Because performance matters!

-

Open Source Application Performance Monitoring for the Crowd

Visual Comparison
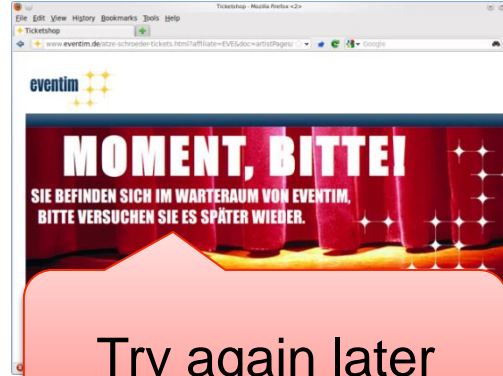
Mercedes	Porsche	BMW
0.0	0.0	0.0
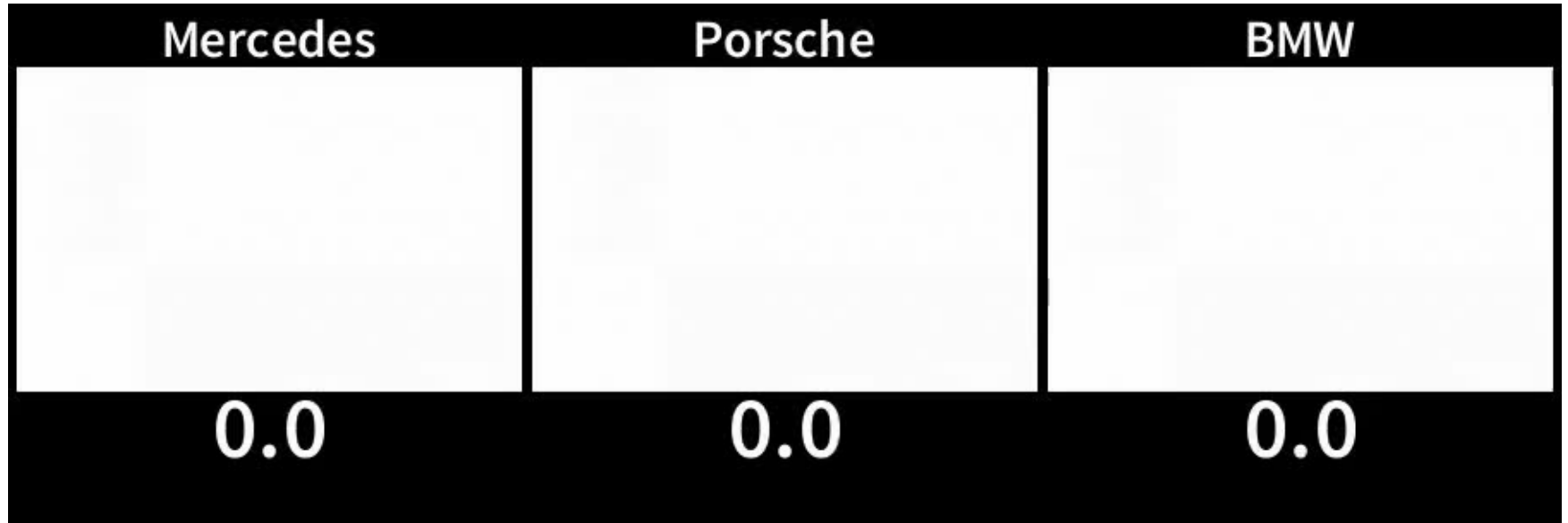
http://www.webpagetest.org - Tested from Dulles, VA - Chrome

INSPECTIT

Perfomance Problems are Omnipresent

An unexpected error occured

Try again later

Temporarily not available

Business Impact of Performance

Every **100ms** page load improvement increases revenue by **1%** (2008)

2008: 19,17 Mrd € → **191,7 Mio €**
2013: 74,51 Mrd € …

32% of all users leave a page if the load time is between 1-5 seconds (2010)

1 seconds delay reduces revenue by 3% (2010)

The perceived load time is 15% higher. The remembered load time even 35%. (2010)

Performance as Direct Competitive Factor

INSPECTIT

… because performance matters!

