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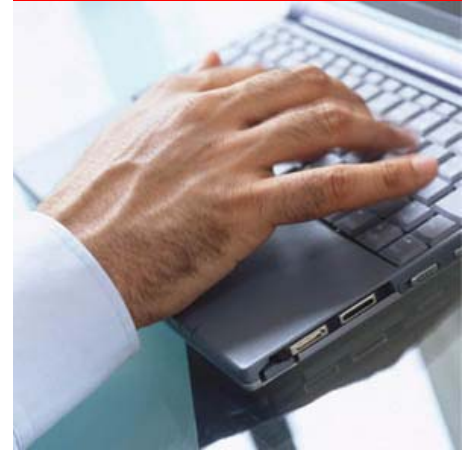
Performance & Availability of web based applications

Sebastian Vingerhoed, specialist region EE&CIS

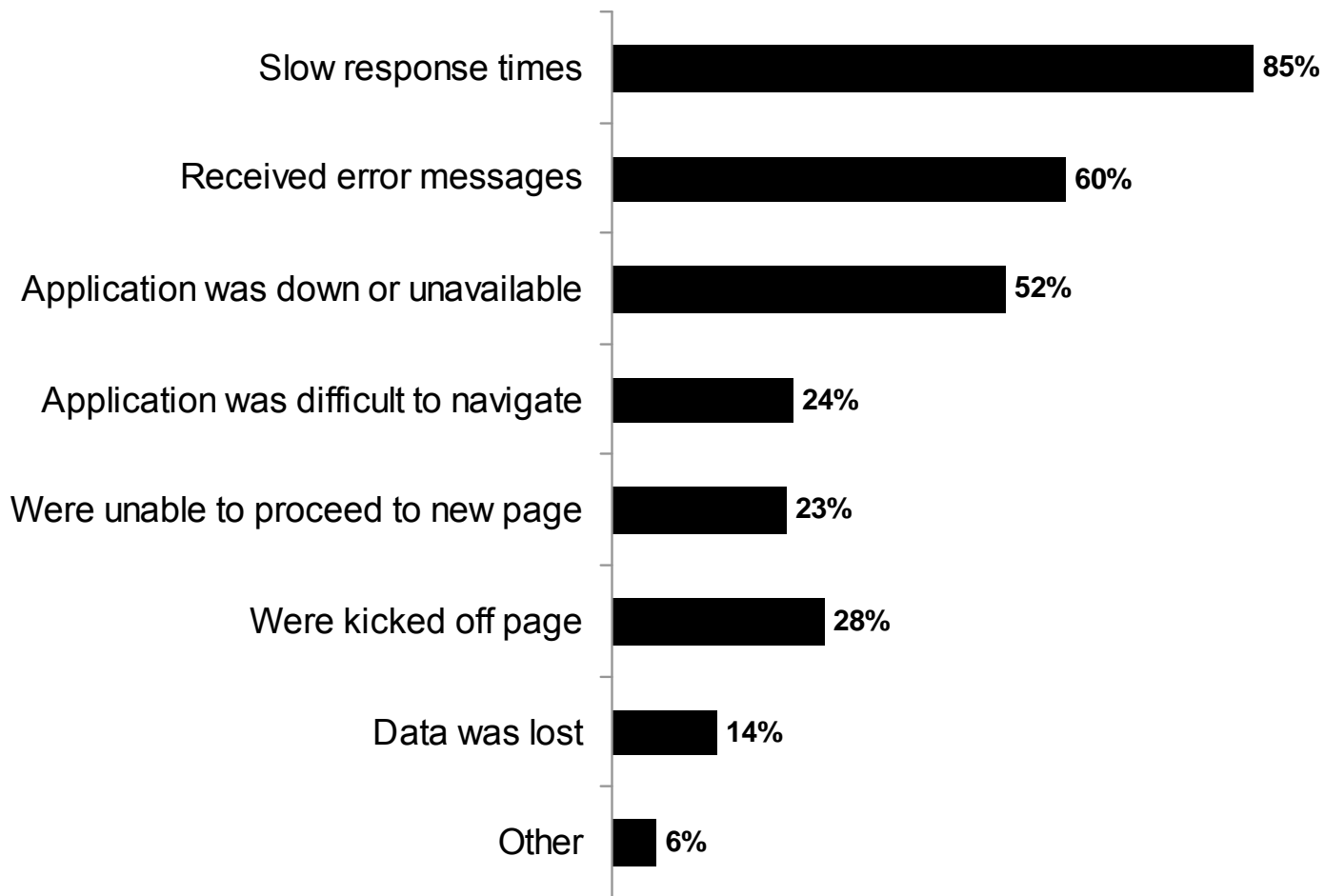
October 20th, 2010

HROUG Agenda

- Welcome & Introduction
- What is “Do you care about”?
- Summary of the key findings of the 2009 OAUG
- ***Monitoring, Testing & Management*** for web apps
- Summary

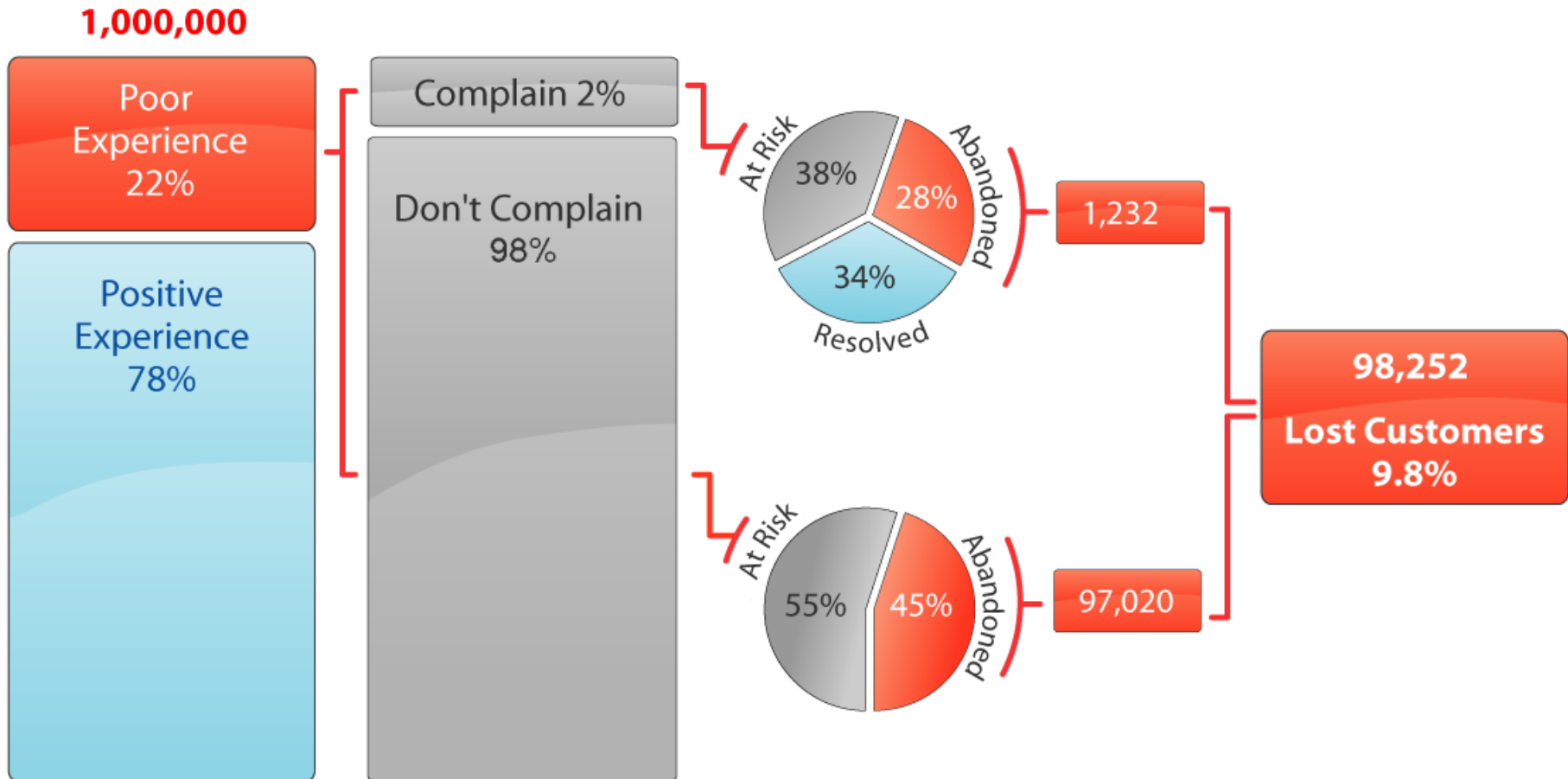


Customer experiences with web applications



Poor Performance = Less Revenue

Typical Result is 10% Revenue Loss



Joint study between Gartner & Response Tek

on-line booking failed

HOME | NETHERLANDS Contact and FAQs | Site map

[go... >>](#)
[Forgot your PIN?](#)

Flight Offers | Booking management | Online check-in | Information | Iberia Group | Iberia Plus

Purchase

Availability > Price > Passenger information > Trip Plan > Purchases > Confirm

The system is temporarily unable to process your request. Please try again. (9102)

For the correct verification of the identity of the origin of the trip (not on the return or at transit point) If you are paying with Visa, MasterCard or American Express, you must provide the card number with you at the airport unless we tell you otherwise. **auto check-in online** Also, by inserting the credit card to IB5999 and IB6500 to IB7999 codes.

The system is temporarily unable to process your request. Please try again. (9102)

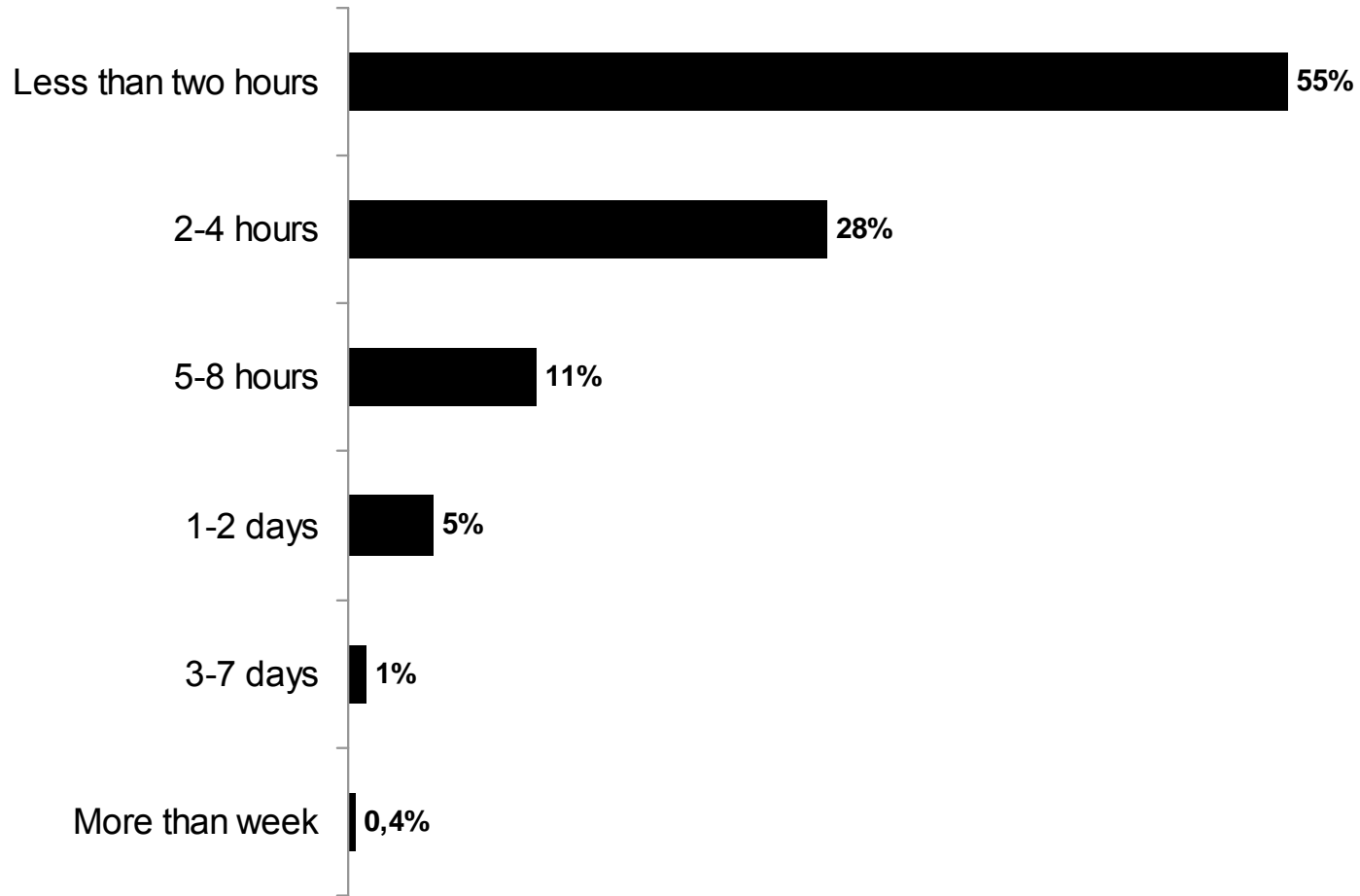
Route: March 4, 2008 **Amsterdam - Madrid**
Price: 508.93 € + 10 € Service Fees = **518.93 €**

* The fields with an asterisk are required.

