

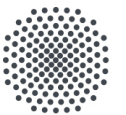
SustainLife

Living Systems in the Digital Humanities



Claes Neuefeind & Kálmán Képes

Uwe Breitenbücher, Lukas Harzenetter, Brigitte Mathiak, Frank Leymann



University of Stuttgart



The MUSE4Music-Method

Very cool project 😊 But: What if another researcher wants to reproduce the results in 10 years?

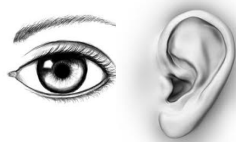
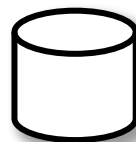
So we need a good answer for this question! → SustainLife 😊



Timecode Start (hh:mm:ss)	Timecode End (hh:mm:ss)
00:01:30	00:02:02
00:02:11	00:02:14
00:02:17	00:02:50



Character Traits



This can / will be a serious issue!

You cannot find the installation files for the database

The cloud services used may no longer be available!

Several security updates must be considered

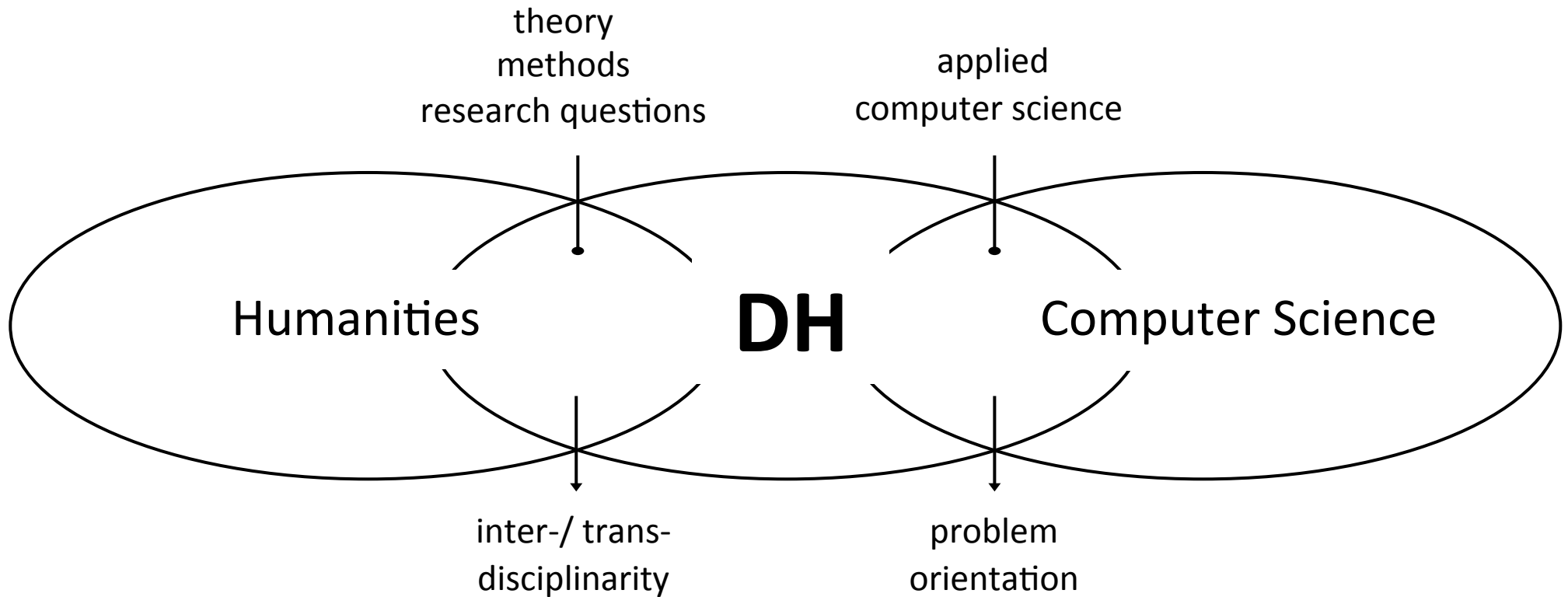
Observation

Data
Capturing

Data
Analysis

Formalization

Context: Digital Humanities (DH)