AGENDA

1. The inspectIT Team

2. Overview

3. Live Demo: Working with inspectIT

4. Outlook

5. Automatic Diagnosis of Performance Problems

6. Live Demo: Automated Diagnosis

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SPEAKER

Background

- 2006 – 2012   Studies in Computer Science (Diploma)
  Karlsruhe Institute of Technology

- 2012 – 2015   Promotion (PhD)
  „An Approach for Guiding Developers to Performance and Scalability Solutions"

- Since 2015   Senior Consultant at NovaTec Consulting GmbH
  "Application Performance Management"

Main Topics

- Automation of Performance Problem Diagnosis

- Performance Analysis of Enterprise Software Systems

- Contribution to inspectIT Open Source Project

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https://goo.gl/HkBKTu

https://goo.gl/mifUhW

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SPEAKER

Background

- 2006 – 2012   Studies in Computer Science (Diploma)
  Karlsruhe Institute of Technology

- 2012 – 2015   Promotion (PhD)
  „Performance Problem Diagnostics by Systematic Experimentation"

- Since 2015   Senior Consultant at NovaTec Consulting GmbH
  "Application Performance Management"

Main Topics

- Automation of Performance Problem Diagnosis

- Performance Analysis of Enterprise Software Systems

- Contribution to inspectIT Open Source Project

Dr.-Ing. Alexander Wert

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https://goo.gl/MbF2w4

https://goo.gl/iQRYsC

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OVERVIEW ON INSPECTIT

Overview

(fictional timings)

