



KCALL

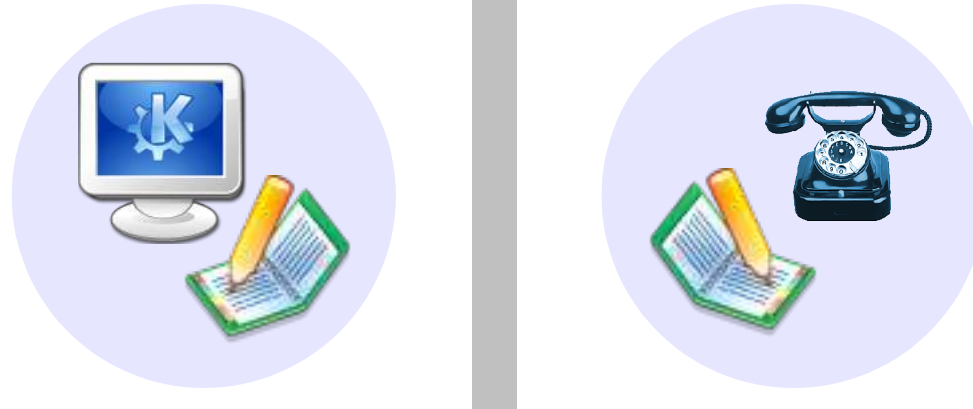
Computer Telephony Integration
For KDE

Eva Brucherseifer

aKademy 2005, Malaga, Spain



- Current State



- Future

- => **Home and Business Users move towards VoIP**

- Soft- and Hardphones

- => **Integration of Telephony and Desktop Software**

- one data base
 - more comfort
 - complex use cases



- CTI – Computer Telephony Integration
- VoIP – Voice over IP
- KCall
- Demo
- Future of KCall



CTI – COMPUTER TELEPHONY INTEGRATION



"Computer Telephony applies computer intelligence (hardware and software) to making, receiving and managing telephone calls.",

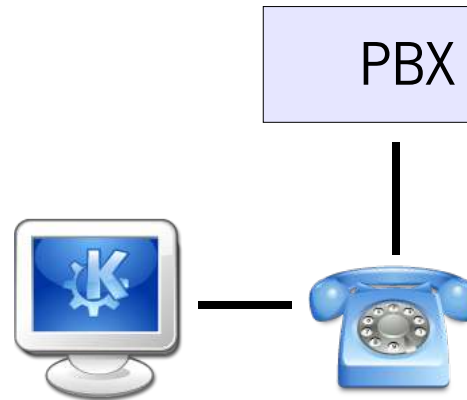
Harry Newton

- Screen Based Telephony (SCB)
 - Dial-by-Click, etc.
- Call Based Data Selection (CBDS)
- Attributes
 - Call URL or Phone Number of Call Participants
 - Addressbook Entry of Call Participants
 - Call ID
 - Call Time
 - Call Duration

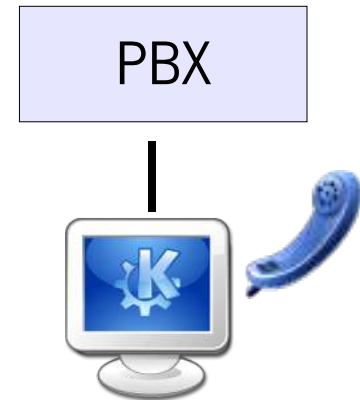


- First Party Control

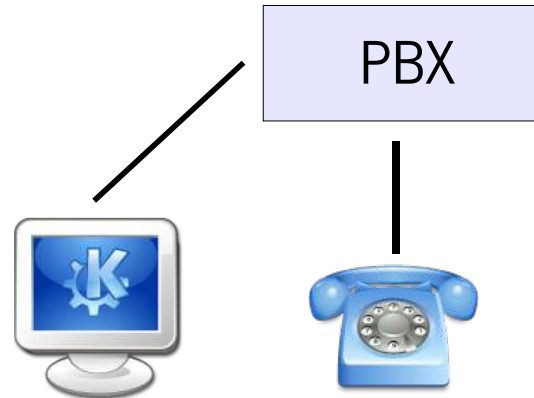
Hardphone



Softphone



- Third Party Control





- Home User
 - softphones
- Office User
 - hardphones
 - groupware integration
 - video calls
- Secretary
 - groupware integration
- Callcenter
 - Softphones + Headsets
 - advanced GUI



