FCAS Ethical AI Demonstrator

Berlin Meeting

October 1, 2021

Agenda

Background: FCAS Ethical AI Demonstrator

- Brief overview regarding application & intention
- Automatic Target Recognition (ATR) as highly probable AI/machine learning application
- Search for hostile SA-22 “Greyhound” (96K6 “Panzir”)

Task: Design of a reasonably representative scenario for an unmanned optical/SIGINT reconnaissance system embedded in SEAD/DEAD scenario flying ahead of main forces

- Idea: Detection & identification of hostile SA-22 in target area with AI support (ATR)
- Generation of simulated (synthetic) video footage based on VR Forces scenario
- Operator Task in Demonstrator: Review and assess maximum number of tracks in limited timeframe (before UAS is detected and shot down)

Ethic-By-Design
localhost:8081/#/simulation
ID 1
83%
SA22
ID 3
70%
SA22
ID 4
65%
Truck
00:17:02
FINISH

SA-22 “Greyhound” (96K6 “Panzir”) – System Overview

Armament
- 12 rockets
- 2 double-barrel 30 mm cannons

Range Radar / Rockets
- 40 to 75 km / 20 to 40 km

Fire-Ready Time
- ca. 5 min

Time from Target Acquisition to Launch
- ca. 4-6 seconds

Targets simultaneously tracked / attacked
- 40 / 4

SA-22 – Challenges for Search and Identification

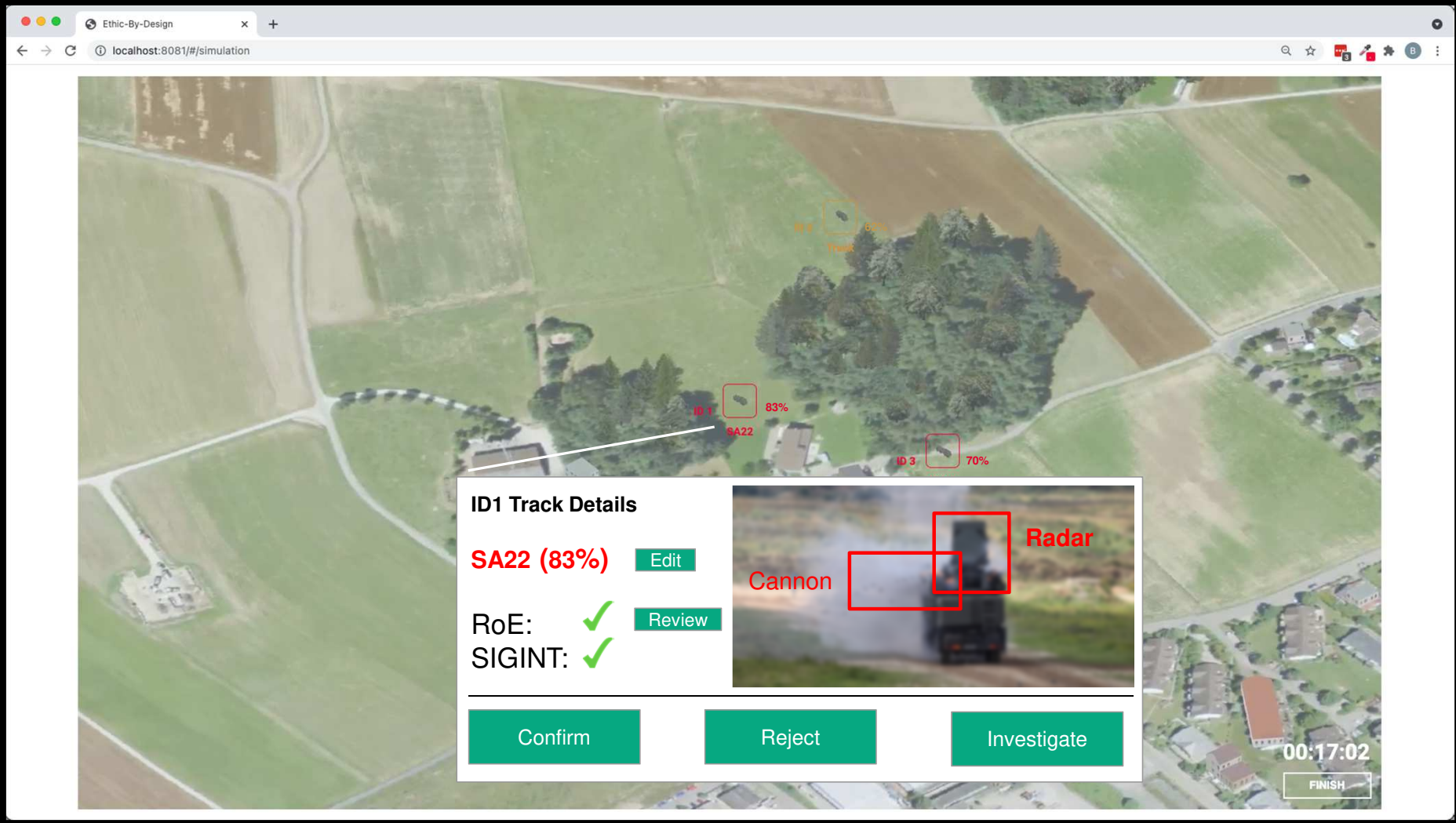
- **Armament potentially tarped**
- **Different camouflage schemes**

