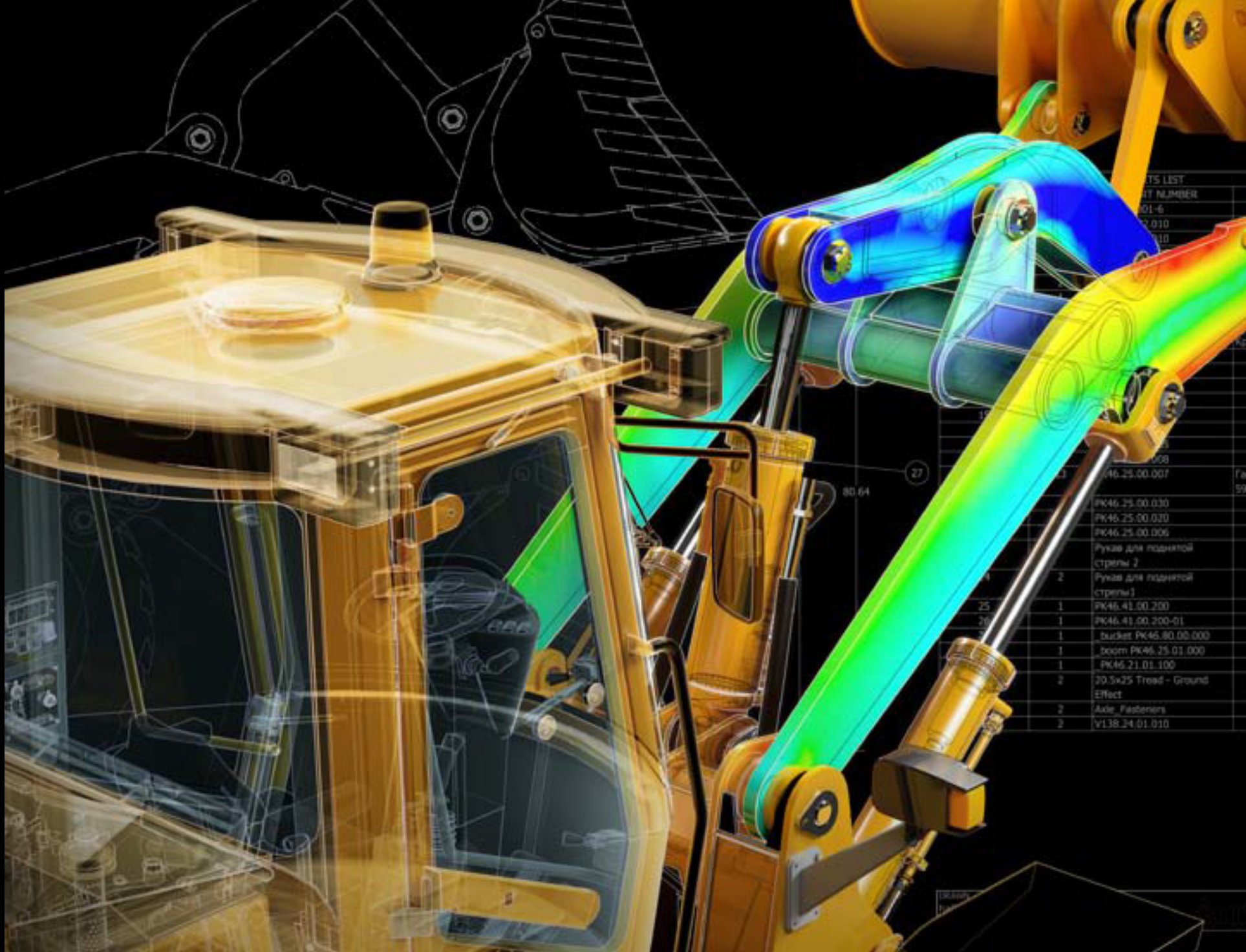


# Autodesk Inventor Certified User Skills



Rendering of a front loader with an engineering drawing underlay and finite element analysis results. Image courtesy of Engineering Center LTD, Russia



AutoCAD® Certified User and Autodesk Inventor® Certified User certifications align both academic and industry requirements into one attainable certification specifically designed for students. The exams combine multiple-choice and performance-based exam questions to ensure students can effectively use Autodesk software.

