

FTN/UNS Hackathon

Faculty of Technical Sciences, University of Novi Sad, Serbia

Benefit Project

Hackathon, 29.1.2021



BENEFIT

Boosting the telecommunications engineer profile to meet modern society and industry needs

Teaching/training material developed within the project BENEFIT - Boosting the telecommunications engineer profile to meet modern society and industry needs - 2017-2021 - cofounded by the ERASMUS+ KA2 program – grant agreement n. 585716-EPP-1-2017-1-AT-EPPKA2-CBHE-JP.

Disclaimer: The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Co-funded by the
Erasmus+ Programme
of the European Union

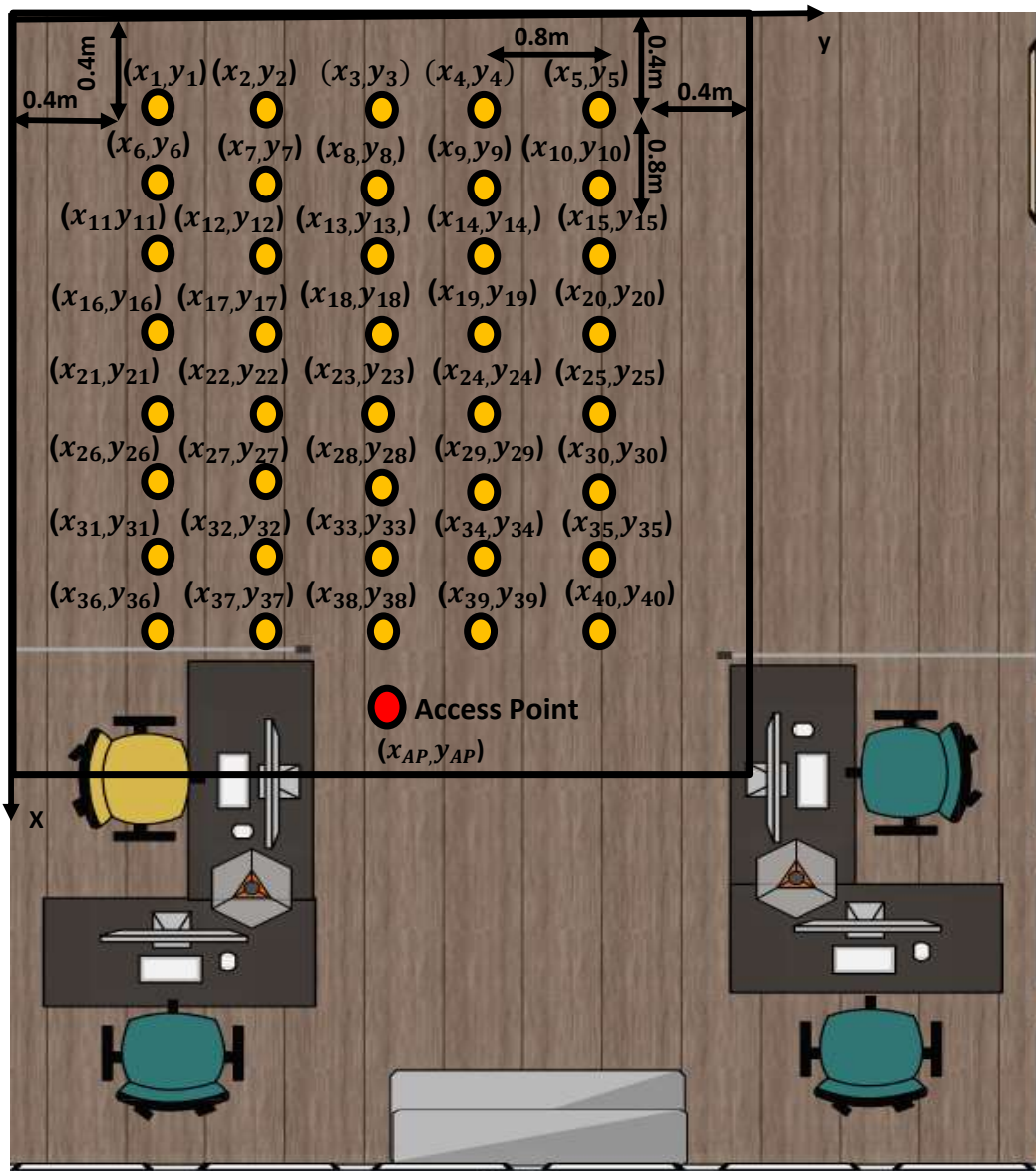


Propositions

- Before we start, you have to do the following:
 - Form teams of up to 3 members and give them cool names.
 - BSc or MSc students are eligible for hackathon.
 - Send us the following information:
 - Team Names
 - Members Names
 - Emails
