Data models for raw-water supply systems (open channels)

Webinar organised by the DW2020 synergy group

Dr. Panagiotis Kossieris (pkossier@mail.ntua.gr)
National Technical University of Athens (NTUA), Greece

Wednesday 3 March, 2021

11.00-12.30 CET

Optimal management of raw-water aqueduct of EYDAP (Greece)

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FIWARE 4 WATER

<u>Objective</u>: Determine sluice gates' settings to establish specific flow rate

- **<u>Case study</u>**: Part L7 - L11 of the conveyance system (free-surface flow), controlled by 6 Lamda regulators.
- The system (is) monitored by:
  - Stage gauges upstream and downstream of gates.
  - Flow meters (L10)
  - Controllers measuring weirs opening at all sluice gates.

Development of a hydraulic model (to perform what-if simulation scenarios), fed continuously with real-time data from the sensors, to determine sluice gate opening for specific target flows

Key entities of data model for open-channel water systems

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Key components of the conveyance system

- Channel
- Junction
- Regulation structure – regulation gates
- Spillway

Entity related to monitoring and computation of key variables

- Cross section

Entities related to modelling and simulation

- Raw-Water system
- Hydraulic Simulation Scenario
- Hydraulic Simulation Result

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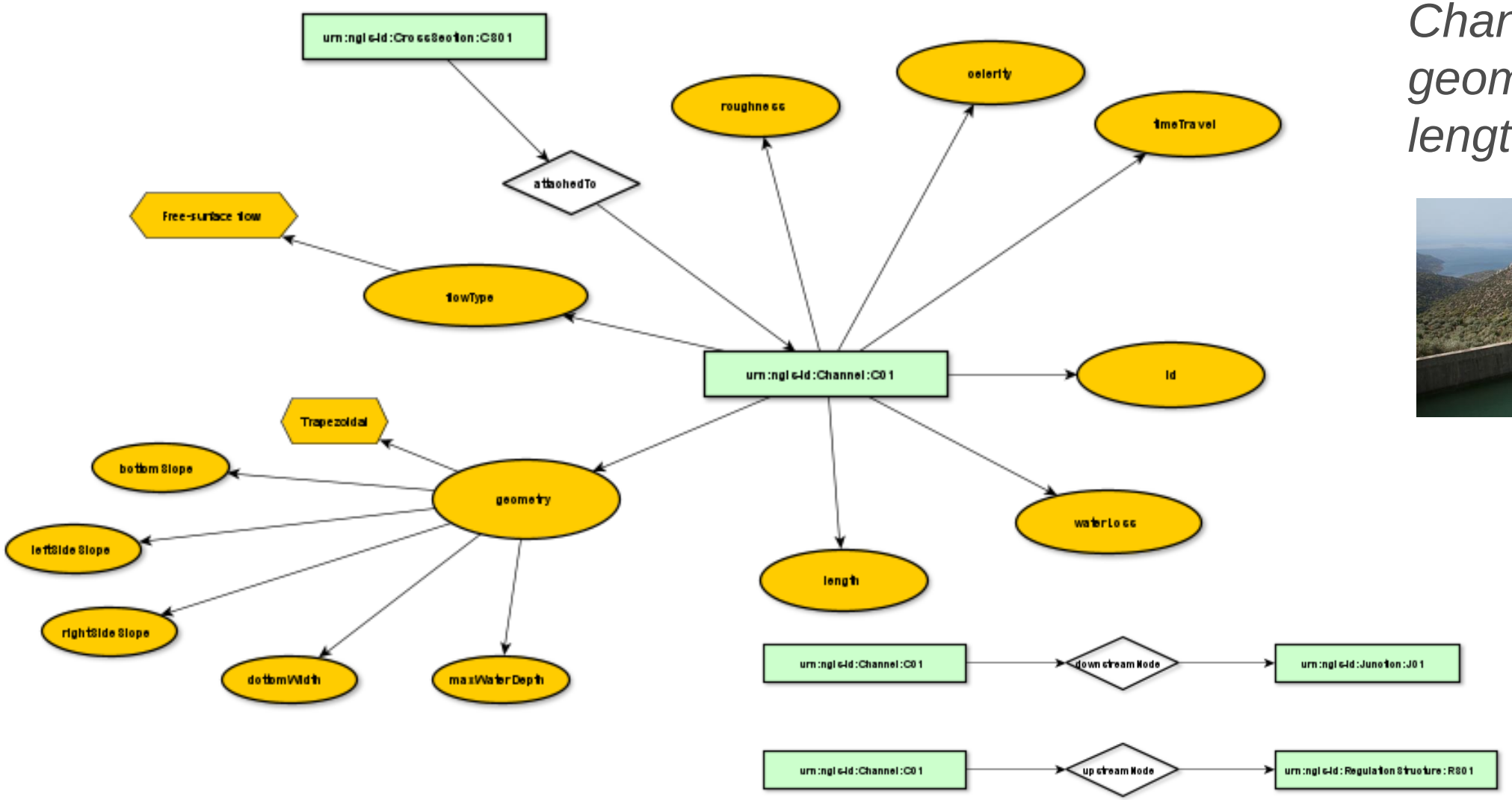
[Channel]