Autodesk Certified User certification confirms students have the skills necessary to continue their design careers—whether they attend college, enter the workforce or work toward additional levels of industry certification after graduation.

By partnering with Certiport, the leading provider of industry certification exams, schools become Certiport® Testing Centers, provide Autodesk certification exams in their classrooms and certify student design software skills with recognized, industry certifications. Classroom license options allow schools to conduct unlimited online testing for an affordable annual fee that simplifies budgeting by eliminating per-test costs. To learn more visit [www.certiport.com/autodesk](http://www.certiport.com/autodesk) or sign-up to become a Certiport Center at [www.certiport.com/go](http://www.certiport.com/go). Contact Certiport at [autodeskinfo@certiport.com](mailto:autodeskinfo@certiport.com).

Welcome to the *Autodesk® Inventor® Certified User Digital Skills*. This document was designed to help educators and educational institutions teach Autodesk® Inventor® software skills. Created using valuable input from Project Lead the Way and other respected educators and designers, it sets forth important skill standards for developing a high-quality user certification exam and curriculum resources.

The Inventor Certified User Skills serves to standardize the core competencies for fundamental -level instruction with Autodesk Inventor for a two-semester class and provides a content framework and reference guide for the Autodesk® Inventor Certified User exam.

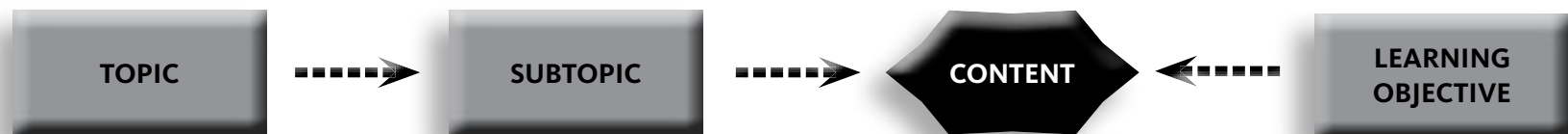


**TIP:** Although this document is designed to facilitate teacher-led courses and lessons, it may also be referenced for self-paced learning through the use of the Autodesk Education Secondary Curriculum and the Autodesk® Inventor® Certified User Digital Study Packet.

### Using This Document

This easy-to-read document lists industry-specific topics pertaining to a function or feature set of Inventor software. Topics are organized into three substructures logically sequenced for classroom presentation:

- **Topic:** A standard functional subject area and/or feature set available in Inventor software.  
Example: Sketching
- **Subtopic:** A subtopic provides more detail on the topics and what the topics support.  
Example: 2D Sketching
- **Content:** The content provides more detail about the subtopic and what should be taught and learned.  
Example: Define a sketch plane.
- **Learning Objective:** The learning objective exemplifies what the student is expected to understand.  
Example: Plan and create sketches.



## Autodesk Inventor Certified User Digital Study Packet

The Autodesk Inventor Certified User Digital Study Packet is a digital learning resource that provides students with a library of short videos based on the Autodesk Inventor Certified User Digital Study Packet. The study packet covers the basic techniques required to become familiar with the software and get hands-on quickly.



**TIP:** Teachers can leverage the study packets in conjunction with the Autodesk Education Secondary Curriculum or their own curriculum to help their students build their software skills and prepare for the certification exam. The Inventor Certified User Digital Study Packet will be available in 2011.

## Autodesk Education Secondary Curriculum

The Autodesk Education Secondary Curriculum provides teachers and students with a highly visual story-based curriculum created to promote design innovation and creative problem-solving through science, technology, engineering, arts, and math (STEAM). The curriculum is structured as a framework for learning software through project-based content based on engaging real-world industry projects that build gradually in difficulty, offering students a chance to achieve small successes as they build their technical skills. The Autodesk Education Secondary Curriculum will be available in 2011.



**TIP:** Using the Inventor Certified User Skills as benchmarks, teachers can measure a student's progress towards certification as they work through the skills-building projects offered in the Autodesk Education Secondary Curriculum.

## Feedback

We welcome your feedback on the *Inventor Certified User Skills*. Please email us at [secondarycurriculum@autodesk.com](mailto:secondarycurriculum@autodesk.com).



