Digital Twin Workshop:

Digital twin capabilities

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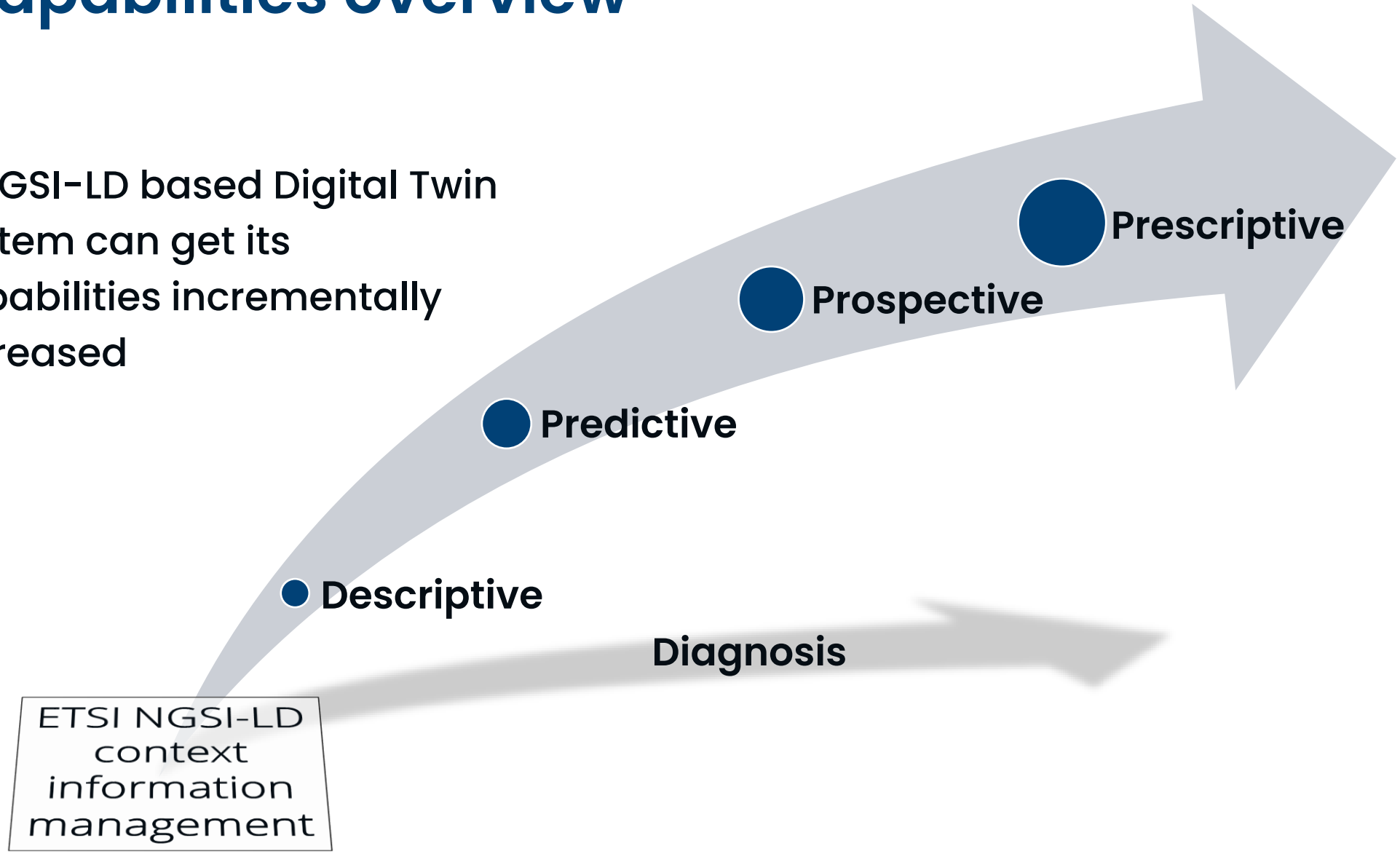
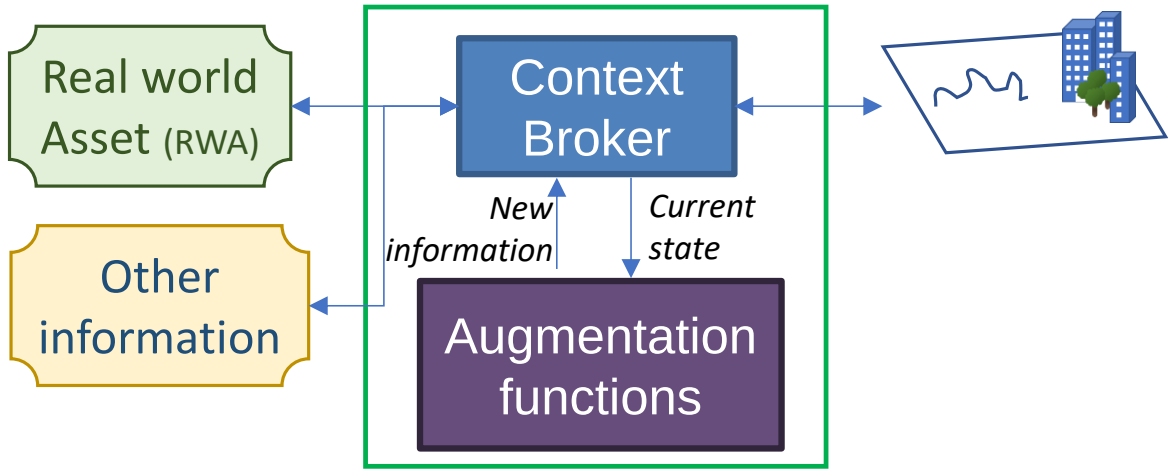
Capabilities overview