- Send your applications to the following email address:
 - vukan.ninkovic@gmail.com
- After validating your team you will be able to access the challenge and we will send you necessary files which you will use for the hackathon.
- Hackathon consists of two challenges, after completing the first you can pass to the next task.
- Be careful not to spill information to the other teams!



Get to know the environment



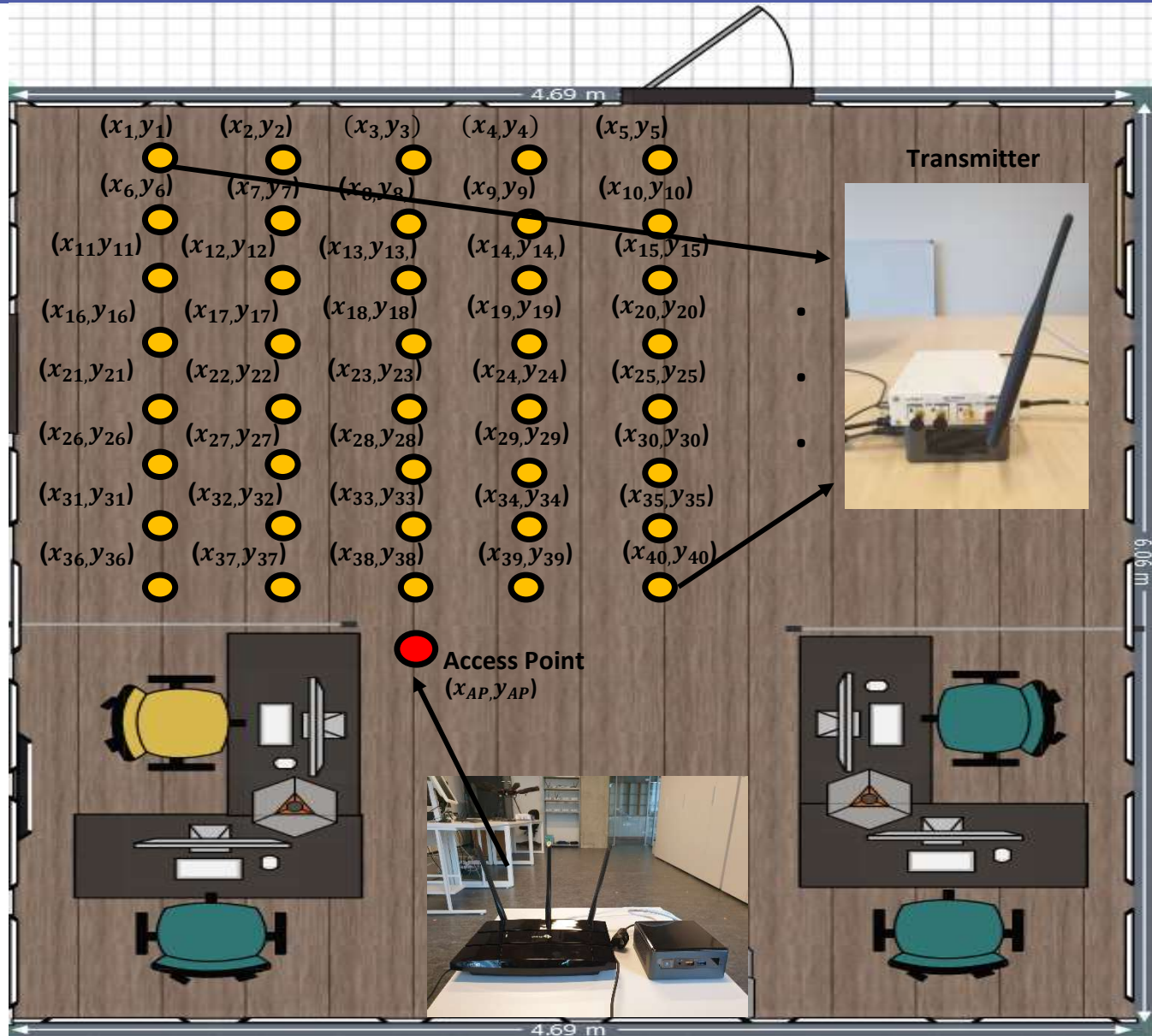
- In the room there are 40 points labeled as in the picture.
- Grid size is 4.8m x 6.4m
- Points have coordinates:
 - $x_1 = 0.4m, y_1 = 0.4m$
 - $x_2 = 0.4m, y_2 = 1.2m$
 - ...
 - $x_6 = 1.2m, y_6 = 0.4m$
 - $x_7 = 1.2m, y_7 = 1.2m$
 - ...
 - $x_{11} = 2m, y_{11} = 0.4m$
 - $x_{12} = 2m, y_{12} = 1.2m$
 - ...
 - $x_{39} = 6m, y_{39} = 2.8m$
 - $x_{40} = 6m, y_{40} = 3.6m$
- Distance between every two points is 0.8m.
- Coordinates of the Access Point are known:
 - $x_{AP} = 6.4m, y_{AP} = 2m$