INSPECTIT

Architecture

Target System

System Node 1

JVM

App 1

App 2

Agent

System Node n
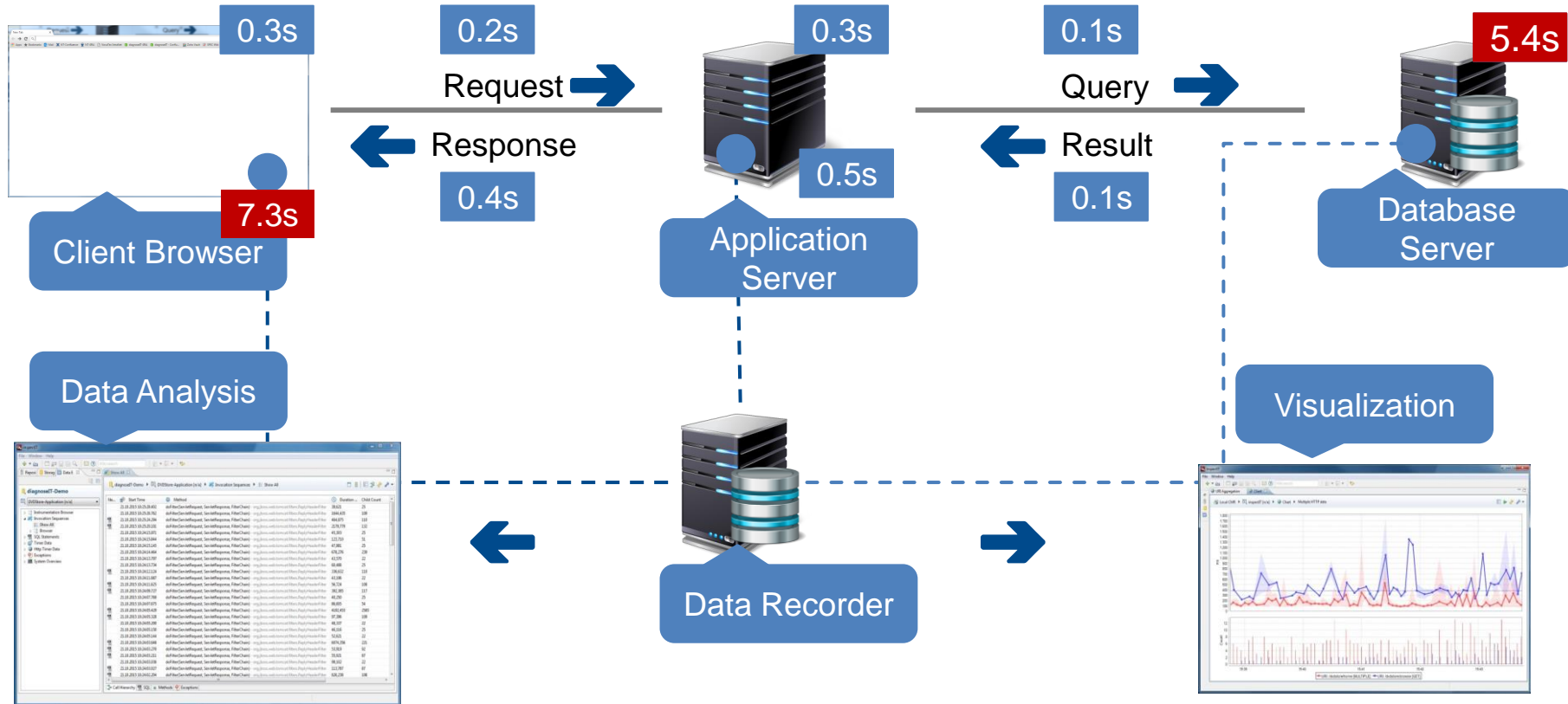
Agent

Central Measurement Repository
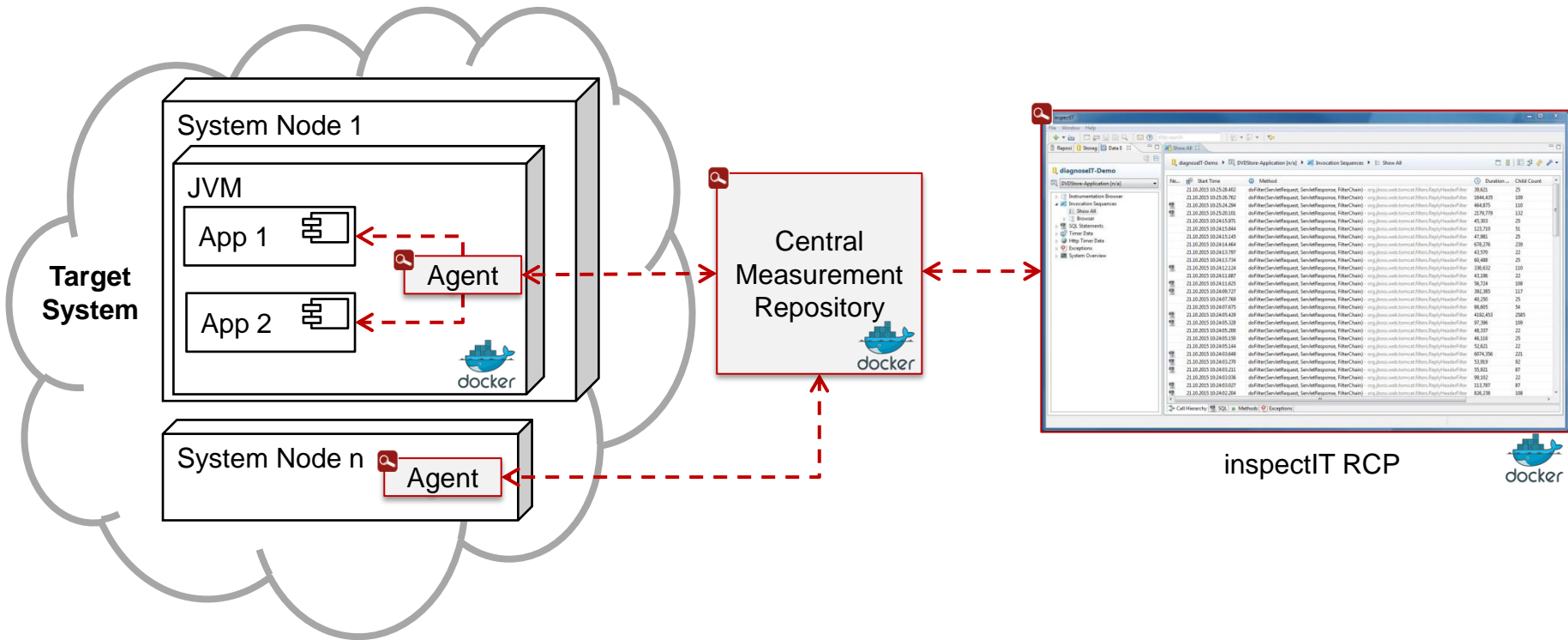
inspectIT RCP

inspectIT

Application Container
+ inspectIT Agent

CMR

inspectIT RCP

inspectit

inspectIT-docker

Installation

Download

http://*github.com/inspectIT/inspectIT/releases*

Central Measurement Repository (CMR)
startup.sh / startup.bat

Instrumentation Configuration Mapping
Environment ↔ Agent

Agent
-javaagent:<PATH_TO>/inspectit-agent.jar -Dinspectit.repository=<CMR_IP>:9070;<Agentname>

