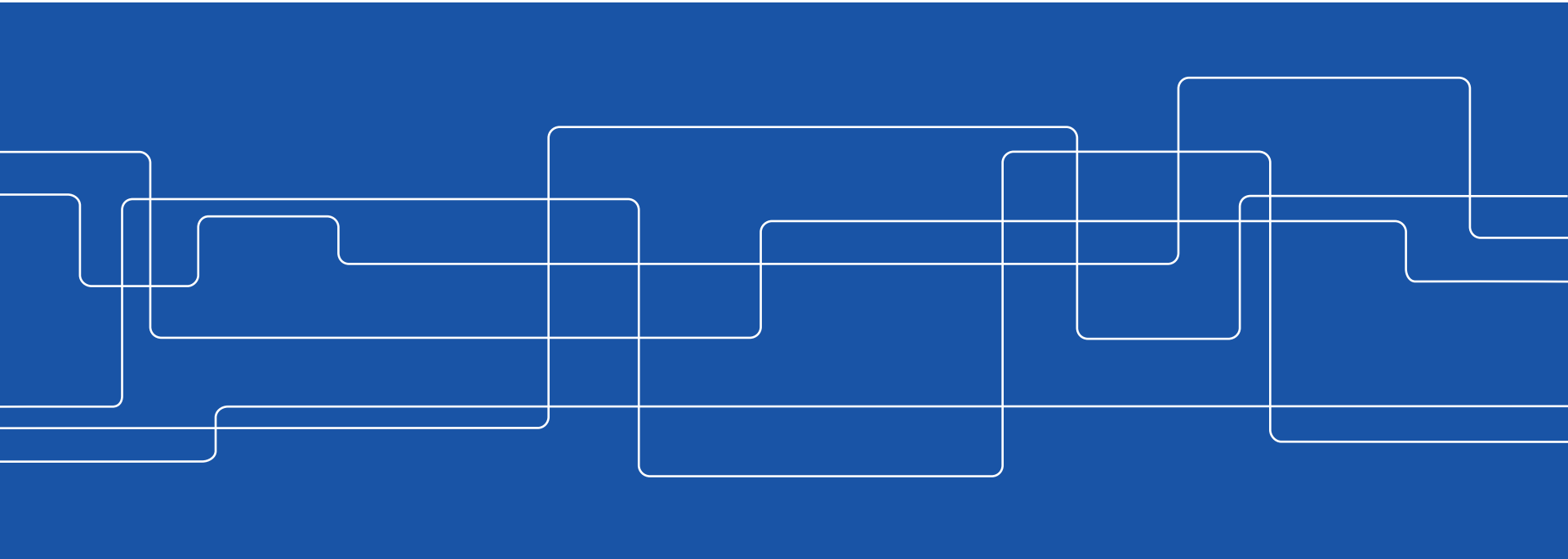




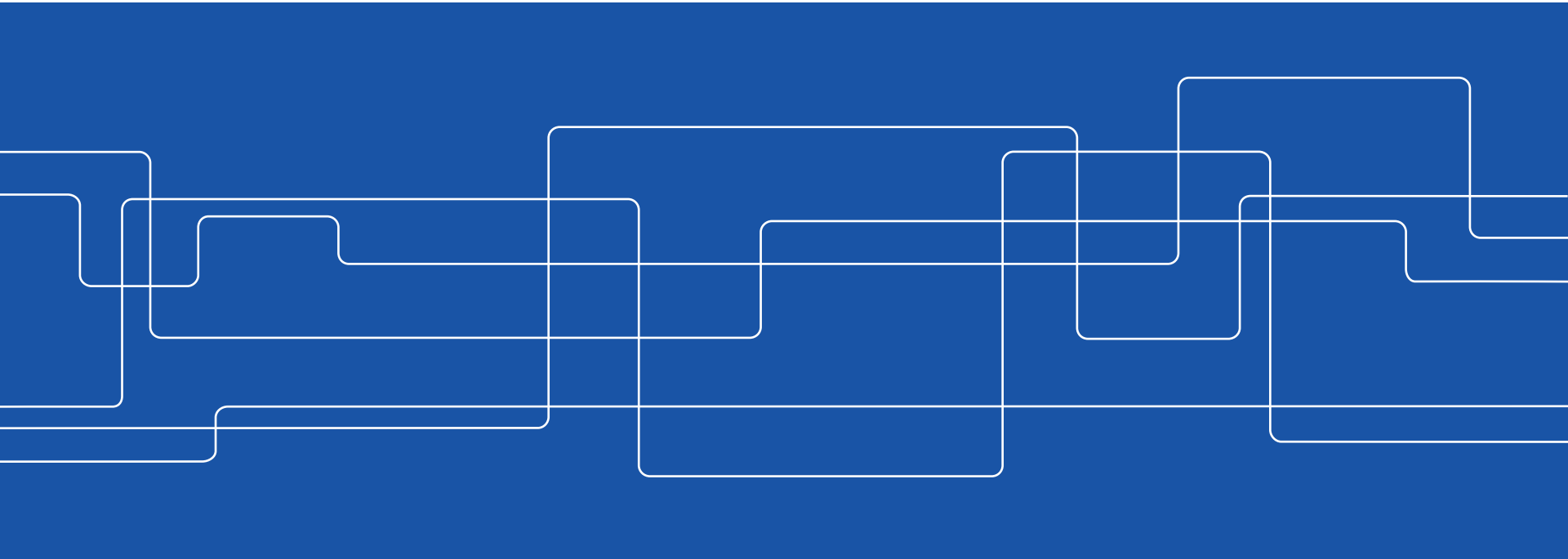
# Security & Reliability threats to mobile systems

- the non-military scenario

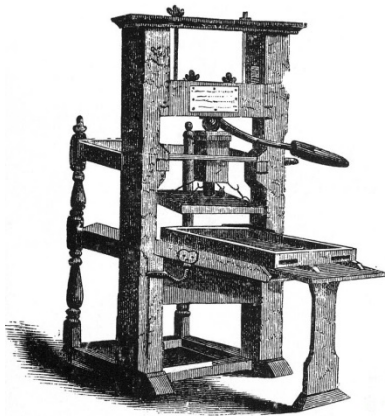
Jens Zander, KTH



# The internet: "More than 'fun and games' "



# "The Internet of Information"

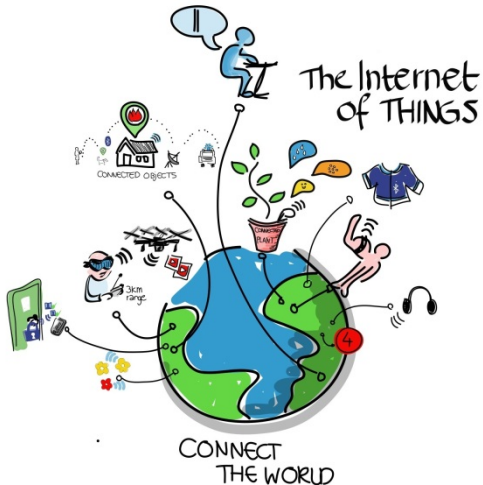


Information available anywhere, anytime  
"Being Digital" = copies "for free"



Threat: Desinformation, Privacy breach, Delays, Info service disruption

## 2. "The Internet of Sensors"



Information collected everywhere  
Enormous data volumes – "Big Data"  
Data Mining, "Analytics" for decision support

