

# SPEC RG DevOps Performance Working Group



July 21, 2016 @ QUDOS 2016, Saarbrücken, Germany

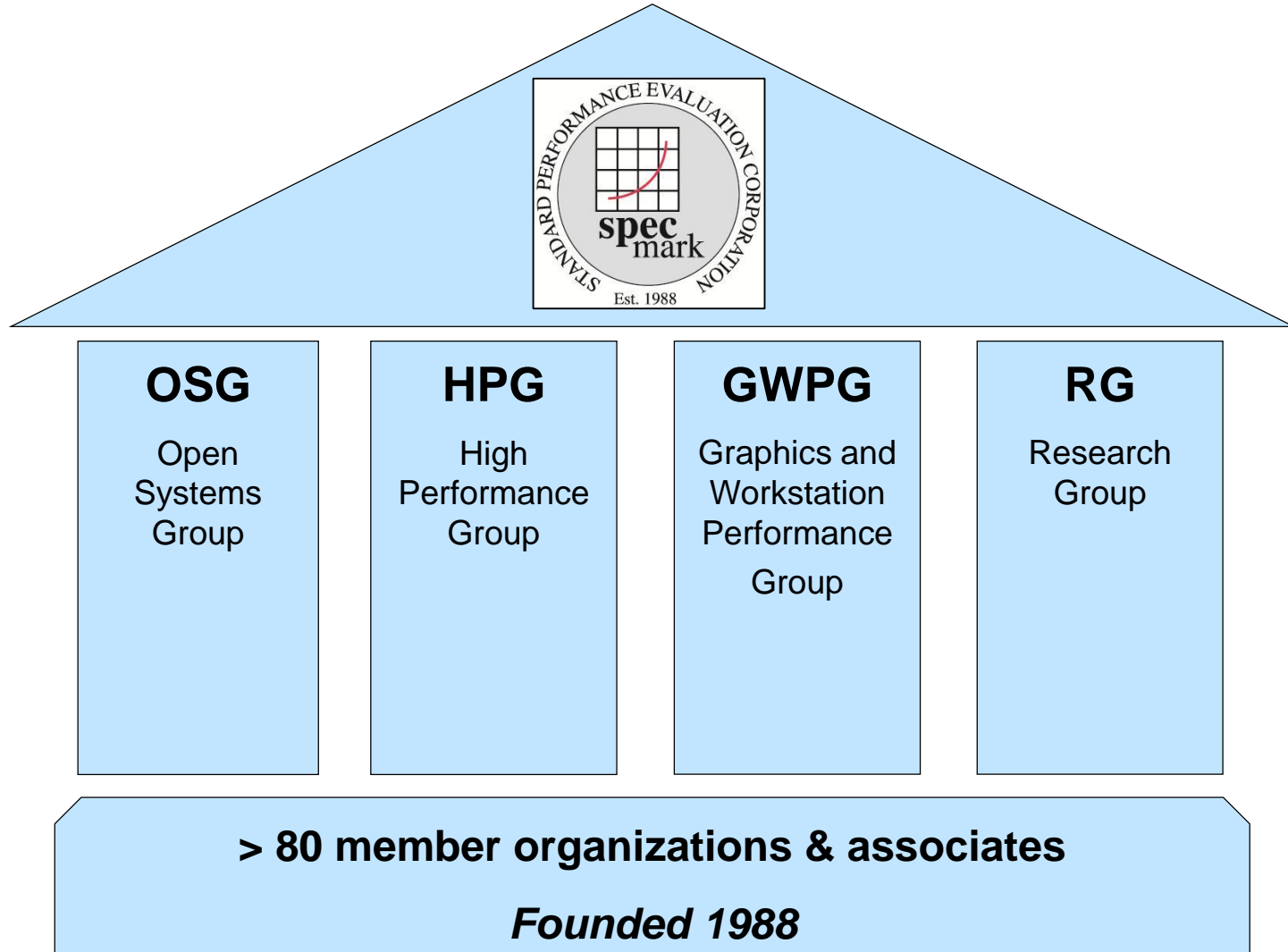
<http://research.spec.org/devopswg>

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# Standard Performance Evaluation Corporation

<http://www.spec.org>



# Standard Performance Evaluation Corporation

Platform for Collaborative Research



## Mission Statement:

- Provide a **platform for collaborative research efforts** in the area of quantitative system evaluation and analysis
- Foster interactions and **collaborations** between industry and academia
- **Scope:** computer benchmarking, performance evaluation, and experimental system analysis in general
- **Focus on** standard scenarios, metrics, benchmarks, analysis methodologies and tools