# Autodesk Inventor Certified User Skills



Image courtesy of 42 Surfboards

Industry Specific Topic	Sub-Topic	Content	Examples of Learning Objective	Reference
<b>User Interface</b>				
<b>Primary Environments</b>				
		Four environments: Parts, Assemblies, Presentations, and Drawings	Name the four primary environments.	<a href="#">Autodesk Inventor Environments</a>
<b>UI Navigation/Interaction</b>				
	Ribbon > Panels > Tabs		Name the key features of the user-interface.	<a href="#">Ribbon</a>
	Browser		Describe the listing in the browser for an assembly file.	<a href="#">Browser</a>
	Context (right-click menus)			<a href="#">Context Menus</a>
	Menus			
	Quick Access toolbar		Demonstrate how to add Redo to the Quick Access Toolbar	
<b>Graphics Window Display</b>				
	Application Options > Colors		Describe the steps required to change the background color of the graphics window.	<a href="#">Application Options</a>
	Application Options > Display			<a href="#">Application Options</a>
	Origin 3D Indicator		Demonstrate how to turn on/off the 3D Indicator	<a href="#">Application Options</a>
	Ribbon		Name the key elements of the ribbon.	<a href="#">Display and Organize the Ribbon</a>
<b>Navigation Control</b>				
	ViewCube		Describe the functionality of the ViewCube.	<a href="#">View Cube</a>
	Navigation bar		Describe the Navigation Bar	
	Function keys: F2 through F6 Pan (F2) Zoom (F3) Free Orbit (F4) Previous View (F5) Home View (F6)		Name the navigation tools started by the F2 to F6 shortcut keys.	Keystroke reference

Industry Specific Topic	Sub-Topic	Content	Examples of Learning Objective	Reference
<b>File Management</b>				
	<b>Project Files</b>			
		IPJ file extension	Name the file extension of a project file.	<a href="#">Introduction to Projects</a>
		Type of project	List the types of project files that can be created.	<a href="#">What are Projects?</a>
		Workspace	Define the term Workspace.	<a href="#">Understand Workspaces</a>
		Libraries	List the types of files stored in a library.	<a href="#">Use Paths in Project Files</a>
		Folder Options	List the three categories in Folder Options.	<a href="#">Folder Options</a>
		Active project	Describe how to set the active project.	<a href="#">Select a Project</a>
<b>Sketches</b>				
	<b>Creating 2D Sketches</b>			
		IPT file extension	Name the file extension of a part file.	Autodesk Inventor file types
		Templates	Describe the purpose of a template file in the sketch environment.	Part templates
		Coordinate system	Describe the function of the 3D Coordinate System icon.	Application Options > Display
		Sketch plane	Define a sketch plane.	Plan and create sketches
		Browser display	Label the entries on the browser.	Browser Icon Reference > Sketch

Industry Specific Topic	Sub-Topic	Content	Examples of Learning Objective	Reference
<b>Sketches</b>				
	<b>Draw Tools</b>			
		Line	Complete a 2D sketch using the appropriate draw tools.	<a href="#">Lines</a>
		Arc		<a href="#">Arcs</a>
		Circle		Circle command
		Rectangle		Rectangle command
		Point		Point command
		Fillet		Lines > Filleting
		Polygon		Polygons > Creating
	<b>Sketch Constraints</b>			
		Geometric: Coincident, colinear, concentric, fixed, parallel, perpendicular, horizontal, vertical, tangent, symmetric, and equal.	List the available geometric constraints.	<a href="#">Constraint Tools</a>
		Dimensional: General and automatic dimensions	Describe parametric dimensions.	<a href="#">Sketch Dimensions</a>
		Show constraints	Describe how to control the visibility of constraints.	<a href="#">View and Delete</a>
		Fully constrained sketches	Describe the degrees of freedom on a sketch and how they can be displayed.	Fully Constrained Sketches
	<b>Pattern Sketches</b>			
		Rectangular, circular, and rotate.	Demonstrate how to pattern a sketch.	Sketch patterns