Type of card *	card number. *	Expiry date *	Card Verification Value (CVV)
Visa	xxxxxxxxxxxxxx	Apr 2009	xxx
Name as it appears on the card *			
G.H.G. KROES			

Klaar www.iberia.com

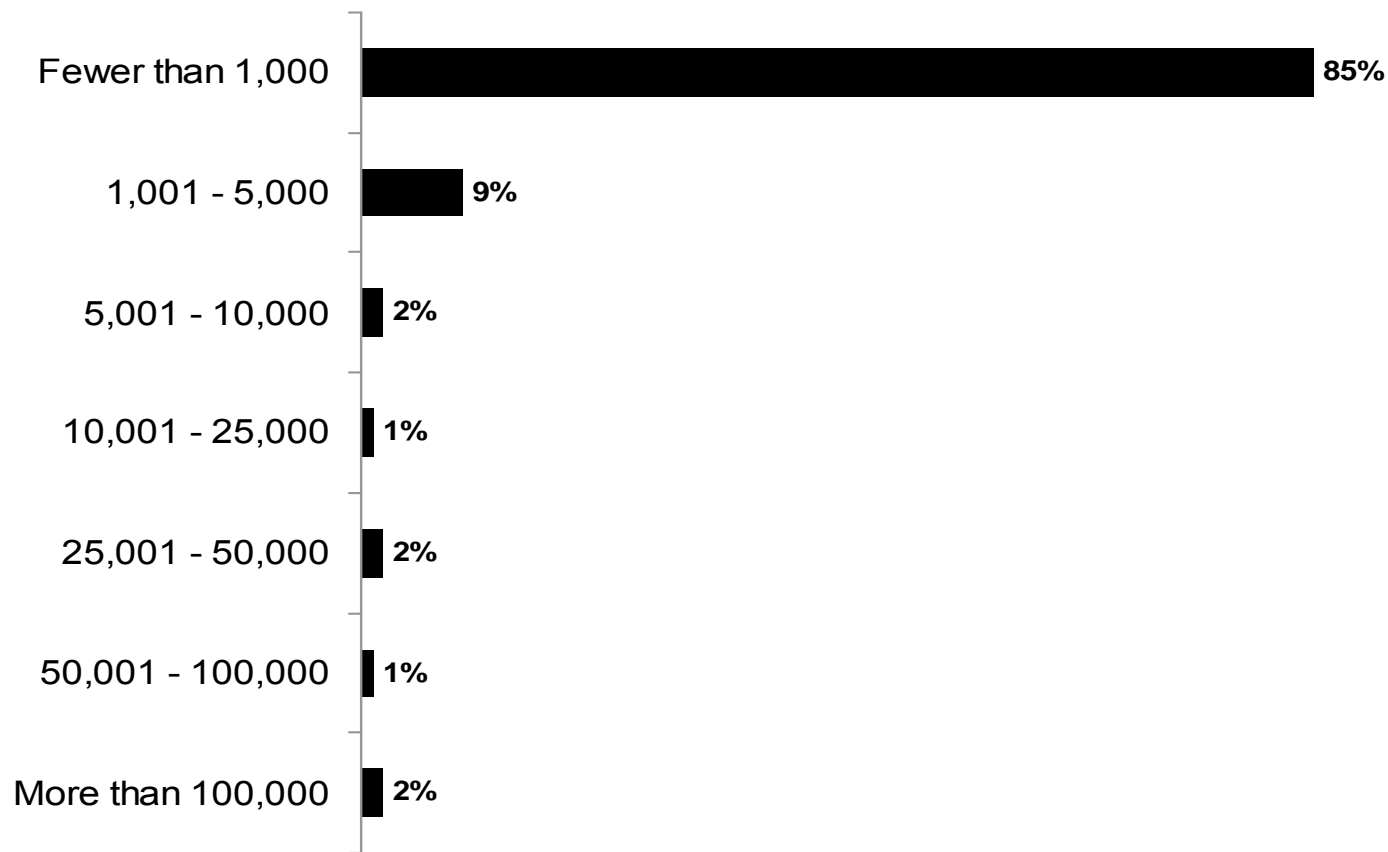
Reproduction of application error's



Average time for reproduction of a problem: 3.37 hour!



Number of web application incidents (yearly)

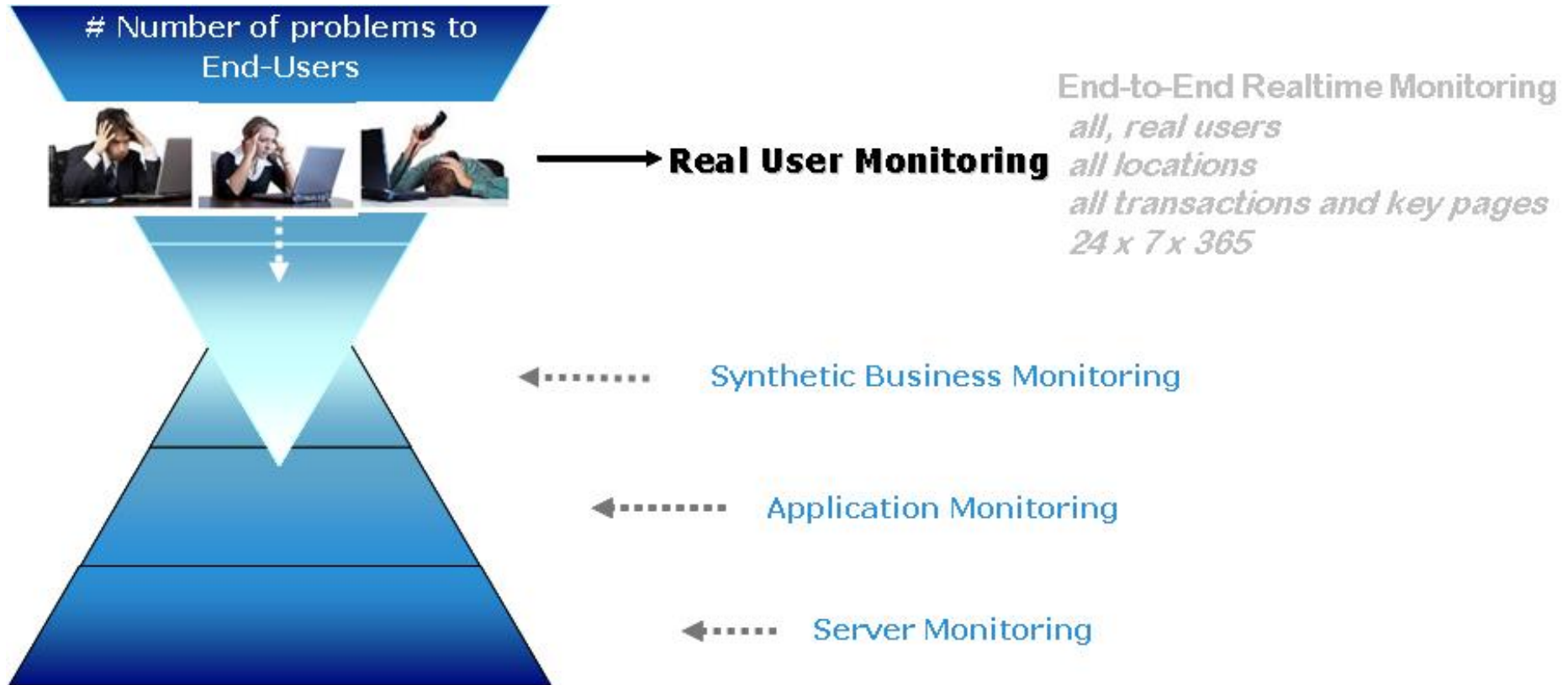


*Average issues per year: 4,573 ! (+/- 15.000 hours for reproduction)
With an hourly rate of \$75 per hour this is more than 1 mill. US\$ per year!*



Our solution for Real User Monitoring

New generation of monitoring



End-user Experience Management

Real User and Synthetic User Monitoring



SLM Beacons (Synthetic)

- Ensure the performance of a specific business process or user
- Determine location-specific performance problems by monitoring from multiple geographic locations
- Ensure the performance of applications based on many different protocols

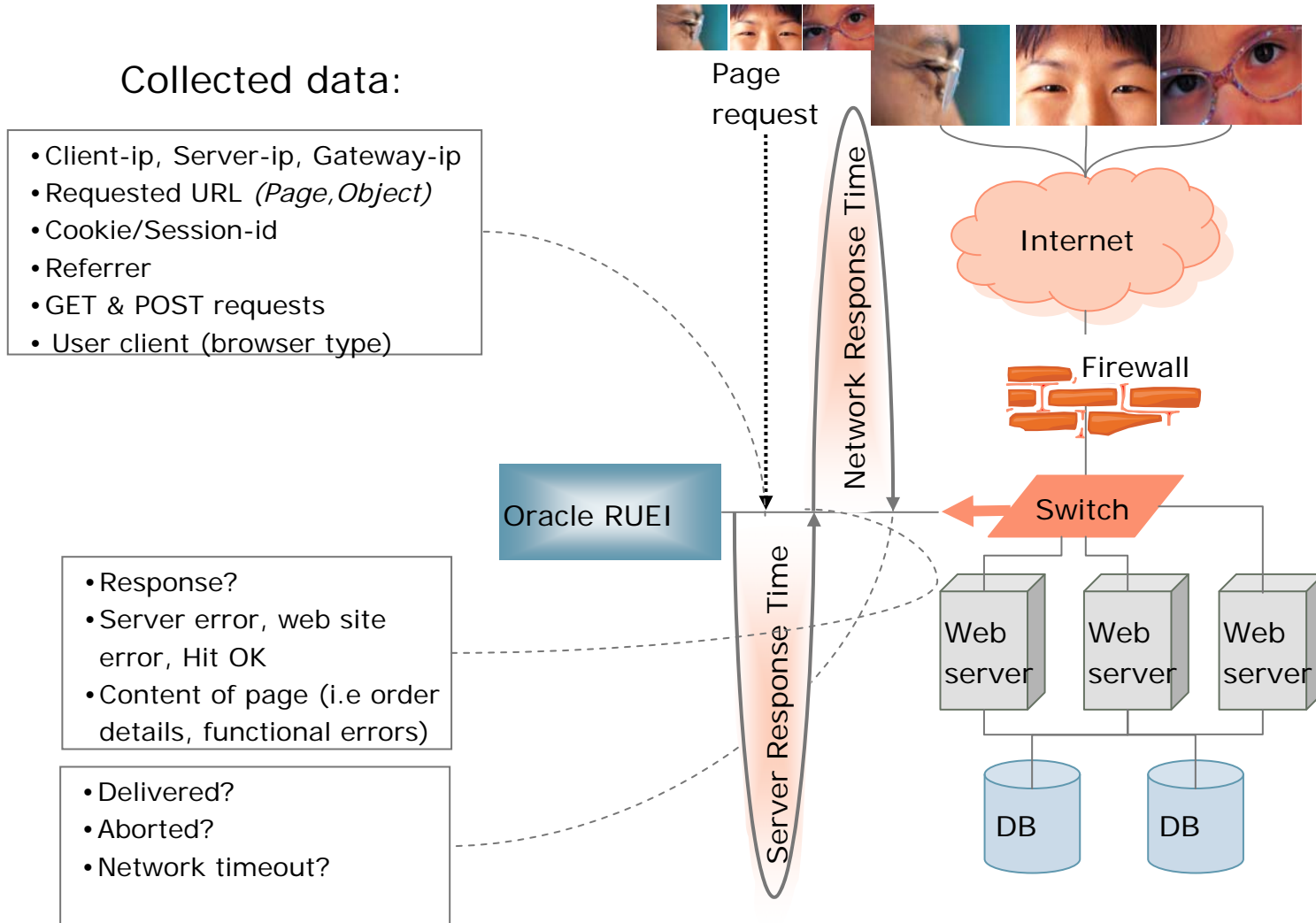
Real User Experience Insight

|

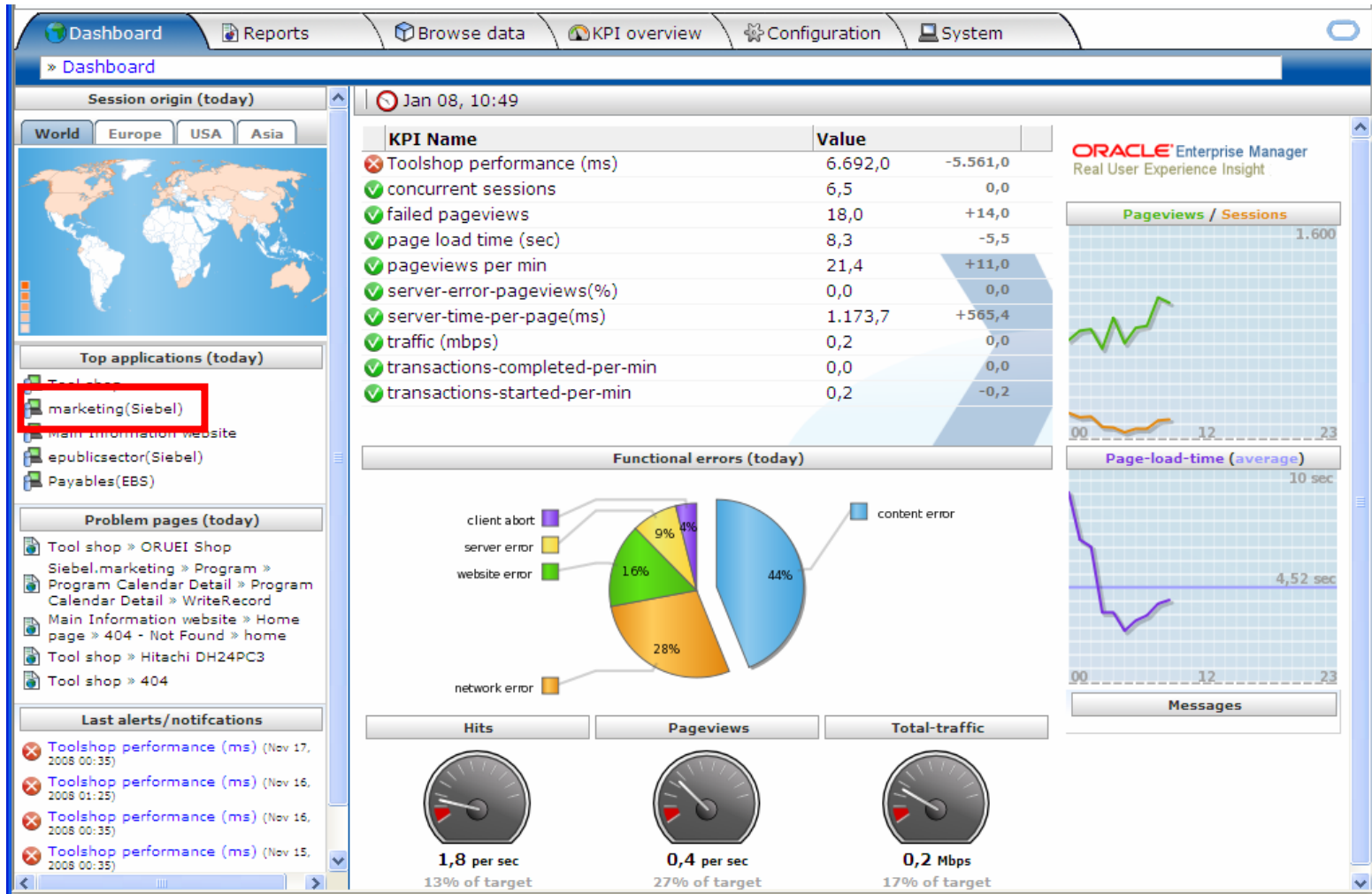
- Catch performance problems for all users
- Catch unexpected performance issues or unique user interactions
- Diagnose problems quickly with “replay”
- Determine exact usage of applications

Real User Experience Insight

How does it work?