Threat: Desinformation, Privacy breach

### 3. "The Internet of Action"



Källa: The Economist



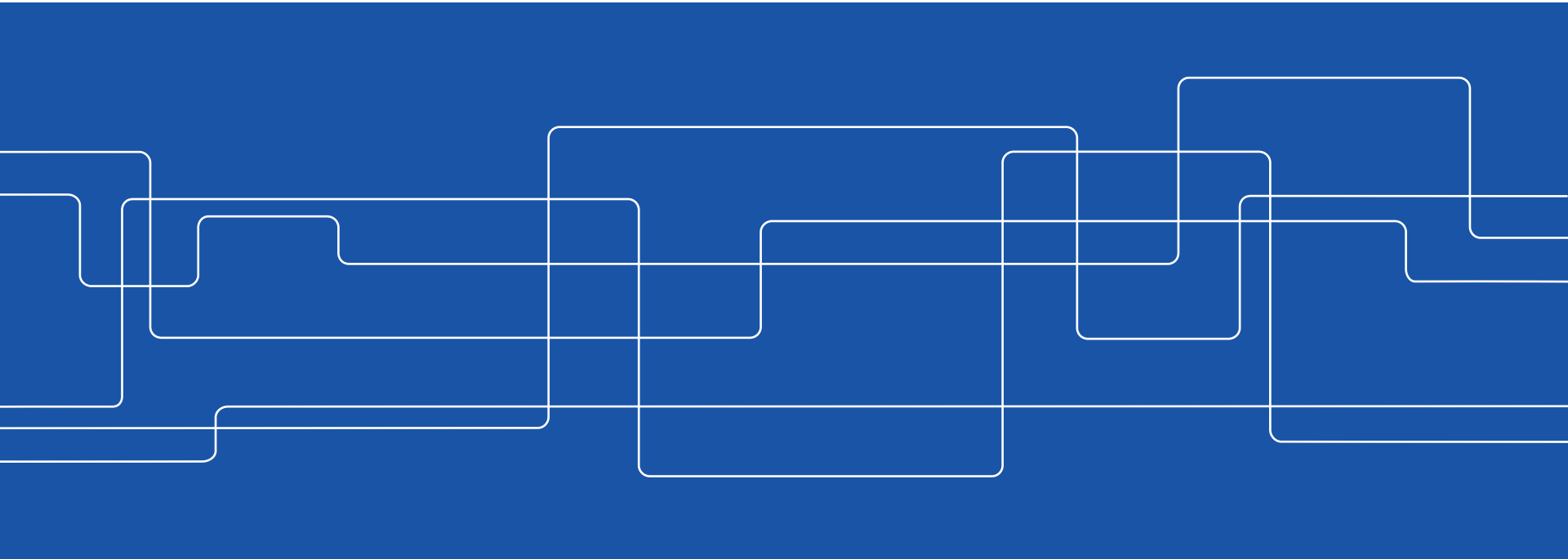
The physical world is under  
Remote control by people and machines



