Imperial College London

# DevOps@Imperial

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# Who are we?

- Quantitative Analysis and Decision Science
  - Enterprise performance engineering
  - Optimization-based decision making
  - Operations research (queueing, scheduling, …)

- Enterprise performance engineering
  - Optimal cloud design
  - Measurement and inference in systems
  - Resource management

# DevOps Project Involvement

MODAClouds (FP7 Call 8, 2012-2015)

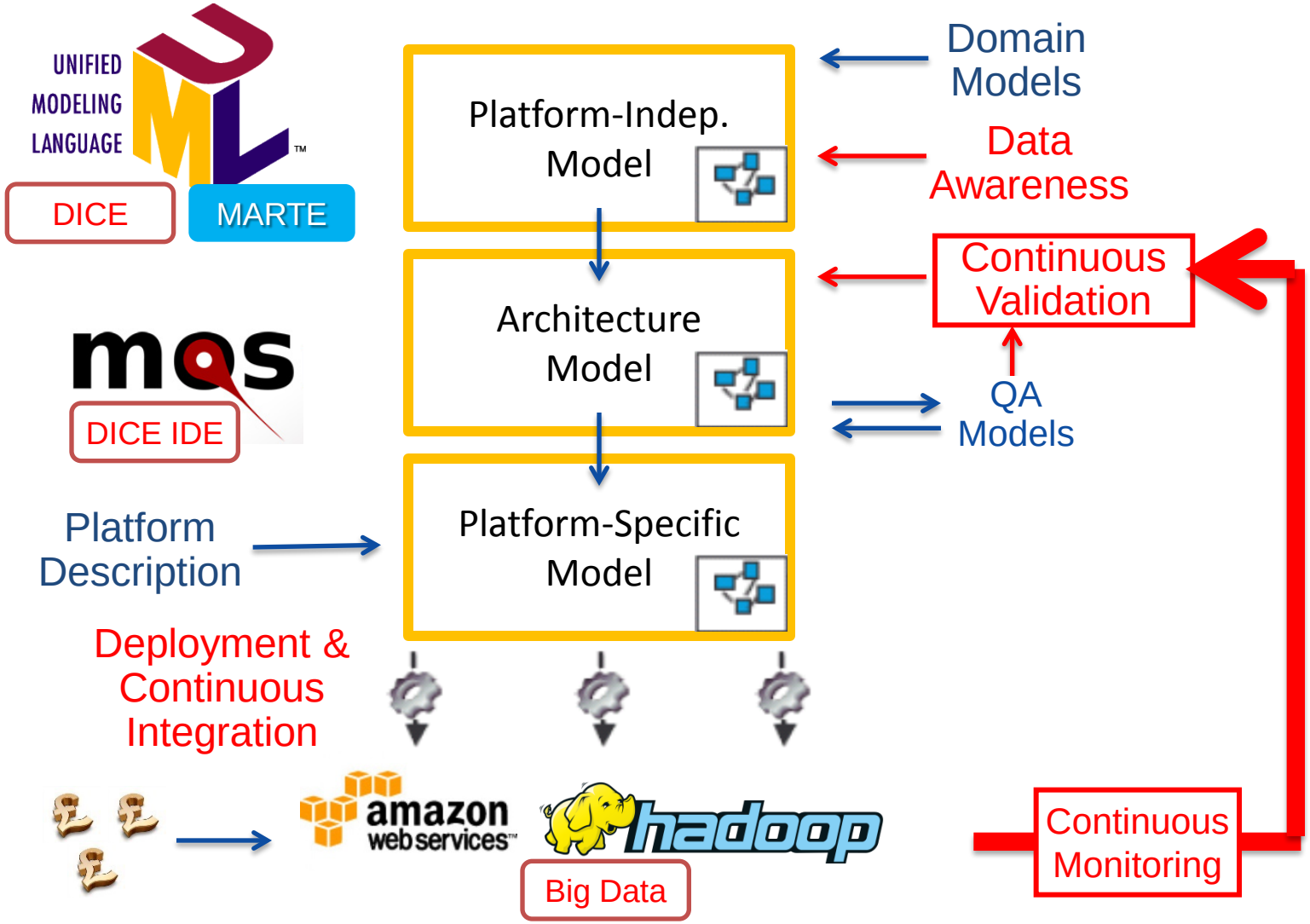

- MOdel-Driven Approach for design and execution of applications on multiple Clouds
- IP project, 9 partners
  - Politecnico di Milano (Coord.), Imperial College, SINTEF, IEAT, Flexiant, ATOS, BOC, CA, Siemens
- Imperial focuses on:
  - Model-based prediction and load-balancing in DevOps

