

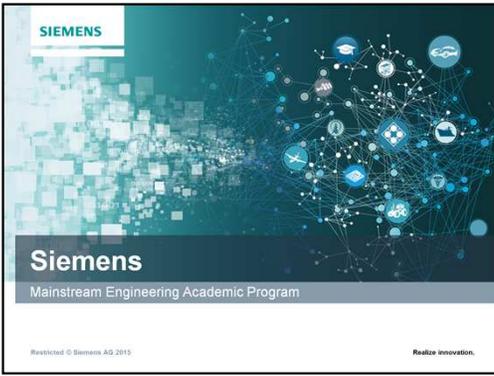
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Mainstream Engineering Academic Program

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Realize innovation.

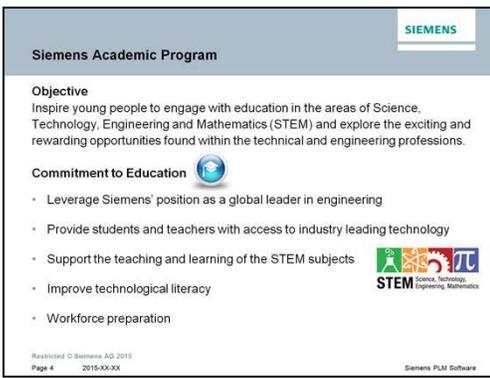




Siemens first and foremost is an engineering company, our success is built on industry leading scientific, technical and medical research and the development of world class technologies, products, and software. For more than **165 years** Siemens has been pushing the boundaries of engineering and manufacturing technologies.

As a global leader in energy, healthcare, industry, infrastructure technologies, and PLM software, Siemens has proven expertise to help companies be successful in today's global market- while preparing the next generation of engineers for future technological challenges.

With over 290 major production and manufacturing facilities worldwide, ***Siemens understands and addresses the challenges faced by engineering companies today.*** At Siemens we design, manufacture, sell, and maintain our products and solutions to a global audience.



Our commitment to education builds on, and leverages our unique position as a global leader in engineering.

We provide both students and teachers with access to industry leading technology including Solid Edge and Femap

We're focused on supporting the teaching and learning of the STEM subjects, Science – Technology – Engineering – and Mathematics

We work to help improve technological literacy at all levels of education; vital in today's ever-increasing technology driven world

And we work to help better prepare students for entering the workforce with the key skills required by industry

Joined-up thinking: industry and academia SIEMENS

Meeting the needs of industry

- Addressing the skills shortage
- STEM workforce: vital for innovation and growth



We've developed a 'joined-up' approach; working in partnership with industry and academia to support the teaching and learning of the STEM subjects at all levels of education, leveraging Siemens own engineering, scientific, and technical expertise and that of our customers and partners, both in industry and academia.

As a global engineering company Siemens knows only too well the urgent need to address the skills shortage of engineers, technicians, and scientists and the importance of a well educated STEM workforce equipped with modern, industry-relevant skills required to enable and drive growth and innovation

Joined-up thinking: industry and academia

Meeting the needs of industry

- Addressing the skills shortage
- STEM workforce: vital for innovation and growth



The talent pipe-line

- **Strategically important to all companies**
- Supply of talented and qualified graduates
 - All levels of education



The talent pipe-line is of strategic importance to all companies, in all industries, both large and small. We need talented and qualified graduates, at all levels of education, if we're to remain competitive and able to meet the challenges of the future.

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Joined-up thinking: industry and academia

Meeting the needs of industry

- Addressing the skills shortage
- STEM workforce: vital for innovation and growth

The talent pipe-line

- **Strategically important to all companies**
- Supply of talented and qualified graduates
- All levels of education

Siemens Academic Programme

- Building links between industry and academia
- Working in partnership to build the network
- Strategic, long-term investment
- Industry-leading technology and industry-relevant projects

The Siemens Academic Program is taking a joined-up approach and working to build links between industry and academia, working in partnership to build a mutually beneficial network.

As shown in this diagram, a student's path through education can take many different routes.

