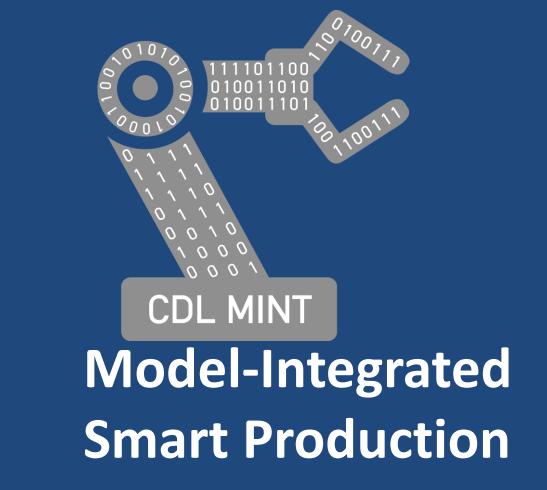


Towards Continuous Behavior Mining

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Motivation

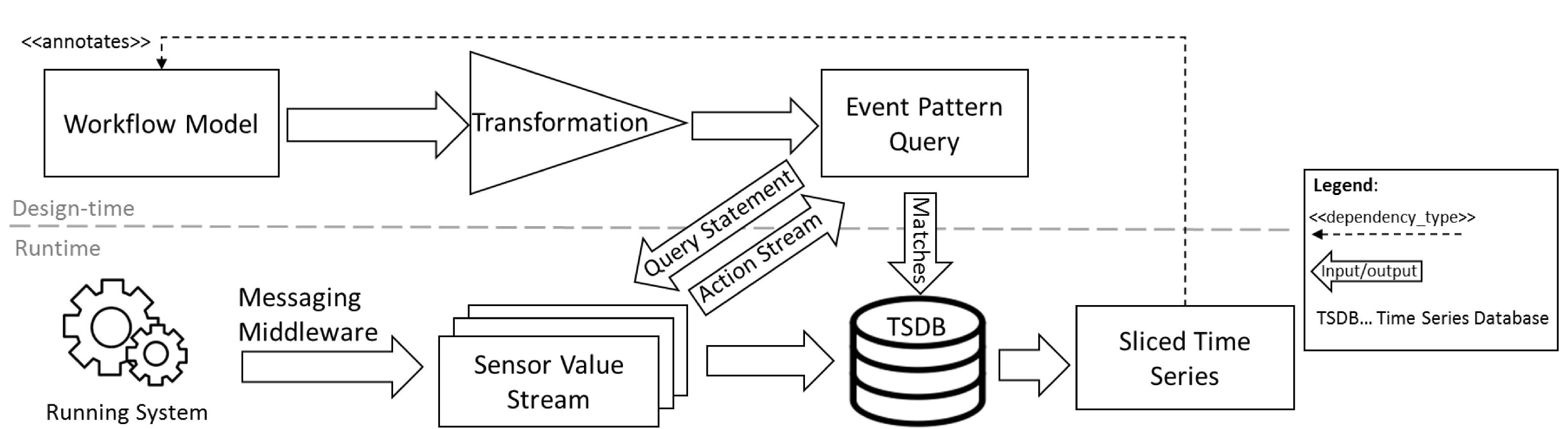
- Monitor continuous systems
- Reason about the precision of models such as activity overlaps, late realization of activities, hidden activities etc.
- Employ time series mining to produce condensed figures of the variable value changes within the different states

Challenges

- Actions in a continuous system are not instantly realized but require time.
- Classical MDE approaches are black-box
 - Actions expressed as value assignments
 - Source and target state of the system is specified
 - Tracing within states not possible
- How to provide a grey-box view?
 - Trace the changes of continuous variables within states

BDD System Grip-arm robot BasePosition:EFloat=0.0 MainArmPosition:EFloat=0.0 GripperPosition:EFloat=0.0 SMD Grip-arm robot Pick-Up Idle BP**←**0.0 MAP**←**1.315 MAP←1.50 GP**←**-0.40 GP←-0.40 SMD Grip-arm robot Pick-Up Idle <0.0,0.0,0.0,...,0.0> <0.0, -0.1, -1.14, ..., 0.0 > BP = 0.0BP = 0.0BP = 0.0..5,1.5,1.25,...,1.31 0.0,0.0,0.71,...,1.50> MAP= 1.50 MAP = 0.0MAP= 1.315 -0.40,-0.10,...,-0.40> (0.0,0.0,0.45,...-0.40>**GP=-0.40** GP=0.0 GP=-0.40

Solution Architecture



Initial Results

✓ Setup

- Design Model / MQTT Server /Blender Simulation / Influx DB
- ✓ Backpropagation of timing information into the design model
 - Avg. transition delays

Next Steps

- **Evaluation of**
 - Time-series mining algorithms
 - Sampling strategies
- Generating EPQs from properties
- Augmenting diagrams with derived information

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