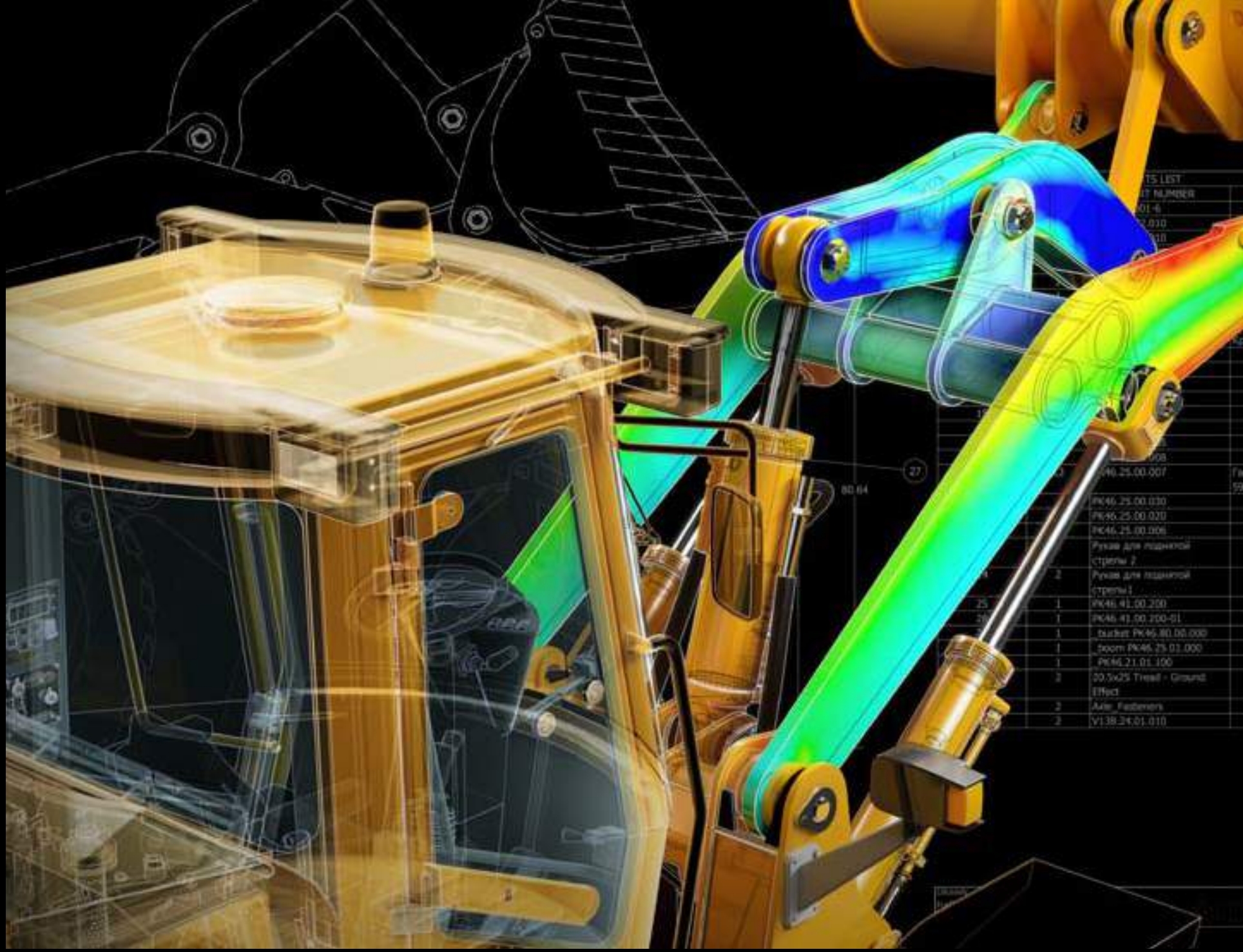
Autodesk Inventor Certified User Skills



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

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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 or sign-up to become a Certiport Center at www.certiport.com/go. Contact Certiport at autodeskinfo@certiport.com.