Get to know the environment

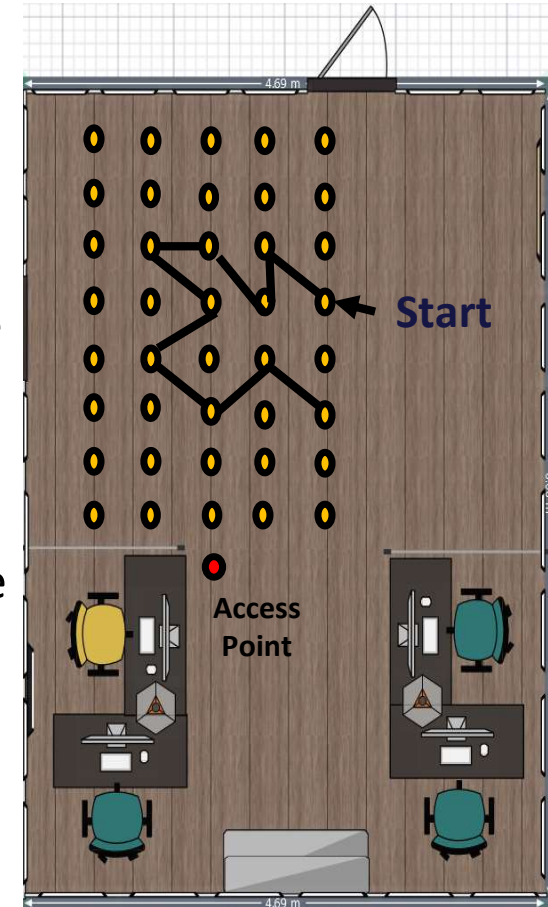


Get to know the environment



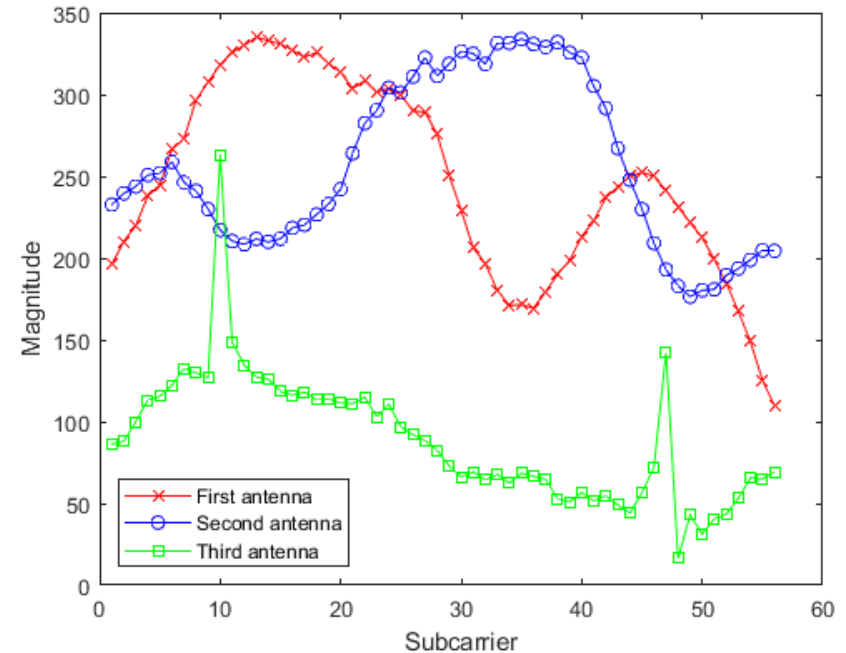
First Challenge- “Find my movement”

