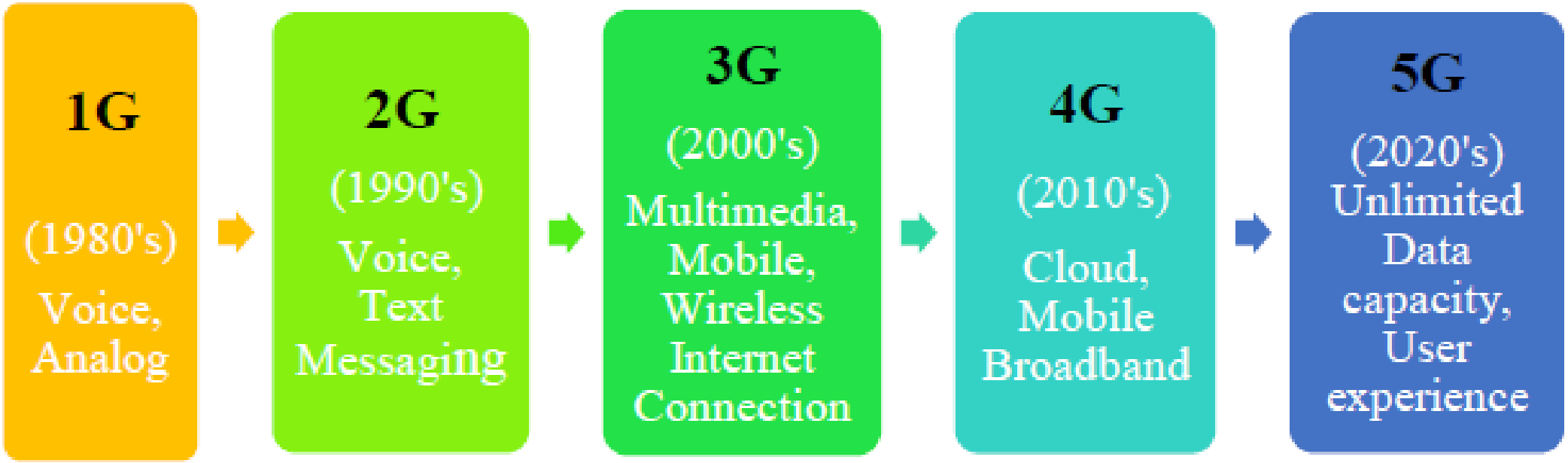
# 5G TECHNOLOGY: THE GENERAL OVERVIEW OF SECURITY OBSTACLES

**Dr. Nguyen Huu Phuoc Dai**
**Dr. Lourdes Ruiz**
**Prof. Dr. Rajnai Zoltán**

*Óbuda University - Doctoral School on Safety and Security Sciences, Hungary*

# THE HISTORY




Countries: South Korea, China, United States, UK, Italy, France, Thailand, Vietnam…

# BENEFITS

- More speed
- More responsiveness (low latency)
- More bandwidth to connect more devices