A NGSI-LD based Digital Twin system can get its capabilities incrementally increased

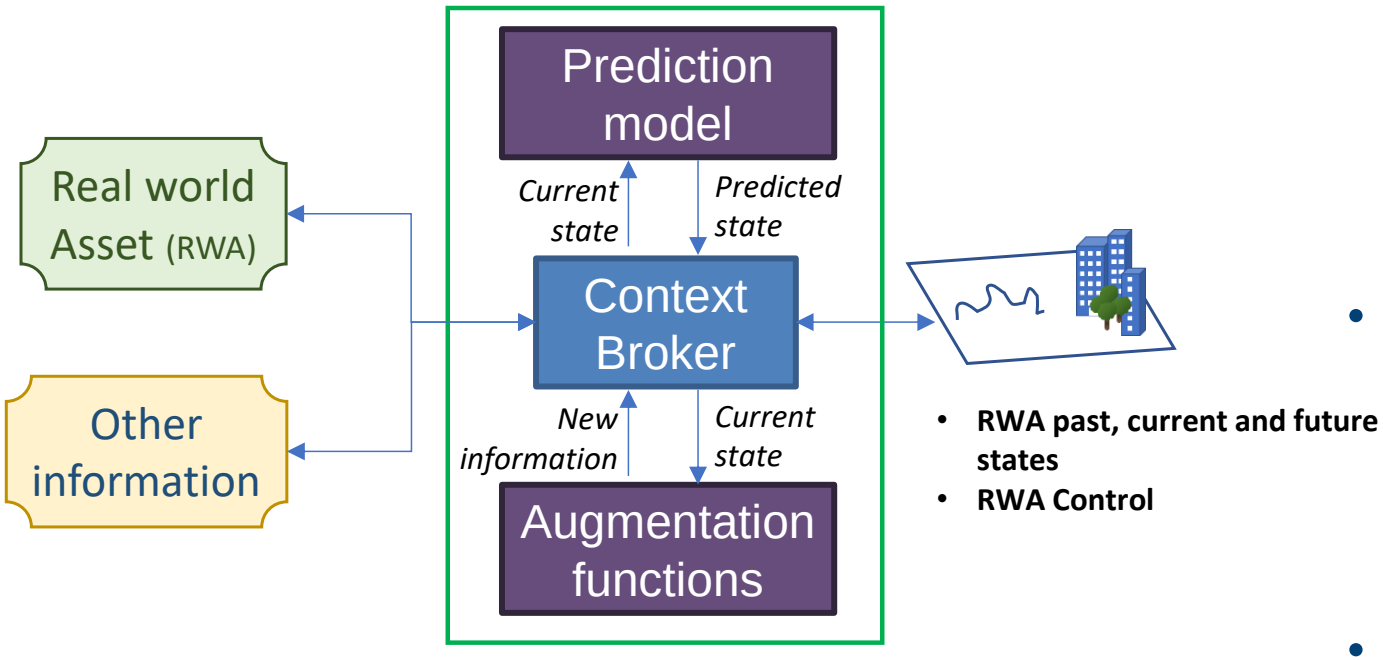


Descriptive Twin



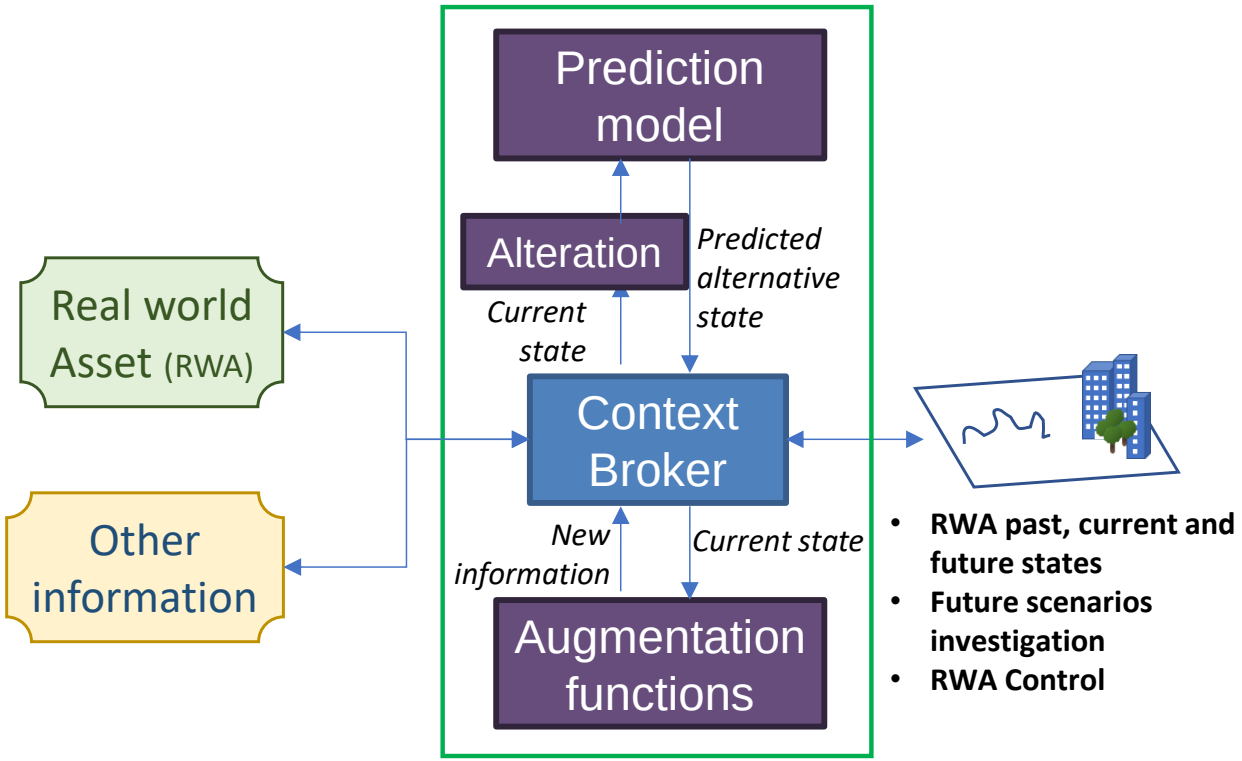
- Informs about the current state of the real world asset.
- Presents past and current values of some of the real-world asset characteristics.
- Characteristics can be static or dynamic
- Connection between the real-world asset and the Digital Twin is bidirectional
