# SustainLife

## Living Systems in the Digital Humanities





Data Center for the Humanities Kölner Datenzentrum für die Geisteswissenschaften

#### **Claes Neuefeind & Kálmán Képes**

Uwe Breitenbücher, Lukas Harzenetter, Brigitte Mathiak, Frank Leymann



University of Stuttgart





Institute of Architecture of Application Systems / Data Center for the Humanities Cologne

### The MUSE4Music-Method

Very cool project <sup>(i)</sup> But: What if another researcher wants to reproduce the results in 10 years?



# Context: Digital Humanities (DH)



### Digital Humanities at University of Cologne

DCH

AAA Research



 $\rightarrow$  All of these projects produce "living systems"

### Example project: Digital Romansh Chrestomathy

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- 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

- 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

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## **OpenTOSCA Ecosystem Overview**

### The OpenTOSCA Ecosystem



"Standards-based - Open Source - End-To-End Toolchain"



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







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



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Offering the deployed CSARs to the end user for easy instantiation

# On the road to sustain life...

### One major goal of SustainLife



HAAS Research DCH

■ Freeze, Adopt, Defrost →

Frappé Method

- Freezing components
  - Databases → obvious ☺
  - Workflow engines  $\rightarrow$  not that trival  $\bigcirc$
  - In memory data  $\rightarrow$  should not happen but what if?
  - Stream processors → how to handle data while application is frozen?
  - • •

DCH

AAA Research

Many open questions <sup>©</sup>

# One challenging issue...

#### Exchange deprecated components



### Exchange deprecated components



### Exchange deprecated components

... which cannot be handled by an old Tomcat 6...etc. Node Types become deprecated App Update topologies based on Version or Reqs/Caps Effects on other nodes? hostedOn Range & number of affected nodes dependsOn Java 16 Tomcat 6 Violated constraints? Breaking dependencies? hostedOn Still deployable? hostedOn We may need to replace Ubuntu Java 5 by Java 16 28.04 What do I get? Security, patches, ... hostedOn Exchanging nodes quickly gets complex 🟵 Amazon EC2 ... but we tackle this in SustainLife 🙂

### Project plan



= New and extended components







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