
Hochschule für Telekommunikation Leipzig, July 1st 2011.
Thomas Aidan Curran, DT Fellow, SVP Technology & Innovation, Deutsche Telekom AG.
Open Services: Enabling means higher speed and efficiency in service development, business opportunities with developers.

Best Service
New service offerings

Connected Life
Connected life - communication across all screens from digital content right through to the connected home

Connected Work
Connected work - from cloud services right through to industry solutions for energy, healthcare, media distribution and connected car

Quality of service, authentication, authorization, accounting, payment, security, storage, context information
Best partner to Internet providers

IT Factory
Process modernization for increased flexibility and speed based on consistent standardization

Network Factory
All-IP networks (fixed network & mobile communications) for the Gigabit Society
DT’s strategy addresses global trends and our specific challenges.

**Industry trends**
- Maturing markets
- New and more competitors
- Broadband for Gigabit Society
- Mobile Internet
- Digital life & work

**Telekom specific challenges**
- Retain and develop market position
- Improve cost structure
- Improve customer service
- Cope with national and European regulations
- Grow against the trend
DT and Android – Rearview mirror perspective.

- 2007 Deutsche Telekom looks at software stacks for “cross platform” application development (on mobile phones). Decision: engage in Android

- 2008 DT launches G1 with Android

- 2009 more phones more apps and more engagement in the new open ecosystem. Android roadmap

- 2009 DT’s T-Labs, dives into Android in detail and contributes to its evolution and success.

- 2010 Android Summit – The DT developer community develops its Android strategy – “grow the ecosystem”

- 2011 DT opens APIs to core services and actively involves the developer community, e.g. Cooliris
Why is Deutsche Telekom doing Android?

- **Android is an open platform**
  Telco Operators, and in particular Deutsche Telekom, are traditionally committed to open systems, interfaces and platforms: after all, international calls and call between different operators work only because of the underlying open standards and interfaces.

- **Android is the dominant smartphone platform**
  DT is where the users are. And DT is where customers can be acquired. So Android invest is not a question of “whether or not” but rather a question of “how and how fast”.

- **Android can help telco operators to get out of the OEMs stranglehold**
  Android offers Telcos unique options for customization and branding and at the same time is an established (even though currently not yet stable) standard to distribute own products and services.

- **Android offers enormous untapped potentials for all players in the ecosystem**
  Android is good for DT and Android is good for developers. And raising synergic effects will increase the mutual benefit even further!
Software Engineering – Android specific challenges. Fragmentation everywhere.

Android Platform APIs – API Level 12!

Vendors – specific Android customizations

Increasing effort for development/testing

Multiple Hardware options

Form Factors

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Software Engineering – Mobile apps data usage.
Operators call for developer co-operation.

**Challenges**

- Network overload due to inefficient data transfer
- Better relationship between operator, manufacturer, developers.
- Provide best practices, libraries, SDK and tooling support
- Joint effort FT, DT, Telefonica

**Operators call for developer co-operation on mobile apps data usage**

Published: Friday 10 June 2011
Region: Europe
Tags: France Telecom, Deutsche Telekom, Telefonica

Europe’s largest mobile operators have called for solutions to be found to bandwidth-hogging mobile apps that overload their networks, reports Light Reading. France Telecom, Deutsche Telekom and Telefonica were among those to call for new industry guidelines around the network demands of mobile apps at the Open Mobile Summit in London this week. They added that they want to work more closely with app developers to help them make their apps more network friendly. "Collective action is required," said Daniel Gurrola, Group Strategy and Business Development VP at Orange-parent France Telecom. "There is a need for issuing guidelines."

"Mobile operators and the apps developer community need to get closer together to better apps ... [we need] to have a better relationship between network operator, handset maker and apps developer," said Kim Larsen, senior VP of technology economics at Deutsche Telekom. Telefonica Europe’s director of mobile data, Tanya Field, added that the “ways apps are built could be smarter and more friendly to the network. This is something I don’t think anyone is doing well at the moment."

The comments by the operators are part of a wider debate currently underway in Europe regarding how content providers can help operators support rising levels of data traffic, and help fund the extra network investments required as a result.

According to The Guardian, parallels at the Open Mobile Summit suggested that mobile data access could increasingly be bundled with paid apps. "There should be lots of innovation in the way we provide connectivity," said Deutsche Telekom’s senior vice president of mobile products, Dr Rainer Deuschmann. "That might include paying US$5 to speed up one particular download, or like our roaming day pass, an alert that lets you know when you’re used 80 percent of that allowance." Deuschmann pointed to Facebook Zero, a free, pared-down Facebook service that the social network has negotiated with local operators. "Freemium apps are not truly freemium because users still have to pay for access.”
Security Challenges - Android Phones behave like unsecured PCs.