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Joined-up thinking: industry and academia

Meeting the needs of industry

- Addressing the skills shortage
- STEM workforce: vital for innovation and growth



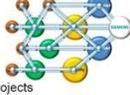
The talent pipe-line

- **Strategically important to all companies**
- Supply of talented and qualified graduates
- All levels of education



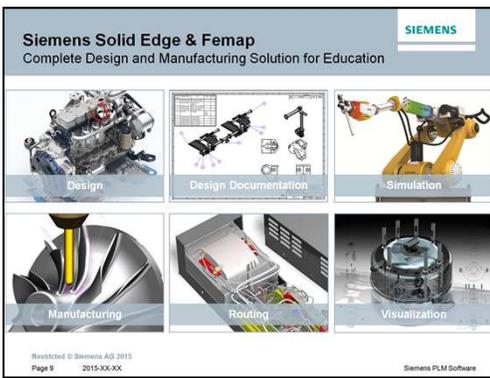
Siemens Academic Programme

- Building links between industry and academia
- Working in partnership to build the network
- Strategic, long-term investment
- Industry-leading technology and industry-relevant projects



Siemens is working in partnership to engage both educators and students at all levels of education, leveraging our own industry-leading experience and expertise but also that of our customers and partners.

This is a strategic and long-term investment with Siemens providing industry-leading technology and complemented by our focused support of industry-relevant projects



Our comprehensive academic program provides students, educators and academic institutions with Siemens' **industry-leading engineering and design software** enabling students to gain real-world, industry relevant skills and experience, **supporting, enhancing, and adding value to their education and future career aspirations.**

Our unique advantage, best in class solutions...

Design with Speed

- Synchronous technology and World Class Drafting

Simulation to validate your design early

- Solid Edge Simulation to cover all aspects of CAE. Very easy to learn and use.

Systems routing

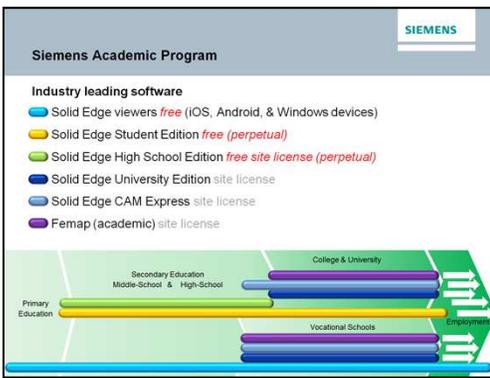
- Piping and wiring

Manufacturing

- Integrated CAD/CAM, including Siemens CAM Express and 3rd party applications such as CAMworks for Solid Edge.

Visualization

- Keyshot bundled, animation, Technical Publication



The Siemens Academic Program delivers industry leading software to schools, colleges, vocational schools and Universities.

The Solid Edge viewers are available free to all levels of education and industry for the iPad, iPhone, Android phones & tablets, Windows laptops & Surface Pro tablets.

Solid Edge Student Edition is available **free** to **all** students (regardless of age) and provides the student with a **perpetual** license.

Solid Edge High School Edition is available to **all** secondary schools for **free** and provides the school with a **perpetual** academic **site** license that allows the school to install and use Solid Edge on as many computers as required.

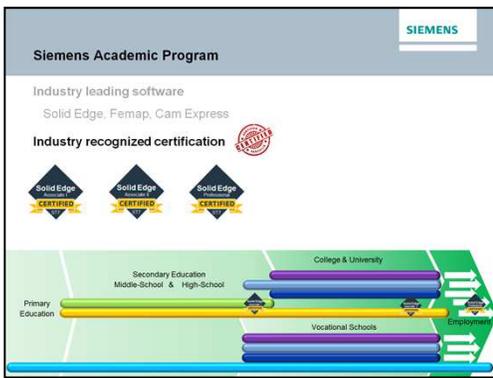
Solid Edge University Edition is available to all post-secondary academic institutions including vocational schools, colleges, and universities, providing an academic site license allowing the installation and use of Solid Edge on as many computers as required for academic use.

Solid Edge CAM Express provides an academic **site** license of **industry proven** CAM technology including 2½ axis, 3 axis Mill-turn, and advanced 5 axis. There are also other integrated 3rd party CAM applications such as CAMworks for Solid Edge.

Femap delivers industry leading analysis software and is available to all post-secondary academic institutions including vocational schools, colleges, and universities, providing an academic site license allowing the installation and use of Femap on as many computers as required for academic use.

