

**Exercise 3: Upload a PDF file on the folder Peer Review 3 on the BEEP**

The file name must be name\_familyname.pdf and it cannot contain any personal reference.

In the solution try to follow the suggested scheme

A telecommunication company has to install some antennas to cover a region. The region is divided into a set of zones  $Z$ . The company can install antennas in a set of candidate sites  $S$ . Given a candidate site  $i \in S$  and a zone  $j \in Z$  it is known the level of the received signal  $p_{ij}$ . A zone can be served by at most one active antenna and the signal received from that antennas must be greater or equal than  $\Delta$ .

Formulate the problem of maximizing the number of served zones as a linear optimization problem.

**Variant:** In order to avoid poor quality solutions, the company has to introduce constraints on the interference. If a zone  $j$  is served by one antenna  $i$ , the total of the received signals (minus that of the antenna serving the zone) must be less than or equal to  $\delta$ .

**Parameters and sets:**

**Variable Sets,** Indicate the indices and their range, the meaning of the variables and their nature (binary, integer...):

**Objective function:**

**Constraints about each zone being served by at most one antenna:**

**Constraints about signal quality:**

**Other constraints if needed:**

**Constraints of the variant:**