Industry Specific Topic	Sub-Topic	Content	Examples of Learning Objective	Reference
<b>Sketches</b>				
<b>Modify Sketches</b>				
		Move	Demonstrate how to move a sketch.	<a href="#">Move Sketch Geometry</a>
		Copy	Demonstrate how to copy a sketch.	Sketches > Copying
		Rotate	Demonstrate how to rotate a sketch.	<a href="#">Rotate Sketch Geometry</a>
		Trim	Demonstrate how to trim a sketch.	<a href="#">Trim 2D Curves</a>
		Extend	Demonstrate how to extend a sketch.	<a href="#">Extend 2D Curves</a>
		Offset	Demonstrate how to offset a sketch.	<a href="#">Offset Ellipse</a>
<b>Format Sketches</b>				
		Modify linetype and driven dimensions.	Describe how to format sketch linetypes.	Linetypes > Sketch Geometry and
		Driven dimensions.	Discuss over constrained sketches.	<a href="#">Driven dimension</a>
<b>Sketch Doctor</b>				
		Fix errors in sketches	Examine a sketch for errors.	Sketch Doctor
<b>Shared Sketches</b>				
		Sharing sketch geometry	Describe the function of a shared sketch.	<a href="#">Share sketch</a>
<b>Sketch Parameters</b>				
		Assign parameters	Describe how parameters define the size and shape of features	Parameters > About

Industry Specific Topic	Sub-Topic	Content	Examples of Learning Objective	Reference
<b>Parts</b>				
	<b>Creating Parts</b>			
		IPT file extension	Name the file extension of a part file.	Autodesk Inventor file types
		Part browser display	Label the entries on the browser.	Browser > Part browser
		Base features	Define a base feature.	Glossary > Base Feature
		Unconsumed sketches	Define an unconsumed sketch.	Sketches > Consumed
		Sketched features > Extrude	Demonstrate how to create an extruded part	<a href="#">Extrude</a>
		Sketched features > Revolve	Demonstrate how to create an revolved part	<a href="#">Revolve</a>
		Sketched features > Sweep	Demonstrate how to create an lofted part	<a href="#">Sweep</a>
		Sketched features > Loft	Demonstrate how to create an lofted part	<a href="#">Create loft</a>
		Termination methods	Describe the termination options for a feature.	Termination > Features
		Placed features > Hole	Demonstrate how to create a hole feature	<a href="#">Hole</a>
		Placed features > Fillet	Demonstrate how to create a fillet feature	<a href="#">Fillet</a>
		Placed features > Chamfer	Demonstrate how to create a chamfer feature	<a href="#">Chamfer</a>
		Placed features > Shell	Demonstrate how to create a shell feature	<a href="#">Create shell</a>
		Placed features > Thread	Demonstrate how to create a thread feature	Threads > about
	<b>Work Features</b>			
		Work plane, point, and axis	Describe the use of work features in the part creation work flow.	Work features > about

Industry Specific Topic	Sub-Topic	Content	Examples of Learning Objective	Reference
<b>Parts</b>				
	<b>Pattern Features</b>			
		Rectangular	Demonstrate how to create a rectangular pattern	<a href="#">Rectangular</a>
		Circular	Demonstrate how to create a circular pattern	<a href="#">Circular</a>
		Mirror	Demonstrate how to mirror features	<a href="#">Mirror</a>
	<b>Part Properties</b>			
		iProperties: Summary, Project, and Physical tabs	Describe part properties and how they are applied.	Properties > iProperties
<b>Assemblies</b>				
	<b>Creating Assemblies</b>			
		IAM file extension	Name the file extension of an assembly file.	Autodesk Inventor file types
		Assembly browser display	Label the entries on the browser.	Browsers > assembly browser
		Degrees of freedom	Name the six degrees of freedom on a component.	<a href="#">Degrees of freedom</a>
		Place parts in an assembly	Demonstrate how to place a part in an assembly.	Placing > components in assemblies
		Grounded part	Discuss degrees of freedom and a grounded part.	Grounded components
		Assembly constraints	Demonstrate how to apply various assembly constraints.	<a href="#">Assemblies - Constraints</a>
		Top down, bottom-up, and middle-out design.	Describe the various assembly environment techniques.	Top-down design
		Create new part in-place	Demonstrate how to create a new part in the assembly environment.	Assemblies > creating parts in
		Place from Content Center	Demonstrate how to place a Content Center part in an assembly.	Content Center > placing parts