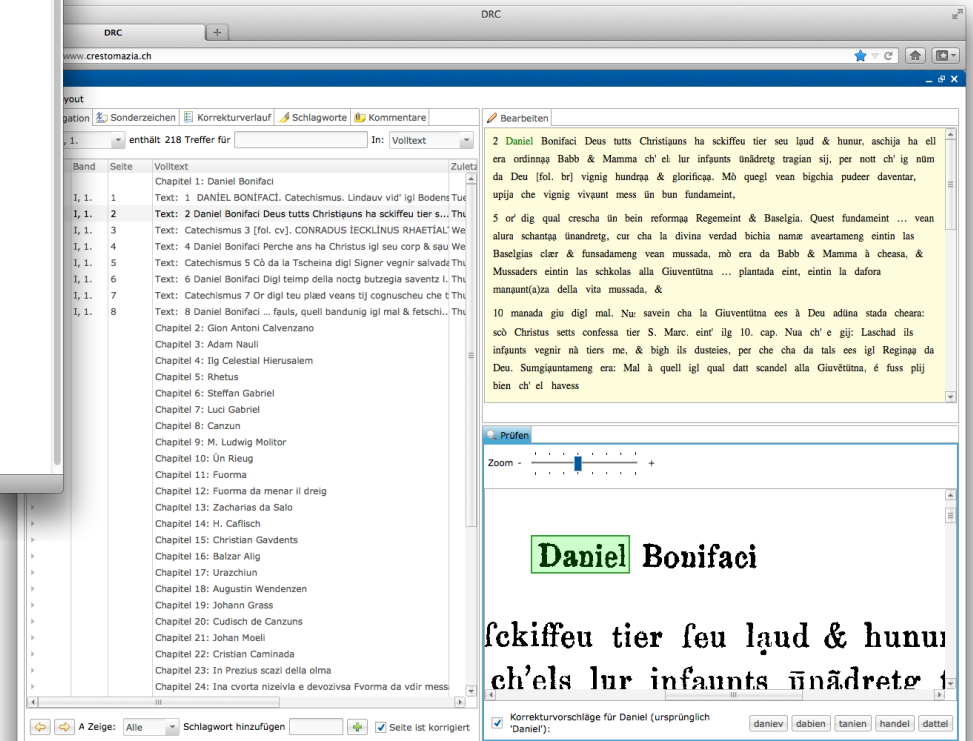
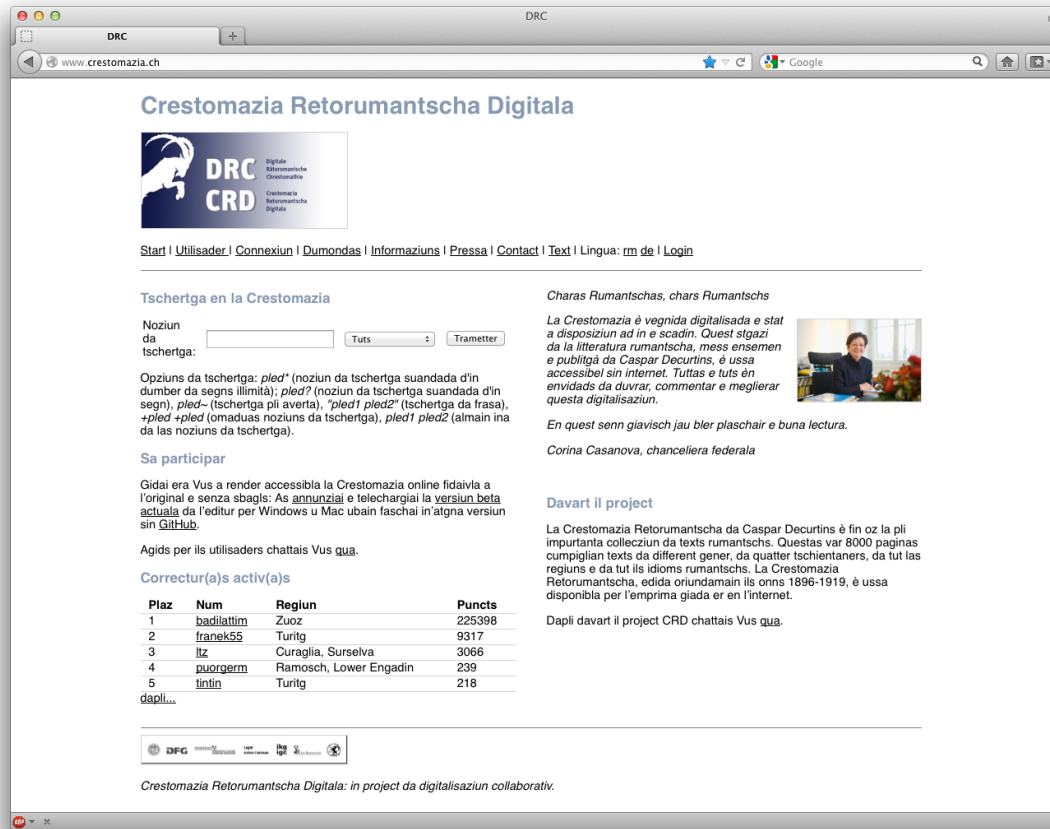
Digital Humanities at University of Cologne



- Faculty of Arts and Humanities (UoC):
 - 26 Institutes, 151 Professorships
- High diversity:
 - Standards and formats
 - Methodologies and traditions of expertise
- Great number of project specific solutions
 - mostly custom-made presentation systems for research projects

→ All of these projects produce „living systems“

Example project: Digital Romansh Chrestomathy



Example projects

Siegen Database of Itinerant Cinemas

New Search
Change Database

Deutsche Version

Provided by the project INDUSTRIALIZATION OF PERCEPTION within the research centre MEDIA UPHEAVALS at the UNIVERSITY OF SIEGEN

Itinerant Cinema Search.

Please enter your search criteria.

Name of showman ☒

Place (town) ☒

Region ☒

Attraction ☒

Limit search to these years
 -

Boolean operator
☐ AND operator ☒ OR operator

Search area
☐ Original sources ☒ Identifications

Search Reset

Explanations

Search categories
You can choose any category

Limit to years
If you want, you can limit the timespan. Only four-digit years.

AND/OR operators
To get all results that match search criteria, please choose only those results that match criteria at once, please choose

Truncating
The check boxes before and can be used as a wild card. To search without uncheck the boxes in question.

Search area
To search for names and places in the source (even if perhaps in the source), we highly recommend the option "Identifications". With the latter is searched for all showpeople been identified.

Show all entries
To get a list of all entries in please leave all search field appropriate category in the

VedaWeb

localhost:8080/view/index/7283

Rigveda (HK) agnim

Advanced Search Browse Rigveda Partner Projects

< 08.072.03 >

antár ichanti tám jáne
rudrám paró maniśáyā |
grbhñānti jihváyā sasám ||

Devanagari transliteration

अन्तर् इच्छन्ति ताम् जाने
रुद्रम् परं मनीषया |
ग्रभ्णन्ति जिह्वया ससम् ||

Grammatical Glossing

antár	ichanti	tám	jáne
antár.	√ iṣ- 2.PL.	sá- ~ tá-.ACC.SG.M	jána-.LOC.SG.M
rudrám	parás	maniśáyā	
rudrá-.ACC.SG.M	parás.	maniśá-.INS.SG.F	
grbhñānti	jihváyā	sasám	
√ grbhñ-.PL.	jihvá-.INS.SG.F	sasá-.NOM/ACC.SG.N/M	

View Filters

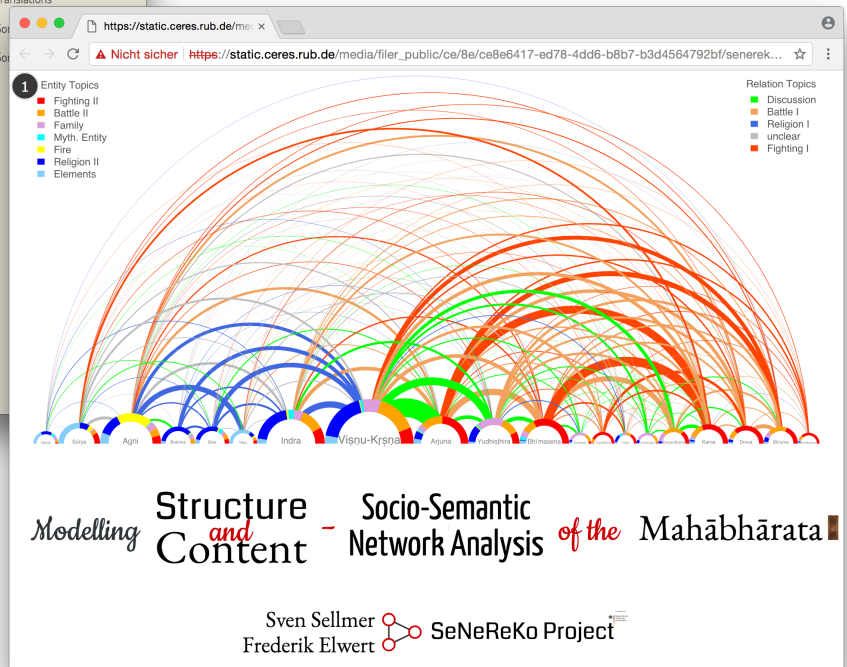
☒ Devanagari transliteration

☒ Grammar Glossings

☐ Translations

☐ Sanskrit

☐ Sanskrit



Living Systems?