By using Siemens software students are better prepared to enter employment with industry-relevant skills

It's important to note that our academic software is at the same level of release as our commercial software giving students access to the latest technology.

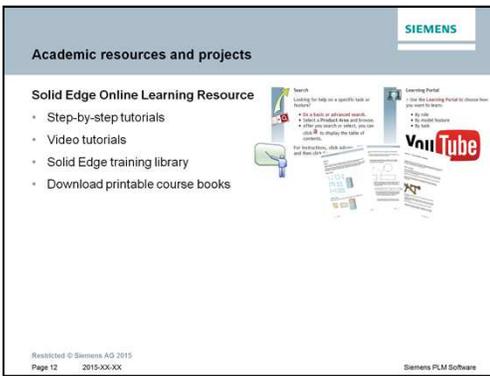


The Siemens Academic Program also provides students with the opportunity to obtain industry recognized certification.

Associate level 1 is aimed at upper High School students

Associate level 2 is for Students towards the end of their formal education and preparing to enter industry

The Professional certification is for engineers and designers with industry experience in using Solid Edge.



The Siemens Academic Program also provides a range of material, resources and projects aimed at supporting the teaching and learning of the STEM subjects with an emphasis on engineering and design and applied learning using Solid Edge.

Our comprehensive Online Learning Resource includes step-by-step tutorials covering all functionality within Solid Edge

There are many video tutorials. Solid Edge also includes the ability to generate YouTube videos directly in Solid Edge allowing educators to produce their own video tutorials quickly and easily.

There's also a comprehensive library of Solid Edge training material...

...including downloadable and printable course books.

Academic resources and projects

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Solid Edge Online Learning Resource

- Step-by-step tutorials
- Video tutorials
- Solid Edge training library
- Download printable course books

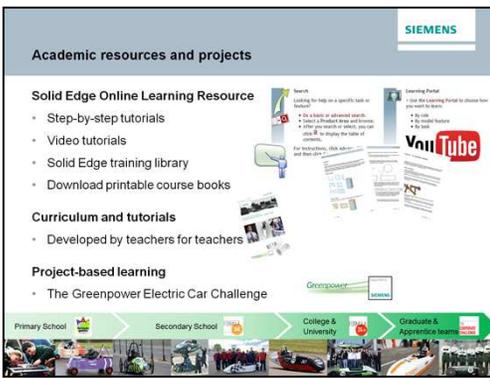
Curriculum and tutorials

- Developed by teachers for teachers



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There is also a growing range of curriculum and tutorials, written **by** teachers **for** teachers



Siemens also supports project-based learning via its partnership with the Greenpower Electric Car Challenge.

The Greenpower Challenge is a team-based project where student design and build a single seat electric car and then race against other teams. Greenpower has categories covering the entire range of education providing a scalable and accessible project suitable for all learning abilities and giving students real hands-on experience in design and engineering and supporting their STEM education.

Note to presenter: More information on the Greenpower Challenge and Siemens' involvement is available in a separate overview presentation

Summary: Siemens Academic Program

Aims and objectives

- Support the teaching and learning of the STEM subjects
- Build the talent pipe-line

Siemens strategic and long-term commitment

- Building a network engagement
- Industry and academia (joined-up thinking)

Siemens industry leading technology

- Solid Edge, Femap, CAM Express

Comprehensive range of resources and projects

- Online Learning resource
- Curriculum & tutorials: developed by teachers for teachers
- Project-based learning: Greenpower Challenge

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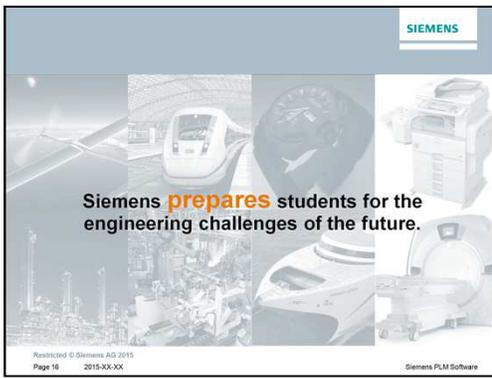




This short presentation has provided an overview of the Siemens Solid Edge Academic Program, its aims and objectives, and the need to support the teaching and learning of the STEM subjects and help build a sustainable talent pipe-line

The strategic and long-term commitment to build a mutually beneficial network with industry and academia

Providing educators and students with access to Siemens' industry leading technology and a comprehensive range of resources including curriculum and tutorials and world class project-based learning..



