Advanced Modelling including Surfacing and Industrial Design

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#IngenuityisNX

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NX Strategy
Breaking down the barriers to innovation

Flexible Product Development Platform

Electro-Mechanical Design
Most Productive Modeling Environment
Generative Design & Integrated Validation
Industrialized Additive Manufacturing
Collaborative Design Management
Immersive Design & Visualization
Industrial Design

Develops design solutions to problems or needs in the market

Focuses on the entire user experience of a product aimed at improving life through design

Industrial Designer’s tasks:
• Research and inspiration
• Ideation and form development
• Concept selection and refinement

Instrumental in developing the company, brand, or product identify that customers relate to
Aesthetics where you don’t expect it

Inventas “Roxar” flow meter for the Oil and Gas Industry

Industrial Design made this Inventas’ #1 product in the market
Subdivision Modeling

Methodology for creating advanced 3D forms

Continuously manipulate and subdivide an initial shape to add greater levels of detail and control

• Originated in the entertainment industry (Polygons)
• Adapted to suit the manufacturing industry (NURBS)
• Revolutionary in terms of form development speed and ease-of-use

Conservatively 10X faster than traditional methods!
NX Realize Shape

Siemens NX integrated subdivision modeling toolset

Advanced subdivision shape creation allows for rapid conceptualization of ideas without the need for expert knowledge

• Easy to use, intuitive user interaction
• Many options for refining shapes
• High-quality b-spline surfaces in an editable feature
• Can be easily used in combination with other surfacing and design tools

High quality freeform shapes can be fully reused downstream without data conversion
Applications

From initial concept ideation and form development to production level advanced freeform surfaces

NX Realize Shape is being applied to numerous design workflows across various industries, replacing traditional CAD surfacing methods for many use cases

• Initial concept forms
• Product styling surfaces
• Advanced aerodynamic / hydrodynamic forms
• Reconstruction of scan or CAE topology optimized shapes

Integration within NX provides significantly greater value over traditional tools and methods
## Customer voice - NX VS Rhino experience

<table>
<thead>
<tr>
<th>Experience</th>
<th>NX User</th>
<th>Rhino User</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time spent on concepts</td>
<td>1 month</td>
<td>Years</td>
</tr>
<tr>
<td>Complexity achieved</td>
<td>Minutes</td>
<td>Hours</td>
</tr>
</tbody>
</table>

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Overview Demonstration
“The use of Siemens NX in our design process is indispensable.

On the one hand, NX Realize Shape supports us at an early stage in the design process in the implementation of concepts as well as complex forms.

On the other hand, the parameterization in NX helps us to accompany design processes in CAD in a sustainable and time-oriented manner.”
Workflows

Solids based

Surfaces based

Wireframe based

Flexible design as you see fit
NX Realize Shape Capabilities

- Subdivision Modeling task environment
- Create and edit subdivision surfaces
  - Primitive, Extrude, Split, Subdivide, Bridge, Fill
  - Transform, Set Weight & Continuity, Delete, Merge, Project
- Symmetric Modeling
- In-context analysis & visualization
- NX Feature
  - Replays in history
  - Edit like create
- NURBS geometry
  - All CAD functions work seamlessly
**NX Realize Shape Capabilities**

- Polyline creation and create polylines from curves
- Extrude, Revolve, Loft, Sweep & Tube from polylines and edges
- Extrude – Vector (Extension), Normal (Flange) and Thicken
- Transformer within all primitives
- Copy-Move cage and polyline geometry
- Insert sections within commands - Bridge, Revolve, Loft, etc.

**Customer value**

- 5x-10x faster to create subdivision shapes
NX Realize Shape Capabilities

• Copy & paste - within active task, between tasks within the same or different parts
• Split and merge subdivisions bodies commands
• Segmentation controls in all primitives
• Mirror and offset commands
• Continuity control in all creation commands
• Transform polylines, Transform within extrude
• Connect to Geometry

Customer value
• Greater reuse of subdivision design elements
NX Realize Shape User Interaction

Capabilities

• Define working regions
• Consistent cage selection intent
• Rationalized selection methods
• Select sharp edges and select weighted edges selection
• Consistent de-select automatically preference
• Polyline preferences settings

Customer value

• Efficient and refined user experience
Detailed Demonstration
Business Value

New levels of advanced surface creation, integration and speed

Easy to explore shapes directly in 3D with greater freedom and control

• Design faster with the same or better quality
• 3D designs that used to take days can be done in a few hours
• Easy to work with complex surfaces, transitions, and model as you want without compromise.

Higher quality results, to a greater level of refinement, in less time, without the need for expert knowledge
NX Maple is a new SPLM Product that allows you to:

- Accelerate simple or complex engineering calculations, including units, in a format that is easily recognizable by all engineers and analysts.
- Keep critical engineering calculations under revision control within the Teamcenter PLM environment.
- Easily connect math equations with existing PLM investments – including driving NX geometric designs in novel ways.

The heart of engineering has always been well-documented math-driven decisions.
NX Maple is a powerful tool that simplifies your ability to integrate and access advanced math inside your designs. NX Maple helps to connect your engineering knowledge to your design geometry to ensure design consistency based on engineering best practices.

**Drop in any time with Taylor Anderson and/or Richard Bush:**

Tuesday: 8:00 to 17:00  
Wednesday: 8:00 to 11:00
Expert information is just a click away

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