- Microsoft TAPI
 - hardware vendors provide TAPI drivers (interface: MS TSPI)
 - ISVs develop for TAPI
 - user installs desktop software + TAPI driver
 - solutions for groupware and call center software available for MS
- JTAPI
 - Java implementation by SUN
-



VoIP – VOICE OVER IP



“IP telephony (also called internet telephony, Voice over IP, VoIP) is making phone calls over a network of computers on the basis of internet protocols”,

Wikipedia.org

PROs

- cheaper in operation
 - no fixed location
- alternative to conventional phone networks (PSTN)
 - networks are already converging
 - Examples:
 - VoIP Offers to Home Users provided by ISPs (e.g. 1&1, AOL, Freenet, web.de)
 - Austrian Ministry for Foreign Affairs

CONs

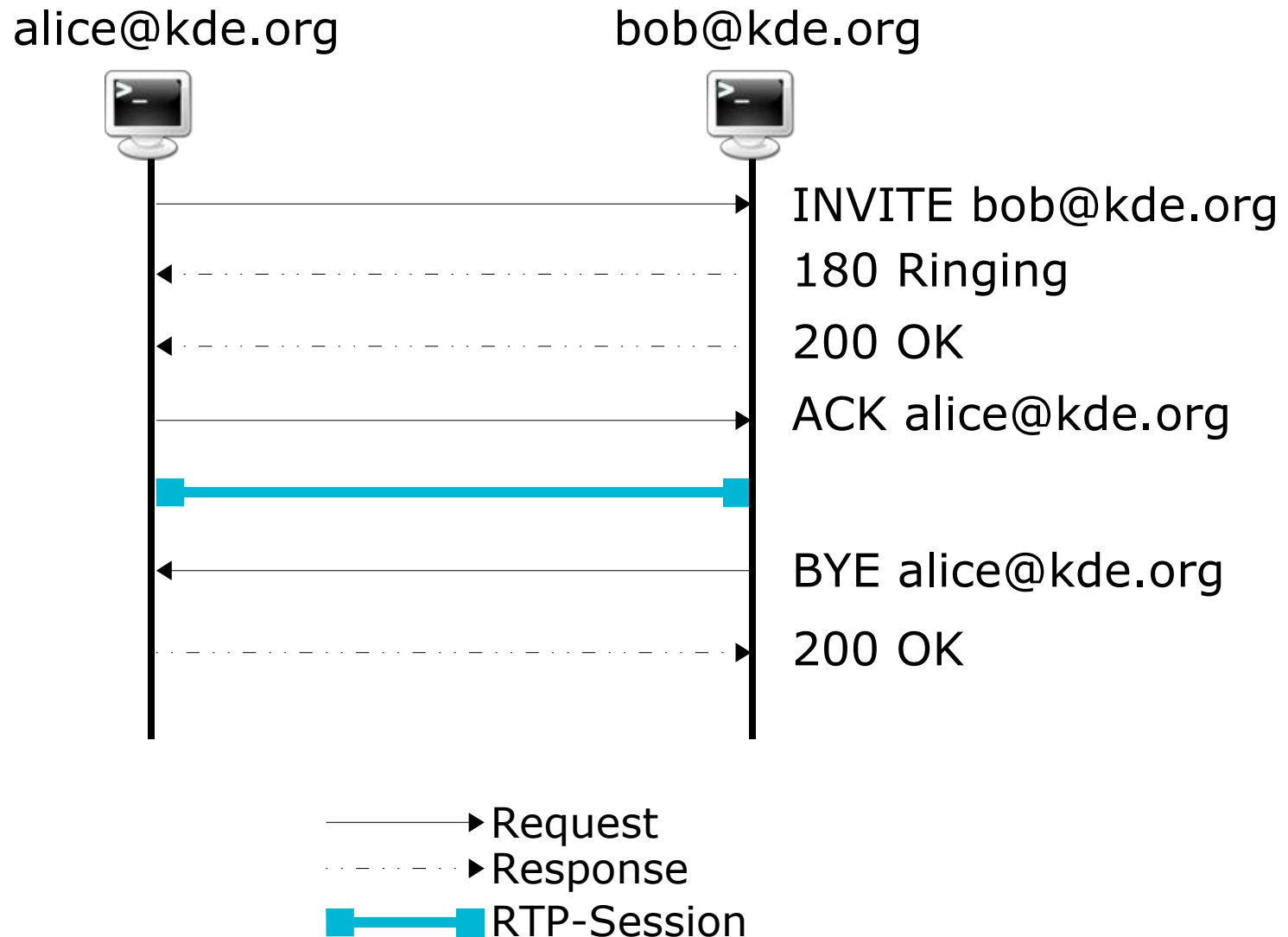
- migration costs
- bandwidth needed



- **Signalling of Calls**
 - Signals a calls between 2 computers
 - Standards: SIP, H.323
 - Kcall: currently SIP
- **Audio-encoding / -decoding**
 - Transforms speech into digital data
 - Optional: Compression
- **Realtime Transfer of Speech Data**
 - Transport of digital Data
 - RTP and RTCP



- Communication over UDP
 - well known port: 5060
 - TCP possible