## RG

Research  
Group

- Big Data
- Cloud
- DevOps  
Performance
- IDS

& associates

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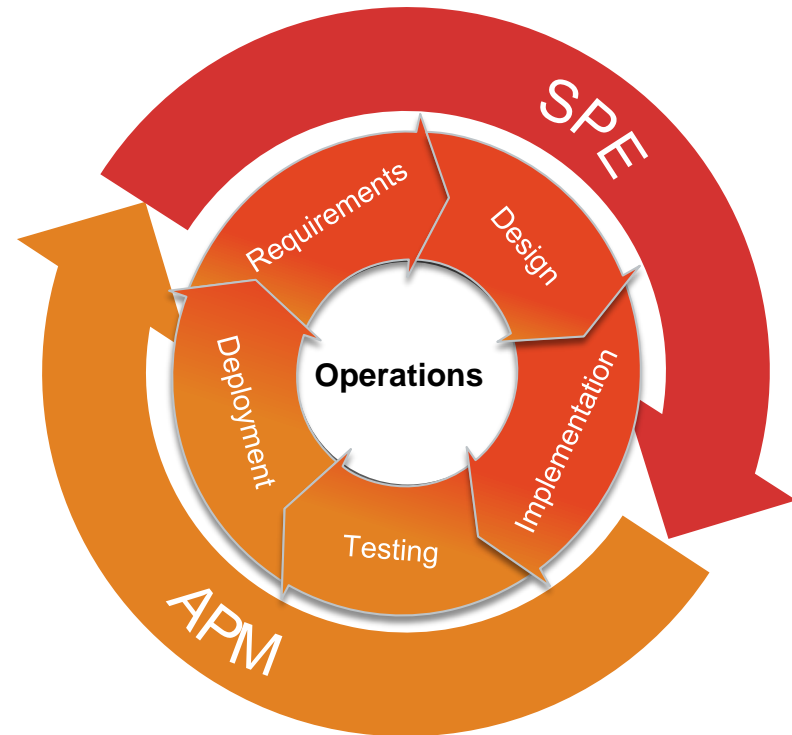
# SPEC RG Member Organizations

<http://research.spec.org>



# SPEC RG DevOps Performance Working Group

<http://research.spec.org/devopswg/>



**Mission:** The mission of the DevOps Performance WG is to foster and facilitate research in combining **measurement-based** application performance management (APM) and **model-based** software performance engineering (SPE) activities for **business-critical application systems**.

# Selected Activities

## SPEC RG DevOps Performance Working Group



## Projects involving the group as a whole

- **In progress**

- Industry survey on performance in DevOps
  - **Contact us if interested to participate in the survey**
- Blueprint and extensible proof-of concept implementation for performance-aware DevOps process and infrastructure  
[Presentation @ DevOpsDays Kiel 2016]

- **Completed**

- Performance-oriented DevOps: A Research Agenda.  
Technical Report SPEC-RG-2015-01, SPEC Research Group  
- DevOps Performance Working Group, Standard  
Performance Evaluation Corporation (SPEC), August 2015.  
<https://research.spec.org/publications/>



# Selected Activities (cont'd)

SPEC RG DevOps Performance Working Group



## Smaller collaborations on specific topics

- Comparison resource-demand estimation vs. Measurements [EPEW '15]
- Model extraction from industrial APM (Dynatrace) [ICPE '15]
- Workload extraction and specification for session-based application systems [ValueTools '14, LT@ICPE '15, SoSyM (considered for publication)]
- Interoperability between APM tools [EPEW ,16]

## Collaborative research projects (3rd-party funding)

- Declare: Declarative Performance Engineering  
<http://www.dfg-spp1593.de/declare> [ICPE '16]
- diagnoseIT: Expert-guided automatic diagnosis of performance problems in enterprise applications  
<https://diagnoseit.github.io/> [EDCC '16]



# Selected Activities (cont'd)

SPEC RG DevOps Performance Working Group



## Organization of events

- International Workshop on Quality-Aware DevOps (QUDOS)  
<http://qudos2016.fortiss.org/> | <http://qudos2015.fortiss.org/>
  - QUDOS 2017 presumably co-located with ACM/SPEC ICPE in L'Aquila
- GI-Dagstuhl seminar on „Software Performance Engineering in the DevOps World“  
<http://www.dagstuhl.de/16394>



