

Session VII_b: IN and Computer Telephony

Chair: Frans Panken, *Lucent Technologies*

TINA-like solutions for implementing computer telephony services

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Outline

- **Background**
 - Telephony services on TINA
- **Computer telephony services**
 - Click-to-Dial service
- **Designing Click-to-Dial service**
 - Basic Framework
 - Service software configuration
 - Sample service scenarios
- **Evaluations and considerations**

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What is target service of TINA ?

- TINA supports a wide range of telecom services;
 - especially, TINA is effective in **multimedia related services**, such as
 - Multimedia conference services,
 - On-line shopping services,
 - Video-on-demand services, etc.
 - Is TINA effective in simple telecom service such as ordinary telephony services?
 - Answer is 'YES', however,
 - TINA is too heavy-weight for the such simple services.
 - We have studied **how to apply TINA-like solutions for control and management of ordinary telephony service.**

Why telephony services ?

- Computer Telephony (CT) services appeared.
 - CT services are composed of:
 - Simple telecommunication services,
 - Supplementary applications.
 - CTI techniques have changed telephony services
 - From a simple conversation method,
 - Into an **intelligent business tool**.
- CTI techniques give solutions simple telecommunication services for integrating them.

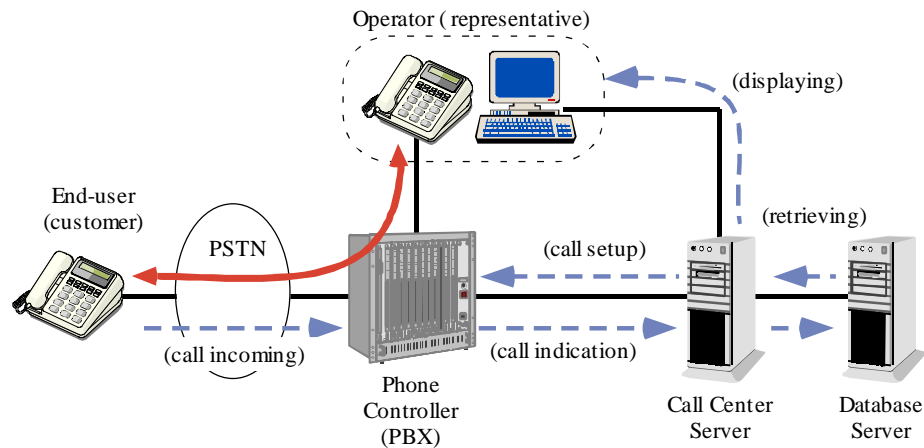
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Examples of CT services

- Typical examples of CT services
 - Call Center Service (see next slide)
 - Simpler Switching Board Service
 - On-line Catalogue Shopping Service
 - Reservation Service etc...

Examples of CT services (□□□□ Center)



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Examples of CT services

- Typical examples of CT services
 - Call Center Service (see next slide)
 - Simpler Switching Board Service
 - On-line Catalogue Shopping Service
 - Reservation Service etc...
 - Unified Messaging Service
 - Allows viewing and sending of every types of messages to users.
 - Supports media transformation from one media to another.
 - Click-to-Dial Service
 - Basic service in the CT field.
 - Target service of our study.

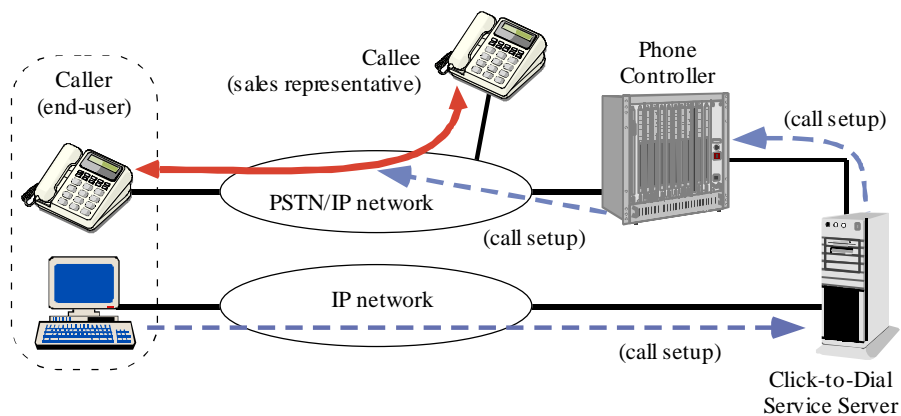
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Why chose Click-to-Dial service ?

- Click-to-Dial service
 - Characterized by call setup triggering
 - Direct type Click-to-Dial service
 - Phone call is initiated and established by calling party's terminal (such as the PC).
 - Same setup process as in an ordinary phone service.
 - Callback type Click-to-Dial service
 - Phone call is initiated by calling party, however, Call is established by Click-to-Dial service provider.
 - In this case, Calling party requests to initiate phone call on its own, but calling party invites phone call from Click-to-Dial service Provider.

Callback type Click-to-Dial Service



Why chose Click-to-Dial service, again ?

