



**Testing of mobile solutions:
„Old wine in new skins?“**

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2013-09-25
values at work.

Background

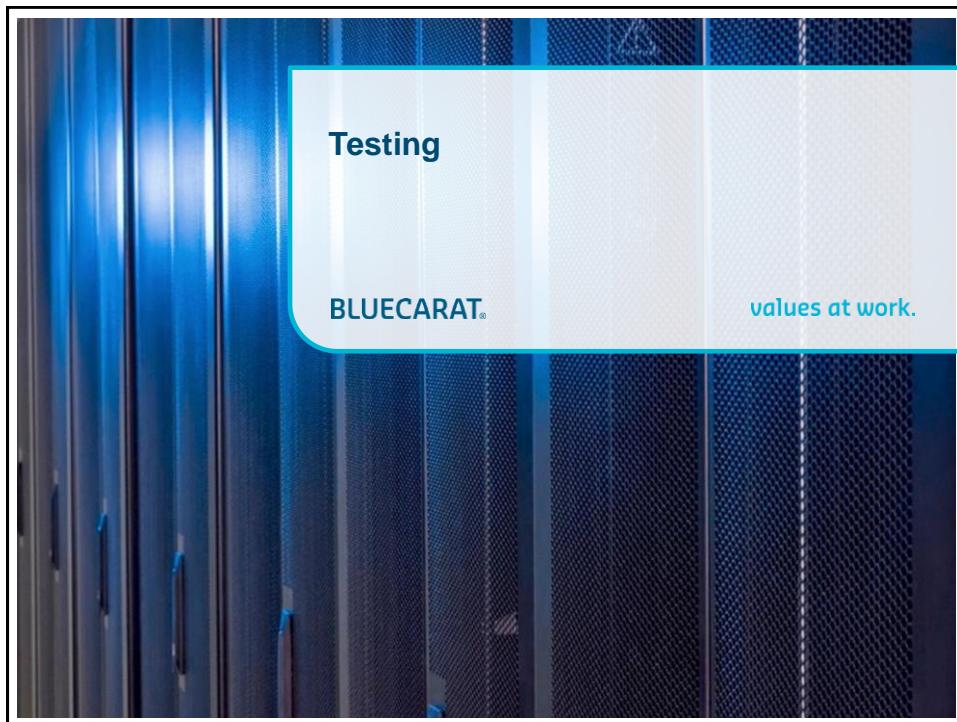
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- Who?
 - SME, 4 Offices
 - 250 Employees, 25 Mio. Euro revenue
- What?
 - IT-Services+Solutions for the complete IT-System lifecycle
 - 6 centers of operation:



Enterprise & Integration Architectures	Identity & Access Management	B2B Communication
IT Infrastructure & Service Management	Mobile Business	Agility ²

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Testing....old-fashioned definitions

➤ Hetzel 88: "*Any activity aimed at evaluating an attribute or capability of a program or system and determining that it meets its required results.*"
(e.g. http://www.ece.cmu.edu/~koopman/des_s99/sw_testing/)

➤ Myers (1989) „Software Testing is the process of executing a program or system with the intent of finding errors.”
(e.g. http://www.ece.cmu.edu/~koopman/des_s99/sw_testing/)

➤ Meyers (2006) Principle 1: Definition
To test a program is to try to make it fail.



➤ Internet: „*The process of exercising software to verify that it satisfies specified requirements and to detect errors.*”
(e.g. <http://www.software-testing-outsourcing.com/glossary.html>)

Testing....modern definition

„The process consisting of all life cycle activities, both static and dynamic, concerned with planning, preparation and evaluation of software products and related work products to determine that they satisfy specified requirements, to demonstrate that they are fit for purpose and to detect defects.“

