

AnyLogic 7

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1st AnyLogic Conference

InterContinental Berlin

December 2012



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Our ultimate goal:

**De-facto standard for simulation modeling
(business applications)**

These things are NOT going to change:

- Flexible general-purpose simulation software
 - With extended support for some verticals
- Java / Eclipse
 - Cross-platform (Windows, Mac, Linux)
 - Models on the Web
 - Object-oriented (hierarchy, reuse of objects)
- Multi-method, multi-language
 - Discrete event, agent based, system dynamics
 - Statecharts, process flowcharts, stock and flow diagrams, actioncharts...
 - Discrete and continuous dynamics, events and differential equations
- Logics linked to graphics but defined separately
- Compatibility with v 6 fully preserved

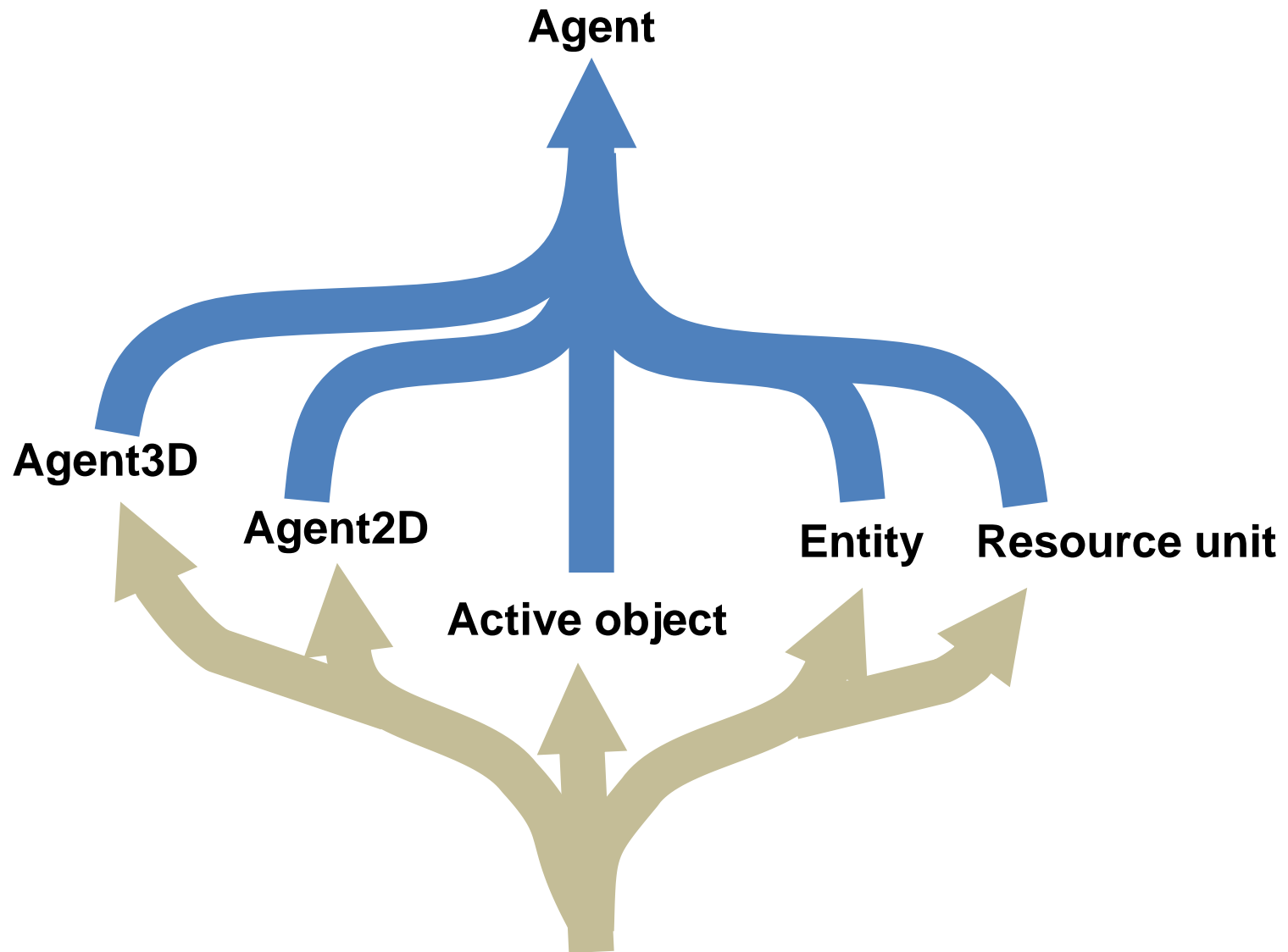
Key new features of AnyLogic 7

- “Merge and consolidation”
 - Uniform space markup for all kinds of activities
 - New library for discrete event (process) modeling
 - New UI (focus on usability and minimum coding)
 - Extended support for "verticals“
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- Scenario manager