# DevOps Project Involvement

DICE (H2020 ICT-09-2014, 2015-2018) 


- Developing Data-Intensive Applications with Iterative Quality Enhancements
- RIA, 9 partners (academia & SMEs)
  - Imperial College (Coord.), Politecnico di Milano, IEAT, Flexiant, U. Zaragosa, XLAB, Netfective, ATC, Prodevelop
- Imperial focuses on:
  - Our focus on runtime data feedback analysis for DevOps and model-driven performance benchmarking

# DICE Overview



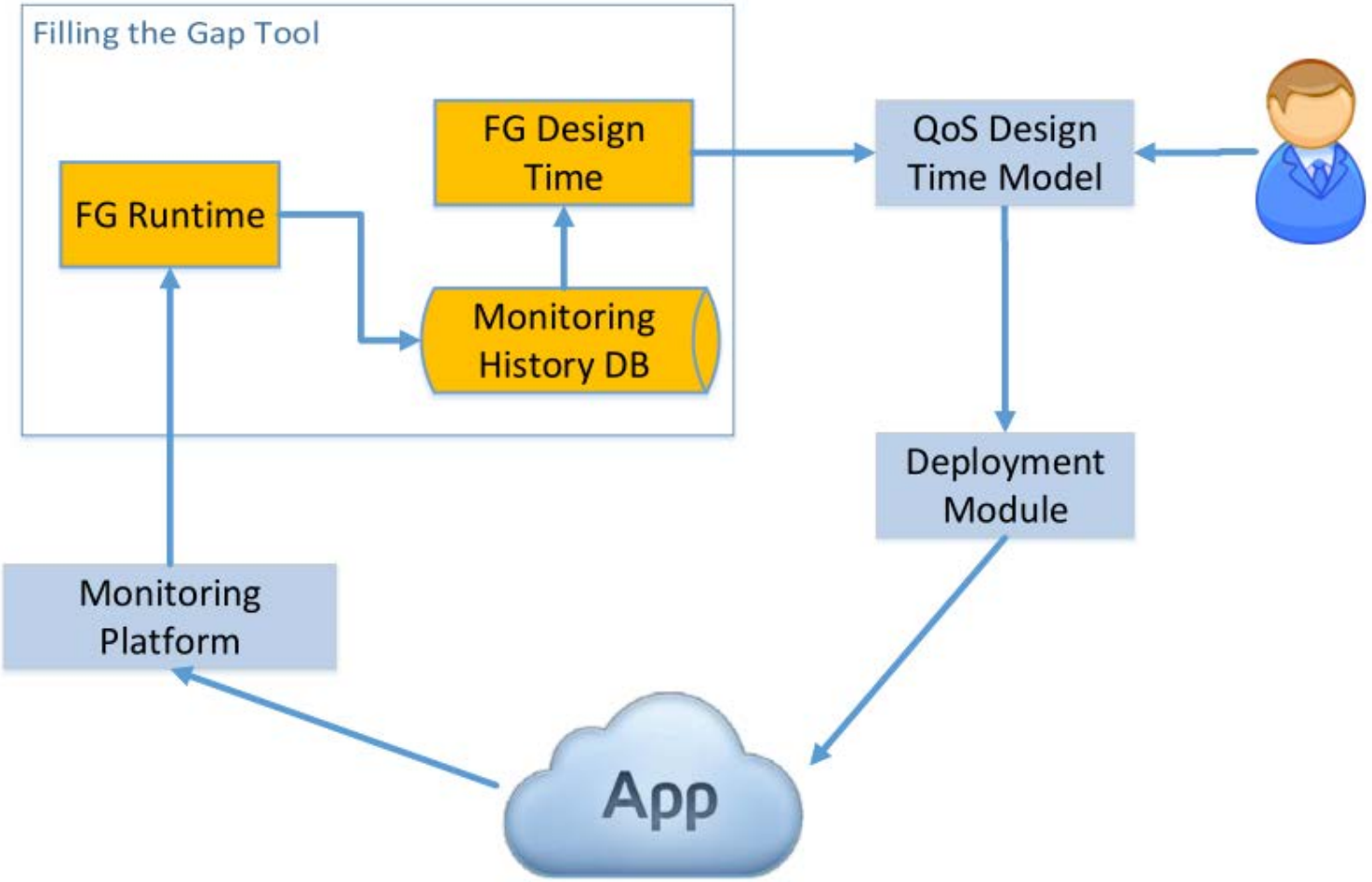
# Interests in SPEC RG DevOps

- Collaboration:
  - Contribution to white papers
    - Runtime management, Feedback analysis
  - Joint projects (tools)
  - Joint supervision of student theses and internships
  - Contribution of open data, model repositories,  definition of data structures
  - Co-operation as part of dissemination or outreach events (e.g., workshops)

