

Digital Farm Project 2: Activities

- **Autonomous vehicle design optimization and prototyping**

This activity gathers students from three fields of study:

- **Agricultural engineering students** provide basic knowledge for "non-agricultural engineering students": they highlight the farm issues to set the context for all students.
- **Mechanical engineering students** will interact with agricultural engineering so that their technical solutions meet the agricultural needs. One of these solutions is the weeding and the precision hoeing.
- **IT students** will adapt the field data acquisition vehicle sensors (they will choose sensors according to specifications established beforehand) and perform the transmission of information to a database that will be used by the farmer. They will also process the images captured by the field data acquisition vehicle.



- **Plant development for data integration**



Mechanical engineering students will analyze the plant development from seed to harvest. They will collect **key parameters** to optimize the operation of agricultural machinery.

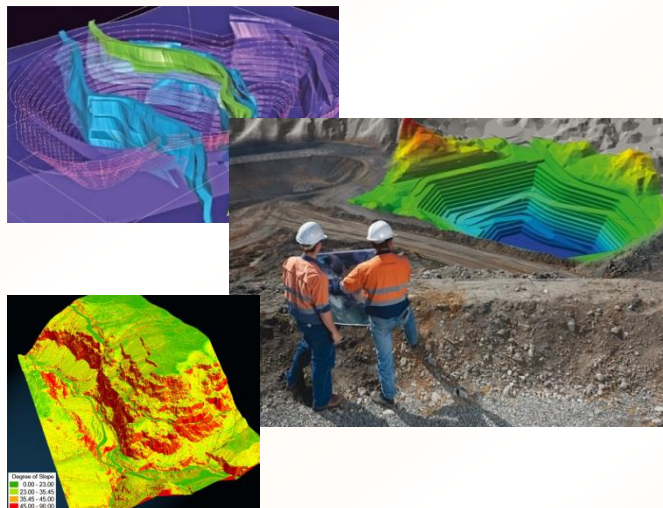
- **Farm architecture**

This activity is divided into two parts:

- Re-using data of the previous project to optimize the structure and improve the farm.
- Students will define a scenario to present the virtual farm. One possible scenario is to provide an **overview of the farm** and fields with the robot, to show the process of weeding, to highlight the different parts of the field data acquisition like the suspensions and the sensors etc. The idea is to use software like CATIA Composer to gather all the activities covered in Digital Farm Project 2.



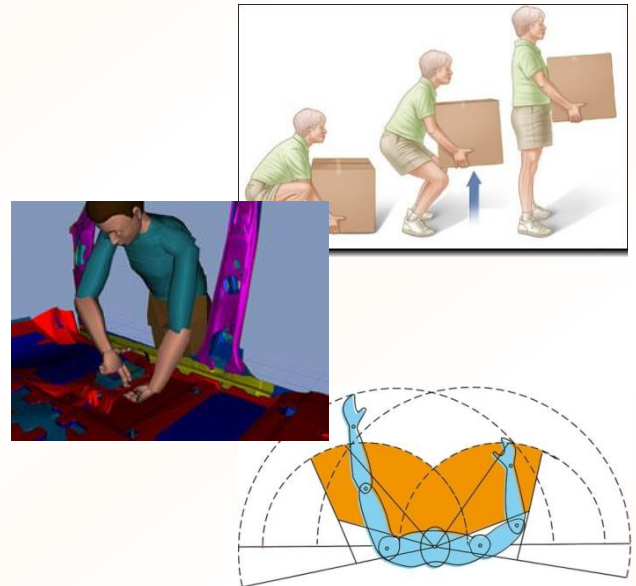
- **Terrain and subsurface modeling**



Using GEOVIA, geology students will **model farm's terrain and subsurface**. The idea is to adapt the farm, the field data acquisition vehicle and the seeds to the terrain and the subsurface.

- Ergonomics

Mechanical engineering students will evaluate how people interact with the workplace. Through the **3DEXPERIENCE** platform, it is possible to maximize productivity by **reducing operator's fatigue and discomfort** (for instance: for robot's maintenance, tractor tools' upkeep etc.)



- Project management



Students will develop skills in the **organization** of an international, transcultural, multidisciplinary project that will bring an added value **for their professional lives.**

- **Communication**

This activity is divided into two parts:

- Students will create videos ([Digital Farm Project 1](#) and [Global Factory](#)) and use different tools (like Facebook, Twitter, a newsletter) **to promote the project.**
- A student will be in charge of supervising the communication between the students dispersed across the planet. The project is a based-learning experience that combines various disciplines, from mechanical, systems, industrial, agricultural engineering to project management and communication sciences.

