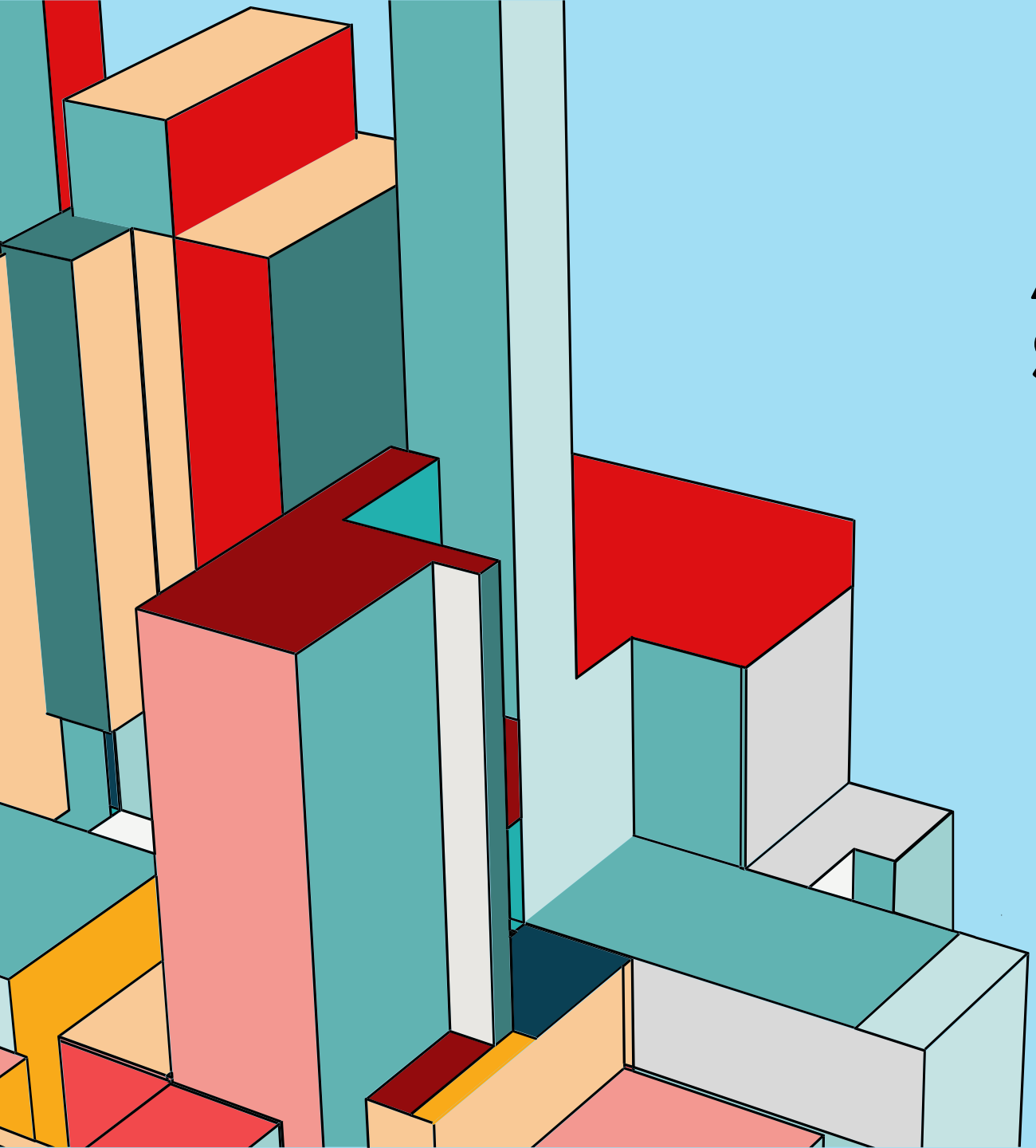


APPLIED DATA SCIENCE PROJECT

DINOV3 FOR DAMAGE ASSESSMENT

Politecnico di Torino

FONDAZIONE links PASSION FOR INNOVATION

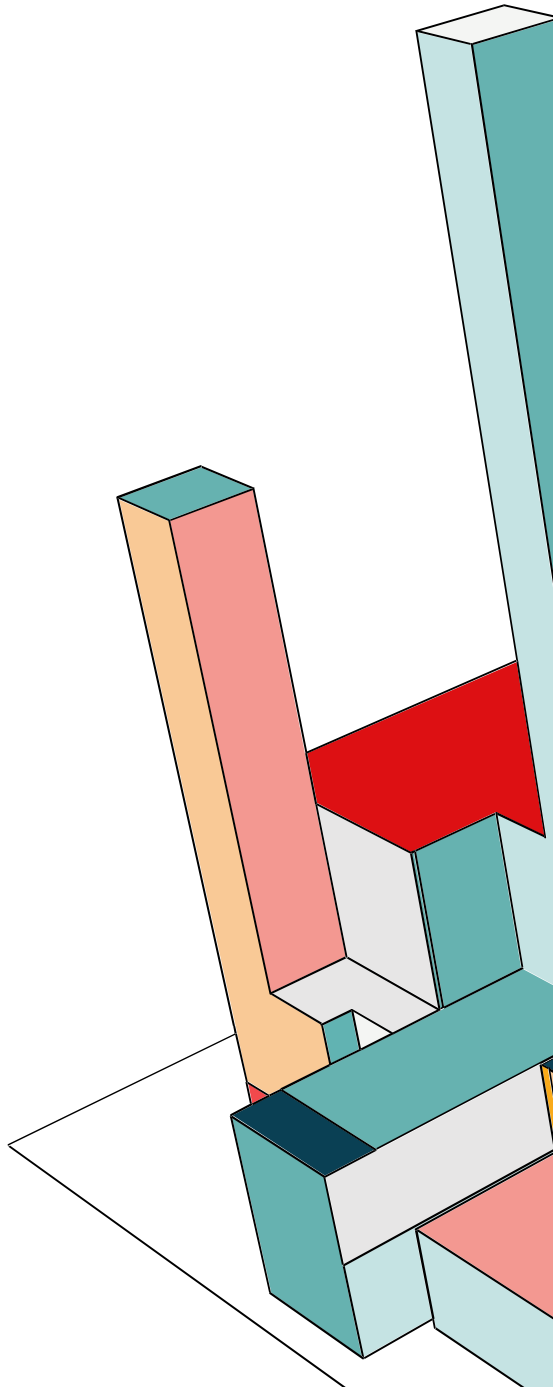
ellis European Laboratory for Learning and Intelligent Systems

VALUE-DRIVEN PROJECT

- **Damage assessment** is the process of automatically identifying and classifying damaged buildings and infrastructures from high-resolution satellite images after a natural disaster.

- The goal is to rapidly generate accurate maps that highlight the location and severity of damage.

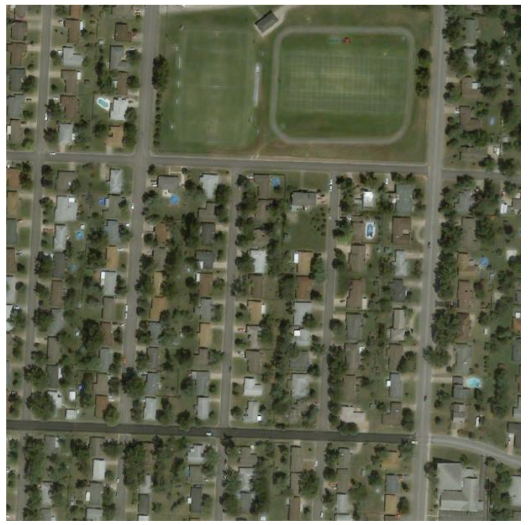
- These maps are critical for first responders to plan recovery operations.



