Using Semantic Technologies to support High Tech products information management

Keywords: Ontology, Semantic modeling, Protégé, Design, Manufacturing, 3D metrology.

Problem: 3D measuring systems are customized metrology equipments used in different industrial domains (manufacturing, automotive and aeronautics). The customization process depends on the requirements of the final users, such as working volume, degrees of freedom, type of pieces to be scanned, etc. This dimensional metrology set up is controlled by a software platform, allowing the complete management of the information in the quality control process. A huge amount of data is generated and need to be structured, processed, analyzed and correlated to other data sources. This data includes among others: Point clouds, Machine parameters, Measuring programs, Scanning programs, etc.

Project: In this project, the student will study ontology models and tools and develop a prototype solution for semantic modeling of the Hightech products using Protégé. He or she will model and structure product information and define related semantics in 3D metrology. Experience from the EU H2020 funded project will be used and collaboration with Datapixel Company is envisaged.

Plan:
1. Study ontology modeling tools and Protégé
2. Study the state-of-the-art in 3D scanning systems
3. Design the Hightech Semantic Model (Ontology)
4. Use Protégé to implement the model
5. Compare and evaluate the model with the “as-is” solution
6. Write a final report

External Partners: Datapixel
Supervisor: Dr. Dimitris Kiritsis, dimitris.kiritsis@epfl.ch
Responsible collaborator(s): Dr. Soumaya El Kadiri, soumaya.elkadiri@epfl.ch