Automatic Deployment and Execution of Applications using Cloud Services

Background (I)

- Grid infrastructure lacks a flexible environment:
  - specific (or a very limited group) operating system flavour with a specific set of software and libraries is deployed across all the available computing nodes
- Executing new applications require:
  - to adapt the application to the computing environment (time consuming, skills), or
  - to adapt the computing environment (unsustainable work overhead, conflicts)

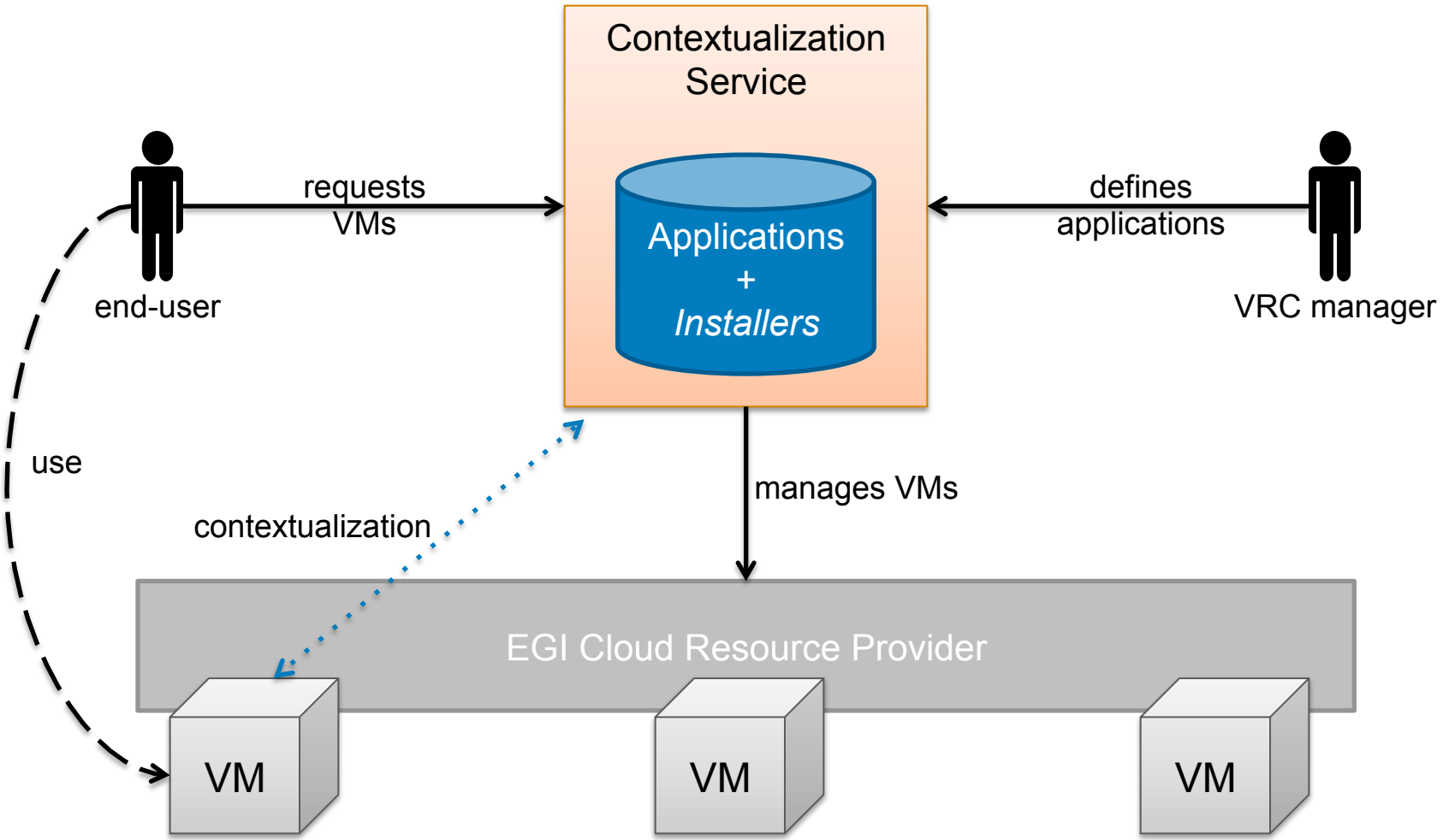
Background (II)

- Cloud model allows the provision of customized application environments
  - perfectly fit the requirements of the researcher's applications
  - without the RPs involvement
- But:
  - customization requires certain skills that end-users may not posses

