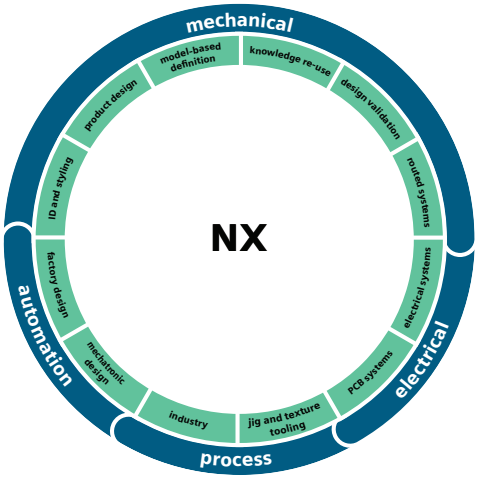
DIGITAL INDUSTRIES SOFTWARE

NX Mach Series add-on modules

Extending product development features and capabilities

Benefits

- Extend features and capabilities of the NX Mach Series
- Configure with process-, industry- and application-specific tools
- Provides flexible token-based licensing



Summary

The NX Mach™ Series software offers preconfigured solutions targeted to specific product development disciplines and problems. You can extend and enhance the functionality of the Mach Series with add-on modules. These add-ons enable you to configure your solutions to specific requirements with specialized design tools, standard parts applications, design-integrated simulation solutions, programming and customization toolkits and direct translators. NX, Simcenter™ 3D software, Teamcenter® software, the Fibersim™ portfolio, the Mastertrim™ portfolio and other solutions mentioned in this fact sheet are part of the Siemens Xcelerator business platform of software, hardware and services. The “token licensing” marked add-ons in the product overview are part of the value-based licensing pool. Token licensing provides you with extra flexibility, as you can use the tokens to activate any product that is part of the token pool.

Core applications

NX provides various core functionalities that enable you to exchange data between proprietary systems and NX, check designs in full size with virtual reality tools and give you an extra boost in usability with artificial intelligence (AI) powered command prediction.

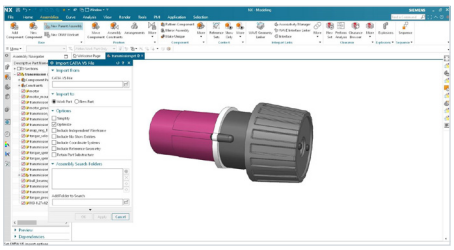
SIEMENS

siemens.com/nx

NX STEP AP 242*
Bidirectional translation using the STEP AP242 translation protocol.

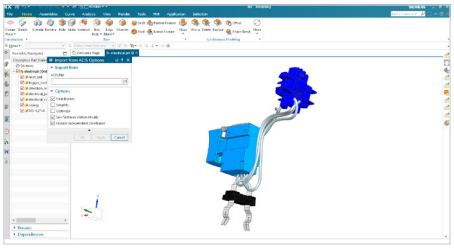
NX CATIA V4 translator*
Delivers bidirectional translation between CATIA V4 and NX. Users can access files from the file open, file save as, file import and file export dialogs. This tool flattens assemblies to a single level on both import and export.

NX CATIA V5 translator*
Provides bidirectional translation and reads CATPart and CATProduct files. This tool reads coordinate systems, points and part substructure, geometry, assembly structure and attributes of color, layer and name into NX.



NX Creo Translator*
This can read Creo Parametric solids and surfaces from *.prt and *. asm files and creates an NX part or assembly.

NX ACIS Translator*
Two-way data exchange between NX and CAD models in the ACIS modeling kernel format.



NX Translator for IFC*
Bidirectional translation using the Industry Foundation Classes (IFC) file format, which describes architectural, building and construction data.

NX Command Prediction*
The machine learning/artificial intelligence-enabled user interface can predict and serve up commands to the user based on learned command usage patterns. It allows design environment personalization by considering the differences in knowledge, style and preferences. Leveraging and sharing of learned command usage data enable a reduced learning curve, promote use of domain and or industry-specific best practices and increase productivity.

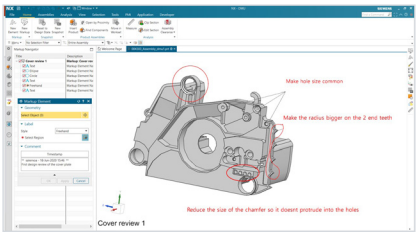
NX Smart Selection
Uses predictive data analytics to predict entities that designers will likely select for a given command.

NX Select Similar Faces*
Performs operations on geometrically similar regions with a reduced number of clicks.

NX Voice – Command Assistant*
Realizes productivity gains by transforming multiple level of menus and clicks with easy-to-use speech- to – text commands.

NX Viewer*
With NX Viewer, NX models and drawings can be opened, viewed and measured in the native NX format. This is ideal for users who have access and need to view NX data, but do not intend to save or reauthor NX data.

NX DMU and Markup*
Provides access to digital mockup (DMU) and markup functions including create DMU workset, create snapshot, manipulate snapshot, insert product, move in work set, reset to design state and add markups.



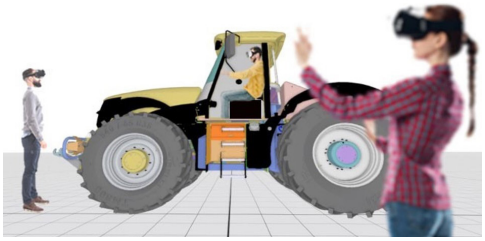
NX DMU and Markup Add-on for NX Viewer*
Provides the NX Viewer user with the ability to perform digital mockup functions.

NX Virtual Reality Review
The NX Virtual Reality Review license provides integrated immersive studies and design review capabilities. Users can review designs with the help of a virtual reality (VR) headset and VR-supported hardware.

*Token licensing available

NX Virtual Reality Collaborate

When used together with NX VR Review, this add-on supports multi-user NX VR sessions. Any number of NX Virtual Reality Review users can join a single collaborative session. The NX VR multi-user collaboration server synchronizes operations that each participant performs.

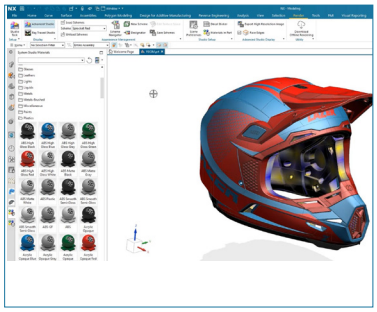


NX Extended Reality*

This allows you to publish your 3D product designs to a range of augmented, virtual and mixed reality workflows and share your ideas easily with colleagues or customers. You can use the NX Extended Reality output across a range of augmented reality (AR) and VR experiences and is natively supported by a variety of browsers.

NX Appearance Management*

Enables designers and engineers to quickly and easily set up a series of visual appearances on a single master model. When combined with NX Render, the user can create a high-quality render of these visual appearances for design reviews or marketing assets.



NX Appearance Management for Managed User*

Using NX Managed Appearance Management enables designers to define an appearance product scheme to manage a products appearance variability when they manage the design data using Teamcenter.

NX Multi-user Design Notification*

Supports a truly collaborative design environment by proactively notifying users of changes in their design context.

NX Smart Context Designer*

NX Smart Context Designer enables an NX managed user to create, open and save a product work set containing one or more filtered product assemblies and view the product data using a partition scheme. Smart Discovery enables searching, filtering, and retrieving information.