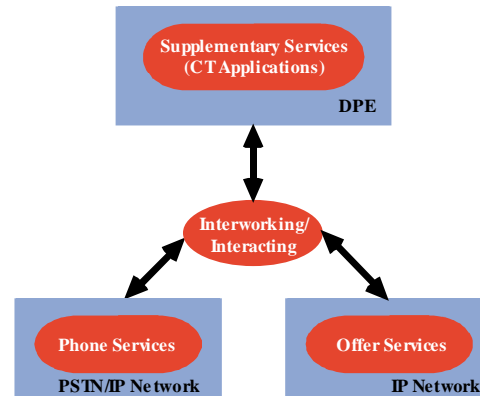
- In Callback type Click-to-Dial service,
 - Service provider has responsibility of making phone call.
 - Gives service providers the ability to make up new supplementary services.
- Potential of Callback type Click-to-Dial service
 - Security Potential
 - Concealing phone number from calling party.
 - Accounting and Billing Potential
 - Divided charging, i.e. rates of fifty-fifty, seventy-thirty.
 - QoS Potential
 - Selecting suitable route or circuit using QoS information.

Outline

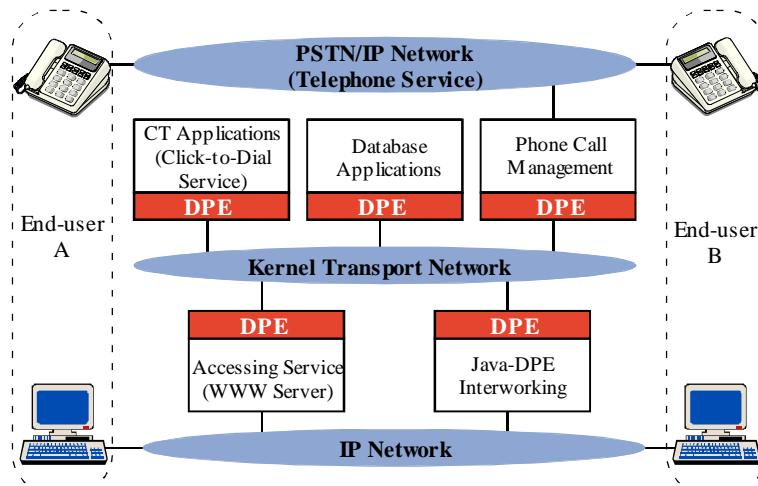
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Basic Framework (Network Activities)

- Three types of Network Activities for CT services
 - Phone services
 - PSTNs/IP networks
 - Offer services
 - IP networks
 - WWW
 - Supplement services
 - DPE
 - CT Applications



Basic Framework (DPE)



Configuration of Service Software

- Some concepts of TINA service architecture were applied.
 - Domain separation (User domain/Provider domain)
 - Session concepts
 - Information model
 - Computational model
- Click-to-Dial service software is composed of multiple functional components.
 - see next figure



A TINA unified service layer for IN and VoIP

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▼ Overview

- ▼ From INAP to Retailer Reference Point
- ▼ A new service architecture for the network intelligence
- ▼ The platform
- ▼ Conclusion

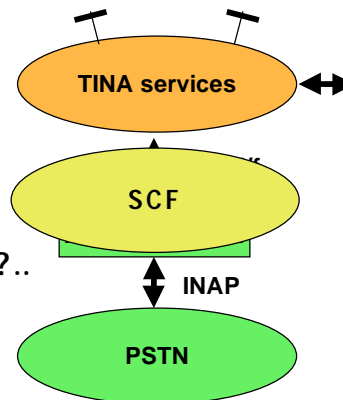
▼ IN drawbacks

- lack of interworking standards
- IN services designed only for IN switches

▼ Using TINA principles

- OOT
- distribution
- business model
- Service architecture

▼ Is there more than only principles?..



▼ INAP capabilities:

- user authentication, services discovery, access to content/user's profile, acceptance of a call, provision of routing and charging informations

▼ Counterparts in TINA:

- TINA access session mechanisms
- non specified resource control (get/set/play/record/stop...)
- invitation, 3 types:
 - end user->SSM->user agent->end user
- NFEP resolution

▼ Need of a clear interface:

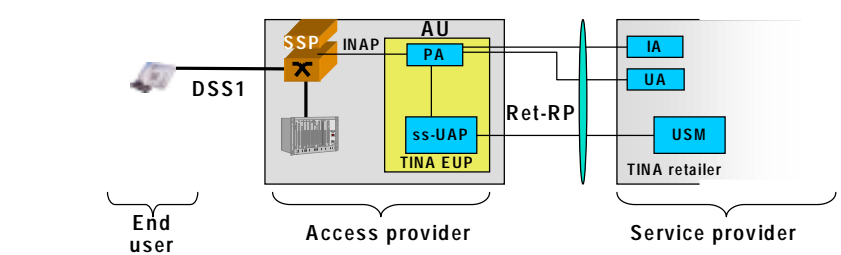
- to have a clear and flexible SCF OO model
- to reuse the TINA framework as it is: a unified service platform, or an enhanced communication platform

▼ TINA Ret RP

- + adaptations?