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Live Demo

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Sensors

Timer Sensor

Invocation Sequence Sensor

Datenbank/SQL Sensor

Logging Sensor

Exception Sensor

HTTP Data Sensor

System Information Sensor

JMX Sensor

Blog Post: Stefan Siegl – „Creating an inspectIT sensor"

http://goo.gl/5cER11

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OUTLOOK

Outlook

Feature

- Business Context

- Distributed Traces

- End User Monitoring

- **Monitoring in Production**

- **Adaptive Instrumentation**

- **Automated Diagnosis**
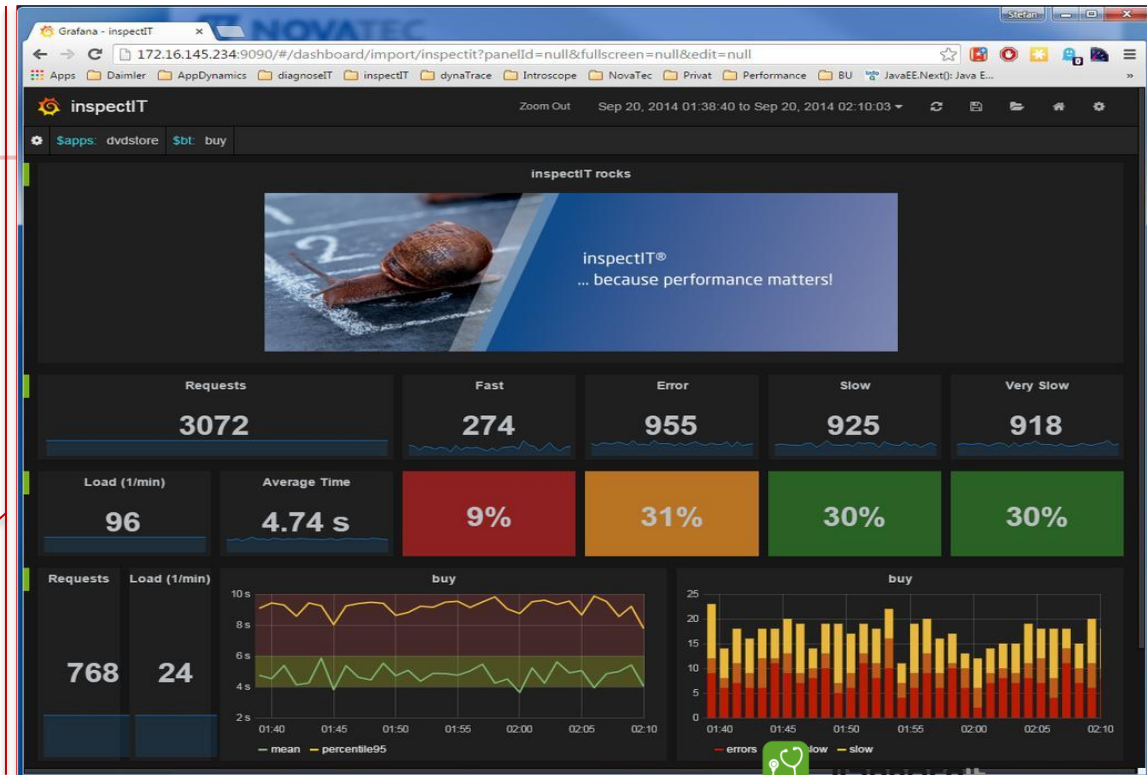
2017

AUTOMATIC DIAGNOSIS OF PERFORMANCE PROBLEMS

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Automatic Diagnosis of Performance Problems

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Automatic Diagnosis of Performance Problems