Channel: constant geometry across its length

[Cross-section]

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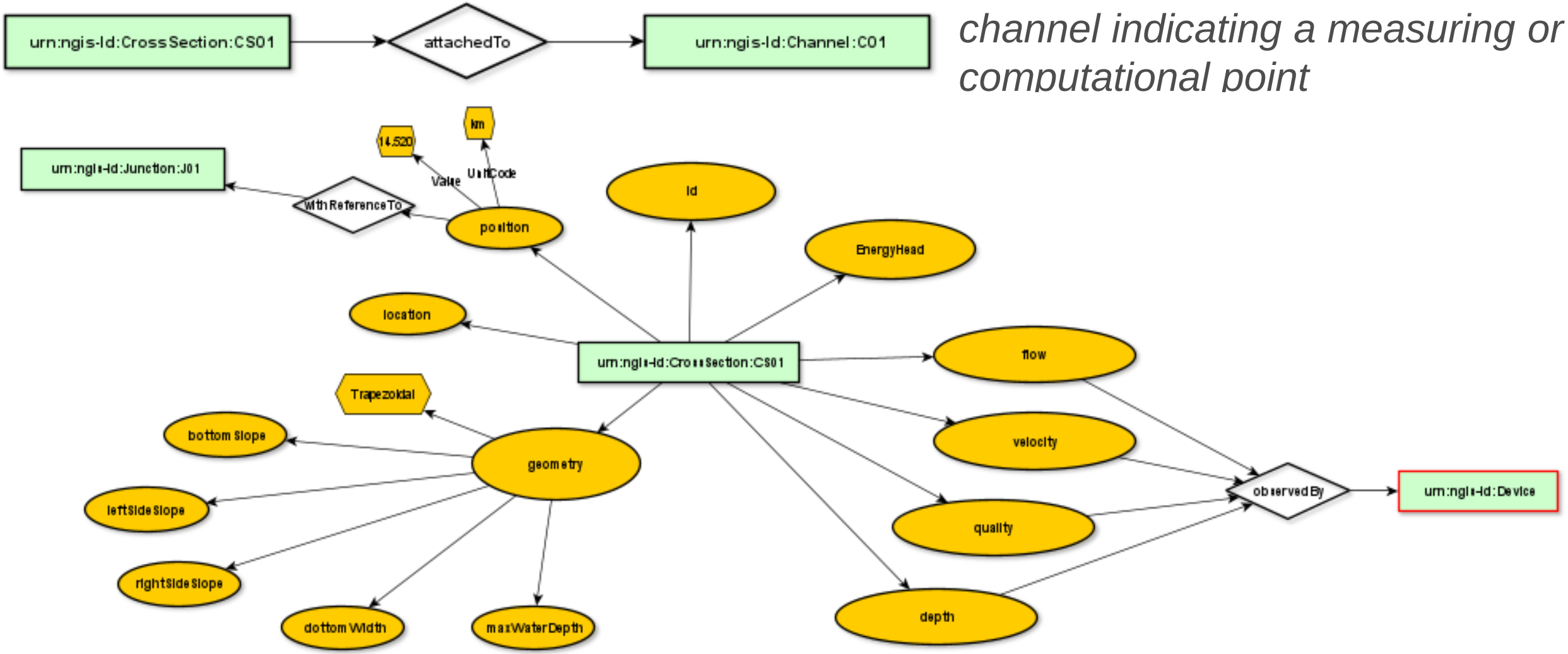