Mechanical

Industrial design and styling

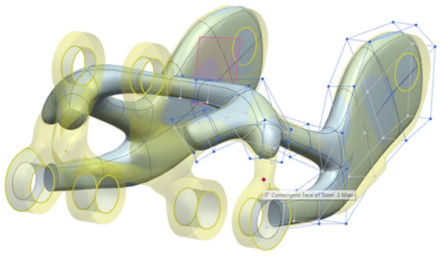
Create aesthetically appealing, innovative products with fast concept design, freeform shape modeling and surfacing capabilities including subdivision modeling, class-A surfacing and reverse engineering. Enhanced visualization with both dynamic and real-time photorealistic rendering tools to create visually stunning models.

NX Render*

NX Render is powered by best-in-class rendering technology and enables you to create photorealistic images for design reviews, marketing assets and sales collateral. Using NX Render to create the perfect looking image is now easier than ever with the addition of an all-new set of render-ready materials. You can drag-and-drop materials, lighting and cameras into your scene in minutes to achieve desired results with accurate texture and reflection.

NX Realize Shape*

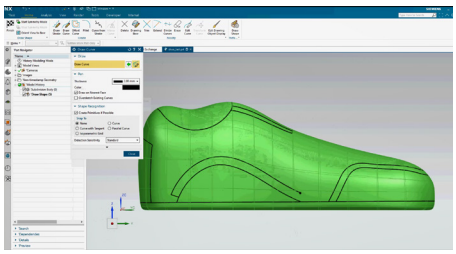
You can use subdivision modeling methods to create advanced 3D product shapes with unprecedented speed and ease of use. The toolset is equally suited to creating quick 3D concepts or final surface shapes of the highest quality. NX Realize Shape™ software is fully integrated with all other NX modeling functions, allowing seamless incorporation with traditional modeling approaches to achieve a high degree of refinement of the design.



*Token licensing available

NX Draw Shape*

This add-on enables designers to visually convey and communicate aspects of the design prior to investing in 3D models. It enhances NX capabilities by enabling freehand drawing of wireframe shapes on bodies.



Product design

The core modeling capability of NX combines wireframe, surface, solid, parametric and direct modeling in a single environment that enables designers to choose the most appropriate tool for the task at hand. Pioneering capabilities such as synchronous technology and Convergent Modeling™ technology make it easy to edit designs with simple push-pull methods and work with facet/mesh data in the same modeling environment. The adaptive UI of NX uses machine learning to help designers improve productivity.

NX Show/Hide Similar

This machine learning enabled functionality allows user to show or hide multiple components which are geometrically similar to a selected component. This functionality helps you to easily declutter assemblies or perform operation on geometrically similar components.

Layout for NX

This 2D conceptual design solution allows you to take advantage of essential 2D requirements and to leverage a familiar drawing environment. NX Layout provides many dedicated tools to support 2D data migration, 2D design and layout as well as 2D-to-3D capabilities to explore concepts in 2D, iterate and transfer to 3D to generate 3D models and assemblies.

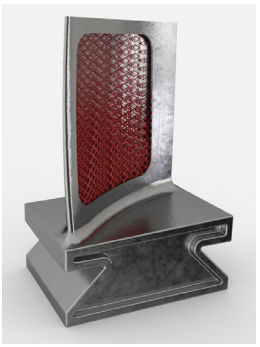
NX WAVE Control*

NX WAVE Control is a geometry linking tool that enables designers to define interpart relationships for parametric assembly modeling. WAVE assembly control structures and constraints help simplify design changes and accelerate modeling of configurations, options and variants.

NX Assembly Path Planning*

The assembly path planning software automatically determines the optimum, interference-free path for extracting a component from an assembly. The resulting path is stored as a set of steps within an assembly sequence. The extraction path can streamline serviceability studies by verifying component access without requiring a physical prototype or extensive analysis.

NX Lattice Structures Design



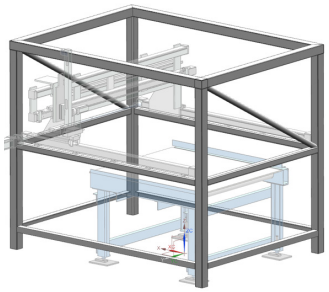
Often used in additive manufacturing, lattice structures allow weight reduction without compromising structural integrity. NX Lattice Structures Design provides a powerful set of design capabilities including custom lattice cells to suit specific design needs such as improved strength, rigidity, impact resistance, energy absorption or porosity, as well as custom and randomized lattice structures. Filtering for individual lattice rods and creation of special tetrahedron surface and volume lattice structures is possible.

NX Structure Designer*

Create structural frames more efficiently with easy-to-use structural frame modeling capability. You can create structural frames in minutes by leveraging the frame drawing assistant, which can create 2D skeletons with minimal clicks.

NX Platform Design*

You can design equipment support structures, accessways, walkways, maintenance platforms and similar steel structures with these specialized tools to maximize productivity for modeling platforms, plating of platforms, reinforcements, corner conditions, handrails, stairs and ladders.



*Token licensing available

NX Topology Optimizer*

This design optimization tool can be used to automate the improvement of structural designs, while still meeting the various performance, material and manufacturing requirements. It contains powerful optimization capabilities including the ability to set up and perform an optimization on a single component or system assembly, the ability to add various design and manufacturing constraints to control the results of the optimization, such as design symmetry, offset, shelling, blending, additive overhang angles, additive self-supporting, additive material spreading, molding, casting, machining and extrusion.

NX Design Space Explorer*

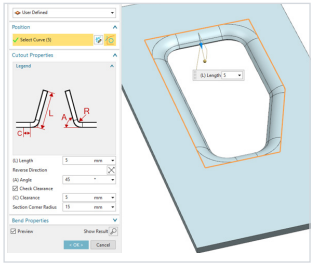
NX Design Space Explorer provides you with multi-objective design space exploration and optimization capabilities.

NX Performance Predictor*

Designers can perform fast simulation to review design performance of their products regarding simulation results. This allows the early evaluation of the impact of design changes in the NX design environment.

NX Advanced Sheet Metal*

Users can model complex sheet metal parts that contain drawn features and nonlinear bend lines. The advanced flange function allows easy creation of non-linear flanges using customer input parameters or existing geometry to define shapes and specify end limits. The completely revised joggle function enables complex joggles to be added to flanges or tabs including single and multiple jogs. The flat pattern feature provides rich data for downstream consumption.



NX Fabric Flattener*

This add-on is designed to generate flat patterns for woven or unidirectional fabric materials. It can be used to flatten composite laminate plies, or any materials that conform to the theoretical models for woven or unidirectional fabrics.

NX Weld Assistant*

Creates weld, structural adhesive and mechanical connection features. It includes resistance spot welds, mechanical clinches, arc welds in the shape of fillets, butt, J, V, bevel and flared bevel. Sealer beads can be generated with any cross-sectional shape and spray-on adhesive, mastic or glue can be defined. There are validation checks for all discrete weld types along with import and export capability. An automatic annotation function generates standard weld symbols and product and manufacturing information (PMI), and all weld features can be published to Teamcenter when running in managed mode.

NX Drawing Automation*

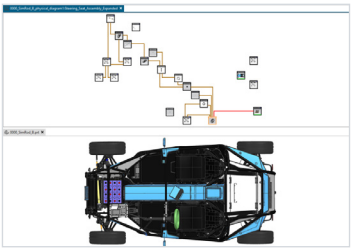
Using NX Drawing Automation provides a framework for developing a company-specific drawing automation solution. With this framework, users can define a highly customized set of rules for creating drawings to specification. Also included are tools for developing custom templates used to automate the drawing process.

NX Physical Architecture Diagram Author*

Used for model-based systems engineering (MBSE), this add-on helps with managing and tracing large numbers of product and technical requirements throughout the design process. It can show connections such as WAVE links, assembly constraints and dimensions between components of a 3D assembly and reports on the status of requirement checks on measurement. The package can be used standalone in NX or in conjunction with Teamcenter MBSE parameter management.

