

Communication in the Mobile Enterprise: Desks Apart, one Team!

Jens Wilke - headissue GmbH

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Agenda

- Vision and Requirements
- Instant Messaging + Telephony
(Asterisk-IM)
- Interfaces
(Asterisk-JTAPI)
- Applications
- Concluding Remarks



Why a Vision?

- the vision drives requirements
- the requirements drive the implementation

- solution <-> technology



What's the Mobile Enterprise?

- another buzzword!
- a sales force with blackberries to access stock quotes and sales figures?!
- how I understand it....



mobile

- not (only) technical:
 - no fixed / single telephone line
 - wireless connections (mobile phone, WLAN)
- practical:
 - no single workplace:
home, office, customer site, travel
 - in general: not always on a single desk



Enterprise

- project team members not sharing an office
- enterprise with multiple locations
- company with road warriors
- in general:
a group of people working together



Needs: 1 - Communication

- instant&easy communication within team members
- presence/status exchange
 - location
 - reachable by phone?
 - when next reachable



Needs: 2 - Applications

- integrated tooling to hand-over information
 - CRM, Issue Tracker
- "mobile" access to Enterprise Applications
- integration with Enterprise Applications (CTI)



Needs: 3 - Easy

- reachable under one number
- no complex setup at user place
 - lightweight
 - adaptable to any environment
 - no restrictions in used hard & software
=> flexibility!



Needs: 4 - Flexibility

- support different phone hardware
 - conventional phone or PBX
 - mobile phone
 - VOIP telephone
 - softphone
- no restriction in used applications
- no restriction in used OS

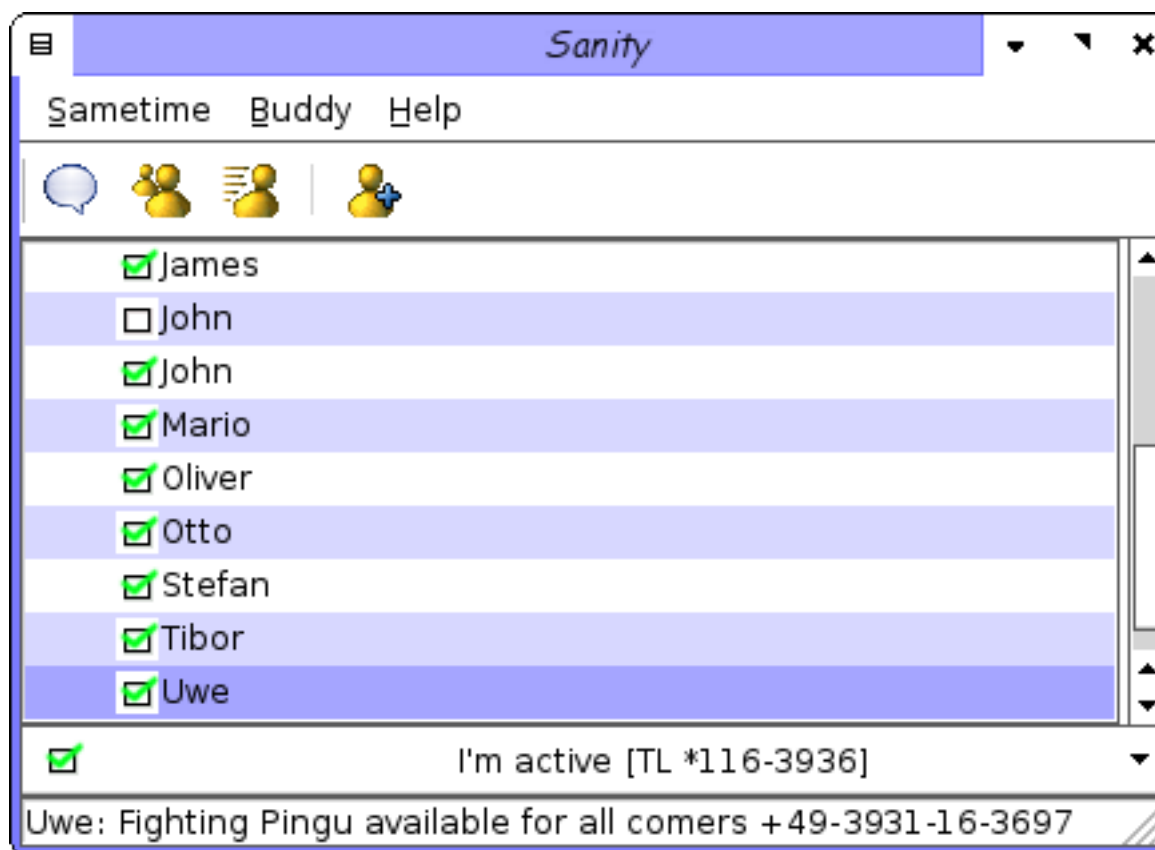


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Instant Messaging + Telephony

- real-world example



Call Routing

- phone numbers:
route incoming calls to the right phone
- presence information:
divert to switchboard if not at the desk

