

Aerospace and defense

# E2M Technologies

Global simulator designer and manufacturer adopts Simcenter to speed up product development

## Products

Simcenter, NX, Teamcenter

## Business challenges

Meet lead times from start to finish

Accept last-minute customer requirements and still meet deadlines

Minimize downtime and need for physical prototypes

## Keys to success

Deploy Siemens NX and Teamcenter software to design, optimize, simulate and communicate

Perform design and simulation work in a single interface

Use Simcenter 3D to simulate and test concepts before final product manufacturing

## Results

Advanced from conceptual phase to feasible end-product in a minimal timeframe

Granted multiple patents for product innovations

Able to customize the motion simulator to meet changing customer requirements

**Siemens Digital Industries Software helps E2M Technologies reduce product lead time through virtual testing**

## Disrupting industry

Among the many requirements of becoming a commercial pilot are hundreds of hours in the classroom, in the air and up to a few dozen hours in a simulator. In today's fast-paced world, complex motion simulators assist with learning and

perfecting the many specialized tasks associated with flying, entertainment, ground vehicle simulation and testing. These systems generally have long lead times, undergo many revisions and take considerable time to deliver the finished product.

Founded in 2007 in Amsterdam, Netherlands, E2M Technologies is impacting industry by leveraging their quick-to-market, customizable motion systems for simulators. From conceptual phase to feasible end-product in a minimal timeframe, their durable, smooth



**“Being completely integrated with the NX/Teamcenter design environment makes Simcenter 3D Motion easy to use and access.”**

Roald Munnig Schmidt  
Senior Design Engineer  
E2M Technologies



electronic actuation products are used for flight simulation, ground vehicle simulation and the entertainment industry.

E2M Technologies' products and services are provided by cards PLM Solutions, a Siemens partner. Through this partnership, E2M Technologies utilizes a variety of Siemens Digital Industries Software solutions, including Simcenter™, NX™ and Teamcenter® to design, test and stay organized when creating new products for customers. While the company is relatively new to the arena, they already have a wide range of systems for motion simulation, including the largest electrical system in the world.

“We have three patents, which for such a young company is a big achievement,” says Rabih al Zaher, group leader mechanical department, E2M Technologies.

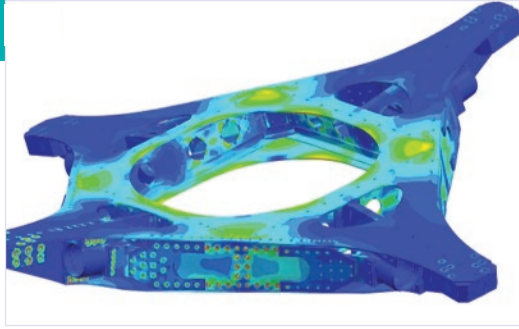
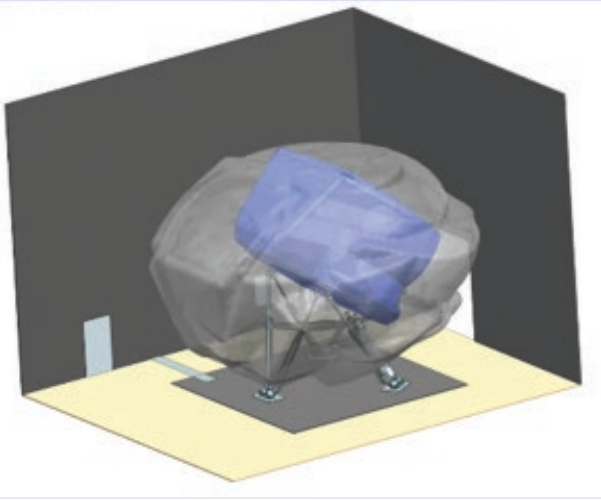
#### **Starting with Simcenter 3D**

E2M Technologies engineers apply the latest production techniques to develop state-of-the-art motion systems for simulators used in various industries. To create the best products possible, E2M Technologies starts with Simcenter™ 3D Motion software.