Categorization of Performance Problems

Isolation of Problem Root Causes

Automated Analysis

Interpretation of Quantitative Data

Semantification of Performance Problems

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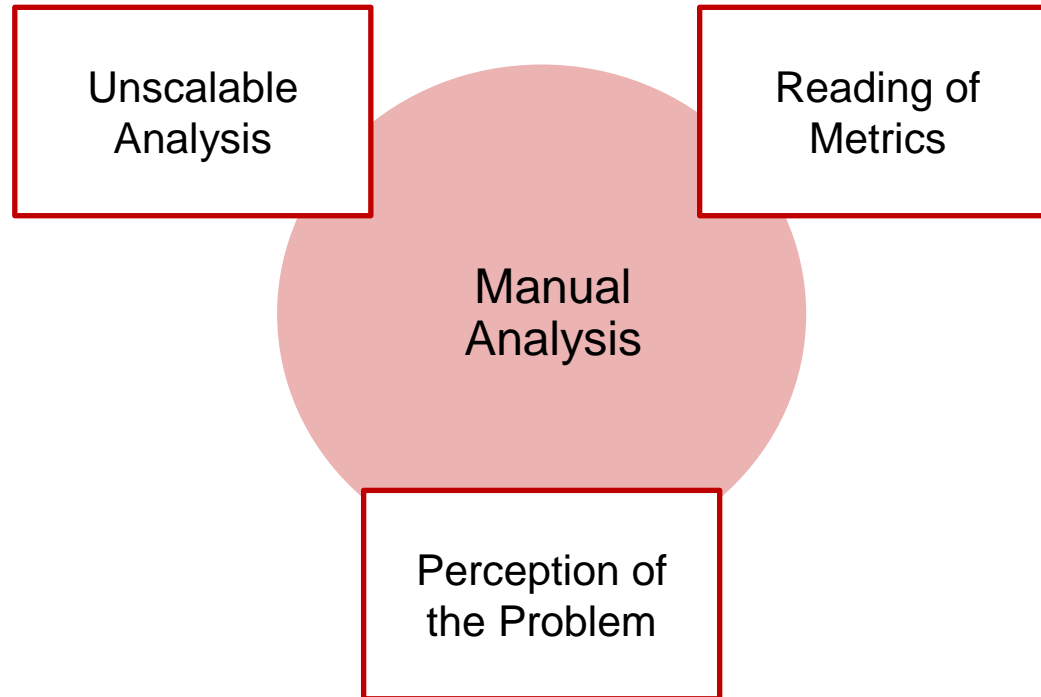
Rules

Root Cause Isolation ➤ **Semantification** ➤ **Clustering**

Invocation
Sequences

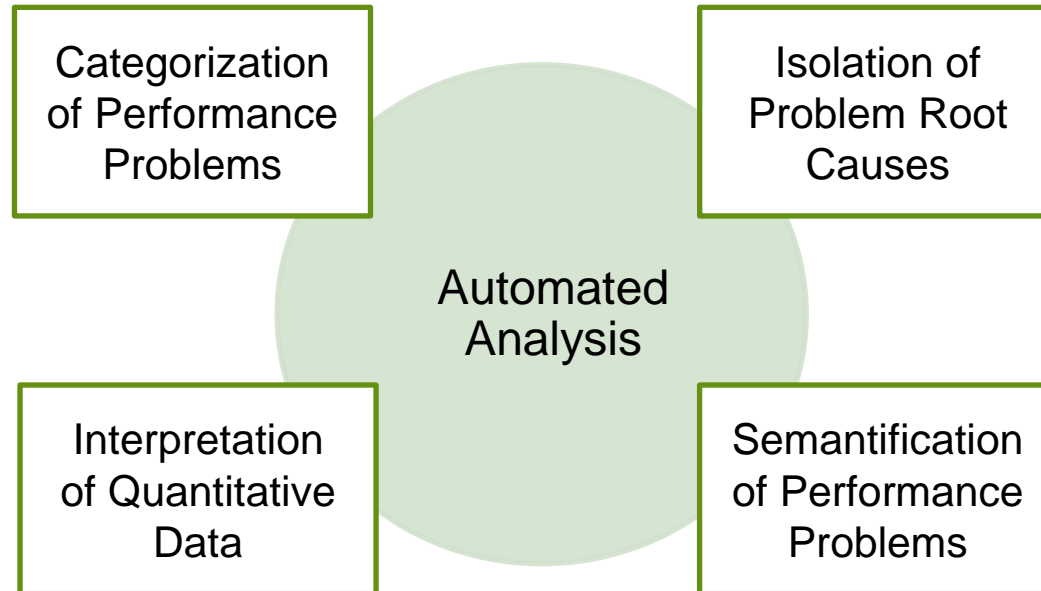| Problem Overview	Severity	# Occurrences	# Problems
⏷ ■ invoke(ServletRequest, ServletRe...			
⏷ ● service(ServletRequest, Servl...			
● getIsEmpty() - com.jbos...			
▷ ● createEntityManager() -			
▷ ● setFlushMode(FlushMod...			
▷ ● joinTransaction() - org.jl			
▷ ● joinTransaction() - org.jl			
▷ ● createQuery(String) - or			
● setMaxResults(int) - org.			
▷ ● getResultList() - org.hibe			
● loadData() - com.jboss.c			
● getSearchQuery() - com			
● getPageSize() - com.jbos			
● getIsEmpty() - com.jbos			
● setSearchQuery(String) -			
● setPageSize(int) - com.jl			
● getIsEmpty() - com.jbos			
⏷ ● doSearch() - com.jboss.c			
● getSlowLongSearch(			
▷ ● createQuery(String) -			