- The descriptive twin capability can be augmented with computed functions

Predictive Twin



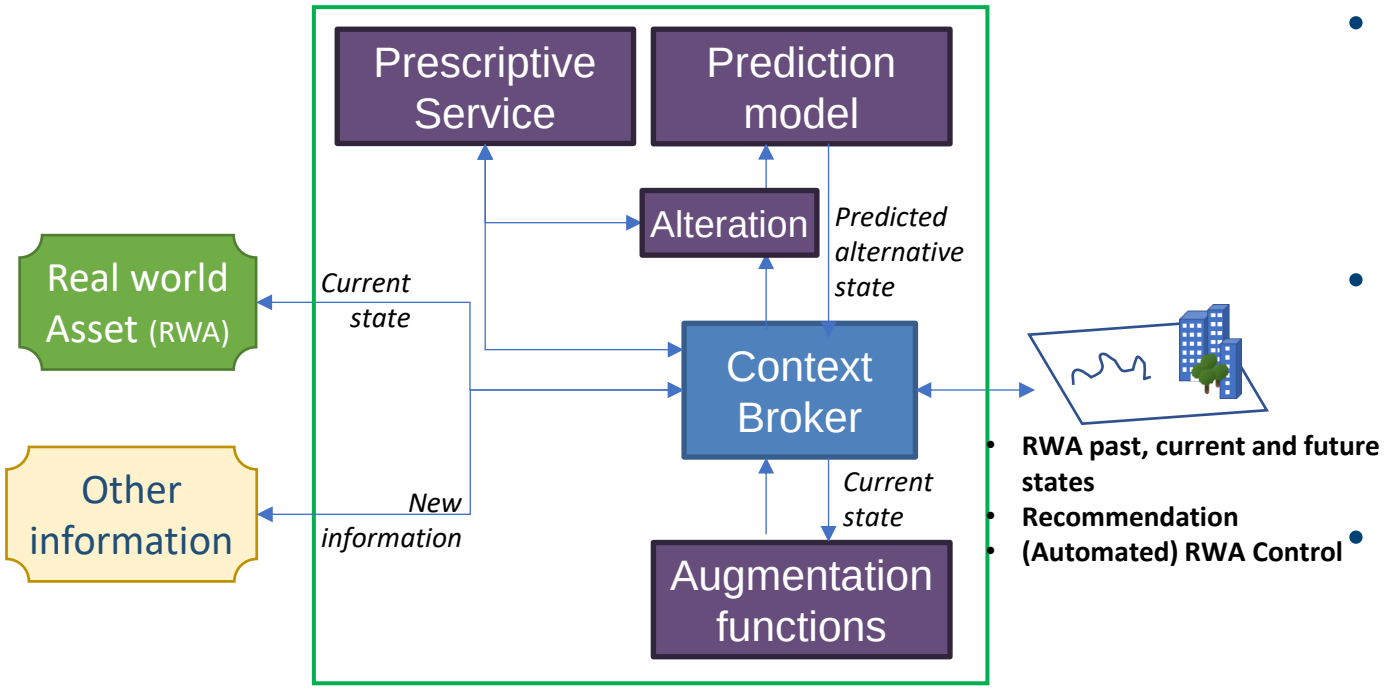
- Extends the descriptive twin capability by providing predictions on the way the real asset could evolve in the future.
- Predicted future values can be computed on demand or stored within properties of the Digital Twin entity(ies)
- Any past, current and future values of the real asset can then be consumed by external applications using the same NGSI-LD API.