- You will be provided with two .csv tables:
 - First .csv file:**
 - Measurements from the positions when there is no movement of the object.
 - .csv files will have 40000 rows, and every row will have 168 values (**CSI** values from one packet).
 - In the extension of the columns (columns 169-171) you will be provided with:
 - Column 169: label (ordinal number of the points)
 - Column 170: x-coordinate of the point
 - Column 171: y-coordinate of the point
 - Second .csv file:**
 - Measurements from the object while moving through the points in the office
 - From this table you should find out where did the object move in the office



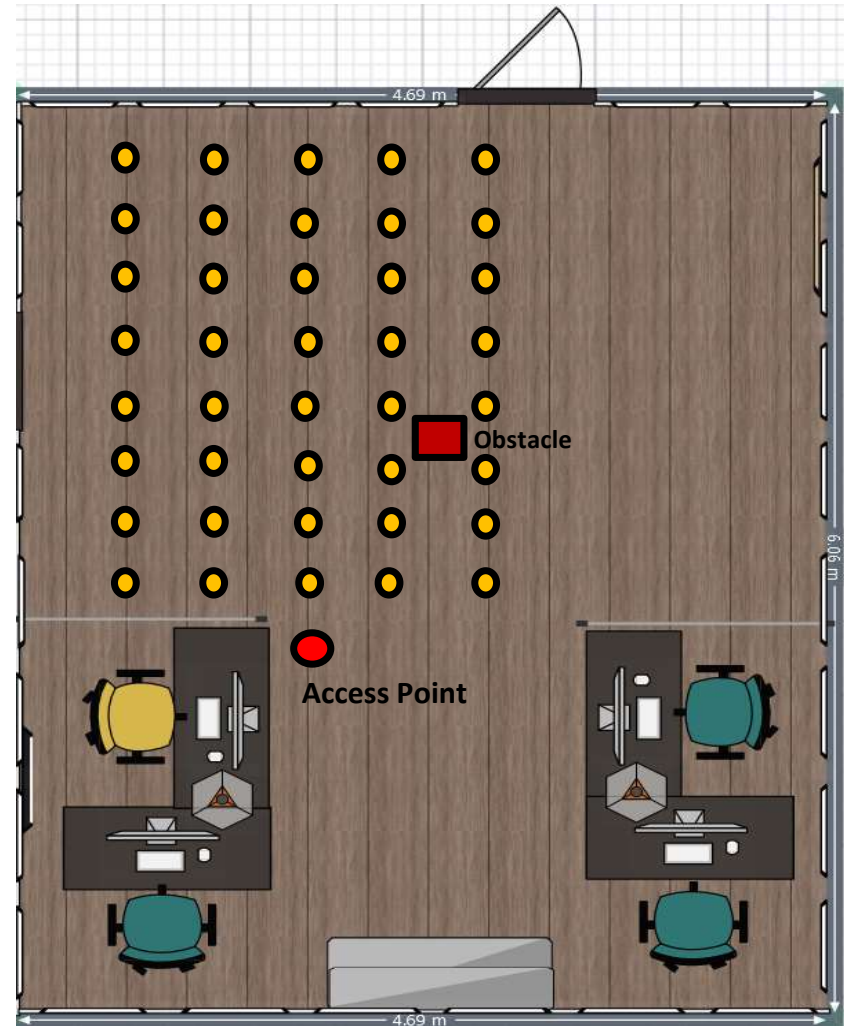
First Challenge- “Find my movement”

- CSI- Channel State Information
- Measurements contain 56 values per Rx antenna (3 Rx antennas in total) which gives us 168 values in .csv file. There is only 1 Tx antenna.
- Values are complex channel gain estimates on 56 subcarriers

