

**SUMMITS**  
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2-3-4  
MAY  
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# Communication and Cybersecurity for ITS

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ASELSAN

**aselsan**



**AUSTÜRKİYE**  
**ITS TÜRKİYE**



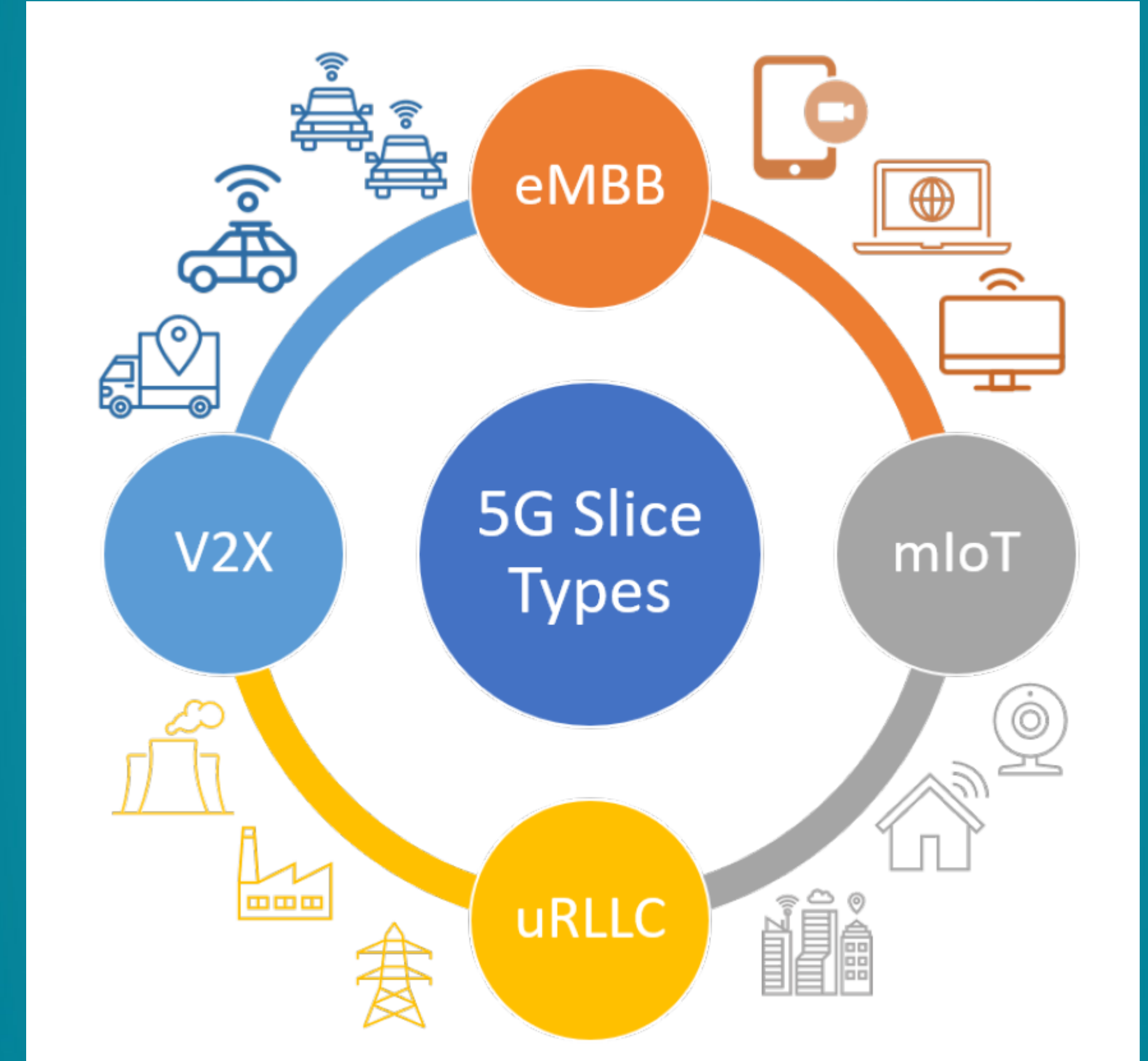
# The Role of 5G

## 5G SLICE TYPES

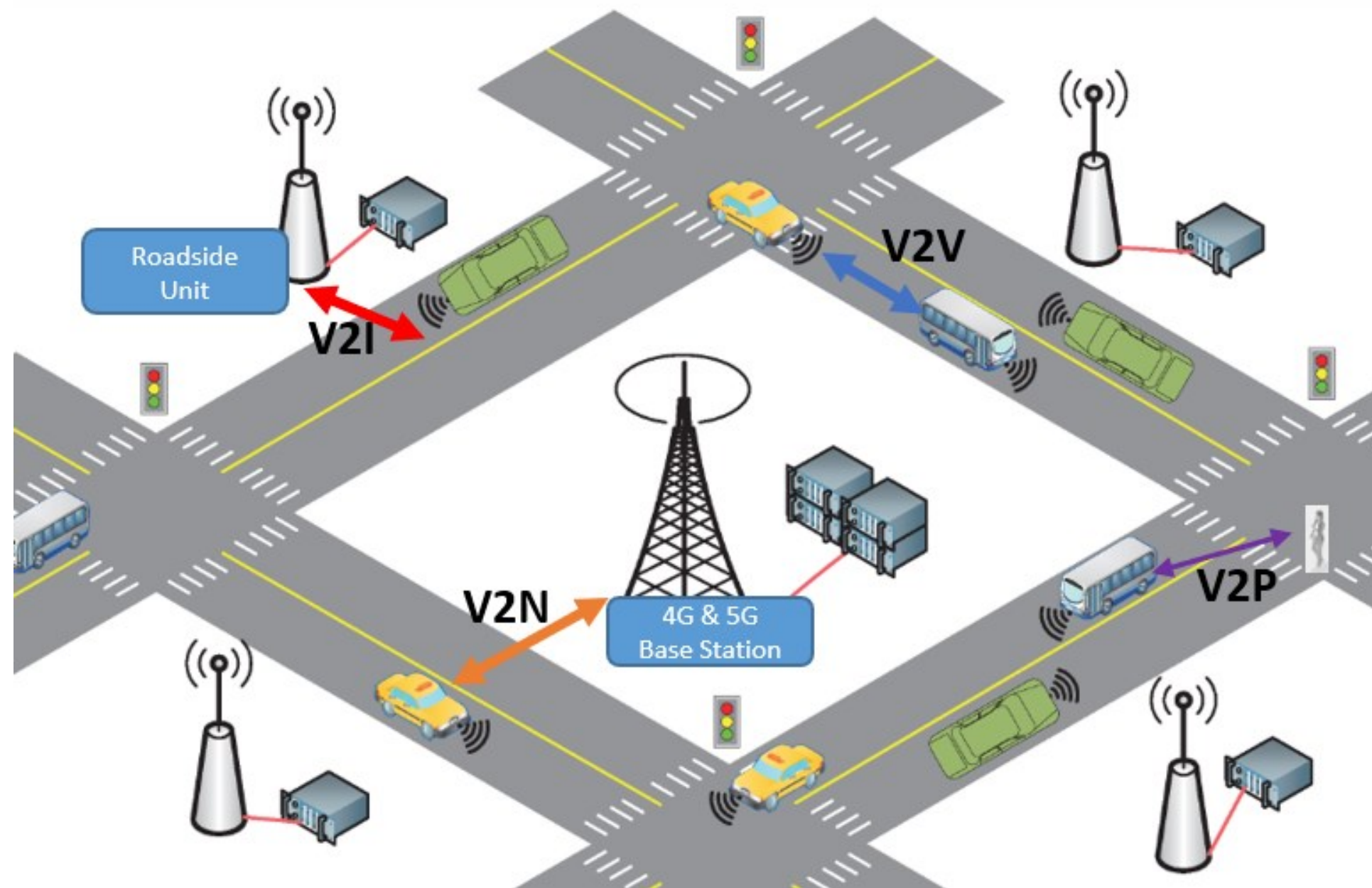
5G has the potential to alter the ITS landscape drastically  
5G and its various slice types can enhance and improve ITS operation and performance:

- eMBB, mIoT, and uRLLC
- V2X

- Automated driving
- Road safety and traffic efficiency services
- Intelligent navigation
- Information society on the road



# V2X Scenarios



- V2V : Vehicle to Vehicle
- VTP : Vehicle to Pedestrian
- V2I : Vehicle to Infrastructure
- V2N : Vehicle to Network



# Potential V2X requirements

5G-V2X Use Case	Minimum- Maximum Range (m)	Maximum Latency (ms)	Data Rate (Mbps)	Packet Reliability (%)
Vehicles platooning	80-350	10-500	50-65	90-99.99
Remote driving	-	5	1-25	99.999
Extended sensors	50-1000	3-100	10-1000	90-99.999
Advanced Driving	360-700	3-100	10-50	90-99.999

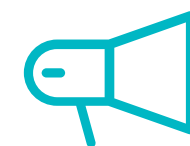


# Importance of Connectivity



## ITS and Smart Cities

Different verticals can enable or expand the capabilities



## Cooperative ITS

Overcome traffic congestion, pollution, and collisions



## Improves Economy

The long-term benefits for implementing a C-ITS are estimated to outweigh the costs by a factor of three





# Cybersecurity Model

## Confidentiality

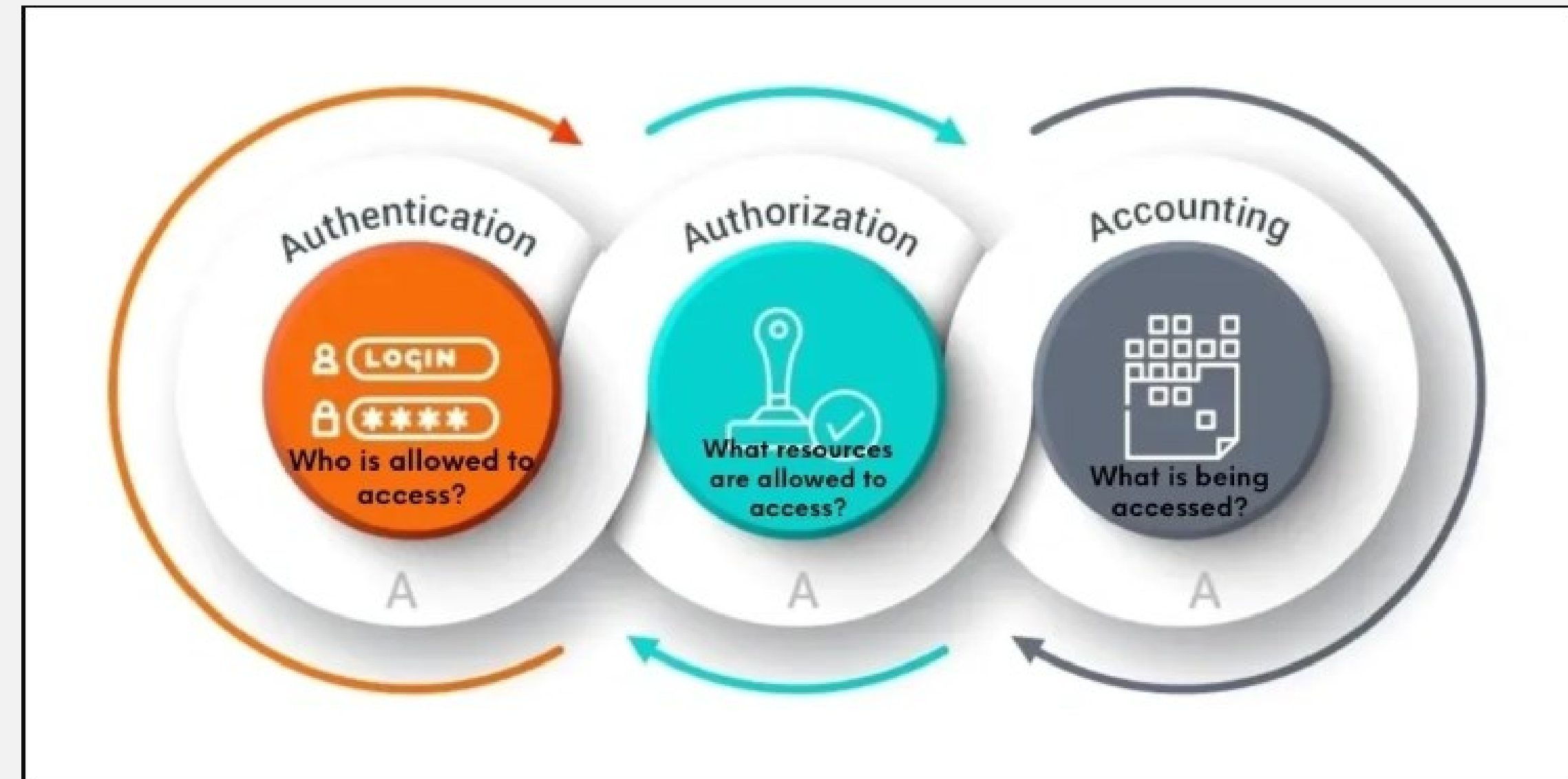
A set of rules that limits access or place restrictions on certain type of information.