August 2013

February 2014

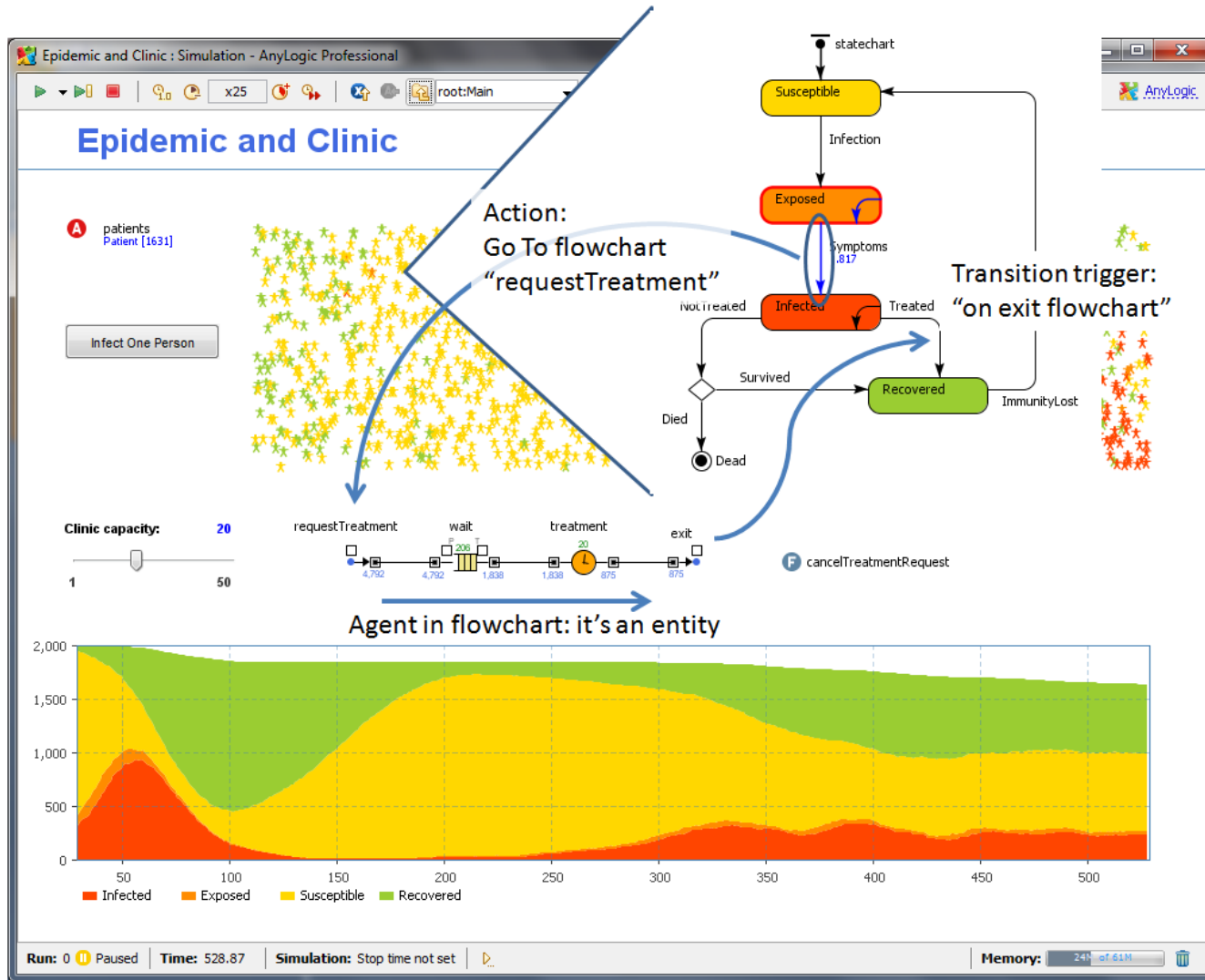
Merge and consolidation: Objects



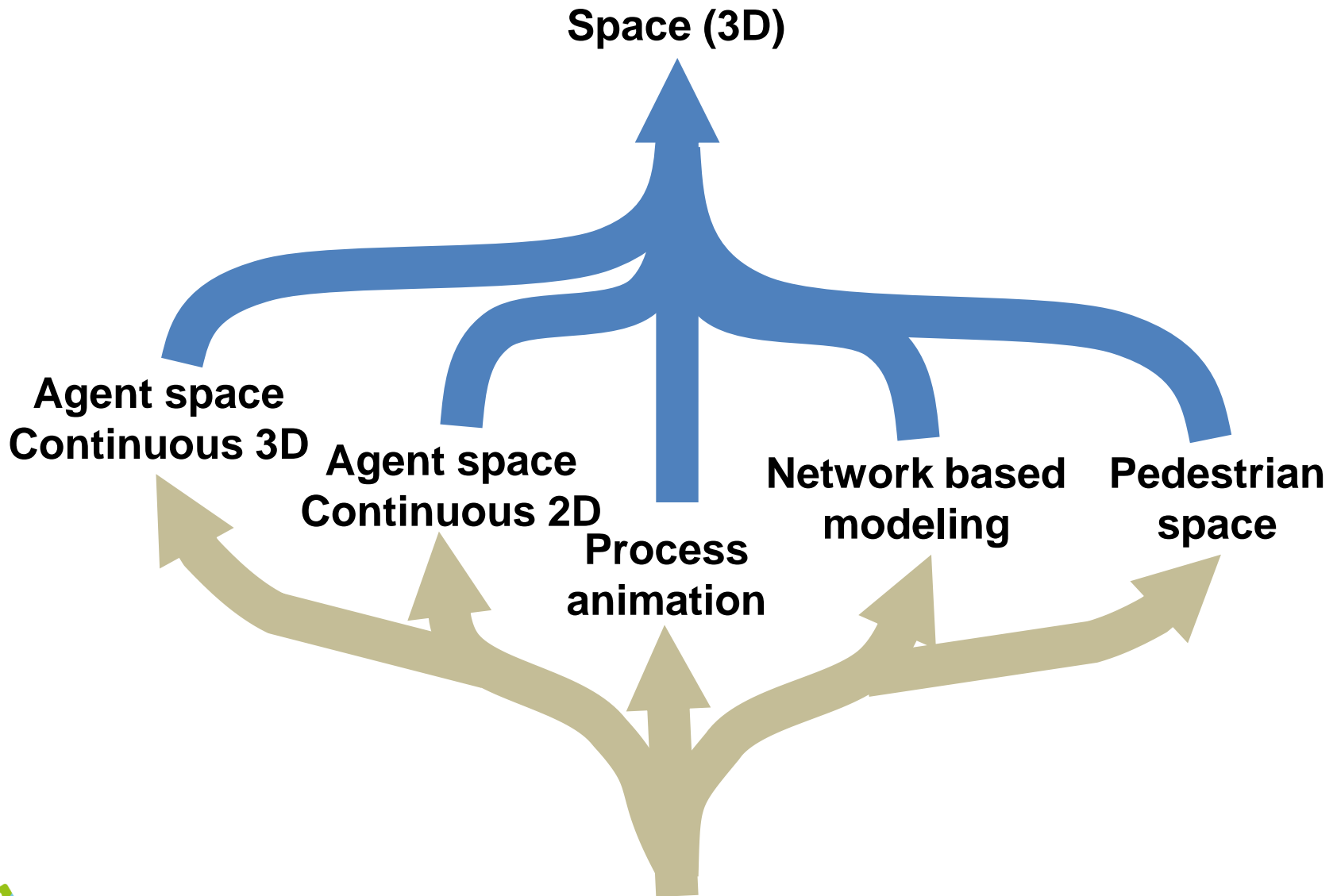
Benefits for modelers

- Use graphical editor to create entity internals:
 - Fields
 - Functions
 - Animation
- Define individual activities inside entities
 - States
 - Timing
- Collect entity-centric statistics
 - Waiting times, processing times, time in system
 - Cost calculation, ABC costing
- Easy to inject agents into a process and remove
- Easy for agents and entities to become pedestrian, train, car, ...