+



=

Oops!
you found a
Dead Link



- Awareness of the problem, but...
 - great heterogeneity in technology and methodology
 - no overview of the DH-landscape
 - high development effort for existing projects, which doesn't scale well
 - only limited funding for long-term maintenance

SustainLife: Objectives

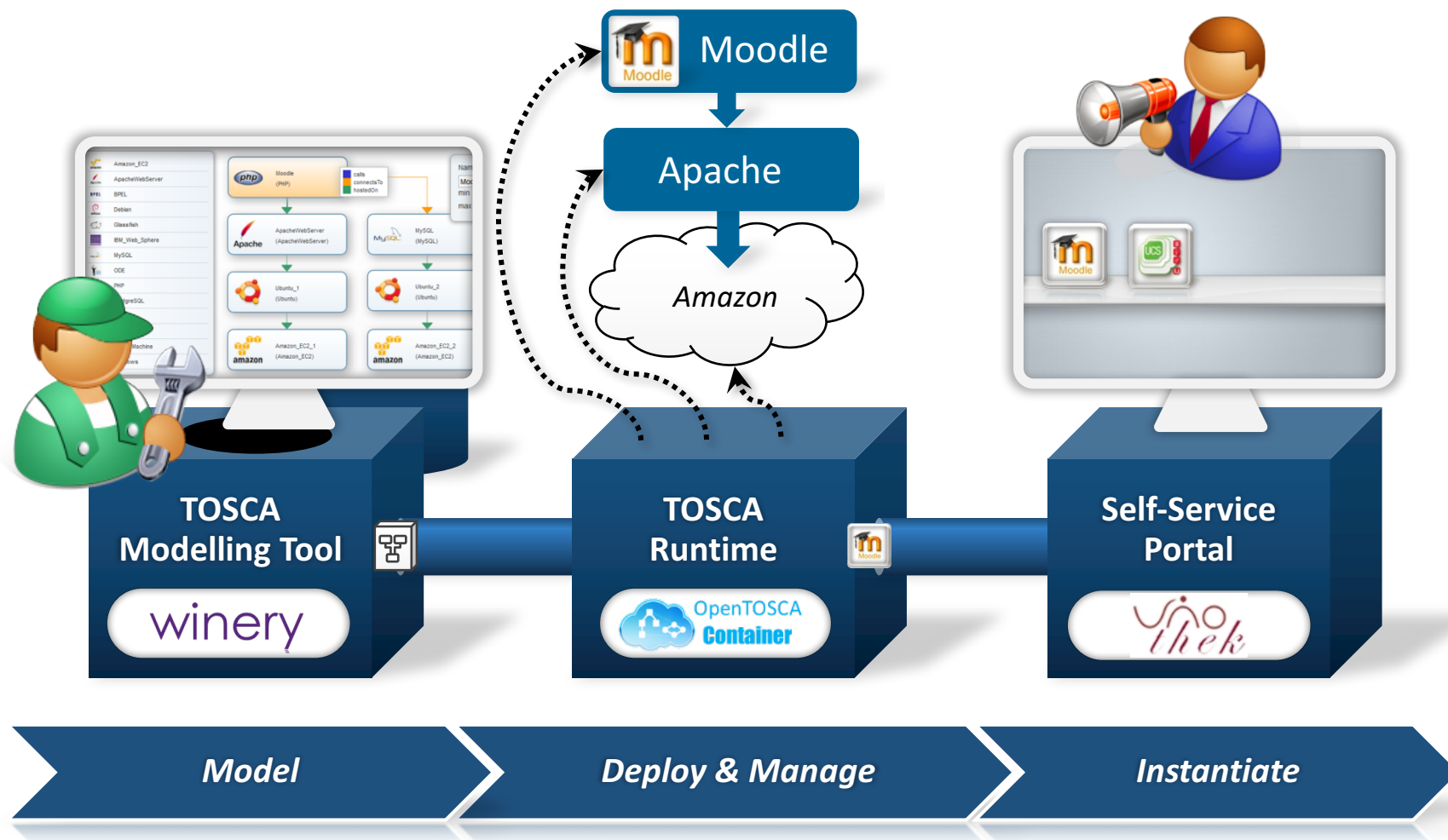
1. Systematic **overview** of the technologies most commonly used in the DH-landscape
2. Identification of **key components** with a high potential for synergetic effects
3. Adaptation and **extension** of the OpenTOSCA ecosystem for the needs of the DH-Community
4. Evaluate maintenance efforts on selected **use cases** and return them to the DH community as best practices

SustainLife: Objectives

1. Systematic **overview** of the technologies most commonly used in the DH-landscape
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OpenTOSCA Ecosystem Overview

