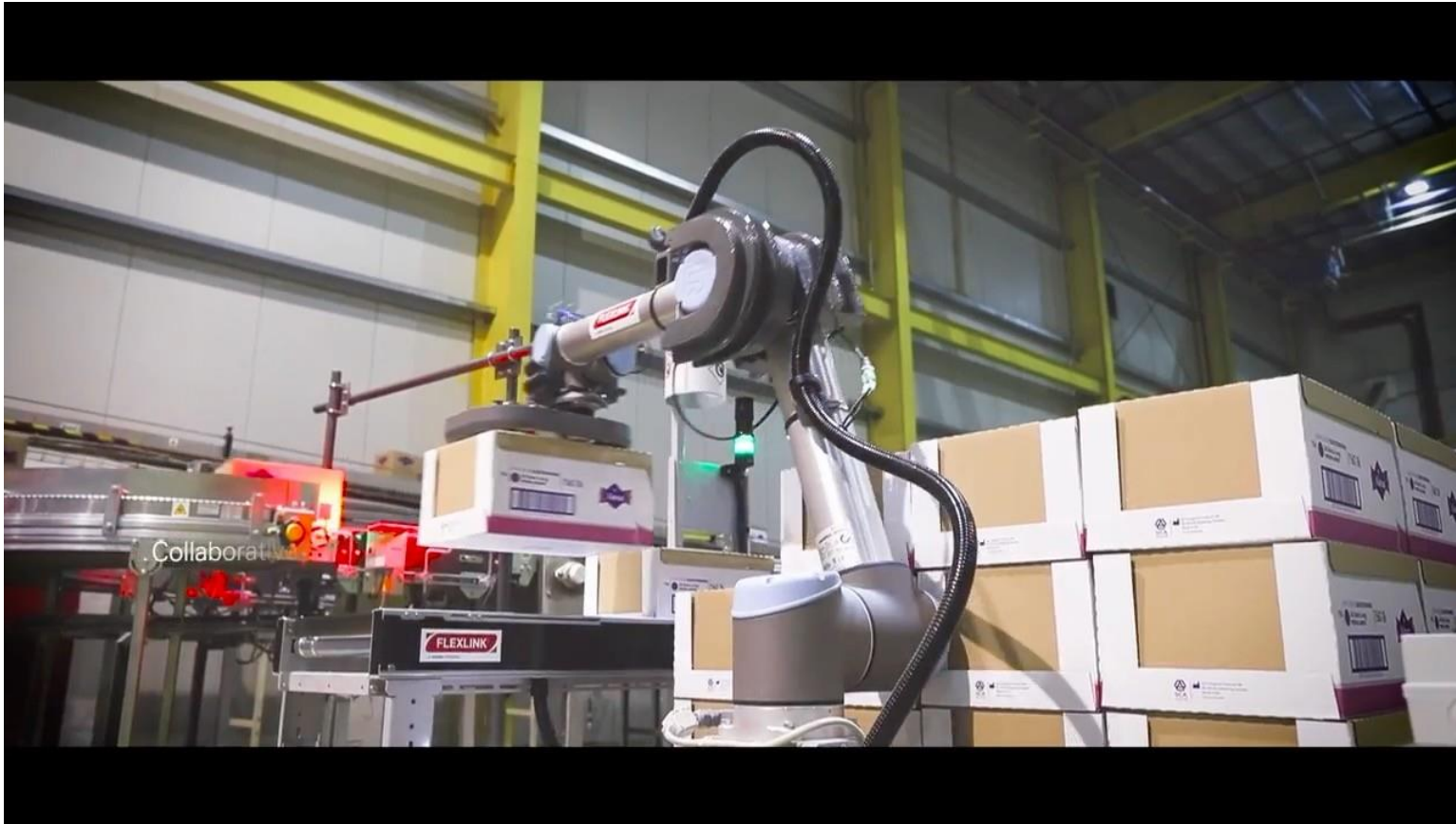


Collaborative robot (cobot)

A **cobot** is designed to work with people and not to replace people. **Cobot** are also called people-focused robots and can help people to make and refine the work they do easier. Dirty, unsafe, boring, monotonous or repetitive tasks can be performed by the robot so that employees can concentrate on other tasks.



