

## Design drives success



Rendering of Cosmic Motors Galaxion 4000 Coupe concept car. Autodesk® Alias® Automotive and Autodesk® Alias® Surface software products were used in the design process. Image courtesy of Cosmic Motors, LLC.

# Exceptional Designers Demand Exceptional Tools

Creative designers demand the best of themselves, their craft and their tools. Autodesk® Alias® software powers your creative design and technical surfacing processes with innovative sketching, modelling and visualisation tools as well as advanced surfacing capabilities that help you to make your vision a reality in less time.

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### Unleash Creativity

Combine creativity and craftsmanship to capture inspirational ideas and forms using the powerful tools in Autodesk Alias software. By addressing the unique creative requirements of the [industrial design](#) workflow, Alias software enables you to iterate concepts rapidly and develop inspiring, ergonomic shapes that also meet functional requirements.

### Perfect Your Designs

Form, function and style all influence a consumer's choice of products. Alias software helps you to develop 3D form to achieve a balance between aesthetics and engineering. With highly advanced curve-based and direct modelling capabilities in a single software environment, Alias software offers the tools you need to create 3D models, refine design details and create high-quality production surfaces with speed, accuracy and control.

### Communicate Your Vision

Tell the story of your products to help customers and team members understand your design intent. Providing real-time 3D visualisation tools and reliable data exchange with engineering CAD software, Alias software helps to streamline communication among design and engineering teams. Communicate concept designs effectively and validate Class-A surface data, so engineering teams do not need to recreate your design data. The visualisation and data exchange tools in Alias software help you to maintain design integrity throughout the product development process, so design review decisions can be made quickly and projects can progress more smoothly.

### Streamline Design with Specialised Design Tools

Alias software offers a full set of industrial design capabilities to meet your requirements for:

- Visual communication
- Conceptual design
- Design modelling
- Precision surfacing
- Reverse engineering
- Real-time visualisation
- Collaboration and interoperability



Image courtesy of Astro Studios

# Effortless Conceptual Design

Autodesk Alias software helps you to explore innovative design concepts in a digital sketching environment and a cohesive 2D/3D workflow, giving you the flexibility to create compelling designs that resonate with your customers.

## Complete Sketching and Illustration Tools

Sketch, capture ideas and communicate your design process in a natural digital sketching environment. Professional-grade drawing capabilities in Autodesk Alias software provide the tools you need for visual communication: concept sketches, design illustrations and image editing. It also provides familiar illustration tools such as pencils, markers, airbrushes, erasers, custom brushes, colour editing and powerful image layer and compositing tools.

## Intuitive Paint Interface

Make the transition from other 2D applications to Alias software with ease and enjoy a simpler, more natural drawing experience through a stylus and tablet input. Alias software can help to accelerate your work by giving you quick access to common brush controls through a dynamic hot spot interface that appears directly under the cursor. Hot spots combine common key functions, so you access the keyboard less often and maintain your focus on the task at hand.



## Integrated 2D/3D Environment

Sketch over referenced engineering CAD data to help ensure design feasibility at full scale. Alias software was the first to introduce an integrated 2D sketching and 3D modelling environment, enabling designers to take several concepts quickly from sketch to 3D and to explore details in sketches without having to invest hours resolving the 3D model form to accord design



approvals. Take advantage of the flexibility of Alias software's 2D-to-3D workflows; sketch what's hard to model and model what's easy to sketch.

## Design Variations and Modification

Create design variations easily. Alias software provides deform and warp tools to alter the proportion or character of an image and modification tools to make subtle corrections or radical changes quickly and easily. Likewise, a full suite of colour adjustment tools enables you to tweak colours, highlights and shadows and explore colour alternatives.

## Autodesk SketchBook Designer

Autodesk® SketchBook® Designer software\* provides a unique hybrid paint and vector platform that enables you to capture design concepts quickly by sketching and painting and then to edit your illustrations easily with the precision and

control of vectors. Export curve data easily from SketchBook Designer into Alias software, where you can transform concept sketches quickly into 3D [product designs](#).

## Autodesk Maya

Industry-leading Autodesk® Maya® software is now included with Alias Automotive, bringing additional value to conceptual designers. A rich feature set of polygonal and subdivision modelling tools, along with data-sharing capabilities, help to speed up early conceptual design and provide workflow interoperability between conceptual mesh modelling in Maya and Class-A surfacing in Alias.