NX Physical Architecture Diagram Viewer*

The viewer shows connections such as WAVE links, assembly constraints and dimensions between components of a 3D assembly and reports on the status of requirement checks on measurement.



NX Physical Parameter Management Author*

Used for model-based systems engineering (MBSE), this add-on helps with managing and tracing large numbers of product and technical requirements throughout the design process. It can show connections such as WAVE links, assembly constraints and dimensions between components of a 3D assembly and reports on the status of requirement checks on measurement. The package can be used standalone in NX or in conjunction with Teamcenter MBSE parameter management.

*Token licensing available

NX Physical Architecture Diagram Viewer*

The viewer shows connections such as WAVE links, assembly constraints and dimensions between components of a 3D assembly and reports on the status of requirement checks on measurement.

NX Physical Parameter Management Author*

Also used for MBSE, this add-on manages mechanical requirements and measures results for master 3D and CAE models. It enables users to create and report on measurements in the CAD model and also reports status of checks on values from CAE results performed in other applications such as Simcenter™ 3D software.

NX Physical Parameter Management Viewer*

The viewer displays reports on measurements in the CAD model and also reports status of checks on values from CAE results performed in other applications such as Simcenter 3D.

NX Reference Point Cloud View

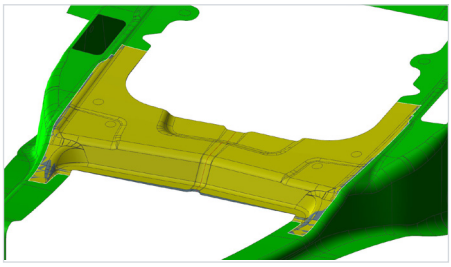
NX Reference Point Cloud View allows users to visualize point cloud files in the point database (POD) format. The software enables designers to easily add referenced point cloud objects into layout models (for example from NX Line Designer and ship design applications) and perform various operations on the point clouds including measurements and clipping. NX Reference Point Cloud View helps improve virtual planning workflows and reduces the number of errors during the physical implementation.

NX Join*

This tool reduces the time to place and define fasteners and hardware, while improving the quality of the fastener assembly design. Users can define standard join features with information and attributes about the connection between assembly components. NX Join covers the basic definition of point-based connections including rivets, bolts, adhesives, and spot welds.

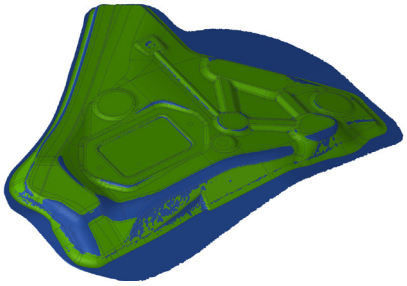
NX OmniFree Transformer

Morph surfaces to points or curves in the NX environment. The points/curves compensate for springback that occurs during stamping.



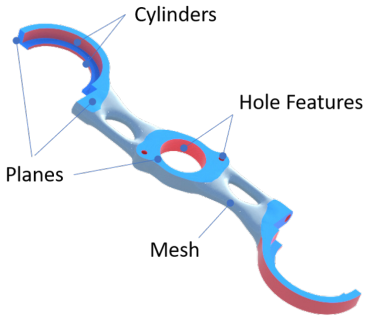
NX OmniMesh Transformer

This add-on is used for tool morphing, providing capabilities to morph surfaces to CAE meshes, STL data or point clouds in the NX environment. The mesh/STL/point cloud compensates for spring-back that occurs during stamping.



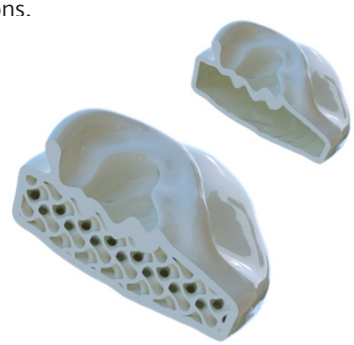
NX Advanced Convergent Modeling™*

This add-on allows you to use innovative capabilities to seamlessly work with mesh geometry in an integrated CAD workflow. With the aid of this add-on it becomes much easier to work with data from 3D scanners, polygon modelers and simulation software and data from topology optimization. These tools also make it easier to prepare mesh (STL) geometry for 3D printing.



NX Implicit Modeling*

Users can create equation-driven structures and perform robust modeling operations on complex designs. Users can design advanced geometric shapes with relative ease and complex operations between geometry that have a high degree of robustness over more traditional methods like b-rep modeling. Using features of Convergent Modeling and NX can present these results in a usable format for downstream modeling and simulation/manufacturing operations.



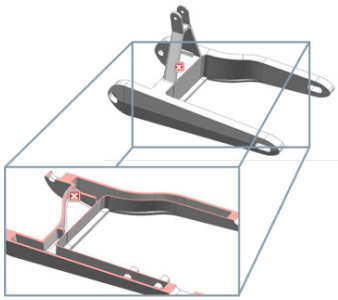
*Token licensing available

NX Advanced Assemblies*

The advanced assembly modeling capabilities enable users to simplify components or sub-assemblies into a single lightweight solid, to enclose assembly geometry in an envelope of planar faces, to partition assemblies into meaningful regions, and to manage weight and other mass properties of components and assemblies. Component filtering techniques enable designers to quickly identify and load the components of relevance to their current task, avoiding unnecessary delays and screen clutter caused by loading irrelevant components.

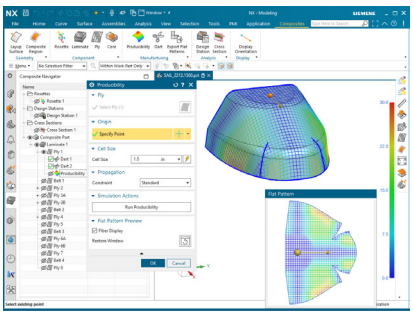
NX Design for Additive Manufacturing*

Innovative capabilities that aid in the process of designing parts that are suitable for production using 3D printing.



NX Composites*

NX Composites provides end-to-end composite part development directly in NX with baked-in model interrogation and design for manufacturing tools.



NX Composites Laser Projection Interface*

This add-on module to NX Composites generates laser projection controller data for lay-up assistance in manufacturing for composite parts.

NX for Sustainability*

NX Design for Sustainability product will allow designers to perform sustainability calculations and rollups, available at all phases of the product design, and perform what-if analysis and optimizations driven by machine learning.

Model-based definition

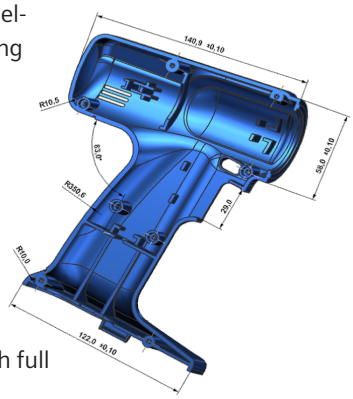
Model-based definition capabilities in NX enable the production of a complete digital definition of a product within a 3D model. By establishing the model as the single source of truth, NX reduces the time spent on engineering documentation, drives downstream tools for validation and manufacturing, and reduces late changes and scrap.

NX Product and Manufacturing Information*

Users can digitally author 3D annotation and product data in a solid part or assembly. PMI includes 3D dimensions, 3D GD&T (geometric dimension and tolerance) data such as datums and feature control frames, 3D notes and customizable non-geometric information that can be directly associated to an NX model. This enables the production of a complete digital definition of a product within a 3D model, eliminating the need for traditional drawings.