## Integrity

Assurance that the information is trustworthy and accurate.

## Availability

The guarantee of reliable access to the information by authorized people.



# Privacy Requirements



## Minimum disclosure

Nonexplicit identification of vehicles

## Privacy on All Fronts

Communication stack can give away more than you are willing to share

## Conditional anonymity

Identification of misbehaving vehicles and implementing corrective actions

# ASELSAN's Roadmap - I



## FRMCS

Aselsan is exploring the cutting-edge capabilities of FRMCS, driving innovation and efficiency in rail connectivity and communication



## TACHOGRAPH

Smart tachographs are the new generation of on-board mandatory digital recorders to enforce the EU legislation on professional drivers driving and resting times (social regulation).

The new features of Smart Tachograph make full use of advanced digital technologies such as satellite positioning, dedicated short range communication for road enforcers and interconnection with other telematics applications (such as smart parking or pay as you drive apps), through a harmonized Intelligent Transport System (ITS) interface.



## NAVDAT (Enabling Technology for ITS)

After successful deployments of NAVDEX systems ASELSAN is developing NAVDAT solutions

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# ASELSAN's Roadmap - II

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## ITS IS CRITICAL FOR NATIONAL SECURITY AND UNINTERRUPTED TRANSPORTATION SERVICES

- Communication Technologies Used in Transportation Systems
- The Importance of Cyber-Security & Cyber Attack Threats to ITS (Physical, Wireless and Network Attacks), Vulnerabilities and Case Studies
- Future of Cyber-Security in Transportation Systems and Innovative Solutions
- Ex: Netflix Movie «Leave The World Behind»



## V2X (VEHICLE-TO-EVERYTHING) TECHNOLOGIES

- ULAK's V2X RSU (Roadside Unit) & V2X OBU (Onboard Unit) Development Works
- ASELSAN's 5G-6G Communication Technologies Development Works
- The Future of V2X, It's Vulnerabilities and Possible Solutions



## HSWIM (HIGH SPEED WEIGH-IN-MOTION) TECHNOLOGY

- ASELSAN is establishing HSWIM System in Azerbaijan. Data transfer between geographically distributed sensor locations and Main Control Center needs to be fast and secure, while providing immunity against cyber-security threats.

## GNSS (GLOBAL NAVIGATION SATELLITE SYSTEM) TOLLING

- In GNSS Tolling Systems, toll collection activities are carried out on highways through communication between OBU (onboard units) in vehicles and Satellites. Satellite communication will be a critical enabler





Thank you!

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