\*Autodesk SketchBook Designer software is included with the purchase of a licence for Autodesk® Product Design Suite Ultimate, Autodesk® Alias® Design software and Autodesk® Alias® Automotive software.



# Design Modelling

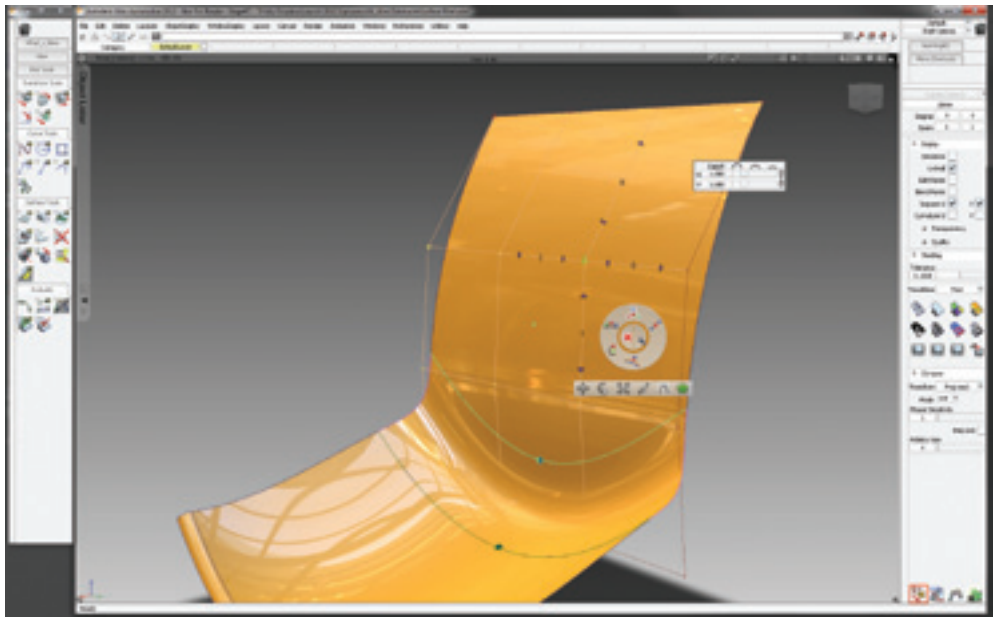
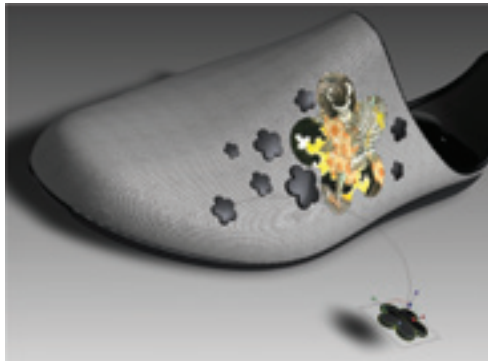
Develop your idea into 3D form through a creative, iterative modelling process to evolve designs quickly from concept to reality.

## Flexible Modelling

Take advantage of a range of surface modelling techniques to construct and visualise nearly any form. Autodesk Alias software combines fast, repeatable curve-based modelling tools with the flexibility designers need to sculpt and edit 3D models directly.

## 3D NURBS Sculpting

Manipulate, edit and form surfaces by pushing and pulling surface control vertices. Build curve-based surfaces to initiate your form at its boundaries and use direct modelling to tweak the shape at any point. Alias gives you the freedom to explore your most innovative ideas and maintain surface control, helping you to achieve the exact form and surface quality you demand of your designs.



## Automated Modelling Tools

Autodesk Alias productivity tools significantly reduce the number of picks and clicks required in your everyday modelling workflows. Alias software includes tools for fast draft surface creation, easy surface selection and trimming, powerful curve and surface alignment and tools that automate multiple common tasks, such as creating fillets and flanges in a single operation or generating panel gaps automatically.

## Dynamic Shape Modelling

Experiment with shapes at any stage of the design process. Manipulate your model quickly, exploring variations on 3D forms without rebuilding geometry or make real-time modifications in design reviews. Shape objects dynamically with these powerful tools:

- Lattice rig – Edit geometry by manipulating a customisable lattice box around an object.
- Bend – Bend geometry using a curve to control deformation.
- Twist – Twist geometry around a single-axis curve.
- Conform – Conform geometry to the shape of another surface.