Web based apps on your dashboard



Pre-defined reports (>60) for Business & IT

UXinsight Help

Dashboard Reports Browse data KPI overview Configuration Appliance

» Reports » Performance killers

Day Week Month

From: 12 Nov 2007 To: 12 Nov 2007

Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su
29	30	31	1	2	3	4	29	30	31	1	2	3	4
5	6	7	8	9	10	11	5	6	7	8	9	10	11
12	13	14	15	16	17	18	12	13	14	15	16	17	18
19	20	21	22	23	24	25	19	20	21	22	23	24	25
26	27	28	29	30			26	27	28	29	30	1	2

Today Clear day selection

00 01 02 03 04 05 06 07 08 09 10 11

12 13 14 15 16 17 18 19 20 21 22 23

Office hours Clear hour selection

Reporting

Favorites

Mailing

Reporting

- Report categories
 - Applications
 - Clients
 - Domains
 - Monitoring
 - Overall
 - Problem analysis
 - Servers
 - Transactions
 - URLs
 - Failed hits
 - Largest objects
 - Performance killers**
 - Slowest hits
 - XLS Failed hits
 - XLS Linked 404 errors
 - XLS Non-linked 404 errors
 - XLS Slow hits

Performance killers

Report on: UXinsight, slow URLs, daily

Mon 12 Nov 2007

object-url/url total-server-time (ms) object-url/url

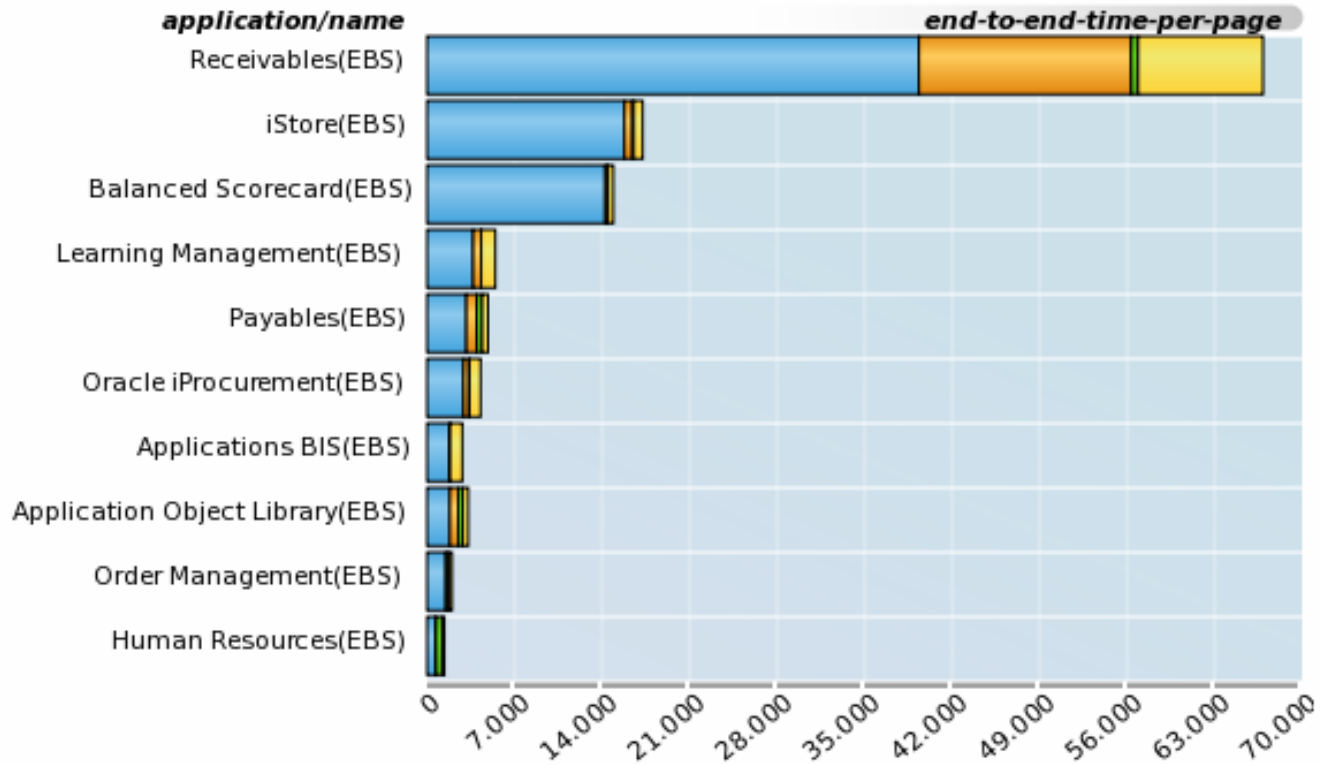
Total: 165295128

Legend:

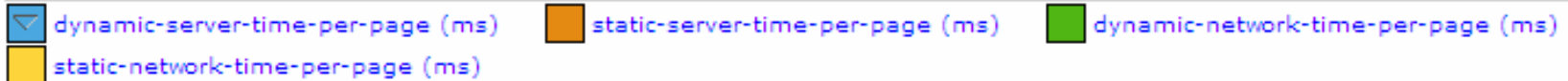
- total-server-time (ms)

Showing 1 to 10 of 105392 value(s)

Complete environment overview



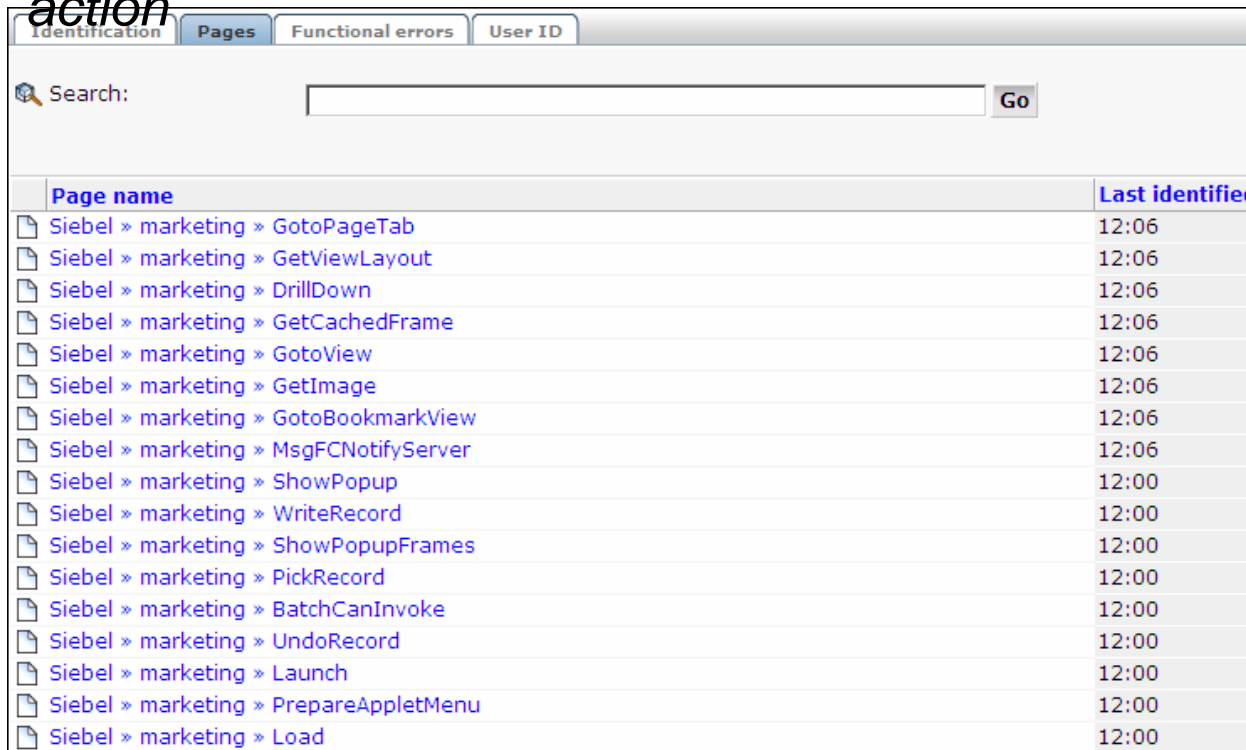
Legend



Siebel – Page Identification

Based on:

suite » application » screen » view » applet » action



The screenshot shows the Siebel Page Identification tool interface. It has a search bar at the top with a magnifying glass icon and a 'Go' button. Below the search bar is a table with two columns: 'Page name' and 'Last identified'. The table lists various Siebel pages and their last identified times.

Page name	Last identified
Siebel » marketing » GotoPageTab	12:06
Siebel » marketing » GetViewLayout	12:06
Siebel » marketing » DrillDown	12:06
Siebel » marketing » GetCachedFrame	12:06
Siebel » marketing » GotoView	12:06
Siebel » marketing » GetImage	12:06
Siebel » marketing » GotoBookmarkView	12:06
Siebel » marketing » MsgFCNotifyServer	12:06
Siebel » marketing » ShowPopup	12:00
Siebel » marketing » WriteRecord	12:00
Siebel » marketing » ShowPopupFrames	12:00
Siebel » marketing » PickRecord	12:00
Siebel » marketing » BatchCanInvoke	12:00
Siebel » marketing » UndoRecord	12:00
Siebel » marketing » Launch	12:00
Siebel » marketing » PrepareAppletMenu	12:00
Siebel » marketing » Load	12:00

The recognized Siebel parameters/action functions :

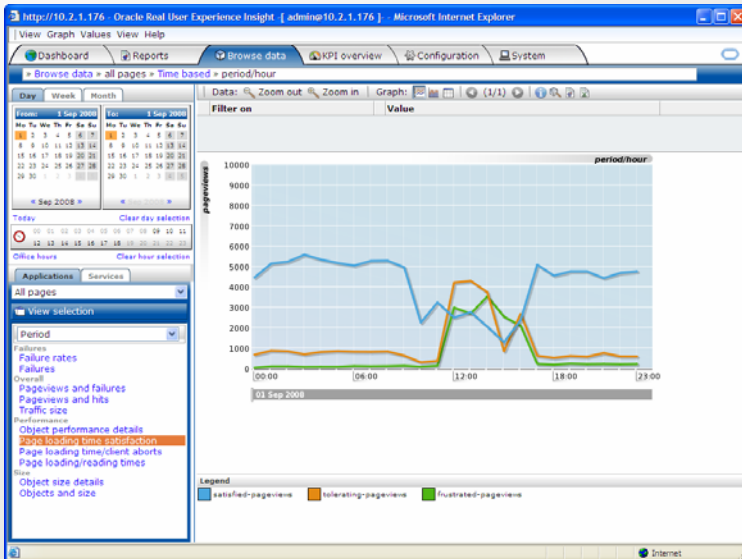
- SWEScreen
- SWEView
- SWEApplet
- SWEMethod
- SWECmd
- SWEEExtCmd
- SWEUserName

Page and action identification are key building blocks of all RUEI KPIs and reporting and alerting.

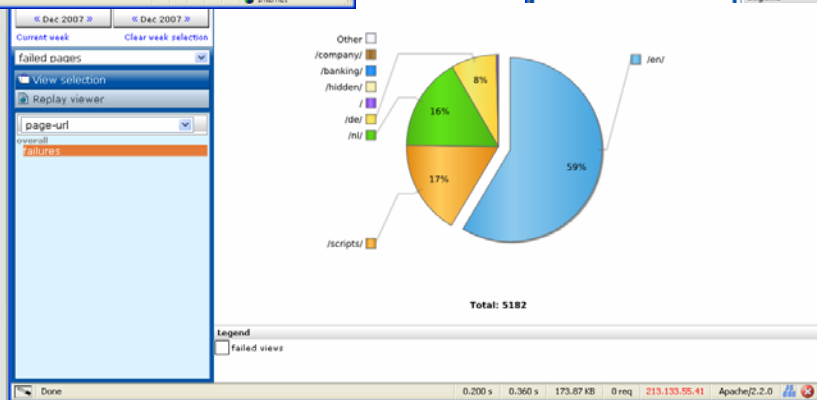
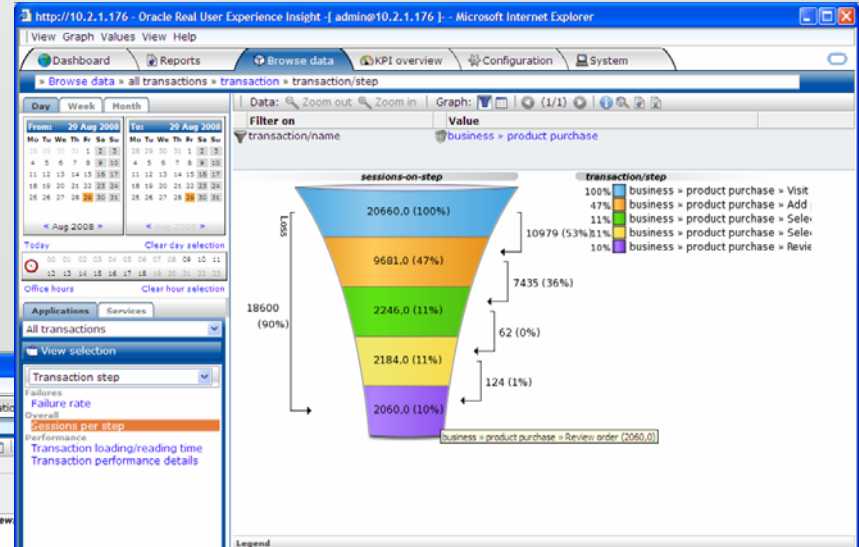
Real User Experience Insight For: Line of Business executives