NX Model-based Definition*

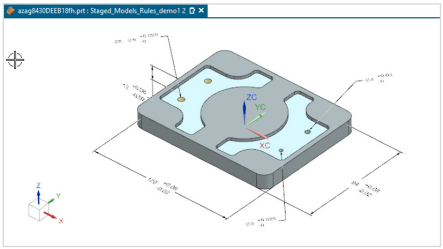
The NX Model-based Definition is an add-on to the NX Product and Manufacturing Information application. This add-on delivers advanced capabilities to support model-based definition deployments including the automated authoring of PMI and user-defined rules. This functionality includes an interactive Logic Editor diagramming interface that supports building and executing rules used to author PMI. NX Model based Definition rules use topological feature recognition with associative updating that enable you to work with full featured models or featureless data.



NX PMI Effectivity*

NX PMI Effectivity helps users who design products that contain a large number of variations to determine which product and manufacturing information (PMI) on a model is relevant for each product configuration. NX PMI Effectivity adds the ability to infer the effectivity of PMI objects based on the geometry referenced by the PMI. This will enable the display of only those PMI objects that are relevant to the selected configuration of the product.

NX Staged Models*

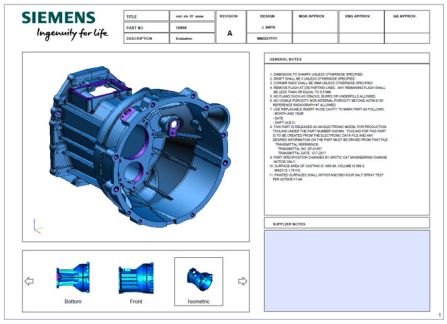


This add-on streamlines the overall staged model design process for production planning and author complete manufacturing information within the 3D staged models. It includes geometrical representation of staged, PMI and other manufacturing process information.

*Token licensing available

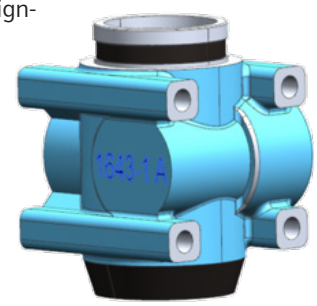
NX Technical Data Package

A technical data package can contain important technical data such as models, drawings, associated lists, specifications, standards, and performance requirements. NX Technical Data Package provides functionality to create, modify, save, store and re-use technical data package templates and to publish technical data packages to industry-recognized formats, JT plus PDF and 3D PDF.



NX Coatings*

You can use NX Coatings to define paint and coating information in the CAD model, including the assignment of coating material, face and boundary location and thickness. Once you have this information you can define the coating, include it in the mass properties calculation, annotate it using PMI or drawing notes and include it in the parts list rollup or bill-of-materials (BOM).

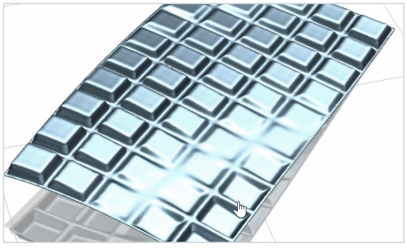


Knowledge re-use

The knowledge re-use capabilities in NX shorten design cycles,reduce development costs, and improve productivity. With knowledge-driven automation capabilities, your company can capture, re-use, and consistently apply best practices across product lines.

NX Algorithmic Modeling*

Users can create algorithmically driven designs and design and automate advanced variational, parametric shapes that are not possible with traditional interactive CAD modeling. It uses a novel, logic editor-based approach to build an algorithm that defines the shape and variability of a design provides an easy-to-use interface and works for automation and design templatization.



NX Product Template Studio Author*

You can use templates to modularize a design, breaking a complex assembly into manageable modules that can then be recombined as needed to configure complex products. NX Product Template Studio Author can add a user-defined interface to any parametric model, which allows parametric models to be intuitively described and packaged for later re-use.

NX Product Template Studio Consumer*

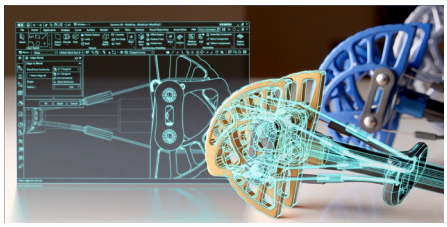
This add-on allows you to display and interact with user-defined template interfaces created by the Product Template Studio Author application. This consumer license will also enable the template model user interface to be automatically invoked as template models are consumed from the NX Reuse Library.

NX Open Toolkits Author

NX Open is a collection of application programming interfaces (APIs) that enable custom applications for NX through an open architecture using well- known programming languages (C/C++, Visual Basic, C#, Java, and Python). Custom programs can automate complex and repetitive tasks, integrate third-party applications and customize the NX user interface.

NX Open for .NET Author

The NX Open for .NET Author license provides the NX .NET API libraries, documentation, and utility tools required to create .NET custom applications.



NX Open Python Author

The NX Open Python Author license provides the NX Python API libraries, documentation, and utility tools required to create Python custom applications.

NX Open Dialog Designers

NX Open Dialog Designers provide the application modules, visual dialog builder, libraries and documentation necessary to interactively construct production-quality dialogs for use in the NX environment and supported platforms. The dialog designer consists of two design tools: the Block Styler, which provides interactive tools to design block-based dialogs, and the User Interface Styler, which provides various widgets to construct a dialog for use in the NX environment.

*Token licensing available

NX Open GRIP Author

Graphics Interactive Programming (GRIP) is a programming language that enables automated operations in NX. In some cases, GRIP can perform advanced, customized operations in a more efficient manner than using NX interactively. NX Open GRIP Author provides the GRIP Advanced Development Environment (GRADE) for editing, compiling and linking GRIP programs.

NX Integration to Geolus*

Designers can dynamically search and retrieve parts that have been indexed into the Geolus database. The shape search can look for either exact or similar matches and open the part into the NX session.

Design validation

NX provides powerful visual product analytics and validation tools that enable you to quickly synthesize information, check designs for compliance to requirements, and make informed decisions. Integrated design-for-manufacturing checks significantly reduce engineering change orders (ECOs), manufacturing defects, costs and delays. With design-integrated motion, structural, and thermal simulation tools in NX, you can quickly compare design alternatives and optimize performance characteristics from the earliest stages of the design process.

NX Human Modeling*

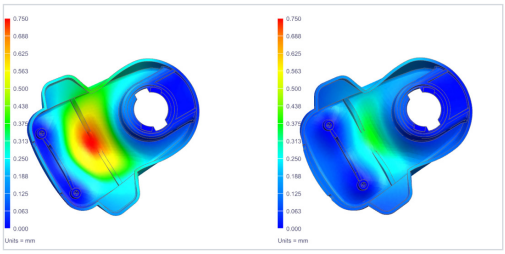
Designers can create feature models of human beings, which can be used to explore and verify how people interact with product designs. The designers can use the human models to explore and verify how people interact with product designs all within the NX environment.

NX Human Modeling Posture Prediction*

Posture prediction is specifically aimed at the automotive industry and allows users to position a model of a human driver, front passenger or rear passenger in a statistically accurate seated position inside an automotive vehicle. Users specify the position of the hands and feet, such as the driver's hands and feet touching the steering wheel and brake pedal and the model then predicts an occupant's hip location, eye locations and arm and leg positions based on the type of vehicle and the occupant's hand and foot locations.

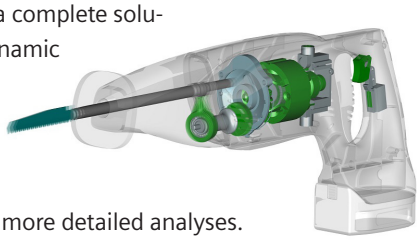
NX Design Simulation*

This design-integrated structural simulation tool helps you validate the structural performance of your design. Compare design alternatives and optimize performance characteristics of products from the earliest stages of the design process. Simulation technology is based on and scalable to Simcenter 3D for further analysis by expert analysts. The result is a highly iterative and predictive engineering process that delivers innovative designs, higher quality products and reduced time-to-market.