Example: agent dives into a process and jumps out



Merge and consolidation: Space



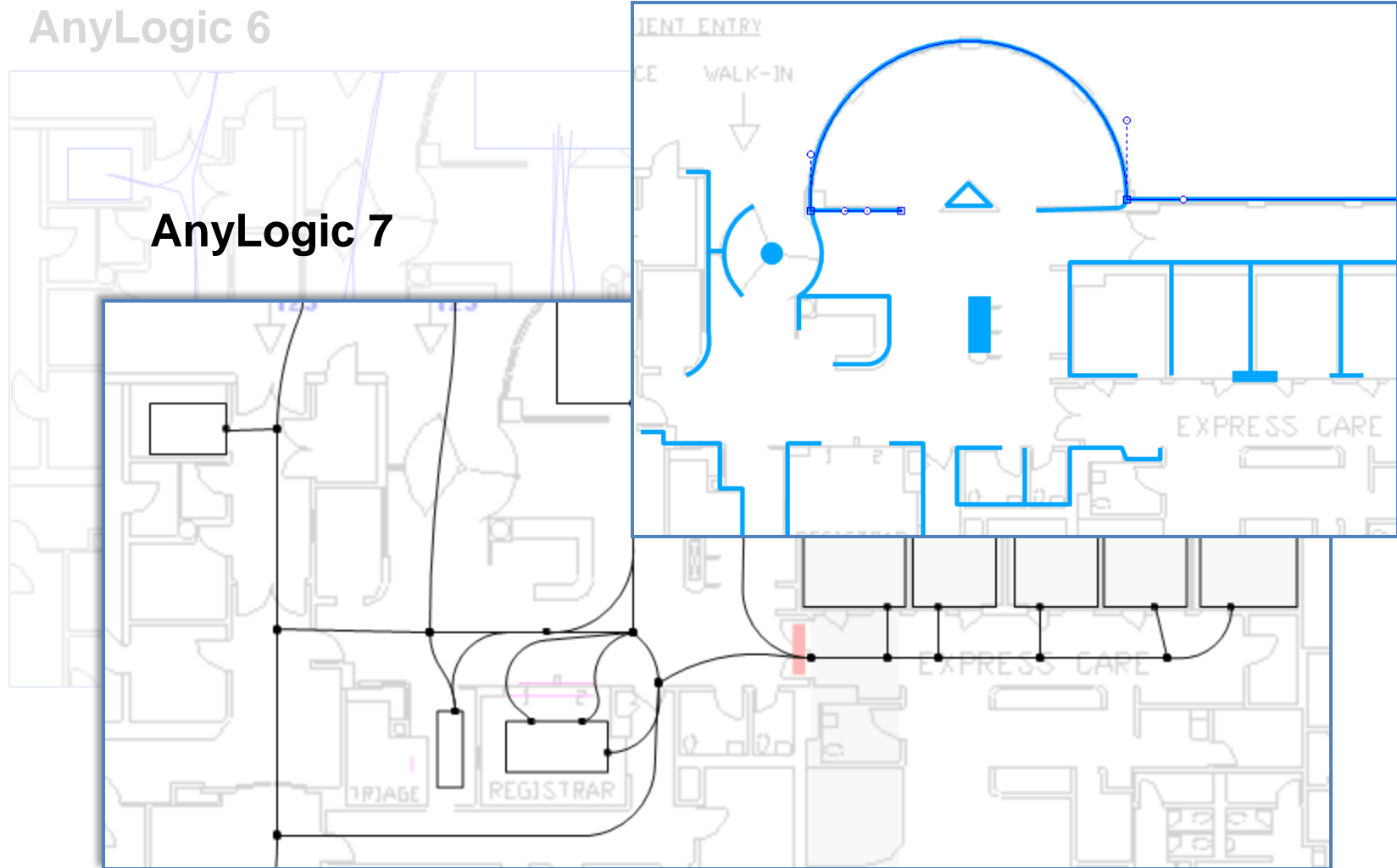
Benefits for modelers

- The space is shared by agents, entities, pedestrians, cars, etc.
 - Let agents use the network drawn over the floor plan
 - Let agents sees the walls and obstacles
- Uniform coordinate system for everybody (uniform X, Y, Z)
 - No coordinate system conversion anymore
 - Entity can easily find out which agents or pedestrians are close and vice versa
- Uniform space markup =>...

New unified space markup

- In AnyLogic 6 we used common shapes like rectangles and polylines to mark nodes and paths
- In AnyLogic 7 we have special shapes to mark locations and
 - Nodes of arbitrary shape
 - Paths with straight and curved segments
 - Smart connection of paths and nodes into networks
 - Special paths for conveyors, walls, rail tracks, roads
 - Special nodes for storages, rail switches, turnstiles
 - Path and node decoration options
- Network routing recalculation performance is drastically improved
 - Important for very large networks, like large warehouses