Satisfaction Reports



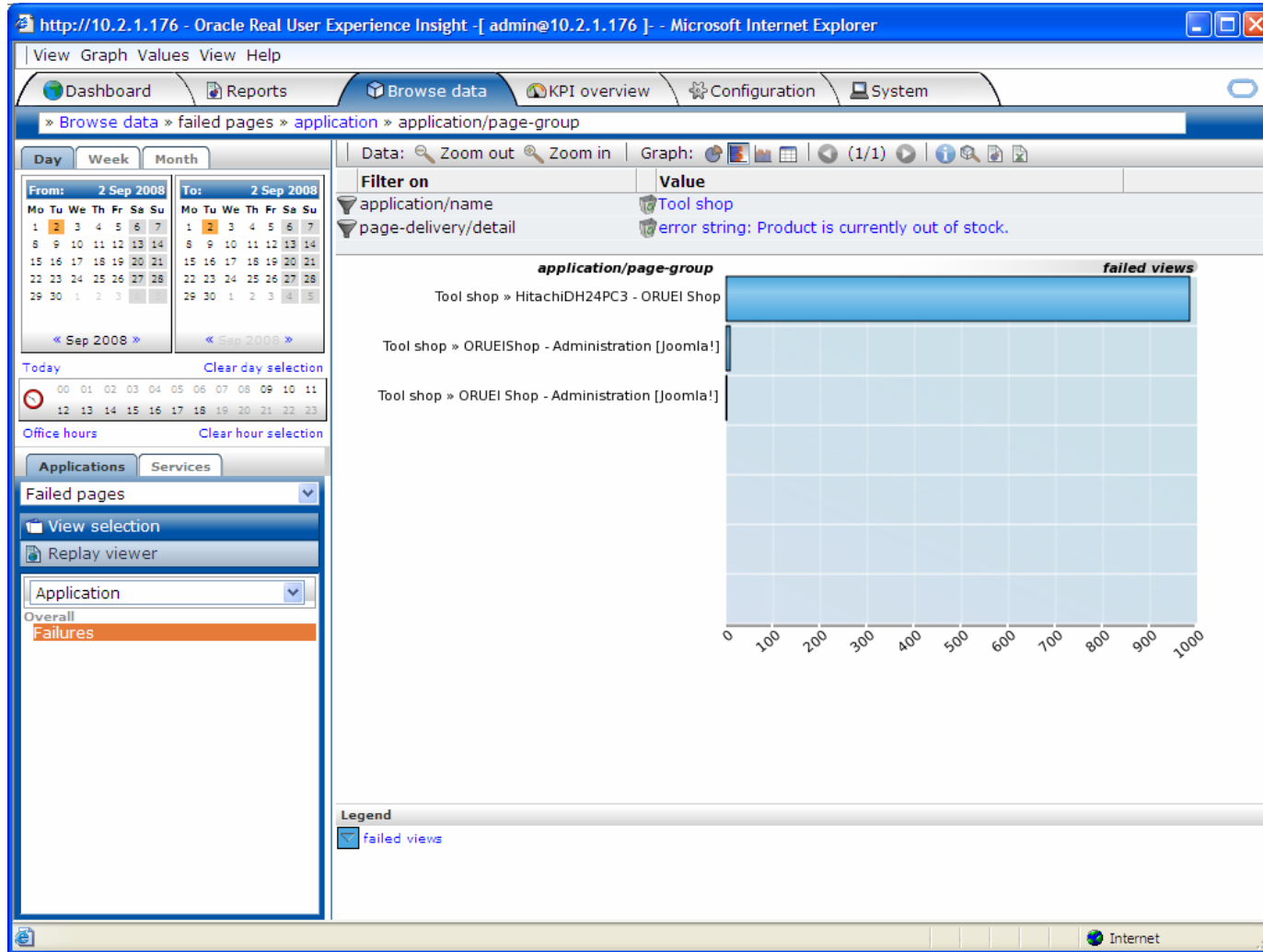
Business Transaction Funnel



Usage Reports:

- Data Browser
- Sales by Country/State

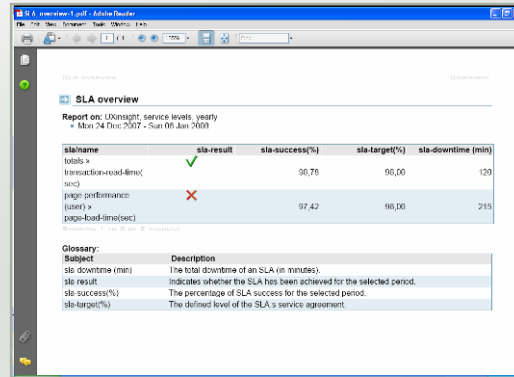
Finding out a problem to a business transaction



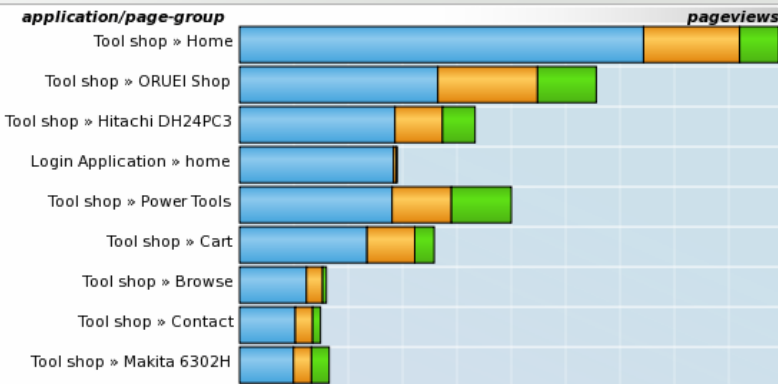
Real User Experience Insight For: Application Owners and Application Support



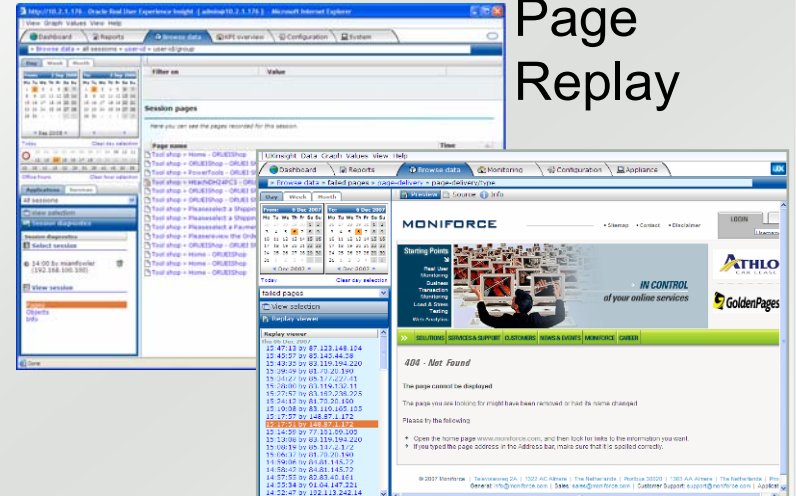
Dashboards & SLM



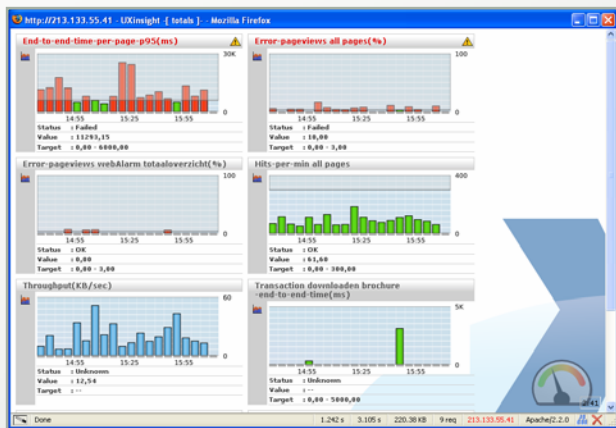
Business Service Monitoring (e.g. Order Entry, Buy Stock)



User Session Tracking, Page Replay



Real User Experience Insight For: IT Operations



KPI configuration, monitoring, & alerting

Server, network, & object performance diagnostics

Data export

The data to export is specified by selecting a report and time-period. Use the export link to download this data.

Select report: Pages

- Public reports
- Technical Reports
- Transactions
- Trends
- Users
- Workstations

From: 07 October 2007
 Upto: 13 October 2007

Export link: No export specified.

Access Control

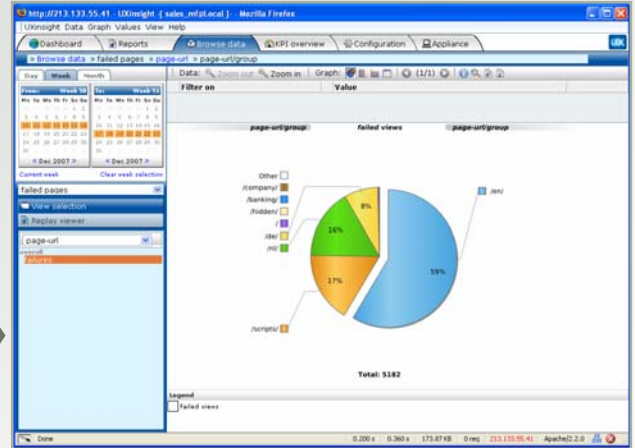
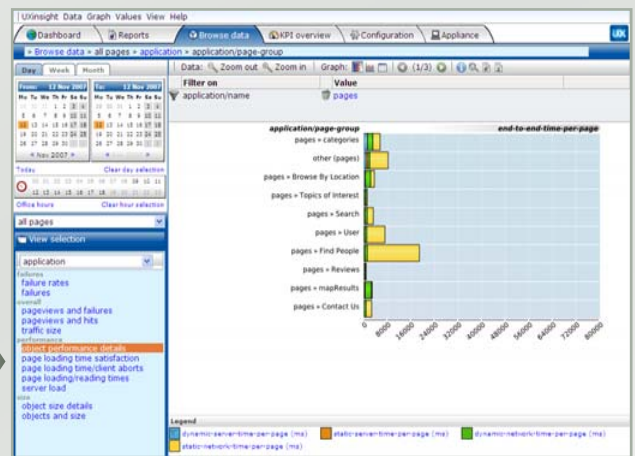
Data access control

Here you can add/remove hosts that are allowed to access data provided by an export link.

Allowed hosts: 10.2.1.124

Data Export

Error reports & analysis



Review complete user sessions

Today Clear day selection

00 01 02 03 04 05 06 07 08 09 10 11
12 13 14 15 16 17 18 19 20 21 22 23

Office hours Clear hour selection

Applications Services

All sessions v

View selection

Session diagnostics

Session diagnostics

Select user record

00:00-05:00 by hdozer
(10.161.58.94)