AUTONOMOUS ROBOT



HOLIDAY WORKERS



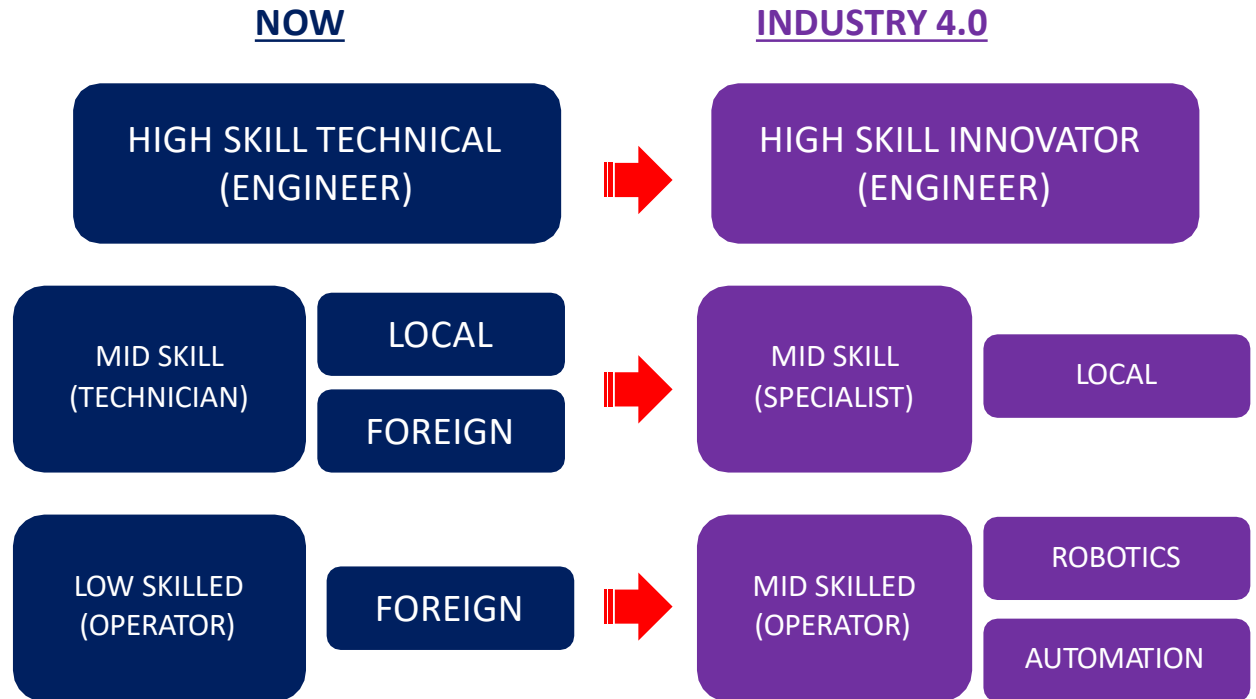
REDUCE 60% OF WALKING



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AUTONOMOUS ROBOT



- ELIMINATE DEPENDENCY ON FOREIGN LABOUR
- PROVIDE PLATFORM FOR JOB UPGRADE ON LOCAL LABOUR



AUTONOMOUS ROBOT



MCK19 KIAH – Key
Innovations Assisting
Healthcare - AGV
(Automated Guided Vehicles)



Roboprenuer Sdn Bhd Founder and Chief Executive Officer Dr Hanafiah Yussof (right) posing for a picture together with **first Malaysian-made autonomous humanoid robot** named **Advanced Development Autonomous Machine (ADAM)**