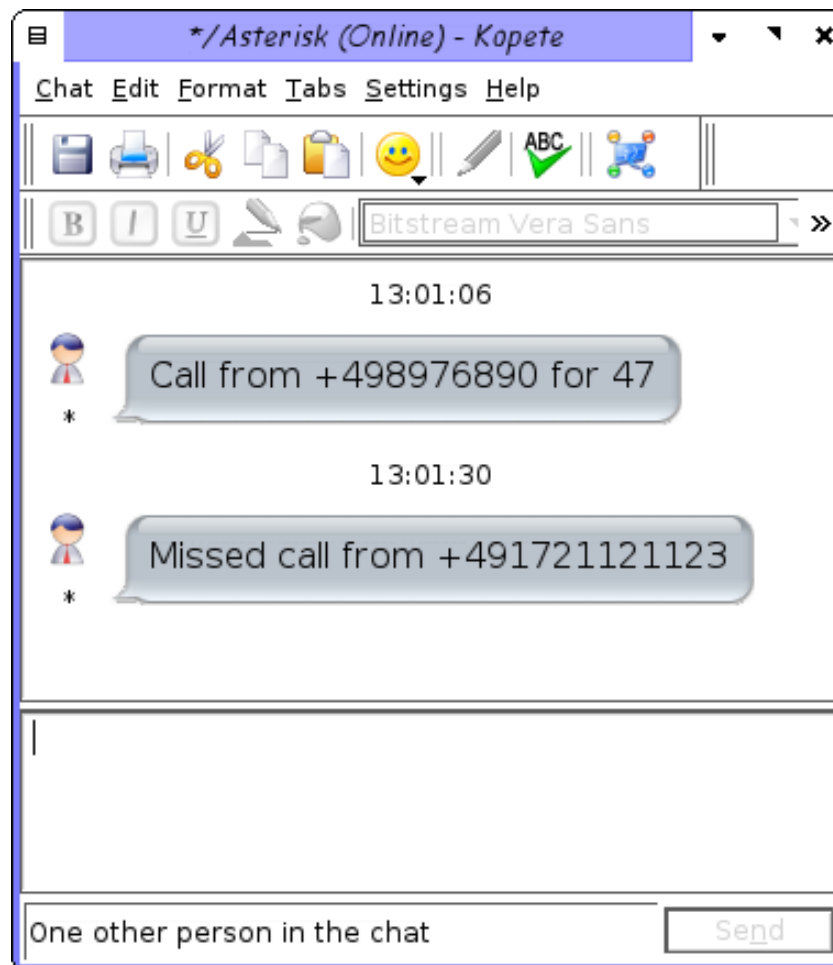
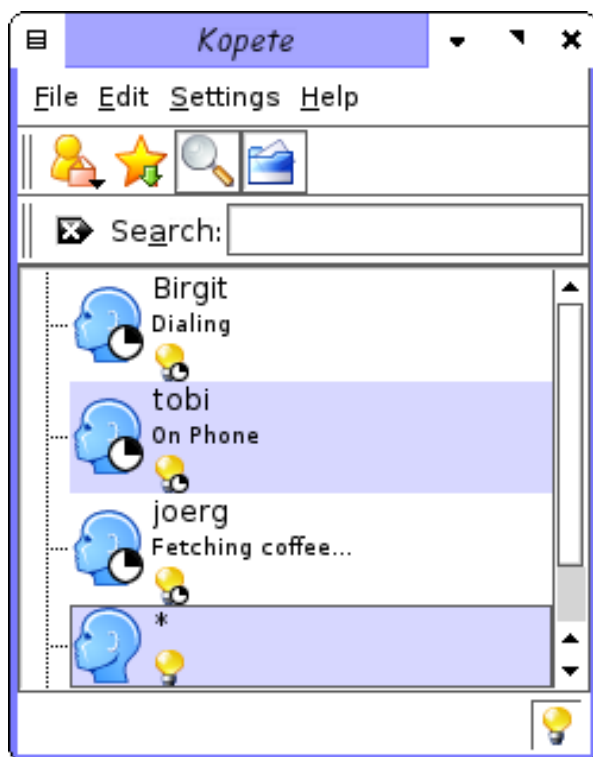


Information

- phone status
 - server marks us as "Away" when on the phone
- indicate incoming call
 - original caller number and called number
- indicate missed call
- list missed calls at next login
- message waiting



Example: Kopete



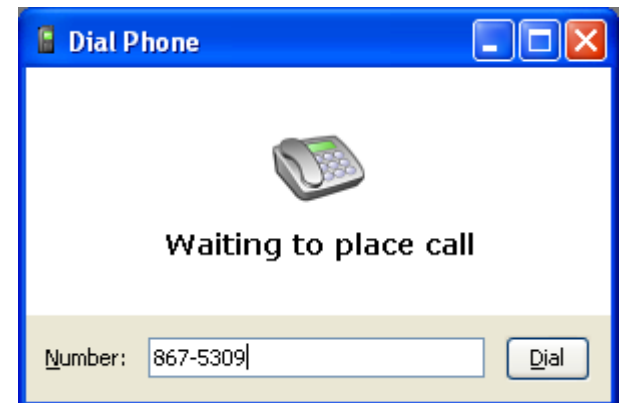
Commands

- initiate a call by sending an IM message
- click-to-dial to other IM users
- program call forwarding
- transfer, reject