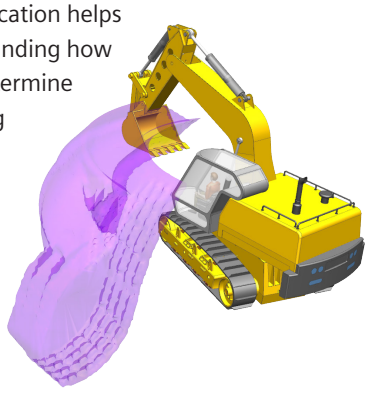
NX Motion*

Predict and understand the functional dynamic mechanical behavior of assemblies and mechanisms. NX Motion is an advanced yet simple-to-use solution that allows designers and engineers to understand, evaluate and optimize the complex motion behavior of assemblies and products. Based on Simcenter 3D simulation technology, NX Motion is a complete solution for kinematics and dynamic motion analysis of rigid multi-body as well as static equilibrium, and data can easily be transferred to Simcenter 3D for more detailed analyses. The early use of performance simulation is key to the evaluation of design options to increase design confidence and reduce risk.



NX Animation Designer*

With this easy-to-use motion simulation application, designers can model the kinematic behavior of any product with moving parts in a time-based manner. This application helps designers gain a better understanding how the product will operate and determine clearances between parts during movement. NX Animation Designer can also be used to create disassembly animations for visually appealing product presentations.



*Token licensing available

Simcenter FLOEFD for NX

This full-featured 3D computational fluid dynamics (CFD) analysis solution, Simcenter™ FLOEFD™ software enables design engineers to work directly on their CAD models to prepare and evaluate CFD simulations for fluid flow and heat transfer.

NX EasyFill Analysis

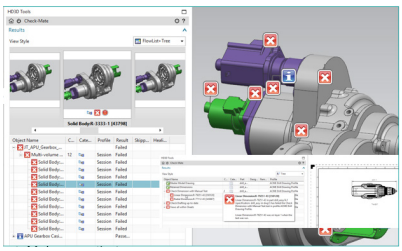
This integrated mold flow simulation tool enables designers to analyze part and mold designs during early stages of design. The analyses can be done with a pioneering 3D technology and through high-performance 3D filling simulation.

NX EasyFill Analysis – Advanced

This add-on validates mold designs prior to manufacturing through capabilities such as multi-gate analysis, packing, shrinkage and fiber orientation. In addition to these capabilities, simulation preprocessing and postprocessing are performed inside the NX CAD environment.

NX Check-Mate Runtime*

Allows customers to validate the integrity of the NX CAD part file with 300+ OOTB checkers to evaluate: part file content, geometry quality, model documentation and adherence to standards. Fully customizable to meet individual customers needs and integrated with Teamcenter to enable check results to be linked into release workflows.



NX Check-Mate Author*

NX Check-Mate provides an automated, customizable tool that helps users proactively improve product quality. The customization capabilities deliver reliable model and part checking and make sure that your CAD data meets your expectations.

NX DFMPro

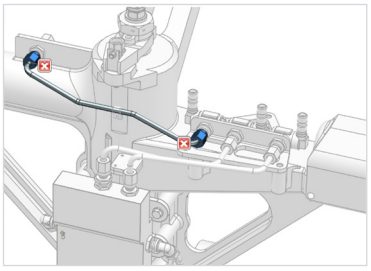
This validation add-on executes design-for-manufacturability (DFM) checks on your CAD model by using a one-button click to identify potential problem areas. This check returns valuable information about model integrity with respect to downstream manufacturing processes. The checks include coverage of injection molding, casting, sheet metal, tubing, general machining and assembly.

NX VDA 4955 Checker*

The Association of German Automobile Industry (VDA) add-on software checks the quality of curves, faces, solids and drawing data in an NX part file. It verifies that curves and surfaces adhere to international standards and local country regulations.

NX HD3D Visual Reporting*

NX HD3D Visual Reporting software displays information of interest from your company's data sources directly into the 3D product design environment. The capability helps designers make unambiguous assessments, interpret information more accurately and synthesize product and process data rapidly into correct design decisions. NX HD3D Visual Reporting comes with a set of predefined, out-of-the-box reports that provide design teams with answers to commonly asked questions. Reports related to ownership, check out, part maturity, projects, load status, validation status and more are available for instant use. With the authoring capability, companies can create and modify custom reports to extract and present the data.

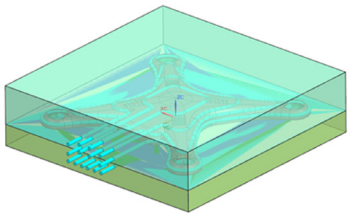


NX One-step Formability Analysis*

NX One-step Formability Analysis provides a quick and accurate finite element modeling (FEM) sheet metal forming analysis, while also providing tools for creating flattened blanks and pre-forms from complex freeform geometry.

NX Mold Cooling*

NX Mold Cooling provides wizard-based capabilities to rapidly simulate the thermal performance of injection mold inserts, identify hot spots and uneven temperatures on the parts, generate reports and compare the performance between design iterations. Users will be able to perform both 1D duct flow simulation and 3D CFD simulation.



NX Forming

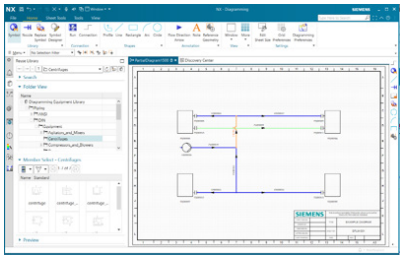
The advanced forming analysis solution, which offers state-of-the-art capabilities for sheet metal forming analysis and all steps in the forming process, including gravity, binder wrap, crash forming, drawing, trimming, flanging and 0.

NX Forming SMP

By enabling parallel processing, users can solve larger forming analyses very quickly. Using distributed memory architecture, NX Forming SMP offers high performance computing (HPC) by taking full advantage of multiple-CPU, multiple-core and multiple-thread configurations of the latest computing platforms in the Windows environment.

*Token licensing available

Routed systems



NX digital product development solutions include an integrated suite of tools that facilitate the entire design process for routed systems, including wire harnesses, cables, piping, tubing, conduit and raceways. These process-specific tools reduce detailed design time, improve product quality and transfer product information seamlessly between the logical design, physical design, analysis, manufacturing and service domains.

NX Diagramming*

NX Diagramming is a multi-disciplinary diagram creation and applicable to various industries. This product provides an environment for the positioning and connection of equipment from standard or custom equipment libraries into logical 2D diagrams using superior diagram creation tools. It includes a specific task environment for easy creation of new symbol libraries and enables the creation of run and branches in the diagram that can then connect with real 3D equipment.

NX Routing Base*

NX Routing Base provides core capabilities used by all NX routed system design solutions. These includes all of the general capabilities needed to create, edit, copy and move paths. NX Routing Base also includes tools for defining standard part libraries, selecting parts from libraries and intelligently placing standard parts within the paths. It also enables designers to define standard stock specifications and assign them to paths.

NX Routing Piping and Tubing*

Optimizes piping and tubing design workflows through intelligent path creation, specification-driven part selection, smart part placement, collision detection, weight calculations and knowledge rules that concurrently validate designs against company and industry standards. The product supports both rigid and flexible pipes and tubes.

NX Routing HVAC*

NX Routing HVAC delivers 3D tools for creating, modifying, validating and documenting HVAC systems. It optimizes HVAC design workflows through intelligent path creation, specification-driven part selection, smart part placement, collision detection, weight calculations, duct splits, duct size calculation and knowledge rules that concurrently validate designs against company and industry standards. The product supports predefined catalogs of HVAC parts and parametric templates that can be modified on-the-fly (smart sizing) to fit any space constraints. Together with other NX capabilities like hangers and sheet metal flat patterns, this product provides a complete lifecycle solution for HVAC design.

