

Introduction to Process Modeling

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Session 2/6 Notes

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4.4

PROCESS MODELING: INTRODUCTION

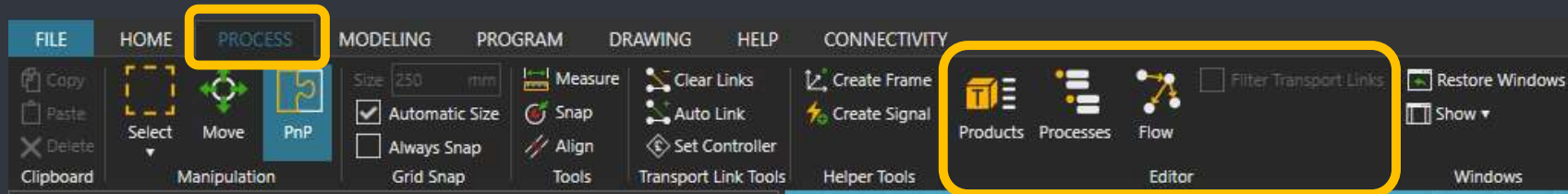
Streamlines the **layout planning process** with a

- visualized workflow
- quick simulation setup
- enhanced simulation performance

- 1) Component Libraries
- 2) Example Design flow
- 3) **Process Modeling**
 - i. **Introduction**
 - ii. Process Tab
 - iii. Flow Groups
 - iv. Product Type
 - v. Assemblies
 - vi. Process Statements
 - vii. Process Routines
 - viii. Resource Controllers
 - ix. Transport Graph
 - x. Flow Sequence
 - xi. Process's Source
- 4) Other Library Families
- 5) Works Library

PROCESS MODELING: PROCESS TAB

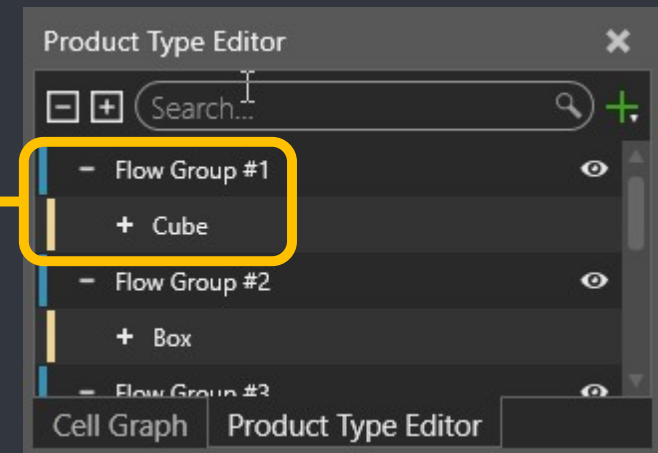
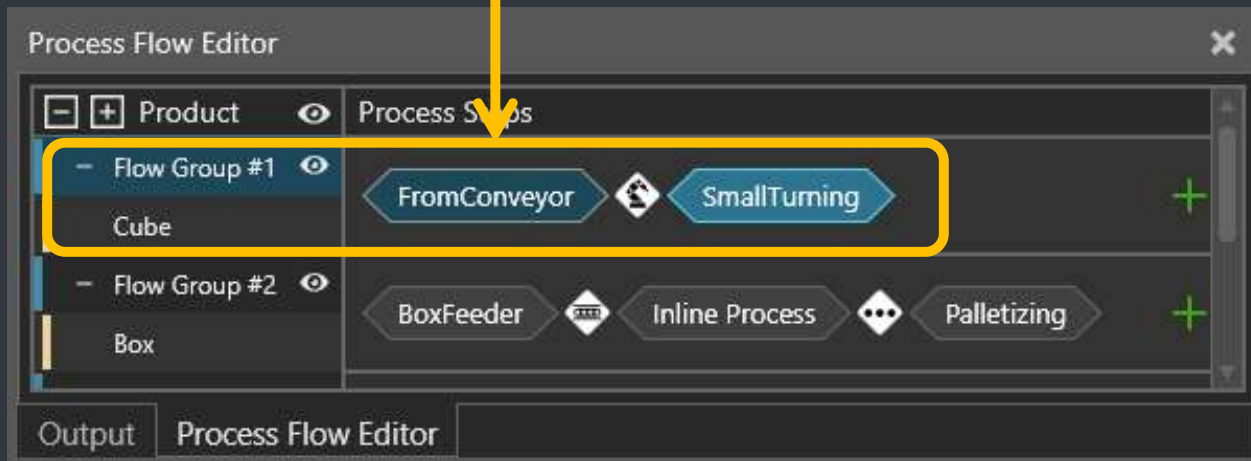
- **Product:** Any entity which goes through a certain process in a layout.
- **Process:** A set of statements which assign certain behavior to a process.
- **Flow:** The sequence of processes which the product follows in a layout during simulation.