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<th>Android Smart Phones are similar to unsecured PCs.</th>
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<td>- Android OS security controls are either incomplete or partially non-existent.</td>
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<td>- Negative impact on network is due to poorly written applications.</td>
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<td>- Framework allows malicious applications to attack networks.</td>
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<td>- Users, developers, and hackers can take root control over their phones, allowing nearly any component at all levels of the OS to be altered and/or replaced.</td>
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<td>- Android phones have to be treated like unmanaged, unsecured PCs for risk-assessment purposes.</td>
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<td>- Sensitive systems and data should not be accessed or stored openly on Android phones.</td>
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<td>- Third-party configuration management tools cannot protect the core security and privacy of an Android phone against root-access attacks.</td>
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Security Challenges -
There are first security add-on solutions.

3LM – Three Laws of Mobility.

- http://www.3lm.com/
- Device Management, Secure communication, Secure storage,
- Aims for additional security APIs within Android.
- Aquired by Motorola in 02/2011.
- Will be offered to other vendors too.

Whispersystems

- WhisperCore, Android security add-on
  - Encryption
  - Network traffic control (Firewall)
  - Fine grained access control
  - Firmware replacement for selected devices
User Experience (UX) Challenges - Security is important for users, but positive experiences as well.

Why developing for User Experience?

UX not only makes new technology **secure**, **accessible** and **usable** across all people, it also makes using this technology **convenient** and **pleasurable**.
User Experience Challenges -
Changing User Expectations cause specific challenges in Software Engineering.

**User Expectations**

- Secure, open and accessible anytime and anywhere
- Seamless services across all devices
- Convenient and attractive look and feel / engaging user interfaces and interactions
- Simple customization

**Challenges in SE to design for positive UX**

- Users **expectations and needs** have to be considered in early software development
- App developers need to work **closely with designers**, at Telekom there is PDE as a central support entity
- Developers need to know **platform-concepts** (menus, intents) and **restrictions** (memory, processes, communication) to develop **seemless interactions**
Findings after 3+ years of Android experience.

- **New software stacks need time**
  Android 1.01 was a nightmare to program for, but at the same time it implanted the dream of the ultimately available paradise playground and business arena. After a year or two, Android delivered and at the same time influenced neighboring ecosystems positively.

- **Some things will be fixed “automatically” by evolution**
  Therefore: don’t focus on bugs and issues that are more “general purpose” in nature. Focus on core assets of the telco.

- **An open platform can uncover unknown challenges for the network (operator)**
  Since no one stops developers from writing “poor” designed or “greedy” apps, such apps will appear and challenge the infrastructure. (not speaking of actual malware) ➔ next slide

- **Make and Ecosystem, Manage Relationships**
  No one really rules the Android Ecosystem. Thus DT should collaborate with OEMs, content providers and first of all with developers!
Its all about Collaboration – Establish developer community is challenging for enterprises.

Challenges

- Distributed locations
- Different time zones
- Cultural differences
- Different collaboration policies (flexible vs. secure)
- External partner integration (Access Control, Infrastructure)
- Overcome political fences / create trust
- Incentive model for sharing and contributing to developer community
- Resource prioritization

Aim for working approach based on Open Source principles.
The Cathedral ...
... and the bazaar.
The Bazaar approach – we name it CodeHub. Best of OpenSource, commercial and proprietary tooling.

Developer communities.

Secure Access

Contra-
c tors

Univ.-Part-
ers

Telekom
integration

Project Portal / IDE Integration

Project Portal

Code Review

Common Build

Bugtracking

Confluence

Mailinglist/IRC/Groups

Jenkins

Git, Repo

JIRA

Gerrit

Maven/Others

Telekom specific

Univ.-Part-
ers

Contrac-
tors

Dev

Design

OpenSource/Commercial

proprietary

Thomas Curran | Software Engineering for Android - Security and User Experience Challenges
Project Portal: **Eclipse Project Skalli.**
Integrate tools and data of enterprise wide projects.
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Deutsche Telekom joins Eclipse OpenSource project!
Collaboration with Developer communities.

Droidcon, Eclipse Demo Camps

- Droidcon covers new business areas and trends around the mobile platform of Open Handset Alliance. Visited by >900 professionals from IT and mobile business, sponsored/co-organized by T-Labs

- Eclipse Demo Camps are very hand-on developer camps to showcase all of the cool technology being built by the Eclipse community. Developer Garden fully organized and hosted the event.
Thank you for your attention.