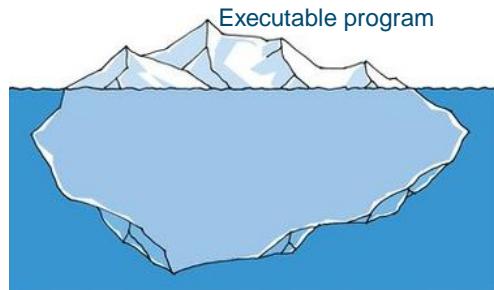


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Testing: Three characteristics 1/3: Testing is more than testing executables

- „[...] software products and related work products [...]“
- Software: “Computer programs, procedures, rules, and possibly associated documentation and data pertaining to the operation of a computer system” (IEEE Standard Glossary of Software Engineering Terminology /ANSI 83)
- Examples:
 - Libraries
 - Functions
 - Nets
 - Market Places
 - Cloud services
 - Documentation
 - Architectures...



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Testing: Three characteristics 2/3: Testing is more than testing functionality

- „[...] satisfy specified requirements [...]“



It works!



Safe?
Compliant?
Maintainable?
Extendable?
Etc.

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src : <http://www.petermeier.at/pd/pd.htm>

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Testing: Three characteristics 3/3: Testing has to validate requirements

- „[...] they are fit for purpose [...]“

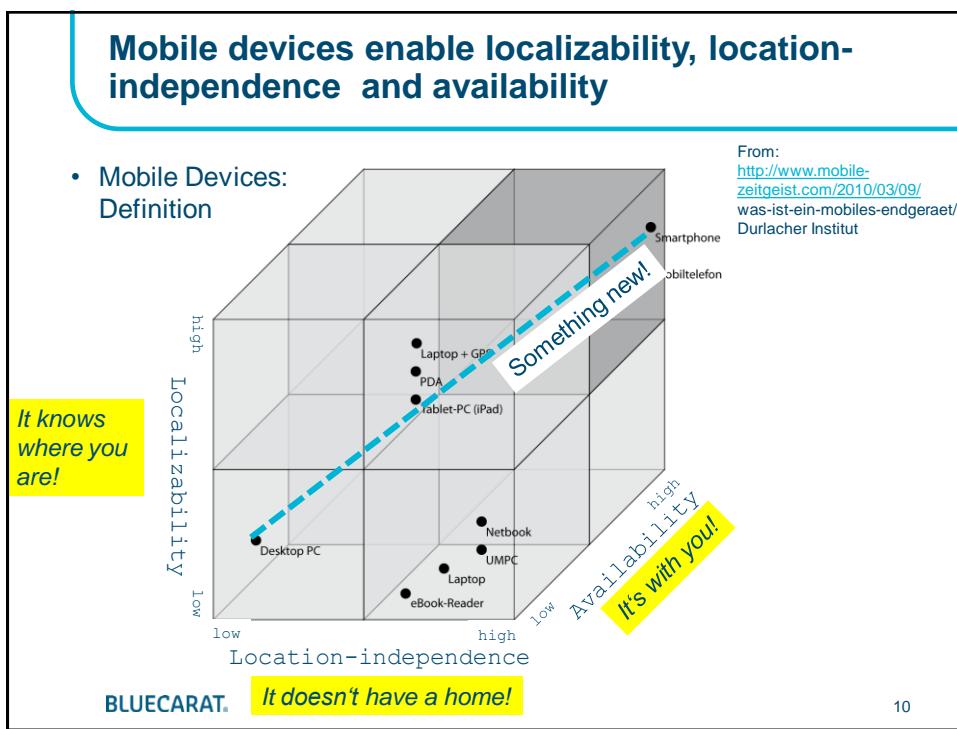
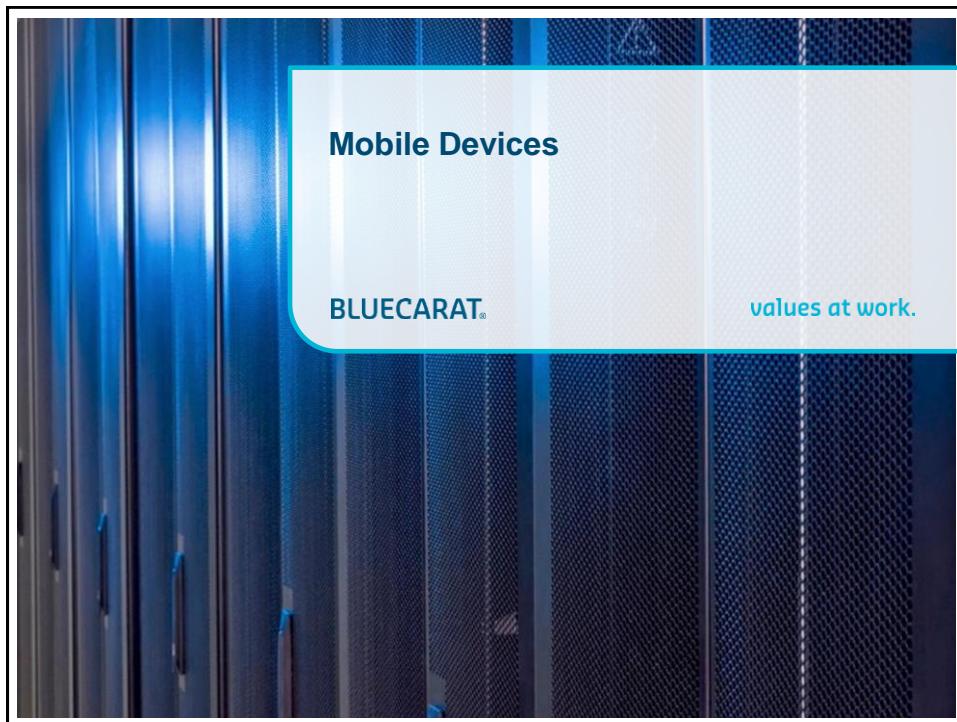
Requirements are
verified!