▼ The End User Proxy (EUP)

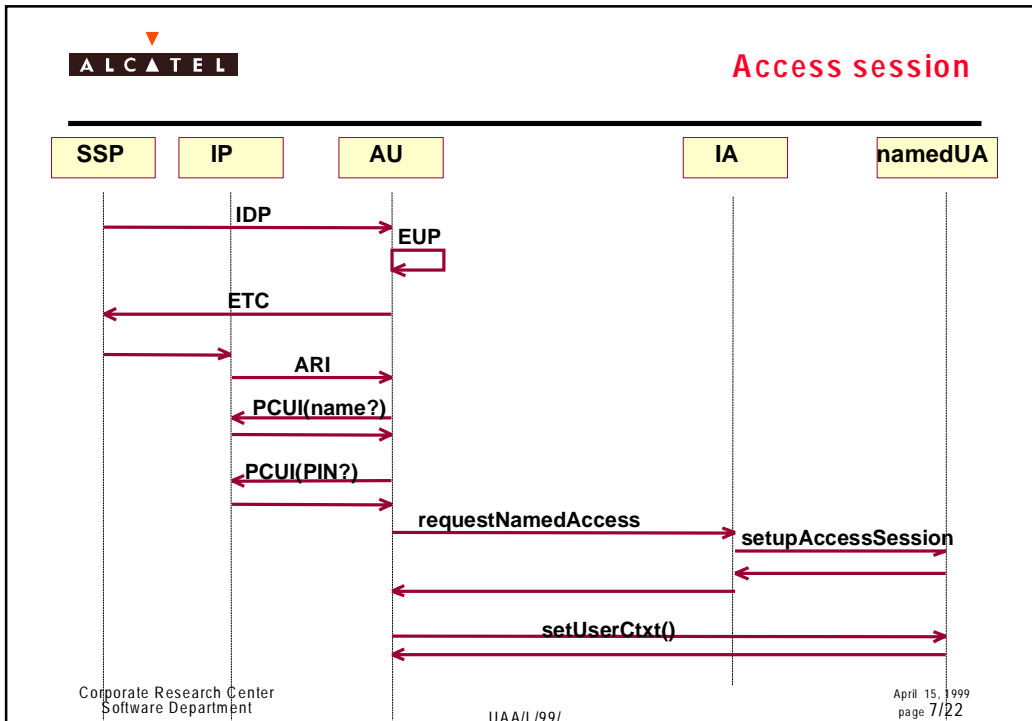
- represents one IN user in the AU
- starts Ret access and usage
- provides the initiating "end user" application
 - the user interface API is INAP



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ALCATEL INAP mapping to usage 1/2

▼ A "telecommunication service" call: service session

- starting the session
- an invitation to the called party
 - if refused: possibility of a playAnnouncement...
- Establishment of a stream binding
 - the vote could be used

▼ Notice: the service session can be totally preserved

- TINA service session model feature set:
 - Mandatory: BasicFS, MultipartyFS: invitations, ParticipantSBFS: Stream bindings
 - Optionnal, not always useful: BasicExtFS, MultiPartIndFS, VotingFS, ControlSRFS, ParticipantSBIndFS
 - interfaces: 3 for the EUP, 3 for the Session Manager
- the SA is kept untouched

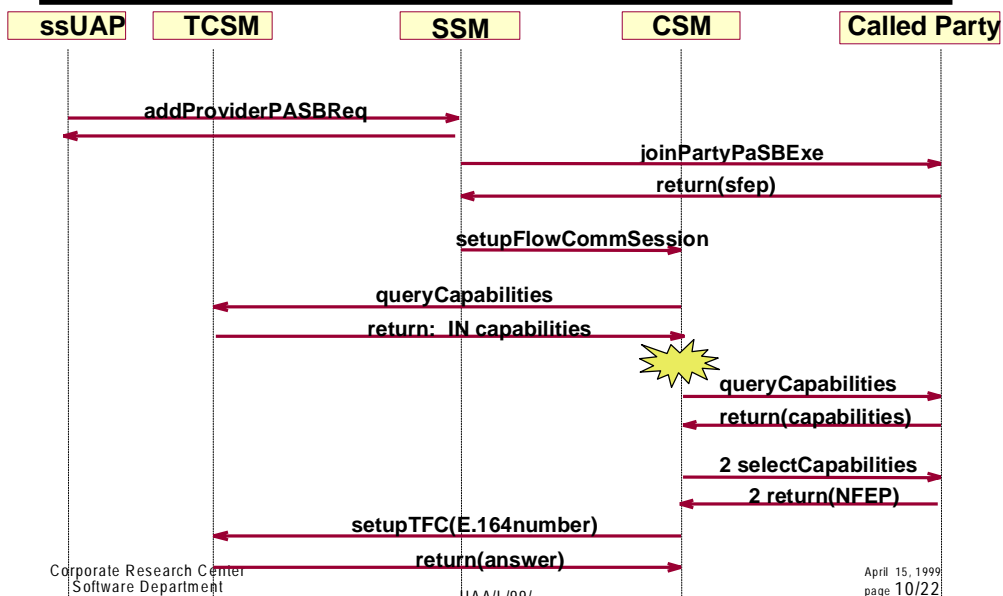
Corporate Research Center
Software Department

