The Essential Eight technologies and how they can be applied

Blockchain

Distributed electronic ledger that uses software algorithms to record and confirm transactions with reliability and anonymity. The record of events is shared between many parties and information once entered cannot be altered, as the downstream chain reinforces upstream transactions.

Example Use Cases

- Identity management
- Voting
- Peer to peer transactions
- Supply chain management
- Smart contracting
- Provenance / traceability
- Asset registration / ownership
- Trade finance
- Record management

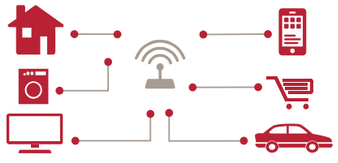
Drones

Air- or water-based devices and vehicles, for example, Unmanned Aerial Vehicles (UAV), that fly or move without an onboard human pilot. Drones can operate autonomously (via on-board computers) on a predefined flight plan or be controlled remotely.

Example Use Cases

- Insurance claim validation
- Precision farming
- Infrastructure inspections
- Railway safety
- Cargo delivery
- Construction site management
- Forestry management
- Facility inspection (wind turbine, oil rig, etc)

Internet of Things (IoT)

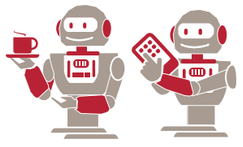


Network of objects – devices, vehicles, etc. – embedded with sensors, software, network connectivity and compute capability, that can collect and exchange data over the Internet. IoT enables devices to be connected and remotely monitored or controlled. The term IoT has come to represent any device that is now "connected" and accessible via a network connection. The Industrial IoT is a subset of IoT and refers to its use in manufacturing and industrial sectors.

Example Use Cases

- Inventory and material tracking
- Real-time asset monitoring
- Connected operational intelligence
- Customer self-service
- Usage and performance benchmarking
- Data integration and analytics
- Connected service parts management
- Remote service
- Real time market insights
- Flexible billing and pricing models

Robots

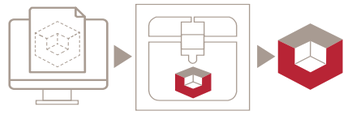


Electro-mechanical machines or virtual agents that automate, augment or assist human activities, autonomously or according to a set of instructions – often a computer program.

Example Use Cases

- Manufacturing
- Hazardous industries
- Hotels and tourism
- Service industry
- Automation of predictable tasks
- Data management

3D Printing



Additive manufacturing techniques used to create three-dimensional objects based on digital models by layering or "printing" successive layers of materials. 3D printing relies on innovative "inks" including plastic, and more recently, glass and wood.

Example Use Cases

- Healthcare and smart medical devices
- Tools and end use parts
- Prototyping
- Bridge manufacturing
- Supply chain optimization
- Customized products
- Remote location production

Virtual reality (VR)

Computer-generated simulation of a three dimensional image or a complete environment, within a defined and contained space, that viewers can interact with in realistic ways. VR is intended to be an immersive experience and typically requires equipment, most commonly a helmet/headset.

Example Use Cases

- Immersive journalism
- Virtual workplaces
- Manufacturing/product design
- Architecture & construction
- Education&training
- Big data management
- Entertainment
- Healthcare
- Merchandising

Augmented Reality (AR)

Addition of information or visuals to the physical world, via a graphics and/or audio overlay, to improve the user experience for a task or a product. This "augmentation" of the real world is achieved via supplemental devices that render and display said information.

Example Use Cases

- Virtual showrooms
- Education
- Travel and tourism
- Gaming
- Printing and advertisers
- Retail environments
- Marketing

Artificial intelligence (AI)

Software algorithms that are capable of performing tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making and language translation. AI is an "umbrealla" concept that is made up of numerous subfields, such as machine learning, which focuses on the development of programs that can teach themselves to learn, understand, reason, plan, and act (i.e. become more intelligent) when exposed to new data in the right quantities.

Example Use Cases

- Managing personal finances
- Trading systems
- Real time fraud and risk management
- Automated virtual assistants
- Underwriting loans and insurance
- Customer support, transactions and helpdesks
- Data analysis and advanced analytics