 - direct and indirect communication possible (via a SIP proxy), e.g. Asterisk (Soft PBX)
- SIP is based on Standards
 - HTTP – Request and Response Messages
 - INVITE
 - BYE
 - CANCEL
 - ACK
 - REGISTER
 - SMTP – Addressing Call Parties
 - alice@example.org
 - 061513969961@example.org





- Transforms Speech to Digital Data
- Codecs
 - non compressing
 - **G.711u/a**
ISDN, high bandwidth needed, good quality
 - compressing
 - **iLBC**
internet Low Bandwidth Codec, good error correction
 - **RPE-LTP**
Regular Pulse Excitation Long-Term Prediction, used by GSM
low bandwidth, lower quality



- Transport of encoded speech from one participant to the other
- RTP – Realtime Transport Protocol
 - Transport der Sprachdaten über eine Sitzung
 - Kommunikation über UDP
- RTCP – Realtime Transport Control Protocol
 - Informiert periodisch die Teilnehmer über Sitzungszustand
 - Netzauslastung
 - Beginn bzw. Ende einer Sitzung



- Home User
 - Softphone
- Business User
 - VoIP implemented by PBX, hardphone
 - CTI
 - VoIP offers more features (video telephony, conference calls, etc)
- Teleworker
 - location independent phone numbers
 - advanced call routing
- Call Center
 - handling many calls
 - call forwarding
 - call protocols