SA-22 – Challenges for Search and Identification

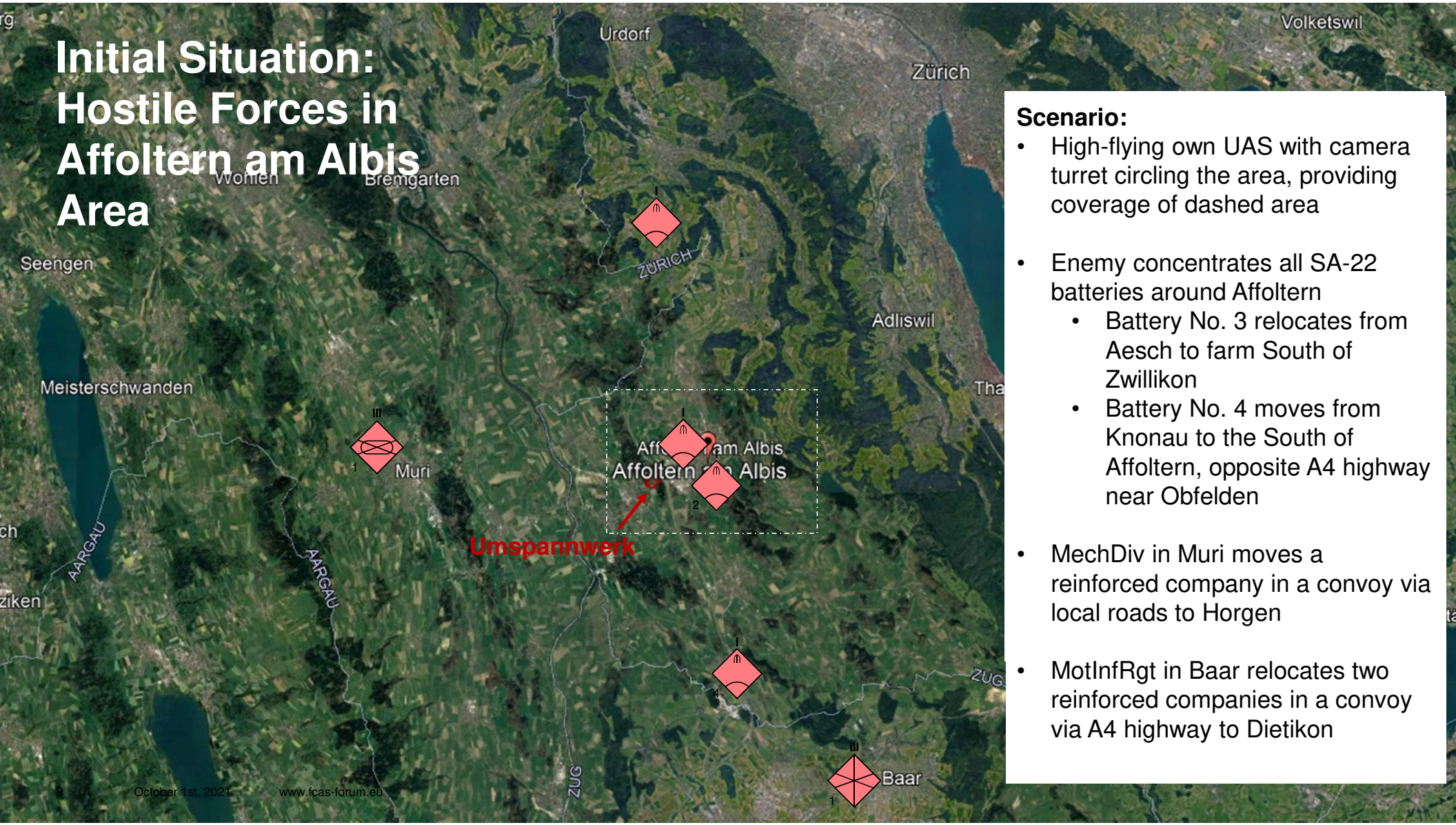
There are many similar civilian and own military trucks!