Example: Space markup in the Trauma Center model

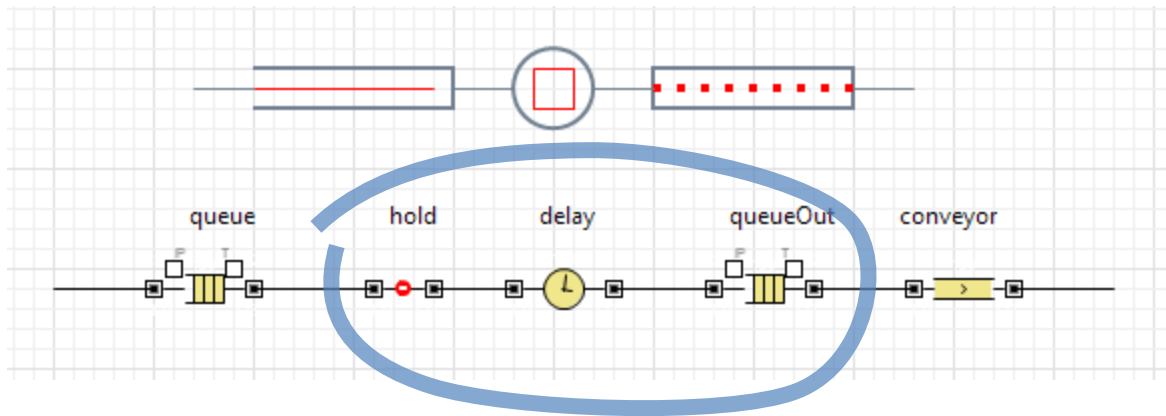


New library for discrete event (process) modeling

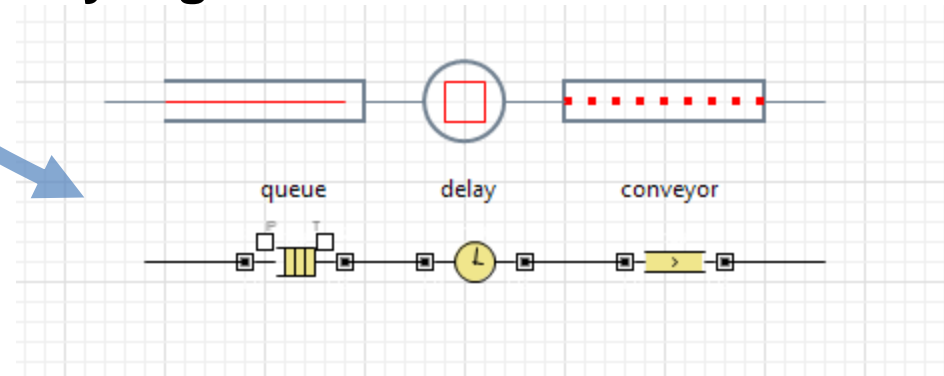
- "Pull" instead of "Push": natural entity flow
 - Flowchart objects will stop and wait until the next objects are ready
 - "Push" is still available as an option
- Flexible resource management
 - All kinds of resources (regular and network) are unified
 - Request particular resources, allow alternative sets
 - Preparation and wrap-up
 - Preemption, interrupts
 - Shifts, breaks
- Bit and pieces for "verticals" support
 - Conveyor connections
 - Warehouse storages
 - ...

Pull and push

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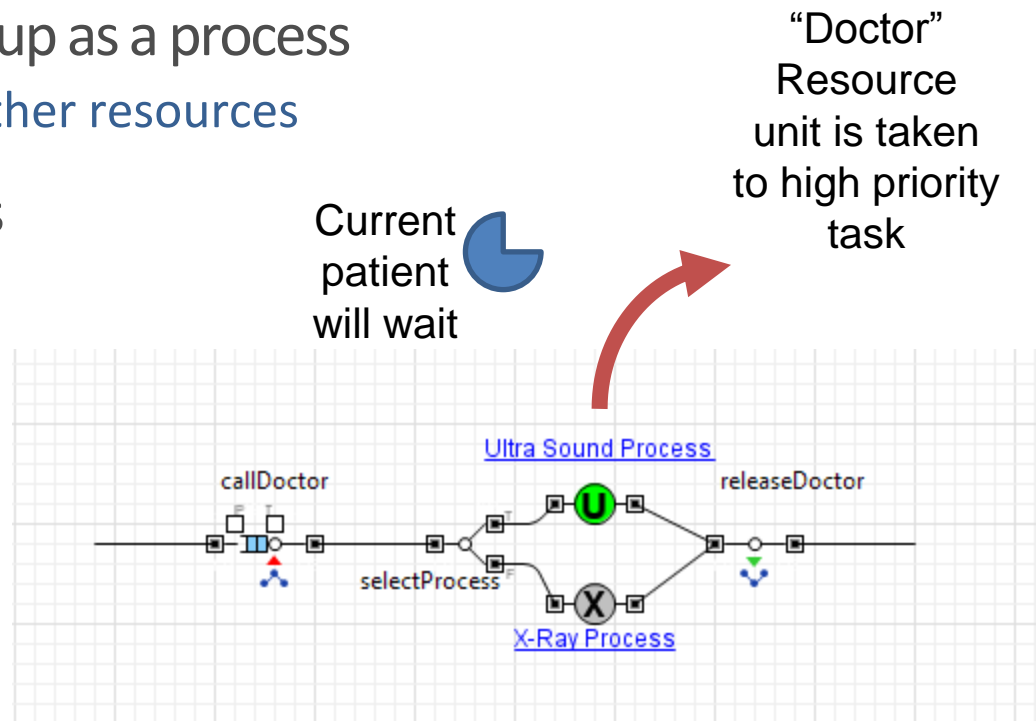


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Flexible resource management

- Regular and "network" resources are merged into Resource
- Entities can request specific resources, allow alternative sets
 - Seize at once, seize one by one, ...
- Preparation and wrap-up as a process
 - Resource may seize other resources
- Preemption, interrupts
- Shifts, breaks