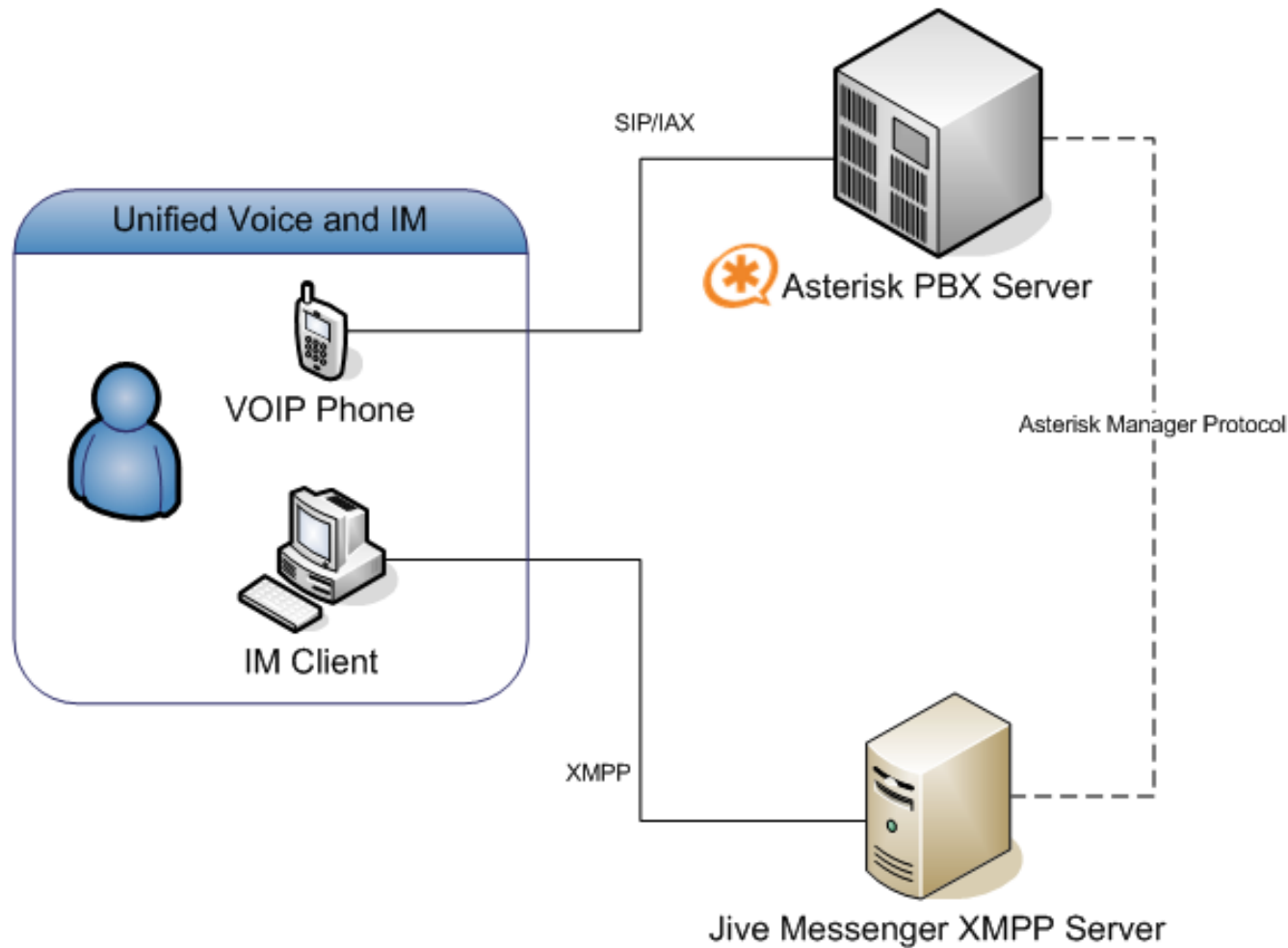


Asterisk-IM

- plugin for Wildfire Jabber server (Jive Software)
- uses a Jabber protocol "Phone" extension (draft JEP)
- phone capabilities included in the IM clients:
Spark, Coccinella, Trillian



Asterisk-IM - Architecture



© Jive Software



Current State & Work

- headissue joined the Asterisk-IM project
- overcome limitations
 - any Jabber client
allow also text based commands
 - right now (release) limited to SIP and IAX phones
will work with any phone soon (configuration!?)