View user record

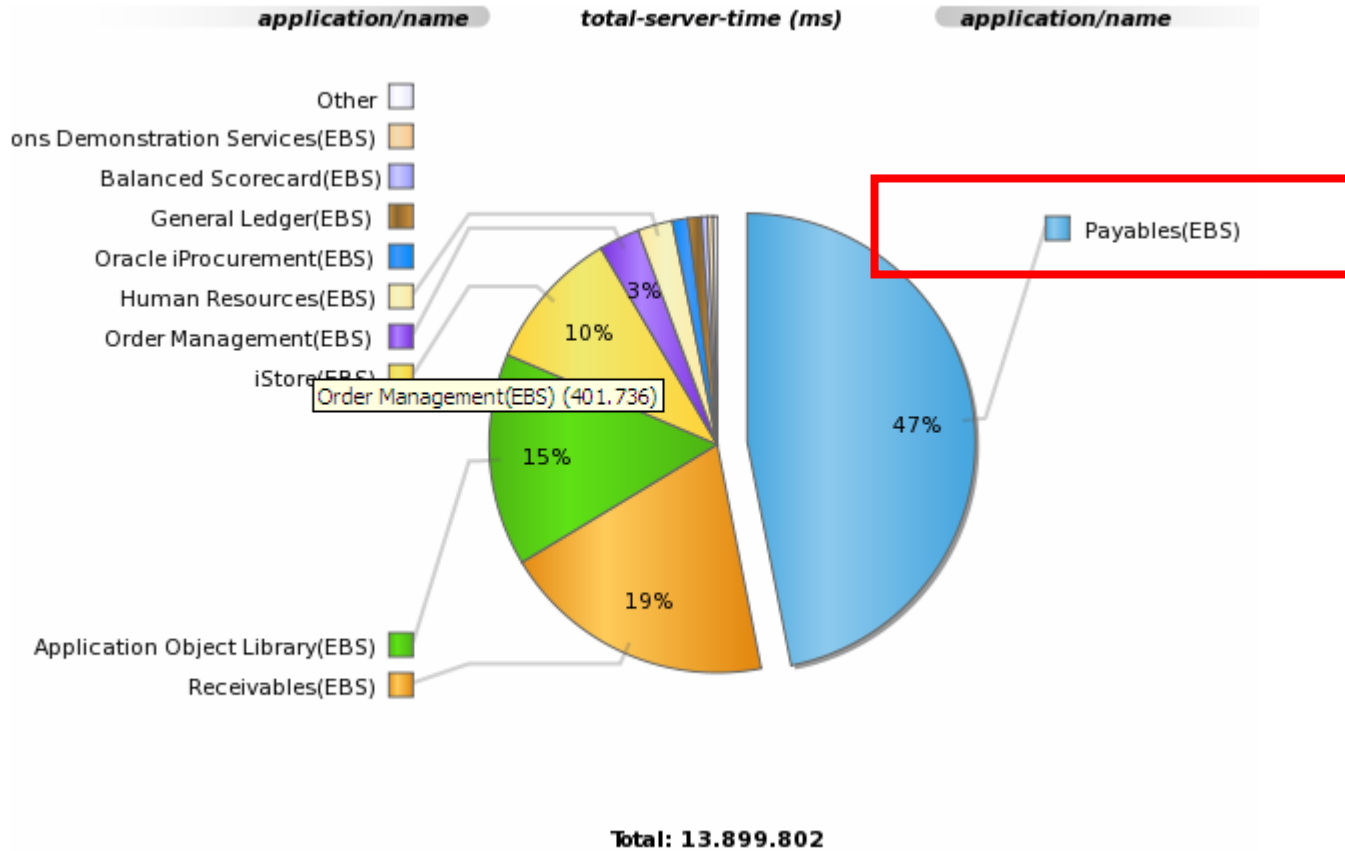
Pages

Objects

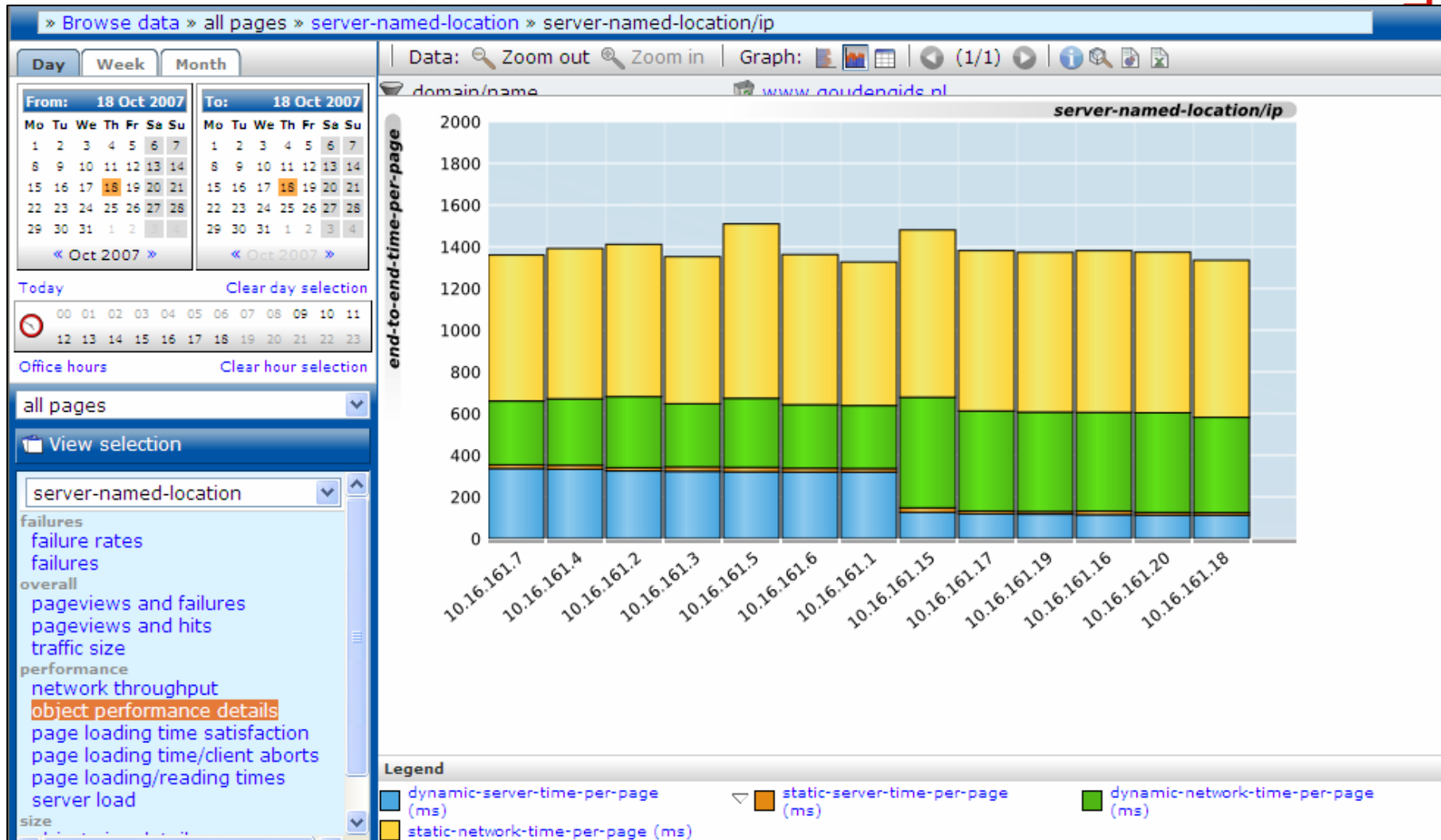
Info

Page name	Time
EBS.ibe » ibe_customer_comms » Create Expense Report: Review	00:00:09
EBS.fnd » APXPWALL » Payment:Query	00:00:12
EBS.ap » APXPWALL » unidentified action	00:00:15
<u>EBS.ap » APXPWALL » unidentified action</u>	00:00:17
EBS.fnd » FNDRSRUN » Jobs:Query	00:00:20
EBS.ibe » ibe_customer_comms » Cash and Other Expenses: Details for Line 3	00:00:20
EBS.fnd » FNDRSRUN » unidentified action	00:00:21
EBS.ibe » ibe_customer_comms » Cash and Other Expenses: Details for Line 2	00:00:24
EBS.fnd » FNDRSRUN » Jobs:Query	00:00:25
EBS.fnd » FNDRSRUN » Jobs:Query	00:00:26
EBS.fnd » FNDRSRUN » unidentified action	00:00:29
EBS.ibe » ibe_customer_comms » Cash and Other Expenses: Details for Line 1	00:00:30
EBS.fnd » FNDRSRUN » unidentified action	00:00:33
EBS.ar » receivables_vision_operations » Workflow Notifications	00:00:34
EBS.fnd » FNDRSRUN » unidentified action	00:00:35
EBS.ibe » ibe_customer_comms » Cash and Other Expenses: Details for Line 1	00:00:39
EBS.fnd » FNDRSRUN » unidentified action	00:00:40
EBS.ap » payables_operations » Workflow SS Notifications Page	00:00:42
EBS.ap » payables_operations » Notification Details	00:01:08
EBS.fnd » FNDRSRUN » unidentified action	00:01:18
EBS.ibe » ibe_customer_comms » Create Expense Report: Review	00:01:18
EBS.ibe » ibe_customer_comms » Cash and Other Expenses: Details for Line 3	00:01:27
EBS.ibe » ibe_customer_comms » View Requests	00:01:36

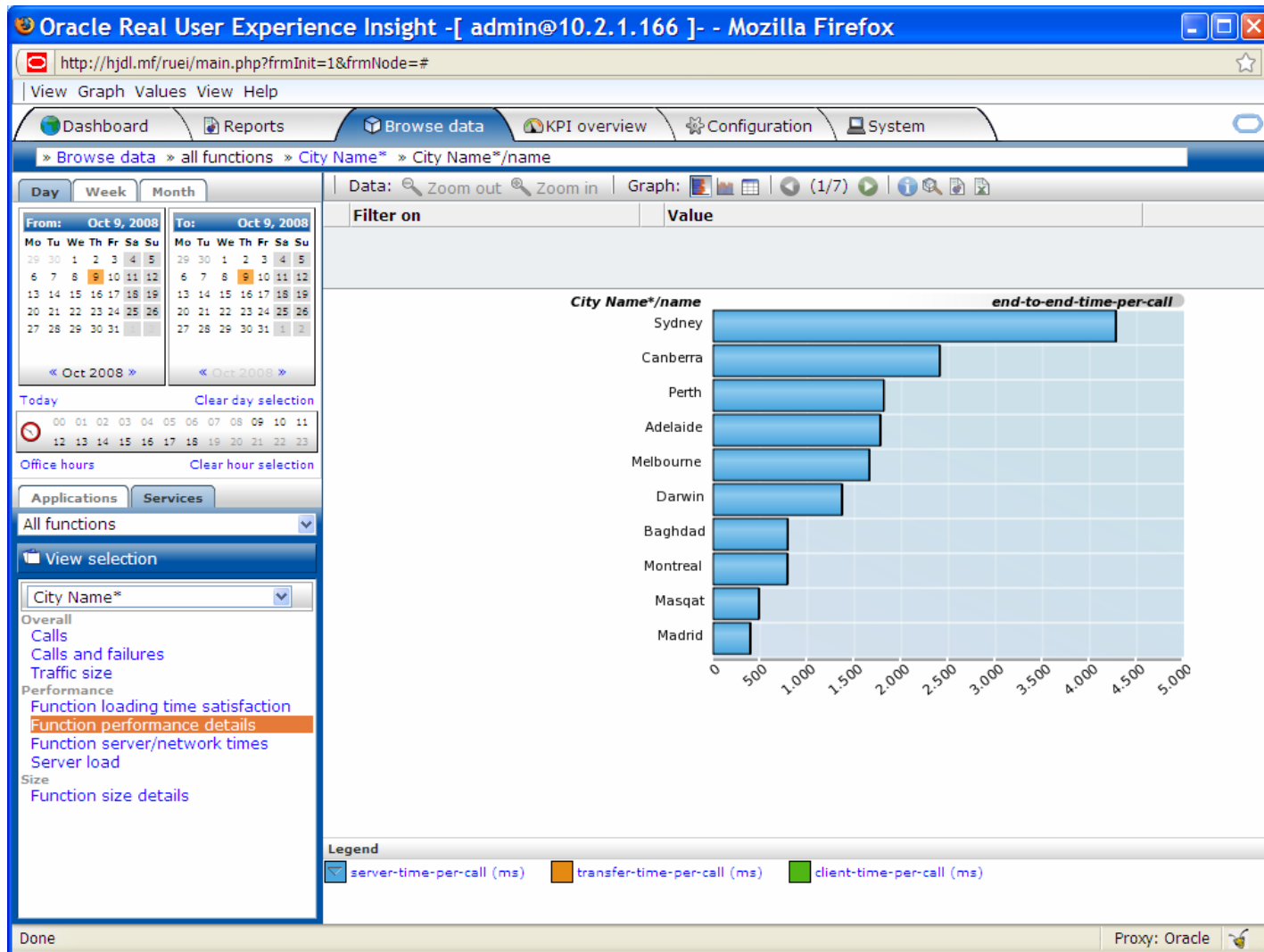
Overall server capacity usage



Server infrastructure load & capacity management



Monitoring web services

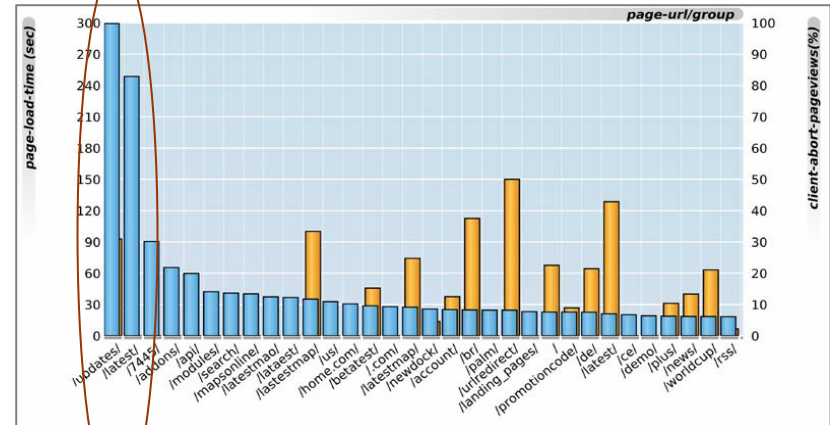
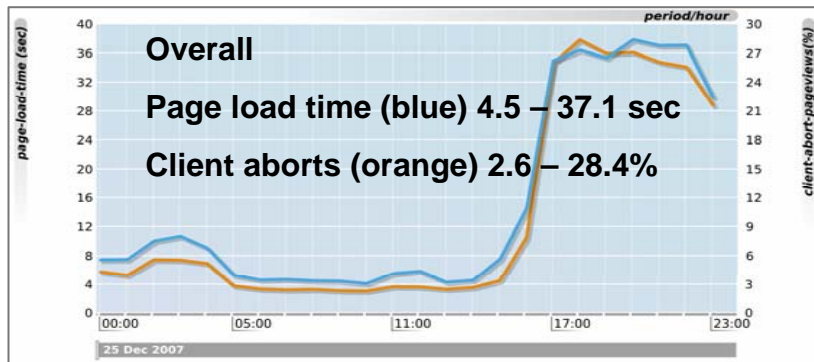
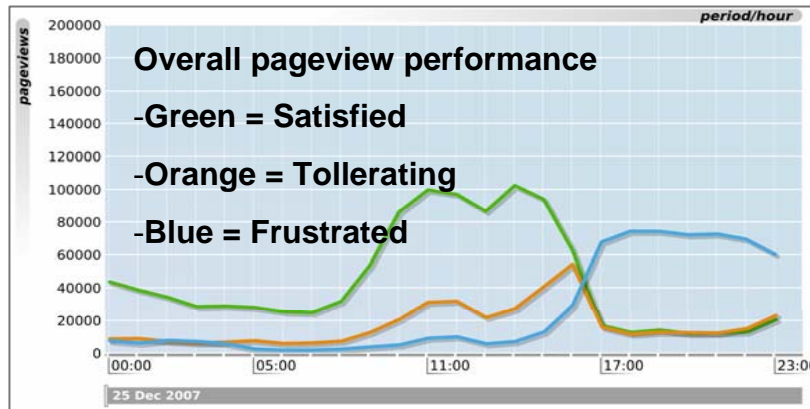


TomTom Business Case:

Christmas Eve 2007 - User Experience Suffers

Overall performance was affected from after about 16:00, resulting in a drop of total pageviews and frustrating long page load times

Root cause: Updates and latest manuals sections



Business Case:

Send Message to Affected Users

drill-down feature shows list of affected users on 25th after 15:00hrs

The screenshot shows an analytics tool interface with the following components:

- Calendar:** Shows the date 25 Dec 2007 selected. The interface includes tabs for Day, Week, and Month, and a time selection area for office hours.
- Filter on:** A filter is applied for 'user-id/group' with a value of 'anonymous'.
- Data Table:** A table with columns 'user-id/id', 'pageviews', and 'error-pageviews(%)'. The table lists various email addresses and their corresponding pageview and error rates.
- View selection:** A dropdown menu is open, showing a list of view options such as 'failures', 'overall', 'pageviews and failures', and 'performance'.

user-id/id	pageviews	error-pageviews(%)
xpedestrian@hotmail.com	1	100,0
carl.donakowski@gmail.com	1	100,0
sgonsauls@satx.rr.com	2	100,0
barbet2@aol.com	1	100,0
ingenbach@bigfoot.com	1	100,0
goddenberg@freenet.de	1	100,0
frankwiedmann@web.de	1	100,0
rmei1051@cox.net	1	100,0
freemanc3@shaw.ca	1	100,0
icmaxm@hotmail.com	1	100,0
hshbrowns820@aol.com	1	100,0
algreystoke@hotmail.com	1	100,0
mark@breitner.dk	1	100,0
ekwinegar@sbcglobal.net	1	100,0
an.nguyenhuu@gmail.com	1	100,0
sepkm.prummer@web.de	3	66,7
goodrichkn@scml.us	2	50,0
bambou.k@hotmail.fr	2	50,0
frank@druckrecords.de	5	40,0
dragonjoe@rogers.com	3	33,3
tomascalojesu@msn.com	6	33,3

Use Case: Site abuse by hackers

A Western European online betting company. The analysis on server errors puts **China** at the top of the list of originating users.

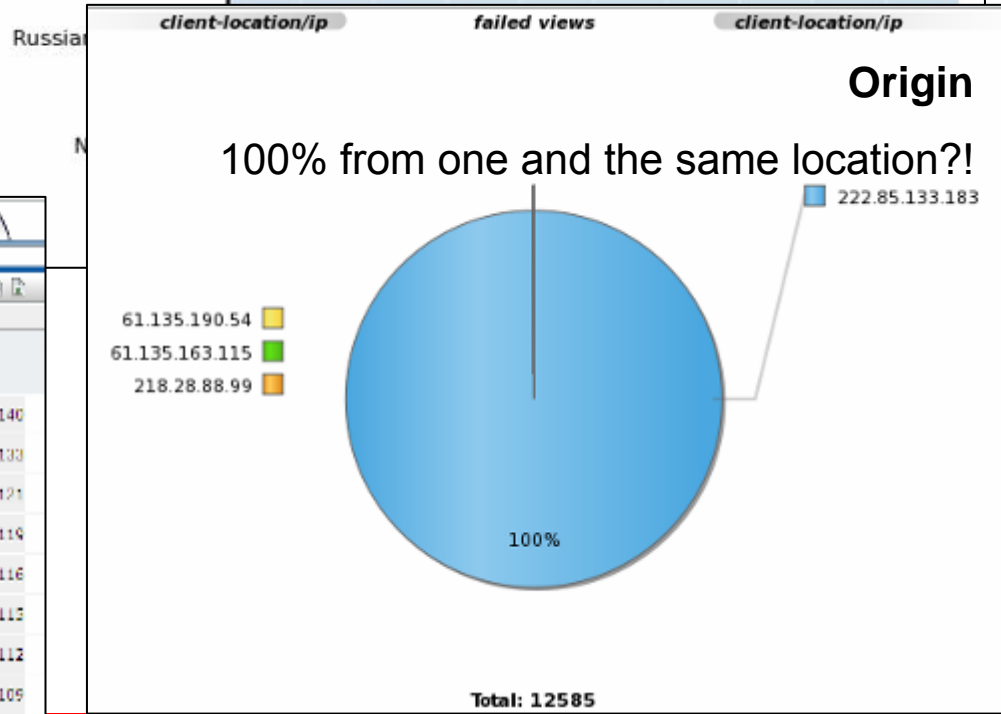
Why China?

Near 100% from the same origin
Sequential requests

Clearly someone trying to break the application logic!



Overall errors
China is clearly 1st in line?!