Threat: Physical damage, Disruption of vital infrastructure

# The Threats

- Accidents, Natural disasters
- Organized crime
- Terrorist attacks





# Today's information infrastructure

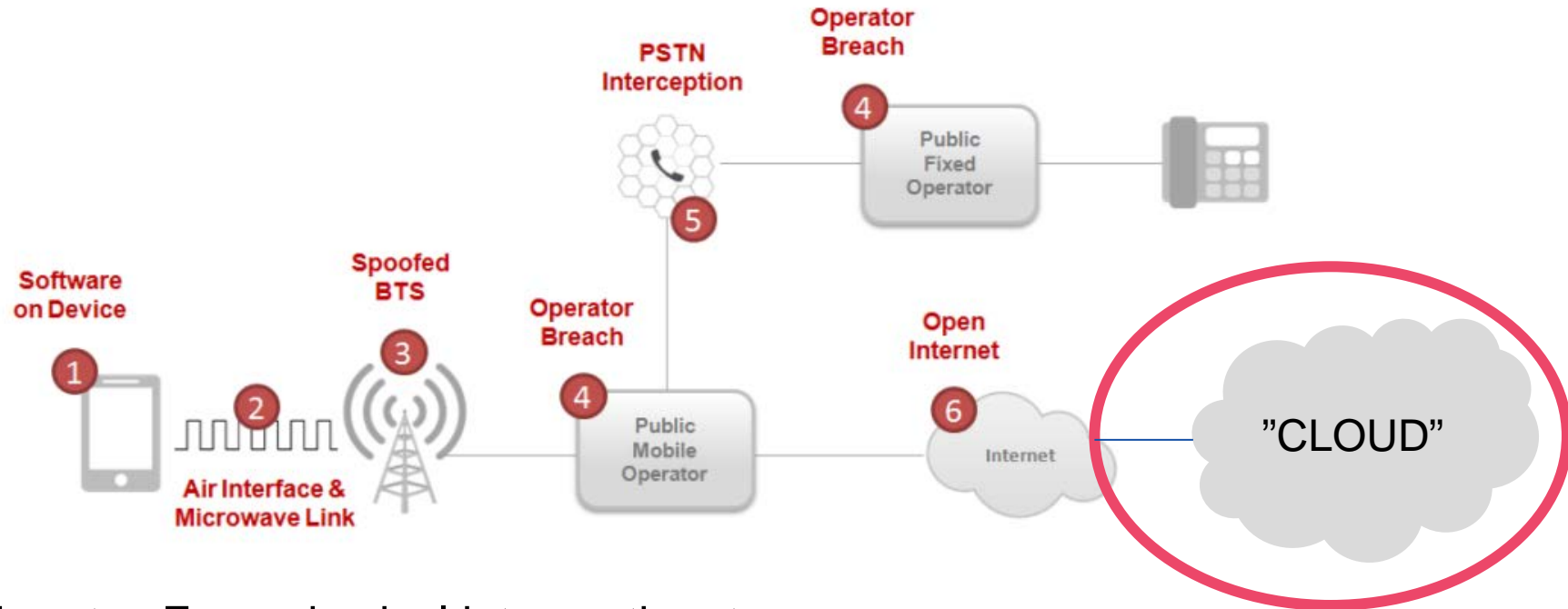
- From special purpose infrastructures ("one-trick ponies") to general IP-based access infrastructures
- **Internet access** = dominant design for ALL services (fixed & mobile)
- "Cloud" computing
- Standardized platforms
- Marginalizes other technical solutions – e.g. Wireless P2P, Mesh, ...



"IP is the answer - now, what was the question ?"

