Notes for the exercise: Identify assets.

Intangible 🡪 activities, information and processes 🡪 primary 🡪 what you want to protect.

Supporting tangible 🡪 what you can protect.

**What does the solution offer?** 🡪 Protecting what the solution is offering! Consider data room, electricity, air conditioning, fire estinguish system 🡪 everything thath you need to assure your service!

Define scope of our services 🡪 identify objectives of activities 🡪 identify critical functions & processes (intangibles) 🡪 map functions & processess to IT systems (supporting assets).

For example if I have an e-commerce site: scope 🡪 sell through internet and be online every time, objectives of activities 🡪selling goods, So you have found the **critical** functions 🡪 intangible assets! 🡪 I need a connection to visa, to paypal, power supply, data room, find the tangible/supporting assets 🡪 consider only the critical function and define the IT system to protect, considering the failure of CIA! Identify the SPOF 🡪 draw the network diagram and logical service e simulate several scenario.

Consider total failure and partial failure (Netflix: degrade the quality of the movie if there isn’t enough bandwidth and not switch off the movie).

Supporting assets: 7 domain in IT infrastructure: user domain, workstation domain (pc used by technician), LAN domain (switches), LAN-to-WAN domain (adsl modem, fibra), WAN domain, remote access domain, system/application domain.

Risk about license 🡪 use software without license 🡪 software protection by law!

People/Personnel are an asset 🡪 the company trains the people!

Unmanned vechicles: drones, self-driving cars.

Air traffic management: everything is not on the ground, Unmanned aerial vehicles: drones, Unmanned aerial systems: similar to UAV, UAS traffic management: UTM. Every activities of big plane are managed by air traffic management centers (tower just manage the traffic in the last 10 miles) 🡪 the control of the entire flight is performed by the ATM.

The area until 4000 feet can be used fo drones or short communications.

UAS owner viewpoint 🡪 who has the drone (remotely piloted vechicle/fleet/drones), UTM service provider viewpoint 🡪who provides the service of managing this air space (portable/persistent UTM system).

Drones aren’t piloted but they are automatically configured to go from point A to point B.

For exercise I consider persistent UTM system and Remotely piloted fleet/drones 🡪 scenario!

To perform this activity I need data service provider: information of the obstacles/paths/traffic, wethear (bad wethear I can loss my drone or the dron can fall down). I have to consider to be AMAZON to deliver my network of drones (UAVs) in this situation. Latency: when I send information to my drone to pilote it, they are affected by the latency.

Horizontal separation 🡪 considering a lot of drones!

UAS/pilot access to fleet through internet. Changing the initial setting dynamically!

UTM service provider: virtually design the path.

**Perform a risk assessment of a UTM service provider, you are the owner of a service deployed by a network of drones!**

Persistent UTM service provider = who provides the service of network of drones.

What UTM has to guarantee:

* Authentication
* Airspace design
* Airspace corridors (paths)
* Dynamic geofencing (dynamically check the flight zone, if the drone can fly or not in that zone)
* Weather integration
* Constraing management (congestion prediction)
* Sequencing and spacing as needed
* Trajectory changes to ensure safety
* Contingency management (emergency management)
* Separation management
* Transition and locations with NAS
* Dynamic adjustment

Current problem with UAVs:

* Lost link
* Latency
* Levels of automation
* Measured response
* Detect and avoid

UTM service operation requirements:

* Airspace management and zone separation
* Integration of meteo data
* Congestion management and prediction
* Maintain safe separation
* Authenticated operations

Role of UTM service provider:

* Authentication
* Airspace design, adjustments and geofencing
* Communication, navigation and surveillance
* Separation management
* Weather integration
* Contingency management

Identify asset:

* Scope: providing an UAVs network that works accounts the CIA.
* Objectives of activity: The near-term goal (1-5 years) is to safely enable low-altitude airspace and UAS operations in remote areas and related applications such as wildlife monitoring and agricultural
* applications. The long-term goal (10-15 years) is to safely enable massively anticipated density of low-altitude airspace and UAS operations in urban areas for deliveries of goods and services.
* Critical functions/intangible assets: Authentication, Airspace design, Airspace corridors (paths), Dynamic geofencing (dynamically check the flight zone, if the drone can fly or not in that zone), Weather integration, Constraing management (congestion prediction), Sequencing and spacing as needed, Trajectory changes to ensure safety, Contingency management (emergency management), Separation management, Transition and locations with NAS, Dynamic adjustment, CNS (communication, navigation and surveillance), self-configuration, self-optimization, self-protection and self-healing.
* My critical functions/intangible assets: power supply to drones, drones have to be able to flight.

**Correction:** primary assets forgotten 🡪 certfication for the UAV network, ability to deliver a packet, link lost function. Supporting assets 🡪 analyzing 7 domains, for example people (from user domain) is a supporting asset. Distinguish between primary asset related to the single drone and the UTM provider.

Define my scenario: who am I? UTM provider? UTM controller? Do I work for italian airforce/nasa/amazon? What does my UAV network do?

Several type of control 🡪 something to decrease or reduce impact/threat an attack.

Regulatory: the law, data privacy GDPR, italian/european law.

Environment: problem with environment.

When I am not sure of the value 🡪 I should insert the highest number, considering the worst case scenario!

**Errors:**

-) define a scenario: utm controller (YES) or fleet manager. UAV network has to deliver packages from point A to point B.

-) ability to be autonomous and ability to fly correctly 🡪 together and referred to a fleet manager.

-) bad name of primary assets (weather integreation 🡪 meteo data).

-) delete meteo on-board, only integration forecast.

-) utm controller 🡪 no pilot.

-) primary asset: manual control too expensive and difficult.

-) considering LOST LINK.

-) describing better Dynamic flight adjustment.

-) Supporting assets: check 7 domains. Adding personnel, interface, servers, data centre, network communication divided in 3 🡪 LAN (DB+servers), WAN, communication between man-drone.

-) Shipping data only sensible data 🡪 regulatory. Other data are critical data 🡪 branding, economic.