Initial CF2016 Roadmap
(after discussions @ CF2016)

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Method

- Position Papers accepted for CF2016
- Scientific papers for CF2016
  - Trawled for ideas during the review phase
- These were analysed and edited into this paper by PC Chairs (Keith Jeffery & Lutz Schubert)
  - With some influence from various EC expert groups, project cluster discussions
  - HOLACloud Portal used for recent topics, relevance and importance
Analysis

• All position and scientific papers were analysed for
  – technological key themes
  – major challenges
  – development status

• Key topics were verified against the HolaPortal
  – verifying general interest in the topic
  – assessing the timeline

• Views in the roadmap are those expressed by the contributors
Detail in paper

• Keith G Jeffery; Lutz Schubert (2016)
  • ‘Initial 2016 HOLACloud Roadmap’
• at Cloud Forward: From Distributed to Complete Computing,
• CF2016, 18-20 October 2016, Madrid, Spain.
• Procedia Computer Science PROCS 9715
  • DOI: 10.1016/j.procs.2016.08.296
Proposed Major Topics 2016

• advanced systems development method(s)
  – based on model-driven technology;
• placement and locality
  – of data, software, resources and users;
• autonomic SLA management to meet NFR
  – pervasively through the software stack including trust, security and privacy based on policy enactment;
• interoperability & portability
  – across hybrid CLOUD platforms and across heterogeneity of data and software, devices and users
Major Topics 2016 after discussion @ CF2016

• advanced systems development method(s)
  – based on model-driven technology, using AI techniques for elicitation, rich models to express requirements
  – Model validation (business requirement), (reproducibility);
  – Including network/edge-fog/IoT/mobility
Major Topics 2016
after discussion @ CF2016

• placement and locality
  – of data, software, resources and users;
  – Network-based approach (network as multicloud, pop-up clouds at nodes)
  – Mirroring (resilience), partitioning (performance, security)
  – Provenance and curation
Major Topics 2016 after discussion @ CF2016

• Adaptive management of software within context and requirements
  – Including business requirements / user centred
    • Community clouds – link to Open Government data
  – Metrics measured and used for adaptation, learning
  – Reasoning with uncertainty and incompleteness
  – Deployed pervasively through the software stack including trust, security and privacy based on policy enactment;
Major Topics 2016 after discussion @ CF2016

• interoperability & portability
  – across hybrid CLOUD platforms and across heterogeneity of data and software, devices and users
  – Standards, dialects, need formal syntax and declared (multilingual) semantics
  – Virtualisation hiding platform characteristics – or exposing for particular purposes
  – Beyond virtualisation – what does that look like?
Thinking ‘out of the box’

And now for something completely different……..

Detailed work after CF2015 roadmap
Proposed Long Term View – I3 ("Complete Computing")

• **Information:**
  – IT is not so much about data, but about information and knowledge
  – From compute- to data- to information-centric computing

• **Incentive:**
  – Software (and hardware) needs to meet the functional and non-functional requirements
  – But they need to be “naturally” and understandably defined not as low level concrete service level objectives

• **Intention:**
  – Every software has a goal, the algorithm is just one path towards that goal
  – Execution must be more free, adaptive, dynamic, flexible
The Road to I3

stages identified in the CF2015/2016 roadmap
(will be updated)
What Happens Now?

• HOLACloud project personnel meet / discuss / write-up the roadmap as a paper (early November)
  – Short 1-2 page version
  – Longer <10 page version
• Draft presented November 7 EC Post-consultation workshop
• On website of HOLACloud project/CF2016
  – http://www.holacloud.eu/
• Email to CF2016 participants (and others including clusters) requesting comments
• Finalised and submitted to EC
Take-home message

- It is your roadmap
- HOLACloud project is facilitator
- Get involved