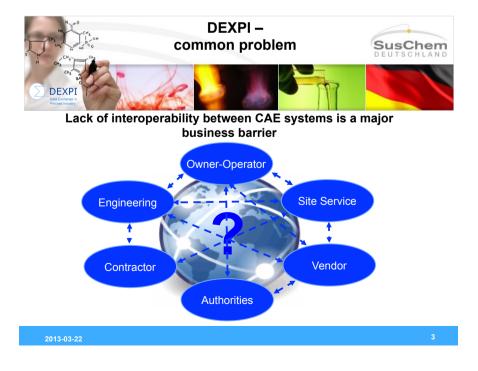


### Data Exchange in the Process Industry - The DEXPI initiative -

### M. Wiedau, RWTH Aachen University



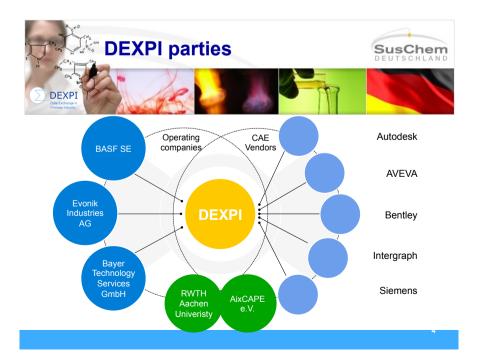
PCA SIG Meeting / Semantic Days May 27th 2013, Stavanger, Norway



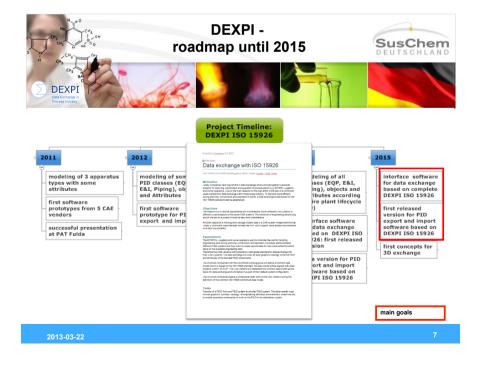


Agenda

- Why DEXPI and what is it?
- Information Modeling
- Usage of ISO 15926-4 and JORD
- Modeling issues
- Application of the information models
- Model validation
- Summary & Outlook



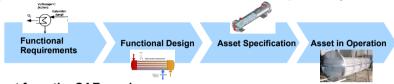






**General standard** for the process industry based on ISO 15926, implemented in the next CAE software generation

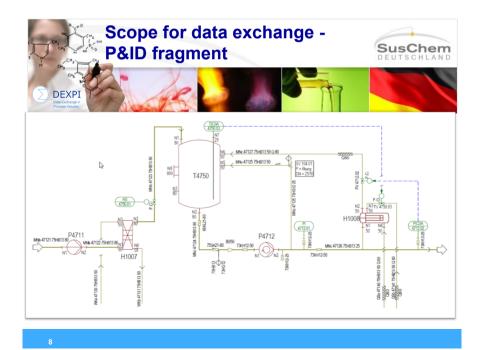
**Input from process industry** (working party DEXPI ISO 15926): Open and international information model for the entire plant lifecycle

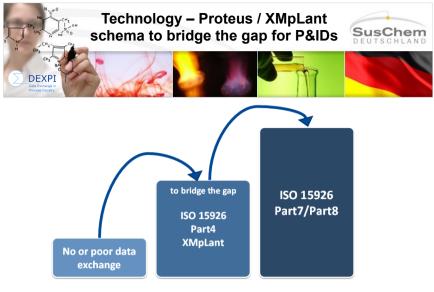


#### Input from the CAE vendors:

- General exchange standard for graphics
- export and import functions based on the new information model and graphics standard