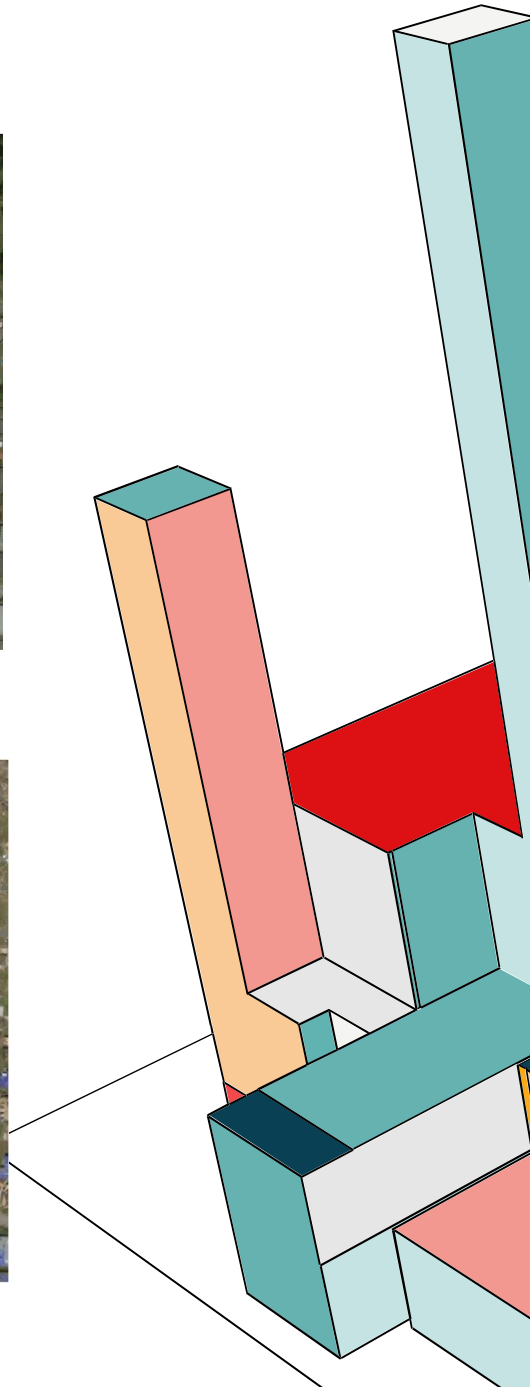
DATA

- Numerous extensive data collections are available.
- We will use the xBD dataset, a large-scale, public benchmark for building damage assessment.
- It contains high-resolution **pre- and post-disaster** satellite imagery, with each building annotated via **polygon footprint** and a corresponding **damage classification label**.