Introduction

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.

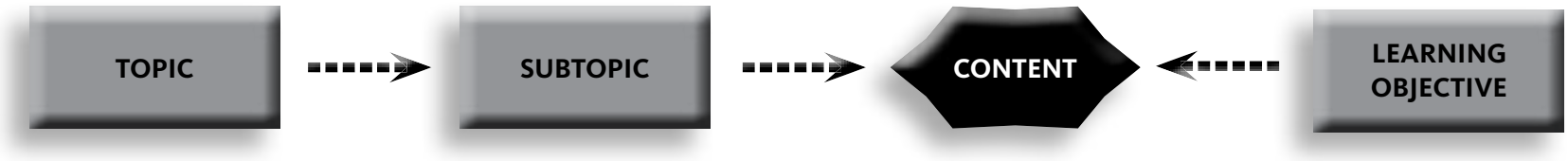
The Inventor Certified User Skills serves to standardize the core competencies for fundamental -level instruction with Autodesk Inventor for a two-semester class and provides a content framework and reference guide for the Autodesk® Inventor Certified User exam.

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.



Introduction

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*.

Autodesk Inventor Certified User Skills

Image courtesy of 42 Surfboards

Industry Specific Topic	Sub-Topic	Content	Examples of Learning Objective	Reference
User Interface				
	Primary Environments			
		Four environments: Parts, Assemblies, Presentations, and Drawings	Name the four primary environments.	Autodesk Inventor Environments
	UI Navigation/Interaction			
		Ribbon > Panels > Tabs	Name the key features of the user-interface.	Ribbon
		Browser	Describe the listing in the browser for an assembly file.	Browser
		Context (right-click menus)		Context Menus
		Menus		
		Quick Access toolbar	Demonstrate how to add Redo to the Quick Access Toolbar	
	Graphics Window Display			
		Application Options > Colors	Describe the steps required to change the background color of the graphics window.	Application Options
		Application Options > Display		Application Options
		Origin 3D Indicator	Demonstrate how to turn on/off the 3D Indicator	Application Options
		Ribbon	Name the key elements of the ribbon.	Display and Organize the Ribbon
	Navigation Control			
		ViewCube	Describe the functionality of the ViewCube.	View Cube
		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
File Management				
	Project Files			
		IPJ file extension	Name the file extension of a project file.	Introduction to Projects
		Type of project	List the types of project files that can be created.	What are Projects?
		Workspace	Define the term Workspace.	Understand Workspaces
		Libraries	List the types of files stored in a library.	Use Paths in Project Files
		Folder Options	List the three categories in Folder Options.	Folder Options
		Active project	Describe how to set the active project.	Select a Project
Sketches				
	Creating 2D Sketches			
		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
Sketches				
	Draw Tools			
		Line	Complete a 2D sketch using the appropriate draw tools.	Lines
		Arc		Arcs
		Circle		Circle command
		Rectangle		Rectangle command
		Point		Point command
		Fillet		Lines › Filleting
		Polygon		Polygons › Creating
	Sketch Constraints			
		Geometric: Coincident, colinear, concentric, fixed, parallel, perpendicular, horizontal, vertical, tangent, symmetric, and equal.	List the available geometric constraints.	Constraint Tools
		Dimensional: General and automatic dimensions	Describe parametric dimensions.	Sketch Dimensions
		Show constraints	Describe how to control the visibility of constraints.	View and Delete
		Fully constrained sketches	Describe the degrees of freedom on a sketch and how they can be displayed.	Fully Constrained Sketches
	Pattern Sketches			
		Rectangular, circular, and rotate.	Demonstrate how to pattern a sketch.	Sketch patterns

