

Companion Specification for Weighing



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OPC UA Weighing Technology Project Consortium



Joint Workgroup Members

- » Bizerba
- » Espera-Werke
- » Hottinger Baldwin Messtechnik
- » Kern & Sohn
- » Mettler-Toledo
- » Minebea Intec Aachen
- » Rhewa-Waagenfabrik
- » Sartorius Lab Instruments
- » Schenck Process Europe
- » Siemens
- » Systec
- » Wipotec

Project processing

- » FISW Steuerungstechnik at the University of Stuttgart

further Contacts

- » PTB Braunschweig

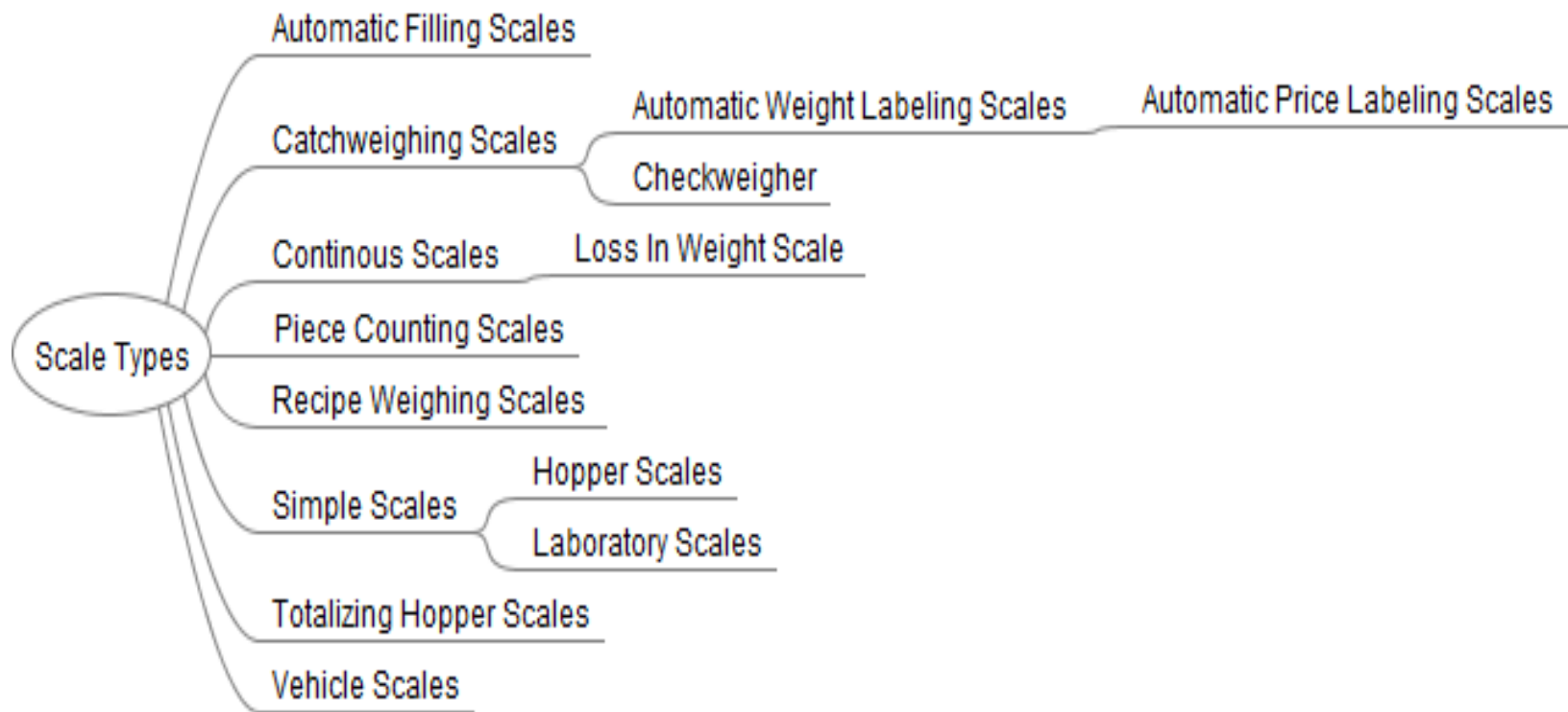


Large Variety of Weighing Devices



OPC UA Weighing Technology

Scale Types



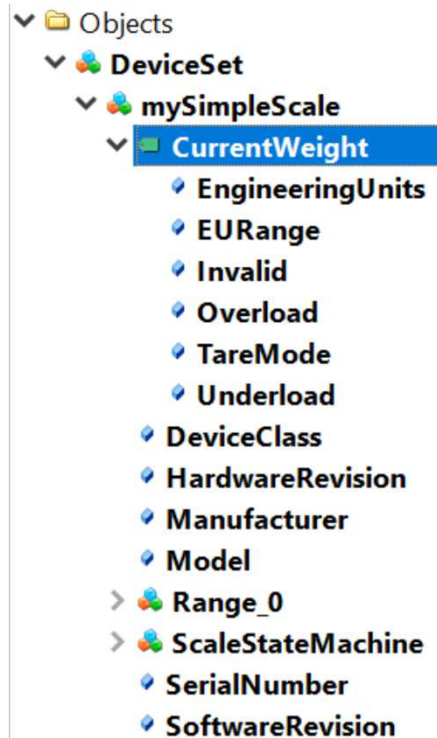
View from Client to Server



- Use Case "Simple Weighing"
- All the nodes shown are mandatory for Simple Weighing
- They represent the minimum node set a Simple Weighing Scale should provide.
- Methods such as SetZero, SetTare and more are optional.