“With every new project, we start with our skeleton design which is made in Simcenter 3D Motion,” says Roald Munnig Schmidt, senior design engineer, E2M Technologies. “We can quickly assess the movement of a customer cabin to check whether it fits in an existing building. During the design phase of a new system, we use Simcenter 3D Motion to check for internal collisions and easily visualize these challenges in search of the best solution.”

***“Not having to slow down these workstations enables us to achieve maximum efficiency.”***

Jack Wever  
Senior Structural Engineer  
E2M Technologies



E2M Technologies understands the advantages of using multiple Simcenter products. "Being completely integrated with the NX/Teamcenter design environment makes Simcenter 3D Motion easy to use and access," says Munnig Schmidt. "Insights gained with motion can easily be incorporated in the design and rechecked. This way it is just part of the engineering process without interrupting the design process."

#### Eliminating extra steps

Munnig Schmidt views the application of Teamcenter as a major upgrade for the company. "Using the Teamcenter database, we can look up parameters or specifications, eliminating the step of repeating work that has already been done," he says, "Using Teamcenter, we are able to re-use parts and assemblies, and perform updates without tampering with older designs." He goes on to say, "This makes the journey from concept phase to something that is already sort of feasible really quick. It also helps us to communicate with our customers because we can show them where we have minor design changes. Then we can change them through our integrated system, which will lead to the best end-product."

Jack Wever, senior structural engineer, E2M Technologies, realizes the importance of minimizing extra tasks to focus more time on the end-result. Having a dedicated server to solve calculations and keep the process running smoothly is vital to E2M Technologies' ability to meet customer demand with high quality work. Their server is equipped with a Simcenter™ Nastran® enterprise solver, enabling them to queue and solve analyses without slowing workstations and continue to keep the workflow moving at a rapid pace.

"By having a dedicated server, we can perform pre-post tasks on our own workstations while the server solves in parallel," says Wever. "Not having to slow down these workstations enables us to achieve maximum efficiency."

**"As products continue to evolve with more demanding components, the more important the digitalization of E2M Technologies in design and simulation becomes."**

Rabih al Zaher  
Group Leader Mechanical  
Department  
E2M Technologies



### Solutions/Services

Simcenter 3D  
[siemens.com/simcenter3d](https://www.siemens.com/simcenter3d)

Simcenter Nastran  
[siemens.com/plm/simcenter-nastran](https://www.siemens.com/plm/simcenter-nastran)

NX  
[siemens.com/nx](https://www.siemens.com/nx)

Teamcenter  
[siemens.com/teamcenter](https://www.siemens.com/teamcenter)

### Customer's primary business

E2M Technologies makes motion systems for simulators for use in aerospace, ground vehicle transportation, entertainment and testing.  
[e2mtechnologies.eu](https://www.e2mtechnologies.eu)

### Customer location

Amsterdam  
Netherlands

### Solution Provider Partner

cards PLM Solutions

### Ability to adapt

"Different FEA models with different levels of detail are used throughout the design process to guide the designer towards an optimal solution in terms of performance and production costs," says Wever. "From feasibility studies in early concept phase, to detail analyses for production approval."

Changing physical prototypes in the middle of manufacturing can lead to high costs and delayed delivery. With Teamcenter, E2M Technologies can communicate easily and effectively to keep a project on schedule.

"If they suddenly decide, 'We want to have a small change there,' E2M Technologies is capable of immediately implementing those changes without affecting deadlines," says Wever. "This is possible using Simcenter combined with Teamcenter software. We can quickly communicate with our design engineers. As model changes are sent back to our department, we can update the models and verify where stresses are still acceptable.

"The strength of our company is being flexible to design changes at any stage of the project and still meet the deadline. We can really do that with the help of Simcenter 3D and Simcenter Nastran."

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Jack Wever  
Senior Structural Engineer  
E2M Technologies

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