# Precision Surface Modelling

Autodesk Alias software provides the tools you need to build high-quality Class-A surfaces, refine innovative design details and create production-ready technical surfaces. All with speed, control and accuracy.

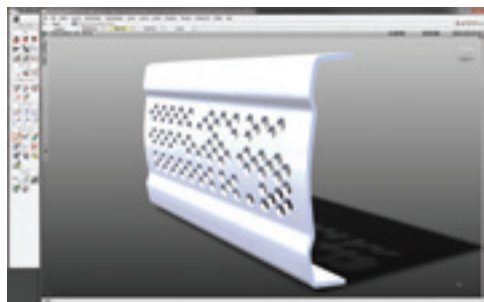
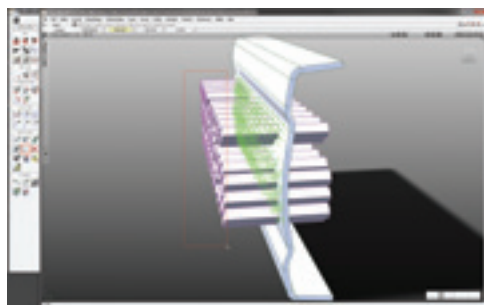
## Advanced Surface Creation Tools

The advanced surface modelling tools in Alias help to ensure that surfaces maintain positional, tangent, curvature and G3 continuity with adjacent surfaces. The result is a high-quality aesthetic model that maintains design intent and integrity from concept to production.



## Advanced Trim Function

Trim and approximate surface data to theoretical edges or intersections precisely with complete control over the final surface structure. Explicit control over trimmed geometry helps to ensure that secondary surfaces are less complex and maintain a high level of visual quality.



## Explicit Surface Control

Alias enables automated or explicit control over surface geometry, creating lighter, higher-quality 3D data. Choose to create Bezier or NURBS geometry and define the number of spans and the degree of both curves and surfaces.

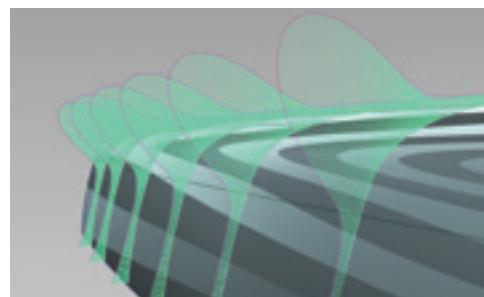


## Align Tool

Apply continuity conditions quickly to curves and surfaces. The Align tool provides a focused and intuitive interaction supported by precise mathematical capability that delivers optimal surface continuity. The associative align function supports a faster and more productive workflow when capturing subtle changes to base geometry.

## Model Evaluation

Evaluate and verify the quality of your created surfaces, including patch layout, curvature, draft angle and surface highlight analysis. This capability helps to ensure that your surfaces are meeting your aesthetic demands and technical surfacing requirements for manufacturing. Alias helps you to fine-tune your models with analysis tools that provide instant numerical and visual feedback to verify surface quality and feasibility quickly.