The Siemens Academic Program helps prepare students for an exciting career in the engineering and design industries and is helping address the skills shortage for our customers enabling them to meet the engineering challenges of the future.

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Siemens: Industry leading technology

Synchronous Technology

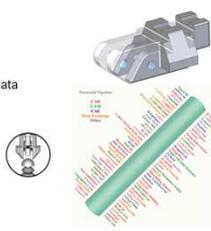
- Freedom from history
- Faster learning curve
- Faster design/idea capture
- Make parametric changes to imported data

Siemens component technology

- Parasolid
- D-Cubed

Open

- File open – market leading 'openness'
- Import/Export – confidence and flexibility working with various file types



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Optional slide

Note to the Presenter: This slide should only be used if applicable to the audience to provide an overview of the benefits Siemens' industry leading technology can bring to an academic user/account. Any detailed questions on Solid Edge or Femap functionality should be addressed in a more product focused and relevant presentation.

Siemens is recognised for it's focus on innovation across it's entire portfolio and delivering the value and benefits of this technology leadership to it's customers.

Siemens has revolutionised the world of product-development, design and engineering with the development and introduction of **Synchronous Technology**. The benefits of this technology and industry leadership include...

Freedom from History.

Parametric, history-based solid modelling was introduced in 1988 (27 years ago) and quickly became a staple technology within CAD software. It allowed users to quickly and easily modify **existing** dimensions of **selected** features and then update the model by regenerating each and every feature in turn following strict and inflexible parent-child relationships referred to as the 'feature history' or 'history-tree'. To this day the shouts of frustration and despair can be heard from users still using this technology when they encounter the all too often 'history- regeneration failures'.

Synchronous Technology was developed by Siemens and introduced into Solid Edge in 2008; heralding in a new era of modern industry-leading modelling technology.

Imitation is the most sincere form of flattery; testament to this is the frantic efforts of other CAD vendors to develop similar technologies. However, thanks to Siemens' technology leadership Educators and Students can take full advantage of Synchronous Technology at the core of Solid Edge.

Faster learning curve

Synchronous Technology enables Educators and Students to focus on teaching and learning design and engineering without wasting time learning how to wrestle the parametric history or develop complex modelling strategies to capture their ideas and achieve the desired result.

Faster design/idea capture – focus on the design not the CAD system

Design creativity and innovation has all too often been a battle between the engineer and parametric history.

Synchronous Technology from Siemens enables Designers, Engineers, and Students to capture, explore, and develop their ideas quickly allowing them to focus on the 'design' and not the CAD system and the frustrating complexities of an inflexible feature history.

Synchronous Technology has removed the fear of working with data imported from other CAD systems. Within Solid Edge students can easily make **parametric changes** to models imported from traditional history-based CAD systems

Siemens component technology

Parasolid is the world's most advanced, industry proven modelling kernel and is **at the core of Solid Edge**. Developed by Siemens, Parasolid is also used by many of the other CAD, CAE, CNC, and CAD data transfer products on the market today, including Solidworks, Onshape, GrabCad, Edgecam, IronCAD, Delcam, ANSYS, and MoldFlow to name but a few. This level industry superiority is thanks to Parasolid's widespread industry acceptance, superior modelling and innovation, unsurpassed interoperability.

D-Cubed is yet another industry leading component technology developed by Siemens and core technology within Solid Edge. D-Cubed technology is also licensed to many other CAD products including Autodesk Inventor, CATIA, Solidworks, Creo Elements (formerly known as Pro/ENGINEER), Onshape, ANSYS, Delcam, and iCAD to name but just a few. D-Cubed technology provides geometric constraint solving, parametric sketching, part and assembly design, motion simulation, collision detection, clearance measurement and hidden line visualization.

So what does this industry leadership in both product and component technology mean for Siemens Solid Edge users?