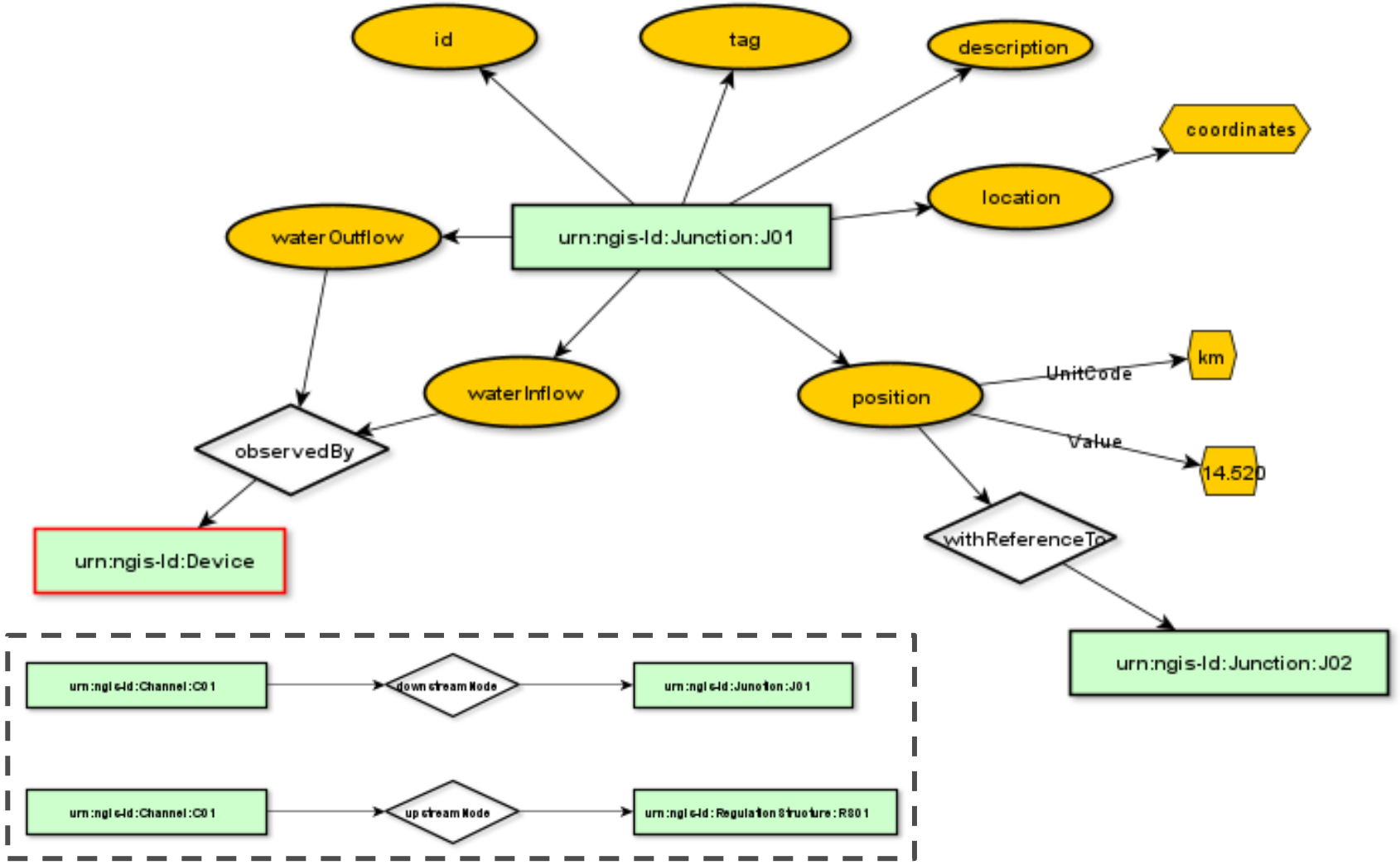
Cross-section is attached to a channel indicating a measuring or computational point