Is this fit for purpose?

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Apps on mobile devices don't differ much from "traditional" software

Mobile Devices: Example

RechnerAddition
Zahl 1:
Zahl 2:
Addiere beide Zahlen!
Ergebnis:

Zahl 1: 12
Zahl 2: -6
Addiere beide Zahlen!
Ergebnis: 18

10:32 AM

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**From an old-fashioned testing perspective:
Testing of mobile devices is nothing new (old wine)**

Fundamental Testprocess

ISTQB
International Software Testing Qualifications Board

Start → TEST PLANNING (Test Manager) → Analysis & Design → Implementation and Execution → Evaluation of Test Exit Criteria → Conclusion of Test By Test Closure Activities → Finish

AND CONTR.

We deploy a new app end of 2013. Let's plan testing 2 weeks before!

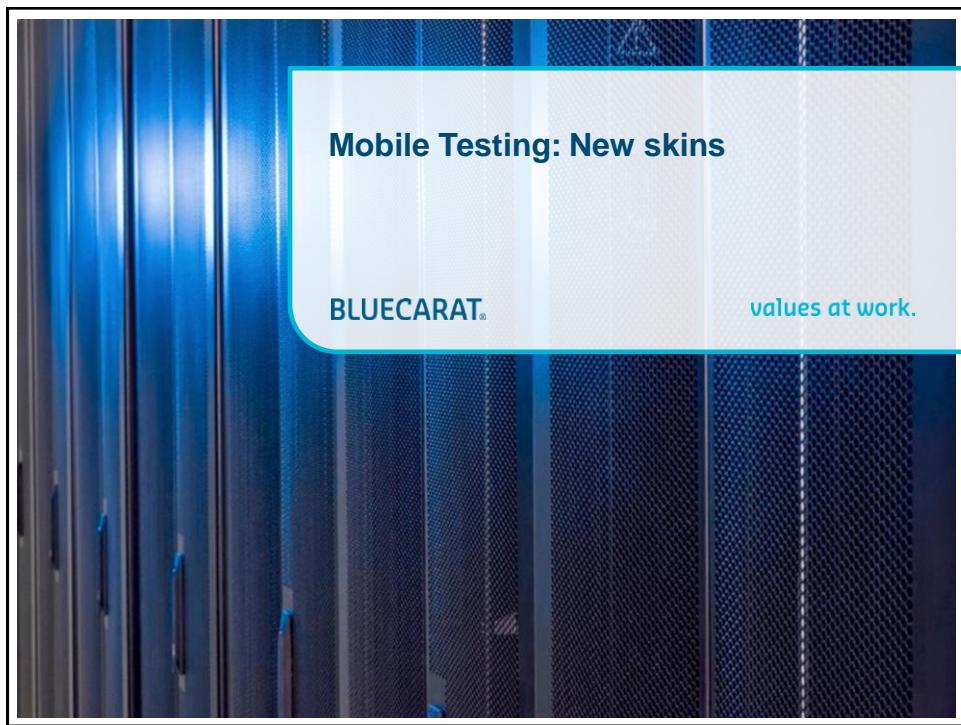
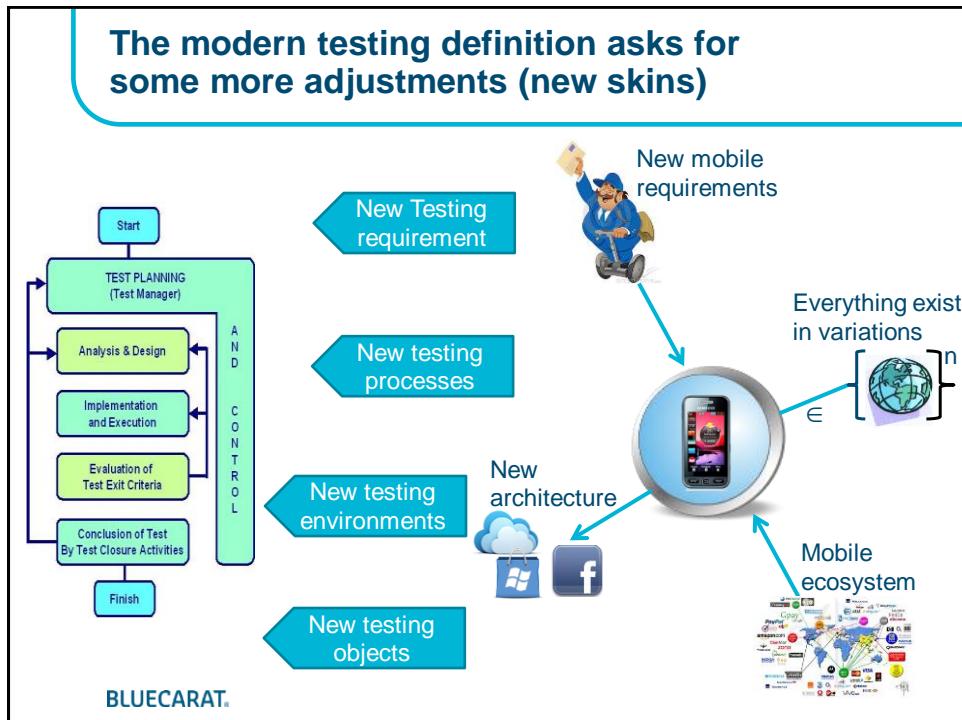
Requirement No1 is adding two numbers; let's create two logical test cases.

Let's generate 4 technical test cases (5+4=9; 0+0=0; A+0= E; 5*4=E); Hey Joe, click it!

Ok, only 1 out of 4 fails; nobody will notice it; Go-live!

For next iterations we need 10 more Joes for 10 more target devices!

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Mobile App Quality

Task Force des BITKOM e.V.