Dashboard: failed pages - page-uri - page-uri/full-uri

Filter on: client location/country Value: China

Value	Count
http://www.boylesports.com/betting/?sID=267.1&stc=38138.1&slc=60409.1&sla=455983.1&slm=-1	140
http://www.boylesports.com/betting/?sID=267.1&stc=37703.1&slc=65707.1&sla=455101.1&slm=-1	133
http://www.boylesports.com/betting/?sID=267.1&stc=37703.1&slc=03335.1&sla=455983.1&slm=-1	121
http://www.boylesports.com/betting/?sID=267.1&stc=37703.1&slc=03335.1&sla=455456.1&slm=-1	119
http://www.boylesports.com/betting/?sID=267.1&stc=06407.1&slc=09203.1&sla=454950.1&slm=-1	116
http://www.boylesports.com/betting/?sID=267.1&stc=07763.1&slc=09671.1&sla=456015.1&slm=-1	112
http://www.boylesports.com/betting/?sID=267.1&stc=37763.1&slc=09671.1&sla=455450.1&slm=-1	112
http://www.boylesports.com/betting/?sID=267.1&stc=37763.1&slc=09671.1&sla=455451.1&slm=-1	109
http://www.boylesports.com/betting/?sID=267.1&stc=39116.1&slc=66928.1&sla=455109.1&slm=-1	108
http://www.boylesports.com/betting/?sID=267.1&stc=38138.1&slc=67154.1&sla=456593.1&slm=-1	107

Key takeaways on Real User Monitoring 15 GROUP

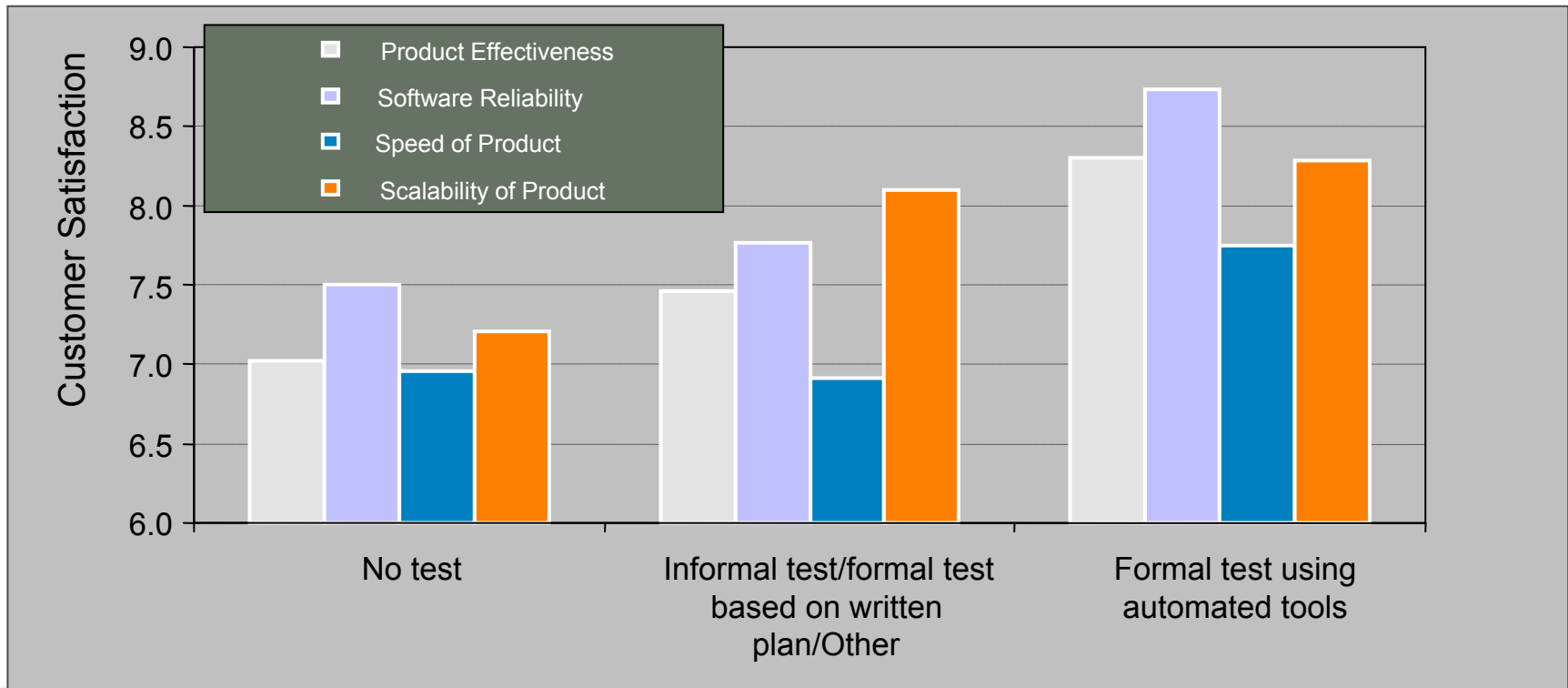
- No instrumentation needed to your web based applications
- Data can be gathered from open and closed environments
- Data is stored within the security of your own network
- Installation and configuration within 3 days!
- Out of the box reporting

Performance testing is complex



Why is testing important?

- Customers who performed higher levels of testing were more satisfied



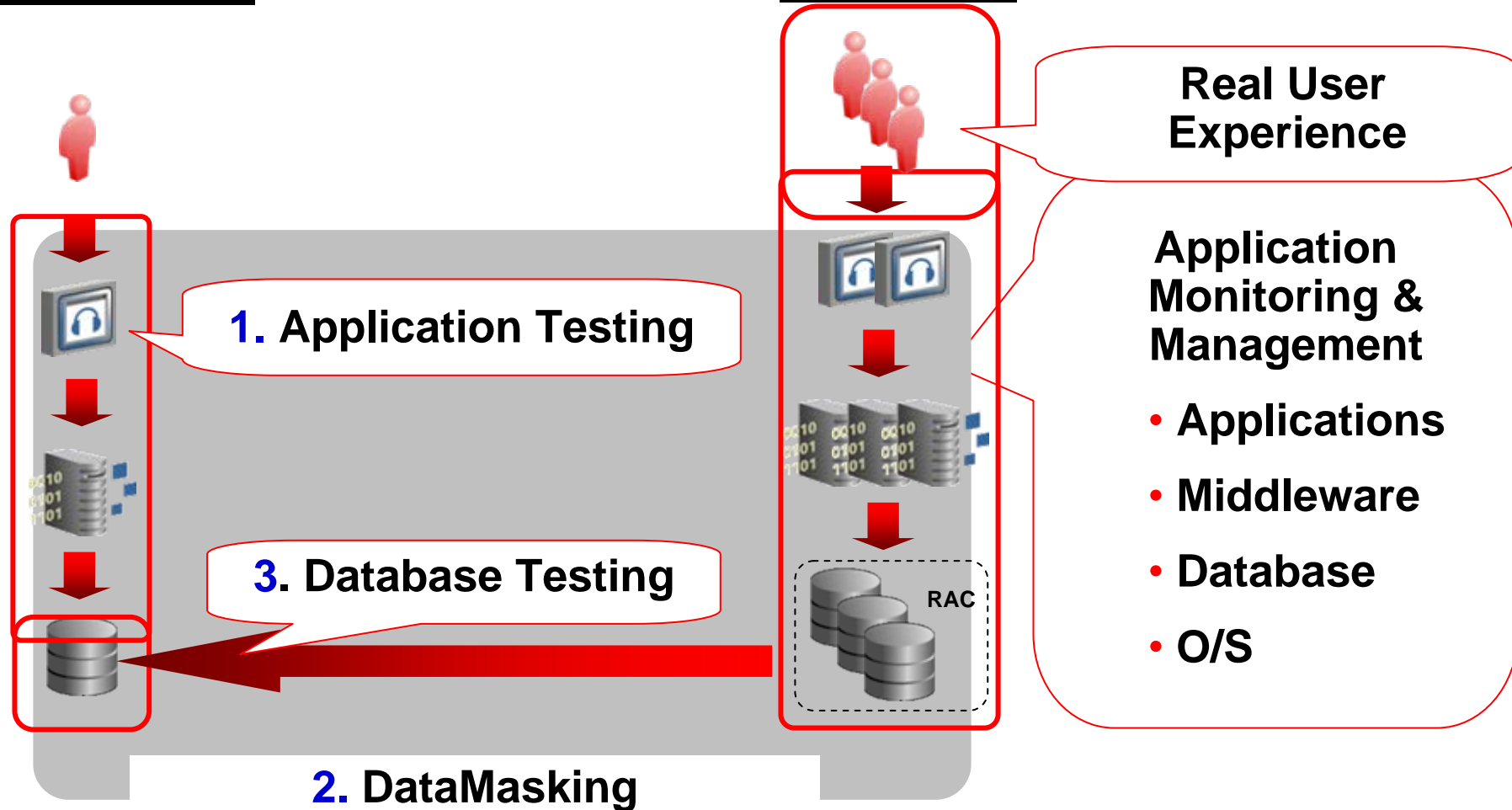
¹ Results from Q1 2003 Customer Satisfaction Survey.

² Product Effectiveness is the average satisfaction ratings of the nine (9) product functionality items.