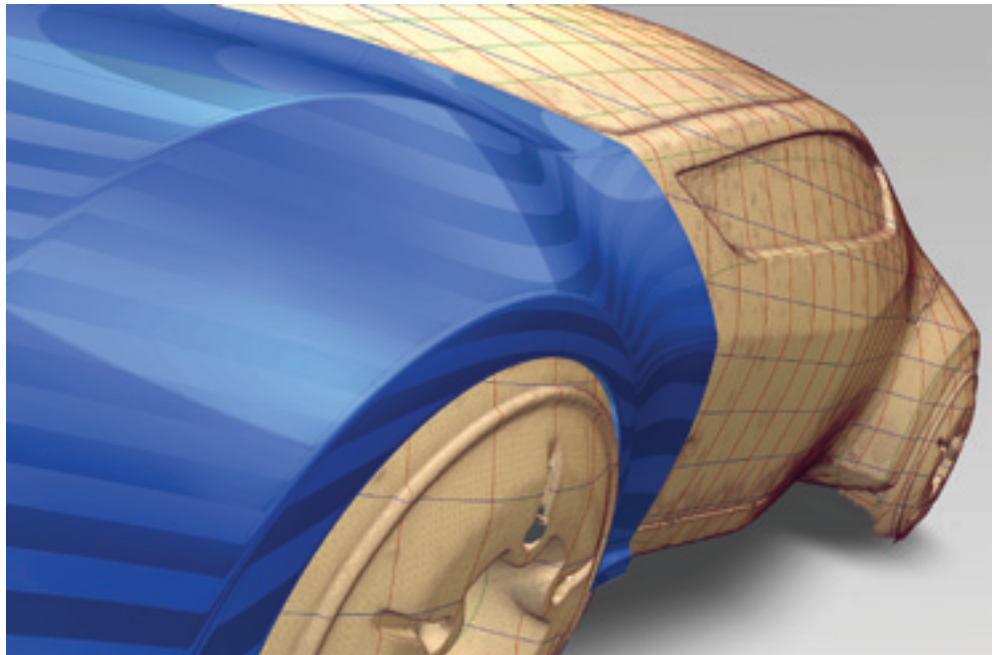
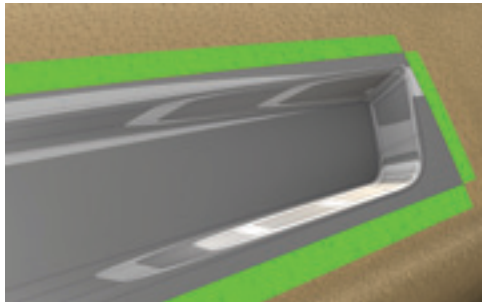


# Reverse Engineering

Move with ease between the analogue and digital worlds. Autodesk Alias software enables you to incorporate changes to a physical model in your digital model.

## Scan Data Workflows

Import and configure scan data from 3D scanners to visualise and reverse engineer automotive vehicles or consumer products. Alias helps you to clean up and simplify data with tools for cutting, smoothing, automatic hole filling and reducing mesh. The software can handle large models with millions of polygons, so you can extract and evaluate shape and form.



## Mixed Modelling Environment

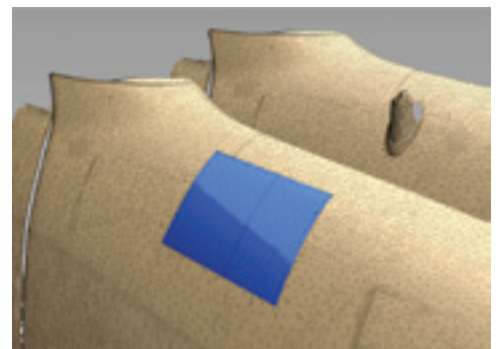
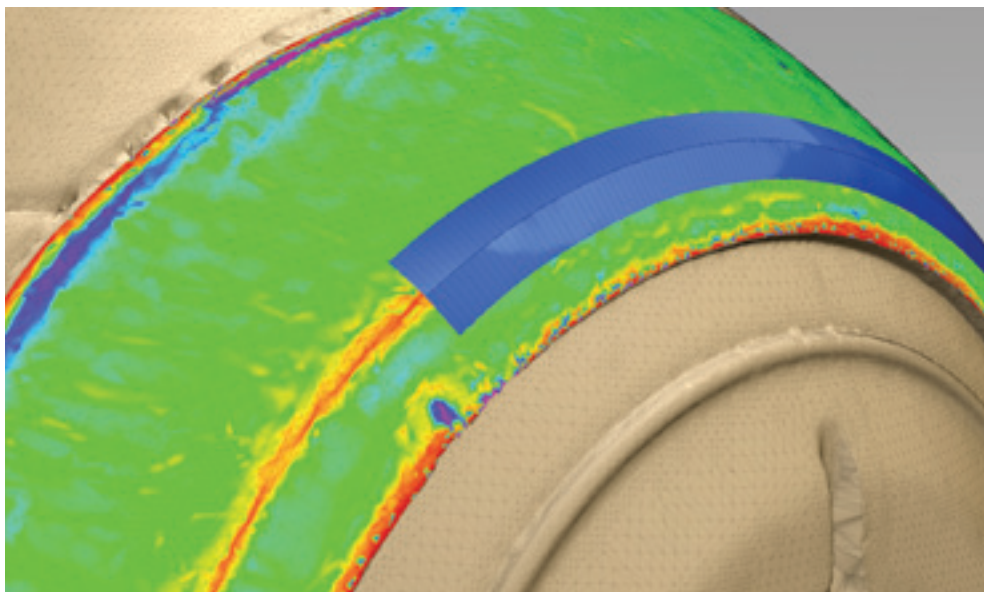
Integrate NURBS data into mesh and scan data. Alias allows you to evaluate and refine the resulting hybrid model without resurfacing an entire model, helping to save time and effort.

