

# Security and Privacy in Future Smart Networking and Communication

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## Internet of Plans

Plan everything ahead of time in every aspect

Manage our life in a smarter and better way

- Every aspect of life could be planned ahead of time?
- What are the technology enablers?
- Living in the augmented reality?
- What does this mean to security and privacy?

# The Power of Internet of Plans



**Smart Health**



**Smart Transportation**



**Smart Homes**



**Logistics and Retail Environment**



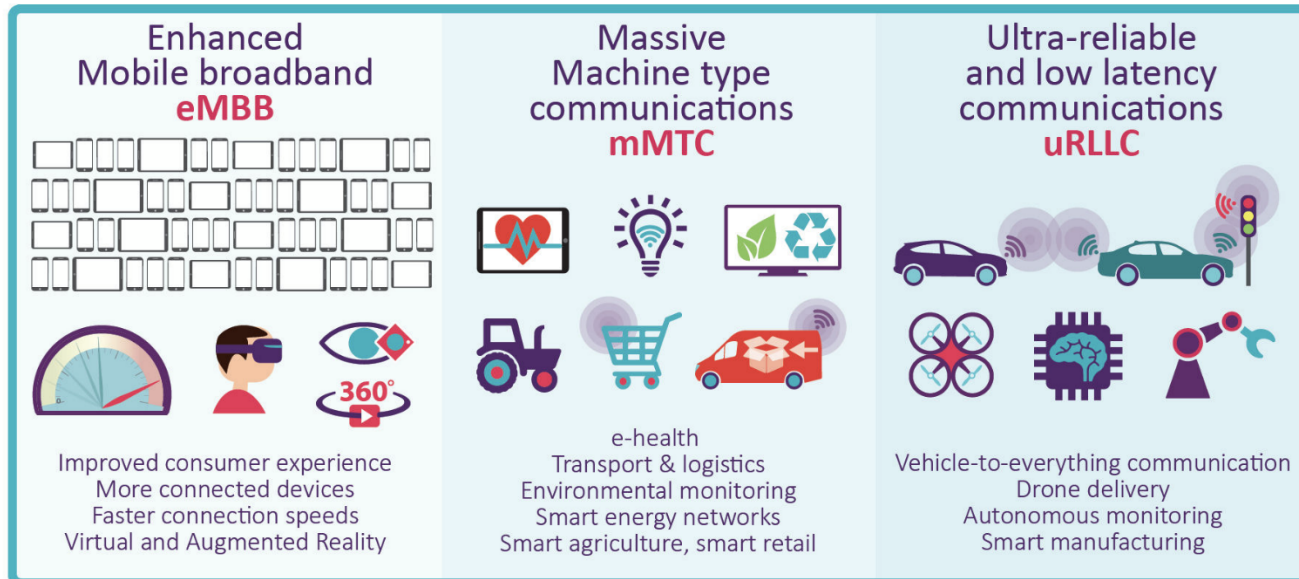
**Business Environment**



**Smart Energy**

# Networking with Internet of Plans

- Current IoT are disconnected systems
  - RFID, UWB, BLE, etc.
- **Future networks**
  - Higher data rate
  - Ultra reliable and lower end-to-end latency
  - Extensive coverage



# Top 10 Security Vulnerability

- Insufficient Authentication/Authorization
- Insecure Web Interface
- Insecure Network Services
- Not enough Transport Encryption
- Poor Physical Security
- Insecure Cloud Interface
- Insufficient Security Configurability
- Insecure Mobile Interface
- Insecure Software/Firmware
- Privacy Concerns



# Privacy Threats

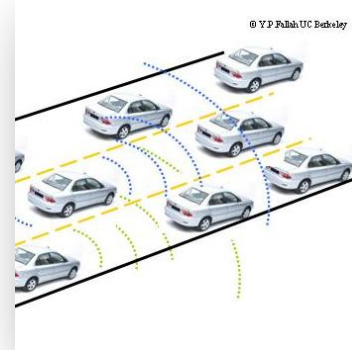
- ❑ Too much data from billions of devices
- ❑ Eavesdropping easily
- ❑ **Unwanted public profile** – e.g., driving habits, v-to-v data
- ❑ **Overly extensive health data** – e.g., medical records, wellbeing monitoring
- ❑ Consumer confidence level



# Case Study: Smart Transportation Applications



**Break Lights  
Communications**



**Platooning**



**Traffic Information  
System**



**Crowdsourcing based Unusual Events  
Detection (hard brakes, rough turns,  
sudden lane changes, etc.)**

# Security and Privacy Threats

## □ Security Issues

- Timely response – life or death
  - Vehicle-to-vehicle data interception
  - Vehicle-to-server communication interruption \*
- **Physical access attacks** (autonomous driving)
  - Alteration of local sensor parameters
  - Impersonation to drive your car
- Misbehavior vehicles
- Cooperative jamming