## Journal special issue

- ACM Transactions on Internet Technology (TOIT) – special issue on Emerging Software Technologies for Internet-Based Systems: Internetware and DevOps  
<http://toit.acm.org/announcements.cfm>



# SPEC RG DevOps Performance Working Group

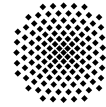
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- Current member organizations

fortiss

Imperial College  
London



University of Stuttgart  
Germany



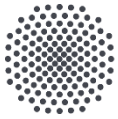
Christian-Albrechts-Universität zu Kiel



- Contacts

- Chair: André van Hoorn (University of Stuttgart)
  - Vice chair: Felix Willnecker (fortiss GmbH)
  - Secretary: Robert Heinrich (KIT)
  - Release manager: Alexander Wert (NovaTec)
- **Bi-weekly calls**, currently @ Fri 13:30-14:30 (Berlin/CET)
  - Next **face-to-face meeting** on April 26, 2017 at ICPE in L'Aquila, Italy

# **Blueprint for Performance-Aware DevOps: Vision**



University of Stuttgart

fortiss



**EXCERPT FROM:**

# **Rethinking Performance Engineering in the DevOps World**

**Felix Willnecker  
André van Hoorn**



May 13, 2016

# Foundations and Challenges: SPEC RG DevOps TR

Technical Report: SPEC-RG-2015-01

## Performance-oriented DevOps: A Research Agenda

SPEC RG DevOps Performance Working Group

Andreas Brunnert<sup>1</sup>, André van Hoom<sup>2</sup>, Felix Willnecker<sup>1</sup>,  
Alexandru Danciu<sup>1</sup>, Wilhelm Hasselbring<sup>3</sup>,  
Christoph Heger<sup>4</sup>, Nikolas Herbst<sup>5</sup>, Pooyan Jamshidi<sup>6</sup>,  
Reiner Jung<sup>3</sup>, Joakim von Kistowski<sup>5</sup>, Anne Koziol<sup>7</sup>,  
Johannes Kroß<sup>1</sup>, Simon Spinner<sup>5</sup>, Christian Vögele<sup>1</sup>,  
Jürgen Walter<sup>3</sup>, Alexander Wert<sup>4</sup>

<sup>1</sup> fortiss GmbH, München, Germany

<sup>2</sup> University of Stuttgart, Stuttgart, Germany

<sup>3</sup> Kiel University, Kiel, Germany

<sup>4</sup> NovaTec Consulting GmbH, Leinfelden-Echterdingen, Germany

<sup>5</sup> University of Würzburg, Würzburg, Germany

<sup>6</sup> Imperial College London, London, United Kingdom

<sup>7</sup> Karlsruhe Institute of Technology, Karlsruhe, Germany

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University of Stuttgart  
Germany

C | A | U

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NOVATEC  
make IT happen!

Julius-Maximilians-  
UNIVERSITÄT  
WÜRZBURG

Imperial College  
London

KIT  
Karlsruher Institut für Technologie



August 7, 2015

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## Performance-oriented DevOps: A Research Agenda.

Technical Report SPEC-RG-2015-01, SPEC  
Research Group – DevOps Performance Working  
Group, Standard Performance Evaluation  
Corporation (SPEC), August 2015.

<https://research.spec.org/publications/>

**“So far, the community  
has failed to  
systematically integrate  
performance  
engineering practices  
into the DevOps world”**

**Our claim – please contradict!**

”

