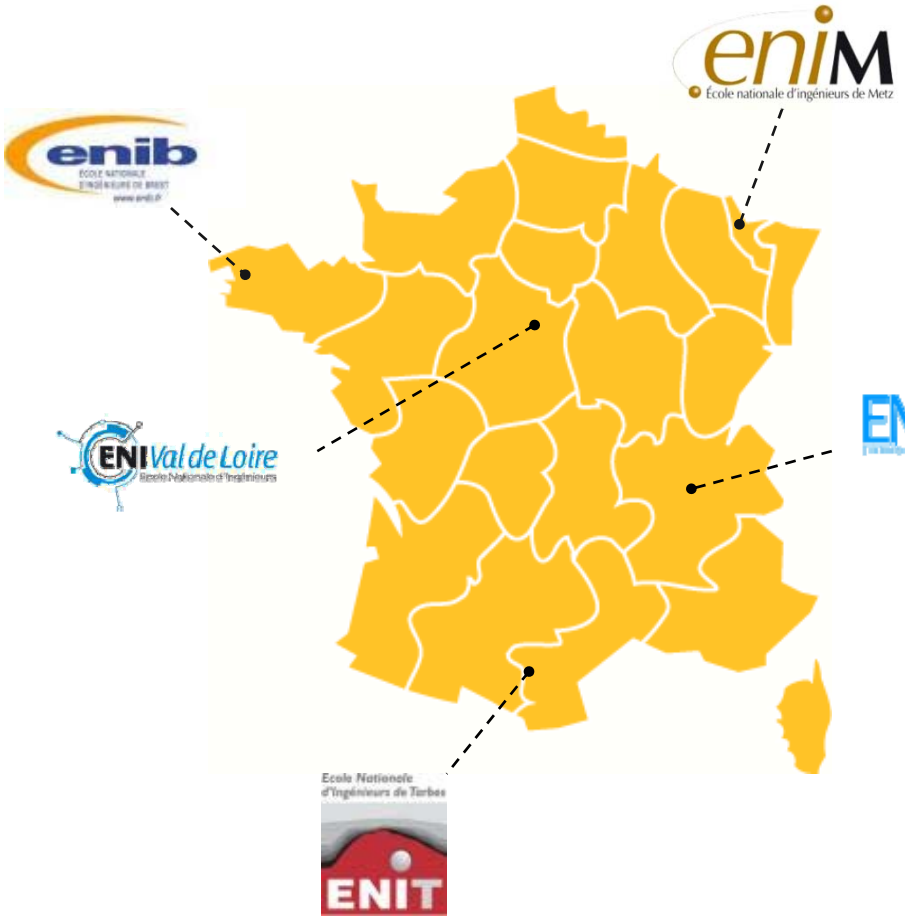
4.2.4 New project- ENIM (Ecole Nationale d'ingénieurs de Metz)