Industry Specific Topic	Sub-Topic	Content	Examples of Learning Objective	Reference
Sketches				
	Modify Sketches			
		Move	Demonstrate how to move a sketch.	Move Sketch Geometry
		Copy	Demonstrate how to copy a sketch.	Sketches › Copying
		Rotate	Demonstrate how to rotate a sketch.	Rotate Sketch Geometry
		Trim	Demonstrate how to trim a sketch.	Trim 2D Curves
		Extend	Demonstrate how to extend a sketch.	Extend 2D Curves
		Offset	Demonstrate how to offset a sketch.	Offset Ellipse
	Format Sketches			
		Modify linetype and driven dimensions.	Describe how to format sketch linetypes.	Linetypes › Sketch Geometry and
		Driven dimensions.	Discuss over constrained sketches.	Driven dimension
	Sketch Doctor			
		Fix errors in sketches	Examine a sketch for errors.	Sketch Doctor
	Shared Sketches			
		Sharing sketch geometry	Describe the function of a shared sketch.	Share sketch
	Sketch Parameters			
		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
Parts				
	Creating Parts			
		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	Extrude
		Sketched features › Revolve	Demonstrate how to create an revolved part	Revolve
		Sketched features › Sweep	Demonstrate how to create an lofted part	Sweep
		Sketched features › Loft	Demonstrate how to create an lofted part	Create loft
		Termination methods	Describe the termination options for a feature.	Termination › Features
		Placed features › Hole	Demonstrate how to create a hole feature	Hole
		Placed features › Fillet	Demonstrate how to create a fillet feature	Fillet
		Placed features › Chamfer	Demonstrate how to create a chamfer feature	Chamfer
		Placed features › Shell	Demonstrate how to create a shell feature	Create shell
		Placed features › Thread	Demonstrate how to create a thread feature	Threads › about
	Work Features			
		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
Parts				
	Pattern Features			
		Rectangular	Demonstrate how to create a rectangular pattern	Rectangular
		Circular	Demonstrate how to create a circular pattern	Circular
		Mirror	Demonstrate how to mirror features	Mirror
	Part Properties			
		iProperties: Summary, Project, and Physical tabs	Describe part properties and how they are applied.	Properties › iProperties
Assemblies				
	Creating Assemblies			
		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.	Degrees of freedom
		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.	Assemblies - Constraints
		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
Assemblies				
	Viewing Assemblies			
		Representations	Label the entries on the browser.	Browsers > Representation browser
	Animation Assemblies			
		Drive Constraints	Demonstrate how to animate an assembly using drive constraints.	Drive constraint
	Adaptive Features, Parts, and Subassemblies			
		Designate models as adaptive	Demonstrate how to make and use an adaptive part.	Adaptivity › about
Presentations				
	Creating Presentations			
		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.	Work with tweaks and trails
		Display trails	Demonstrate how to apply trails to a part.	Trails › displaying
		Animating the view	Demonstrate how to animate an assembly.	Animate with an exploded view

Industry Specific Topic	Sub-Topic	Content	Examples of Learning Objective	Reference
Drawings				
	Creating Drawings			
		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.	Base view
		Assembly drawings	Demonstrate how to create an assembly drawing.	Projected view
		Annotation	Describe the various annotation options.	Annotations › drawing views and
		Balloons	Demonstrate how to add balloons to an assembly.	Projected view
		Parts list	Demonstrate how to add balloons to an assembly.	Parts list
Sheet Metal				
	Creating Sheet Metal Parts			
		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	Bend
		Create tools › Face	Demonstrate the creation of a sheet metal bend	Face
		Create tools › Flange	Demonstrate the creation of a sheet metal bend	Flange