Problem Overview

Problem Overview	Severity	# Occurrences	# Problems
⏴ Business Transaction: DVDstore02_search	high	32	4
⏴ Node Type: DVDStore-Application	high	32	4
⏴ Entry Point: HTTP POST (/dvdstore/browse)	high	32	4
▷ Problem Instance: SessionImpl.list(...)	high	10	---
▷ Problem Instance: FullTextSearchAction.searchTitleAndDescription(...)	high	1	---
▷ Problem Instance: SQL (select inventory0_.INV_ID as INV1_0_2_, inventory0_.PROD_ID ...)	medium	3	---
▷ Problem Instance: SQL (select product0_.PROD_ID as PROD1_5_0_, actor2_.ID as ID7_1_...)	low	18	---
▷ Business Transaction: unknown	medium	1	1
▷ Business Transaction: DVDstore03_browse results	low	1	1
▷ Business Transaction: DVDstore04_add to cart	low	1	1
▷ Business Transaction: DVDstore01_browse shop	low	5	4
▷ Business Transaction: DVDstore02_login	low	1	1
▷ Business Transaction: DVDstore06_checkout	low	30	3
▷ Business Transaction: DVDstore06_browse dvd	low	1	1
▷ Business Transaction: DVDstore01_logout	low	1	1
▷ Business Transaction: DVDstore07_purchase	low	1	1
▷ Business Transaction: DVDstore05_checkout	low	1	1

...cognition

„Select n+1 anti-pattern"

|				
● setParameter(String, Object) - org.hibernate.ejb.QueryImpl	0,048	0,048	0,000	0,000
● setParameter(String, Object) - org.hibernate.ejb.QueryImpl	0,003	0,003	0,000	0,000
● getResultList() - org.hibernate.ejb.QueryImpl	27686,085	0,012	27159,774	27159,774
⏴ ● list() - org.hibernate.impl.QueryImpl	27686,074	0,042	27159,774	27159,774
⏴ ● list(String, QueryParameters) - org.hibernate.impl.SessionImpl	27686,031	26337,705	27159,774	27159,774
● executeQuery() - org.h2.jdbc.JdbcPreparedStatement	222,243	222,243		
● executeQuery() - org.h2.jdbc.JdbcPreparedStatement	0,386	0,386		
● executeQuery() - org.h2.jdbc.JdbcPreparedStatement	0,080	0,080		
● executeQuery() - org.h2.jdbc.JdbcPreparedStatement	0,075	0,075		
● executeQuery() - org.h2.jdbc.JdbcPreparedStatement	0,068	0,068		
● executeQuery() - org.h2.jdbc.JdbcPreparedStatement	0,053	0,053		
● executeQuery() - org.h2.jdbc.JdbcPreparedStatement	0,082	0,082		
● executeQuery() - org.h2.jdbc.JdbcPreparedStatement	0,065	0,065		
● executeQuery() - org.h2.jdbc.JdbcPreparedStatement	0,065	0,065		

