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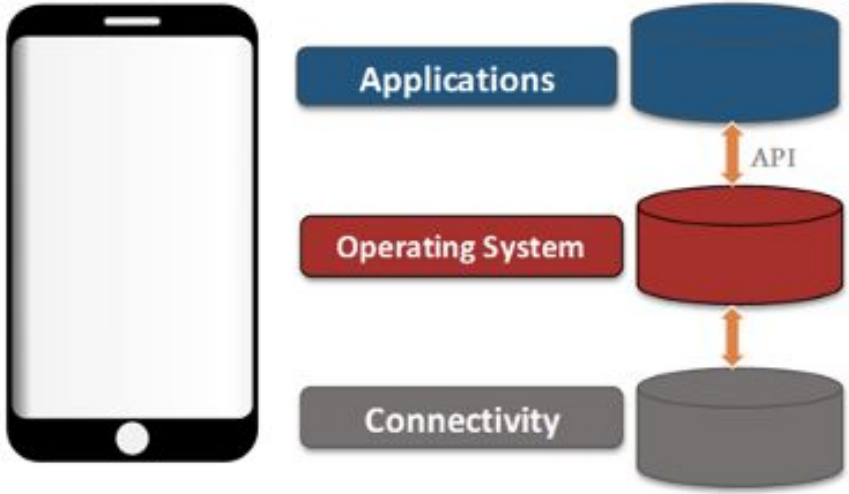
Protocols for WSN
M2M

Summary

The functionalities of M2M

- **M2M communication = all the data exchanges carried out between several devices without human intervention**

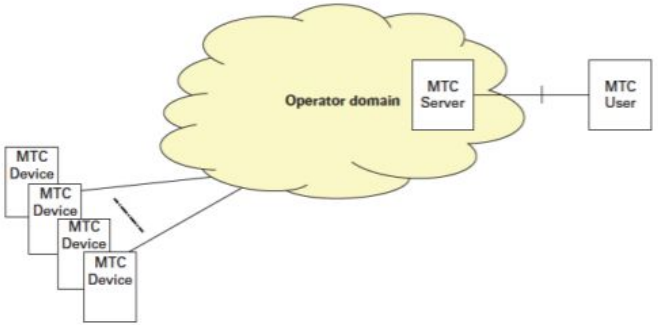
- **oneM2M: global initiative**
- **Service layers:**
  - **Connectivity Layer**
  - **Operating System**
  - **Applications Layer**