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PROCESS MODELING: FLOW GROUPS

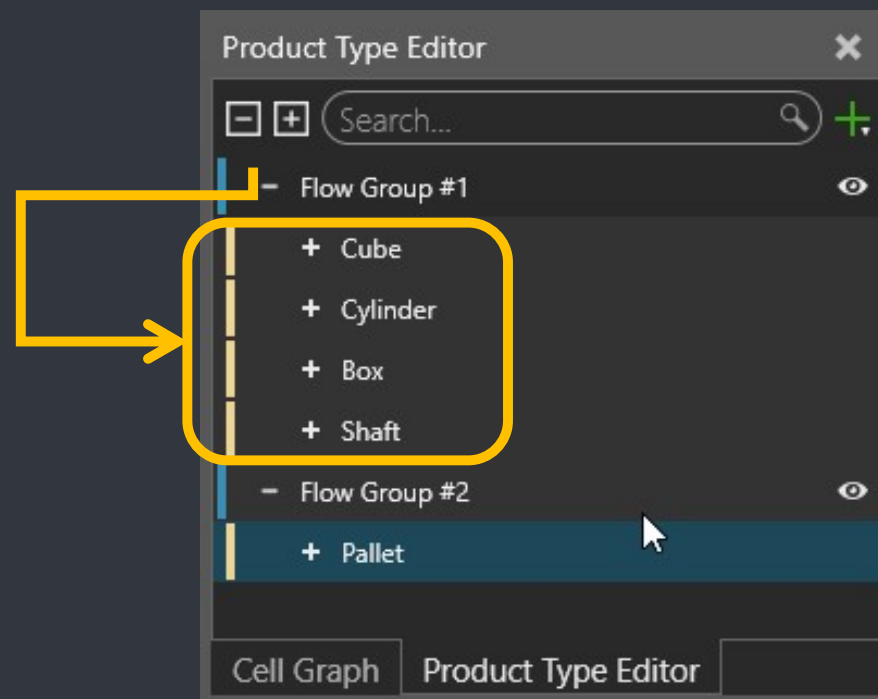
- Product Flow Group is a collection of product types that share the basic production flow sequence (=route through production).
- Product Editor in Process tab is used to do this definition.



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PROCESS MODELING: PRODUCT TYPE

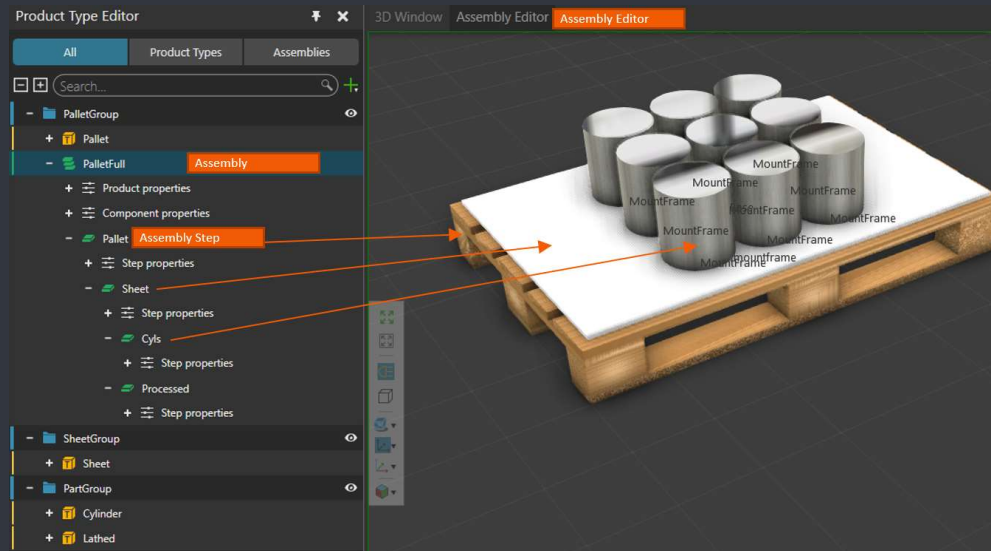
- Product Editor is used to define product types that are used as products in manufacturing production.
- Each Product Type is part of a Flow Group.