# Tool Assets: QoS Prediction

- Java Modelling Tools [w. Politecnico di Milano]
  - http://jmt.sf.net
  - Queueing simulation, workload analysis
  - 40k+ downloads, 8+ years on sourceforge
- LINE performance engine
  - https://code.google.com/p/line/
  - Queueing predictions about QoS & SLAs

# Tool Assets: Filling-the-Gap Tool

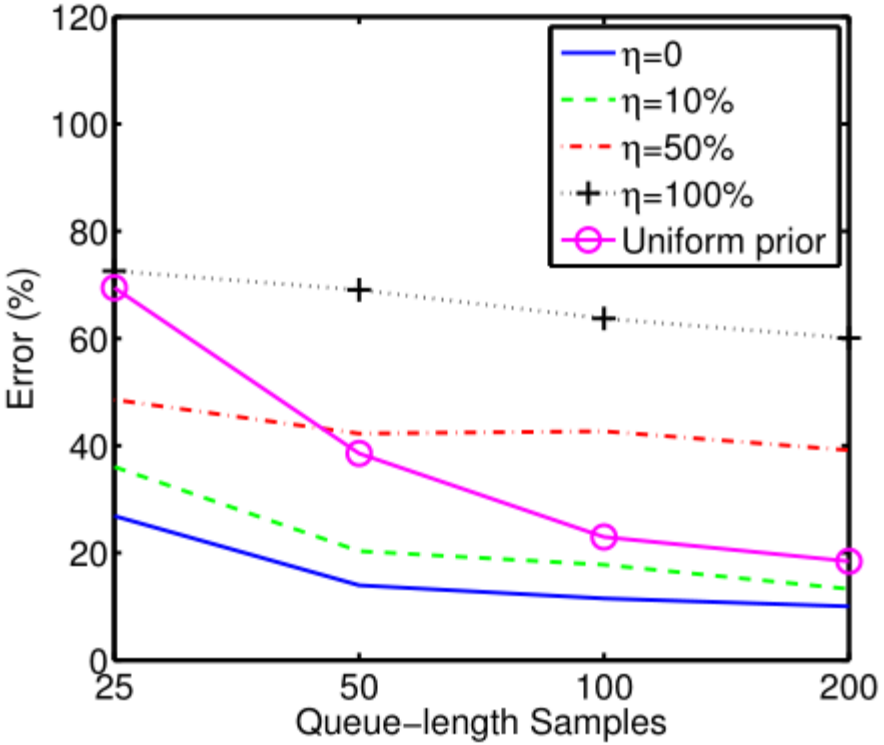


# Tool Assets: Filling-the-Gap

- Filling-the-Gap demand estimation
  - Standard demand estimation (e.g., LibReDe)
- Response-time based estimation
  - MinPS: MLE, but depends on scheduling
- Queue-length based estimation
  - GQL: Gibbs sampling, allows for prior probabilities
- …

# Tool Assets: Filling-the-Gap

- Example: effect of prior beliefs on improving demand estimation



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# Questions?

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