



# Modeling Techniques for Enterprise Architecture Documentation

Experiences from Practice

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18  
20

# Motivation

- **Enterprise Architecture (EA) Management is ...**
  - an **IT-management process** which makes ...
  - relations between **business, applications** and **IT-infrastructure** visible ...
  - by means of **EA Documentation (models)**
  
- **EA Documentations are used in ...**
  - Risk and Impact Management
  - Standardization efforts
  - Long-term planning
  - Technology management and application portfolios
  - ...

- **EA Experience** since 2011 in projects with ...
  - a large Austrian banking data center
  - a global manufacturer of semiconductor technologies
- **What we've learned ...**
  - EA modeling is done by different stakeholders with different expertise
  - EA modeling is not like modeling of OO software systems
  - EA modeling requires “advanced” modeling techniques
- **What we've done ...**
  - *Txture* EA modeling framework 

The screenshot displays the Txture software interface, which is used for modeling and visualizing system architectures. It is divided into several main sections:

- Navigation Panel (Left):** Contains menu items such as Dashboard, Architecture, Browser, Visualization, Instance Edit, New Instance, Admin, Meta Edit - Classes, Meta Edit - Layers, and Import Config.
- Browser Table:** A table listing system components with columns for ID and Type.
 

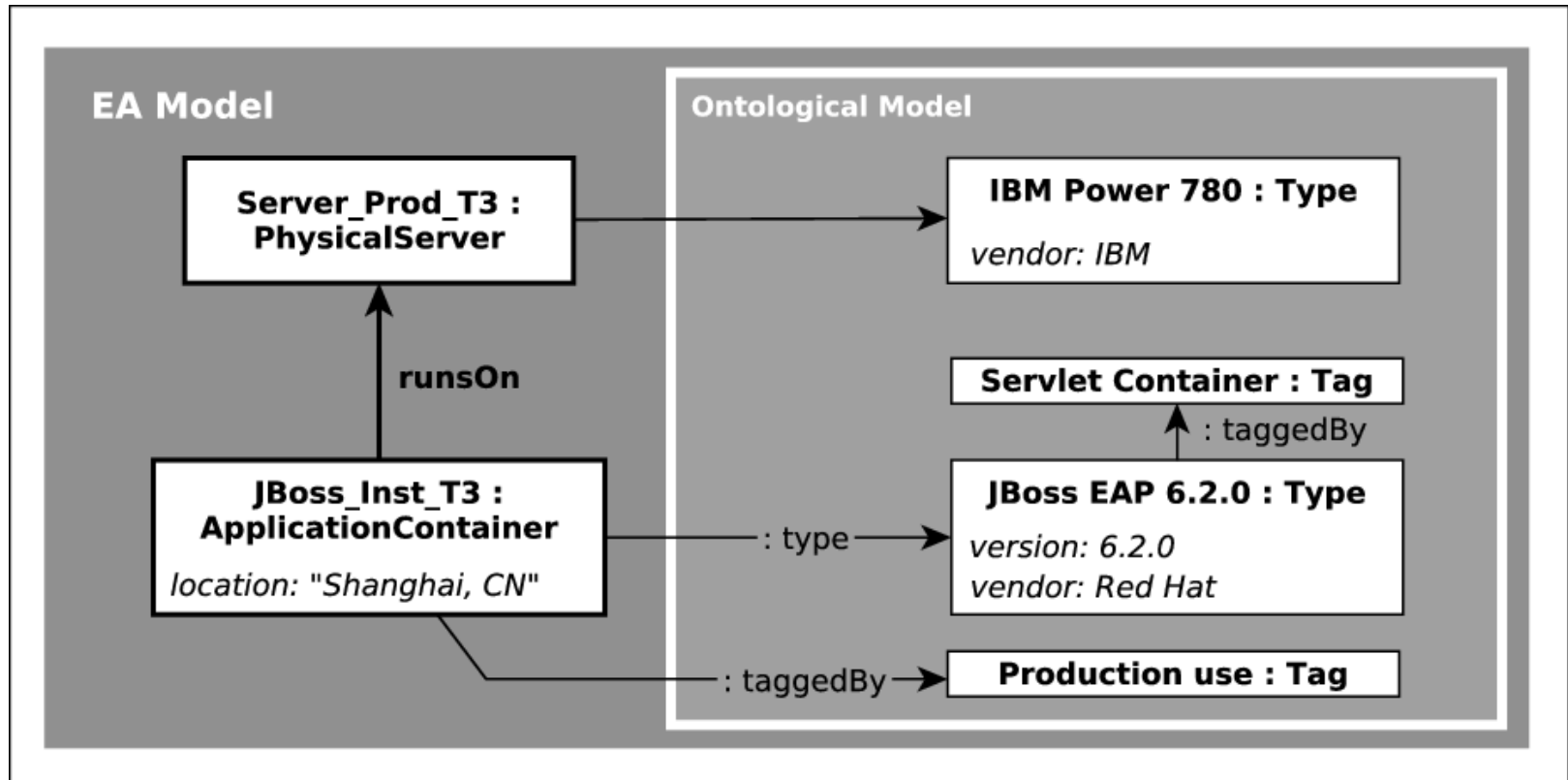
ID	Type
IBKServer20	Windows Ser
IBKCluster3	Microsoft Clu
IBKCluster2	VMware Clust
Remedy-IT	Application
WinServiceApp	BaseLayer
IBK2	Windows Ser
IBKDB	Microsoft Clu
AXCApp	Application
Server_Prod_T1	VMWare Server
Server_Prod_T3	VMWare Server
Server_Prod_T2	VMWare Server
Server_Prod_T5	VMWare Server
Server_Prod_T4	VMWare Server
Server_Prod_T6	VMWare Server
IBKCluster	VMware Cluster
Server_Prod_T21	VMWare Server
- Information Model Edit Window (Bottom Right):** Provides details for a selected component.
 

