

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

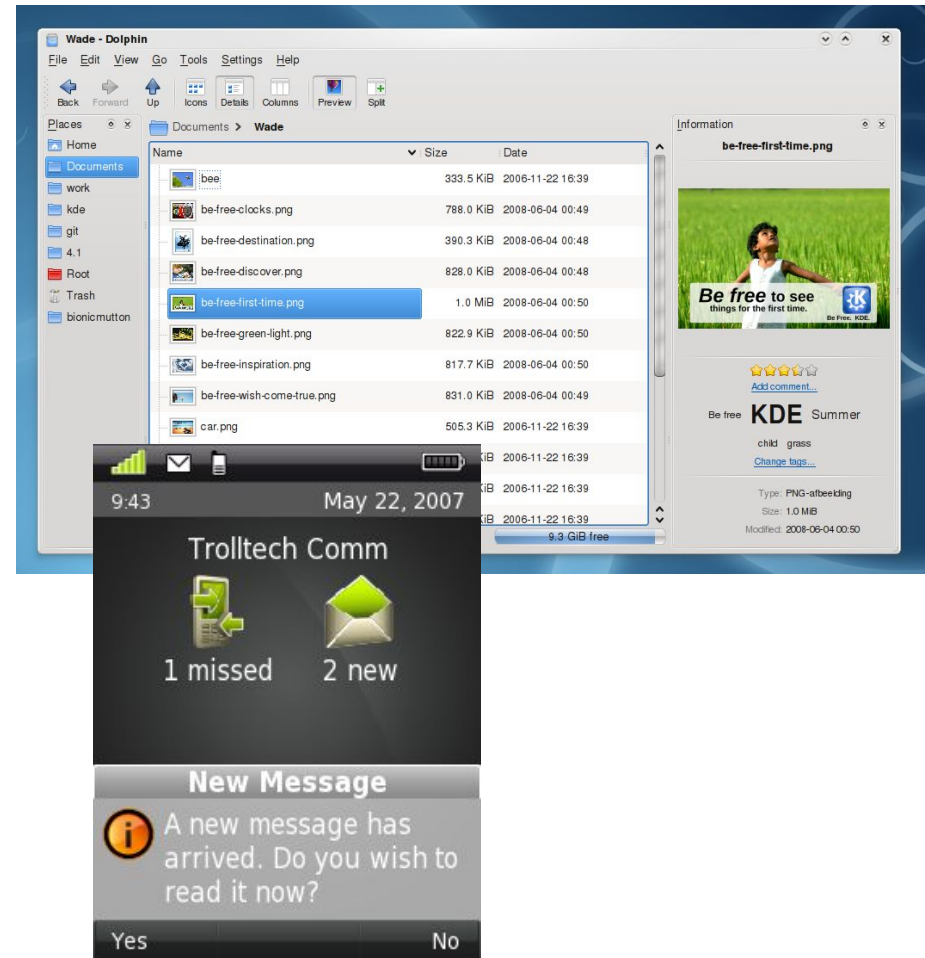
| Less Ressources

- 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



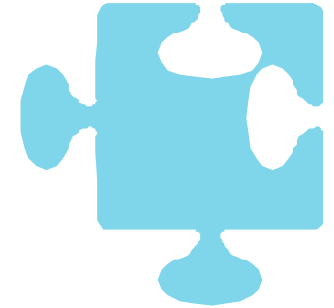
Differences Desktop – Embedded Device

- | 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

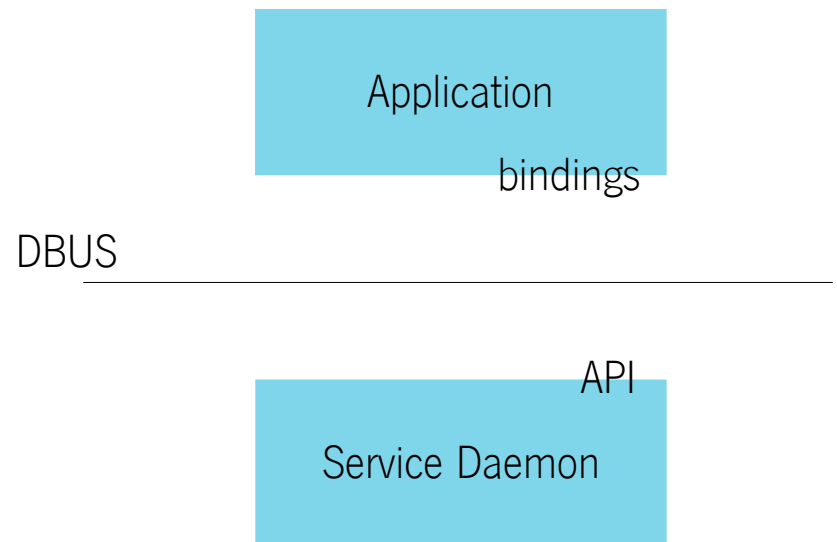
- | separate functionality from view
- | make integration optional
- | stabilize & test component APIs using unit tests