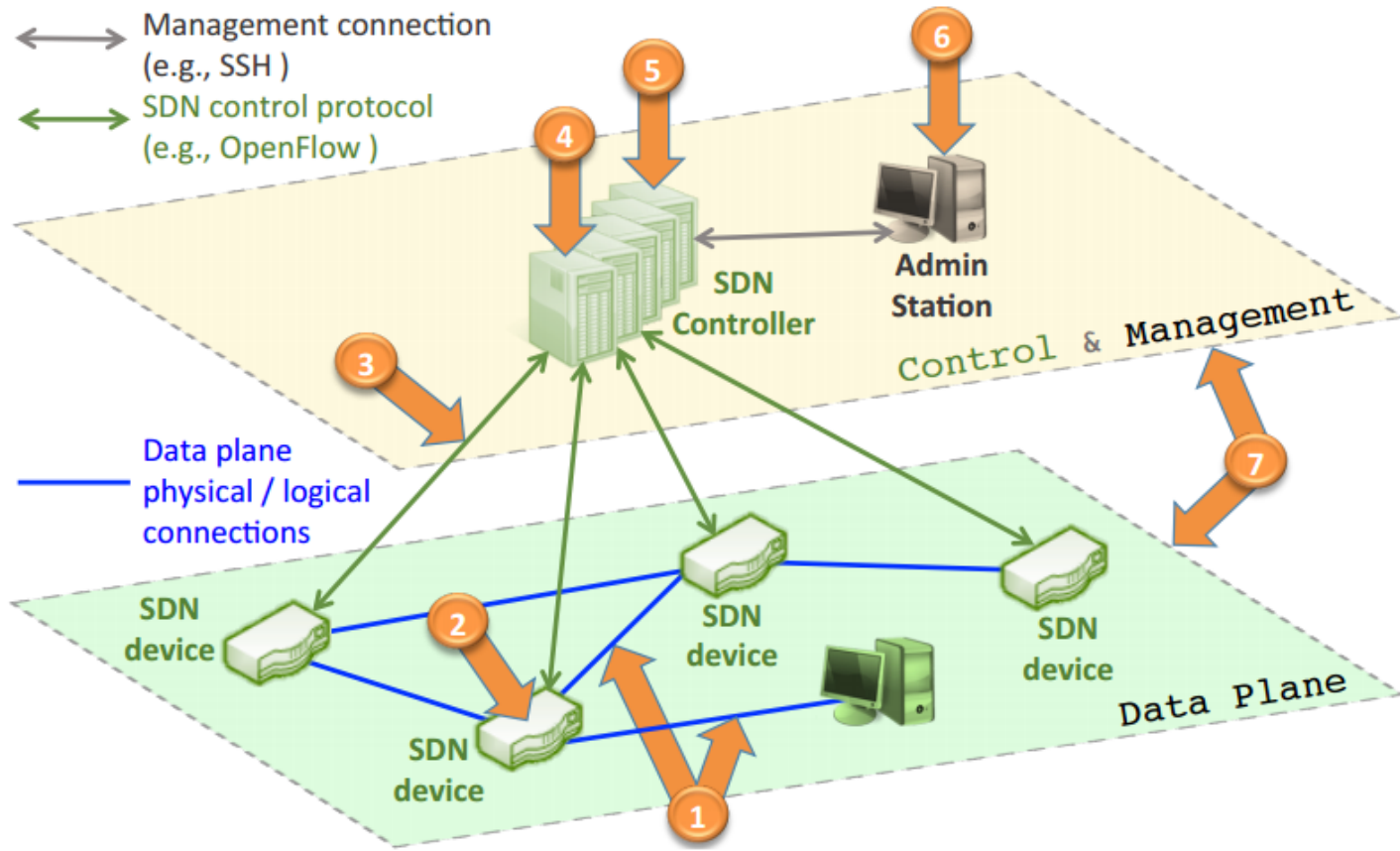


## □ Privacy Issues

- Sharing all the data or just some of them?
- High-level private information (e.g., driving habits, life styles, motions, demography) leakage through crowdsourced data



# Case Study: Smarter SDN & Edge Computing



# Security and Privacy Threats

## □ Security Issues

- Attack on the centralized controller - Denial of Service
- Trust between controllers and applications
- Attack on control channels
- Access control mechanisms for all components and users of SDNs

## □ Privacy Issues

- Context-aware networking
- Private traffic patterns
- Energy/cost/efficiency solutions in SDNs