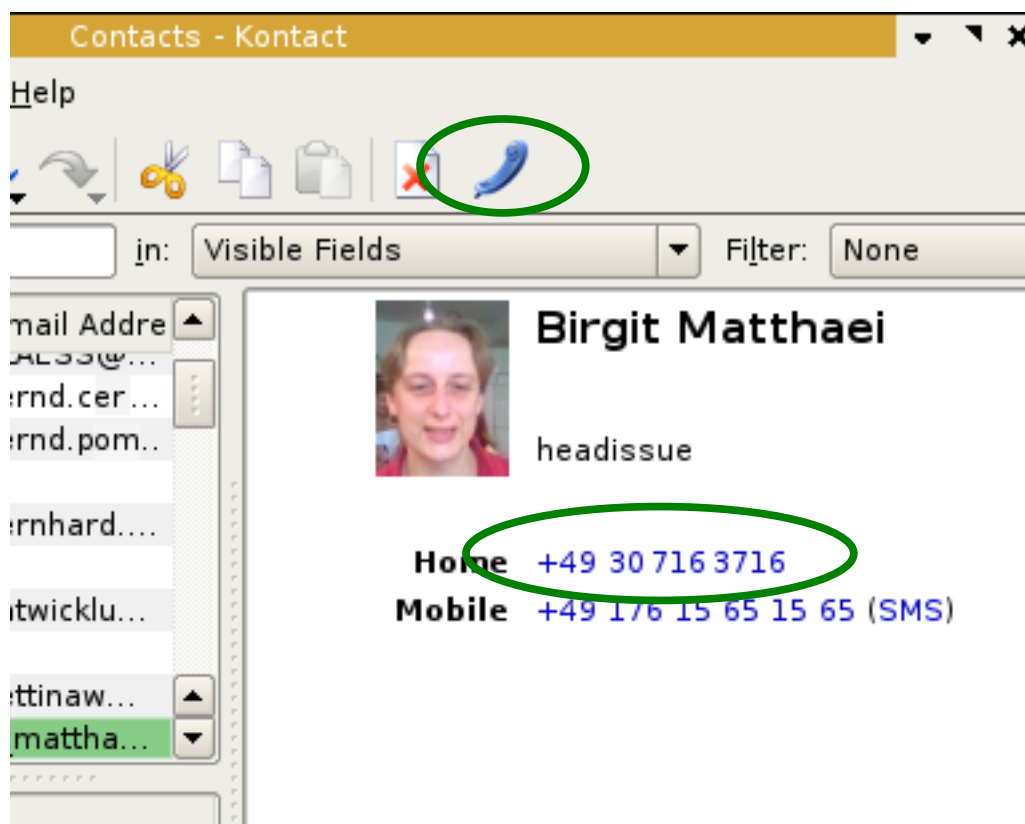
Ongoing Work and Ideas

- details, details, details
- interface to other PBX systems (e.g. with JTAPI)
- Asterisk-IM is available at:
<http://jivesoftware.org/asterisk-im>



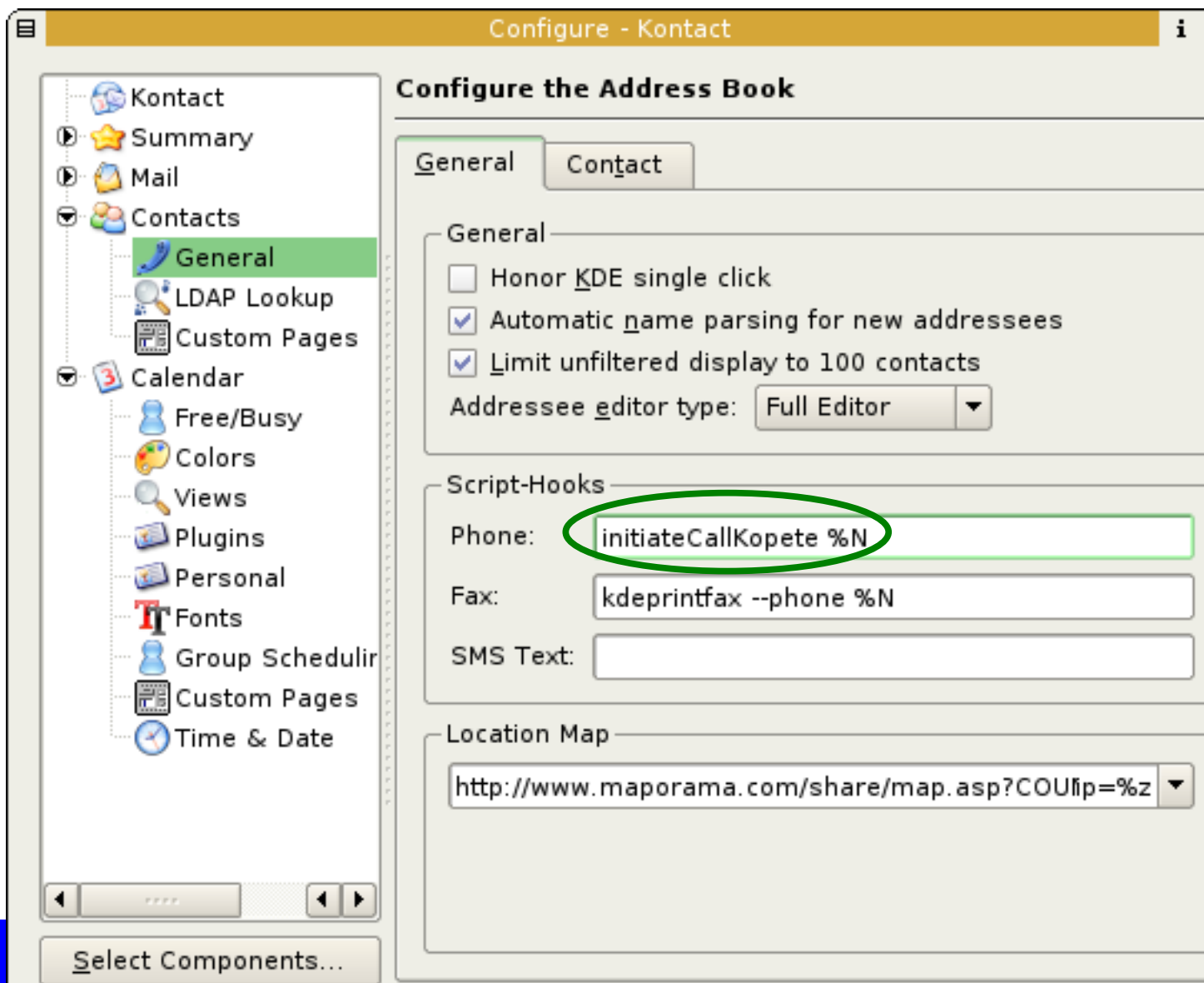
Click-To-Dial with KDE?

- Kontakt/Kaddressbook supports Click-To-Dial



Kontakt Configuration

- provide a script for dial out



An Easy Dial Script

- send an IM message via Kopete!
- dcop: Desktop Communication Protocol

```
#!/bin/sh
dcop kopete KopeteIface messageContact \
    phone.jabber.headissue.com \
    "call $1";
```



CTI Interface?!

