

CLOUD  
FORWARD  
CONFERENCE

18-20 October, Madrid  
Círculo de Bellas Artes

2016



# 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:



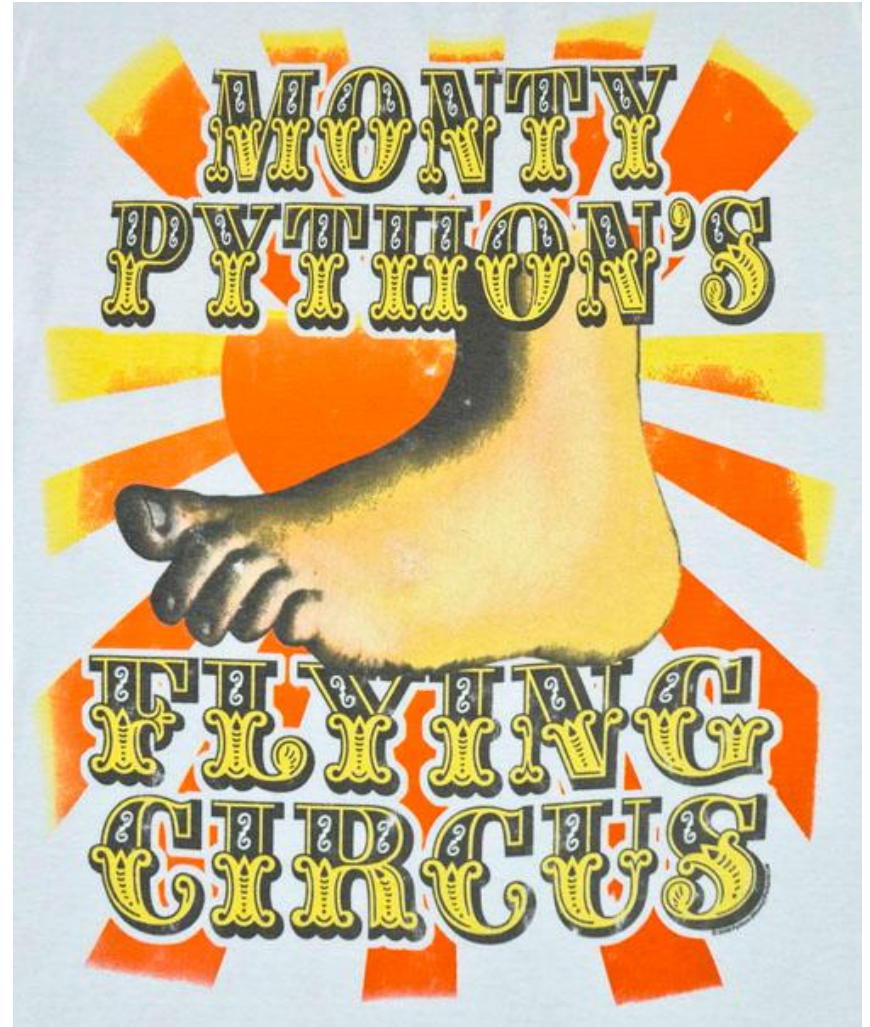
# Major Topics 2016 after discussion @ CF2016

- 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.....

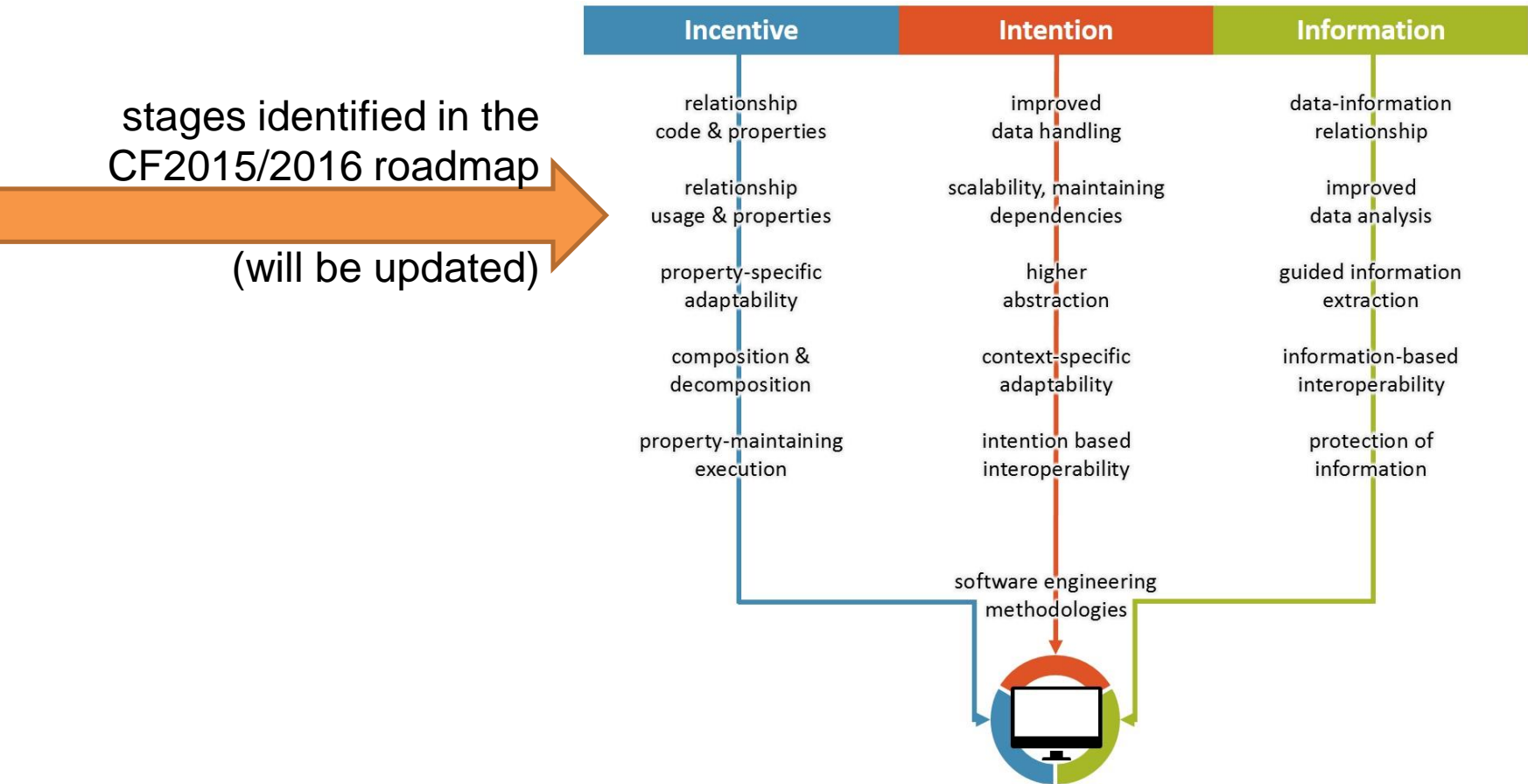
Detailed work after  
CF2015 roadmap



# 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



# 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
  - <https://ec.europa.eu/digital-single-market/en/news/consultation-cloud-computing-research-innovation-challenges-wp-2018-2020>
- 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

