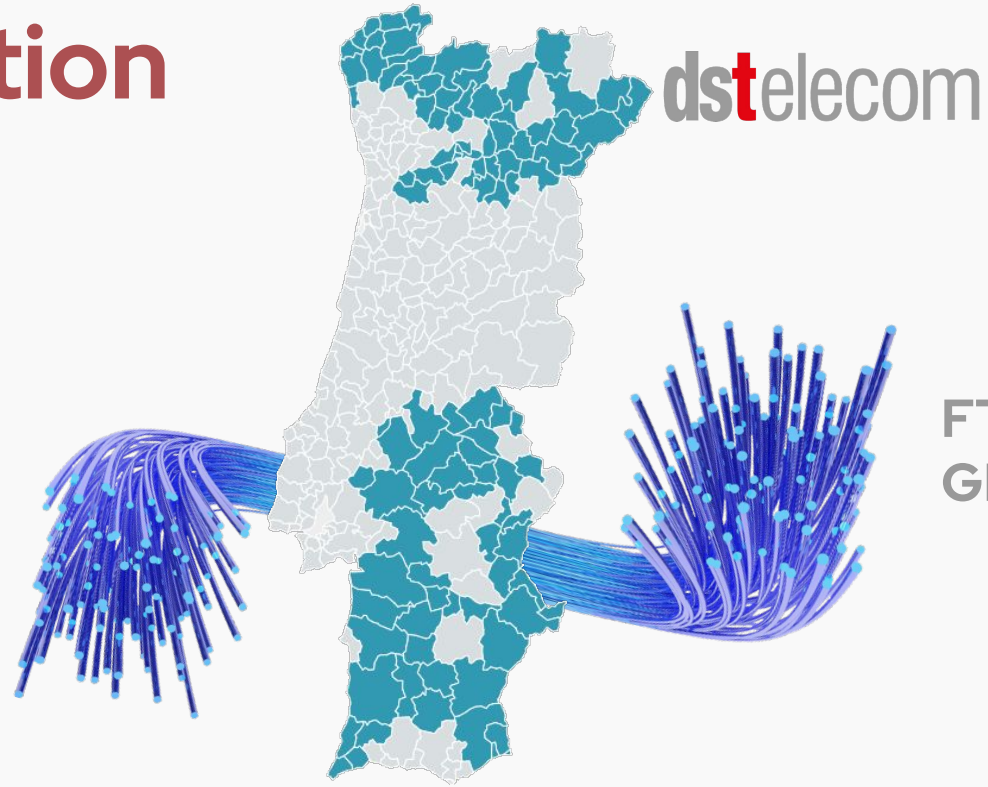# OPTIMIZED PLANNING OF FIBER OPTIC NETWORKS

Mestrado Integrado em Engenharia Informática 2021/2022

Renata Gomes Dias Ribeiro A86271
Oriented by António Costa and Helena Fernandez

Context & Motivation

dstelecom

FTTH based GPON

Problem

Network design made <u>manually</u>

Complexity and time constraints

Defective planning

Design Process at
<u>dstelecom</u>

01
Collecting information on infrastructure location and conditions, addresses, potential approach, etc.
Site Survey

02
Information is introduced in a software and accessed by back office planning team.

03
Network planning and design.
Project Component

AUTODESK®
AUTOCAD®

Google Earth

Example KML file opened in Google Earth.

Previous Work

Models

- Binary Integer Programming (BIP)
- Mixed-Integer Programming (MIP)
- Mixed Integer Linear Programming (MILP)

Approaches

- Multi-layer design
- No redundancy in the last mile

Solution

**Optimized and Automized Planning
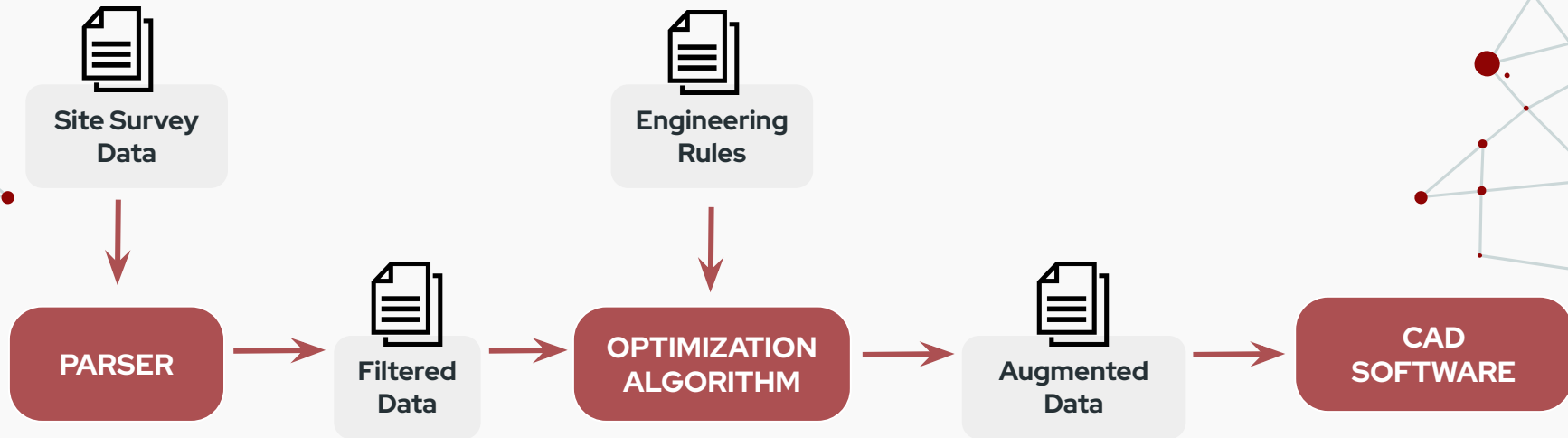of Fiber Optic Networks**

Optimization Algorithm

**Calculated prediction
of the best location for**

- Splitting points
- POP's (Point of Presence)

Engineering Rules

- Distance between POP's and ROE's
- Maximum "jumps" between poles
- Number of houses to serve

Proposed Approach

Future Work

	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept
Literature Search and Review	■	■							
Data Processing		■	■						
Algorithm design			■	■	■				
Implementation and Result Analysis				■	■	■			
App Development						■	■	■	■
Thesis Writing	■	■	■	■	■	■	■	■	■

Thank you.

Do you have any questions ?

Renata Gomes Dias Ribeiro A86271