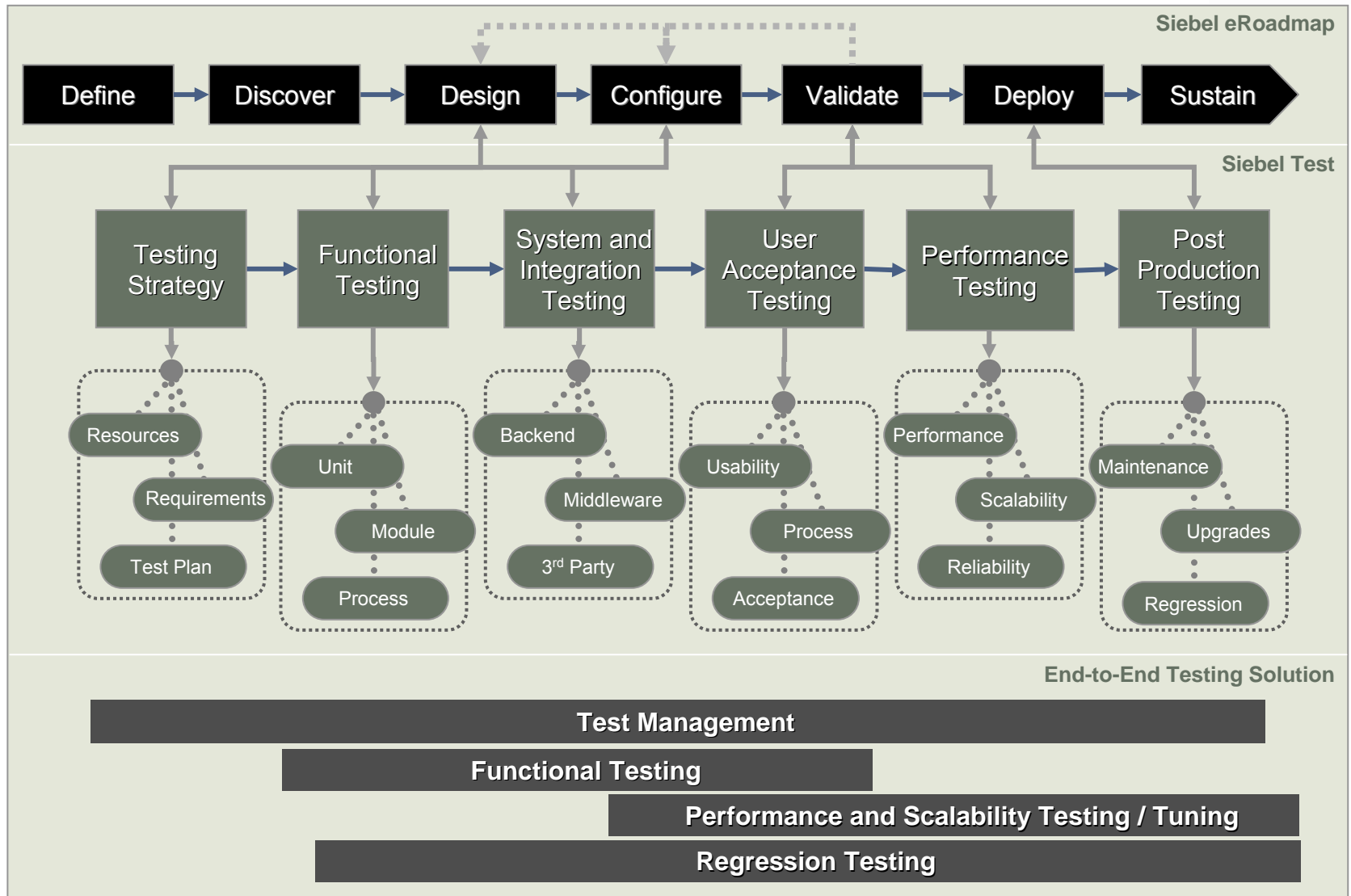
Application and Database Testing

Test / Staging

Production



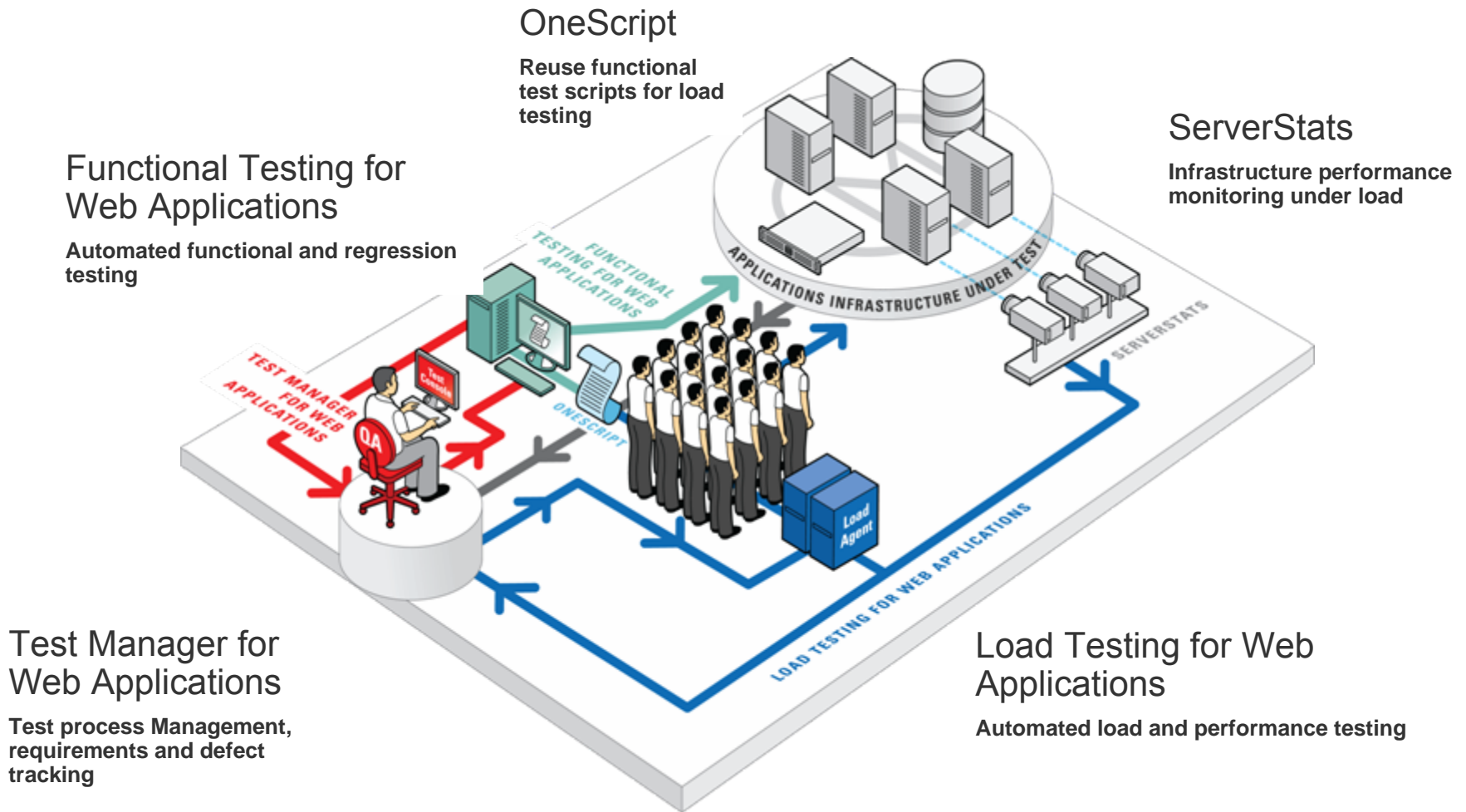
Oracle Test Methodology



Oracle Application Testing Suite

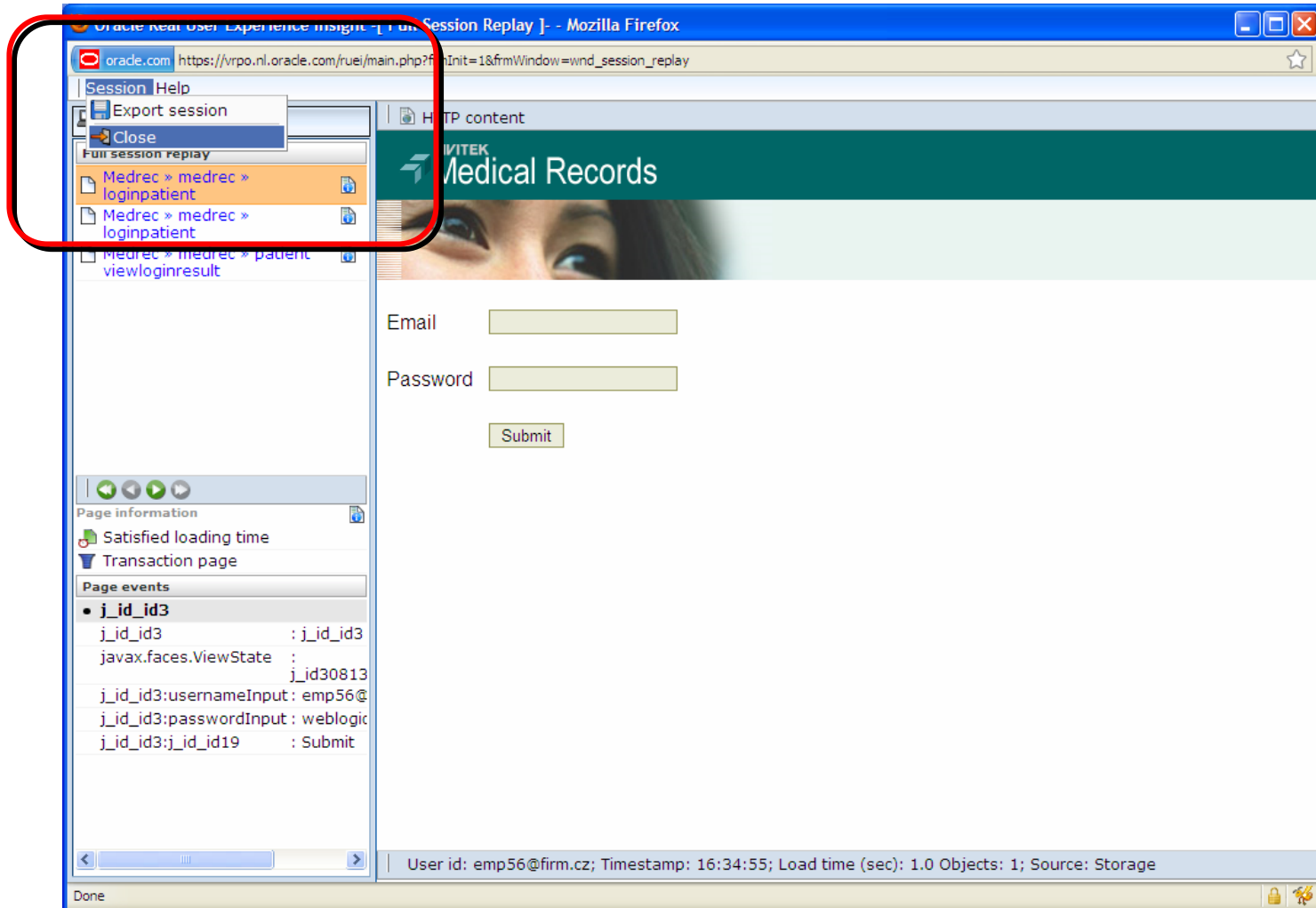


Reduces web testing effort by 50%*

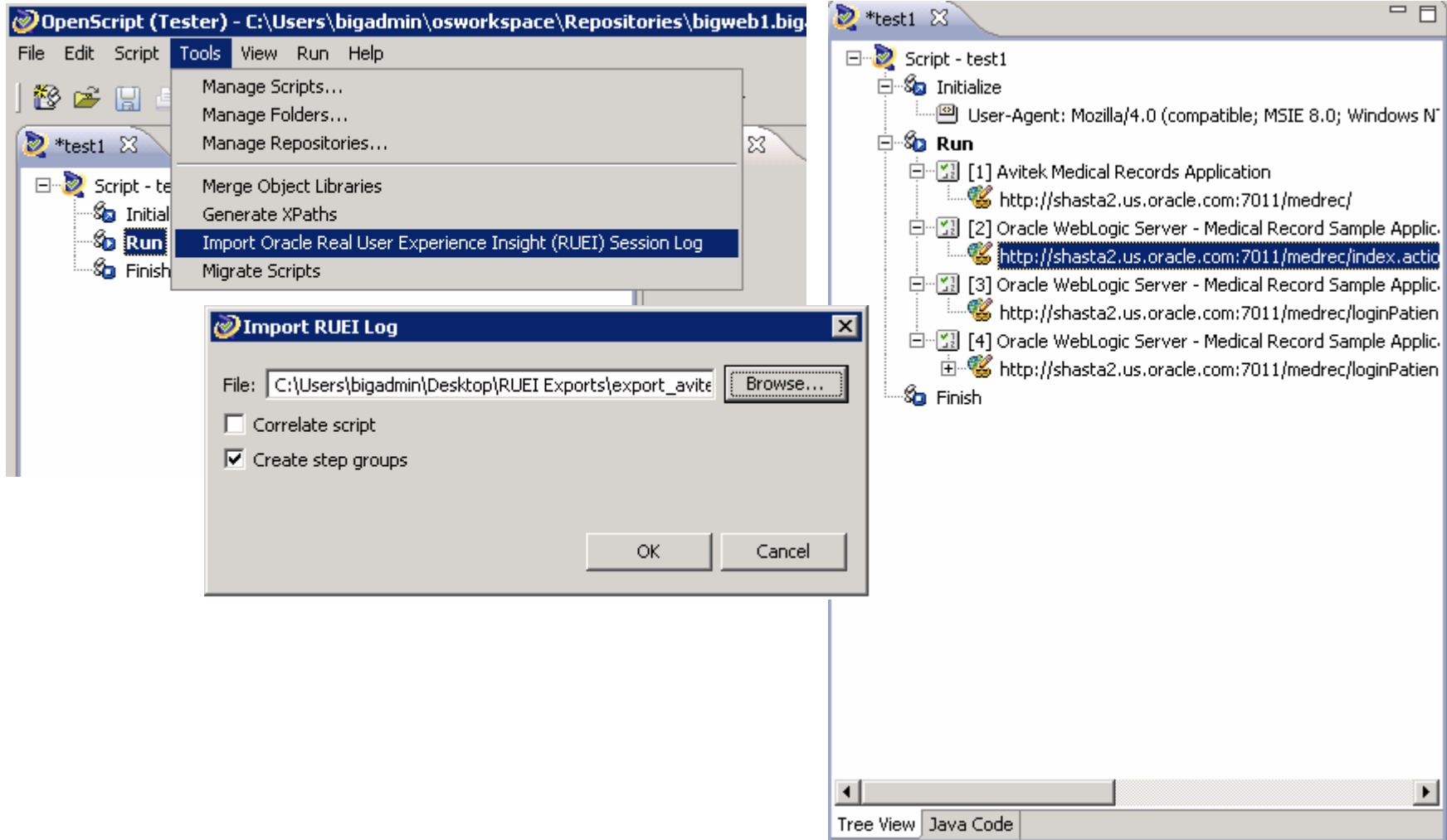


* http://www.oracle.com/technology/products/oem/pdf/ds_oracle%20load%20testing%20for%20web%20applications.pdf

Export a user session from RUEI



ATS – Script Import from RUEI



The screenshot displays the OpenScript (Tester) interface. The 'Tools' menu is open, highlighting the option 'Import Oracle Real User Experience Insight (RUEI) Session Log'. Below the menu, the 'Import RUEI Log' dialog box is shown, with the file path 'C:\Users\bigadmin\Desktop\RUEI Exports\export_avite' and the 'Create step groups' checkbox checked. The background shows a test script tree with steps like 'Initialize', 'Run', and 'Finish'.

The 'Tools' menu options are:

- Manage Scripts...
- Manage Folders...
- Manage Repositories...
- Merge Object Libraries
- Generate XPath
- Import Oracle Real User Experience Insight (RUEI) Session Log**
- Migrate Scripts

The 'Import RUEI Log' dialog box contains:

File: C:\Users\bigadmin\Desktop\RUEI Exports\export_avite [Browse...]

Correlate script

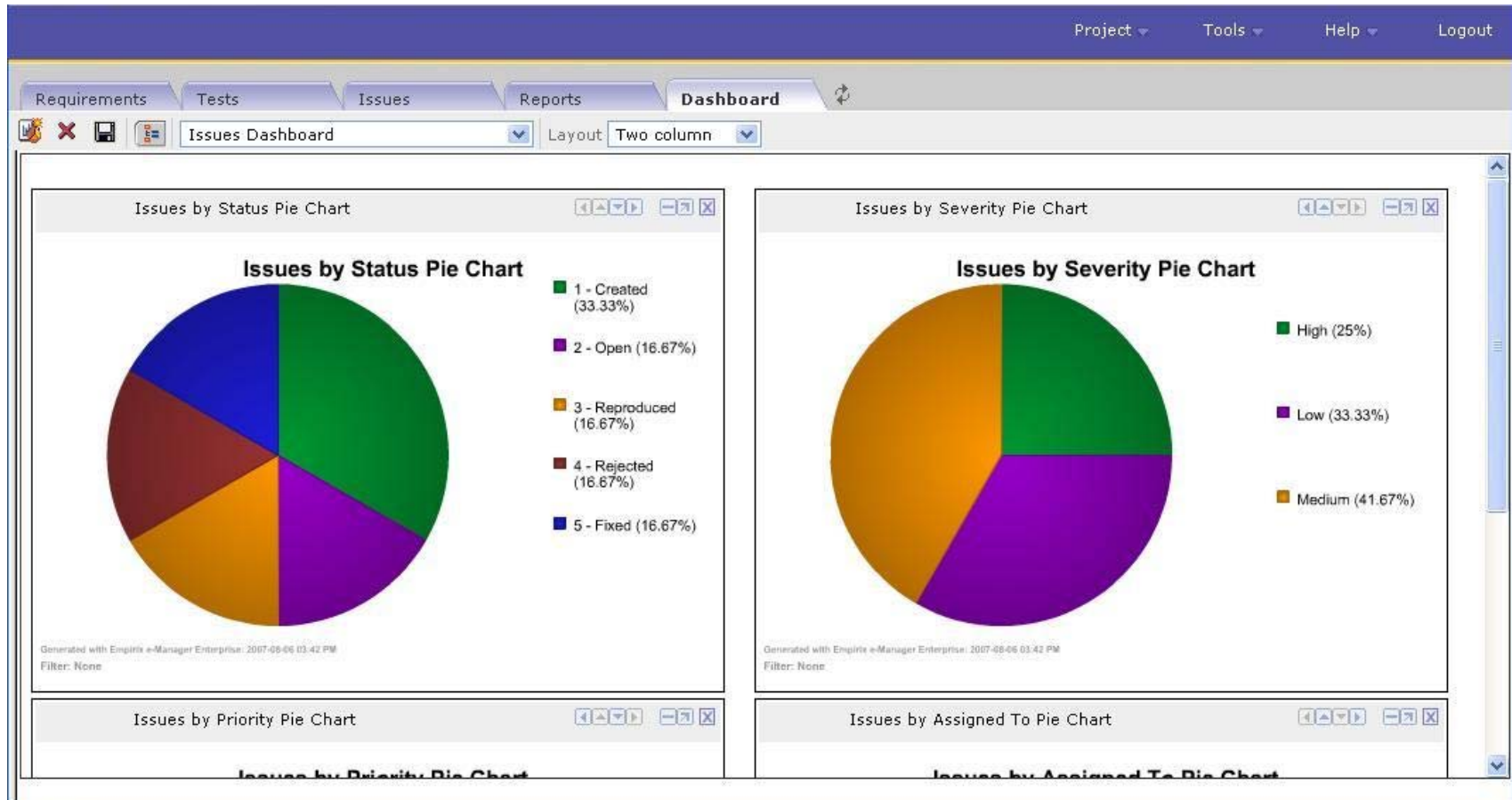
Create step groups

OK Cancel

The test script tree shows:

- Script - test1
 - Initialize
 - User-Agent: Mozilla/4.0 (compatible; MSIE 8.0; Windows N
 - Run
 - [1] Avitek Medical Records Application
 - http://shasta2.us.oracle.com:7011/medrec/
 - [2] Oracle WebLogic Server - Medical Record Sample Applic.
 - http://shasta2.us.oracle.com:7011/medrec/index.actio
 - [3] Oracle WebLogic Server - Medical Record Sample Applic.
 - http://shasta2.us.oracle.com:7011/medrec/loginPatien
 - [4] Oracle WebLogic Server - Medical Record Sample Applic.
 - http://shasta2.us.oracle.com:7011/medrec/loginPatien
 - Finish

Report on Application Readiness



Performance testing: reporting

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Example Report

This is an example text and it does not really make any sense, it is just here to demo that a template can have text blocks. The text can be formatted and use your corporate Identity.