UAA/I/99/

April 15, 1999
page 8/22

Communication session

- The SSM intanciates a "normal" CSM: it has an extra behavior
- Query Capabilities -> IN context detected
- Here, the CSM adopts the IN behavior
 - the cost of a classical mechanism is high
 - IN is simple
- The IN connection : a TINA terminal flow connection
 - no need of QoS
 - simple connection: SFEP (TC ID) with NFEP (E.164)
 - A terminal connection is simple, and the terminal is still split into the phone, the SSP and the AU
 - very light change in the CSM to adopt an alternative behavior



▼The classical TINA communication could have been followed

- CSM TCSM dialogue with no valuable information exchange for the AU
- ConS use
- IN LNC and TCon implementing a simple "connect"
- Time and resource consuming for only the generic CSM

▼The IN connection is done, but a TINA NFC can be needed

- The CSM then acts normally (need of a media gateway)

▼The whole service architecture can be fully used

- The choice is pragmatic and takes advantage of TINA SA

▼The EUP host layer implements:

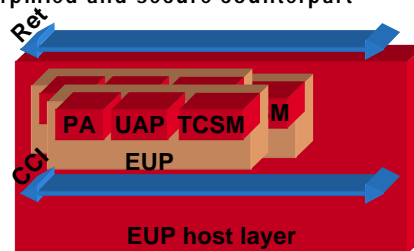
- the CCI for service developers and providers (not only operator)
- a management interface for the network operator

▼A secure access to external implementers

- not a direct INAP/CORBA
- network topology hidden
- primitives/parameters are simplified or hidden:
 - half of the INAP primitives have a simplified and secure counterpart in CCI

▼A simple API

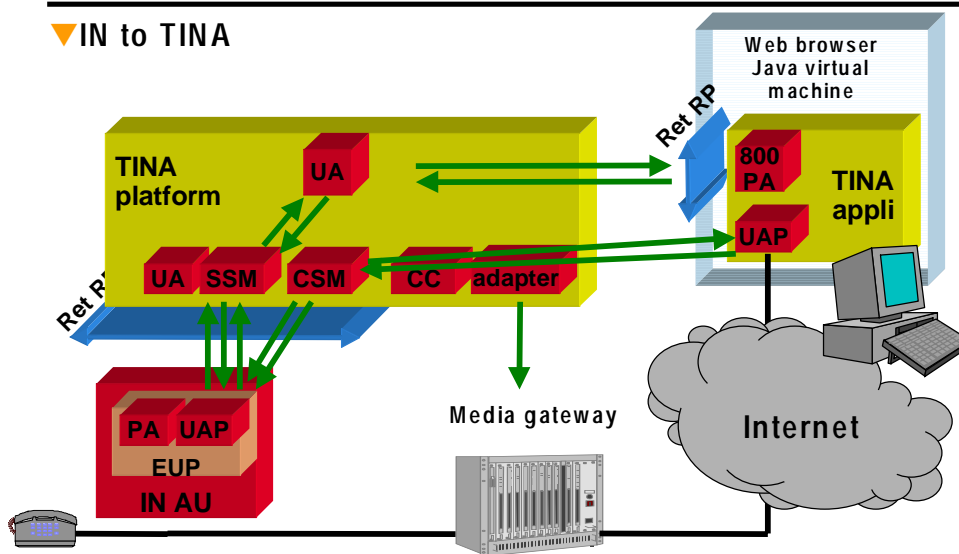
- to be lightweight and avoid overhead with the TINA usage objects
- easy to be implemented



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The IN/internet call

▼ IN to TINA



▼What is IN?

- The user delegates its choices to the network intelligence
 - dumb terminal
 - no possibilities to accept or not a call
 - no possibilities to gives its NFEP/routable numbers
 - dumb network
 - numbering plan
- IN services are features if the basic TINA session
- classical IN is proxy based

▼What is 3rd Party IN?

- The user has now advanced terminal
 - Web browser plus (TINA) applet
 - the user is a hot line service with exclusive NFEP knowledge
- The classical subscriber proxy is in another domain

▼The TINA platform

- the call triggers an EUP instantiation
- authentication performed by the EUP
- the EUP launches a TINA access session
- The EUP launches the service session
- EUP sends an invitation to the Service Session Manager (SSM)
- the SSM retrieves the called party User Agent (UA) reference and forwards the invitation
- ... *Now the service begins*

▼The subscriber the UA forwards the invitation to the called party PA

- the UPT/follow me/... are easily performed by ssUAP/TCSM

▼ In the EUP

- how to deal with an IP in TINA?
 - Technology dependant, user interface
- Is it changed for a new service?
 - If the hear and feel changes
- The AU should be implemented with a set of EUPs classes in order to provide a stable EUP base
- TINA opens the SCE

▼ In the subscriber proxy

- implement the follow me, call screening, call log/notification behind the standard i/f
- Not in the core of the platform, easy to change

▼ In the called party domain

- an access session has been launched

▼ Overview

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▼TINA INAP is Ret RP:

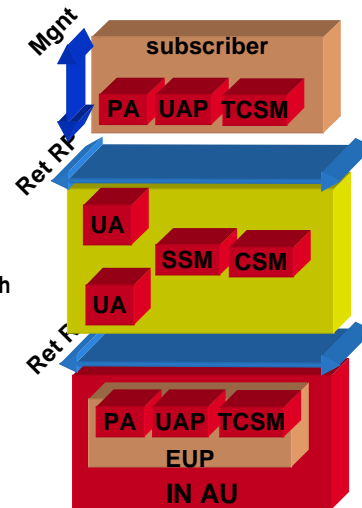
- answering invitations
- accepting stream binding
- giving NFEP