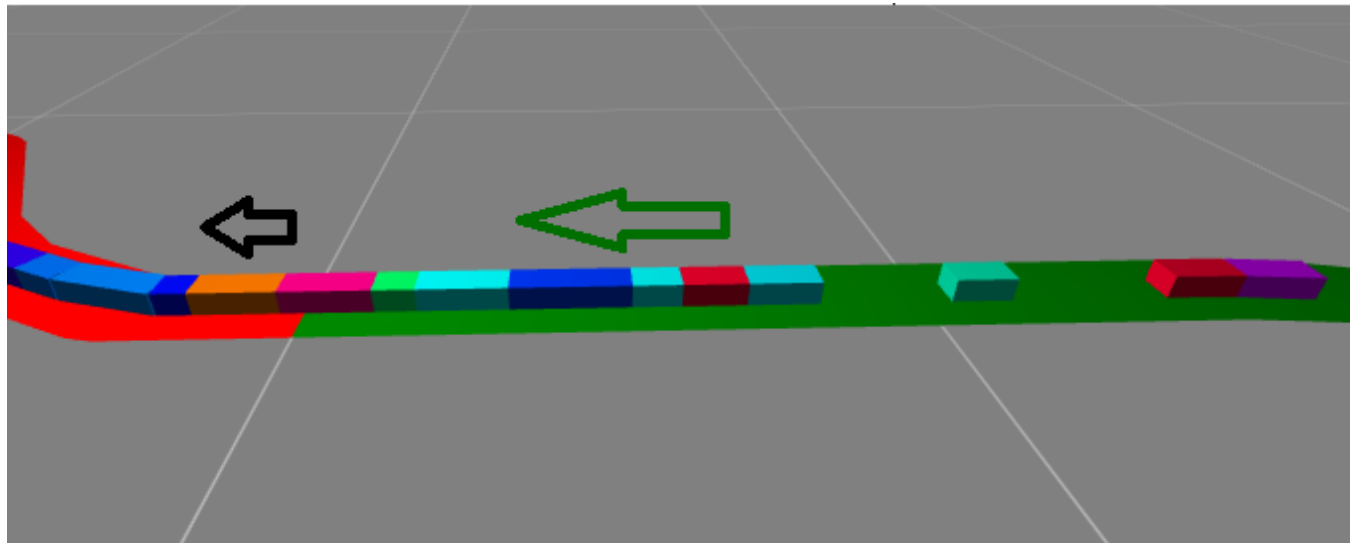


Entity- and process-centric statistics

- Entity (= agent) knows and collects statistics on:
 - Current flowchart block
 - Entry and exit time for each flowchart block
 - Time spent in the current block
 - Waiting time in the block
 - Cost of processing
 - Full path in the flowchart
- Flowchart block knows and collects statistics on:
 - Who is inside
 - Who has finished processing and waits to exit
 - Utilization
 - History of entities' entries and exits
- Resource (= agent)
 - Who has ever sized this resource unit
 - Utilization

Material handling support

- Conveyor connections
- Warehouse storages
- Cranes, robots
- ...

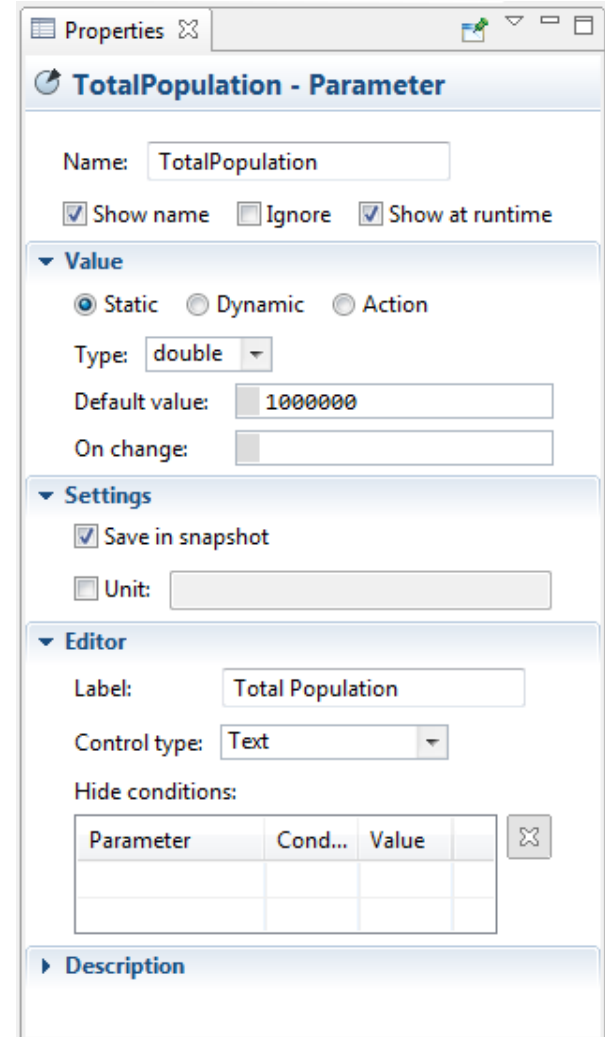
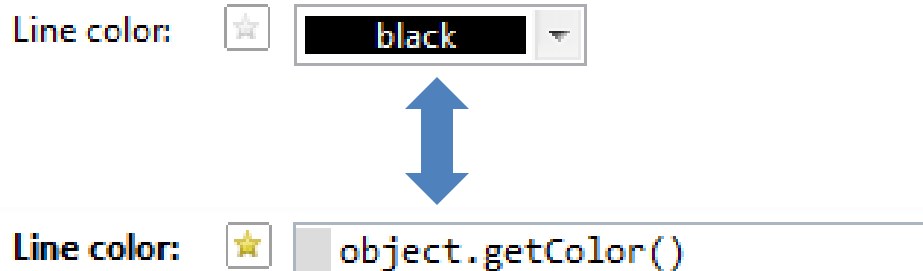