Name	Value
ApplicationContainer	Name: ApplicationContainer
Database	Layer: application
ClusterInstance	runsOn [0..1] PhysicalServer
PhysicalServer	Name: runsOn Opposite:
Cluster	Target: PhysicalServer Multiplicity: 0..1 Type: Directed
ApplicationService	
DatabaseInstance	
- Visualization (Top Right):** A dependency graph showing relationships between components. Nodes are categorized by layer: application (Application (Remedy-IT), JBoss 6.2.0 (JBoss\_Inst\_T3), Tomcat 7.x (Tomcat\_Inst\_T3)), virtual (Windows Server (virtual) (IBK1), Windows Server (virtual) (IBK2)), cluster (VMware Cluster (IBKCluster)), and physical (VMWare Server (Server\_Prod\_T3)). Relationships are labeled 'runsOn'.

# Modeling Challenges

- **Separation of stakeholders according to responsibilities**
  - Expert architects perform meta modeling operations
  - Element responsables perform the actual EA documentation activities
  - Element responsables typically work on certain parts of the EA model
- **EA model and meta model both evolve over time**
  - On meta model changes conformance of EA models need to be re-established
- **EA model needs to expose enterprise-aligned concepts**
  - Most importantly product types
- **EA model needs to support varying documentation demands**
  - Flexibly adding tags or new attributes to elements

# Documentation Example





# Modeling Solutions

- **Classical modeling hierarchy**
  - Helps to separate stakeholders and responsibilities
  - A meta-model and a model seem to be enough in EA
  - Easily comprehensible for non-modelers
- **Type pattern**
  - Types are the most important ontological aspect in EA models
  - Allows to minimize changes to EA meta model
- **Mixins**
  - Allow arbitrary properties to be added to types
  - Get instantiated either on types or EA elements
- **Tags**
  - Are like stereotypes and help further interpreting elements or types

# Conclusion

- **Classical model hierarchies as a starting point ...**
  - to make EA models comprehensible to non-modelers
  - to define boundaries for corresponding tool implementations
- **EA models benefit from ...**
  - Type pattern to integrate domain-specific instantiations
  - Mixins and their (limited) multi-level instantiation abilities of properties
- **Txture**
  - is an EMF based solution, with types and mixins requiring complex modeling workarounds
  - (Would require a) stable, maintained multi-level modeling environment with EMF like features, like resource management, persistence and change notifications

# Demo Session Ad

Demo on **Txture**, although about ...

*“Combining Textual and Web-based Modeling”*

**Demo Session 2, Tuesday at 11:00**



**That's it ... Thanks for listening ...**

Questions and comments are much appreciated!

Also, if you're interested in anything,  
please don't hesitate to contact me via

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