**A11 IDENTIFY CLAIM**

How much concrete is in the building and how big of an impact does it have on the building?

* Checking if their LCA value is reasonable. They claim 6,74 kg CO2 eq./m2/year. We will check if the main contributors are below this.

Justification:

* CO2 emissions 🡪 within out subject and one of the largest contributors to the LCA.

**A12 USE CASE**

From the IFC file check the amount of concrete that they use in the building. This can then be used for calculating the CO2 eq. in LCA byg.

For example we can get the number and dimensions of concrete columns and by finding the height we would be able to calculate the CO2 contribution from concrete columns in the building. (see A1 for python example).

WHAT WE KNOW / DON’T KNOW

* Building CO2 emissions
* Amount of concrete (foundation/ground deck = slab / mat foundation, columns, beams, basement wall + core = walls, ground deck = slab / floor , stairs)
  + Number of columns /column heights / column dimensions
  + Number of beams / beam length / beam dimensions
  + Core wall area
  + Foundation area
  + Ground deck area
* Building GFA

**A1C: SCOPE THE USE CASE**

New scripts:

* A script that tells us the number and dimensions of:
  + Columns
  + Beams
  + Core walls
  + Foundation
  + Decks

New function:

* A function that counts
* A functions that measures area
* A function that measures height/lenght
* A function that multiplies
* A function that adds

New tool:

* A tool that generates the total amount [m3] of one material in an IFC file.

**A1D: EXPERIENCE**

* Efthymios : level 1 (never coded before)
* Frederikke: level 1 (never coded before)

Total score of 2.

**A1E: TOOL IDEA**

The purpose of our tool is to calculate the amount of concrete in the building in m3 and convert the result into a file that can be read by LCAbyg.

**A1F: INFORMATION REQUIREMENTS**

* + Columns = ifcColumn/square Column:STR – Concrete Column – 600x600mm
  + Columns = ifcColumn/square Column:STR – Concrete Column – 480x480mm
  + Beams = ifcBeam/Intermediate beam (D):STR – Intermediate Deltabeam 293
  + Beams = ifcBeam/ Edge beam (DR):STR – Edge Deltabeam – DR22-250
  + Core walls = ifcWall/Basic:STR
  + Foundation = ifcSlab - mat foundation
  + Decks = ifcSlab/floor
  + Basement wall = ifcWall/Basic wall:GEO

It is in the structural model.

It would be nice to separate different sizes of collums and beams from eachother when calling them in ifcXXX without defining their entire name. We would need read about how to do this.

A2 To be continued…

<https://github.com/WilliamEskildsen/41934_group3/tree/main/A4>