Industry Specific Topic	Sub-Topic	Content	Examples of Learning Objective	Reference
<b>Assemblies</b>				
	<b>Viewing Assemblies</b>			
		Representations	Label the entries on the browser.	Browsers > Representation browser
	<b>Animation Assemblies</b>			
		Drive Constraints	Demonstrate how to animate an assembly using drive constraints.	<a href="#">Drive constraint</a>
	<b>Adaptive Features, Parts, and Subassemblies</b>			
	Designate models as adaptive	Demonstrate how to make and use an adaptive part.	Adaptivity > about	
<b>Presentations</b>				
	<b>Creating Presentations</b>			
		IPN file extension	Name the file extension of a presentation file.	Autodesk Inventor file types
		Presentation browser display	Label the entries on the browser.	Browsers > presentation browser
		Uses for presentation views	Discuss the various uses of Presentation files.	Presentations > about
		Apply tweaks to parts	Demonstrate how to apply tweaks to a part.	<a href="#">Work with tweaks and trails</a>
		Display trails	Demonstrate how to apply trails to a part.	Trails > displaying
	Animating the view	Demonstrate how to animate an assembly.	<a href="#">Animate with an exploded view</a>	

Industry Specific Topic	Sub-Topic	Content	Examples of Learning Objective	Reference
<b>Drawings</b>				
	<b>Creating Drawings</b>			
		IDW file extension	Name the file extension of a drawing file.	Autodesk Inventor file types
		Drawing templates	Describe the use of template files.	Drawings > templates
		Drawing browser display	Label the entries on the browser.	Browsers > drawing browser
		Drawing Resources	Describe the content within Drawing Resources.	Drawings > templates
		Part drawings	Demonstrate how to create a part drawing.	<a href="#">Base view</a>
		Assembly drawings	Demonstrate how to create an assembly drawing.	<a href="#">Projected view</a>
		Annotation	Describe the various annotation options.	Annotations > drawing views and
		Balloons	Demonstrate how to add balloons to an assembly.	<a href="#">Projected view</a>
		Parts list	Demonstrate how to add balloons to an assembly.	<a href="#">Parts list</a>
<b>Sheet Metal</b>				
	<b>Creating Sheet Metal Parts</b>			
		IPT file extension	Name the file extension of a sheet metal part file.	Autodesk Inventor file types
		Sheet metal defaults	Discuss the use of sheet metal defaults.	Sheet Metal Default dialog box
		Create tools > Bend	Demonstrate the creation of a sheet metal bend	<a href="#">Bend</a>
		Create tools > Face	Demonstrate the creation of a sheet metal bend	<a href="#">Face</a>
		Create tools > Flange	Demonstrate the creation of a sheet metal bend	<a href="#">Flange</a>



Industry Specific Topic	Sub-Topic	Content	Examples of Learning Objective	Reference
<b>Sheet Metal</b>				
	<b>Modify Sheet Metal Parts</b>			
		Modify tools > Corner seam	Demonstrate the creation of a corner seam	<a href="#">Corner seam</a>
		Modify tools > Punch tools	Demonstrate the creation of a punch tool	Sheet Metal > Punch tool
		Modify tools > Cut	Demonstrate the creation of a cut across a bend	<a href="#">Cut across a bend</a>
	<b>Flat Pattern</b>			
		Create a flat pattern	Demonstrate how to create a flat pattern.	Sheet metal > flat pattern
		Using a flat pattern in a drawing	Demonstrate how to insert a flat pattern in a drawing.	Flat patterns > about
		Export a flat pattern	Demonstrate how to export a flat pattern.	Flat patterns > exporting
	<b>Visualization</b>			
	<b>Create Rendered Images</b>			
		Access the Inventor Studio environment	Describe the process to activate Inventor Studio.	Inventor Studio > Studio scene browser
		Create a new camera.	Demonstrate how to create a new camera.	Cameras > creating
		Render Image	Demonstrate how to create a rendered image.	Render Image dialog box
	<b>Animate an Assembly</b>			
		Create a new animation.	Demonstrate how to create a new animation.	Animations > about
		Animate a camera.	Demonstrate how to create an animation by animating a camera.	Cameras > animation settings
		Animate a constraint.	Demonstrate how to create an animation by animating a constraint.	Animate Constraints dialog box
		Animate a fade.	Demonstrate how to create an animation by animating a fade.	Animate Fade dialog box