New UI

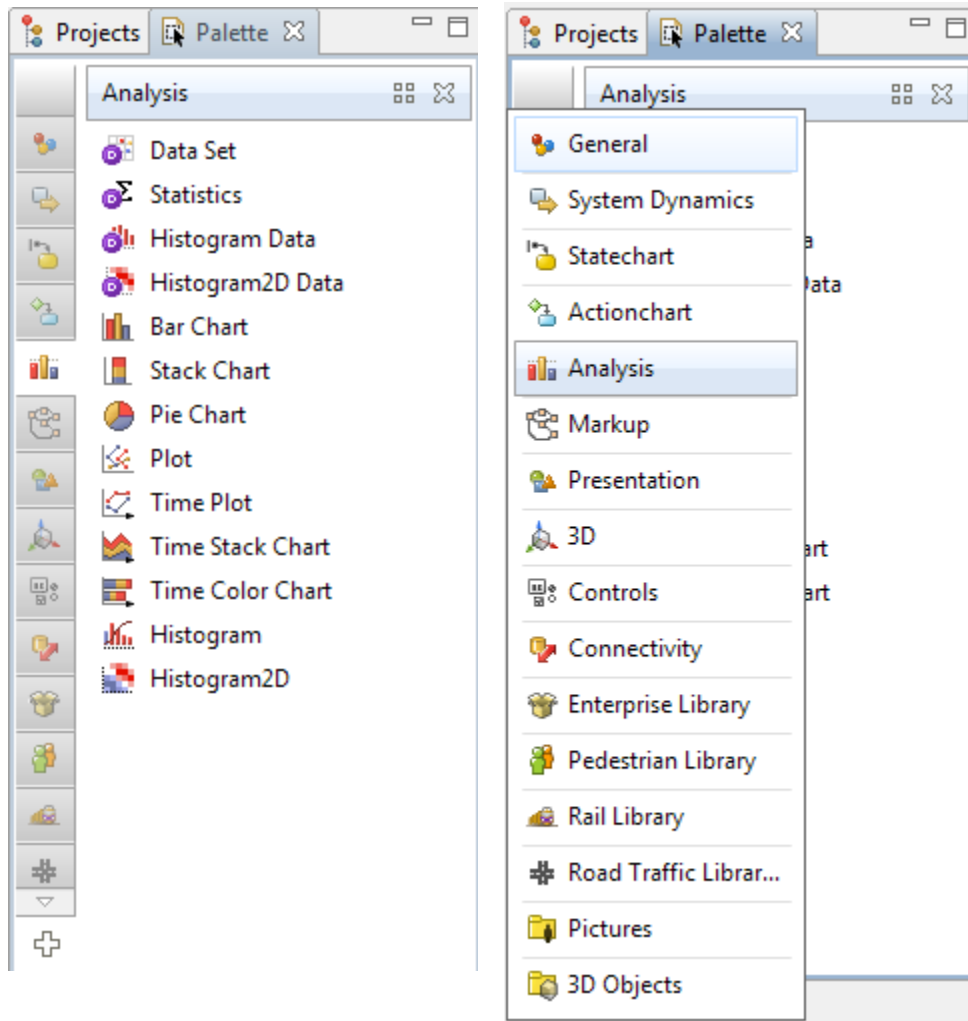
- New Properties window
- New Palette
- New Space Markup objects (we talked about that already)
- 3D preview at design time
- New "code completion" and "code wizard"
 - Completion suggests only relevant choices and in compact way
 - Wizard to compose expressions and statements for Java-unaware modelers
- Many more 3D objects

New properties

- Vertical
 - Docked to the right by default
- One page (no tabs anymore)
- Collaspe/expand sections
- Easy to switch between design-time and run-time values:

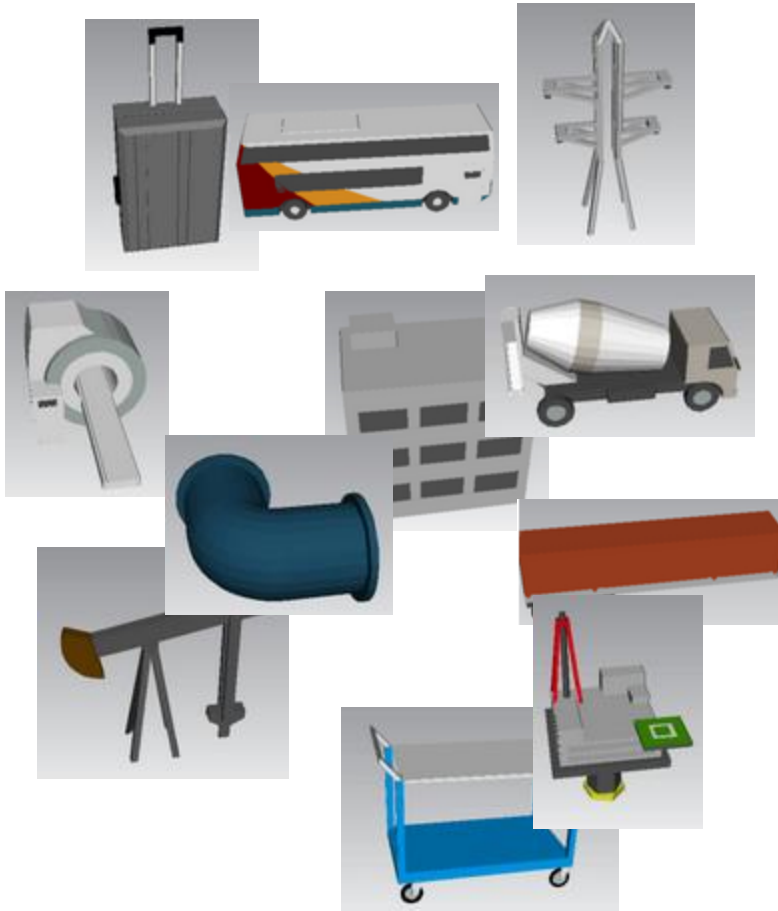


New palette



- More space for elements
- By default, docked on the left

More 3D objects

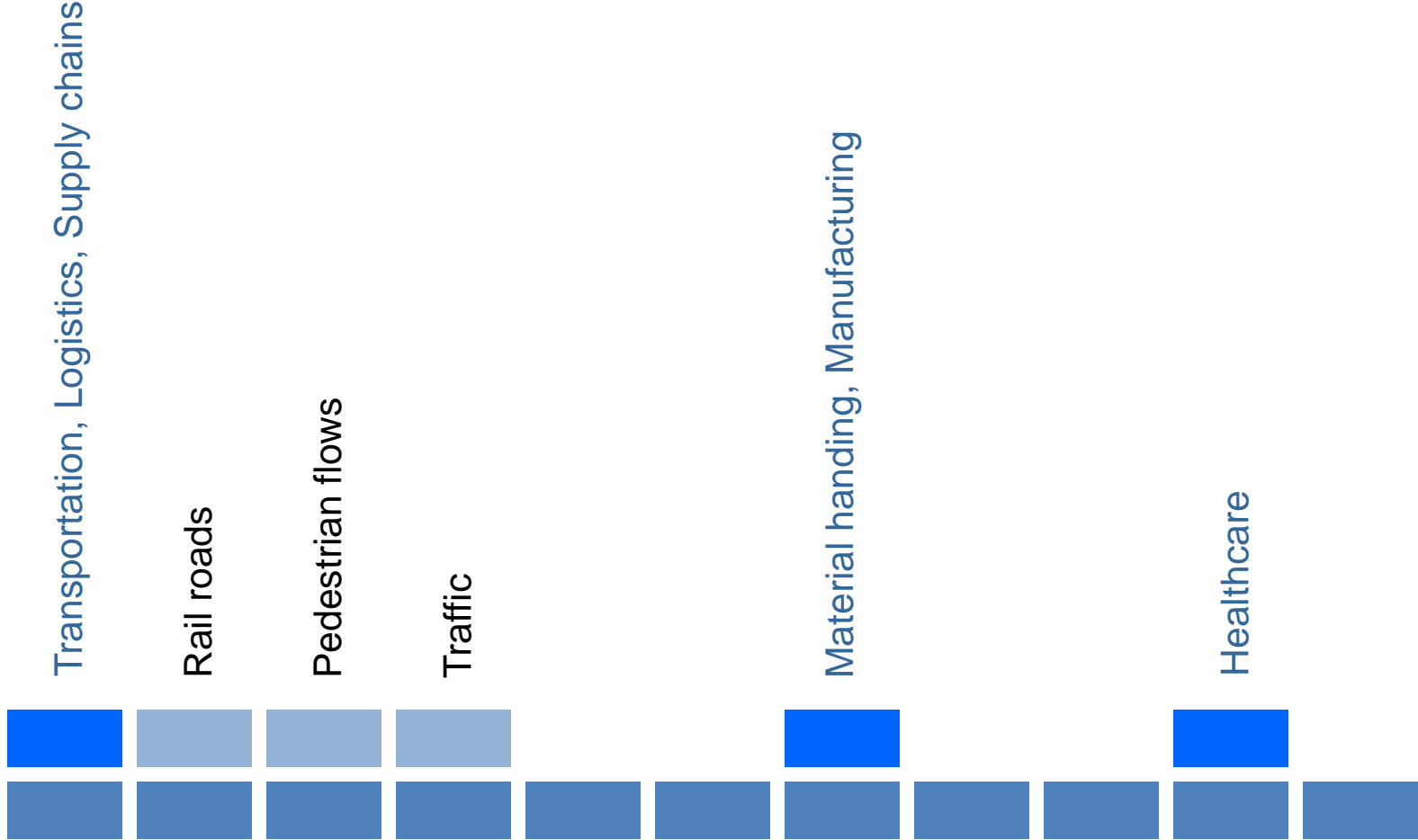


- Hundreds of new standard 3D objects
 - Manufacturing
 - Material handling
 - Medical
 - Oil and gas
 - Vehicles
- Standard objects optimized for fast rendering
- Ability to paint standard and imported 3D objects

Scenario manager

- Easy-to-use UI to design and run experiments
 - Compare runs
 - Parameter variation
 - Sensitivity analysis
 - Monte Carlo
 - Optimization
 - Calibration
- Database to store and manage
 - Model versions
 - Parameter sets
 - Run results
- Advanced charts and graphs
- Desktop and client-server options
 - Option: model runs on server, thin clients (web)

AnyLogic: horizontal and vertical



Thank you!

- Questions?
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