Strategy 1: D-BUS Services

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

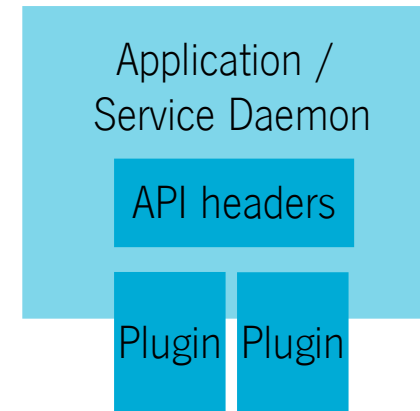
- | Good for
 - data storage
 - system wide services

- | 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

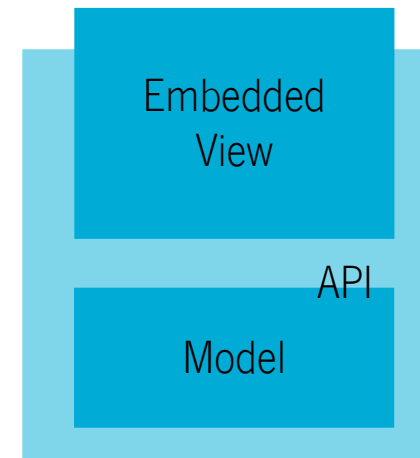
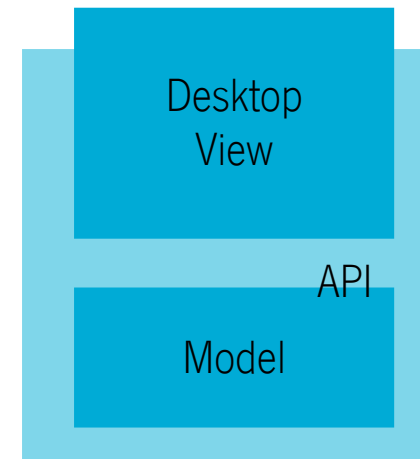


Strategy 3: Model-View Concepts

- | 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

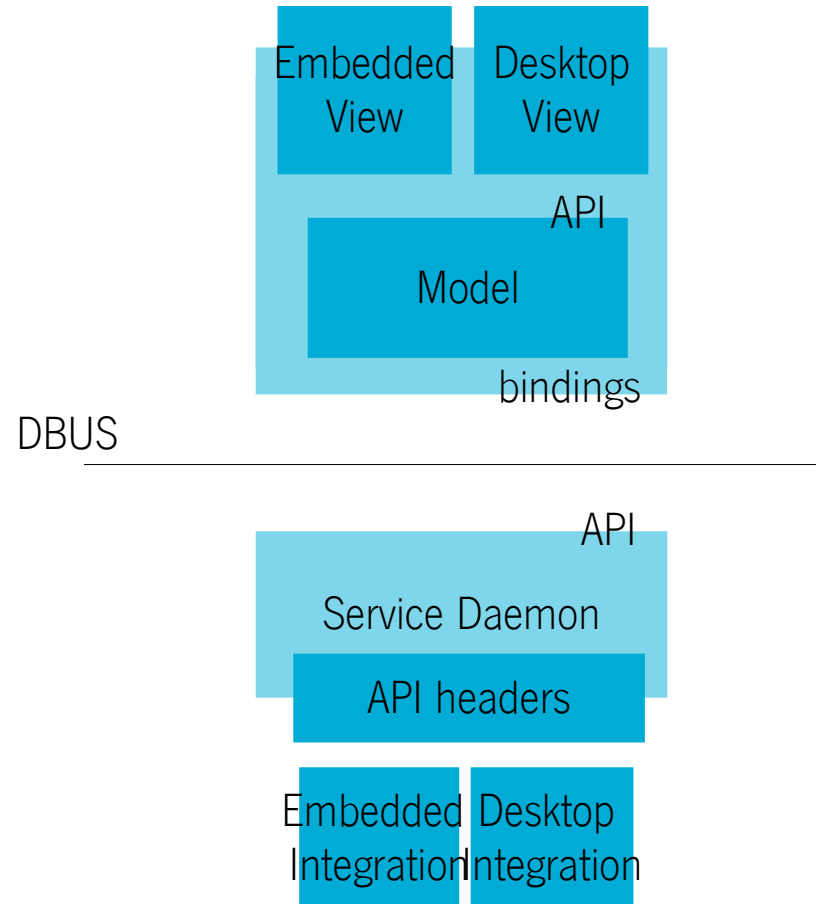
- | Enables different views for Embedded /Desktop without much reimplementation / porting