Here is an example of a chart.
Duration: 00:14:02 (842 sec)

Name	Min	Max	Avg
Active Virtual Users	0	500	308,909
Virtual Users with Errors	0	0	0
Transactions Per Second	2,05	98,882	76,473
Pages Per Second	12,8	245,333	188,684
Hits Per Second	17,6	432	334,049
Kilobytes Per Second	61,724	1077,155	828,304

Totals

Transactions	65384
Transactions with Errors	0
Pages	161325
Hits	285612
Kilobytes	708200

here we have some more text and it is also just some dummy text. Sometimes it is more interesting if you have a real text and not just some bogus put together to show an example.

Performance

Export to: PDF XLS

3. DataBase Testing: Real Application Testing

• SPA

- Solution for identifying SQL performance regressions/improvements
- “Capture” SQL queries from production, including executions plans & stats
- “Test-Execute” SQL queries serially “before” and “after” changes
- Compare “before” and “after” SQL execution plans and performance stats
- Ideal for changes impacting query plans such as db upgrades, optimizer statistics refresh, new index creation, etc.

• Database Replay

- Load testing solution for performance and scalability testing
- “Capture” entire workload (queries, DML, DDL, PL/SQL, etc.) in production, including concurrency
- “Replay” entire workload in test with exact production characteristics including concurrency
- Ideal for system upgrades, configuration changes (SI to RAC), storage changes, etc.

Challenge



What-if I patch my database?

What-if I tune my database?

What-if I change my server?

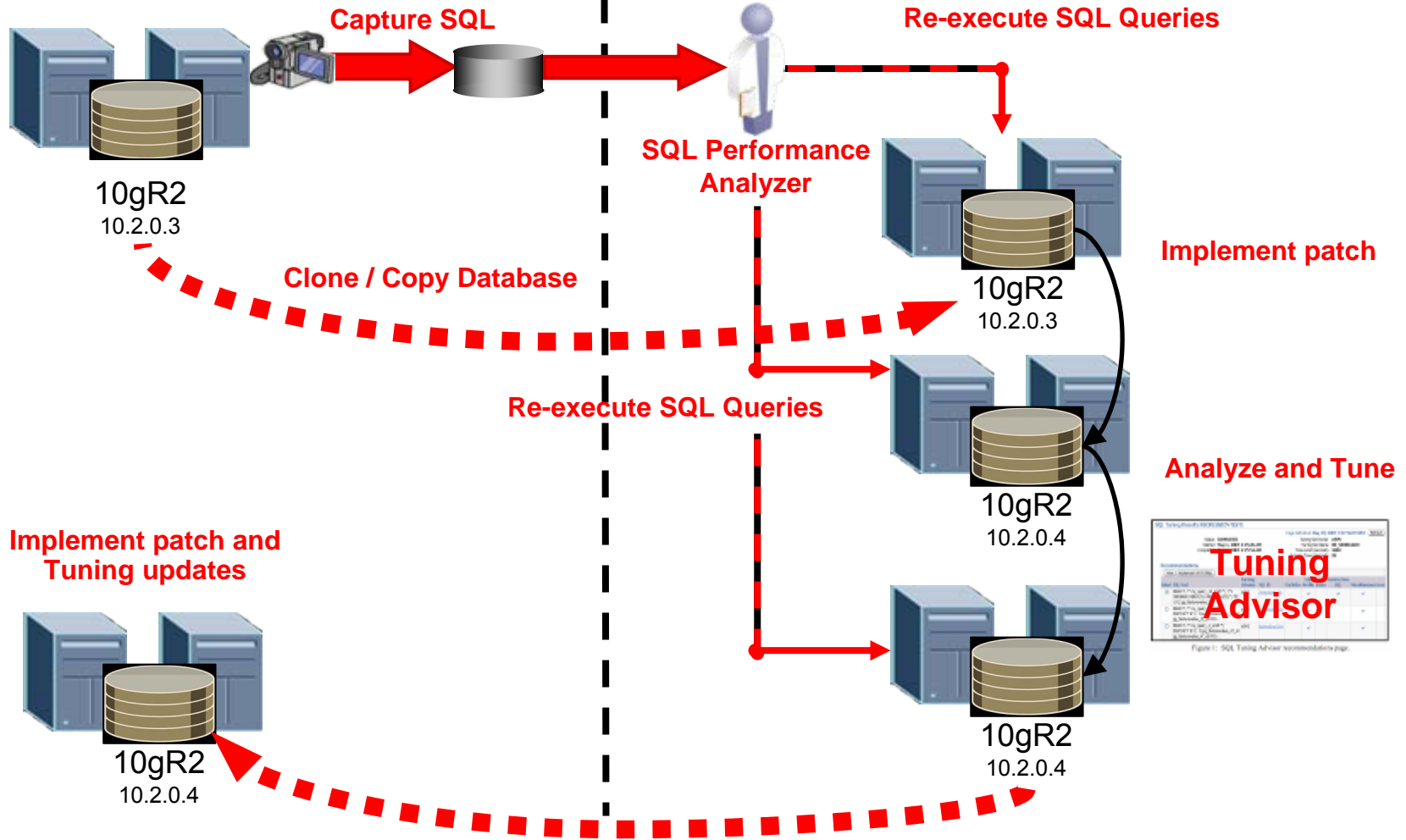
What-if I change a parameter?

What-if I patch my OS?

SPA Workflow

As-Is Production

What-if Test



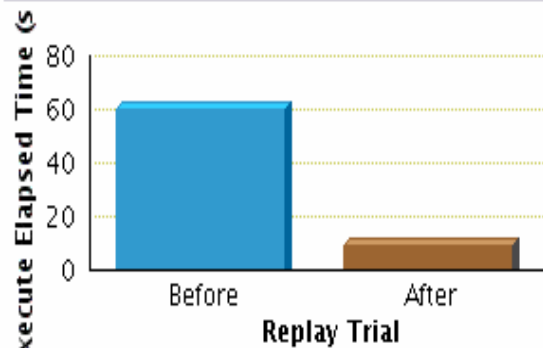
SPA Report

SQL Performance Analyzer Task Result: SYS.SYSTEMCHANGES1

Task Name	SYSTEMCHANGES1	SQL Tuning Set Name	HR_WORKLOAD	Replay Trial 1	Before
Task Owner	SYS	STS Owner	APPS	Replay Trial 2	After
Task Description		Total SQL Statements	50	Comparison Metric	Execute Elapsed Time
		SQL Statements With Errors	0		

Global Statistics

Projected Workload Execute Elapsed Time

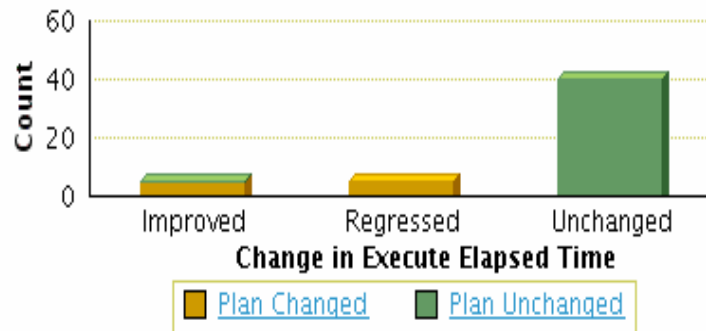


Improvement Impact [89%](#) ↑

Regression Impact [-5%](#) ↓

Overall Impact [85%](#) ↑

SQL Statement Count



Recommendations

Run SQL Tuning Advisor to tune regressed SQL statements.

[Schedule SQL Tuning Advisor](#)

Challenge

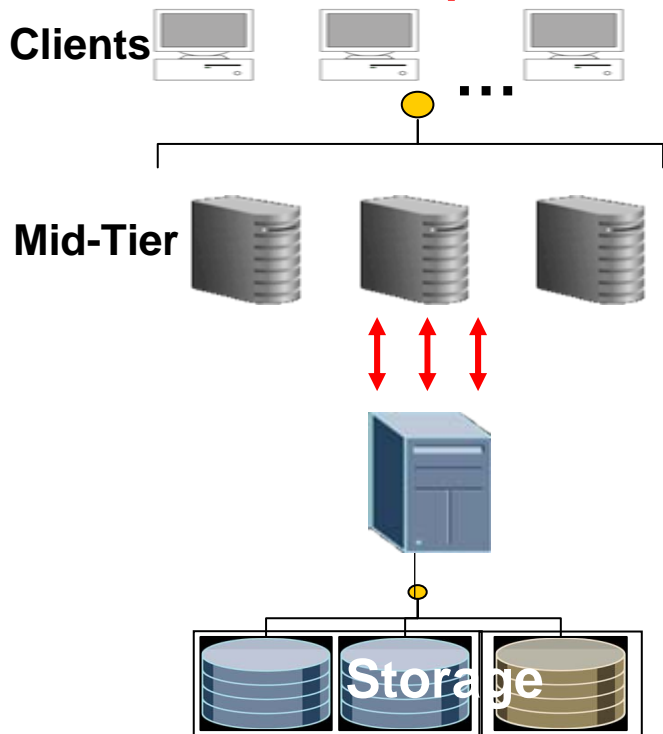


How will my system perform after an upgrade?

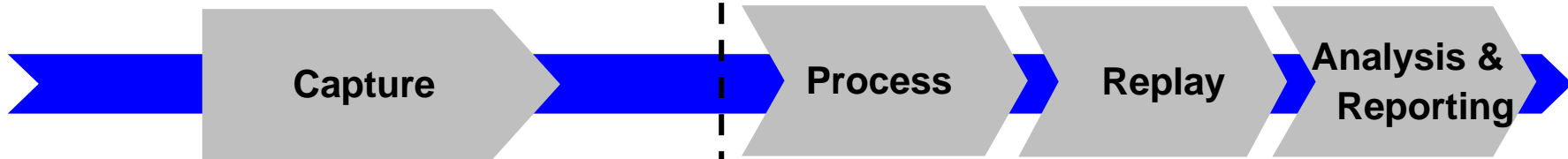
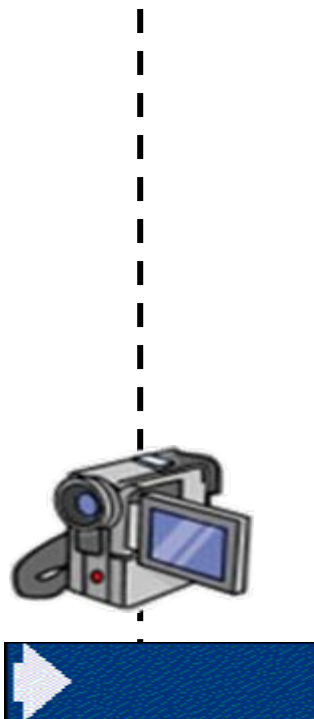
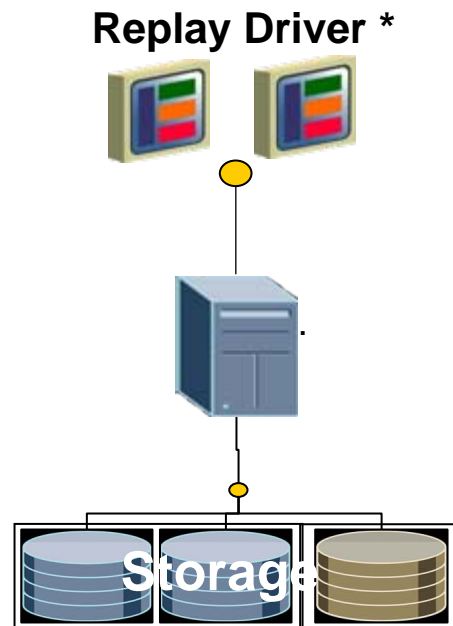
Will all application calls work in 11g?

Database Replay Workflow

Production ($\geq 9.2.0.8$)



Test (≥ 11.1)



* No middle/client tier setup required

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Introduction

Oracle introduced a feature called "Real Application Testing" with its newest database version Oracle 11gR1. Real Application Testing is an extra option for the Oracle 11g Enterprise edition.

The Real Application Testing feature can be split in two main components:

Database Replay

You can capture the whole workload (SELECTs, INSERTs, UPDATEs, etc.) on an Oracle database and replay it on another or on the same database again. The limitation of this feature is that you can only replay the captured workload on an Oracle 11g database.

SQL Performance Analyzer (SPA)

You can capture SELECT statements on an Oracle 9i, 10g or 11g database and replay them remotely on an Oracle 10g or 11g database via a "SPA system" or replay them locally on an Oracle 11g database.

So we can only use the SQL Performance Analyzer in a SAP environment, because of Oracle 11g is not supported until yet.

What is the benefit of the SQL Performance Analyzer in a SAP environment?

- Evaluate the impact of a patchset installation or database upgrade on the most used transactions in your SAP system (only SELECTs)
- Try different tuning trials and compare them very easily

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David Mitchell
Senior Vice President, OVUM

“Oracle Real Application Testing reduces the time required to test changes by as much as 80%, lower testing costs by as much as 70%, mitigate risks by reducing the number of unexpected outages, and improve the quality of service for their IT operations.”

Challenge

- Upgrade critical customer-facing application providing rates for room reservations from Oracle Database 10.2.0.4 to 11.1
- Highly volatile data where plan stability is critical
- Unsuccessfully used synthetic queries to test previous upgrades

Solution Approach

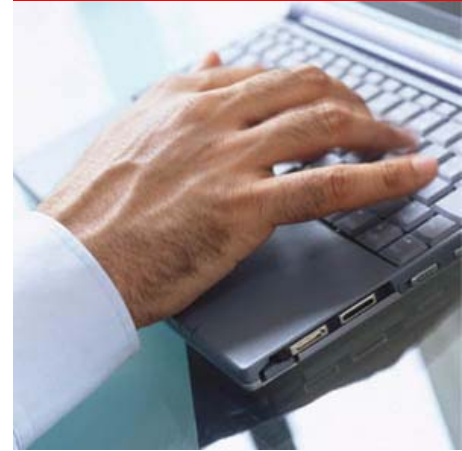
- SQL Performance Analyzer to identify SQL regressions
- SQL Profiles to tune SQL transparently
- SQL Plan Baselines for plan stability

Benefit

- Very successful upgrade. No surprises!
- Predictable performance and SLAs
- Reduced testing time from 5 months to 10 days

Summary: Start today!

- Proactively manage User Experience:
 - No change in your application is needed
 - No impact on performance
 - Be alerted before your end-users start calling
- Effective testing and Quality Management
 - Test your system changes with real production loads and reduce testing efforts by up to 80 percent
 - Create realistic load test scenarios that simulate end-user behavior, including content validation under load
 - Out-of-the-box support for Oracle Siebel, PeopleSoft and EBS



Questions: You care!



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