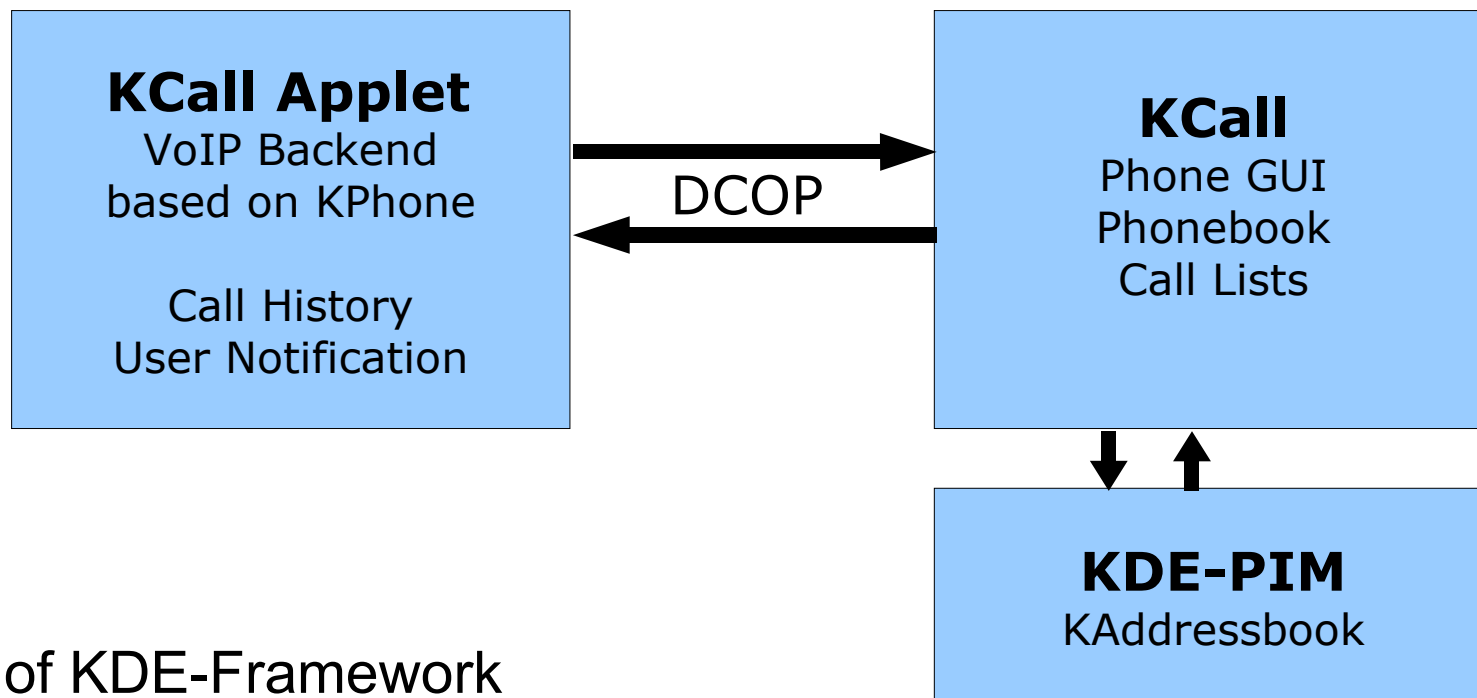
KCALL – THE APPLICATION



- Goals:
 - OpenTAPI
 - Telephony/CTI-Service for the Desktop
 - Daemon with Plugins for 1st and 3rd Party Control
 - RPC: DCOP, DBUS, etc.
 - Qt only
 - License: LGPL
 - Kontakt Part
 - KDE Application
 - integrated with PIM
 - Applet for User Notification
 - KDE Application