- | Existing Examples:
 - Plasma: DataEngines + Applets



Component Puzzle

I Putting it all together



Example: Decibel

- | Communication Framework
- | building block for IM and VoIP applications



Classic Applications History



Wengophone

Qt4, SIP

KPhone

Qt4, SIP



Skype

Qt4, proprietary



PSI

Qt4, Jabber



qutim

Qt4, AIM/ICQ



sim-im

Qt3, multi-protocol



Kopete

KDE4, multi-protocol



Konversation

KDE3, IRC



KCall

KDE3, SIP



KCall for KDE4

KDE4, Decibel

Design Goals

| **Portable**

Works across platforms, desktops and devices

| **Integrated**

Seamlessly works with the environment of the user

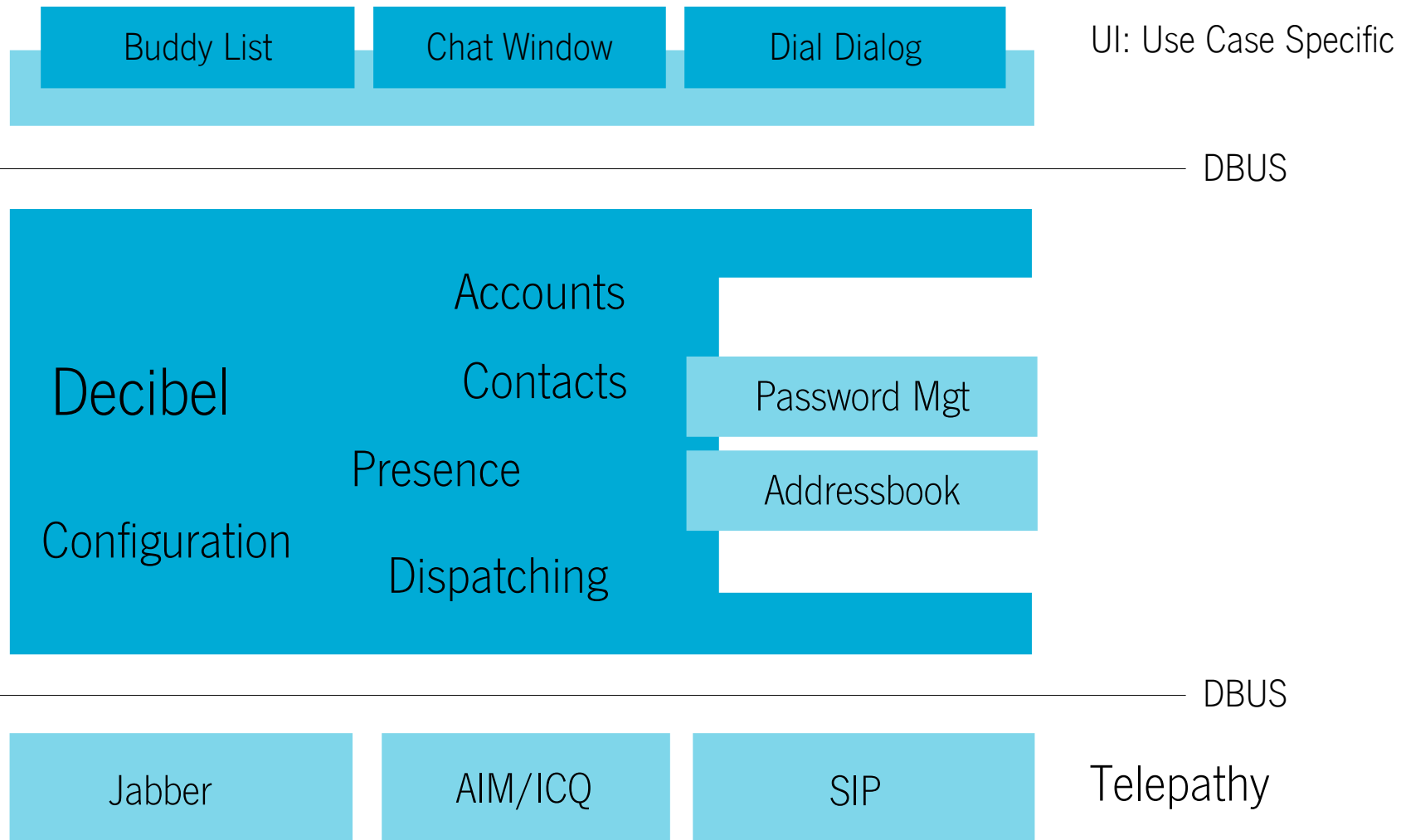
| **Flexible**

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

| **Minimal**

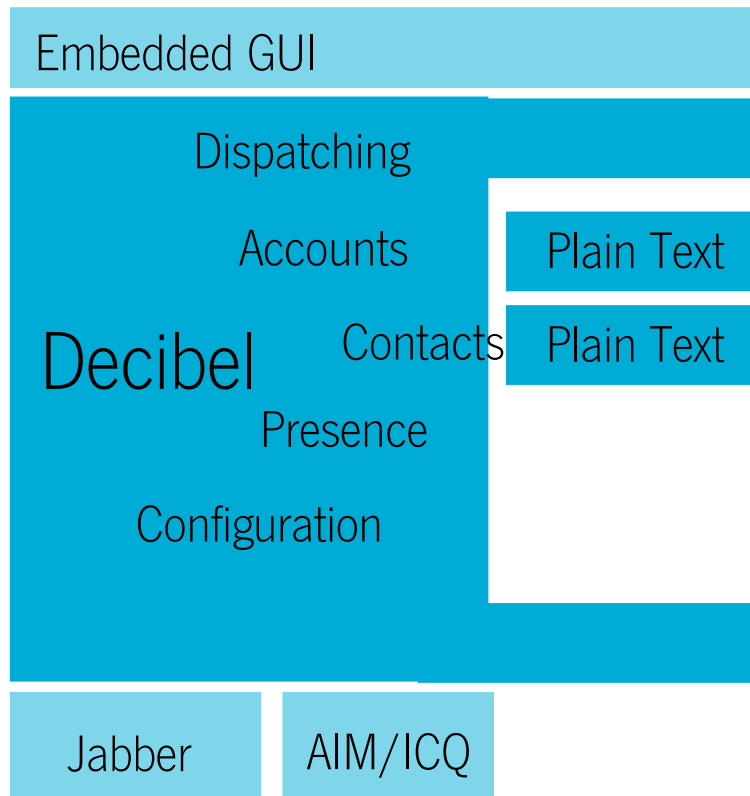
- each component should be minimal and focus on its purpose
- Less to code, test, debug and port

Decibel Architecture



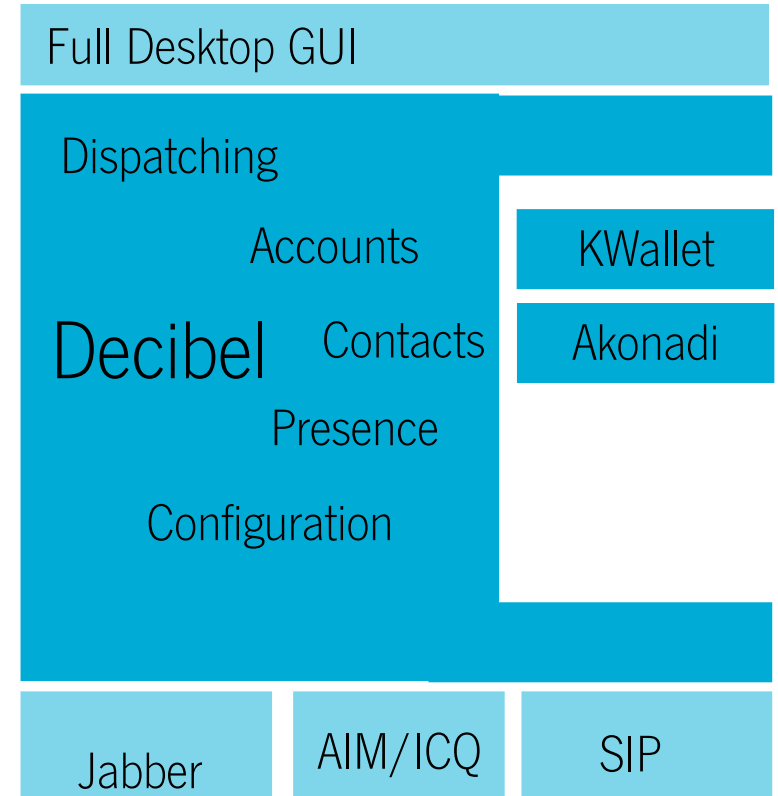
Addressing Use Cases

| Embedded
Chat



shared model

| KDE Desktop
Chat+VoIP



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