▼The TINA platform: a middleware for advanced telephony services

- connects the AU to the service layer
- TINA integrate the IN (user has not access) with internet services (user has an access)

▼The service layer

- subscriber-oriented
- on top of network technology independent interface
- coupled with VoIP registration



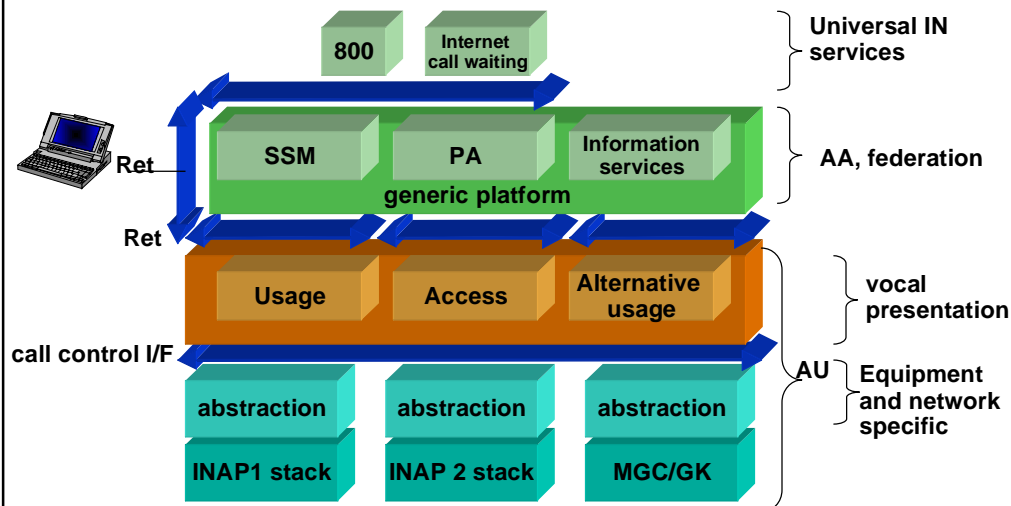
▼TINA offers the enhanced communication services:

- technology independence
- universal invitation/messaging platform
- control of different transport networks

▼The IN services are on top of the platform

▼TINA must be extended for information services

- extension of the TINA service session model for unified messaging service: the message box is a resource of the service
- alternative service session model for information services



▼TINA in IN:

- from principles to enhancements of TINA (or IN) platform

▼A new network intelligence can be defined

▼TINA offers answers for IN evolution

- Distribution, OOT
- Business model
- Service architecture for any technology
 - service layering
 - IN to H.323, IN to TINA, ...

▼TINA helps!



A TINA Service Platform integrated with current Intelligent Network systems

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Deutsche Telekom AG
TZ Darmstadt



Jean-Marc Pageot
France Telecom
CNET Lannion

Uwe Herzog
Deutsche Telekom AG
TZ Darmstadt

On behalf of SATIN project-team



Outlook

- Project objectives
- Scenario: Migration step, Platform, Interoperability
- SATIN Architecture, components, RP-details
- Service description and demo
- Satin Lab equipment
- Experiences and conclusions

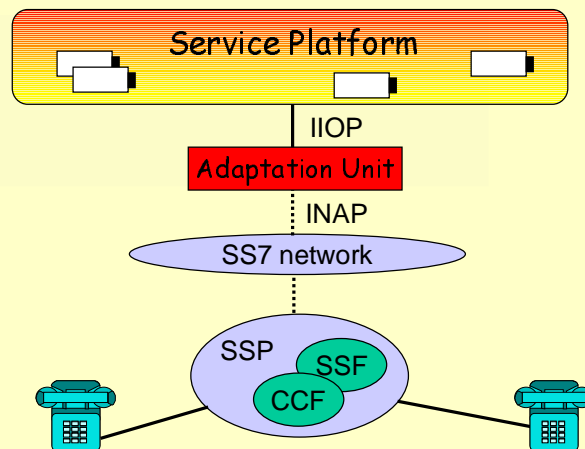


Objectives of SATIN

- To define and implement a prototype service platform at DT/FT sides, interworking with current IN systems
- Interoperability between DT and FT platforms
- Introduction of TINA concepts
- Reuse of existing IN infrastructure
- Taking into account existing results (e.g. EURESCOM project P508)

