Crossing boundaries
Crossing Boundaries
Making KDE Technology Available to Embedded Devices

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- Just another Platform?
- Strategies for cross device development
- Example: Decibel
- Benefit for KDE
Embedded Applications

- Consumer Devices
  - Phone
  - Multimedia Devices
  - Children's PCs
  - Navigation System
  - Home Automation
  - Ticket Vending Machine

- Industry Applications
  - Medical Industry: Ultrasonic
  - Production: Quality Assurance System for Manufacturing Process
  - Measurement: Network Analyser
  - Logistics: Storage Management
  - Automotive: Agricultural Tractors
Just another platform to compile on?

- Different hardware
  - ARM, x86, PowerPC, SH4, Mips
  - Flash, GPS, Touch, ...

- Different Tools
  - Crosscompiler, Remote Debugging, etc
  - Embedded Linux

- Less Resources
  - little MB 32-64 MB
  - little MHz 150-800 MHz
  - different capabilities with/without FPU
  - small amount of space usually flash, 64 MB
  - smaller screens 480x240, 800x600
Differences Desktop – Embedded Device

- Embedded Devices are specialised to enable single use cases

- touch screen & small screen resolution require optimized user interfaces

- Embedded devices are built by manufacturers. Community devices usually not possible
KDE has a lot to offer

- Current Embedded Linux market:
  - Qt offers a maintained and supported toolkit, Qt is preferred in industry

- KDE has rich and powerful functionality extending Qt
  - with more powerful CPU functionality is becoming an option

- But:
  - KDE components mostly unknown
  - KDE components have too many dependencies, no easy plug & play

- Required: more **building blocks**

- some components are already on use:
  - Frameworks: Phonon
  - Widgets: Webkit
Strategies for Cross-Device Development
Design Goals for Modular Components

- separate functionality from view
- make integration optional
- stabilize & test component APIs using unit tests
Strategy 1: D-BUS Services

- API as D-BUS specification
- hide functionality in daemons

Good for
- data storage
- system wide services

Existing Examples:
- HAL
- Strigi
- Akonadi
- Decibel
Strategy 2: Plugins

- Plugins are libraries loaded on demand
- one API with a variety of implementations

useful for
- optional functionality
- optional integration

Existing Examples:
- Passwort Storage: Plain Text vs. KWallet
Strategy 3: Model-View Concepts

- Application implemented as Qt's model-view architecture
- Model contains all data handling and core functionality
- View can be replaced as needed for use case
- Enables different views for Embedded/Desktop without much reimplementation / porting

Existing Examples:
- Plasma: DataEngines + Applets
Component Puzzle

- Putting it all together
Example: Decibel

- Communication Framework
- building block for IM and VoIP applications
### Classic Applications History

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<th>Platform 1</th>
<th>Protocol 1</th>
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<td>Qt4, SIP</td>
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<td>Konversation</td>
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<td>KCall</td>
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<tr>
<td>KCall for KDE4</td>
<td>KDE4, Decibel</td>
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Design Goals

- **Portable**
  Works across platforms, desktops and devices

- **Integrated**
  Seamlessly works with the environment of the user

- **Flexible**
  - Can handle different use-cases
  - Do not hard-code policy

- **Minimal**
  - each component should be minimal and focus on its purpose
  - Less to code, test, debug and port
Decibel Architecture

UI: Use Case Specific

Decibel

Configuration

Accounts
Contacts
Presence
Dispatching

DBUS

Buddy List
Chat Window
Dial Dialog

Password Mgt
Addressbook

DBUS

Jabber
AIM/ICQ
SIP

Telepathy

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Addressing Use Cases

- Embedded Chat
  - Decibel
    - Dispatching
    - Accounts
    - Contacts
    - Presence
    - Configuration
  - Plain Text
  - Jabber
  - AIM/ICQ

- KDE Desktop
  - Chat+VoIP
  - Decibel
    - Dispatching
    - Accounts
    - Contacts
    - Presence
    - Configuration
  - Full Desktop GUI
  - Plain Text
  - KWallet
  - SIP
  - Akonadi
  - Jabber
  - AIM/ICQ
Benefit for KDE

- Faster way to address use cases and user requirements
- Easier quality assurance
- Enable industry to create more KDE devices :-)

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- basysKom is hiring!
  - Qt Consultants
  - KDE Consultants
  - Squish Consultants