- IM/Jabber as control channel for telephony enabled applications?
- ...hmm, perhaps a misuse, but we get:
 - authentication
 - logon/logoff within IM
 - encrypted communication



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Asterisk Interfaces

- Application Gateway Interface
 - control over one connection and access to the stream
- Manager Interface
 - control and information on whole PBX
- messages and commands are simple and text based



Asterisk-Java

- Java API for AGI and Manager Interface
- class definitions for all messages
- reduces pain to look up (where?) the commands and information fields
- NB: good reference for AGI and Manager Interface!
- See: <http://asterisk-java.sf.net>

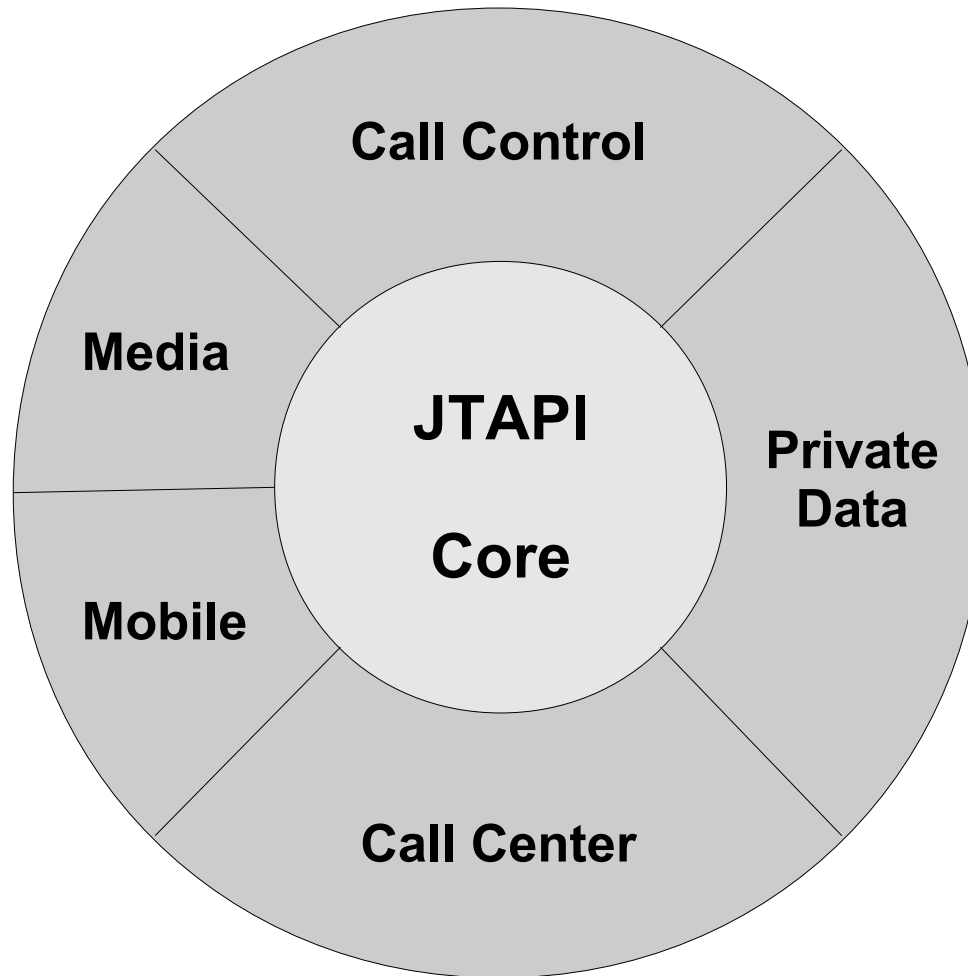


Java Telephony API (JTAPI)