NX Piping Fabrication Drawings and PMI

An add-on to NX routing that creates 3D PMI information and corresponding piping isometric drawings from piping models. All the necessary information for downstream fabrication is captured in the form of dimensions and annotations from the 3D model. Custom parts lists can also be created for the fabrication drawings. Existing PMI views with dimensions, annotations and tables can be updated based on changes to the 3D model.

NX Penetration Management*

NX Penetration Management provides an interface for creating, managing and responding to penetration requests between different user groups responsible for steel structures and routed system design. The process begins with a routed system designer (such as a piping designer) who requests pipe penetrations through structures that are designed and maintained by a different design group such as a structure group. A penetration request defines the location of the required cutout and initiates a workflow that can be customized by the end user to meet specific needs. A typical workflow includes several review steps that must be completed before the cutout can be created to satisfy and close the request.

Electrical

Electrical systems

NX offers advanced software tools for the complete development of electrical systems, from electrical/electronic architecture definition, through detailed electrical design and wire harness manufacturing, to documentation and diagnostics.

NX Routing Cabling*

Helps with routing electrical cables in a product assembly along with typical mechanical parts and supporting equipment such as conduit and raceways. The software can automatically find paths that have been routed between devices and can assign the cable descriptions to the path segments. Actual cable lengths and diameters can be automatically added to the connection list for feedback to upstream ECAD applications or downstream to manufacturing applications.

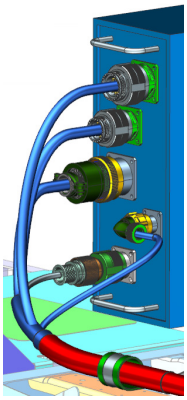
NX Cable Router*

NX Cable Router presents an interactive interface to the Cable Routing functionality and enables cable routing engineers to route and visualize a high volume of cables using interactive or automatic routing methods. This includes the ability to search cables based on multiple criteria, visualize start and end devices and set

*Token licensing available

rules and preferences. This add-on optimizes cable routing with large vessels and accelerates cable route visualization which reduces cost and time and guides designers to the right decisions.

NX Routing Harness*



Designers can route an electrical wiring harness consisting of bundles of wires and specify typical mechanical parts and supporting equipment such as connectors and other devices. The software can also import the wiring characteristics for connections between electrical devices. Actual wire lengths and diameters can be automatically added to the connection list for feedback to upstream ECAD applications or downstream to manufacturing applications.

PCB systems

NX provides an environment for the design of both flexible and rigid printed circuit boards (PCBs). Based on workflows common to the design of printed circuit boards, the PCB design tools help model printed circuits rapidly and accurately in the context of an assembly and send the outlines to manufacture or to an ECAD system for further refinement.

NX PCB Exchange

NX PCB Exchange provides a foundation for intuitive and efficient design of rigid and flexible printed circuits. NX PCB Exchange allows direct connection with all major printed circuit board (PCB) design applications, supporting various PCB data interchange formats (IDF, ProSTEP EDMD Schema, IDX) and manufacturing formats (ODB++, GenCAD).

NX PCB Exchange for Xpedition

NX PCB Exchange for Xpedition builds an added layer of capability onto the foundation product. It provides a unique and innovative integration to Xpedition Enterprise PCB design flow, that goes beyond Industry standard methods of communication making it easy to model and manage 3D ECAD data. Boards and components are modeled using standard part modeling practices with NX or can be directly imported from Xpedition. An assembly of the board and components is created with NX Assembly Modeling and can be shared with Xpedition.

NX PCB Exchange for Zuken

This add-on transmits information between NX and Zuken CR-5000 and CR-8000 PCB design software. Data such as the board outline, hole placements, component placements, keep-in and keep-out regions can be transmitted back and forth using a format native to the Zuken product. The software also enables enhanced data exchange concerning board layers, copper trace geometry and bend region geometry.

NX Flexible Printed Circuit Design*

The PCD design tools help model printed circuits rapidly and accurately in the context of an assembly and send the outlines to manufacturing or to an ECAD system for further refinement. The printed circuit model developed in NX can be checked for clearances and tolerances, and the finished board model can be transferred to an ECAD system for component placement and circuit trace or layer development.

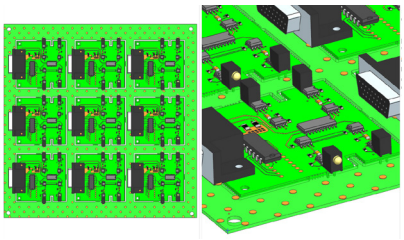
Process-based applications

Jigs, fixtures and tooling

Automate the entire tool development process including part design, tool assembly layout, and detailed tooling design and validation using advanced NX functionality. With step-by-step guidance and associativity to part designs, you can work with even the most challenging tooling and fixture designs.

NX Mold Wizard*

You can create designs quickly and efficiently with this complete working environment of supporting functions and component data for mold designs. A process thread approach is employed to identify and develop the critical functions required to complete mold design tasks. The approach includes the implementation of tools that simplify, automate and guide users through the tasks involved in the design of plastic injection molds.



NX Molded Part Designer*

NX Molded Part Designer will give product designers molded part validation and simulation tools to get their product design closer to the finished product without going through costly iterative and prototyping processes.

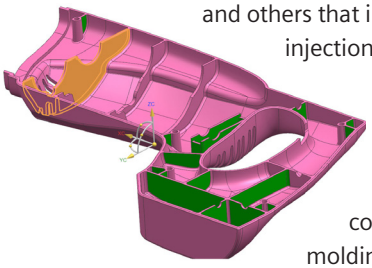
NX Feature2Cost – Stamping

The NX Feature2Cost add-on provides the capabilities needed to analyze the product design and identify key features such as bends, embossing and sheet metal thickness that influence the manufacturing of stamping tools. Once the features are analyzed and identified, the information is transferred to Teamcenter tool costing software to estimate manufacturing costs.

*Token licensing available

NX Feature2Cost – Mold

This helps users to analyze the product design and identify key features such as ribs, openings, cores/cavities, side cores and others that influence the manufacturing of injection molds. Once the features are analyzed, the information about these features is transferred to Teamcenter tool costing to estimate the cost to manufacture the injection molding tools.



NX Flow Blend

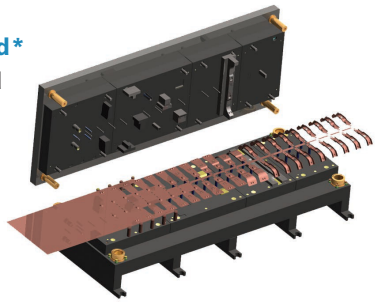
Enables designers to create robust constant or variable blends along multiple complex faces with small curvatures that are essential for manufacturing.

NX Electrode Design*

NX Electrode Design is a time-saving, step-by-step solution that streamlines design and production of electrodes for electrical discharge machining (EDM). This solution helps automate and effectively design, validate, document, manufacture and manage the entire electrode development process from design through production.

NX Progressive Die Wizard*

The NX Progressive Die Wizard add-on offers the tools to construct progressive stamping dies. When planning the forming process, designers can define the pre-process, unfold the part and perform formability analysis (using NX One-step Formability Analysis), nest the flat pattern (blank layout), design the scrap and determine the strip and tool layout.



NX Die Structure Design*

This add-on assists tool designers with specific tools for creating blank, draw, trim and flange dies and associated transfer equipment for stamping sheet metal parts.