Pre-disaster

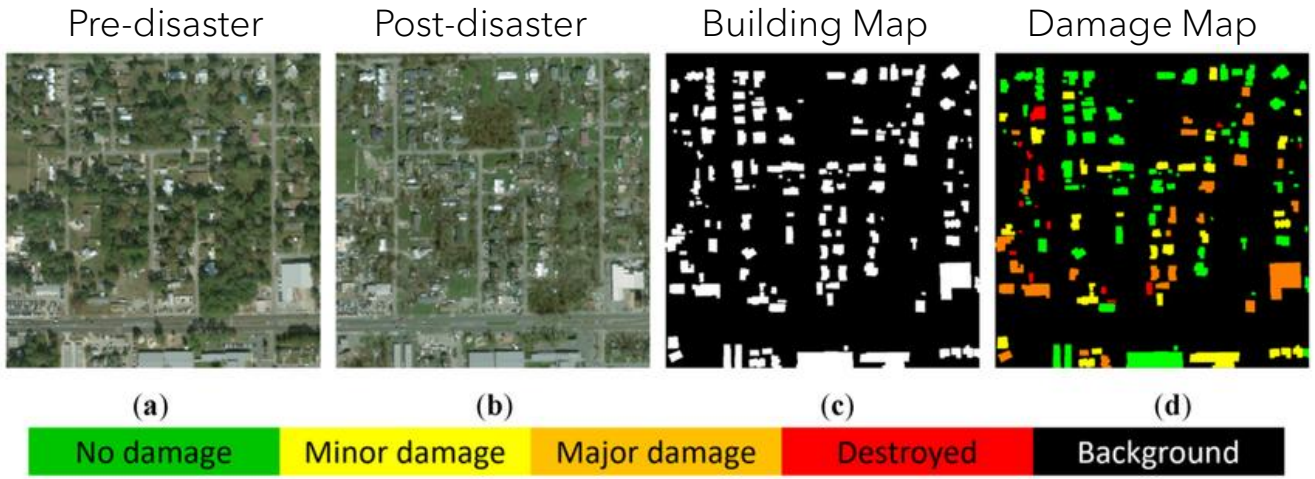


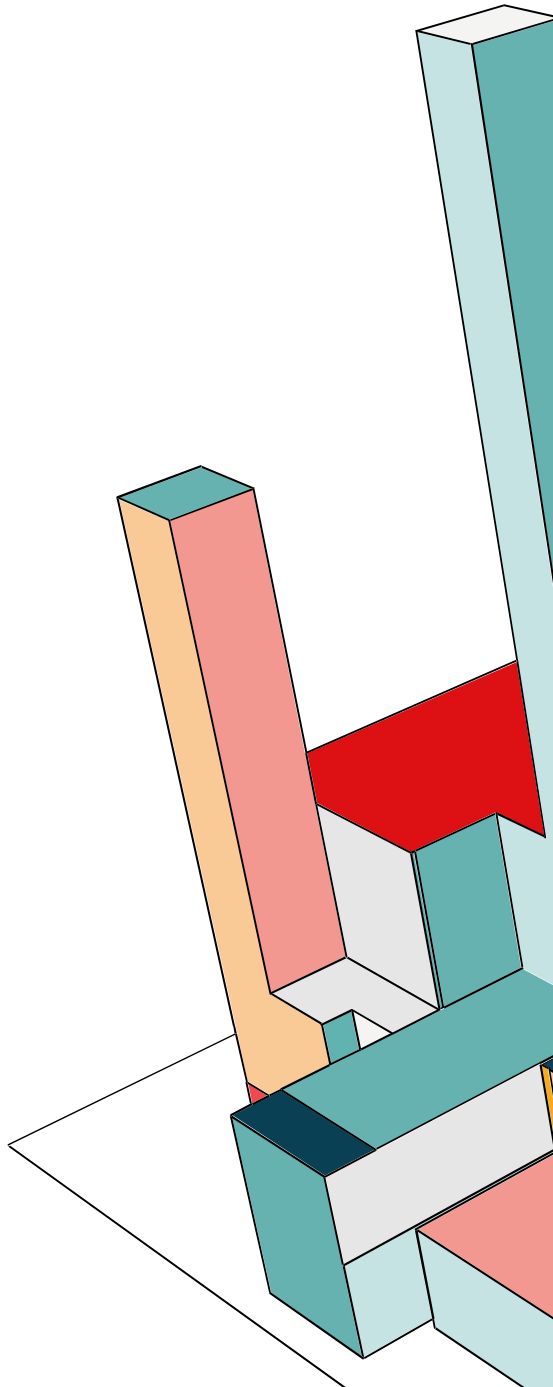
Post-disaster



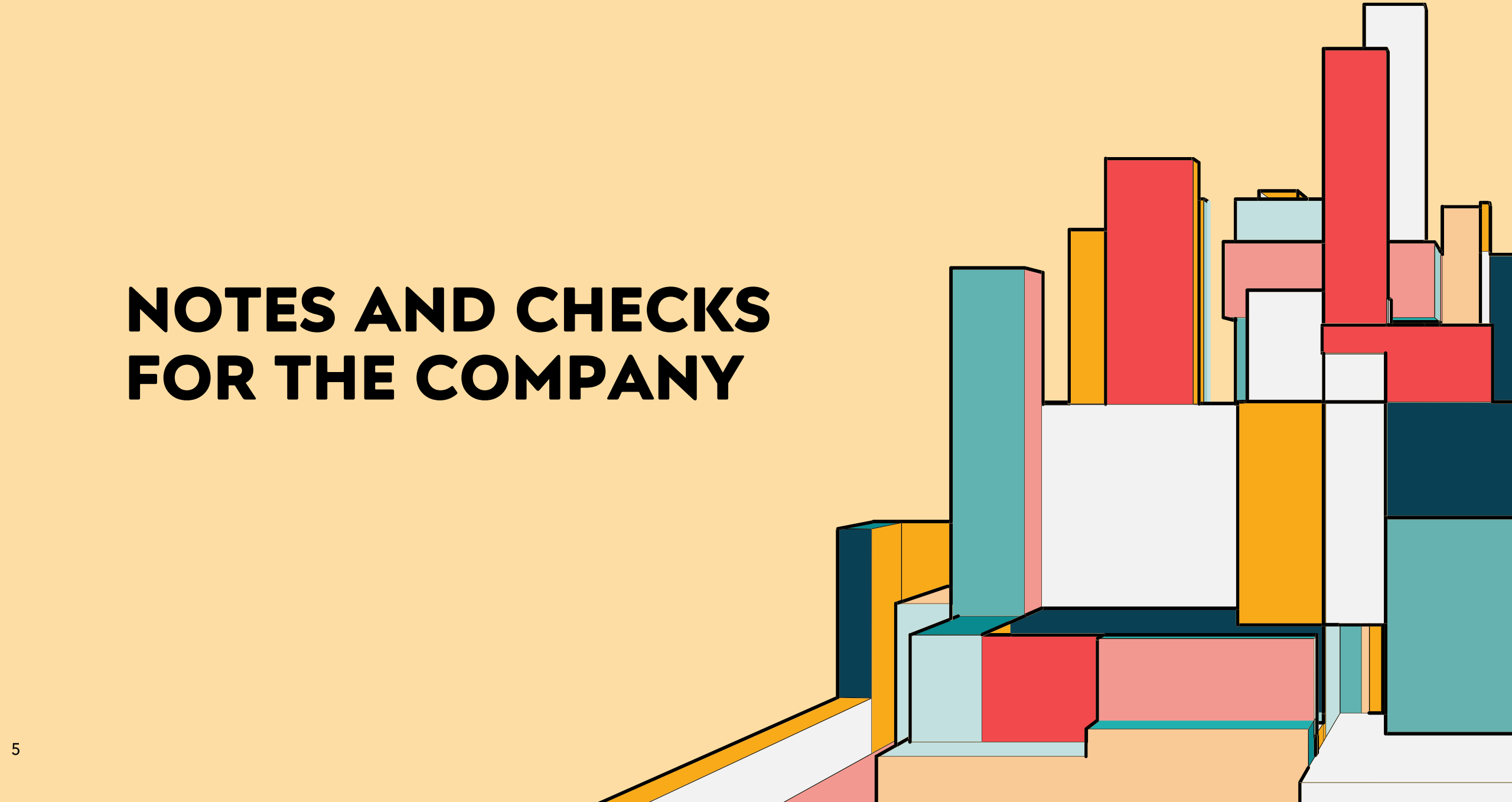
TASK

- The objective is a **semantic segmentation** task with a dual prediction for each pixel:
  - **Building Localization**: First, identifying if the pixel is part of a building footprint.
  - **Damage Classification**: Second, if it is a building pixel, classifying its damage level (No Damage, Minor, Major, or Destroyed).