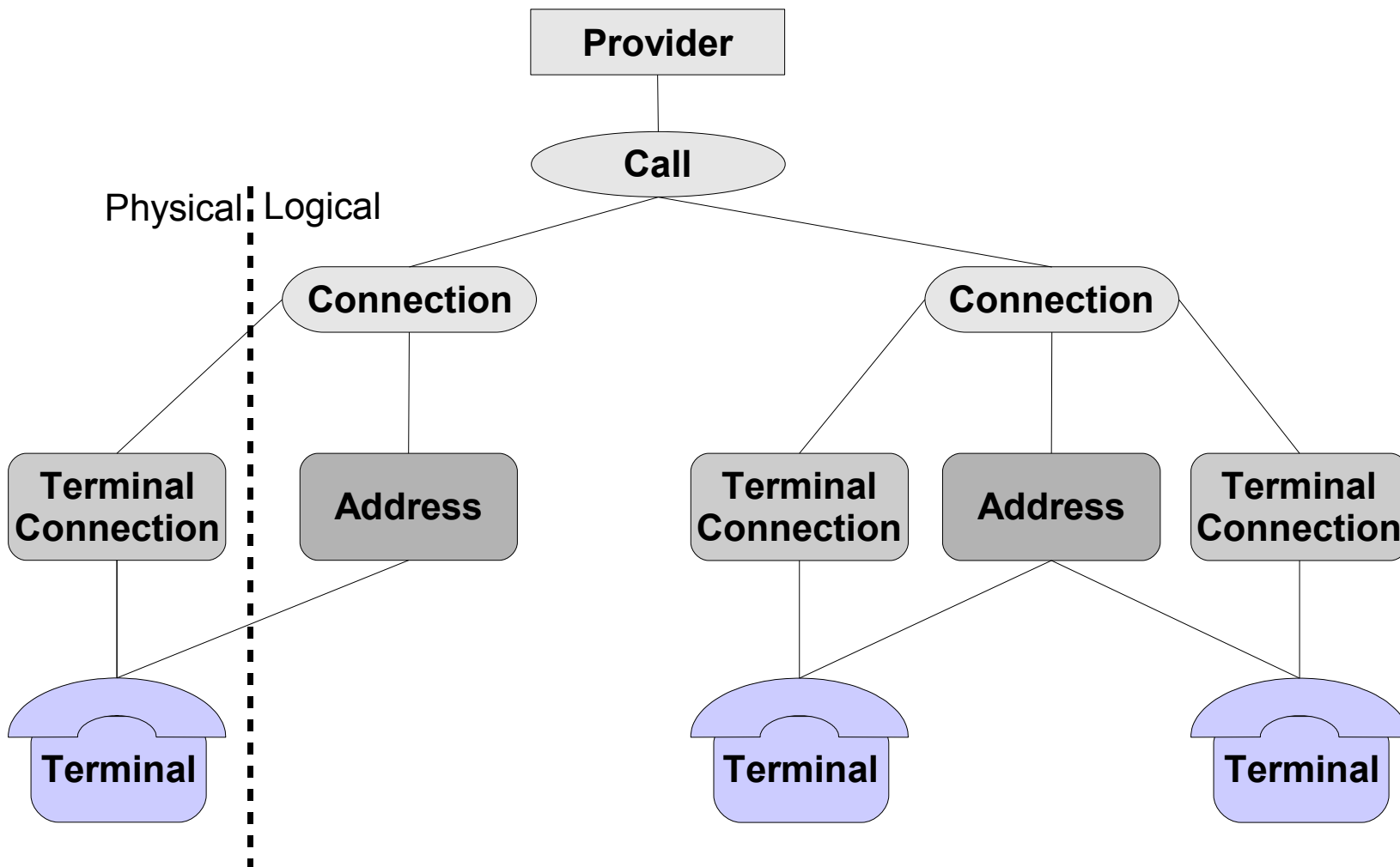
- standard interface JSR 43
- abstract interface for telephony applications
- First-Party (control a phone) or
- Third-Party (control a PBX) telephony applications
- manufacturer independent
-> portable code