NX Die Engineering*

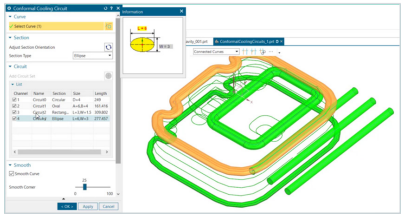
The Wizard-like environment provides process-specific tools for die face design.

NX Molded Part Validation*

This add-on analyzes parts and automatically provides designers with information about draft angles, undercut areas, sharp corners, small radiuses and other items that could compromise molding quality. It also provides designers with an easy visual check of core and cavity sides.

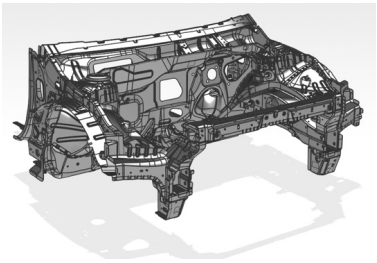
NX Conformal Cooling Channel Design*

Users can use this to automate the conformal cooling channel creation on 3D printed metal mold inserts such as core and cavity. This capability helps mold designers to eliminate many manual modeling processes that improves the creation of conformal cooling channels for mold inserts.



NX Tooling Locators*

NX Tooling Locators application provides the ability to generate and manage datum locators and measurement points typically used in the creation of an assembled structure. It enables connected parts to be assigned to aid in coordination and datums can be configured to automatically determine the control direction. A variety of measurement point types are supported including: surface, trim, hemmed edge, hole, slot and stud.



Industry-specific applications

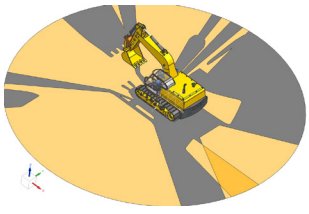
NX delivers workflow solutions built for the specific needs of individual industries with modules for aero structure design, vehicle design automation, ship structure design, human modeling and automation engineering of production systems.

NX General Packaging*

The VDA software (General Packaging) is a set of software assistants and advisors that automate a wide range of tasks associated with the mechanical, safety, vision and occupant packaging of a vehicle. The vehicle design automation functionality checks designs for compliance with international standards and local country regulations.

NX Vehicle Design and Validation

This validation add-on helps engineers define the position of vision devices like mirrors and cameras in vehicles such as cars, trucks and heavy equipment machinery in accordance with national and international safety standards. It works in conjunction with NX General Packaging.



NX Vehicle Design Advanced Validation

NX Vehicle Design Advanced Validation is a combination bundle incorporating NX General Packaging and NX Vehicle Design and Validation.

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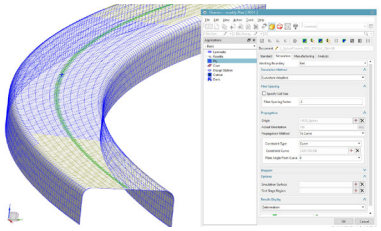
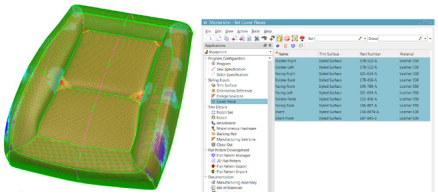
Fibersim*



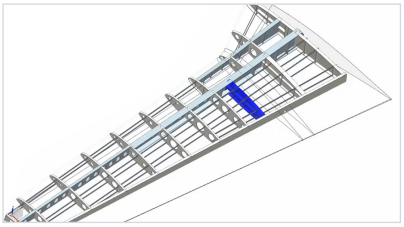
Fibersim includes special-purpose tools for engineering and manufacturing parts from fiber-reinforced composite materials. The software delivers a 3D environment that supports a concurrent engineering process in which design and analysis are performed in the context of the manufacturing process.

Mastertrim*

The Mastertrim™ add-on provides tools for engineering transportation seating and interiors that efficiently define, communicate and maintain a complete and single representation of the automotive seat and interior components across disciplines. Once the master model is defined, Mastertrim provides upstream and downstream benefits, including enabling concurrent engineering, early cost feedback, quicker and more reliable changes, styling criteria verification and the reduction of design iterations.



NX Aerospace Design*



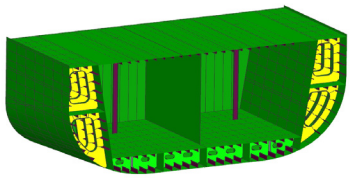
NX Aerospace Design offers a set of tools (aero step, aero rib, aero shelf, aero flange) specifically tailored for designing aerospace parts. NX Advanced Sheet Metal tools for the creation of non-straight-brake parts are also includeds.

NX Ship Structure Basic Design*

Designers can quickly model a preliminary macro view of the ship based on inputs available from the concept design stage. Users can easily model and modify a structural macro view of the ship to support early design-stage analysis, drawing generation and transition to detail design. The basic design model includes hull, plate and profile systems that can be further split with seams into smaller subsystems. Designers can define decks, bulkheads, pillars, stiffeners and edge reinforcements. Standard parts, brackets and cutouts can be added to the basic design model. The resulting models can be used in gross material estimates and weight and center-of-gravity calculations. The basic model transitions seamlessly to detail design.

NX Ship Structure Detail Design*

NX Ship Structure Detail Design provides tools needed to define and modify ship structural detail parts. It includes parametric detail feature definition for quick placement and modification of plates, stiffeners, brackets, holes, profile cut-outs, clips and collars, chamfers, end cuts, corner features, edge features and flanged plates. It also supports creation of structural pillars and application of insulation material to steel surfaces. All data generated from detail design can be used for manufacturing and production planning outputs.



NX Ship Structure PMI Creation

This is an add-on to NX Ship Structures Detailed Design that creates PMI views with similar dimensions and annotations to those created by the combination of NX Ship Drafting and NX Ship Structure Dimensioning and Advanced Annotations.

NX Ship Structure Manufacturing Preparation*

NX Ship Structure Manufacturing Preparation enables creation of data for structural part fabrication. Manufacturing parts can be created from the detail design parts within a manufacturable unit and can be restructured to organize parts and enable welds distribution within the manufacturing assembly structure.

NX Ship Manufacturing Super Plate*

Two or more planar manufacturing plate parts can be combined to form a Super Plate part. All manufacturing processes already run on the individual plate parts like cutting side face, reference line, excess material etc., as well as weld information are copied to the Super Plate part.

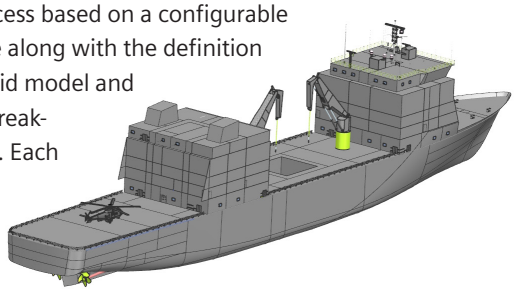
NX Ship Drafting*

This add-on helps you create drawings required for classification approvals. Users can create frame bars on drawing views along with shipbuilding-specific baseline dimensioning methods. Ship section drawing views can be automatically annotated to include stiffener section symbols, structure ID symbols, filling lines representations, scantling information and continuity symbols. Designers can add annotations to each ship structure object and control color, fonts and widths of the ship structure lines.

*Token licensing available

NX Ship General Arrangement Design*

Ship designers can create quick and accurate proposals for new ships based on customer requirements during the concept design phase. It provides tools for creating a 3D model of the general arrangement of a ship and its corresponding 2D drawings. The application includes the capability to initialize the general arrangement design process based on a configurable product structure along with the definition of the concept grid model and the deck-based breakdown of the ship. Each deck can then be detailed by individual designers into room spaces based on a specific purpose. Net and gross volume and surface area for each space is calculated. The ability to add standard equipment, parts and accommodation-related items from the reuse library to these spaces is also provided.