The OpenTOSCA Ecosystem



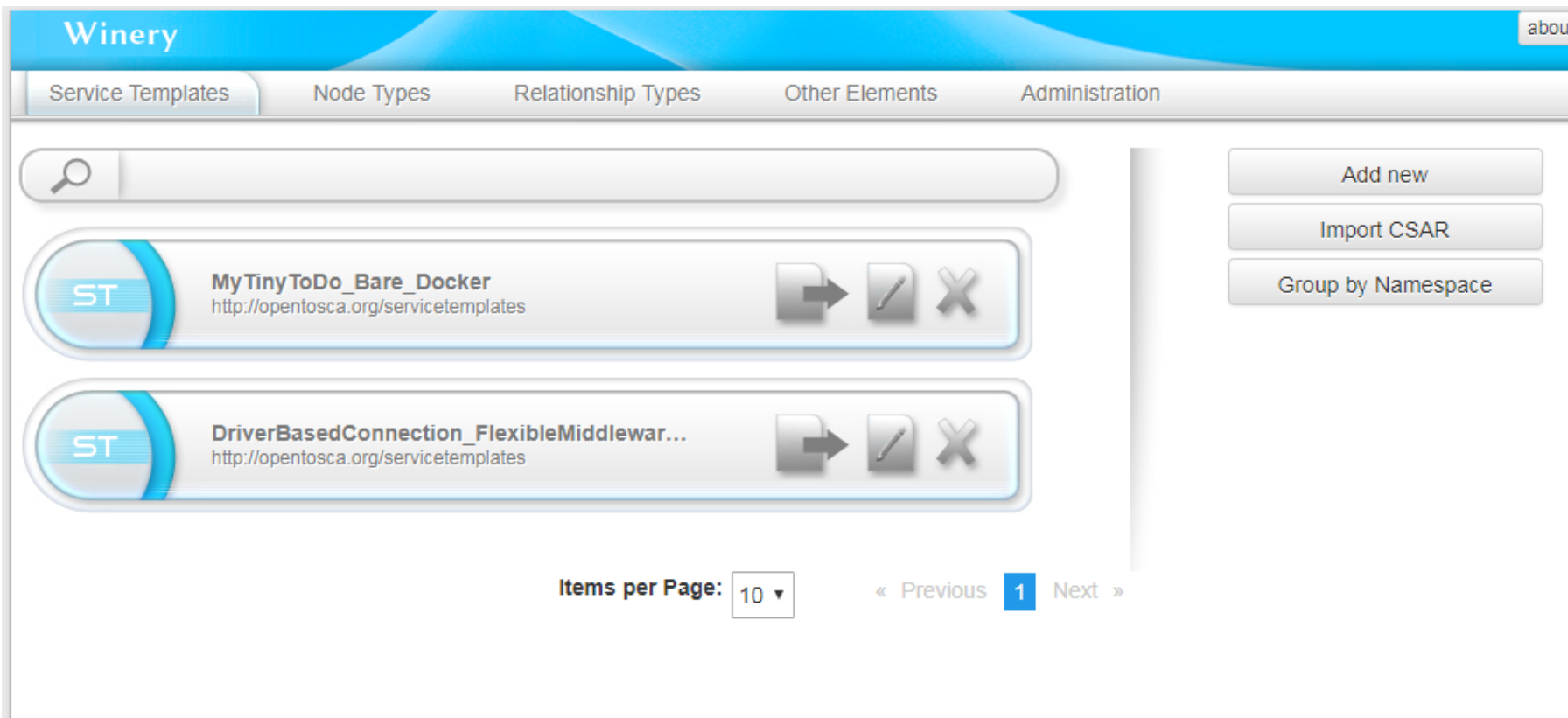
„Standards-based - Open Source - End-To-End Toolchain“



Modeling Tool

Container

Self-Service



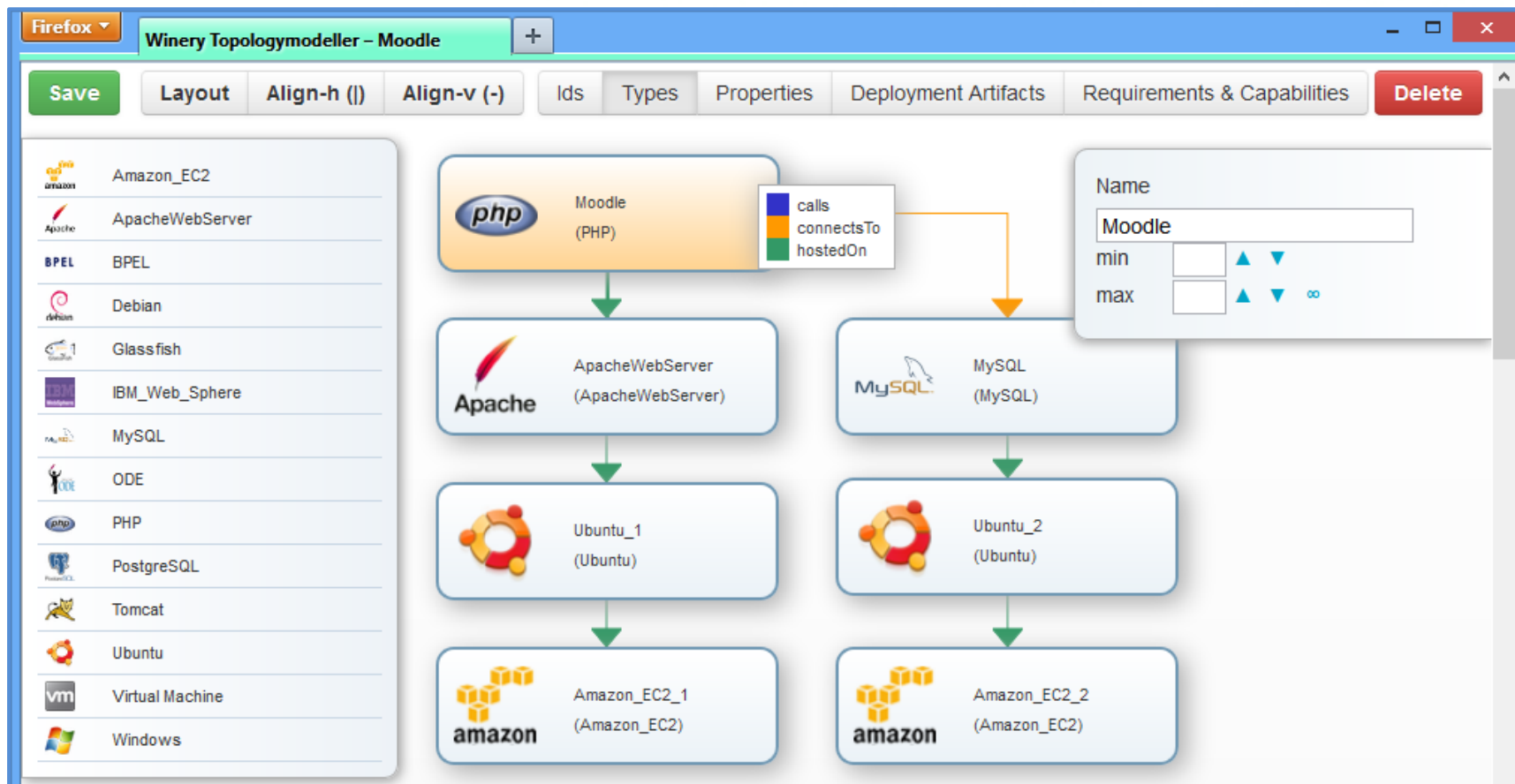
Creation and modeling of TOSCA applications, including graphical modeling of topologies and management plans. Exported as Cloud Service Archive (CSAR) for TOSCA runtime.