SA-22 – Challenges for Search and Identification

SA-22 also on military trucks of German origin (e.g. UAE)!


Ethic-By-Design
localhost:8081/#/simulation
ID 1
83%
SA22
ID 3
70%
ID1 Track Details
SA22 (83%)
Edit
RoE:
SIGINT:
Review
Radar
Cannon
Confirm
Reject
Investigate
00:17:02
FINISH

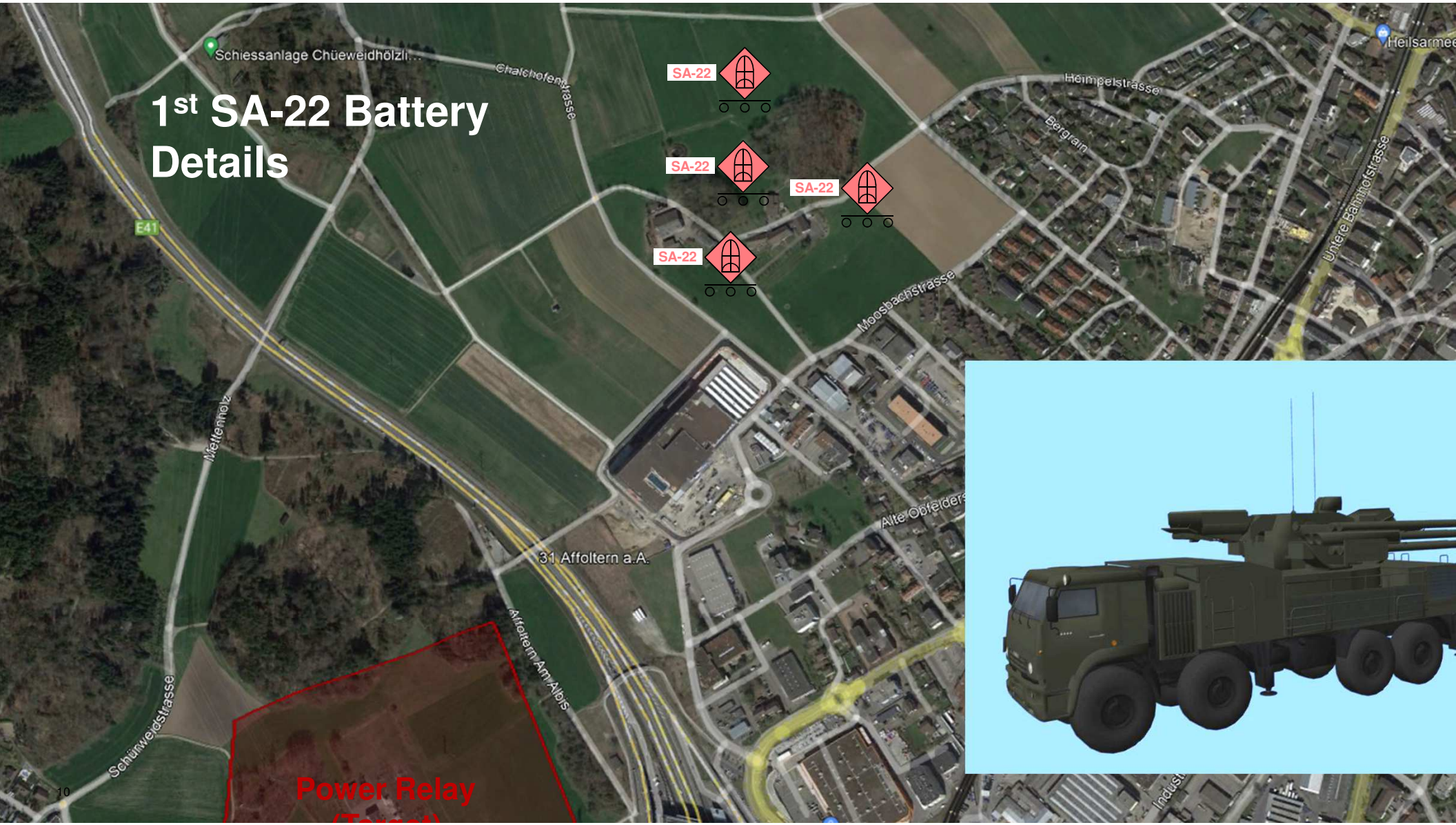
Initial Situation: Hostile Forces in Affoltern am Albis Area



