INGENIA SE Hackday

1

The (simulated) drone firefighter

What is a hackday?

- A hackathon (also known as a hack day, hackfest or codefest) is an event in which system developers collaborate intensively on a -typically software- project.
- The goal is to **create functional software**.

- Teamwork is critical. Focus –objectives– is necessary.
- We will dedicate the whole morning 8:30 to 13:30 to develop an application.
- This task will help evaluate generic and specific competences according to INGENIA objectives.

Hackday 1 Objective

- The objective of hackday 1 is the development of a **simple control application** using a **drone simulator** to emulate the **MBZIRC challenge**.
- This application will be demonstrated by **capturing a video** of a simulated drone acting on a fire in a structure.

What is a drone simulator?

Goals

- The system shall simulate the MBZIRC challenge of a **drone fighting a fire in a building**.
- The team shall use the system to **produce a video** showing the simulated firefighting.

System (artist concept)

Requirements (partial)

- The application runs on a conventional host -e.g. Windows or Linux or OSX or Android or iOS.
- The application will communicate with a **simulated drone** to control it.
- The application is used to pilot the drone; automatically and/or manually.
- The human pilot may use the UI resources of a **common computer** -mouse, keyboard, screen- to operate the drone in addition to the automatic control by the application.

Other issues

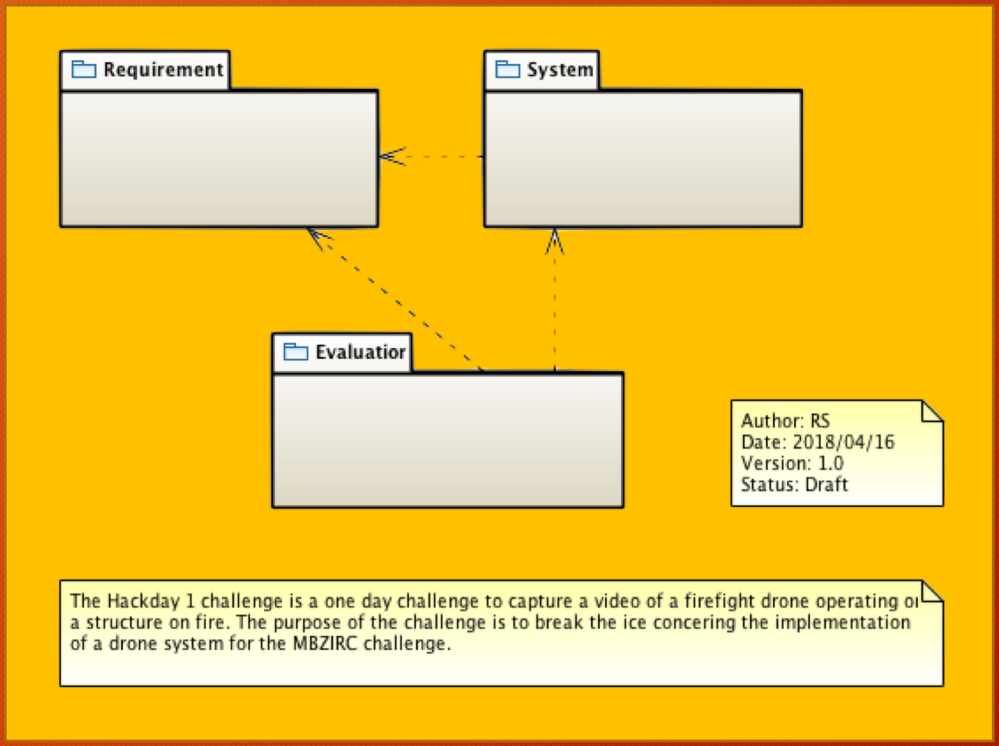
- **Teams** will compete for grading.
- Intermediate objectives give **bonus points**.

- Fidelity of simulation is irrelevant.
- An initial MBSE system model will be available at the server:

`https://github.com/ingenia-se/hackday`

GitHub repo content

- Among other things, a SysML model of Hackday1



Evaluation

1. Milestones – 60%
2. Acceptance (requirements fulfilment) – 30%
3. Quality (not of simulation/video) – 10%

Milestones

first/others

- Simulate the drone. 2/**1**
- Simulate building with fire. 2/**1**
- Fly the simulated drone. 2/**1**
- Fly the drone using the app. 2/1
- Capture video. 2/1
- Capture MBZIRC-like video. 2/1
- Upload **code, model** and **video** to server. **10/5**

Team formation

- Teams for hackday 1 will not be the full teams.
- They will be formed now trying to be:
  - Capable
  - Sizeable
  - Equilibrated
- Team names will be HTML color names. Choose one.
- DarkSlateBlue is reserved (for me).

DarkSeaGreen	#8FBC8F	
DarkSlateBlue	#483D8B	

Beware

- Teams mean teamwork: analyze and distribute
- Destruction of other’s products will be penalized
  - Use Git branching
- Simulation fidelity is irrelevant

Questions?

Time is Californium

Go!

The cost of a gram of Californium 252 is US$ 27M.