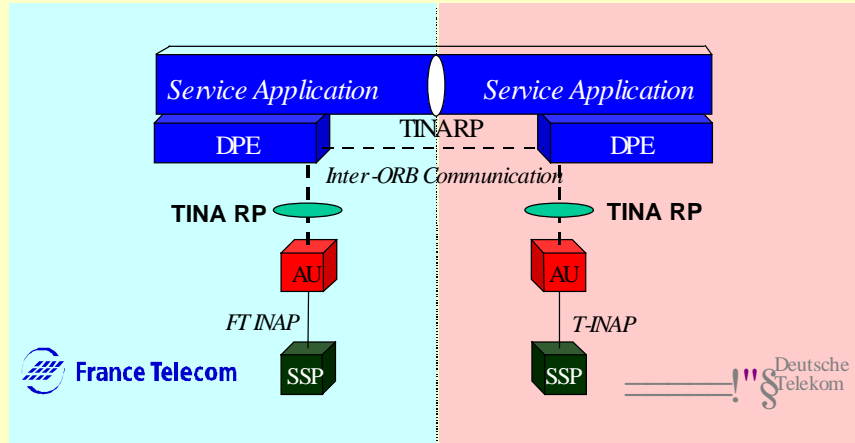


Migration scenario



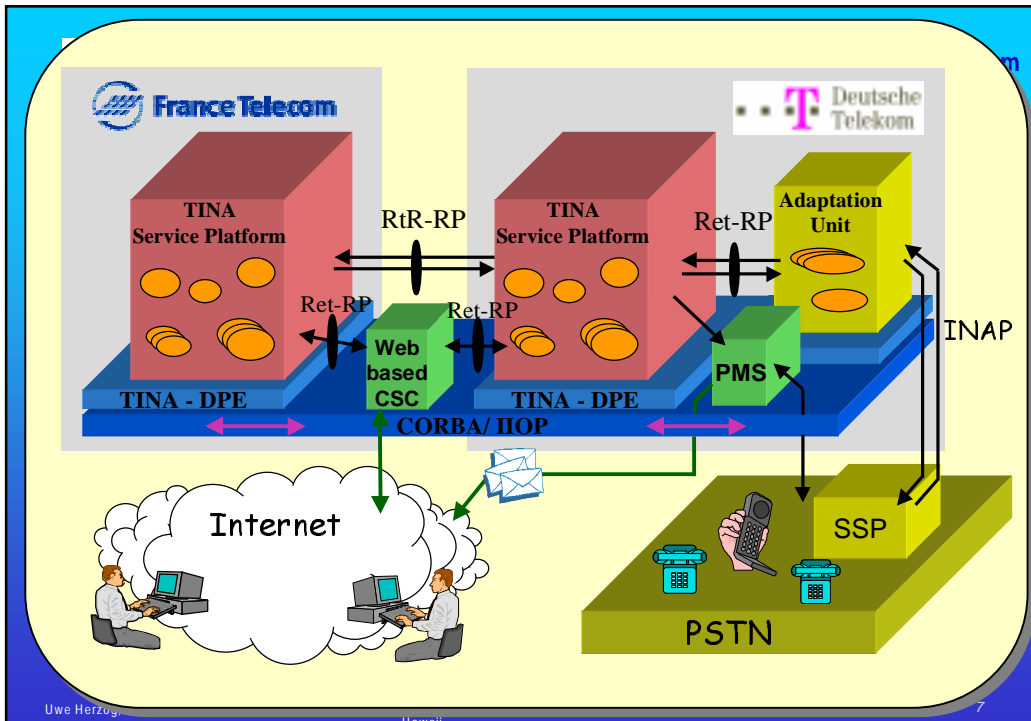


Platform Interoperability



The Service: UPT Deluxe

- A UPT service with additional notification feature
- Registration by phone
- Full profile modification by web-/phone-based CSC
- Incoming Call
- Outgoing Call
- CallLector (email, SMS, Fax)



Details on RtR-RP

- **Registration:**
- **requestNamedAccess** (userId=PUI, userProperties: PASSWORD=PIN)
[NamedAccessIR, asId, asSecretId]
- **registerAtTerminal** (asSecretId, termId {seq(name, value)})

- **Incoming Call: Setup RtR Access Session**
- **requestNamedAccess** (userId="FT-Plattform", userProperties: PASSWORD=FTsPif_pswd)
[namedAccessIR of FT UA, asSecretId, asId]

- **Incoming Call: Setup Access Session On User Behalf**
- **requestAccessOnUserBehalf** (asSecretId = RtRasSid, userId = PUI) on UA of FT-Retailer
[NamedAccessIR, asId, asSecretId = UPTasSid]
- **listSubscribedServices** (asSecretId = UPTasSid, desiredProperties {seq(name=ServiceName, value="UPT")})
[services { seq(serviceId=182, ..., (registeredTerminal, value(NAPAddr)>), (callLectorActivation, <value(boolean)>), (emailAddress, <value(string)>)]

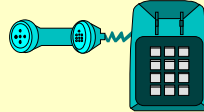
Uwe Herzog, FE13d, TZ Darmstadt TINA 99 conference, 12-15 April, 8



UPT Deluxe customer wants to register



His personal number is 6668



Dials 0145 1001 6668 ****

Service prefix

registration

Personal number

PIN



UPT Deluxe user successfully registered!