Confidence and market leading 'openness'

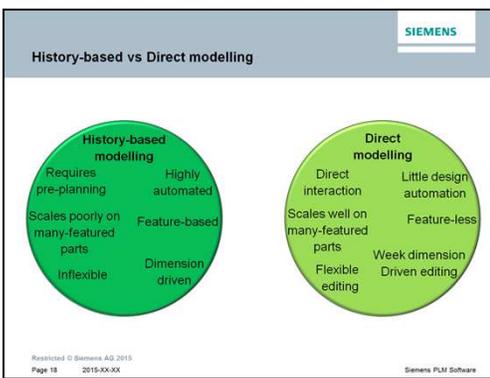
Solid Edge users can work productively with data from other CAD products. For example; users can simply **open** a Solidworks file and make parametric modifications to the imported model.

Our academic software provides unparalleled import/export formats including;

Import - DXF, DWG, STL, Solidworks (part & assembly), Pro/ENGINEER (part & assembly), IGES, STEP, Parasolid

Export – DXF, DWG, STL, Parasolid, CATIA V4 & V5, JT, ACIS, IGES, STEP, XML, XGL, KeyShot, Mobile Viewer format, Adobe Acrobat 3D, and PDF

It is also important to know that Siemens Solid Edge academic software is at the same release as it's commercial version, unlike other CAD vendors who ship older versions to their academic users.



Optional slide

Note to the presenter: this slide should only be used if applicable to the audience. This slide is intended to provide an overview explanation of Synchronous Technology and the benefits over History-based modellers and Direct-modellers.

To help explain the benefits of Siemens Synchronous Technology we can look at how ‘history-based’ modelling compares to ‘direct-modelling’.

History based modelling provides a highly automated approach.

Which requires a level of planning often referred to as a ‘modelling strategy’ where the order in which the features are created is defined.

The model is created from features such as extrudes, sweeps, rounds, etc., with each feature added to the history obeying a parent-child relationship with previously created features.

This approach doesn’t scale well in parts contain many features.

Each feature is driven by either dimensions or parameters that can be easily changed to modify the related aspects of the feature, i.e. the diameter of a cylinder.

However this approach is limited in terms of flexibility

Now lets look at ‘Direct modelling’

As the name suggests you have direct interaction with the model, for example; you can drag faces around
But this manual approach has little or no automation

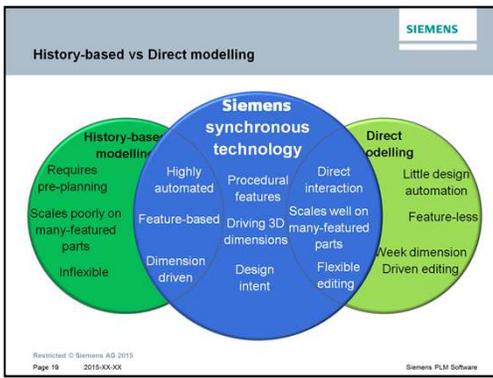
Direct modelling scales well for large, many-featured models

But there is no feature list

This does facility very flexible editing

But has week dimension-driven editing

So as you can see from this very introductory comparison, each modelling approach has its plus and minus points.



Optional slide

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Now lets look at how Siemens synchronous technology is changing the way Designers and Engineers create products.

Click 14

Synchronous technology combines the benefits of both history-based **and** direct modelling while addressing the inherent shortfalls.

For more information**Web links**

- Solid Edge Academic Program **Educator** page
http://www.plm.automation.siemens.com/en_us/academic/resources/solid-edge/educators/index.shtml
- Solid Edge Academic Program **Student** page
http://www.plm.automation.siemens.com/en_us/academic/resources/solid-edge/index.shtml
- Siemens PLM Greenpower page www.siemens.com/plm/academic/greenpower

Solid Edge community**For more information please contact one or more of the following**

- Americas - solidedgeacademic-am.plm@siemens.com
- Asia Pacific - solidedgeacademic-ap.plm@siemens.com
- Europe, Middle East, & Africa - solidedgeacademic-emea.plm@siemens.com

Video showing a few user examples <https://www.youtube.com/watch?v=552wXSL4BwI&list=PL6c9d3a8200e417a74b0c740d>