Modeling Tool

Container

Self-Service



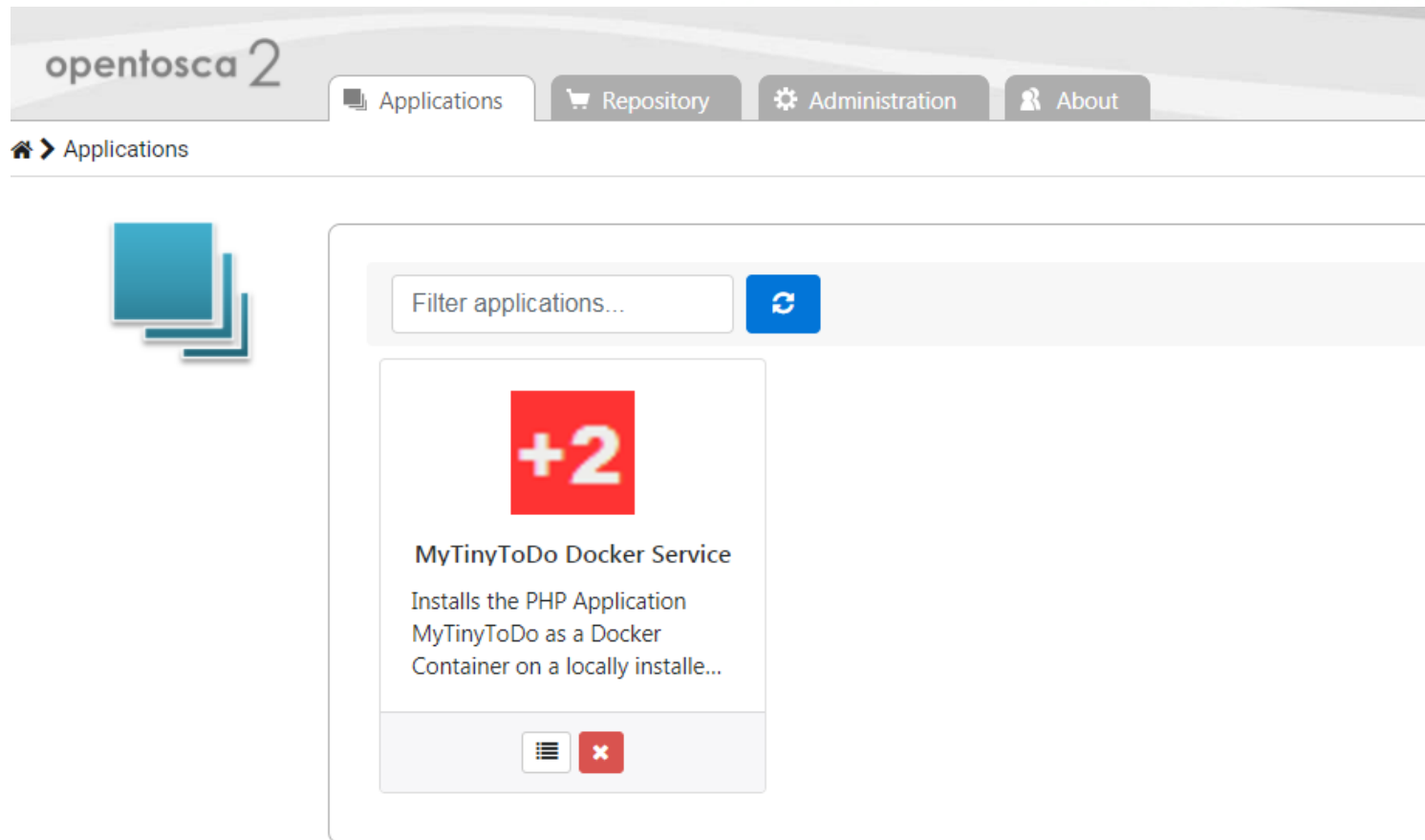
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Modeling Tool

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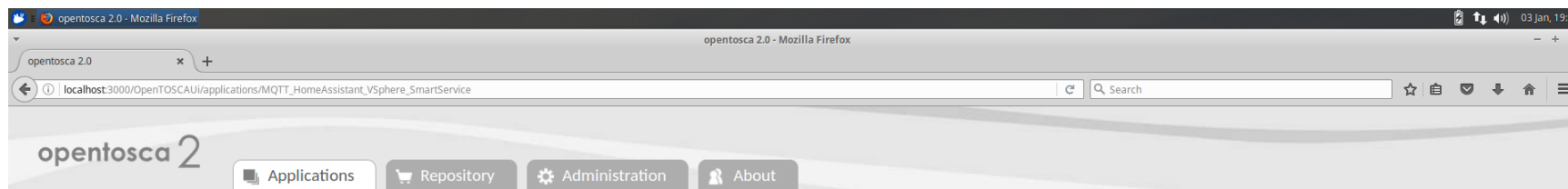
TOSCA runtime & middleware
Processes CSARs, runs plans, manages state, ...



Modeling Tool

Container

Self-Service



Applications / HomeAssistant / Description



HomeAssistant

Description

Instances

« Back to Overview

Description

This service contains the IoT UI HomeAssistant application which is able to display values sent by a data delivery service.

Version

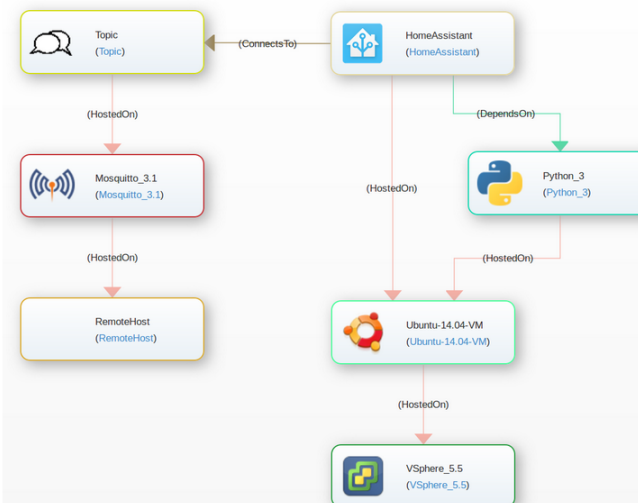
1.0

Authors

Uwe Breitenbücher, Ana Cristina Franco da Silva, Kálmán Képes, Oliver Kopp

Provision New Instance

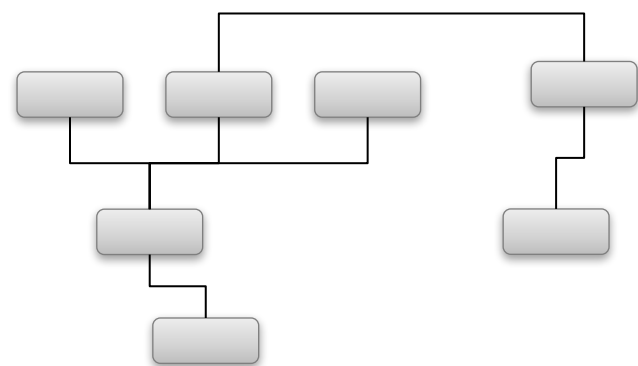
Topology Template



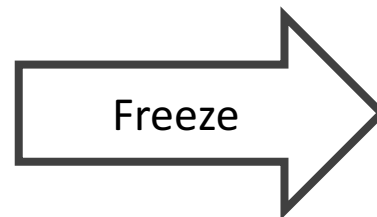
Offering the deployed CSARs to the end user for easy instantiation

On the road to sustain life...