ENI Group, 1000 Graduating Engineers/year



GROUPE ENI
ÉCOLES NATIONALES D'INGÉNIEURS

ENIB: Electronics, Computer science, Mechatronics

ENIM: Mechanics & Industrial Eng

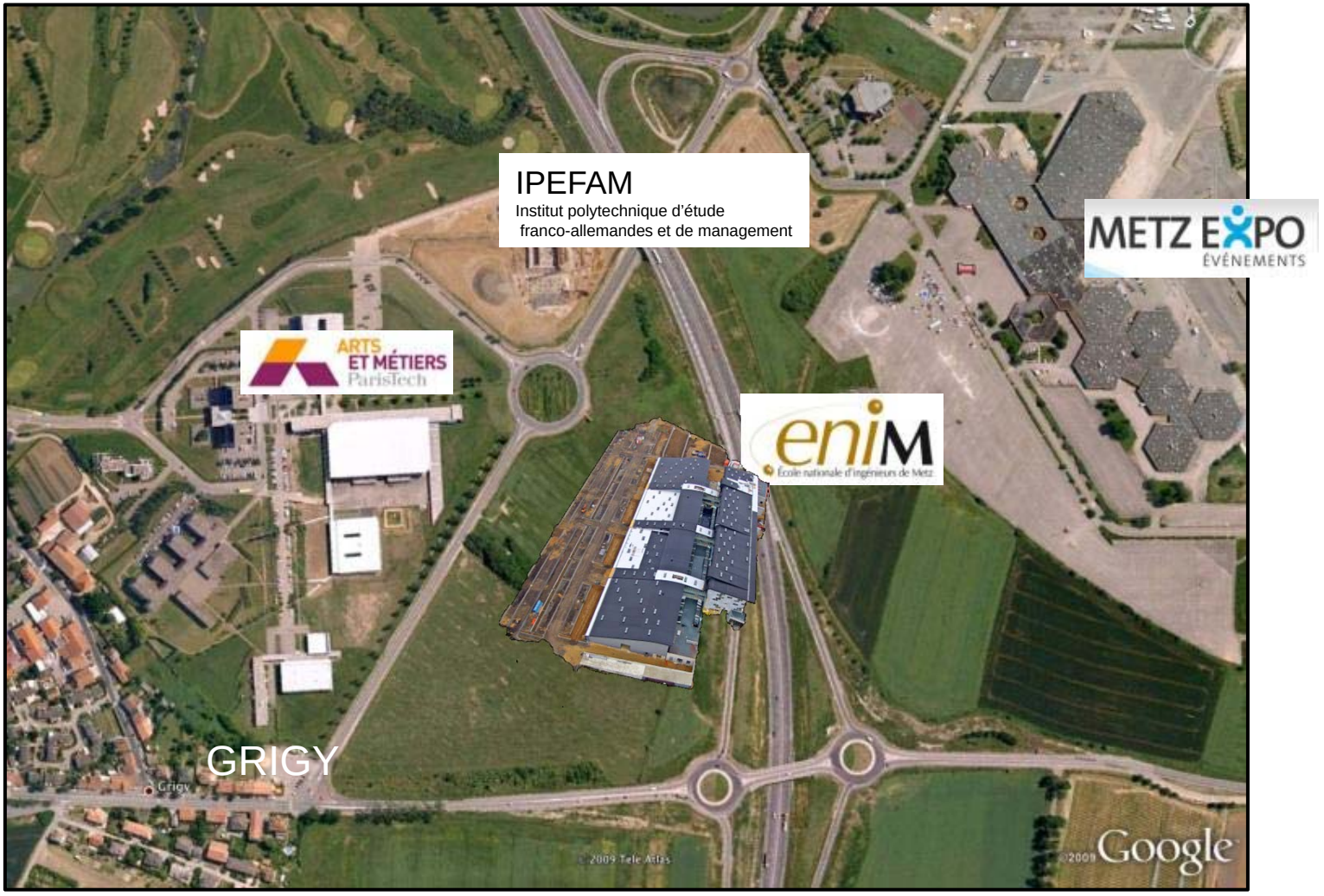
ENIT: Mechanics & Industrial Eng

ENISE: Mechanics & Civil Eng

ENIVL: Mechanics, Electronics & Industrial Sys Management

4.2.4 New project- ENIM (Ecole Nationale d'ingénieurs de Metz)

The Metz Technopole and high education campus view



4.2.4 New project- ENIM (Ecole Nationale d'ingénieurs de Metz)

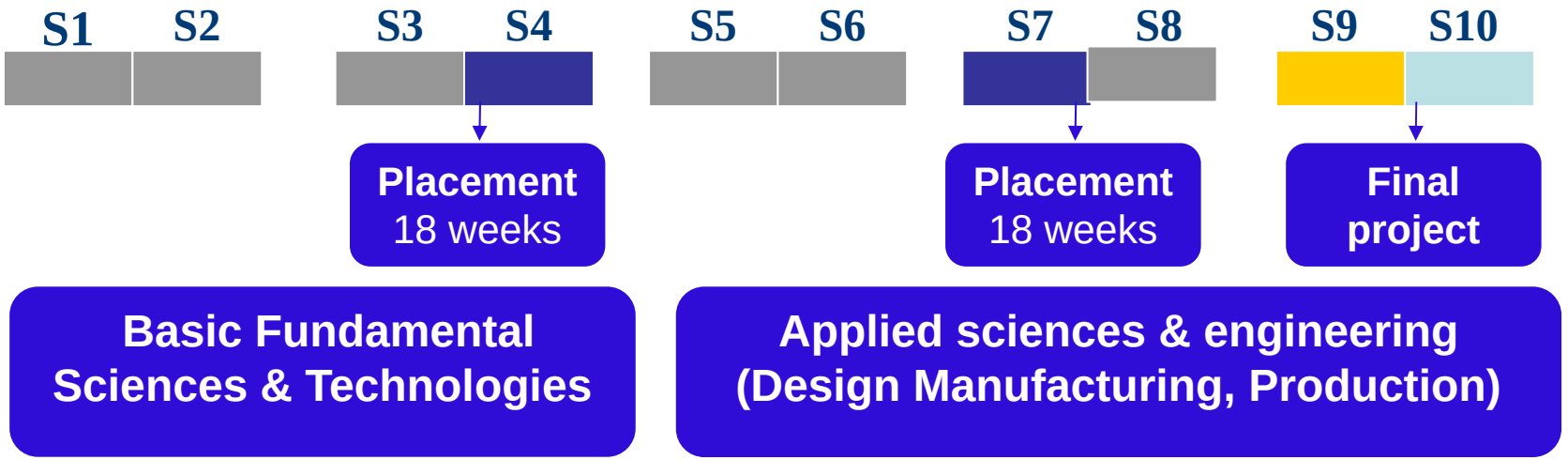
ENIM in figures

- 1000 engineering students
- 290 foreign students
- 250 students abroad/year
- 300 industrial internships each year
- 78 Faculty members
- 2 Research Laboratories
- 90 International cooperation agreements
- 4 Master programs
- 280 Graduates each year
- More than 6000 graduated engineers.

4.2.4 New project- ENIM (Ecole Nationale d'ingénieurs de Metz)

Graduation programmes

- Mechanical Engineering
- Industrial Engineering
- 2 Master of engineering (Logistics, Industrial Systems Management)
- 2 Masters of research (Mechanics, Materials, Structure, Processes and Innovative Design in Industrialization)
- 3 Research laboratories
- 1 college of continuous education



4.2.2 Utilization of natural fibers as reinforcement of polymer based structure - Study of the impact strength

Duration of project:
20 weeks

Research Topic: Composite structure, Polymer, Natural fibers