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PROCESS MODELING: ASSEMBLIES

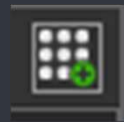
- Assemblies are hierarchical structures of assembly steps. Each assembly step has a specified location compared to its parent step.
- Each assembly step contains a pattern of slots. A slot defines the default product type and the location for that product.
- Just like product types, assemblies can be defined in the product type editor. The assembly editor can be launched from the pencil icon to the right of an assembly step.



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PROCESS MODELING: PROCESS STATEMENTS

- Process statements editor to define behavior of a process.



Add new Statement

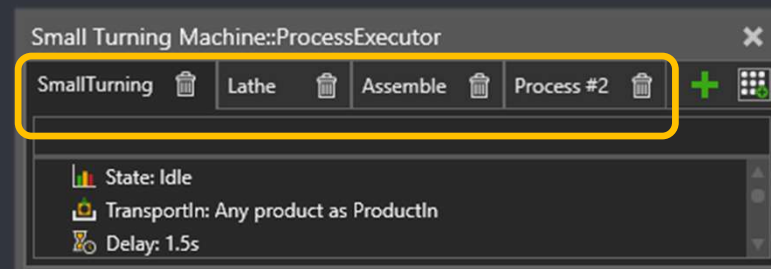
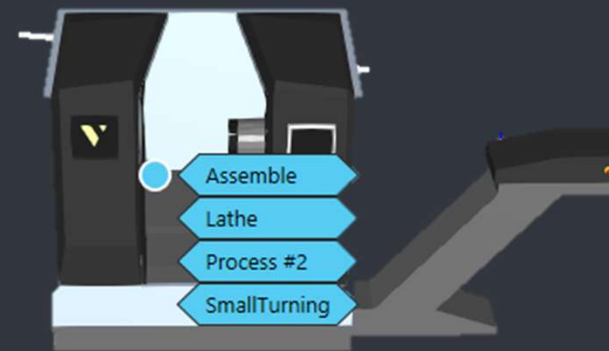
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PROCESS MODELING: PROCESS ROUTINES

- In process editor different processes (e.g. machines, buffers and workstations) are built from one or more **process routines**.
- Each process routine is built from **statements**, that define how process or machine behaves.
- Process routines with same name represents parallel processes.