## Feature Extraction

Spend less time creating and updating surface models. This specialised tool enables you to extract feature information quickly from scan data.

## Surface Reconstruction

Automate the multistep process of filling holes in scan data. Alias software recognises exterior curvature through user-defined sections by generating a mesh patch.





# Visualisation and Communication

Express the emotional character of your design and communicate your design intent to customers and team members.

## Real-Time Visualisation

Autodesk Alias software reduces the need for time-consuming renderings by providing immediate visual feedback. Save high-resolution images of your modelling window quickly without running a full software rendering. Use image-based lighting to increase realism and evaluate surfaces and design forms. Alias supports material colour, texture, glow, incandescence, bump and displacement mapping.



## Photorealistic Renderings

Using photorealistic rendering capabilities in Alias software, you can create images for print, video, animations or interactive presentations. Alias raycast and raytrace renderers incorporate ambient occlusion calculations (soft shadows) and high dynamic range imaging (HDRI) for added realism.



Image courtesy of Cosmic Motors, LLC

## Annotation Tools

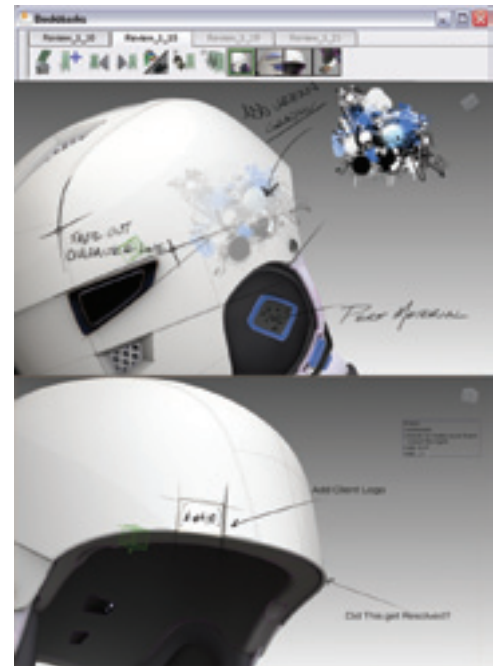
Evaluate and review designs with ease. Take advantage of your entire screen space, working only with necessary interface aspects. Alias software provides a full set of annotation tools, including bookmarks, full-screen capabilities and pencils and markers.

## Reference Data Workflow

The Reference Manager gives teams the ability to review massive amounts of 3D geometry and interact directly with detailed digital models, while maintaining interactive performance. Take advantage of fast loading speed and alternative shading – such as diagnostic shading, transparency and visual cross sections – to generate and compare multiple design variations for engineering and design reviews.

## Built-in Environments and Lighting

Tell the story of your product design in context with real-time, interactive 3D product visualisations. Render shading based on an omnidirectional light source, take advantage of ambient occlusion and soft shading or use HDRI as the light source for more realistic images for evaluating, presenting and marketing designs. Autodesk Alias software also features geometric environments with built-in HDRI lighting and reflections, making it easier to create stunning product visualisations in realistic settings.

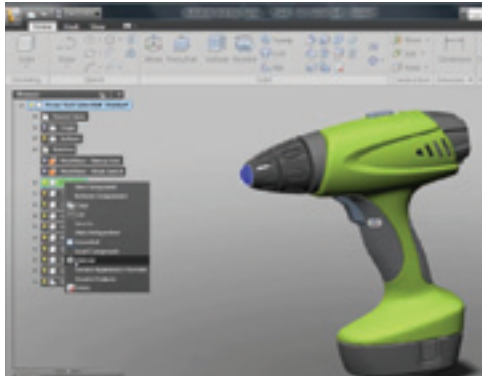


# Collaboration and Interoperability

Share Class-A and production surfaces effectively with engineering teams that can reuse your data to avoid having to recreate your designs.

## Autodesk Interoperability

Collaborate more easily with designers and engineers using other Autodesk® applications, such as AutoCAD® software, using the DWG™ data format. Bidirectional interoperability between Alias and Autodesk® Inventor® software enables Alias users to read Inventor data directly, while Inventor users are able to read native Alias .wire files directly, including surface, shell, solid and curve data. Autodesk® 3ds Max® Design users can now import .wire files natively into 3ds Max Design as Bodies objects, preserving object names, hierarchies, layers and material names.