Vision

- Mobile Devices werden effizient und effektiv in neuen Geschäftsprozessen eingesetzt und integriert.
- Spezifika mobiler Lösungen werden bewusst und gewinnbringend eingesetzt.
- Mobile Lösungen sind unabhängig von der Vielzahl von Zielplattformen und -technologien und werden in Deutschland effizient und effektiv entwickelt.

Ziel

- Erarbeitung und fortwährende Pflege von Best Practices für die Entwicklung erfolgreicher mobiler Lösungen.
- Bereitstellung einer Plattform zum Wissensaustausch zur Stärkung des IT-Standorts Deutschland.

Aktueller Stand

- Bisher über 50 Best Practices strukturiert gesammelt
- Offenes Netzwerk des Austausches initiiert

Die Task Force freut sich auf Ihre Unterstützung!
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In Zusammenarbeit mit







Pitfall 1.x: Mobile Requirements ignorance

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Challenge 1.x: Requirements of mobile solutions change dramatically!



- Pitfall 1.x: Mobile-Requirements-Ignorance:
„Mobile solutions are just copies of desktop-apps, so the requirements are pretty much the same as well“

- 1.1: Reuse analysis and design documents and re-implement them on mobile devices
 - Mobile devices enable NEW processes
 - Mobile devices NEED modified processes
- 1.2: Weights for quality attributes can be migrated too
 - USABILITY becomes much more important today
 - SECURITY generates new hidden champions (e.g. Apple's Touch ID sensor)
- 1.3: There exist established quality attribute catalogues
 - Bad ENERGY EFFICIENCY will kill your app rating
 - Google just bought Bump...how about BUMP-ABILITY?

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Example for changed requirements



From <http://blog.utest.com/infographic-the-state-of-mobile-app-quality-android-vs-ios/2012/02/>; 2012
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Pitfall 2.x: Mobile multiple assets ignorance