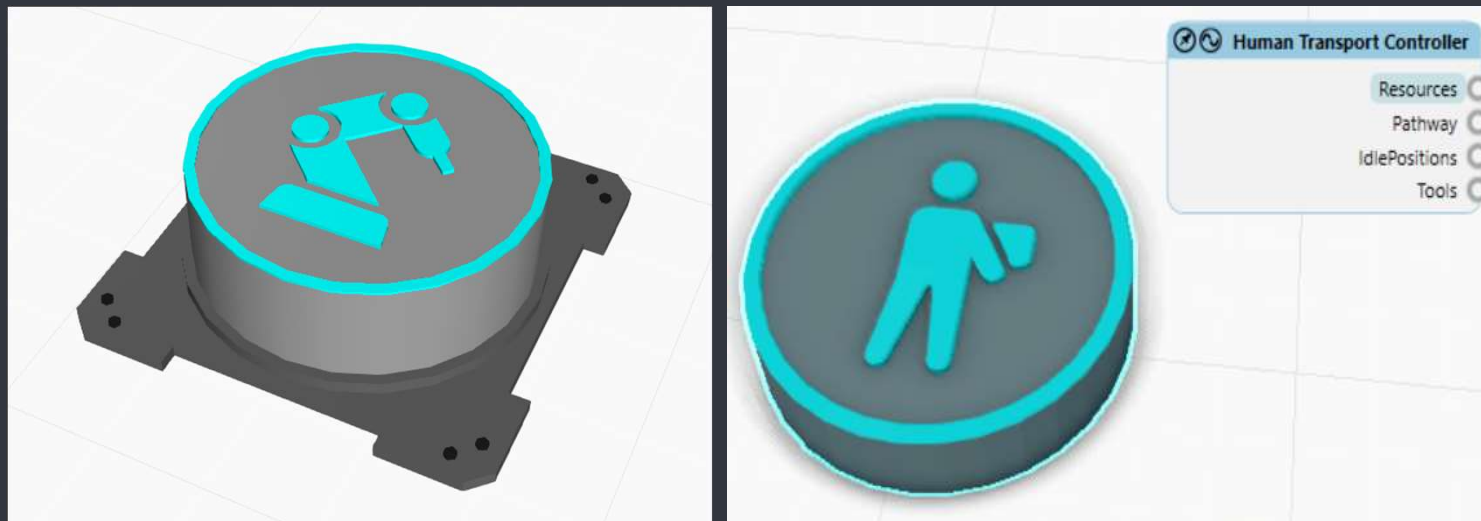
Add new Process



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PROCESS MODELING: RESOURCE CONTROLLERS

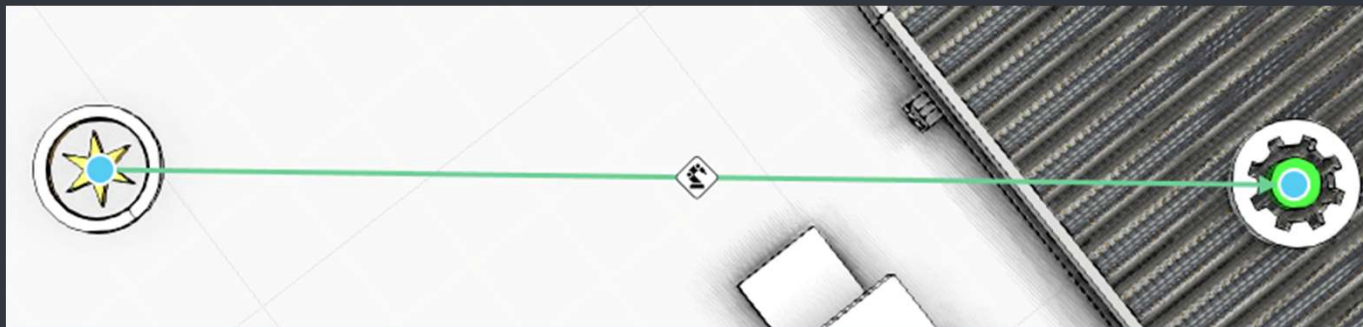
- Process Model Human Transport Controller is provided to have different human resources in the production
- Process Model Robot Controller is provided to have robots handling processes



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PROCESS MODELING: TRANSPORT LINKS