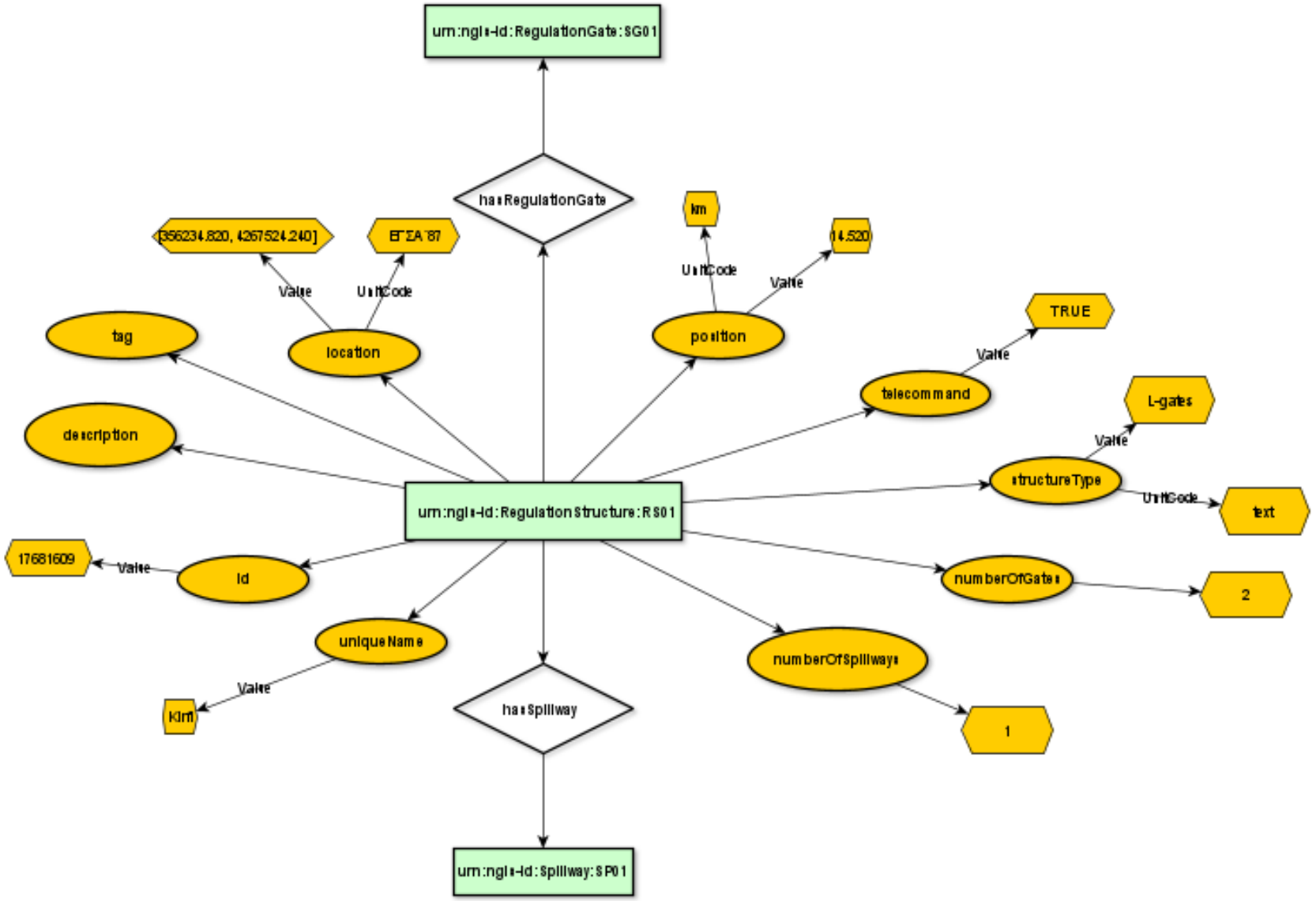


[Junction]



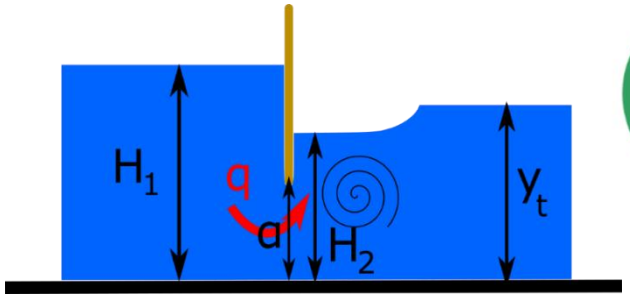
Junction: location where the characteristics of the channel changes, two or more channels come together or split apart, amounts of water are abstracted or inserted to the system.