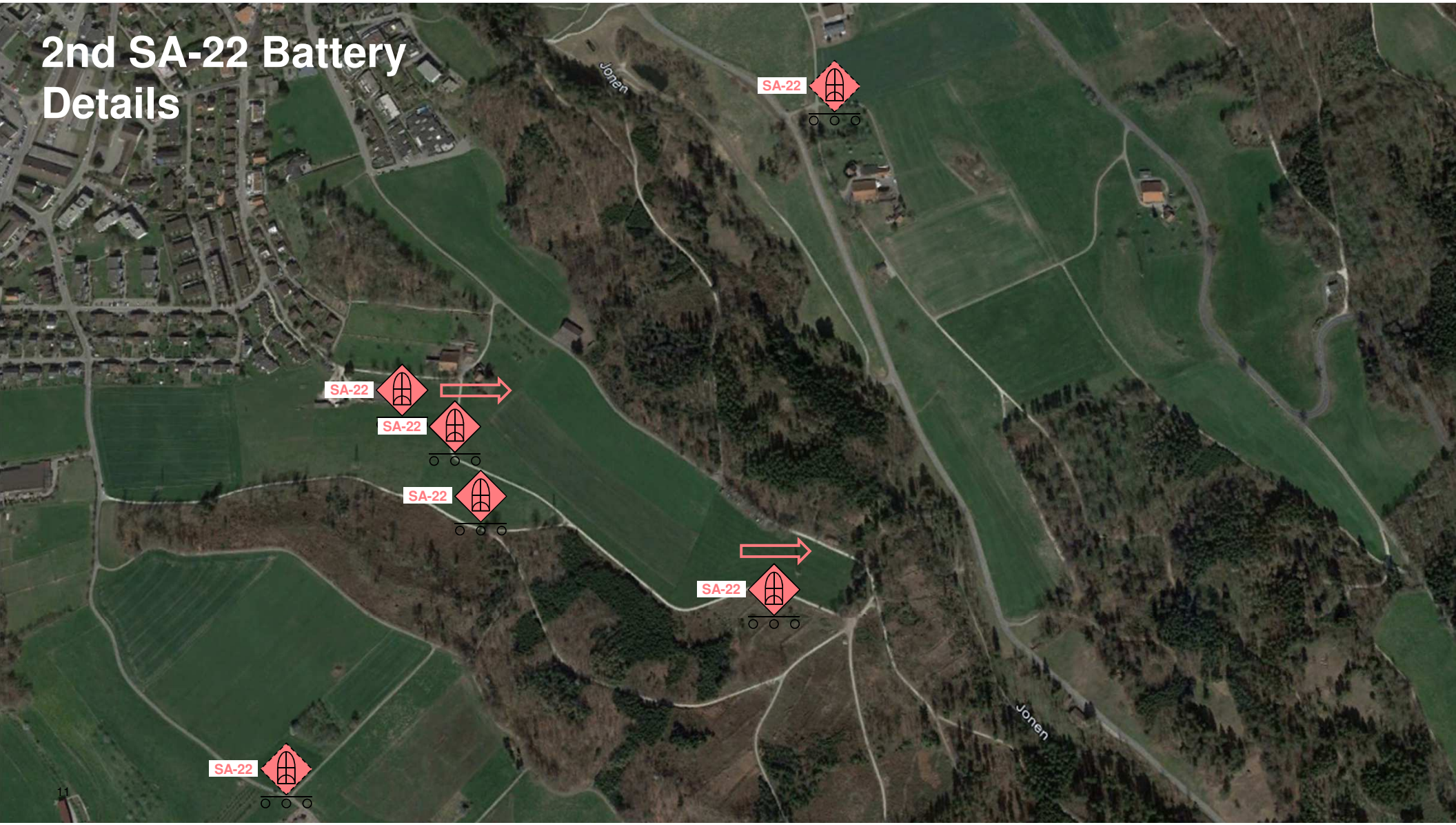
Scenario:

- High-flying own UAS with camera turret circling the area, providing coverage of dashed area
- Enemy concentrates all SA-22 batteries around Affoltern
  - Battery No. 3 relocates from Aesch to farm South of Zwillikon
  - Battery No. 4 moves from Knonau to the South of Affoltern, opposite A4 highway near Obfelden
- MechDiv in Muri moves a reinforced company in a convoy via local roads to Horgen
- MotInfRgt in Baar relocates two reinforced companies in a convoy via A4 highway to Dietikon