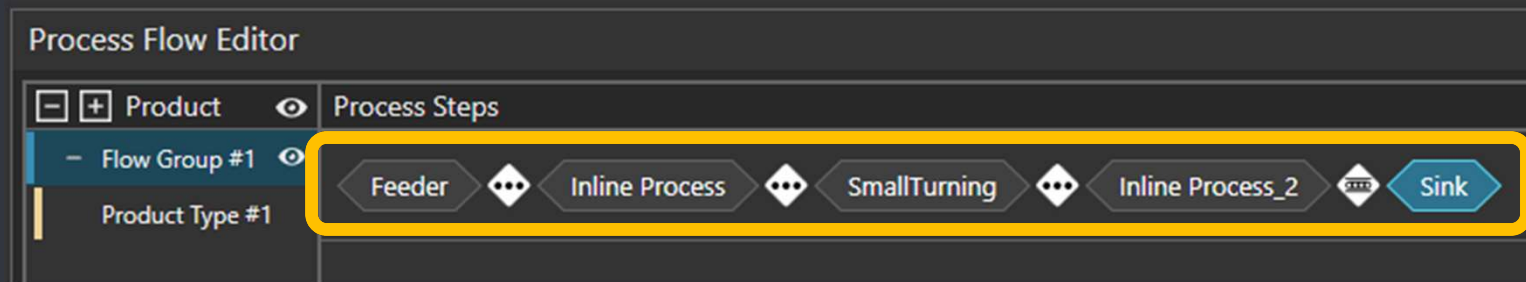
- Transport Link is used to find Transport solution from requesting process to demanding one.
- Transport Link consist of Transport Link and Transport Implementer (Interpolating, Conveyor, Robot, Human, etc.)



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PROCESS MODELING: FLOW EDITOR

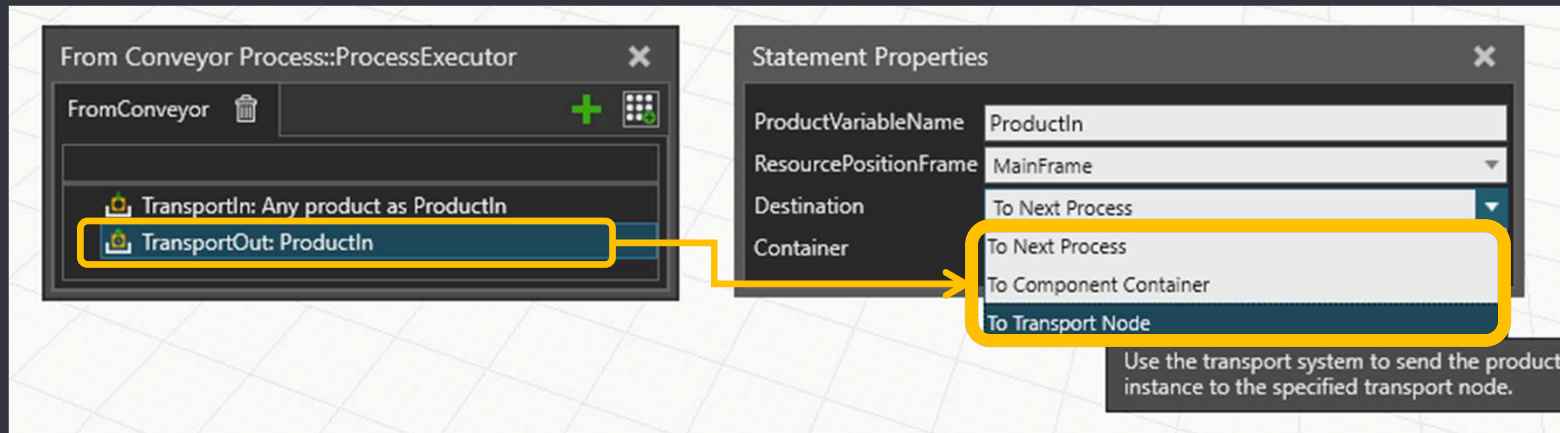
- Process flow sequence for each product group.
- Sequence is a list of sequential processes that product instance must go through in order to finalize its production
- Transport links between process implementations (and also between transport nodes without process).
- Transport link define how product instances are transported over that link / transition (via conveyor, using Transport Controller...)



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PROCESS MODELING: PROCESS'S SOURCE

- Note the destination of a product in process flow component when transporting out the part
- **To Conveyor** and **From Conveyor** Components use “Component Container” and Sink uses the “From Previous Process”
- When using the Process as source for process transport statement, simulation waits for next process to be free, then sends the part



From Conveyor Process::ProcessExecutor

FromConveyor

TransportIn: Any product as ProductIn

TransportOut: ProductIn

Statement Properties

ProductVariableName: ProductIn

ResourcePositionFrame: MainFrame

Destination: To Next Process

Container: To Next Process, To Component Container, To Transport Node

Use the transport system to send the product instance to the specified transport node.

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