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Case Study 1
How General Motors is Collaborating Online

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Why did it GM over four years to design new car?

A lot of reasons contributed to the lengthy process of design a new car by General Motors. The reasons are as follow:

- Frontal Crash Test

  Each model that is designed needs to go through a frontal crash test. The frontal crash test requires a prototype that cost 1 million dollar to be crashed. The data collected from the first crash is then used to create a second prototype. The second prototype is then crashed again and data is collected again. This process is repeated as many as 70 times for each new model. The process of creating the car prototype and crashing takes up a lot of time which contributed to the lengthy process of designing a new car model.

- The process of sharing the information

  The information regarding a new design and the information collected from the frontal crash test needs to be shared out to the other designers and engineers who are located in hundreds of division and department at 14 General Motors design labs. These 14 labs are located in different countries. Apart from that communication and collaboration between the design engineers and more then 1000 suppliers also contributed to the lengthy process.

Who collaborated with whom to reduce the time-to-market?

- Designers and Engineers

  Through the system known as Unigraphic, internal and external designers and engineer that are hooked up with the EDS software are able to share document online

allowing them to collaborate with each other. Apart from the Unigraphics system, collaborative tools / software's like Microsoft Netmeeting and EDS eVis also allow the end users to collaborate online enhancing teamwork and at the same time changing the vehicle-review process.

- Software Programmers, Engineers, Designers and Digital Sculptor

Inside the GM's Advanced Design Study, a team of software programmers, engineers, designers and digital sculptor sits side by side working with each other on every aspects of the vehicle that is projected on to the screen.

- Executives, Designers and Managers

The virtual reality room in the GM building is digitally linked to all the 14 GM engineering centers via the corporate internet. This allows the executives and designers to collaborate with their foreign counterpart on the reviews or feedbacks provided by the managers.

- GM and Suppliers

Collaboration between GM and its suppliers also take place. Take for example Johnson Control. Data specification is sent electronically to the vendor product data system that is linked to the Unigraphic system allowing the vendor and GM to have joint searching capability and flexibility in designing, tooling and testing in real time. This collaboration has expedite the process and also have reduce the cost by more then 10 percent.

- Designers and Test Engineers

Designers and test engineers collaborate with each other on the frontal crash test. Here cars are crashed electronically through simulated instead of physically, reducing the time-to-market and also reducing the cost tremendously.

How has IT helped to cut the time-to-market?

It has helped GM to cut the time to market through:

- Allowing information to be shared online

Before IT was introduced in GM, the process of sharing information is a very lengthy process. The fact that the designers and engineers were located in different departments across different countries further complicated the process of sharing information. IT has helped cut short the time to market by allowing information to be shared across all the department online.

The system GM uses is centered on a Computer Aided Design (CAD) program from GM's subsidiary company, EDS. Known as Unigraphics, the system allows 3-D design documents to be shared online by both the internal and external designers and engineers who is hooked up with the EDS software. Apart from the unigraphics system, web conferencing tools like Microsoft Netmeeting and EDS's Evis also helped to convey message across the 14 GM design labs and also with its suppliers.

- Allows collaboration to take place

One of the greatest advantage or benefits IT has brought to the General Motor is it allows collaboration to take place. Previously before IT was introduced, collaboration between the engineers and designers or among other parties is deem impossible or difficult as information cannot be shared and also due to the fact that some of the

parties are located across the nation or in other plants. Now using the unigraphic system as a portal any related parties that is logged in to the system is able to communicate and collaborate with each other real time. Even the suppliers who are hooked up into the unigraphic system are able to collaborate with their GM counterpart to design, perform tooling and testing in real time

- 3 Dimensional View of vehicle and Simulation ability

Through the innovation of IT, designers and engineers are able to have a 3 dimensional projection of the vehicle in progress allowing them to be able to examine the vehicle and to dissect whatever potential problems that may arises. This 3 dimensional projection of the vehicle is projected onto a 20 – foot "power walls" wrap around on of the section in the Advanced Design Studio. The simulation ability on the other hand allows the GM managers to experience the feelings of driving the vehicle virtually. With this the managers are able to provide useful feedbacks that can be use to improve the prototype. The simulation ability also allow GM to crash the cars electronically instead of doing it physically.