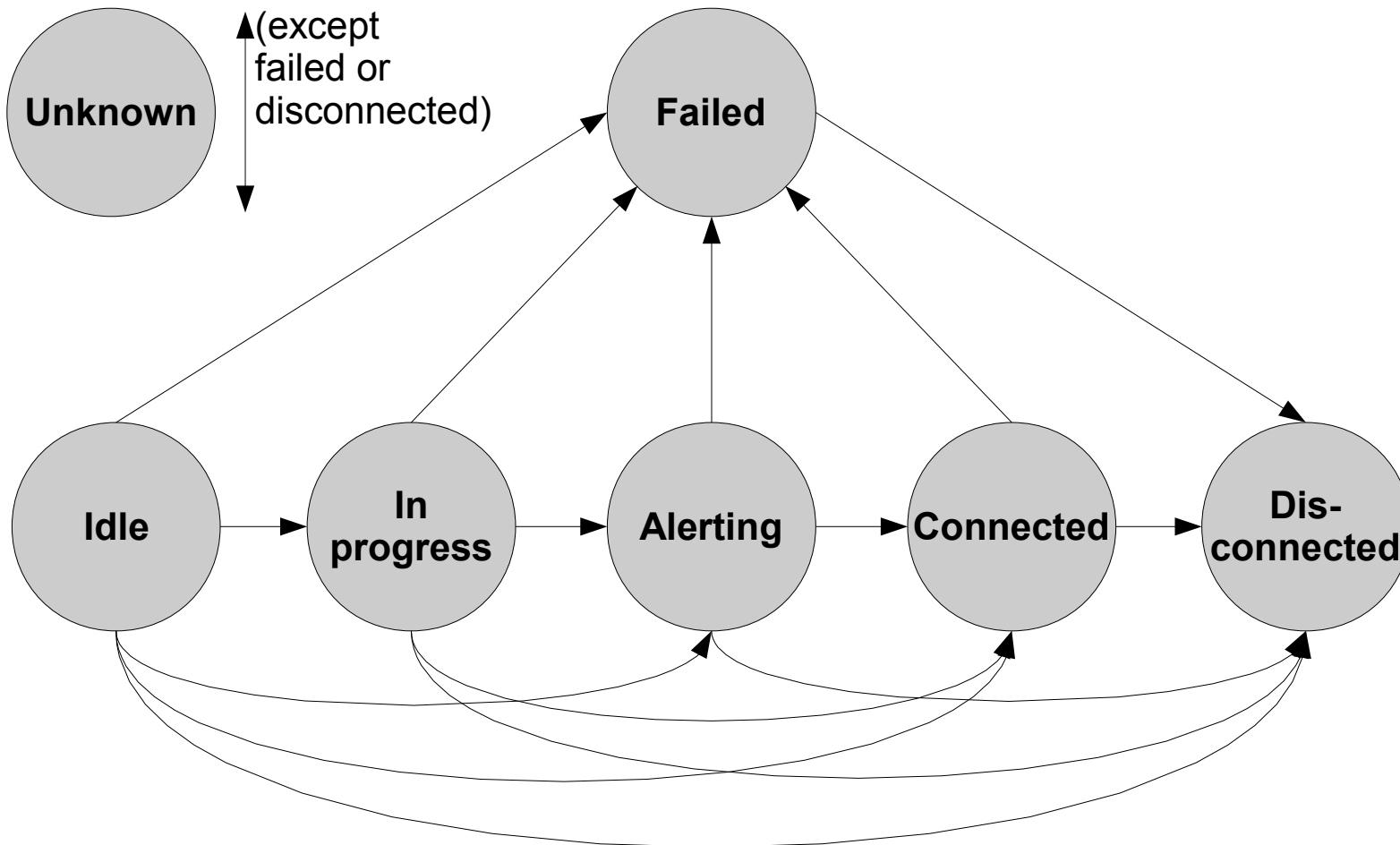
JTAPI Packages



JTAPI Object Model



States Machines - e.g. Connection



Programming Example

- initiate a call

```
Terminal terminal =  
    provider.getTerminal("jens_desk");  
Address addr =  
    provider.getAddress("34");  
Call call = provider.createCall();  
call.connect(terminal, addr,  
             "0049898976890");
```

- get first address of a terminal

```
Address addr =  
    terminal.getAddresses()[0];
```



Asterisk-JTAPI

- “easier” than the Asterisk Manager Interface
- uses Manager Interface
- builds on top of Asterisk-Java and GJTAPI
- mediate between different worlds, names and concepts:
 - Asterisk: context, extension, channel
 - JTAPI: address, terminal



Terminals in Asterisk?!

- all configured IAX and SIP phones?
- ISDN phones?
- roadwarriors?
- ... what is a terminal?

- requirement: flexibility!



Reconfiguration?

- reconfigure application if participant is reachable at another phone?
- design decision:
call routing is within Asterisk and "the terminal" needs to be transparent to the (enterprise class) application