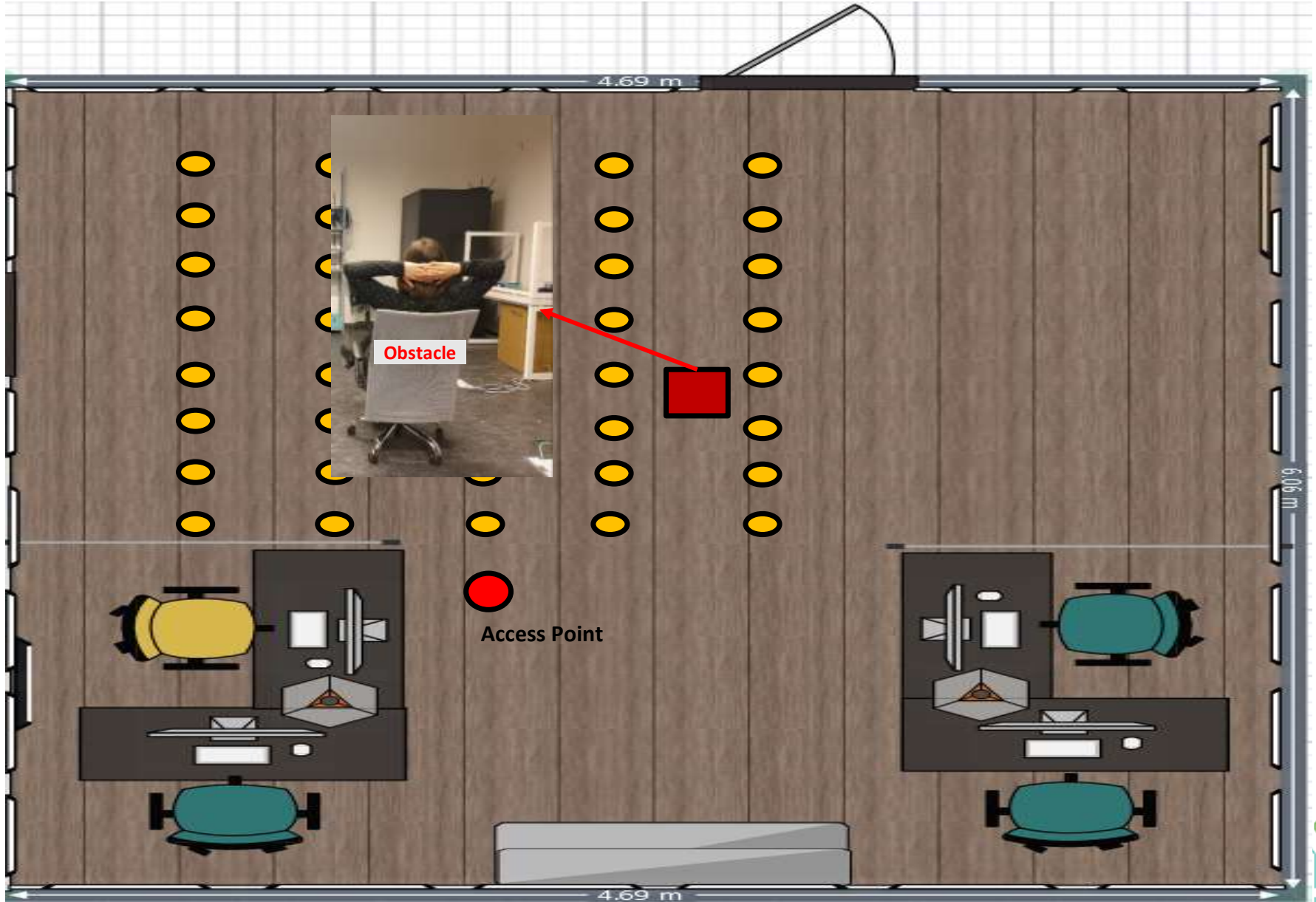


Second Challenge- “Where am i?”

- You will be provided with the .csv file which will be of the same format as .csv file one from the first challenge.
- Your task will be to find how many obstacles are placed in the room.
- Find coordinates of the n obstacles placed somewhere in the office.



Real life- "Where am i?"



Propositions

- Deadline for application is **10th February**.
- After validation of your team, we will send you all necessary details and files.
- Deadline for final solution is **28th February**.
- Final solution should consist of short report describing the solution and the code used.
- The winner will be chosen based on the precision of the tasks you did.



Winners

1. Visit Novi Sad
(all travel and accommodation costs covered)



2. Meet the crew



3. Visit lab



Good luck to everyone!

www.project-benefit.eu



BENEFIT

Boosting the telecommunications
engineer profile to meet modern
society and industry needs

Disclaimer: The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Co-funded by the
Erasmus+ Programme
of the European Union