M2M technology, basic concepts

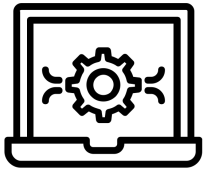
Star architecture

- Direct mode
- Indirect mode
  - Interworking gateway
- Hybride mode



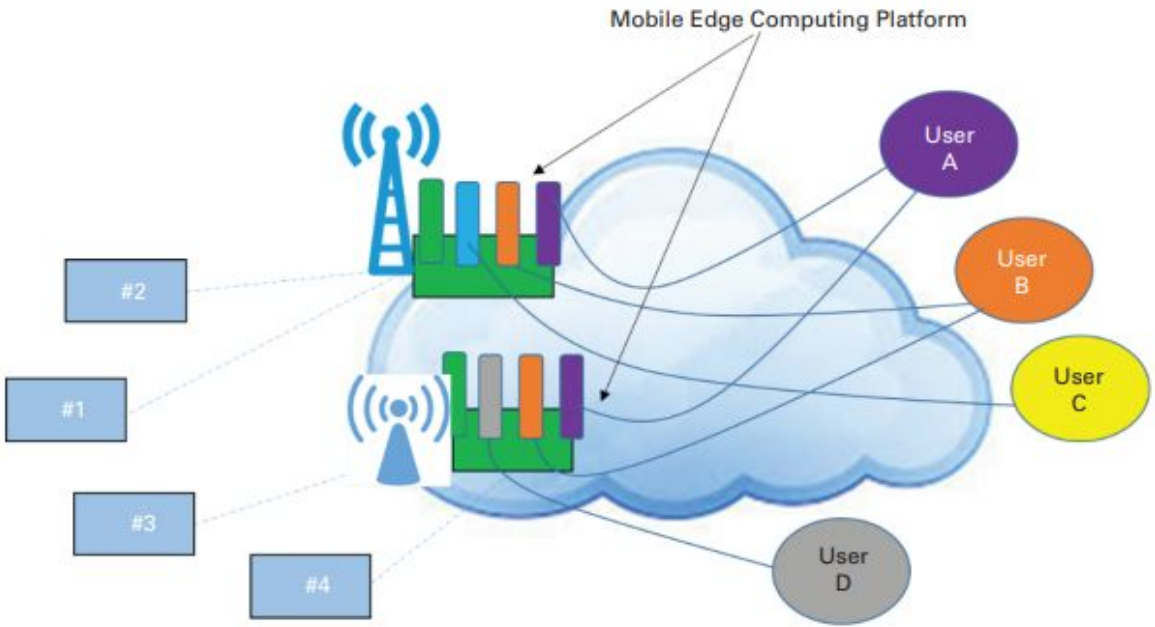
MTC Concept

- MTC-Server
  - Linux Servers
    - Software



Virtualisation

M2M technology, cloud and edge architecture



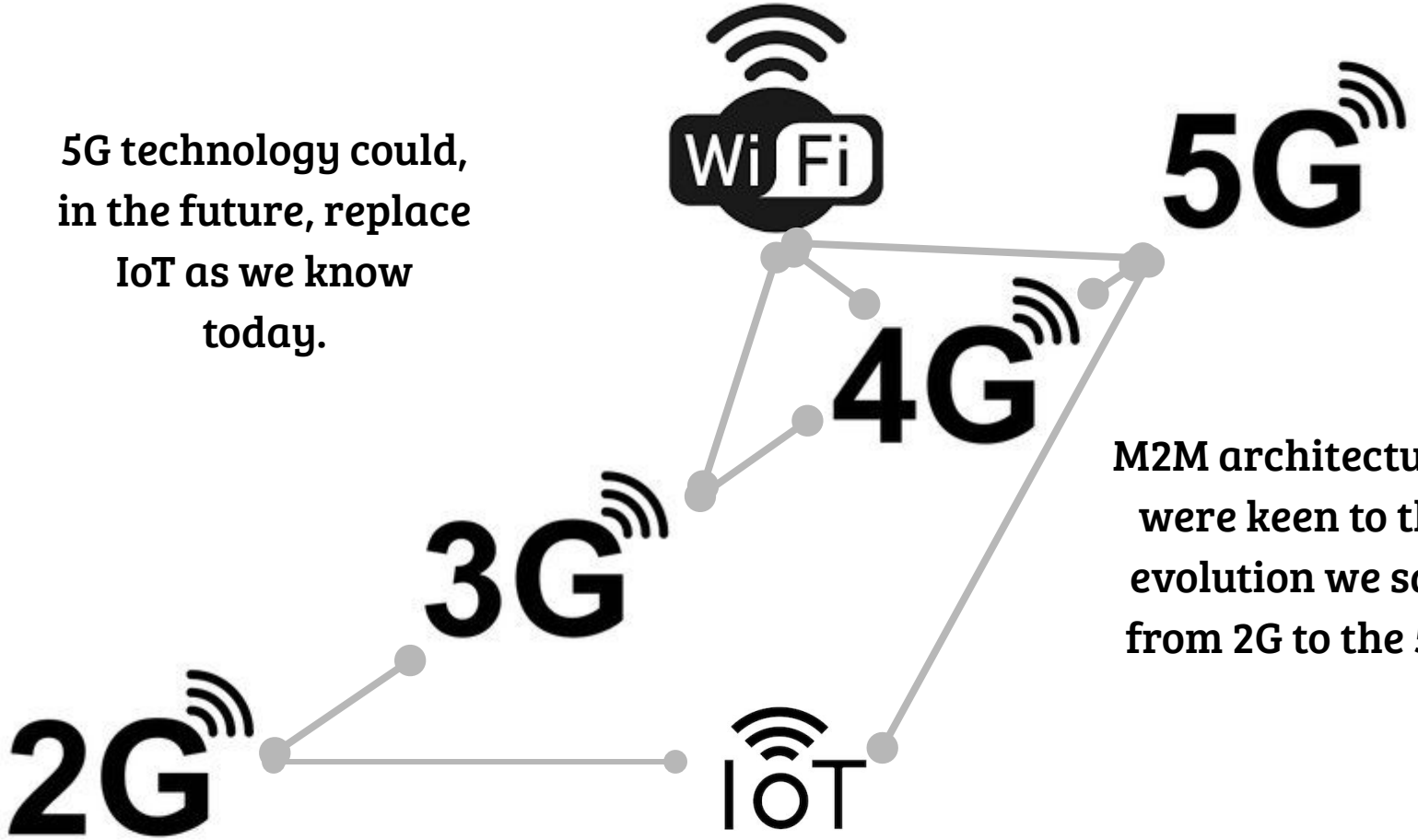
Cloud

- **Private cloud**
- **Public cloud**
- **Hybride cloud**

Edge

- **Response time**
- **Pre-processing**

5G technology could, in the future, replace IoT as we know today.



M2M architectures were keen to the evolution we saw from 2G to the 5G.