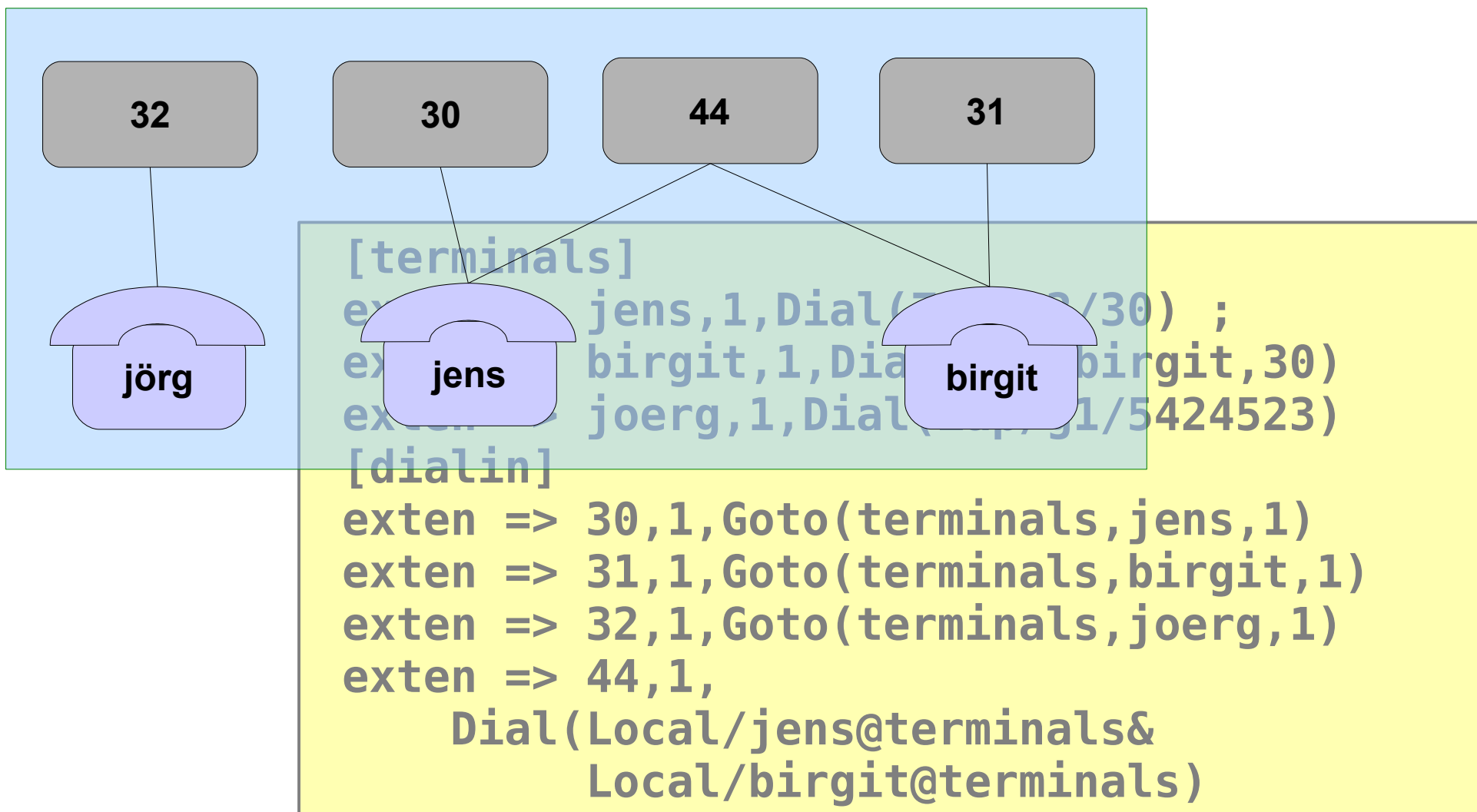
Extension => Address + Terminal

- create list of terminals and addresses by analyzing the Asterisk dialplan

```
[terminals]
exten => jens,1,Dial(Zap/g2/30) ;
exten => birgit,1,Dial(SIP/birgit,30)
exten => joerg,1,Dial(Zap/g1/5424523)
[dialin]
exten => 30,1,Goto(terminals,jens,1)
exten => 31,1,Goto(terminals,birgit,1)
exten => 32,1,Goto(terminals,joerg,1)
exten => 44,1,
        Dial(Local/jens@terminals&
             Local/birgit@terminals)
```



Dialplan Object Model



State of Work

- Asterisk-JTAPI is available at:
<http://asterisk-jtapi.sf.net>
- beta state, basic functionality
- a lot of details missing needed
e.g. for call center usage



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Application Example (Projektron)

Testfirma > Herr Mitarbeiter, Max

Telefon:	(030) 61201398
Mobil:	0171-12345678

Datum: Gesamt:

Betreff: Bemerkung: [-Status-]

Status	Datum	Dauer	Betreff
Gesendet	Mi 12.04.06		Auftragsbestätigung Sehr geehrter Herr Mitarbeiter, gerne bestätigen wir die Mit freundlichen Grüßen
Beendet	Di 28.03.06	00:06h	Fehlende schriftlich Da bisher noch keine s sich darum kümmern.
Beendet	Do 23.03.06	00:11h	Auftrag erteilt Herr Mitarbeiter hat uns Tagen zugehen.

Angerufen wurde Max Mitarbeiter

Objekt-ID:	Mitarbeiter, Max	Telefon:	(030) 61201398
Organisation:	Testfirma	→ zur Kommunikation	

Verbindung

Von:	04.04.06 15:03h
Dauer:	00:34h
Status:	Beendet

Informationen

Betreff:	Informationen zum Projektstatus
Bemerkung:	Herr Mitarbeiter wurde zum aktuellen Status der Umsetzung informiert. Zwischenstand sehr zufrieden.

Aktionen

Zeiterfassung:



The Phone Console?

Status/Aktionen
 Firmenliste
 Kurzwahlliste
 Anrufliste
 Einstellungen
 Hilfe

Mein Status

Status: On phone
Lines: 0721-45362718 unbekannt
 040-56723412 Gerda Bauer

Wählen:

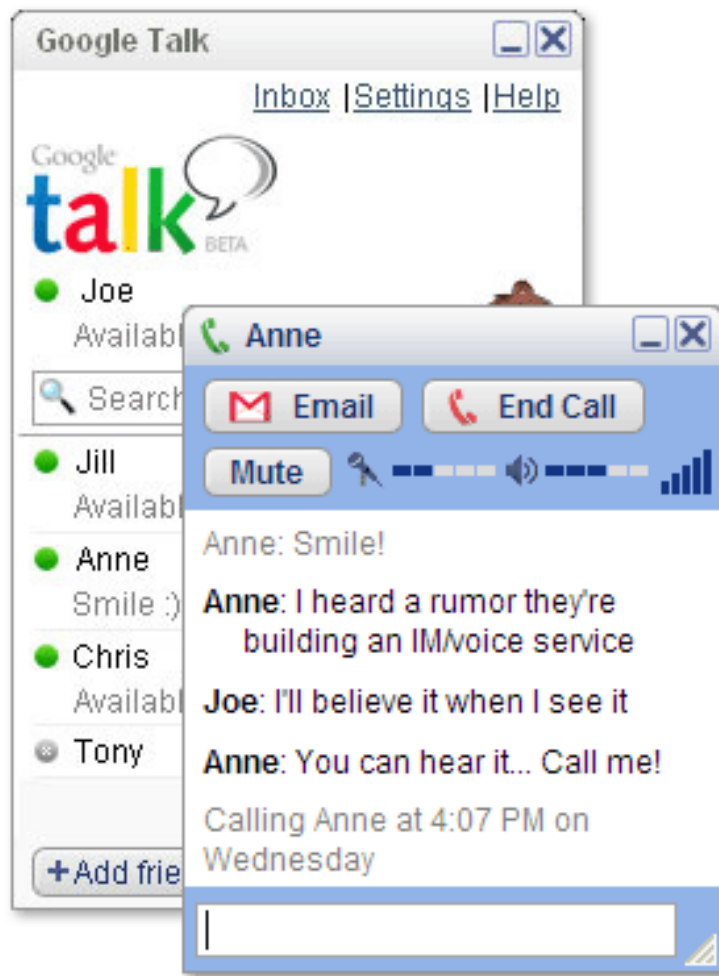
Teamstatus

Anrufen
 Weiterverbinden

	▲ Name	▲ Status	Infotext
	Bert Brot		---
	Britta Brezn		---
	Karl Krume		---
	Sandra Semmel		---
	Rita Rösti		Urlaub, Sonne, Meer bis 5.5.
	Waldi Weck		Vertragsverhandlungen mit Meyer mind. bis 22h



All-in-One?



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Conclusions

- if you don't (can) have the all-in-one application: build bridges
- use the right interfaces depending on what you want to do
- **enjoy live!**
- contact:
`jens.wilke_REMOVE_@headissue.com`