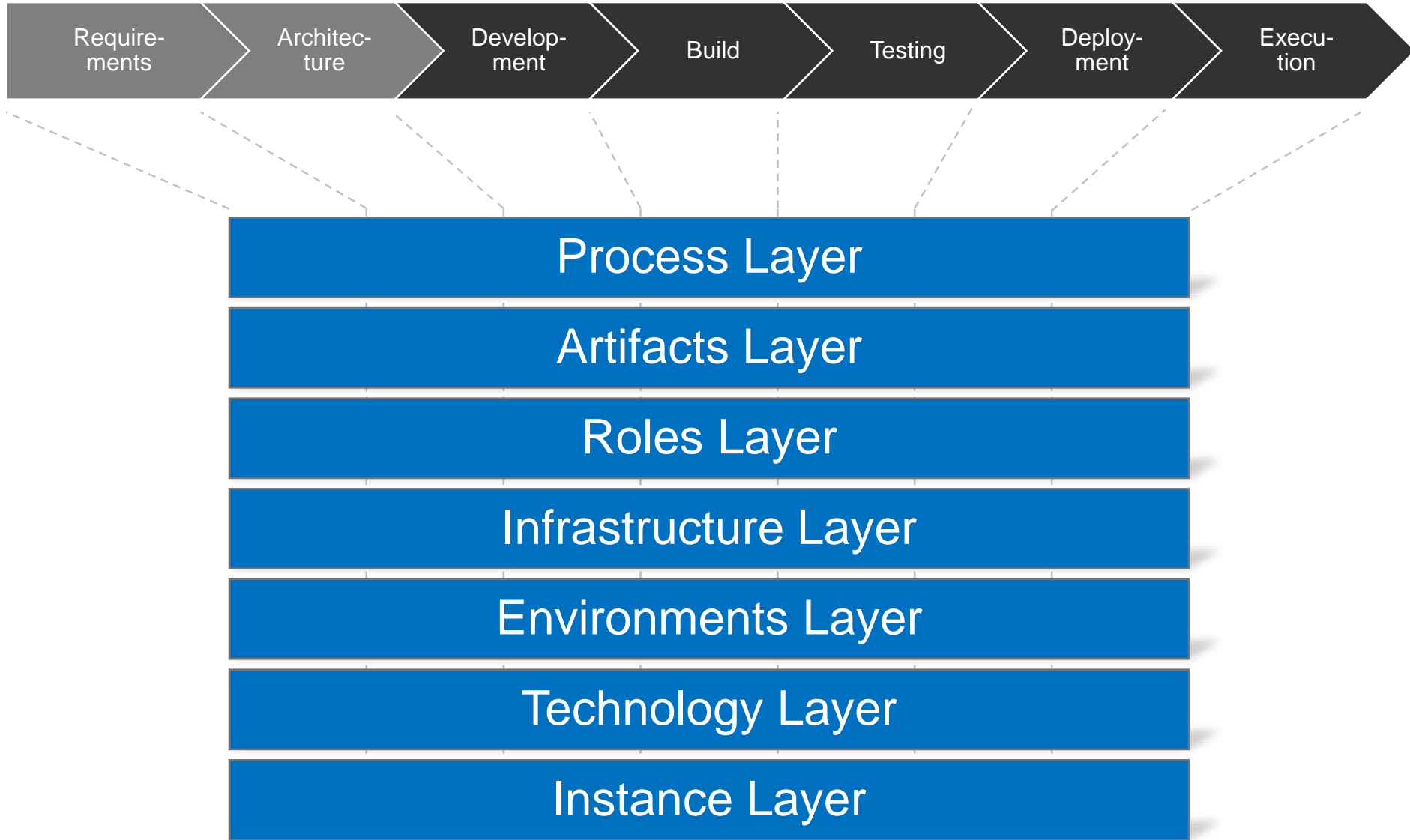
# Survey: Call for Participation

- What's current state of DevOps Performance?
- Help us find out by answering this short survey