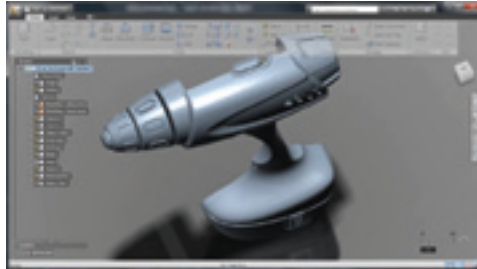


## DWF File Format

Create DWF™ files from Alias data with a single click. The DWF format protects the integrity of a design so you can publish, render and print with precision even the most complex digital models.

## Model Verification

Bridge concept design and manufacturing with improved sharing of your design data. Autodesk® Inventor® Fusion software\* expands the capabilities of Alias for validating, repairing and making models CAD-ready for engineering. Inventor Fusion helps to make it easier to test geometry created in Alias software to predict and diagnose problems when transferring to mechanical CAD systems.

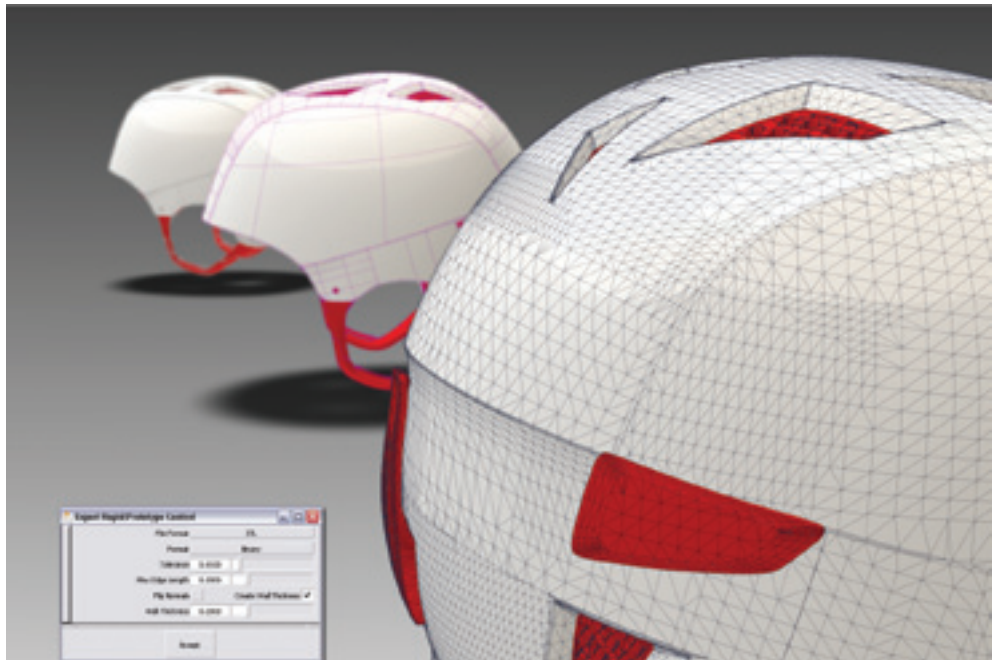


## Rapid Prototyping

Build physical prototypes more efficiently from digital models. Rapid prototyping allows you to develop and refine designs before committing to production. Print in 3D using STL output for stereolithography and export data to computer numerical control machines. Alias software supports 3D printing in colour with ZPR file format (Microsoft® Windows® only).

## Reliable Data Exchange

Exchange digital design data with engineering teams using fast, high-quality CAD translators for standard file formats such as DXF™, EDF, IGES and STEP. You can also integrate Alias software into your development pipeline with Autodesk® DirectConnect data translators, offering bidirectional sharing with CAD software packages such as CATIA®, Siemens® NX® PTC®, ICEM® EDF, PTC Granite®-based systems (Creo™, Pro/E®), Siemens® JT and SolidWorks® software.



\*Autodesk Inventor Fusion software is included with the purchase of a licence for either Autodesk Alias Design or Autodesk Alias Automotive software.