Objectives/Motivation: The transport companies try to lighter their vehicles for many years in order to reduce their full consumption. The use of composite materials is a common solution which rarely respect the environmental law about the recyclability. The objectives of this work is to evaluate the mechanical properties of a flax fibers reinforced thermoplastic, identify their asset and find solutions to the main problems. The long-term aim is to develop a new bio-sourced material with a positive carbon assessment, a good recyclability or revalorization, and properties which match the manufacturer requirement in term of performance and reliability.

4.2.2 Utilization of natural fibers as reinforcement of polymer based structure - Study of the impact strength

Main findings/result:

The specific properties of the composite studied match the steel one, which mean that a this point of the research it is not possible to lighter structures with this material. The main problem is the aging of the fibers which cause a lowering of 30% of its strength. The process used allow us to obtain a finished material with a colored and shiny aspect in a single step but do not prevent the apparition of defaults, mainly voids, which cause an early failure

Perspective/next steps:

The improvement of the process is the next step. The objective is to avoid the default during the injection of the matrix and increasing the properties of the link between fibers and the matrix. This should increase significantly the global mechanical properties and lower the aging phenomenon. Then a work on the reinforcement structure will allow us to find an optimal configuration. Finally the evaluation of the thermo-mechanical properties will validate its use in several atmospheric condition.