- SIP softphone



- Use of KDE-Framework
 - KConfig, KNotify, KPart
 - Applet
 - DCOP

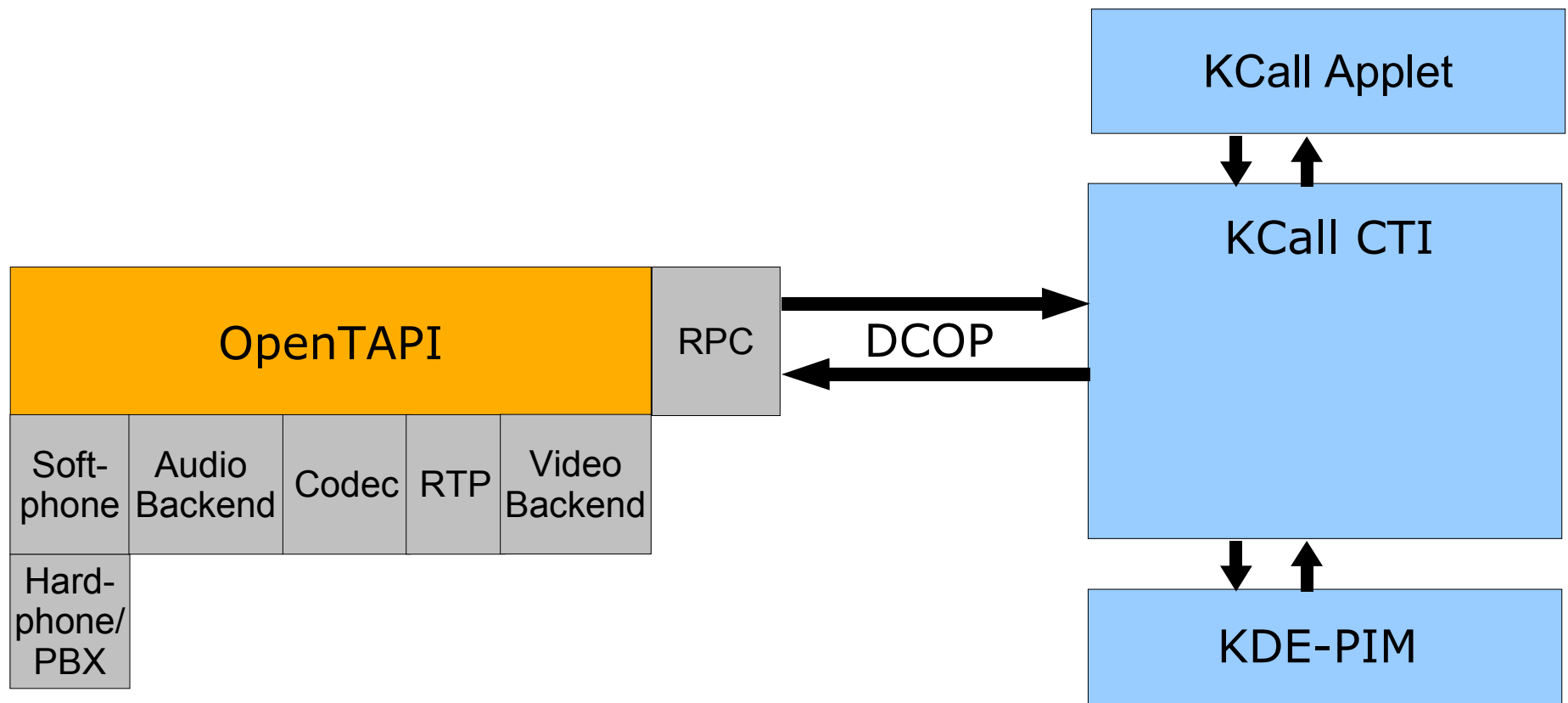


DEMO



- OpenTAPI

- currently going on: Google Summer of Code Project by Malte Böhme





- Integration into groupware client Kontakt
- further integration into other PIM components
 - Notes, Calender, Task planner, etc.
 - Kopete integration (presence information)
- OpenTAPI
 - Plugins for telephony backends (1st party, 3rd party)
 - softphone plugins
 - video calls
 - conferences



- People

- Mike Hauth

- GUI implementation
 - Addressbook integration
 - Applet

- Malte Böhme

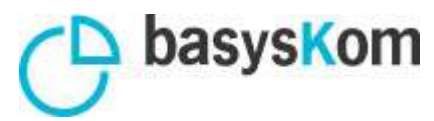
- Future OpenTAPI Framework

- Eva Brucherseifer

- Idea, Architecture and Use Cases
 - KPhone integration, RPC interface



- Sourcecode in KDE Source Repository
 - kdeplayground/kcall > kdepim/kcall
 - branch/kcall-tng
- <http://kcall.basyskom.de>
 - kcall@basyskom.de
- OpenTAPI
 - <http://www.opentapi.org/>
- KCall is supported by basysKom GmbH
 - <http://www.basyskom.de/>





- basysKom GmbH
 - located in Darmstadt, Germany
- Services:
 - Software Migration to Linux
 - Software Development C++, Qt, KDE and more
 - Consulting on Linux Desktop KDE