Current Weight Node

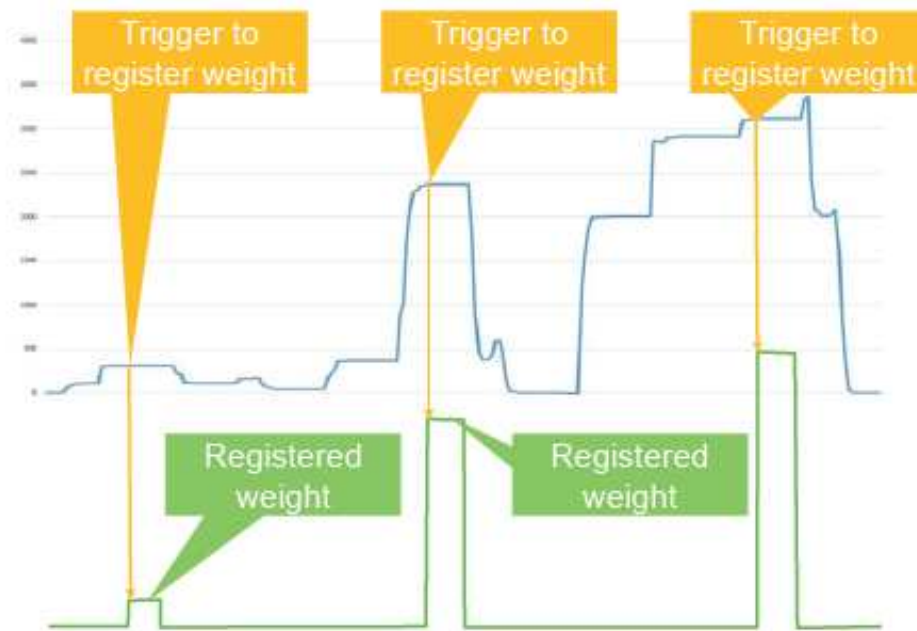


Gross	0
Net	0
Tare	0
<input type="button" value="Write"/> <input type="button" value="Cancel"/>	

- Includes Gross, Net, Tare.
- $\text{Net} + \text{Tare} = \text{Gross}$
- Current values that are measured by the scale with the concurrent timestamp.



Registered Weight Node




RegisteredWeight:

- Defines the last valid measurement that was recorded and will be used for further processing.
- Optional Parameter. Check availability with scale vendor if you need it.



EUInformation / Engineering Unit






- ▼  CurrentWeight
 - ◆ CenterOfZero
 - ◆ Gross
 - ◆ InsideZero
 - ◆ Invalid
 - ◆ Net
 - ◆ Overload
 - ◆ Tare
 - ◆ TareMode
 - ◆ Underload
 - ◆ WeightStable
 - ◆ WeightUnit
 - ◆ EngineeringUnit



- **OPC UA specified in (OPC 10000-8) to apply the widely accepted “Codes for Units of Measurement” published by the “United Nations Centre for Trade Facilitation and Electronic Business” (see UN/CEFACT: UNECE Recommendation N 20).**
 - KGM/4933453 kilogram
 - GRM/4674125 gram
 - MGM/5064525 milligram
 - M86/5060662 pounds



Common Problem with Methods for SetTare, SetPresetTare, ClearTare and SetZero, RegisteredWeight

- >  SetTare,
 - >  SetPresetTare,
 - >  ClearTare and
 - >  SetZero,
 - >  RegisteredWeight
- A method is sub-process initiated by the client and executed by the weighing device hosting the OPC UA server.
 - Execution of a method can last from a fraction of a second to several minutes.
 - Execution of Methods for Tare, SetPresetTare and Zero can last longer than expected. This can be due to unstable environment such as vibrations and draft or sloshing or vaporizing liquids that delays detection of stable criteria for stable weight.



Dependencies with Other Specifications

PackML for StateMachine

- PackML for automated packaging lines uses OPC UA. Using PackML StateMachine avoids two different standards in the same production line.
- Minimum StateMachine set from PackML will be recommended for simple scale and other non-automatic weighing devices. Full set of PackML StateMachine for automatic weighing devices such as Checkweighers.

Companion Specification for Machinery

- Not all nodes of CS Machinery are in CS Weighing. However, those which are overlapping have the same semantics.



Test Device at LNI4.0 Confirmed Interoperability



