TOWARDS CL2M: ENABLING FEED-FORWARD MECHANISMS IN PRODUCT DESIGN

Project description:

The undergoing transformation in our current socio-economic models, led by the advent of emerging technologies, has changed the relation of customers to products. Customers play no longer a passive role in the product development process as they express their product experiences and opinions through several channels such as discussion forums, blogs, chat, idea voting, and more. The potential endless amounts of information that is created through these channels and that can be collected, tracked, analyzed, and shared offers a rich ground for value creation in the product innovation chain. New products and value-adding services can thus be realized in a faster way, resulting from user-experiences and product usage.

This project aims at closing the loop in the product lifecycle management – CL2M. By exploiting information from MOL and EOL (feedback in terms of user experiences and product usage for instance) we are able to increase capabilities of adjustment and improvement of products-services design, by actively providing updates – information, services, software and hardware (feedforward).

The focus is made on the design stage. The student will develop visualization widgets (using WebGL 3D model) aiming at enriching 3D models (CAD model) with additional knowledge collected from MOL and EOL (collected using questionnaires; structured using ontology and analyzed using reasoning mechanisms).

By overlaying information from MOL/EOL over CAD models, designers can easily gain insights on product redesign and improvement.

The project will follow an iterative and incremental development process.

Keywords: PLM, BOL, MOL, EOL, 3D Visualization, 3D Enriching, WebGL 3D model, Ontology, Reasoning.

Proposed Plan:

Step 1: Study of visualization and overlaying features with CATIA/ WebGL and requirement analysis. (2W)

Step 2: Functional and technical specification analysis of the visualization widget. (2W)

Step 3: MOL and EOL Knowledge capture and representation. This step includes the design of a questionnaire to collect feedbacks from end-users (customers). (2W)

Step 4: Knowledge modeling and reasoning for knowledge discovery using Protégé. This step includes the study of ontology modeling and implementation in Protégé. (2W)
Step 5: Development of the visualization widget. (4W)

Step 6: Use-case scenario of e-Vehicle (TbC). (2W)

Step 7: Preparation of the final Report. (2W)

**Supervisor:** Dr. Dimitris Kiritsis, dimitris.kiritsis@epfl.ch

**Responsible collaborator(s):** Dr. Soumaya El Kadiri, soumaya.elkadiri@epfl.ch