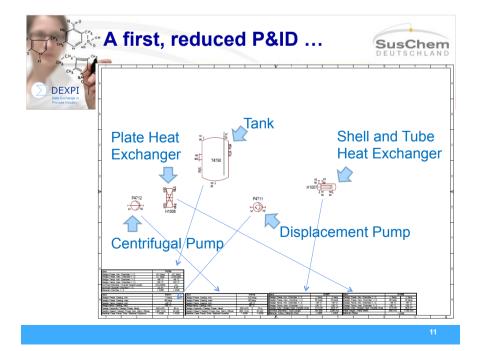
2013-03-22		





Data part OK, but graphic part is only well under way

2013-03-22		9





From data to semantics

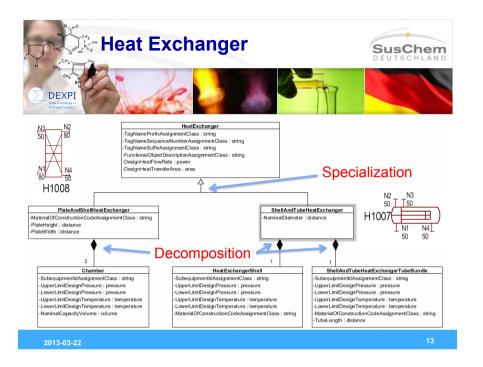
## **INFORMATION MODELS FOR ENGINEERING DATA**

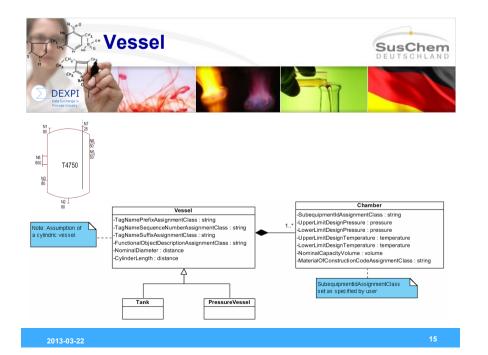


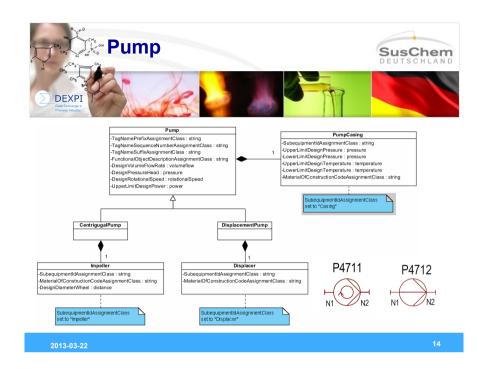
- Use XMpLant for bridging the gap
- Verify the software outputs





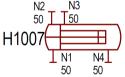








Here: Shell and Tube Heat Exchanger



Ident	H10	007
Design Press. min. Chamber 1 / 2	-1 barg	-1 barg
Design Press. max. Chamber 1 / 2	60 barg	30 barg
Design Temp. min. Chamber 1 / 2	-45 °C	-45 °C
Design Temp. max. Chamber 1 / 2	100 °C	100 °C
Design Duty / Design Heat Transfer Area	313 kW	46,8 m²
Nominal Diameter / Tube Length	DN 800	2200 mm
Material Tubes / Material Shell	1.4306	1.4308

2013-03-



- Specifications by the DEXPI group:
  - Tag Name (e.g. "H1007")
    - Tag Name Prefix ("H")
    - Tag Name Sequence Number ("1007")
    - Tag Name Suffix ("")
  - Description
  - Flow Rate
  - Transfer Area

HeatExchanger -TagNamePrefixAssignmentClass : string -TagNameSequenceNumberAssignmentClass : string -TagNameSuffixAssignmentClass : string -FunctionalObjectDescriptionAssignmentClass : string -DesignHeatFlowRate : power -DesignHeatTransferArea : area

2013-03-22



#### Solution for missing attributes:

THE DEXPI SANDBOX



- FunctionalObjectDescriptionAssignmentClass
- NominalDiameter

   → http://posccaesar.org/rdl/RDS366794



- TagNamePrefixAssignmentClass
- TagNameSequenceNumberAssignmentClass
- TagNameSuffixAssignmentClass
- DesignHeatFlowRate
- DesignHeatTransferArea
  - → http://sandbox.dexpi.org/rdl/DesignHeatTransferArea