Prospective Twin



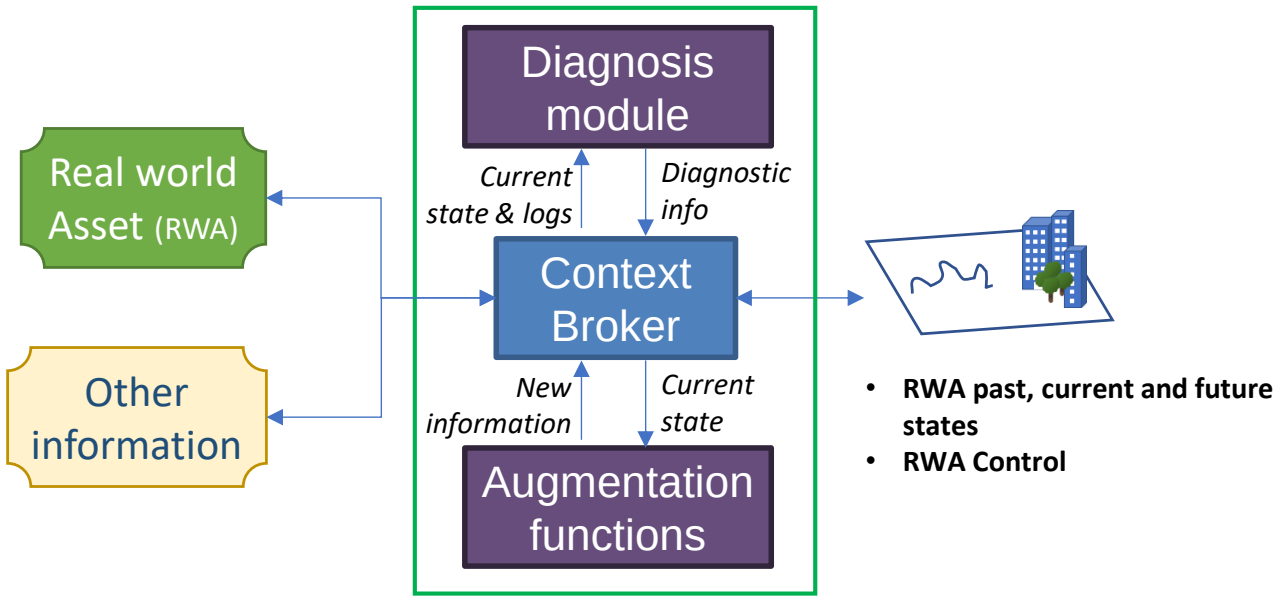
- Builds upon the predictive capabilities.
- Meant to help the Digital Twin's user to evaluate the impact that actions would have on the real-asset, if applied.
- Allows running "what-if" analysis made over the current description of the asset, which is altered to represent the intended action.

Prescriptive Twin



- Aims at identifying actions to be taken over the real asset for it to reach a target state.
- Identified actions could be provided to the user or directly actuated on the real asset
- Ultimately, it could thus implementing an autonomous behaviour of the asset.

Diagnosis Twin



- Particular capability meant to understand what happened in case of real asset malfunction or what is happening in case of a real asset deviating from its expected working trajectory.
- Builds on a diagnostic model that collects additional data related to the real asset evolution (e.g. log files).