[Regulation Structure]



Junction-type object, indicating a point in the channel where the flow is controlled.

[Sluice Gate]



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urn:ngsi-ld:Curve:C01
ourveDischargeCoefficient
upstreamControlPoint
upstreamEndControlPoint
downstreamEndControlPoint
downstreamControlPoint
orifice DischargeCoefficient
gate DischargeCoefficient
"SUBMERGED FLOW"
Value
flowType
UnitCode
lexi
urn:ngsi-ld:SluiceGate:SG01
gate Bottom Elevation
gateControl
OPEN-CLOSE
controlAction
newGateOpening
actionMoment
timestamp
head Difference
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observed By
gateOpening
gateWidth
3.2
m
gateType
"SLUICE-GATE"
water Discharge

[Spillway]

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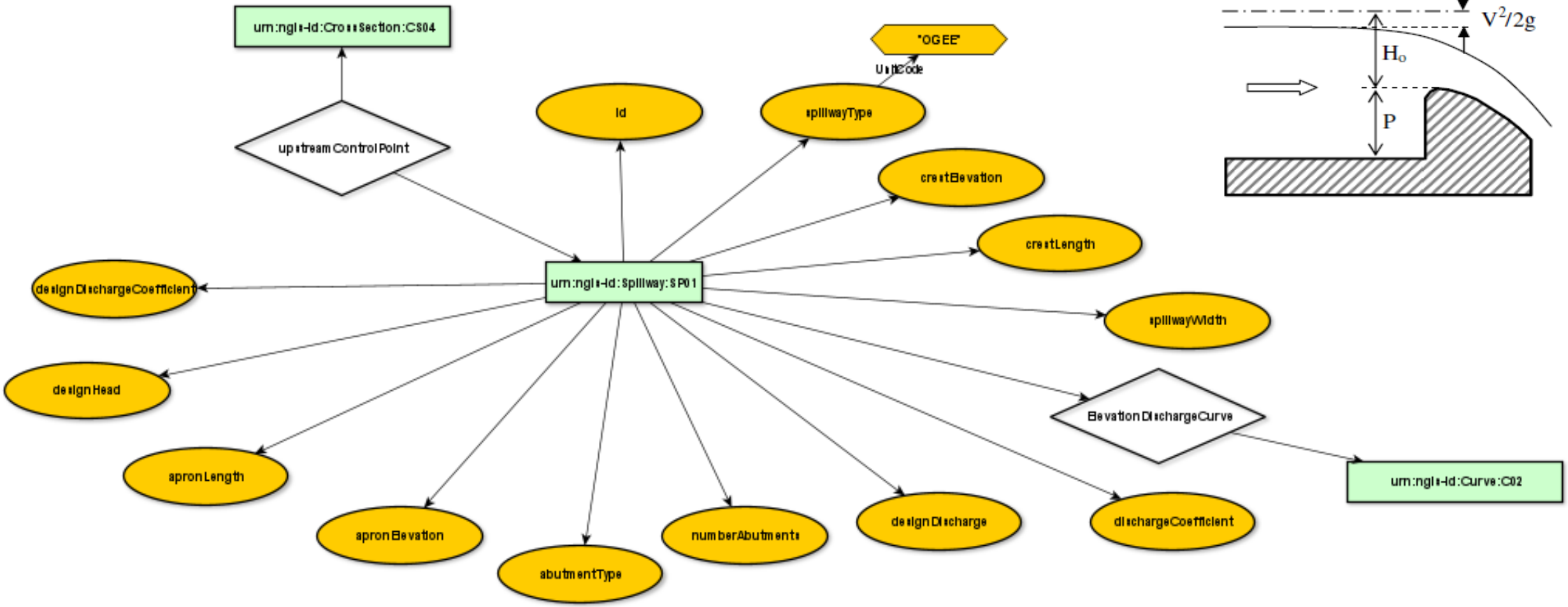