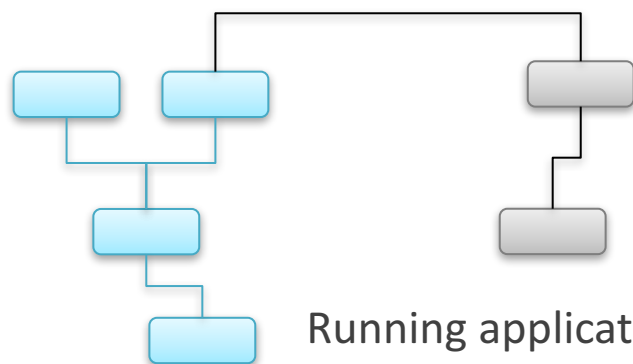
One major goal of SustainLife



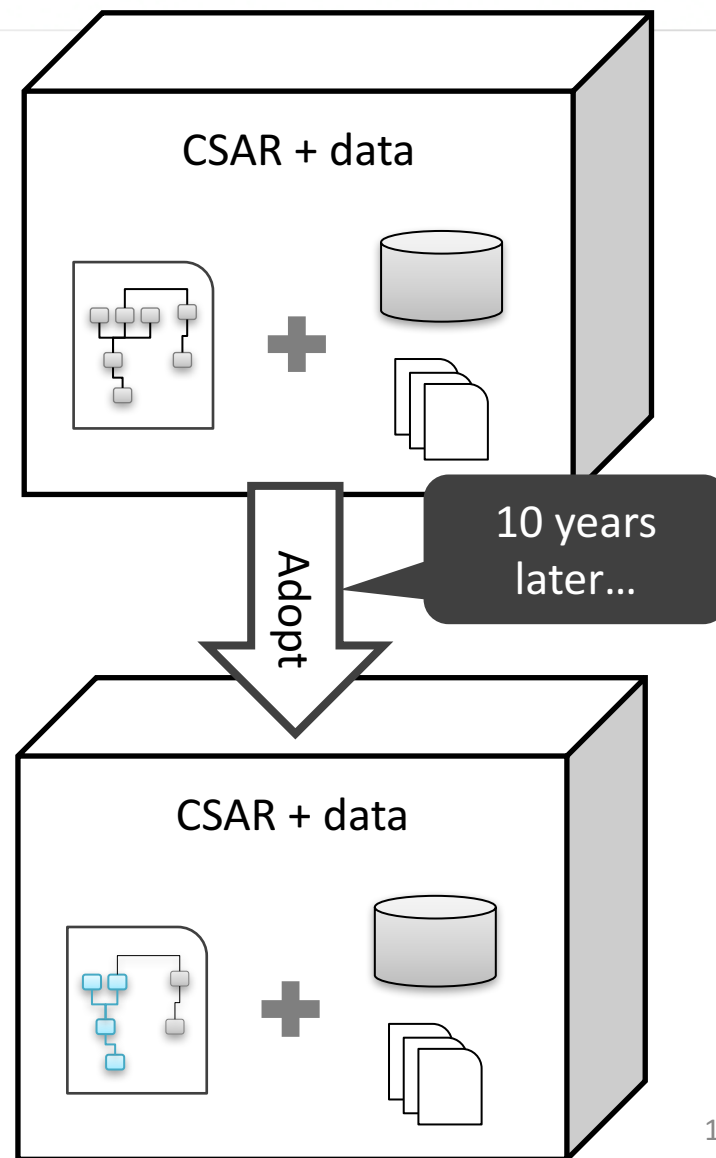
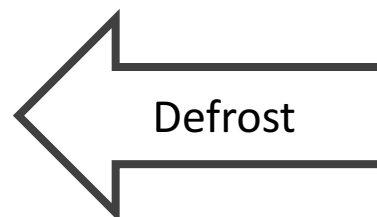
Running application



Frappé Method



Running application



Stop and rerun stateful components – Frappé Method

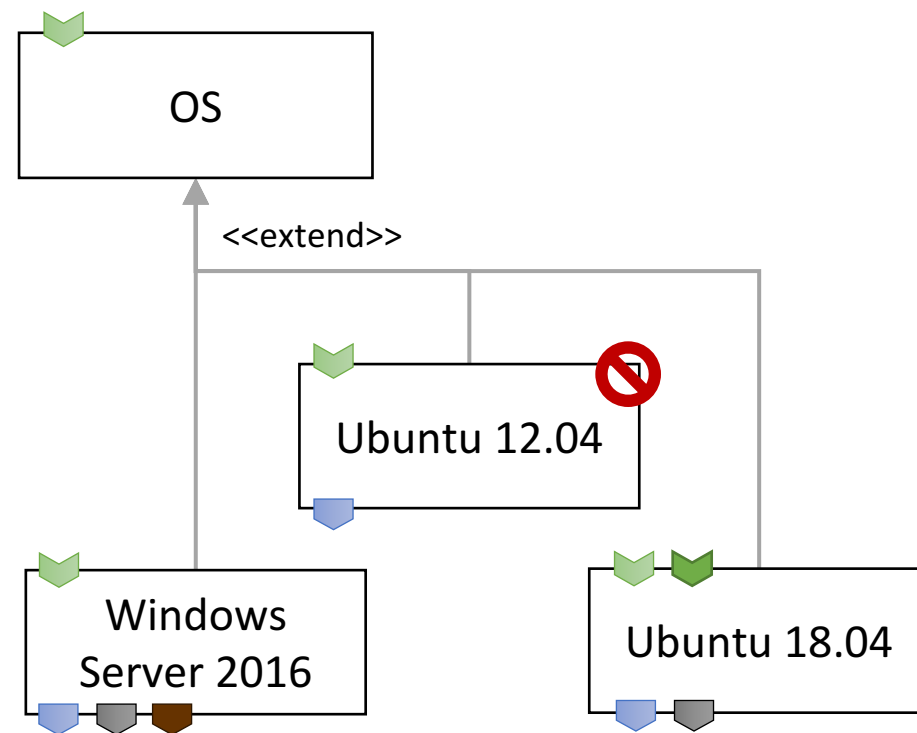
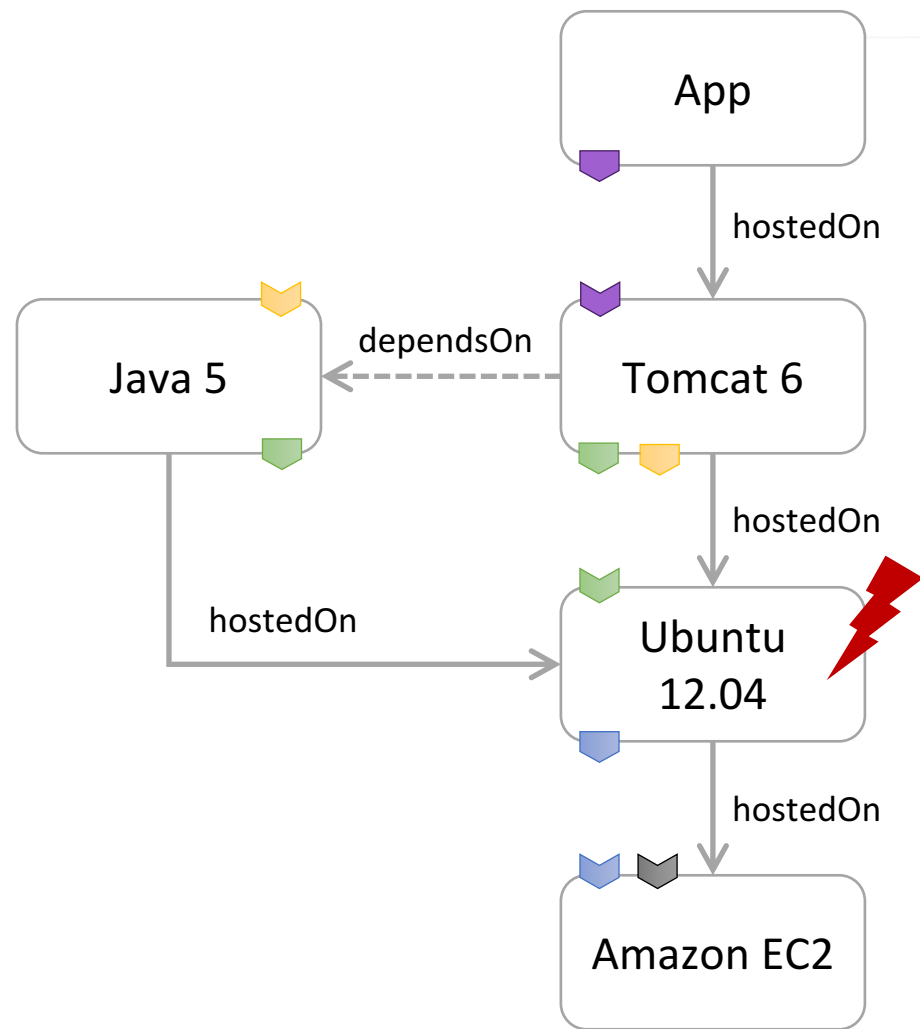
- Freeze, **Adopt**, Defrost →