#### http://endpoint.dexpi.org

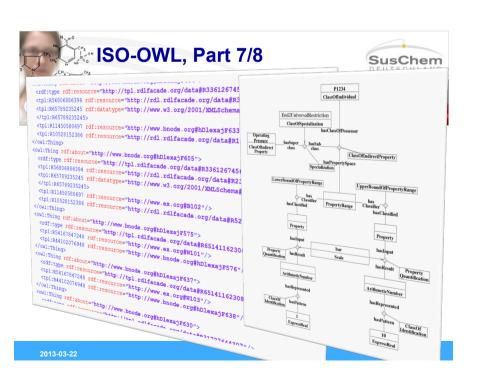
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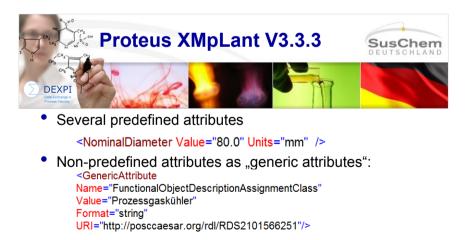




XMpLant and ISO-OWL

## APPLICATION OF DEXPI INFORMATION MODELS



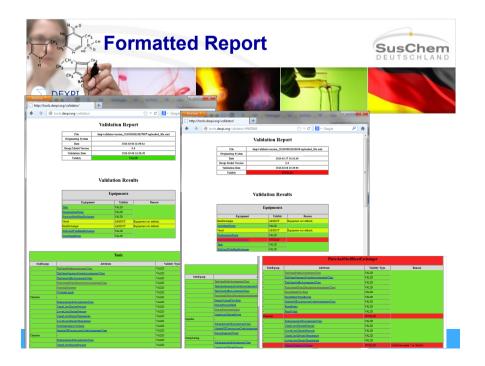


<GenericAttribute Name="DesignHeatFlowRate" Value="313" Format="double" Units="Kilowatt" URI="http://sandbox.dexpi.org/rdl/DesignHeatFlowRate"/>



### Output of the

## **VALIDATION TOOL**



Firefox T		
DEXPI - Data EXchange in the Process In +		
♦ ♦ tools.dexpi.org/validator/	☆ マ C 8 - Goog	le 👂 🏫
DEXPI Data Exchange in Process Industry	A VORKING PARTY OF PROCESSINET AN INITIATIVE OF DECHEMA AND VORGE	SusChem
DEXPI - Data EXchange in the Pr	ocess Industr	у
Validator Prototype		
DEXPI Version: 0.6 -		
XMpLant Input File: Durchsuchen_		
Output: Validation Report   Daten absenden		
For more information see: <u>www.dexpi.org</u>		
×		



Use case P&ID exchange – CAE vendor results		SusChem	
DEXPI Bits Extrage Process roady			
CAE Vendor	Support of DEXPI P&ID model according	Status 2013-03-22	
Autodesk	Proteus / XMpLant schema 3.3.3	$\checkmark$	
	Proteus / XMpLant schema 3.3.3		
Bentley <sup>®</sup>	ISO Part 7/8 OWL	<b>⊻</b> (*)	
INTERGRAPH"	Proteus / XMpLant schema 3.3.3	$\checkmark$	
SIEMENS	Proteus / XMpLant schema 3.3.3		
(*) graphic part is well under way			



- Validation of ISO-OWL files
- Additional visualization of XMpLant → as SVG
- Expanding models towards life cycle aspects
- Intensify exchange with members of ISO community
- Communication / publication of DEXPI results



- DEXPI group is ISO 15926 ready
- Common information model
  - Is generic
  - Can be used for XMpLant
  - Can be used for ISO-OWL
- Validation tool verifies the exports of CAE vendors



### Thank you for your attention!

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Lehrstuhl für Prozeßtechnik Aachener Verfahrenstechnik RWTH Aachen University







# BACKUP