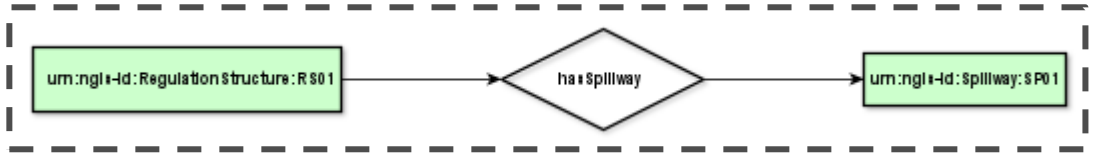

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[Raw-Water System]

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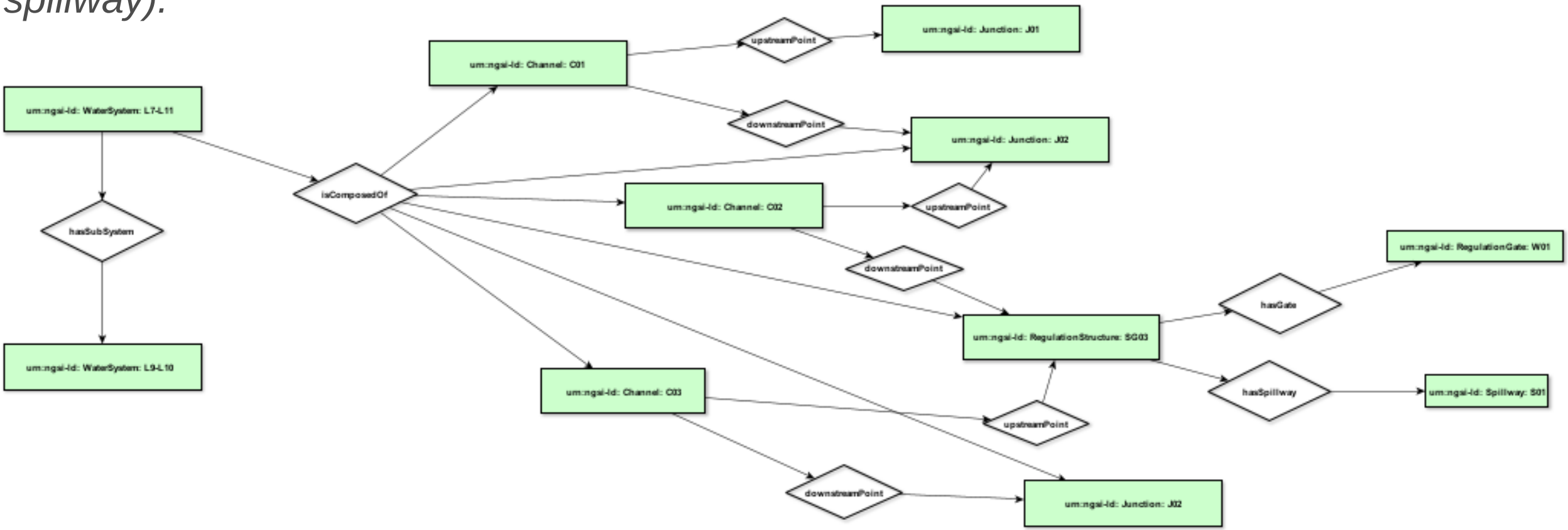
An entity representing a raw-water water system composed by components/entities (e.g., channels, junctions, cross-sections etc) or just a component (e.g., simulation of a spillway).



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[Hydraulic Simulation Scenario & Results]