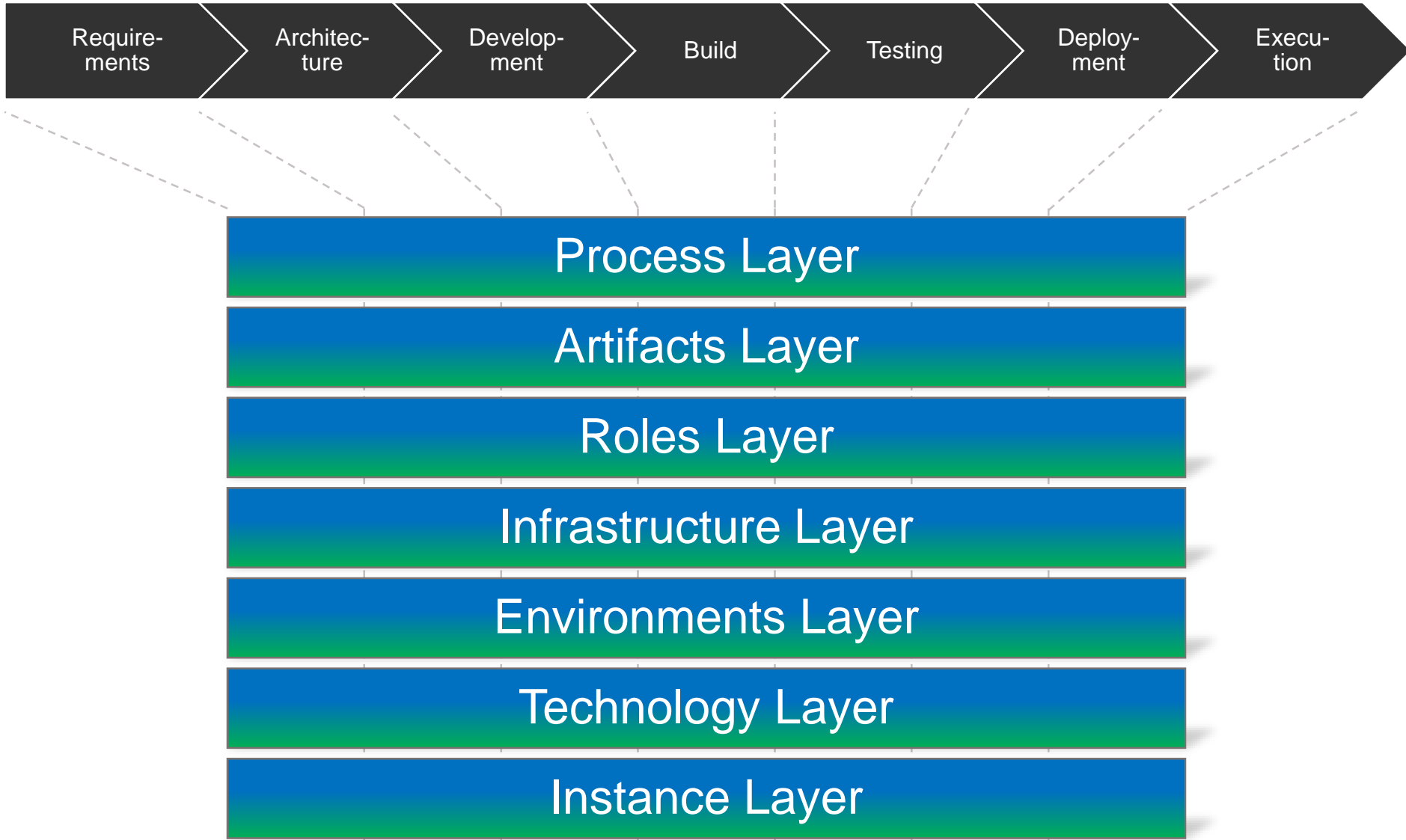


[kiel.devops-performance.org](http://kiel.devops-performance.org)

# Stages and Layers – „Pure DevOps“



# Stages and Layers – Performance-Aware





# Performance-Aware Instance Layer – Netflix RSS Reader

Fork me on GitHub

- Objective

- Extensible showcase/benchmark environment for performance-aware DevOps
- Ready-to-use
- Community-driven

- DevOps process & infrastructure

- From commit to production
- Performance-aware CI/CD template

- Performance components

- Planned to be added (examples)

Performance  
Regression  
Testing

Load  
Testing

Performance  
Problem  
Diagnosis

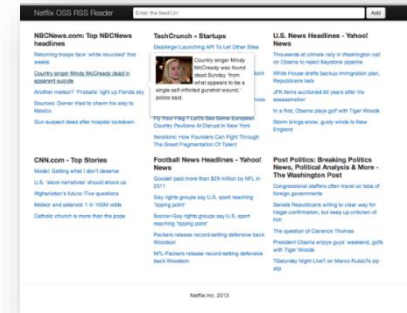
Performance  
Monitoring

Performance  
Model  
Extraction

- <your extension>

- Microservice-based Application

- Netflix RSS
- SPECjEnterprise?
- CoCoME



- Technology Stack



- Open-source accessibility (soon)

- Artifacts on GitHub
- Documentation on Atlassian Cloud

# SPEC RG DevOps Performance Working Group

<http://research.spec.org/devopswg/>



- Interested to join?
- Learn more: <http://research.spec.org/devopswg/>
- **We are always interested in:**
  - Joint publications (e.g., scientific or white papers)
  - Joint projects (e.g., tools or benchmarks)
  - Jointly supervised student theses / internships
  - Production workloads and measurement/architectural data
  - Current challenges that cannot be addressed by existing tools