Security

- **Several potential security threats from other network-based communications**
- **Resource restrictions**
- **Low complexity devices**
- **Difficult to foresee certain breaches**

Security

- **Physical attacks**
- **Easily accessible devices**
  - **Modification to software**
  - **Malware**
  - **Destruction**
- **Side channel attacks**
  - **Power consumption**
  - **TIming information**

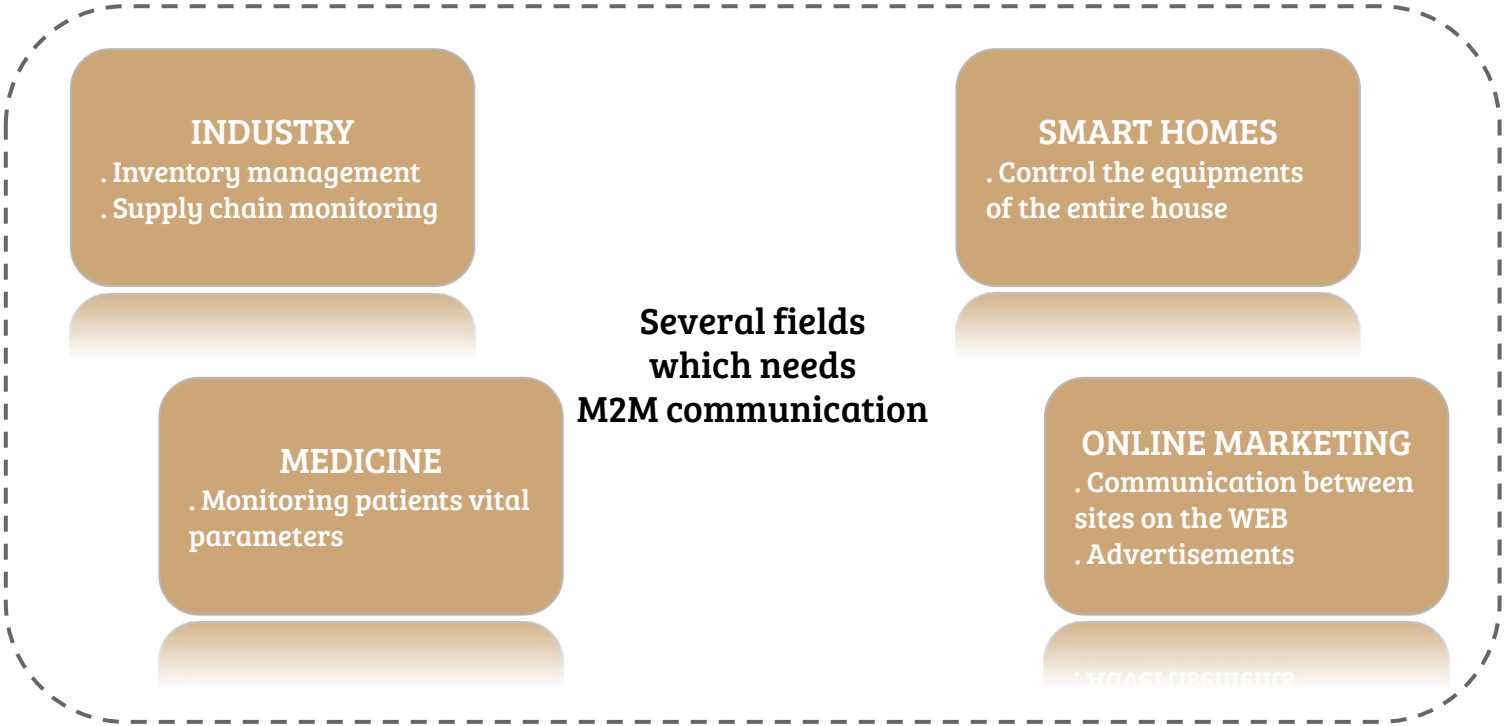
Security

- Logical attacks
- Targeting functioning without making changes to the device
- Impersonation
  - Emulation of back-end server
- Sensitive information
- Information integrity
- Reducing trust
- Diminished utility

Power consumption

- **Varying power usage**
- **No standard M2M device**
- **Most devices are designed with low power usage in mind**
- **Relatively low power consumption**

Fields and Example of the use of M2M



Fields and Example of the use of M2M

The Example of the Air France KLM company

Goals :

- Organizing a follow-up of the various equipment on board.
- Optimize the duration of their use and efficient maintenance.
- The geolocation of the various equipment on the tarmac.

Solution :

- Move towards intelligent predictive maintenance with M2M communication.

Conclusion

- **M2M Benefits and downsides**
- **M2M helped telecommunications evolve from 2G to 5G**
- **Security is one of the most important topics on M2M now**
- **M2M is used in basically every industry domain.**