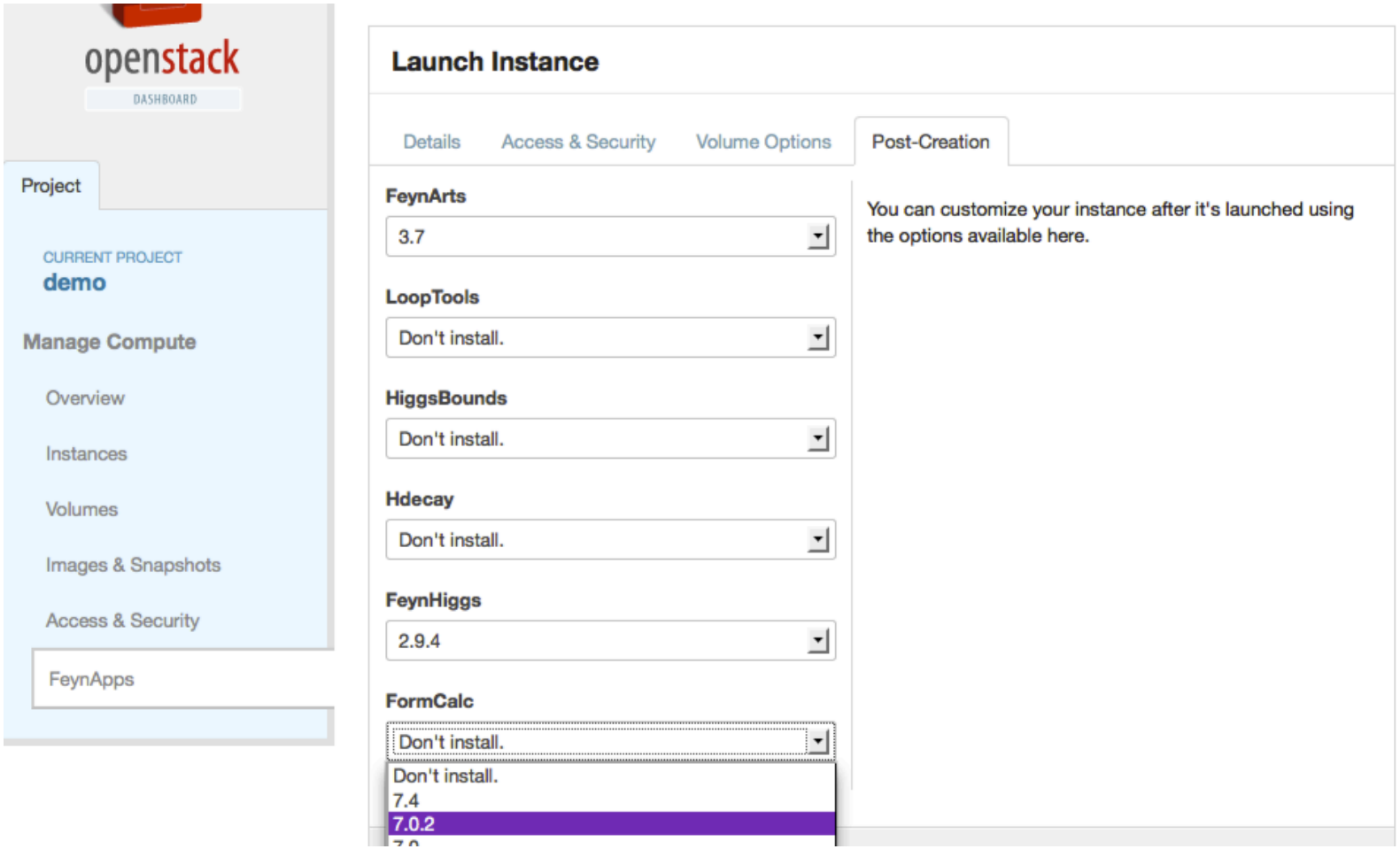
Main objective

Develop a contextualization service that aids scientific communities to execute their computing workload by automating the deployment of scientific software on virtual machines using the interfaces and standards within EGI's Federated Cloud