NX Issue Management

Adds an interface inside NX for integrating directly with Teamcenter-based issue management capabilities. The tool enables NX users to directly create, edit, and manage issues, as well as associating 2D images and other files with issues.

NX Rules-based Structure Welding*

Enables shipbuilders to automatically define welds in the 3D model. This application generates a lightweight object to represent each weld joint, enabling very large quantities of welds to be defined and worked with in NX. The software creates weld joints automatically based on the 3D part geometry and material, including the placement and bevel configuration. Supports varying bevels, 3D edge preparations, automated product manufacturing information and drawing weld symbols.

Automation

Mechatronic design

NX provides a multidisciplinary approach to machine design that breaks down barriers between electrical, mechanical and automation engineers. With a library of joints, motors, sensors and actuators along with kinematic and dynamic properties for each component, machine designers can rapidly perform a physics-based, interactive simulation to verify machine operation.

NX Mechatronics Concept Designer*

NX Mechatronics Concept Designer (MCD) delivers a functional design approach to build concept models that combine mechanical, electrical and software components based on system-level product requirements. It enables early conceptual design capabilities in the disciplines of mechanical, electrical, and automation design and engineering and their associated parallel interdisciplinary workflows, supporting a coarse-to-fine product development process.

NX MCD Player*

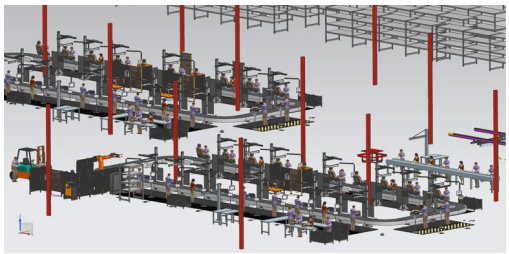
This is a read-only viewer and simulation player for models created with MCD software. The player enables users to load and play simulations of mechatronic machines. Additional signal mapping capabilities are available to drive simulations using programmable logic controller (PLC) hardware or virtual software simulations of a PLC.

Factory design

With NX you can quickly design and visualize layouts of production lines and associate them to manufacturing planning. You can easily optimize the process by specifying each production step down to managing a single manufacturing resource, such as a robot or fixture. Perform accurate impact analysis and drive efficient change management by using a library of parametric resources.

NX Line Designer

The powerful manufacturing layout solution is integrated with Teamcenter fourth-generation design (4GD) or manufacturing process planning. It delivers a rich library of parametric equipment including racks, conveyors, safety equipment and material handling equipment that can be used with Teamcenter Classification.



*Token licensing available

NX design products key add-ons overview

(Content is subject to change)

Core	Token licensing
NX STEP AP242 translator	Yes
NX CATIA V4 translator	Yes
NX CATIA V5 translator	Yes
NX Creo Translator	Yes
NX ACIS Translator	Yes
NX Translator for IFC	Yes
NX Command Prediction	Yes
NX Smart Selection	—
NX Select Similar Faces	Yes
NX Voice – Command Assistant	Yes
NX Viewer	Yes
NX DMU and Markup	Yes
NX DMU and Markup Add-on for NX Viewer	Yes
NX Virtual Reality Review	—
NX Virtual Reality Collaborate	—
NX Extended Reality	Yes
NX Appearance Management	Yes
NX Appearance Management for Managed User	Yes
NX Multi-user Design Notification	Yes
NX Smart Context Designer	Yes

Mechanical	
Industrial design and styling	
NX Render	Yes
NX Realize Shape	Yes
NX Draw Shape	Yes
Product design	
NX Show/Hide Similar	—
NX Layout	—
NX WAVE Control	Yes
NX Assembly Path Planning	Yes
NX Lattice Structures Design	—
NX Structure Designer	Yes
NX Platform Design	Yes
NX Topology Optimizer	Yes
NX Design Space Explorer	Yes
NX Performance Predictor	Yes
NX Advanced Sheet Metal	Yes
NX Fabric Flattener	Yes
NX Weld Assistant	Yes
NX Drawing Automation for NX	Yes
NX Physical Architecture Diagram Author	Yes
NX Physical Architecture Diagram Viewer	Yes
NX Physical Parameter Management Author	Yes
NX Physical Parameter Management Viewer	Yes
NX Reference Point Cloud View	—
NX Join	Yes
NX OmniFree Transformer	—
NX OmniMesh Transformer	—
NX Advanced Convergent Modeling	Yes
NX Implicit Modeling	Yes
NX Advanced Assemblies	Yes
NX Design for Additive Manufacturing	Yes
NX Composites	Yes
NX Composites Laser Projection Interface	Yes
NX for Sustainability	Yes
Model-based definition	
NX Product and Manufacturing Information	Yes
NX Model-based Definition	Yes
NX PMI Effectivity	Yes
NX Staged Models	Yes
NX Technical Data Package	—
NX Coatings	Yes
Knowledge re-use	
NX Algorithmic Modeling	Yes
NX Product Template Studio Author	Yes
NX Product Template Studio Consumer	Yes
NX Open Toolkits Author	—
NX Open for .NET Author	—
NX Open Python Author	—
NX Open Dialog Designers	—
NX Open GRIP Author	—
NX Integration to Geolus	Yes
Design validation	
NX Human Modeling	Yes
NX Human Modeling Posture Prediction	Yes
NX Design Simulation	Yes
NX Motion	Yes
NX Animation Designer	Yes
Simcenter FLOEFD for NX	—
NX EasyFill Analysis	—
NX EasyFill Analysis – Advanced	—
NX Check-Mate Runtime	Yes
NX Check-Mate Author	Yes
NX DFMPro	—
NX VDA 4955 Checker	Yes
NX HD3D Visual Reporting	Yes
NX One-step Formability Analysis	Yes
NX Mold Cooling	—
NX Forming	—
NX Forming SMP	—
Routed systems	
NX Diagramming	Yes
NX Routing Base	Yes
NX Routing Piping and Tubing	Yes
NX Routing HVAC	Yes
NX Piping Fabrication Drawings and PMI	—
NX Penetration Management	Yes

*Token licensing available

Electrical	
Electrical systems	
NX Routing Cabling	Yes
NX Cable Router	Yes
NX Routing Harness	Yes
PCB systems	
NX PCB Exchange	—
NX PCB Exchange for Xpedition	—
NX PCB Exchange for Zuken	—
NX Flexible PCB	Yes

Process	
Jig, fixture, tooling	
NX Mold Wizard	Yes
NX Molded Part Designer	Yes
NX Feature2Cost – Stamping	—
NX Feature2Cost – Mold	—
NX Flow Blend	—
NX Electrode Design	Yes
NX Progressive Die Wizard	Yes
NX Die Structure Design	Yes
NX Die Engineering	Yes
NX Molded Part Validation	Yes
NX Conformal Cooling Channel Design	Yes
NX Tooling Locators	Yes
Industry-specific applications	
NX General Packaging	Yes
NX Vehicle Design and Validation	—
NX Vehicle Design Advanced Validation	—
Fibersim	Yes
Mastertrim	Yes
NX Aerospace Design	Yes
NX Ship Structure Basic Design	Yes
NX Ship Structure Detail Design	Yes
NX Ship Structure PMI Creation	—
NX Ship Structure Manufacturing Preparation	Yes
NX Ship Manufacturing Super Plate	Yes
NX Ship Drafting	Yes
NX Ship General Arrangement Design	Yes
NX Issue Management	—
NX Rules-based Structure Welding	Yes
NX for BIM	Yes

Automation	
Mechatronic design	
NX Mechatronics Concept Designer	Yes
NX MCD Player	Yes
Factory design	—
NX Line Designer	—

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