BEYOND PARADIGM SUMMIT IN MALAYSIA



ROBOT SOPHIA

- Born & raised in Hong Kong
- Made to resemble Audrey Hepburn
- A citizen of Saudi Arabia
- Cloud compile information
- Algorithm integrated system
- Be a friend
- To aide the elderly and those with special needs



ROBOT ADAM

- Developed in Cyberjaya, Malaysia
- First Malaysian humanoid robot
- Weighs 44kg
- 22 degrees upper body freedom
- Natural interaction capabilities
- Algorithm integrated system (3rd phase)



CERTIFIED PRODUCTIVITY SPECIALIST (CPS) COURSE



CHALLENGES IN IR4.0



CERTIFIED PRODUCTIVITY SPECIALIST (CPS) COURSE



CHALLENGES IN IR4.0

WALL OF
GOVERNANCE

WALL OF
INFRASTRUCTURE

WALL OF LEGAL
SYSTEM



WALL OF HUMAN
CAPITAL

WALL OF
TECHNOLOGY

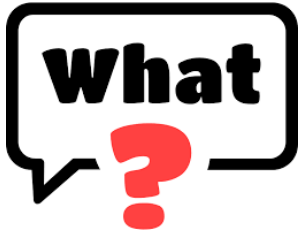
WALL OF SOCIAL
ACCEPTANCE



CERTIFIED PRODUCTIVITY SPECIALIST (CPS) COURSE



CHALLENGES IN IR4.0



PROBLEM STATEMENT
FIND THE GAP
LIST 3 PROBLEMS



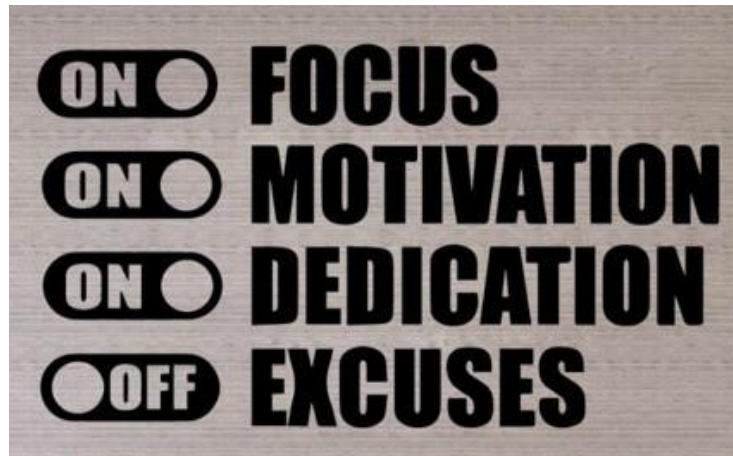
DEVICES
MACHINES
PROCESS



COST SAVINGS
ASSETS
IMPROVEMENT



TECHNICIAN
SUPERVISOR
MANAGER



“70% of Digital Transformation Projects will fail”

source:aiim.org

1. MINDEST

Not having the *right transformation mindset* – CEO to drive

4. TALENT

fail to bring in people who have a *digital understanding and experience* implementing

2. CULTURE

change management is a key component in bringing about successful culture change

5. TECHNOLOGY

focusing solely on the enabling *technology* can lead to failure

3. GOALS

Not defining *clear goals* means your organization will end up with people going in lots of different directions

6. ATTITUDE

Adopting a *fail fast mentality*, however, often means companies might not give projects the room to succeed.