Expected Outcome

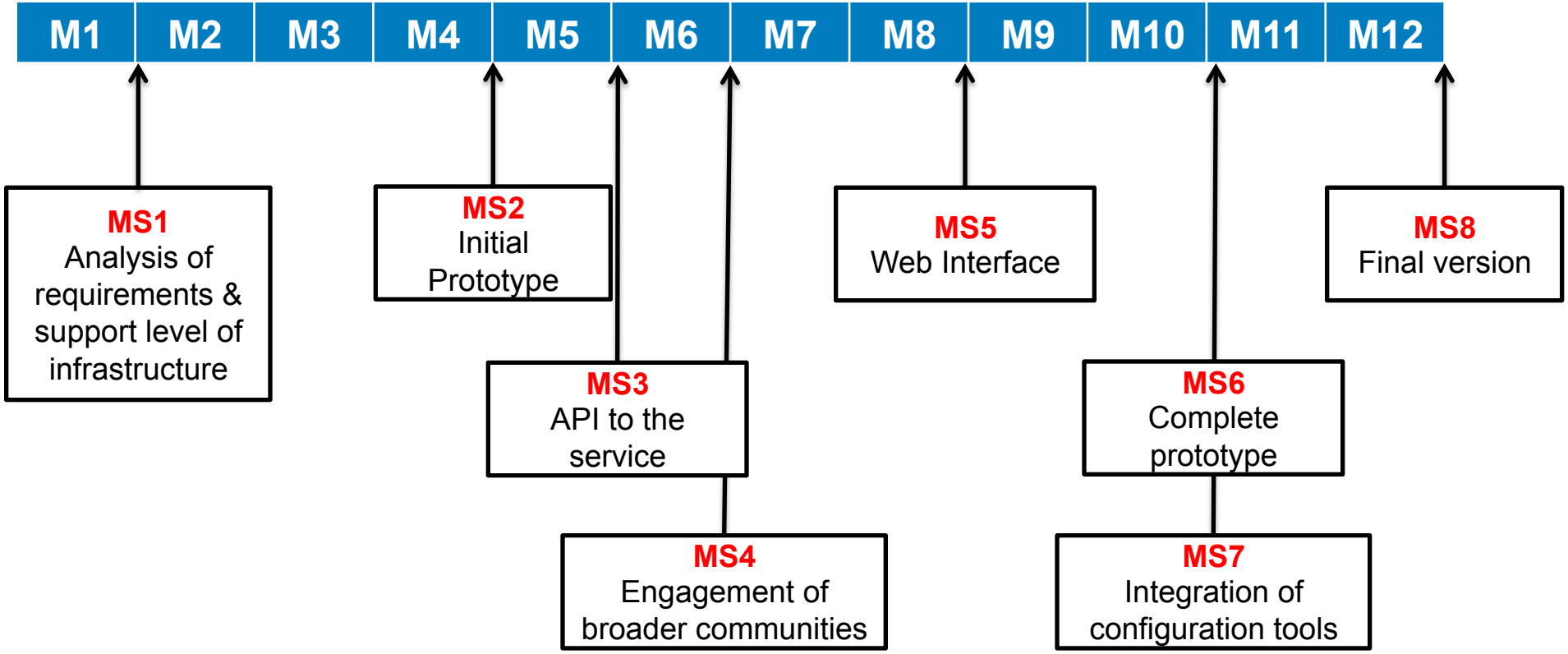


Initial experience



See slides from “Phenomenology tools on a OpenStack Cloud Infrasctucture” talk
https://indico.egi.eu/indico/contributionDisplay.py?sessionId=12&contribId=83&confId=1222

Timeline


M1
M2
M3
M4
M5
M6
M7
M8
M9
M10
M11
M12
MS1
Analysis of requirements & support level of infrastructure
MS2
Initial Prototype
MS3
API to the service
MS4
Engagement of broader communities
MS5
Web Interface
MS6
Complete prototype
MS7
Integration of configuration tools
MS8
Final version

EGI's Cloud Support

- OCCI currently lacks of any contextualization features
  - We will collaborate with FedCloud towards a working solution
  - cloud-init like solution should be available
- External metadata server with context info as workaround*
  - tested at Ibercloud level
  - allows contextualization but only public data can be used

* See https://github.com/enolfc/context-server

Final Outcome

- New service model to deploy the Virtual Research Environments encapsulated in virtual machines
  - Potentially enhancing the adoption of the infrastructure by projects with complicated software stacks
  - Reducing the overhead of the local site administrators

Partners

- CSIC
  - FedCloud members
  - Involved in OpenStack development
  - Particle Physics Phenomenology group
- FCTSG (CESGA)
  - FedCloud members
  - OpenNebula expertise
  - Computational Chemistry group
- Project leader:
  - Enol Fernández (CSIC)