The big picture on complexity

How to get the job done when a task is shared between several teams scattered around the world? A European R&D cooperation, the EUREKA ITEA2 3D TESTBENCH project, might bring a change in project managers' complicated lives.

The 3D TESTBENCH project has been developed within the frame of The EUREKA Cluster for software development ITEA 2: Information Technology for European Advancement. This pan-European cluster involves some of the most preeminent companies in the sector and has already led some of the most ground-breaking innovations in the software-intensive systems and services sector.

To solve the problem of complexity might be one of the major goals of the 21st century: we are exposed everyday to increasing amounts of information that we are unable to digest, and there are no signs of a downturn. In the engineering field this is translated into the high number of parameters to take into consideration, as development projects are getting bigger and often too complex to be grasped entirely by one single person.

In an engineering process, the stage referred to as the integrating phase: the point when the knowledge of different teams is put together into one single outcome, is posing a huge problem to some of the biggest innovative companies globally. Several research teams around the world are working on the development of what is called collaborative engineering environment and are beginning to create the tools to facilitate the integrating phase.

An adaptive tool

Research facilities environments are becoming more and more complex and interaction between different units is a growing setback. The solution proposed by the team led by Andy De Mets, leader of the 3D TESTBENCH project and R&D projects coordinator at Barco, is the integration of all the tools used by different groups into a single instrument, compatible with all of them. "In fact", says De Mets, "a lot of engineering tools and software are being used and these tools are not always conceived to interact with each other".

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The outcome of the project looks like a giant 3D screen or "wall" where all the stages of the engineering and product conception process are displayed. Change one aspect of the project and the modifications implied at all of its stages will show, highlighting potential conflicts. Of course the system developed within the 3D TESTBENCH project needs to be adaptive. It does not consist of one single software, it is rather "the wall and its workflow management tool that are at the heart of the system" says De Mets.

Failure is not an option

"If you look at the way R&D is performed nowadays you will see it is characterised by both diversification and specialisation". In other words, a lot of different people are overlooking extremely precise parts of a project, nobody gets to see the big picture and

the possibility of somebody making a big mistake is increased. For some companies, failure is not an option: in the aeronautic industry the poor management of a complex project can end-up putting at risk many lives.

The first user of the new device developed by the international research team and also project partner was Fokker Elmo, a company specialising in aerospace engineering. It was the consortium's guinea-pig, supplying the model which allowed optimising the workflow tool. Barco, a company specializing in visualisation instruments developed the 3D wall, working closely with NOESIS Solutions, LMS International, a simulation solutions provider.

team-force that was brought together was a crucial aspect for the success of the project" says De Mets.

Possible applications are very broad, since the project represents the solution to a problem potentially faced by any type of organisation. Companies having already contacted the research team members represent major players from the automotive industry and the energy market. De Mets emphases that with the international fragmenting of research teams and the trend for open innovation,

the concept of a collaborative engineering environment will only become more central in the future and the system developed during the project will be employed by more and more companies. By the way the

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Major industry players

The Technical University of Delft in the Netherlands, and the Vrije Universiteit Brussel, Belgium brought in the academic background in complex project modelling necessary to develop the project. "The complementary expertise and enthusiasm of the human

3D TESTBENCH system was used to coordinate the last stages of… the project itself!

Project participants
Belgium, Netherlands

Duration **36 months**

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