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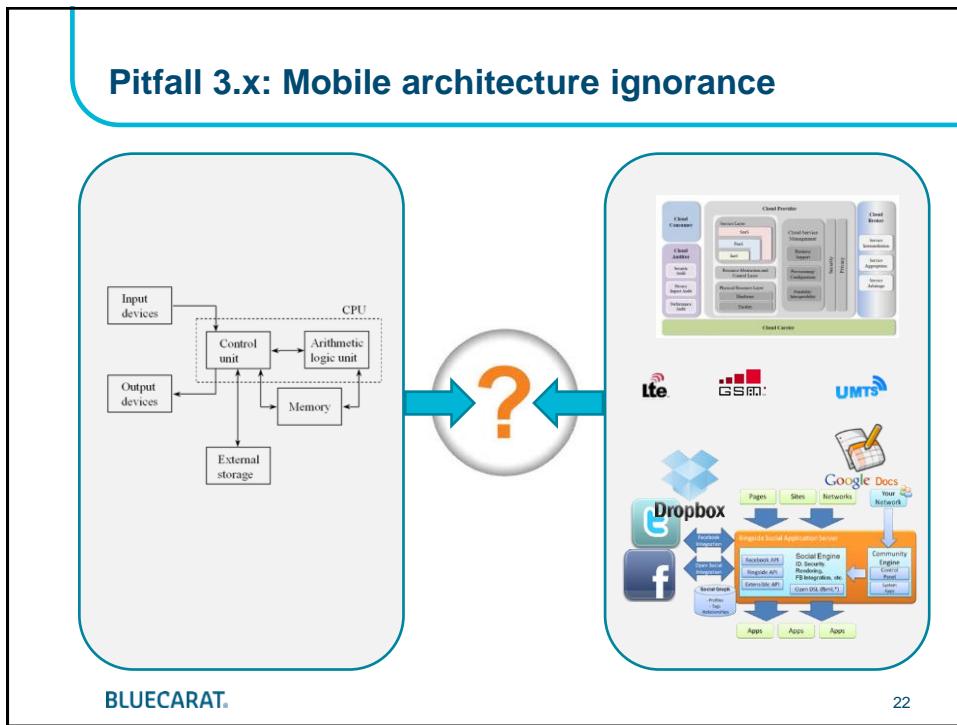
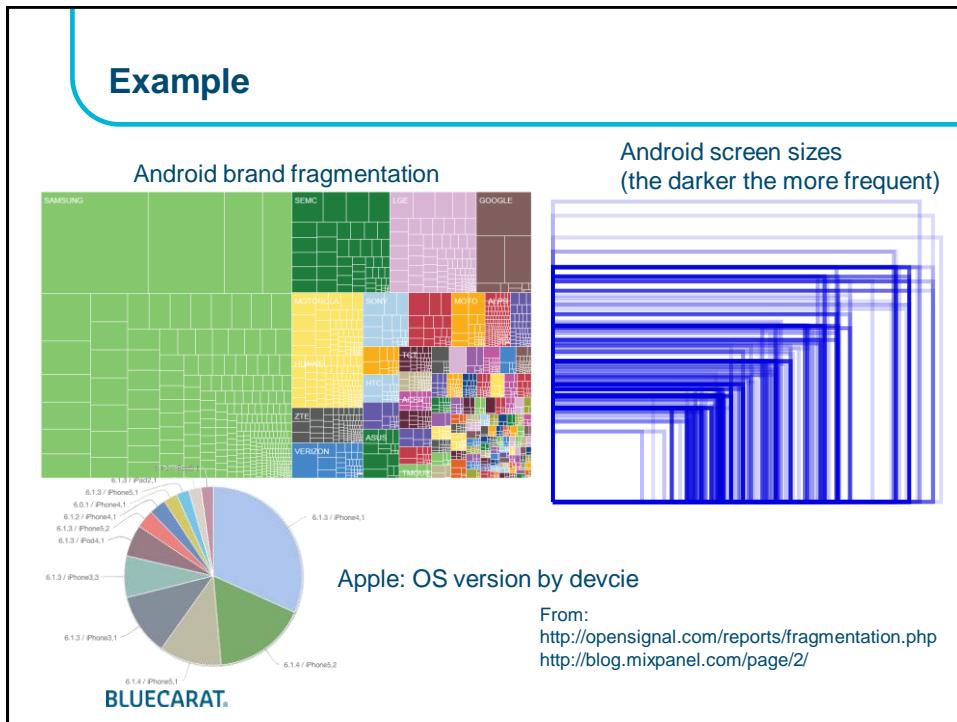
Challenge 2.x: Each mobile asset that is relevant for quality exist in different versions

- Pitfall 2.x: Mobile Multi Assets Ignorance:
„Quality of mobile solutions depend only on delivered app for one target device in one target context“

- 2.1: There is only one device with one operating system
 - ◆ You need 30 different phones to cover 50% of Android versions
→ 30 test branches?
 - ◆ Today Windows has 7% coverage; forecast 2015: 30%
- 2.2: The network is working equally world-wide
 - ◆ GSM is different from EDGE, is different from UMTS, LTE...
 - ◆ Roaming demonstrates new behavior (e.g. strong limits)
- 2.3: Devices have a standardised set of available sensors
 - ◆ BlackBerry doesn't have a 3G-sensor (at least Frank's doesn't have one); Apple now has a Touch-ID sensor
 - ◆ Samsung Galaxy S IV has built-in temperature and humidity sensors

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Challenge 3.x: Interoperability is core of mobile solutions and need architectural investment



