GATO
Groupe d'appui technologique opérationnel
How we setup a new Unit
within a civil protection organisation
Looking back to 2014

(Professional) Fire and Rescue Brigade – City of Luxembourg

Capital city of the Grand-Duchy of Luxembourg
Densly urbanised
Dense traffic during work hours
120,000 residents, roughly doubled by commuters during daytime
Looking back to 2014

(Professional) Fire and Rescue Brigade – City of Luxembourg

Command is looking for

• Different, faster ways to get an overview of a scene;
• tools to avoid or reduce risk exposure to incident responders;
At the same time

(Voluntary) Fire and Rescue Brigade – Municipality of Berdorf

Rural area of Luxembourg
Surrounded by farmland, woods and the “little Switzerland” (Mullerthal)
The brigade is also the home of a unit specialised in animal rescue

“Little Switzerland is thought to have similar terrain to its namesake country, hence the name; it is dominated by craggy terrain, thick forests, some caves and myriad small streams. Unlike Switzerland, Little Switzerland is low-lying, even by Luxembourg standards (its highest peak is only 414 m above sea level).” - Wikipedia
At the same time

(Voluntary) Fire and Rescue Brigade – Municipality of Berdorf

Members are looking

• to reduce personnel requirements to get a fast and easy overview of a scene
• to survey large outdoor surfaces in a short time period
  • to find persons
  • or animals
Both came up with the same idea

We need eyes in the sky to reduce

• number of heavy vehicles and crew required;
• risks related to ongoing traffic;
• time-frame to survey large or hidden areas

so we can provide

• imagery intelligence to the local chief of operations and remote command post;
• target acquisition assistance
How difficult can it be?
• Notice that 2 fire brigades are working on a UAV concept
• Integrate both into 1 team
Step 1

• Take notes of your expectations
• Get a UAV and the authorisation to operate it
• Get to know the UAV’s capabilities
• and limits
• Try not to crash it; but if you do, try to learn from your mistake
• Revisit your notes. Did your UAV meet them? Did your expectations change?
Step 2

• Simulate an operation
• Define goals to achieve with your UAV
• Try to reach them
• Analyse which goals you met and those you didn’t
  • Analyse the cause for both
• Work on overcoming the shortcomings of the setup or the crew
• Make a list of shortcomings of the hardware
• Repeat for different operations
Step 3

• Find another unit with a UAV and have them join the team
• Get accessories necessary to complete your simulated operations
• Deploy your unit during a few incidents
• Review the accessories
• Review your selections of UAVs and equipment
• Get in touch with other national & international government UAV operators (Police Grand-Ducale (LU), Police locale (BE), Police fédérale (BE), Gendarmerie nationale (FR), Sécurité civile (BE))
• Exchange knowledge about hardware, SOP, training methods
Lessons learned

• Your expectations change as you learn about UAVs
• Every step brings new insights
• Your UAV is going to suffer a collision
• You are going experience a fly-away
• Equipment malfunctions are real
• Firmware upgrades do break things (sometimes)
Step 4

- Prepare the creation of a new specialized unit in CGDIS
  - Get to know pertinent legislation and internal CGDIS regulation
- Define
  - scope and tasks for the unit
  - Roles, activities and requirements applicable to firefighters within the unit
  - vehicle fleet and equipment
  - personal protective equipment
  - budget
Step 4

- Develop risk management
  - Regular checks
  - Pre-flight checks
  - Post-flight checks
  - SOPs
  - Location specific risk assessment

- Develop CGDIS internal courses
  - 3 levels
  - Practical and theoretical exercises
  - Timetables, material requirements and learning objectives of the courses
Step 5

• Present your work to superiors
• Apply requested changes
• Add your own changes
• Repeat step 5 as necessary
• Present the final work to steering committee and the board of directors
Result

Creation a specialised intervention unit as of 1\textsuperscript{st} January, 2021.

Nomination of

• 2 platoon leaders
• 5 squad leaders
• 9 team leaders
• 23 team members
• 2 experts
Result

Unit in charge of deploying 3 operational units and 1 internal unit

- Unmanned aerial vehicles (UAV, e.g. drones)
- Unmanned ground vehicles (UGV, e.g. robots)
- Information & Communication Technologies (ICT)
- Logistical Support (equipment provisioning & maintenance)
Result

Vehicle fleet

• 3,5t small truck with loading ramp
• 5,5t small truck integrated light pole
• 7,5t small truck with loading ramp
Result

UAV fleet

- 1 DJI Matrice 210 v2 RTK
- 2 DJI Mavic 2 Enterprise Dual
- 7 UAVs for training purposes
Result

On-call teams

• 1-2 advisors for chief of operations and/or command post
• 3-4 persons for the deployment of 1 operational unit (limited to 1 UAV/UGV)

Certifications (EU 2019/947)

• 22 CoC A1 A3 open sub category
Being aware of the risks
Active threat assessment
Risk management

“Risk management is the identification, evaluation, and prioritization of risks (defined in ISO 31000 as the effect of uncertainty on objectives) followed by coordinated and economical application of resources to minimize, monitor, and control the probability or impact of unfortunate events or to maximize the realization of opportunities.” – Wikipedia, 12.885 words

Acceptable Means of Compliance (AMC) and Guidance Material (GM) to Commission Implementing Regulation (EU) 2019/947 – EASA, 45.928 words
Risk management

Be prepared

• Setup SOPs for easier and methodical implementation of risk management and assessment
• Regular training and rehearsal of SOP
• Regular maintenance and inspection of UAV and accessories
• Pre-define the role of on-call remote pilot and spotter

Safe time by managing generic risk before deploying units to an incident
Risk management

Include technology to gather information

- Wind, precipitation, visibility, temperature
- GPS+GLONASS coverage
- Maps and Aerial views

⇒ Reduce time necessary to complete the location specific risk assessment
1. Check the motors to confirm that they are rotating smoothly.*
   - Checked
   - Other

2. Check the propellers to confirm that they have not come loose.*
   - Checked
   - Other

3. Check the arm connectors to confirm that they are mounted firmly.*
   - Checked
   - Other

4. Ensure that all the gimbals are rotating smoothly.*
   - Checked
   - Other

5. Ensure that the landing gears are mounted firmly and check the pins to confirm that they are inserted fully and tightly.*
   - Checked
   - Other

6. Ensure that the SD card cover and the rear cover are closed tightly.*
   - Checked
   - Other
8
An external GPS module is required when the upward gimbal is used. Ensure the GPS cable is connected to the rear port and the cable is tied properly. *

- Checked
- Not relevant
- Other

9
When using the M210 RTK, check that the RTK antenna screws have been tightened. *

- Checked
- Not relevant
- Other
Hi, when you submit this form, the owner will be able to see your name and email address.

*R Required

Riskoanalyse ausfüllen

1. Startposition *
Enter your answer

2. Wer ist der Pilot? *
Enter your answer

3. Wird ein Spotter benötigt? *
Wenn Ja, bitte Namen angeben!
Enter your answer

4. Art der Mission auswählen: *
- Mission
- Bereitschaft
- Training
- Sonstige

5. Einsatznummer und Beschreibung: *
Enter your answer
6. Geschätzte maximale Flughöhe: *

Enter your answer

7. UAV Forecast screenshot: (Non-anonymous question) *

Lade hier den Screenshot hoch welcher mit UAV Forecast erstellt wurde.

Upload file

File number limit: 1  Single file size limit: 10MB  Allowed file types: Image

8. Wie lautet das Ergebnis der App UAV Forecast? *

- Good to Fly
- Not Good to Fly
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