Industry Specific Topic	Sub-Topic	Content	Examples of Learning Objective	Reference
Sheet Metal				
	Modify Sheet Metal Parts			
		Modify tools > Corner seam	Demonstrate the creation of a corner seam	Corner seam
		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	Cut across a bend
	Flat Pattern			
		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
Visualization				
	Create Rendered Images			
		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
	Animate an Assembly			
		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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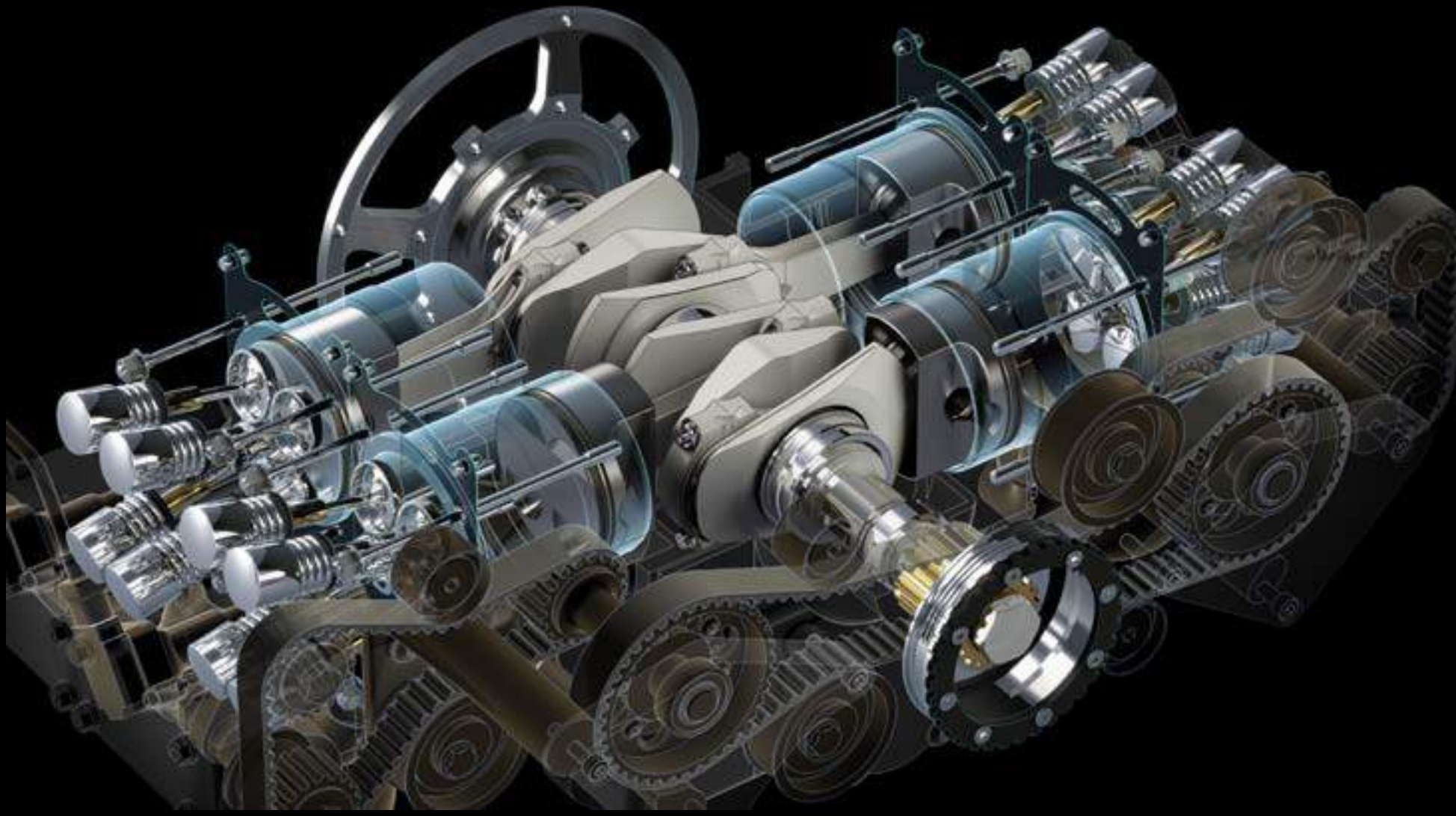

Rendering of an engine highlighting the interrelation of components.

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