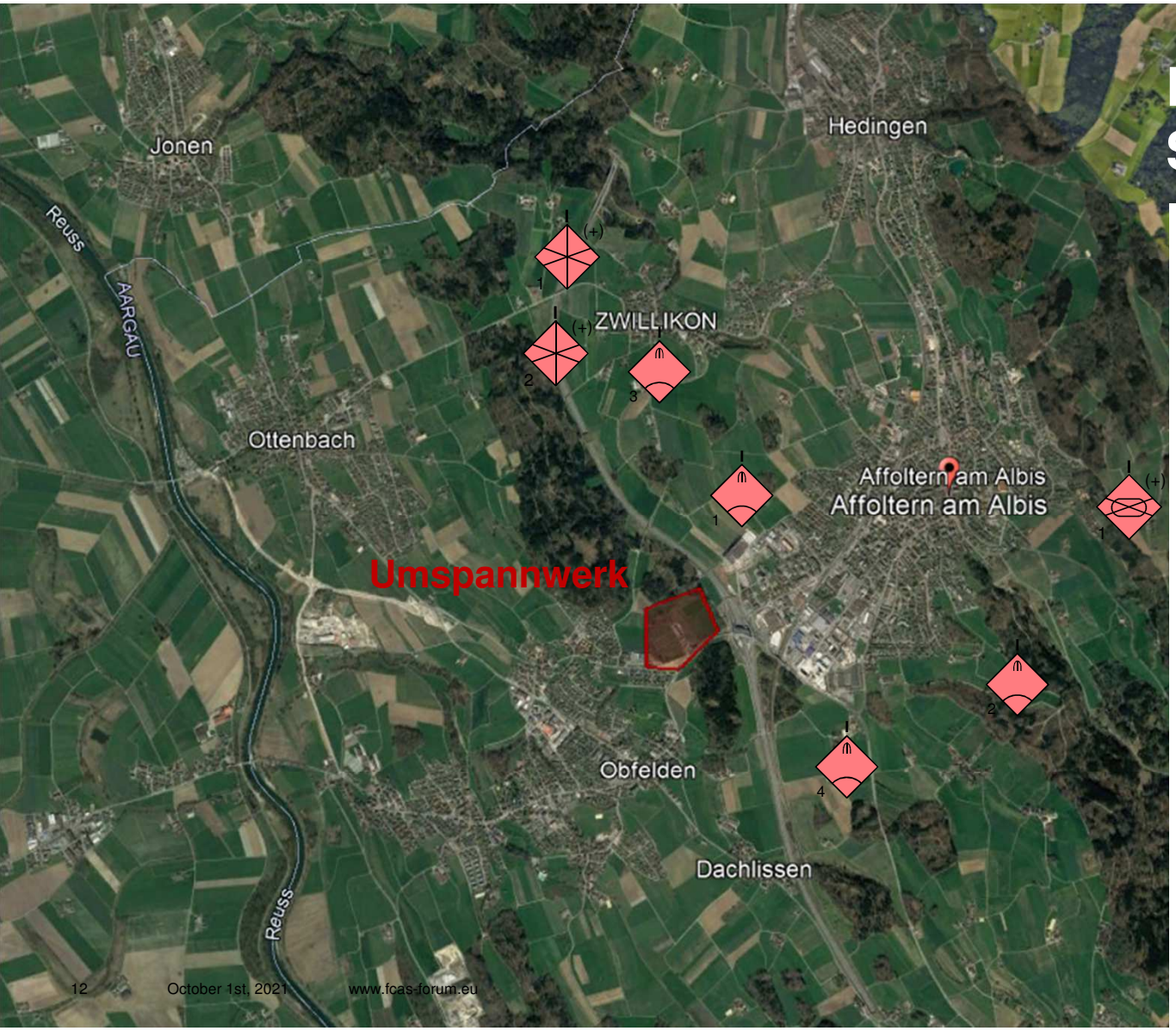
1st SA-22 Battery Details



2nd SA-22 Battery Details



Final Situation SA-22 Batteries



Underlying Idea:

- ***Generate dynamical situation in area of interest***
- Only 1st SA-22 battery is completely static
- Two combat vehicles of the 2nd SA-22 battery change position
- Two further SA-22 batteries are brought in the area from the North and South
- Two military convoys are passing the area:
  - Reinforced mech. comp. from Muri distracts from inflowing SA-22 battery from the North
  - Convoy(two reinforced mot. inf. comp.) from South passes A4 highway near Zwillikon when 4th

We are looking forward to your questions and feedback!