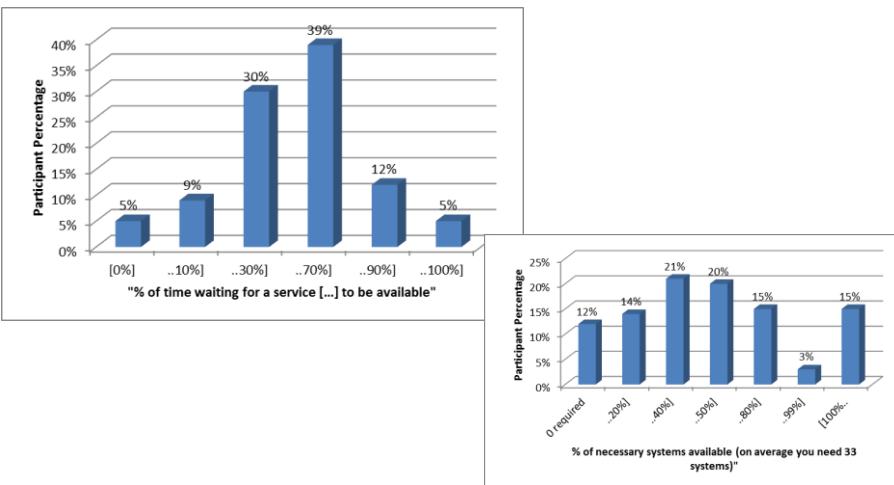
- Pitfall 3.x: Mobile Architecture Ignorance:
 „Interoperability of mobile apps doesn't need specific investments and comes for free for the whole application lifecycle“

- 3.1: Mobile architecture is built-in
 - Mobile interface landscape changes on a daily basis and have to be monitored (incl. techniques)
 - Abstraction layers only way to handle complexity
- 3.2: External interfaces can be used for testing as well
 - Interfaces are not available for free all the time, you have to care for them
 - Generation of extreme test data (e.g. negative data) coming from interfaces have to be enabled
- 3.3: Mocking of interfaces can be done ad-hoc
 - Shift-Left is not possible without service virtualization
 - Intelligent mocking is a value for its own and should be shared project wide

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Example



From:
 „Market Snapshot Report“: Service Virtualisation, by Theresa Lanowitz, Lisa Dronzek, 11. Dezember 2012

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Pitfall 4.x: Mobile ecosystem ignorance

The diagram illustrates the pitfall of mobile ecosystem ignorance. It consists of two vertical columns separated by a central question mark. The left column, labeled 1 through 4, represents a linear development process: 1 (crown), 2 (book), 3 (flowchart), and 4 (person). The right column represents the complex and dynamic mobile ecosystem, featuring various platforms (Google, Apple, Microsoft), a diverse crowd, and a mix of positive (thumbs up) and negative (thumbs down) feedback loops, all leading to a trash can.

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Challenge 4.x: Demand for proactive management of mobile solutions and its development

- Pitfall 4.x: Mobile ecosystem ignorance:
„Having good requirements and a strong straight forward process guarantees great business for my mobile solution“

- 4.1: We define the rules for our apps
 - ◆ Central market places and MDM-tools override own rules (e.g. ethic and technical constraints)
 - ◆ Monetary “Ligging” is mandatory for all big market places
- 4.2: We can manage customer’s communication
 - ◆ Customer’s ratings are fast and brute and have to be considered
 - ◆ Hidden/direct modifications intensifies power of ratings
- 4.3: We define our development process
 - ◆ Unpredictable changes for all connected (sub-)systems
 - ◆ Anticipation of requirements no longer than 6 months

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Example



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Conclusion

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values at work.

Conclusion

- Old-fashioned testers won't recognise any difference between testing desktop applications and mobile apps
 - But they don't bring much value for a new business
- Modern testers know the specifics of testing mobile apps
 - They know that mobile devices generate new /changed requirements
 - They know that multiple variants of all assets ask for new testing processes
 - They know that testing mobile devices need a centralised testing environment hosting all (virtualised) services
 - They know that new test objects occur on a daily basis and each can generate strong risks
- But modern testers know as well that testing mobile devices can be much fun as well!



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