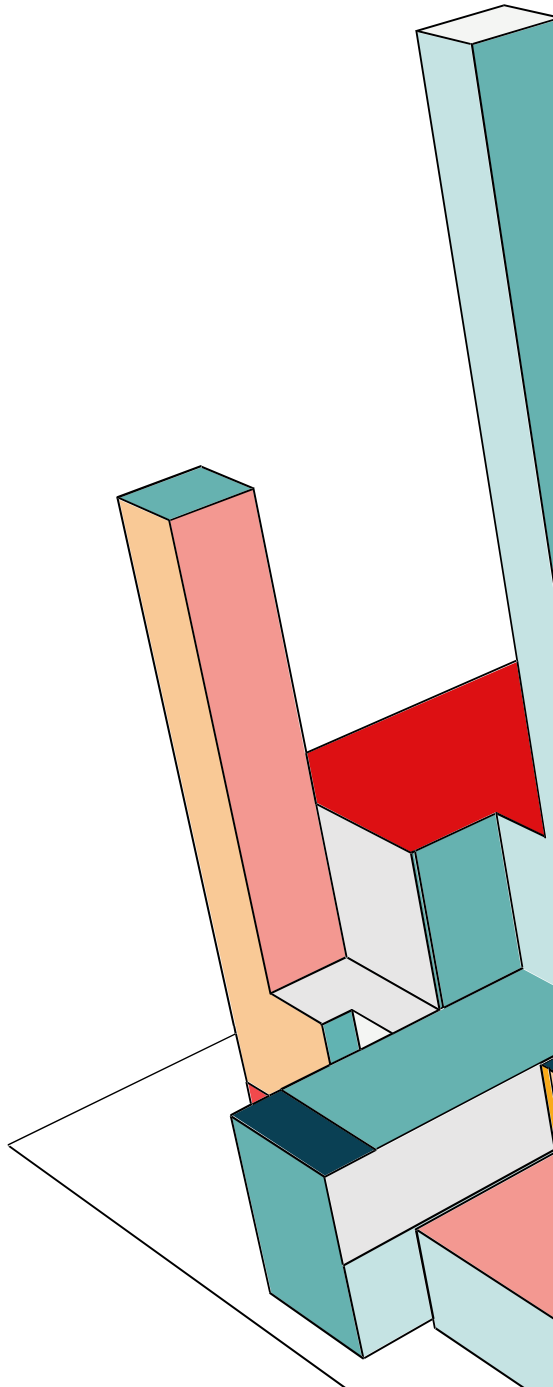
NOTES AND CHECKS FOR THE COMPANY



LIGHT MENTORING

Jacopo Lungo Vaschetti (jacopo.lungo@linksfoundation.com) and Lorenzo Innocenti (lorenzo.innocenti@linksfoundation.com), researchers at LINKS, will be the mentoring contacts during the project:

- 30-minute biweekly calls during the semester
- General mentoring for the project



POLICY

- Both project descriptions and implementations will be part of a repository group published on GitHub

- The repositories will be public