# THE APPLICATIONS OF 5G

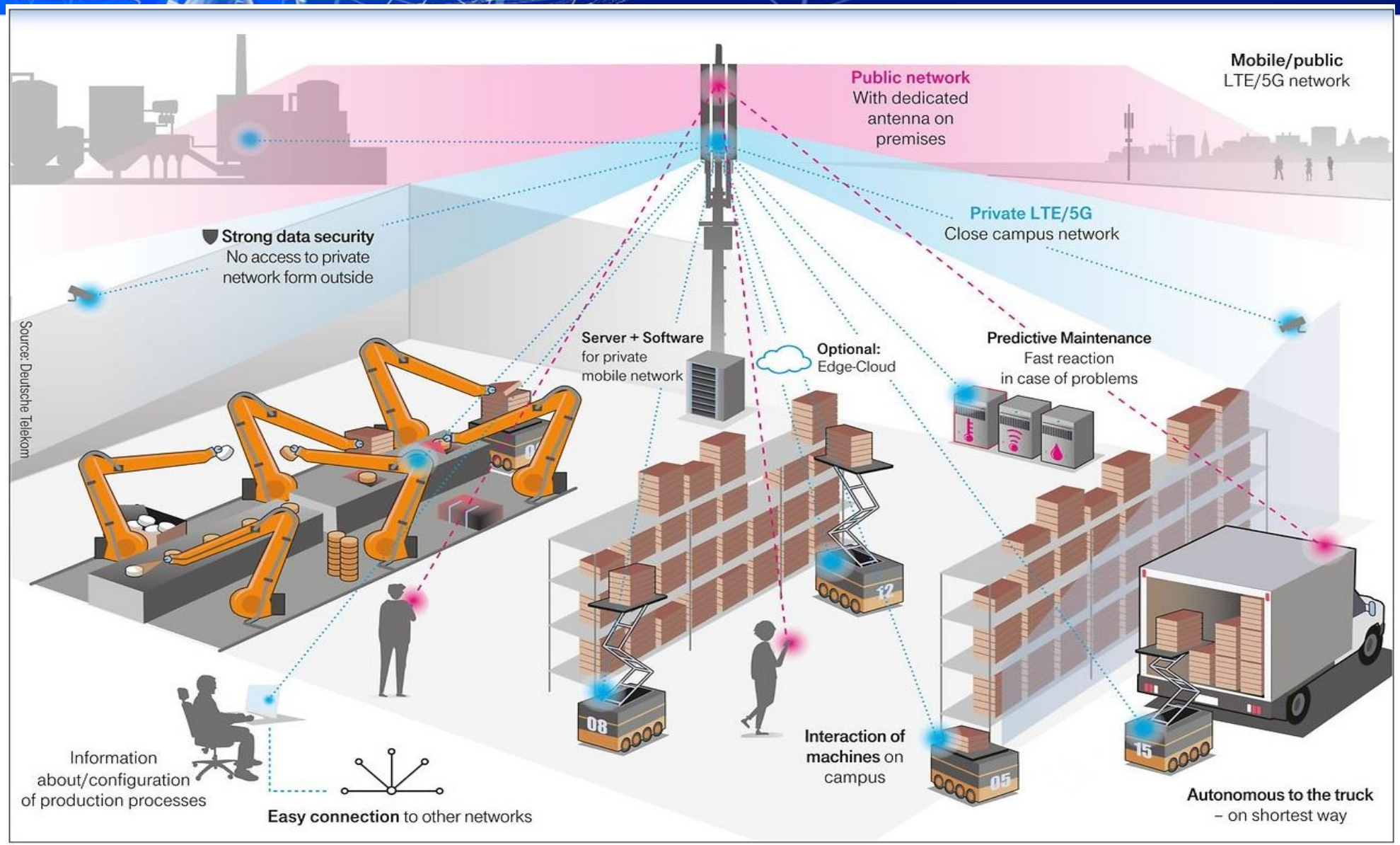
# EDUCATION

EFFICIENCY
QUALITY
SPEED
COST
BUSINESS PLAN
time
money
quality
USER
CLOUD
30%
70%
TAX
PROFIT
INCOME
EXPENSES
cost
quality
price