G Q Maguire

# Cellular /Data Security/Privacy Threats Then, now and tomorrow

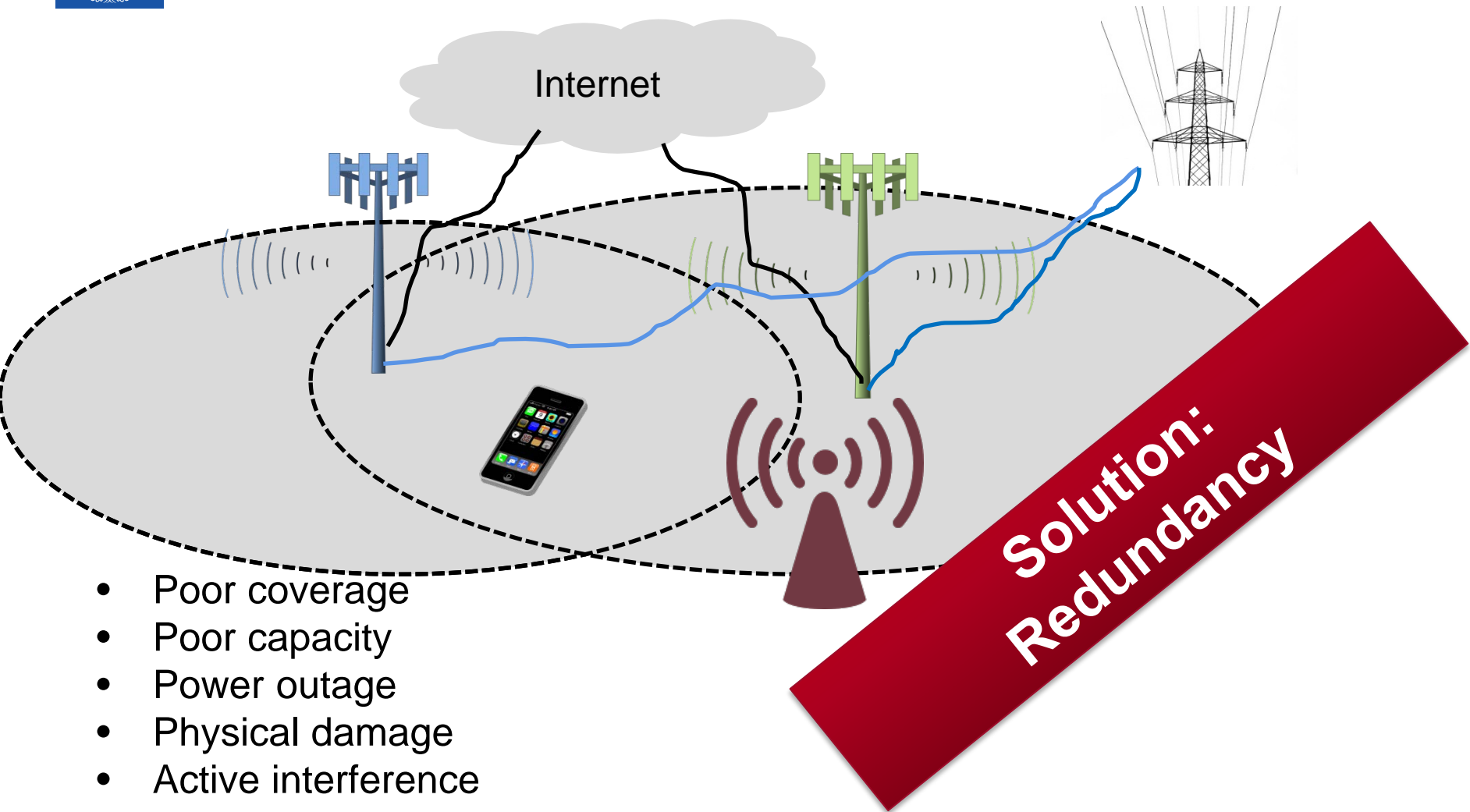


Threats: From physical interception to

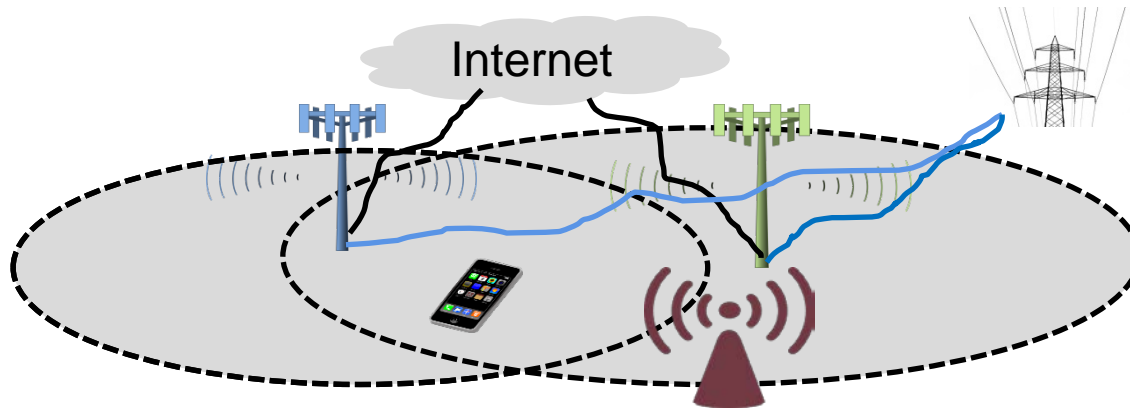
- Link interception/disruption
- Network interception
- Spoofing (insertion of disinformation)
- "Cloud" /Server attacks



# Wireless Network vulnerabilities



# Redundant resources:



- Poor coverage – **Multiple Networks, lower frequencies**
- Poor capacity – **Multiple Networks, higher frequencies**
- Power outage **Power backup – Multiple Networks**
- Physical damage: **Physical protection – Multiple Networks**
- Active interference: **Multiple frequencies**



## Some observations:

- Open networks do not provide security
  - this has to be provided "end-to-end"
- Main threat: Disruption of vital services
  - The internet is a fantastic tool to scale-up systems and solutions and make them effective on a global scale - but it also empowers the attackers to do likewise
- Our computers are protected – but what about the "low-end" cyber-physical devices ?
  - Smartphones are replaced every 1-2 years
  - A car lasts for 10 years
  - The thermostat in my house ... will it ever be replaced?