



## DRONES – AN ADDITIONAL SAFETY MEASURE ON THE ISTRIAN Y MOTORWAY

*Bina-Istra Operation and Maintenance*

*Christian Santaleza*



- 100 km motorway + 50 km semi-motorway
- Učka tunnel (total length >5 km, bi-directional tunnel)
- 136 structures, total length 9.35 km
- Closed toll system operation with 108 lanes



Total investment  
value =  
800 million €



- AADT of 27,500 vehicles
- Peak day traffic of 70,000 vehicles
- 40% tourist-related traffic volume



10 million vehicles  
per year



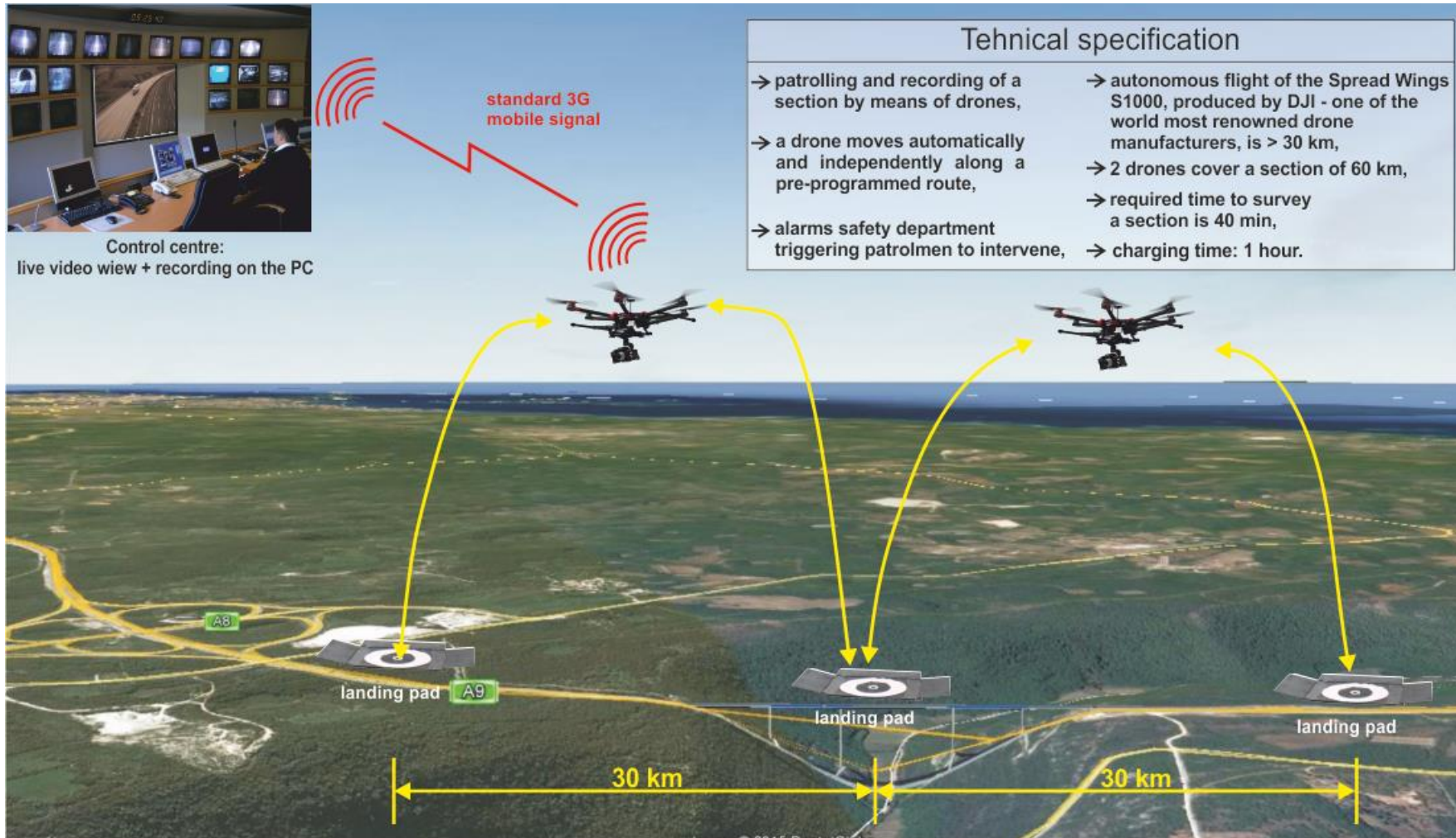
- In the last 5 years: **+22.0% traffic volume**  
**-12.5% road accidents**
- **0 fatalities in the last 4 years on the motorway**
- **The first motorway company in the Adriatic region certified under ISO 39001 Road Traffic Safety Management**



**EuroRAP**  




- For motorway concessionaires, one of the top priorities is:
    - **Fast detection of events on their networks**
  - Several possibilities are available:
    - **Video coverage along the entire network**
    - **Implementation of well-equipped and frequent patrol units**
- **Very expensive measures**
- On the Istrian Motorway (BINA ISTRA Concession– Croatia), high level of safety standards:
    - **1 patrol unit per 50 km long section every 4 hrs (2 x more frequent than the local legal requirement)**
  - A danger persists: **No network status information / no possibility to detect incidents during 4 hrs.**
  - Solution: **use of autopiloted drone to cover the non surveilled period.**



# VIA DRONE PATROL



[CLICK HERE TO WATCH THE VIDEO](#)

- Our researches and preliminary tests enabled us to find the adequate device:
  - **Very high cost/efficiency ratio**
  - **Available for use day and night**
  - **Surveillance possible also during unfavourable weather conditions (up to wind speed of 45Km/h, which gives device availability of 87% of time)**
- Bina Istra in-house development of a software interface allowing auto-pilot functions (without human intervention):
  - **Predefined itinerary within an authorized corridor**
  - **Real-time sending of videos to the Control Room (3G network)**
  - **Possible commands from Control Room: stationary flight, forward flight, backward flight, zooming etc. along the predefined itinerary**
  - **Autonomous landing, charging and taking off, without human intervention**



- System compliant with the legal framework:
  - Flying-over zone is within the land plots owned by the Concessionaire
  - No-fly zones are defined in order to avoid for the drone to fly over the Motorway
  - Safety system with demarcation lines/if the line is crossed, emergency landing mode is activated
  - Procedure of obtaining authorisation for use is ongoing with the civil aviation agency (high possibility of obtaining)
- System testing ongoing:
  - Preliminary results conclusive/implementation planned for 2018 (over a section of 30 Km).
  - Total investment price confirmed: 25,000 Euro.
- System easily transposable:
  - Longitudinal construction sites (construction of railways, motorway networks,...)
  - Enables surveillance, monitoring of construction progress, avoids trips within areas which require systematic control for safety and security reasons.



*Thank you for your attention.*