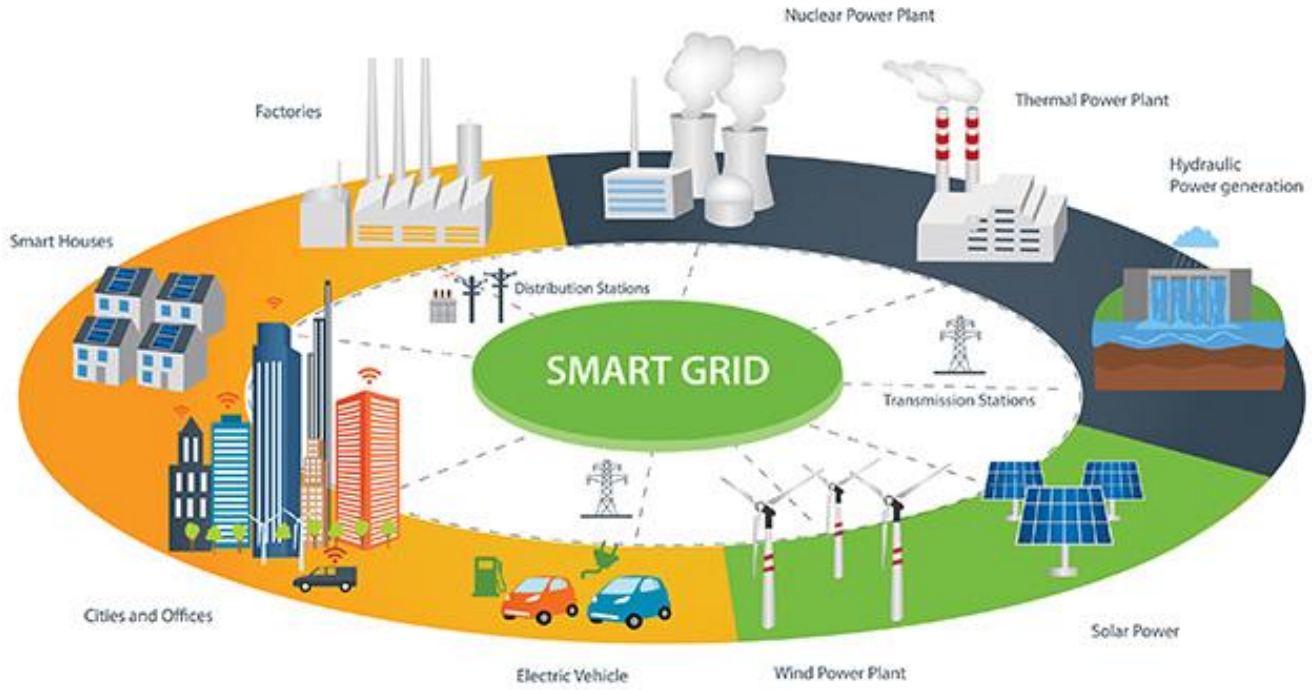
Learning
education

# AUTOMATION & IOT

# INDUSTRY


Public network
With dedicated antenna on premises
Mobile/public
LTE/5G network
Private LTE/5G
Close campus network
Strong data security
No access to private network form outside
Server + Software
for private mobile network
Optional:
Edge-Cloud
Predictive Maintenance
Fast reaction in case of problems
Source: Deutsche Telekom
Information about/configuration of production processes
Easy connection to other networks
Interaction of machines on campus
Autonomous to the truck
– on shortest way

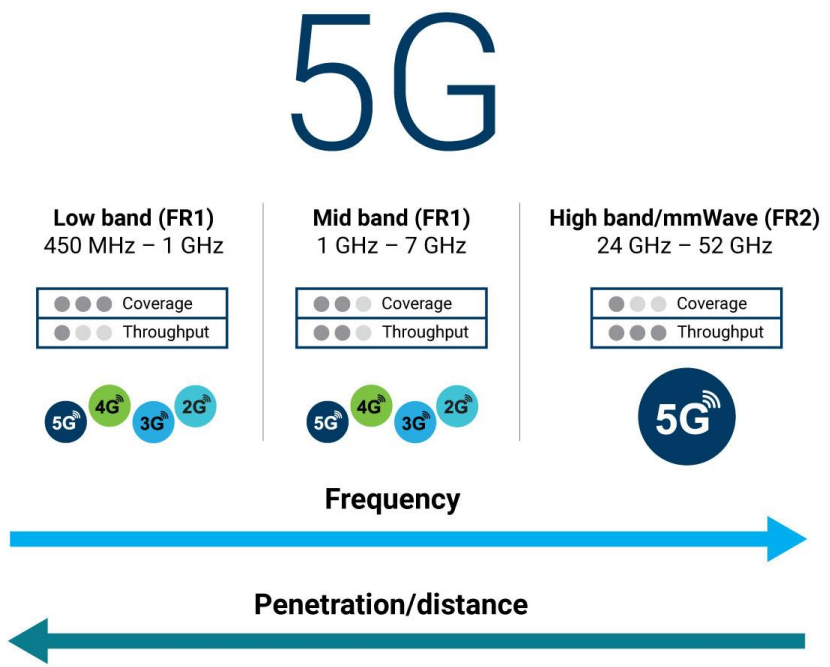
# SMART GRID & HEALTHCARE



# TRANSPORTATION & ENERGY

# CHALLENGES

- Spectrum challenges
- Deployment cost
- Privacy



# SECURITY ISSUES

| Security issues | Description |
|---|---|
| **Mobile virtual operations** | - Data leakage, unsecured Wi-Fi, network spoofing, phishing attacks, spyware, broken cryptography, improper session handling |
| **Telecommunication fraud** | - Slamming, cramming, toll-free number fraud, social engineering, bypass problems. |
| **The IoT issues** | - Wi-Fi attacks, radio frequencies, access points, and the like |
| **Network attacks** | - Attacks on availability, authentication, and confidentiality, DoS/DDoS attacks, software-defined networking (SDN) vulnerabilities, network function virtualization (NFV). |
| **User privacy** | - Location tracking, identity, and personal data lost through semantic information attacks, International Mobile Subscriber Identity (IMSI) attacks |
| **Network security vulnerabilities, Relay to relay communication** | - Eavesdropping, man in the middle attack, Replay attack, DoS attack, interleaving attack, virus/malware attack |
| **Security issues from (1G to 4G)** | - Intercepting SMS messages, denial of service (DoS, diameter signaling protocol problems) |

# THANKS FOR YOUR LISTENING

*Óbuda university, Budapest, Hungary*