6668

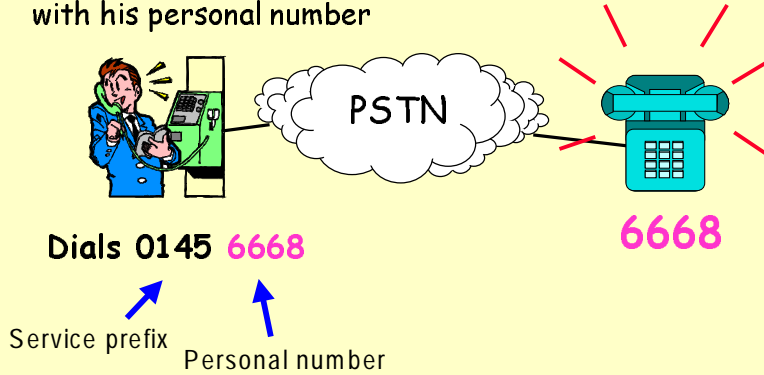


All calls for him will be routed to this terminal

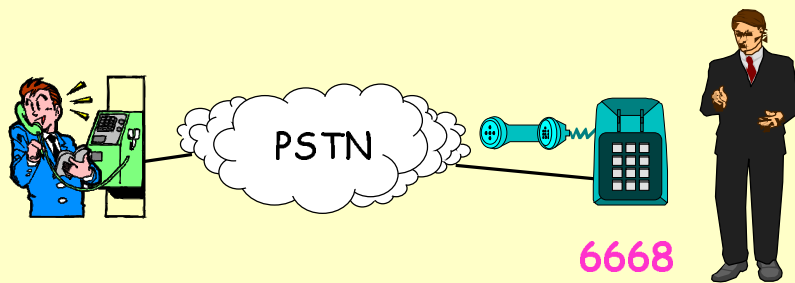


Call to a UPT Deluxe customer

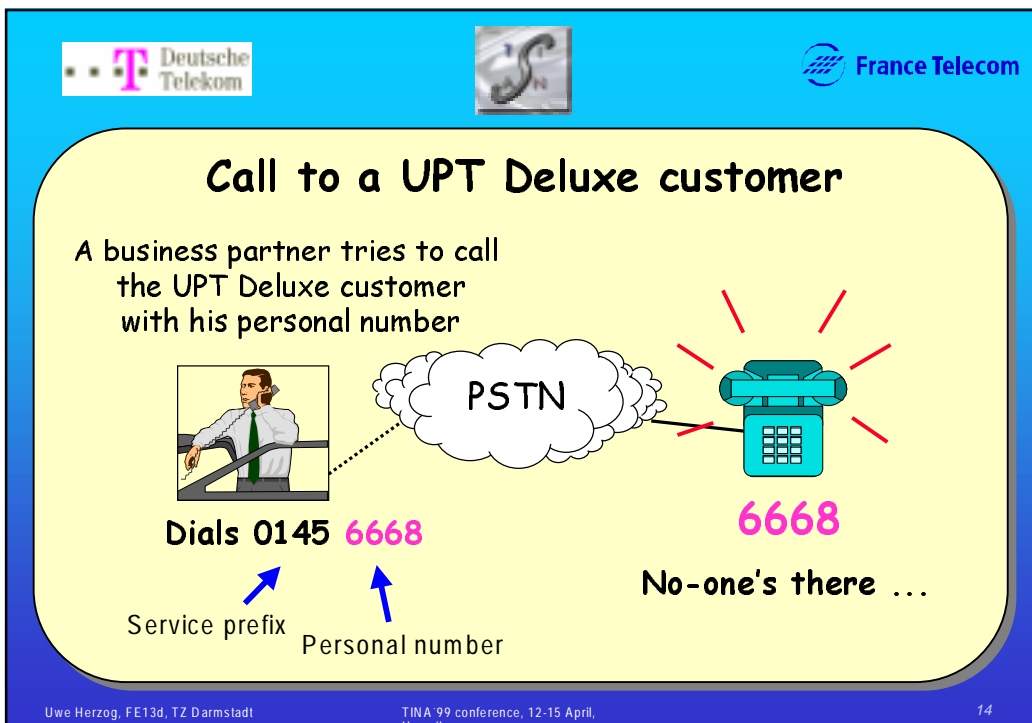
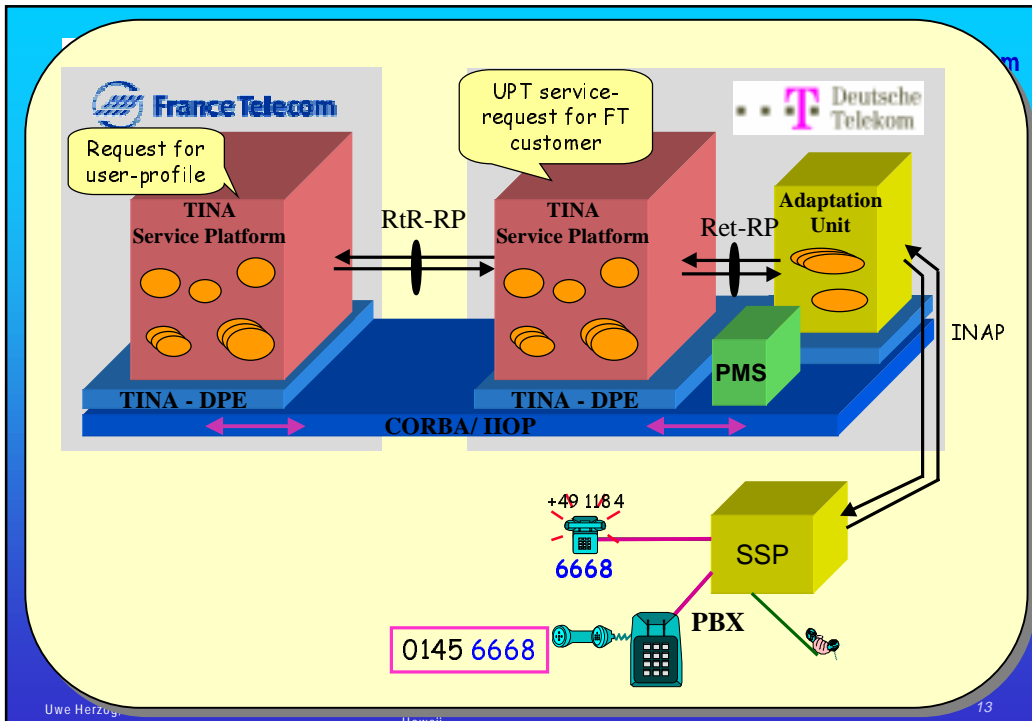
This person tries to call the UPT Deluxe customer with his personal number