Frappé Method

- Freezing components
 - Databases → obvious 😊
 - Workflow engines → not that trivial 😊
 - In memory data → should not happen but what if?
 - Stream processors → how to handle data while application is frozen?
 - ...
- Many open questions 😊

One challenging issue...

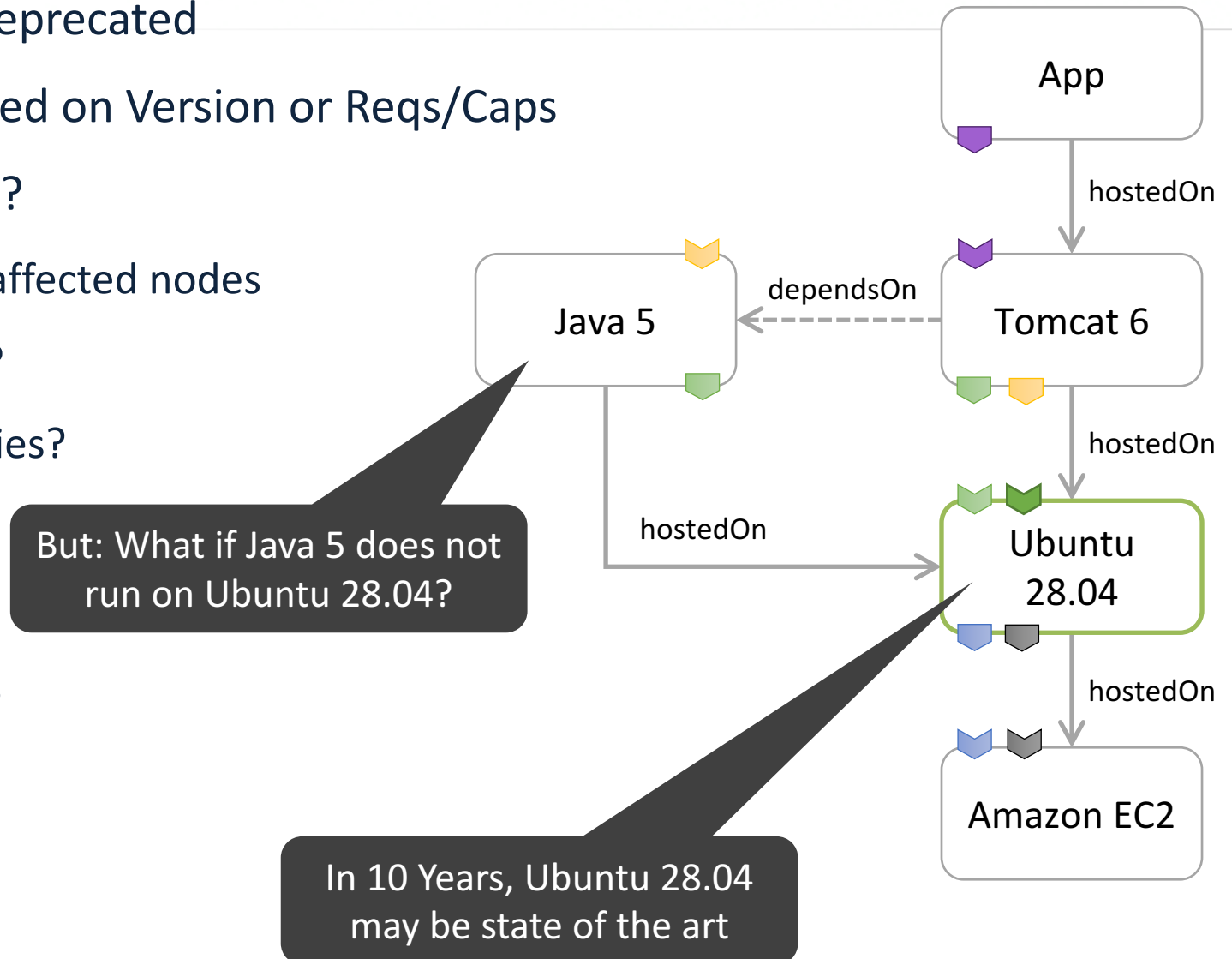
Exchange deprecated components



⊘ deprecated ▼ Capability ▢ Requirement

Exchange deprecated components

- Node Types become deprecated
- Update topologies based on Version or Reqs/Caps
- Effects on other nodes?
 - Range & number of affected nodes
 - Violated constraints?
 - Breaking dependencies?
 - Still deployable?
 - What do I get?
 - Security, patches, ...

