**Understanding the problem**

The lowest level subsystem that contains data is column E in ““arborescense”” windows, which corresponds mostly to assembly lines which belong to different kind of lines, presumably lines are grouped according to the production site (MU MOTG, MU MOTP, etc).

The window Database does not contain data about all the elements presented in ““arborescense”” windows. 13 subsystems (mainly assembly lines) are available in the dataset, which give data about the failure of their respective components or sub-sub systems.

Can we treat these subsystems as being independent? Maybe in terms of production, one semifinished material feed the other line, but it terms of structural dependence are they related?

N° équipement in Database window: ID at system level (production sites), for example, 10008496.

Appellation in Database window: ID for sub-system failing/degrading (ex: 100045) or element of sub-system failing (ex: 100046). Note that the second one belong to the first one, but events are presented for one or another. Additionally, both belong to 10008496 which is a system (production site for example).

the “arborescense” of an event presented in Dataset windows corresponds to reading the columns N° équipement, Equipment, Libellé parc, and MU all together.

**Tasks requested by Phuc**

* understand structure
* From each subsystem estimate the most important components: looking at the MTBF and the duration of intervention, failure rate, total downtime of each component/line? Can we plot a descriptive statistic (histograms depend on the number of failures/data points per component).
* Relation between the failure of components? Through statistical analysis?
* Model reliability behaviour: the hierarchical structure is done, making clear which elements belong to which subsystems. However, we need to be careful because some elements belong to a specific subsystem but thy are structurally dependent, like lifts in an assembly line. Maybe the output of one feed the other. To understand this, it is necessary to look at the role of each element within the subsystem. One initial assumption is that all elements that belong to a subsystem are structurally related.
* Calculate MTBF
* Build PDF
* Are there multiple components belonging to the same type? Is their behaviour similar?
* First build PDF for MTBF then the reliability