UPT Deluxe user reached!

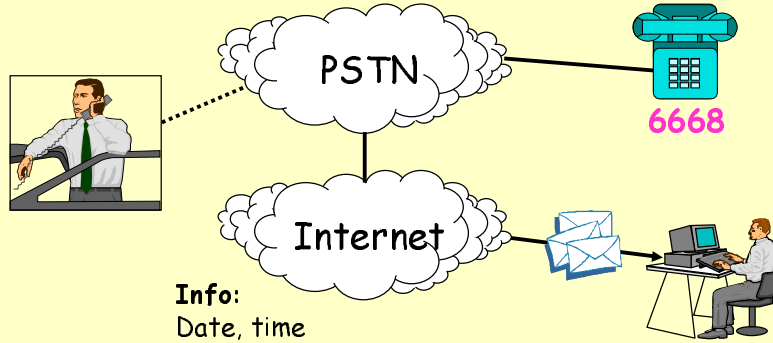


The call was successfully routed to the current terminal of the UPT Deluxe customer !

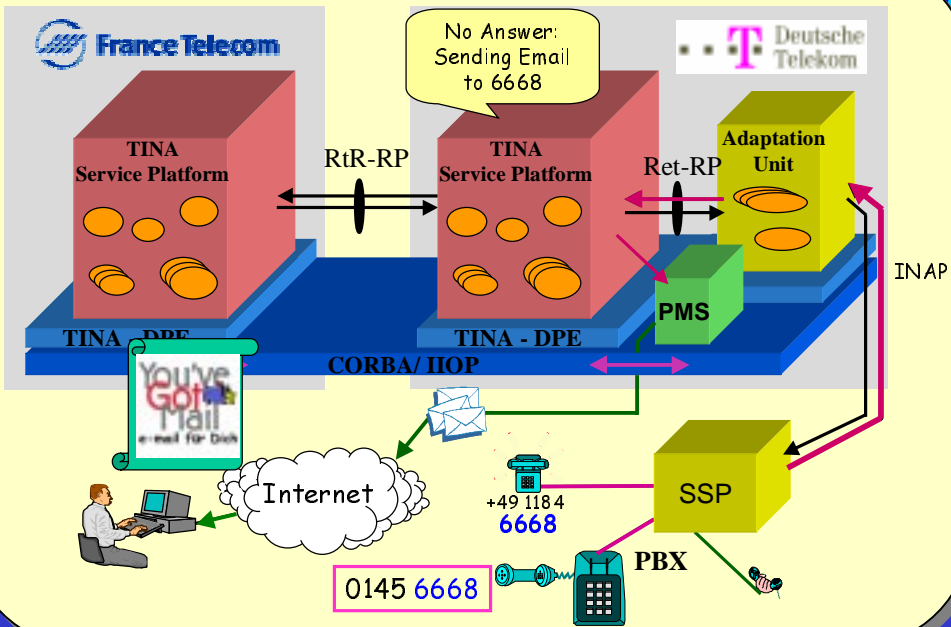




UPT Deluxe user notified by email!



Info:
Date, time
Calling Line Identity stephane.tuffin@francetelecom.fr





SATIN Lab equipment

- **DT**
 - Orbix 2.3, C++
 - HP 9000 Enterprise Server, PC Win NT4.0
- **FT**
 - Visibroker 3.1 for Java (JDK 1.1)
 - Orbix 2.3, C++ (reuse of TTT components)
 - Solaris 2.6
- Platforms interconnected using TCP/IP over ISDN



Experiences

- TINA specs are large, sometimes difficult, missing guidelines for practical work
- Reference Points
 - only spec. of Ret-RP was available
 - no templates (MSCs) for major use cases of Ret-RP
- Products
 - Interoperability problems between different ORBs
 - Missing source code
- Adaptation Unit
 - under investigation, Goal: no code modif. for new services
 - Service independent Call Control Interface (INAP, H.323 etc.)
 - Joint DT-FT response to TINA-IN-WG Rfp on TINA-IN-AU



Conclusions

- Difficult, but successful work
- IN can benefit from using TINA, proven by prototype
- TINA has potential for integrating networks and technologies, promoting opening of network interfaces
- TINA concepts still be seen as guidelines for the future telecommunication market
- TINA specs may partly lose their importance in being a conformity criteria