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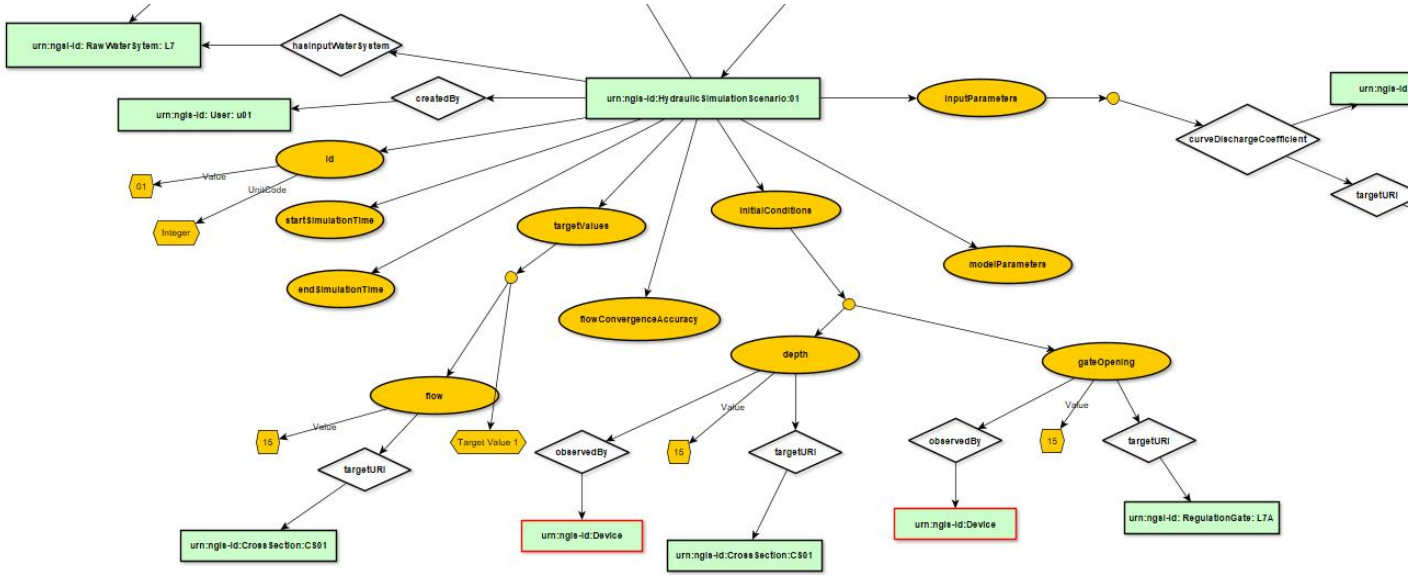

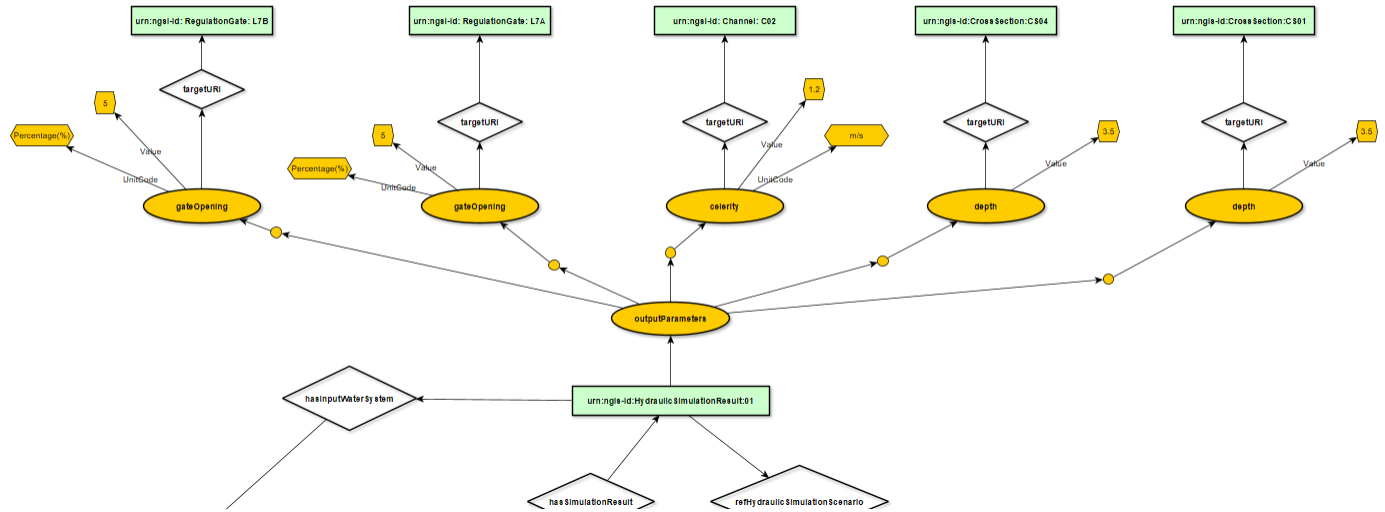

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Thank you for your attention

Visit https://github.com/smart-data-models/dataModel.RawWaterManagement for a closer look at our data model!

Dr. Panagiotis Kossieris (pkossier@mail.ntua.gr)

Mr. Christos Pantazis (xpanta@outlook.com)

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