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Live Demo – Preview
(Automated Diagnosis)

inspectIT & Continuous Integration
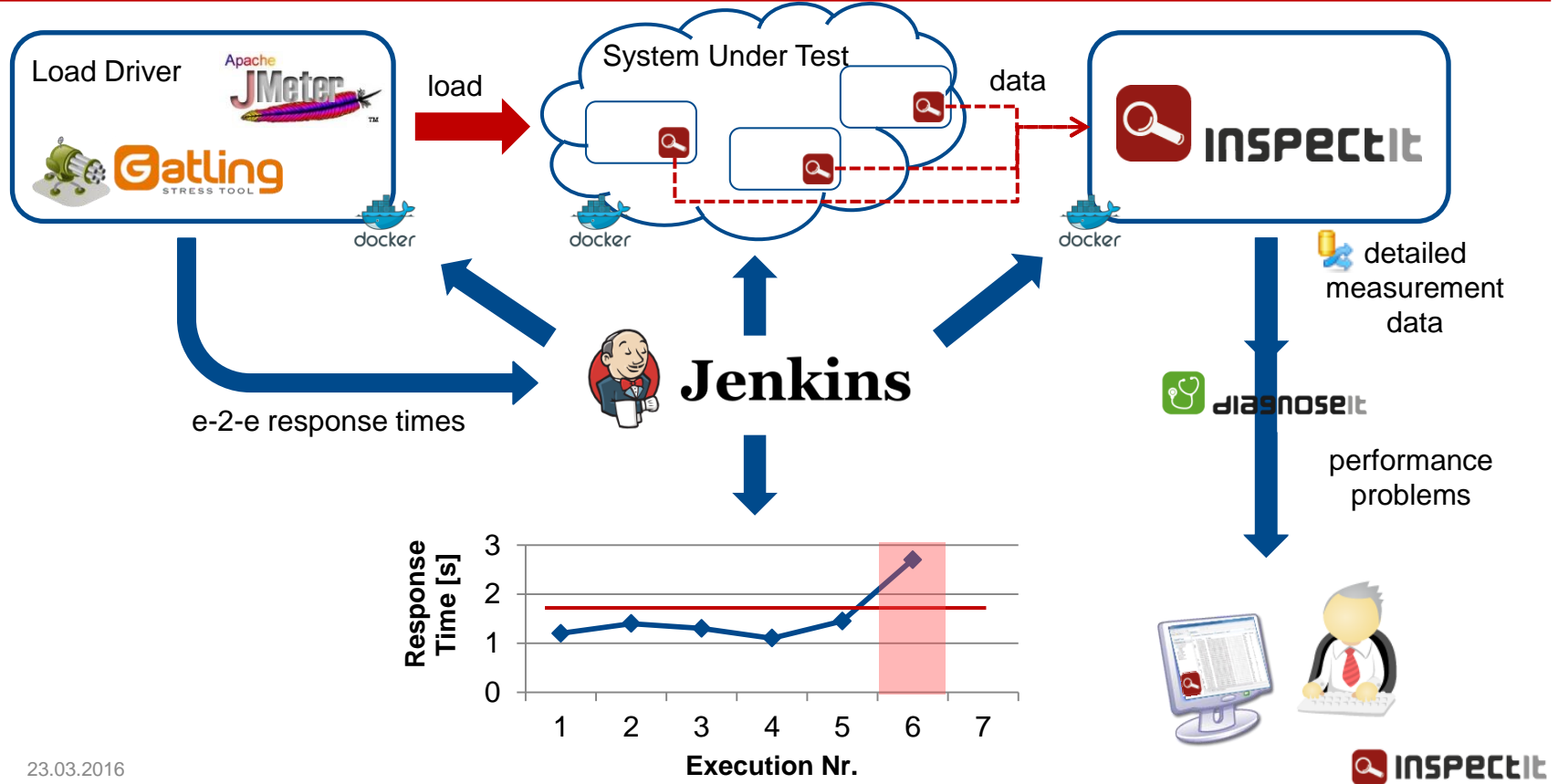
troubleshooting

development

use inspectIT

production

continuous
integration

performance
awareness
coaching

like & spread
tweets

star & watch
on GitHub

promote

customer
reference

write about

tell colleagues
about

Contribute

create
feature requests

bug reports

feedback

vote
feature requests

experience
reports

documentation

code

ecosystem

provide

new ideas

bug fixes

icons & images

inspectIt

NOVATEC

make IT happen!

Stuttgart **München**

Berlin Frankfurt

more than 200 colleagues

founded 1996

Consulting Domains

Agile Methods & Processes

Service Oriented Architecture and Technology

Business Process Management

Application Performance Management

Agile Quality Engineering

Enterprise Application Development

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