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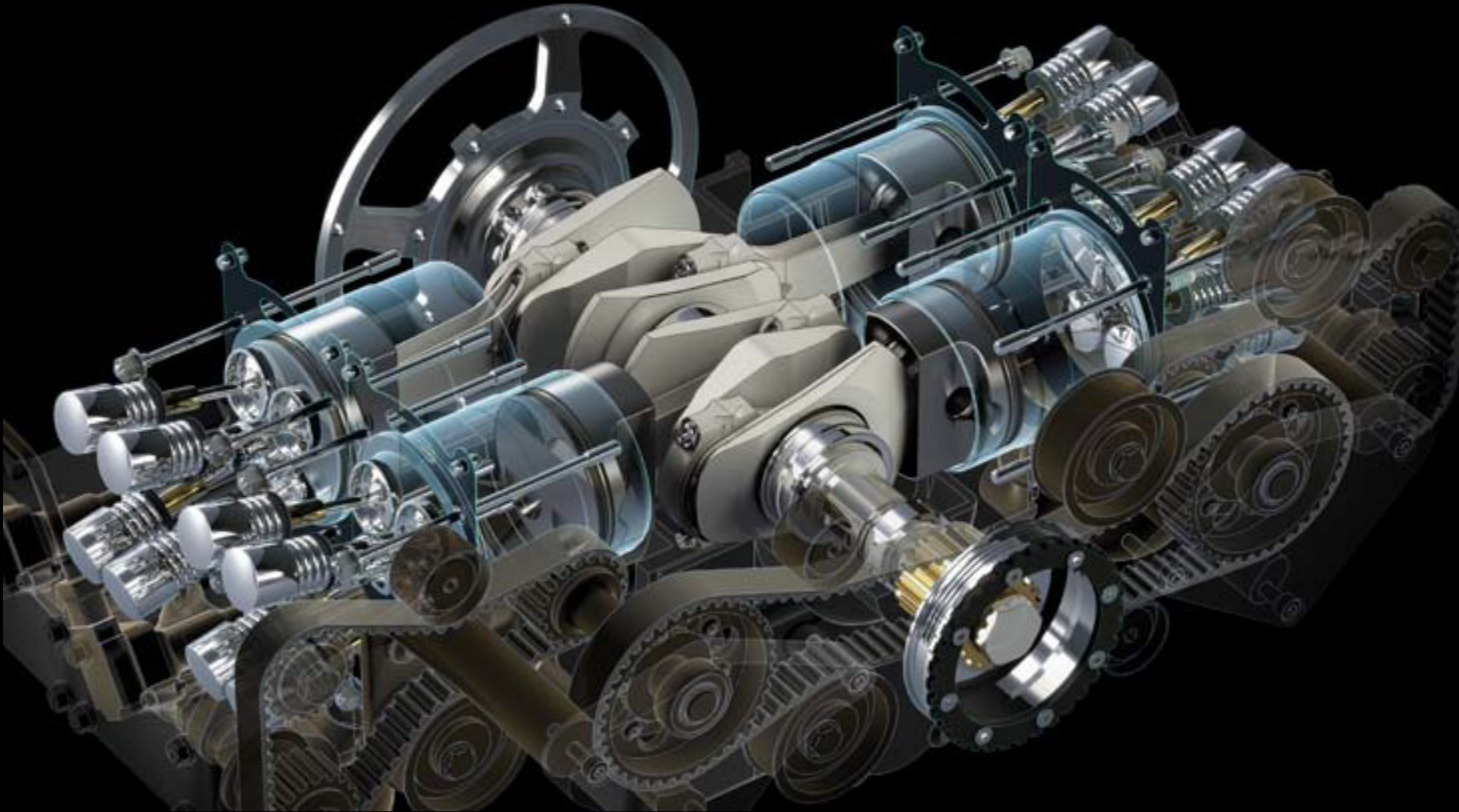
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Rendering of an engine highlighting the interrelation of components.