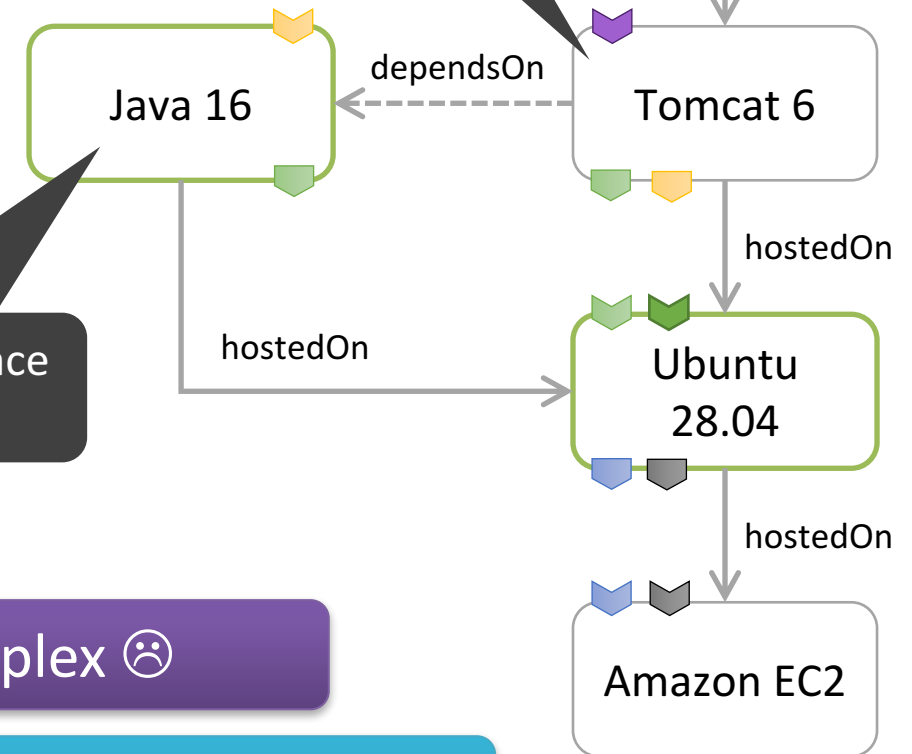


Exchange deprecated components

- Node Types become deprecated
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... which cannot be handled by an old Tomcat 6...etc.

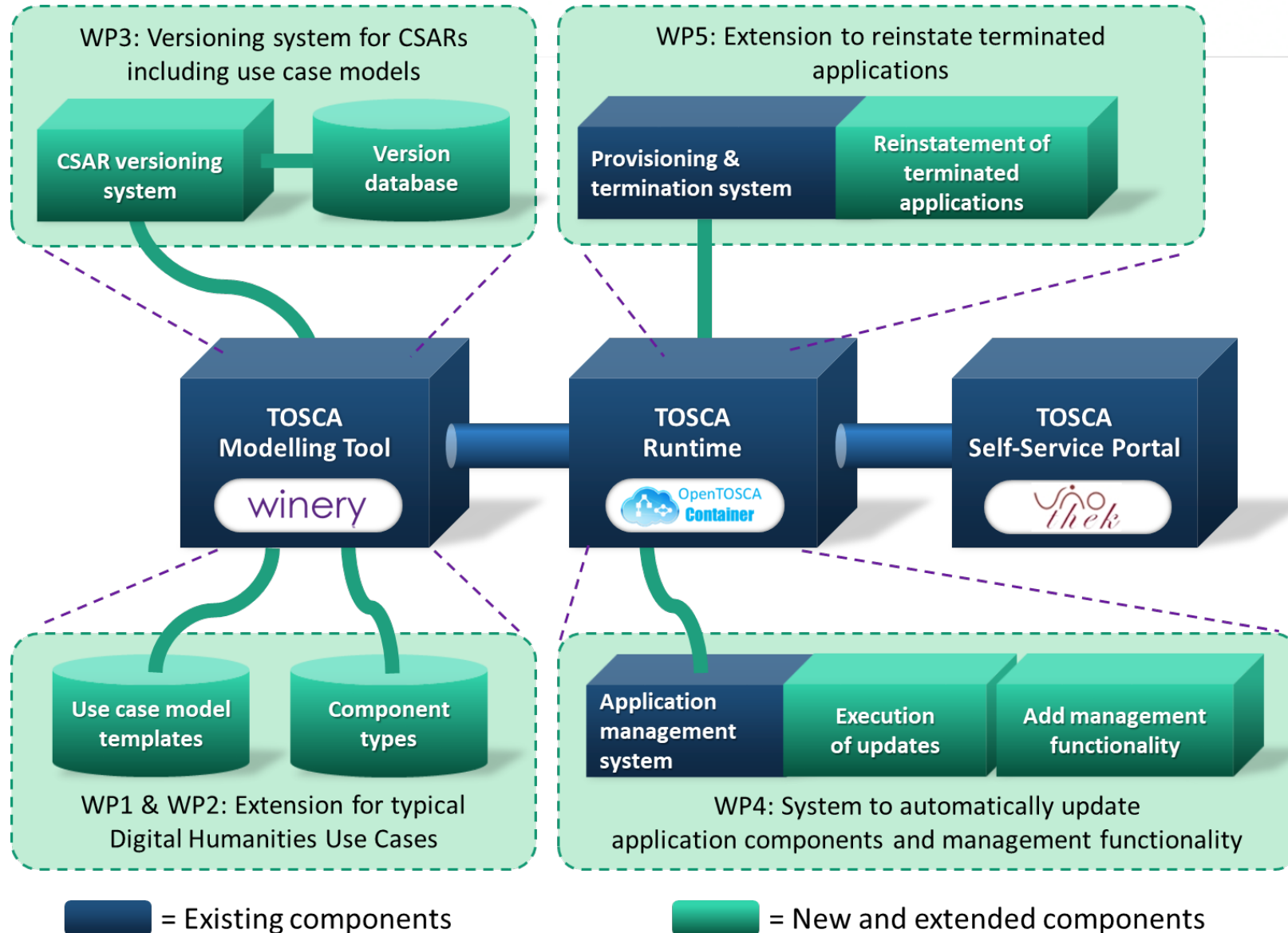
We may need to replace Java 5 by Java 16



Exchanging nodes quickly gets complex ☹️

... but we tackle this in SustainLife 😊

Project plan

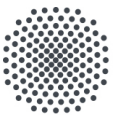


Thank You 😊



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