IMPACT IN IR4.0



CERTIFIED PRODUCTIVITY SPECIALIST (CPS) COURSE



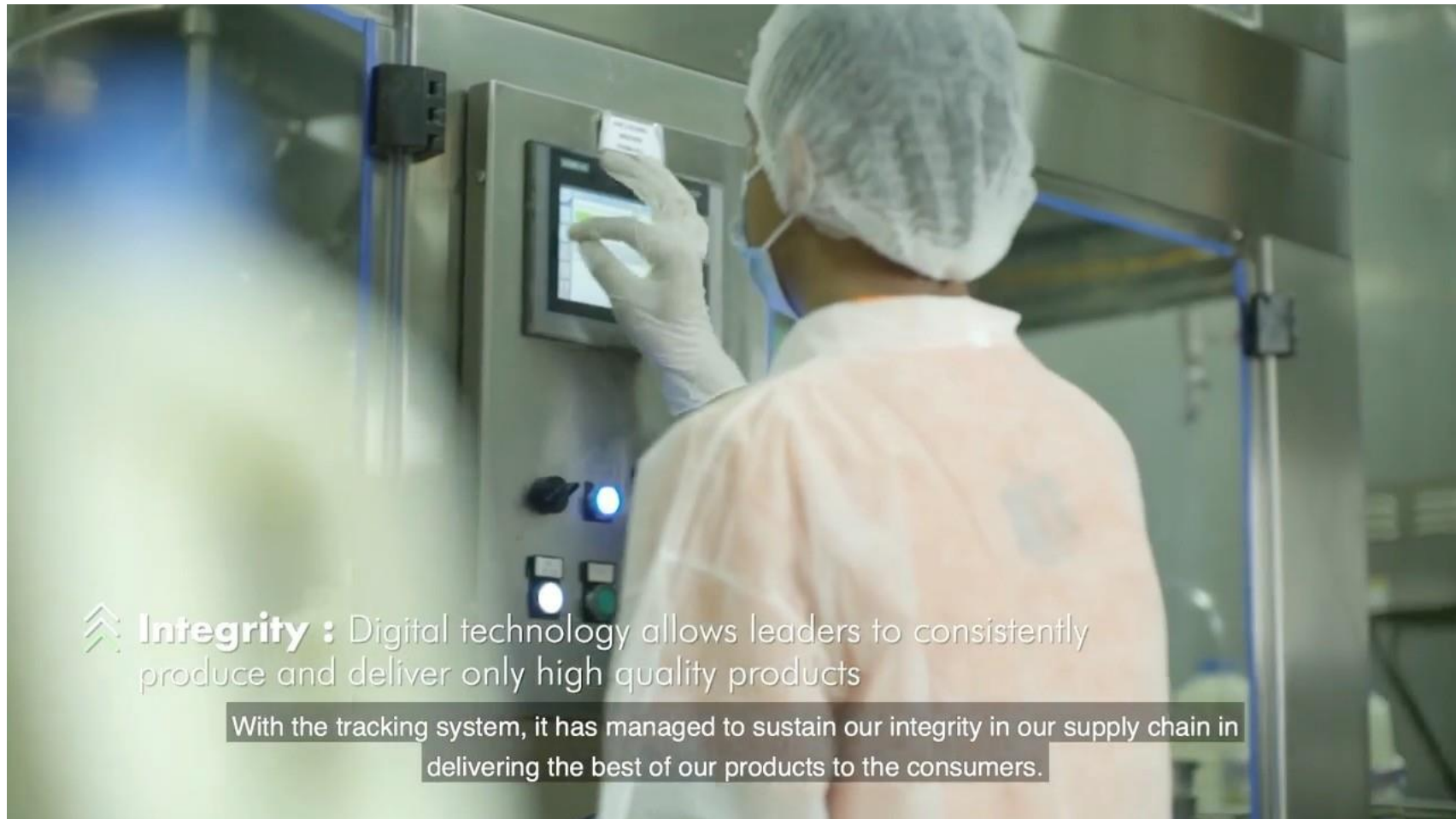
IMPACT OF IR4.0



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IMPACT OF IR4.0



 **Integrity :** Digital technology allows leaders to consistently produce and deliver only high quality products

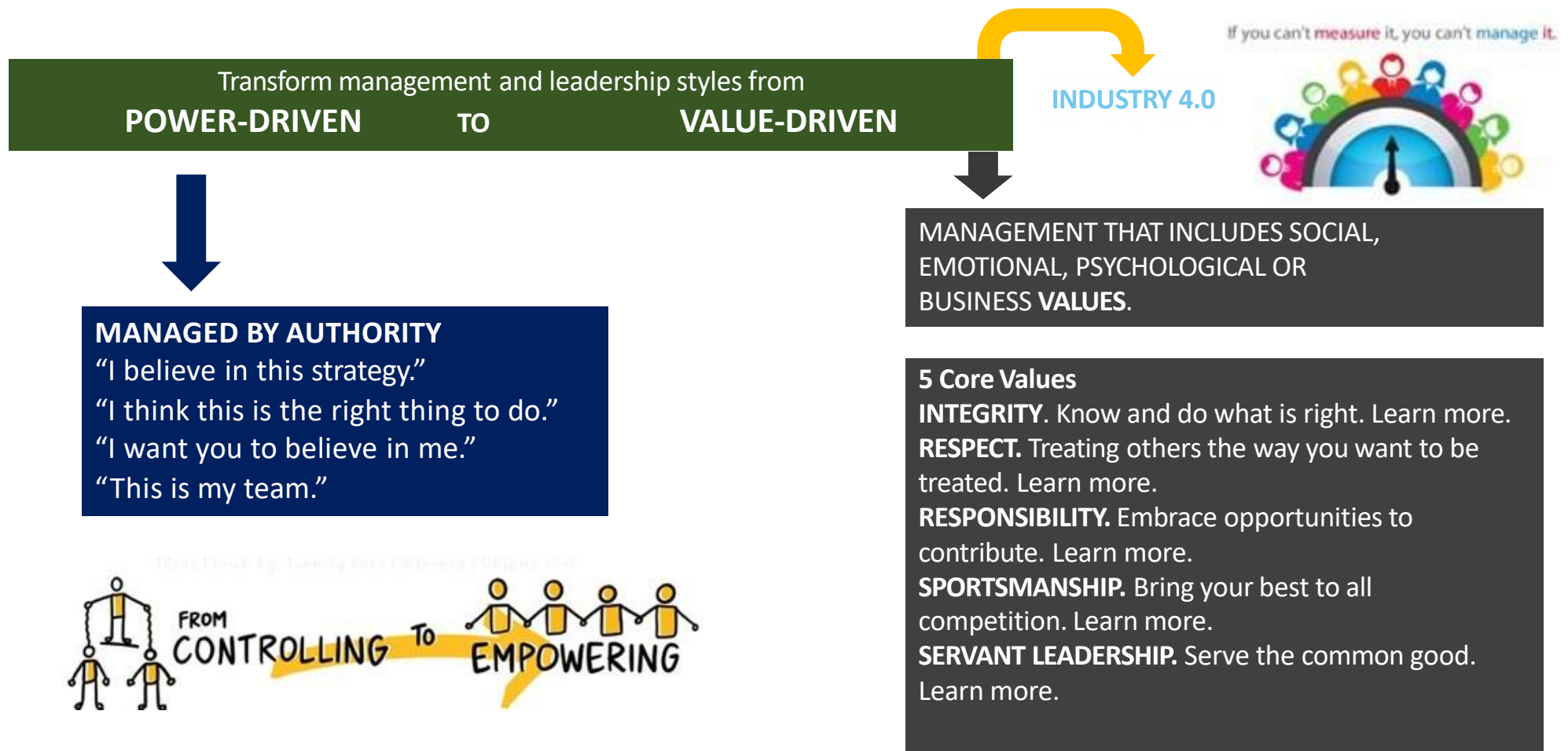
With the tracking system, it has managed to sustain our integrity in our supply chain in delivering the best of our products to the consumers.



CERTIFIED PRODUCTIVITY SPECIALIST (CPS) COURSE



IMPACT OF IR4.0



IMPACT OF IR4.0



PILLARS OF IR4.0 TECHNOLOGY



CERTIFIED PRODUCTIVITY SPECIALIST (CPS) COURSE



IMPACT OF IR4.0



*Thank
you*



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