# Autodesk Alias Products

Autodesk Alias products, part of the Autodesk solution for Digital Prototyping, power your creative design process with advanced sketching, modelling and visualisation tools that help you to create innovative designs faster than your competition. Products include Autodesk Alias Design, Autodesk Alias Automotive and Autodesk Alias Surface software.

## Autodesk Alias Design

Autodesk Alias Design is 3D design software tailored for industrial designers who control the creative [product design](#) process from the initial concept sketch to the final surfaces that are shared with engineering. Industrial designers can go quickly from compelling visual communications to concept modelling to production-quality models, all within a hybrid 2D-to-3D workflow. Alias Design software enables industrial designers and creative professionals to collaborate across the variety of teams within product development, from marketing to engineering, with its industry-leading sketching, modelling and visualisation tools that help you to create, communicate and drive the innovative designs that consumers want.

## Autodesk Alias Automotive

Autodesk Alias Automotive software is one of the leading applications for automotive design, styling and technical surfacing. The choice of leading automotive styling studios throughout the world, Alias Automotive software provides a comprehensive set of sketching, modelling, visualisation and analysis tools for the entire vehicle design process. With advanced workflows from visual communication through to Class-A surfacing, the software helps automotive companies to produce design iterations quickly, reduce rework and bring innovative vehicles to market faster than before.

## Autodesk Alias Surface

Autodesk Alias Surface software offers a full set of dynamic 3D surface modelling capabilities and tools that enable digital modellers to evolve design concepts into production surface models for consumer product design and high-quality Class-A surfaces for automotive design and styling. Alias Surface software also supports advanced reverse engineering capabilities, enabling digital modellers to go quickly from mesh data to high-quality Class-A surfaces ready for engineering detail design.

	Alias Design	Alias Surface	Alias Automotive
<b>Capabilities</b>			
<b>Concept Exploration</b>			
Complete Sketching and Illustration Toolset	•		•
Intuitive Paint User Interface	•		•
Integrated 2D/3D Environment	•		•
Autodesk® SketchBook® Designer	•		•
<b>Design Modelling</b>			
Dynamic Shape Modelling	•	•	•
Flexible Modelling	•	•	•
3D Sculpting	•	•	•
Automated Modelling Tools	•	•	•
<b>Precision Surface Modelling</b>			
Advanced Surface Creation Tools		•	•
Explicit Surface Control		•	•
Trimmed Surface Paradigm	•	•	•
Align Tool	•	•	•
Surface Evaluation		•	•
<b>Reverse Engineering</b>			
Scan Data Workflows		•	•
Feature Extraction		•	•
Hybrid Modelling		•	•
Surface Reconstruction		•	•
<b>Visualisation and Communication</b>			
Real-Time Visuals	•	•	•
Image-Based Lighting	•	•	•
Photorealistic Renderings	•	•	•
Annotation Tools	•		•
Reference Data Workflow	•	•	•
<b>Collaboration and Interoperability</b>			
Autodesk Interoperability	•	•	•
Reliable Data Exchange	•	•	•
DWF™ File Format	•	•	•
Rapid Prototyping	•	•	•
Autodesk® Inventor® Fusion	•		•

# Digital Prototyping for the Manufacturing Market

Autodesk is a leading supplier of engineering software, providing companies with tools to design, visualise and simulate their ideas. By putting powerful Digital Prototyping technology within the reach of mainstream manufacturers, Autodesk is changing the way manufacturers think about their design processes and is helping them to create more productive workflows. The Autodesk approach to Digital Prototyping is unique in that it is scalable, attainable and cost effective, which allows a broader group of manufacturers to realise the benefits with minimal disruption to existing workflows, and provides the most straightforward path to creating and maintaining a single digital model in a multidisciplinary engineering environment.

## Autodesk Ltd.

1 Meadow Gate Avenue  
Farnborough Business Park  
Farnborough  
Hampshire GU14 6FG  
United Kingdom

[www.autodesk.co.uk](http://www.autodesk.co.uk)

[www.bsa.org](http://www.bsa.org)



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## Autodesk Education

Autodesk offers students and educators a variety of resources to help ensure that students are prepared for successful design careers. Educators can access design software, curricula and teaching resources while students can access free\* software, training videos, design competitions and career resources. Anyone can get expert guidance at an Autodesk Authorised Training Centre (ATC®) site and validate their skills with Autodesk Certification. To learn more, please visit [www.autodesk.co.uk/education](http://www.autodesk.co.uk/education).

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