



Gemalto Convergence offer

Feeling at home. Everywhere.

February 2007

BANKING & RETAIL

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TELECOMMUNICATIONS > WHITE PAPER

Executive summary

The telecom ecosystem is evolving - and the pace of change is increasing.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	2
INTRODUCTION: Ecosystem evolution	3
GLOBAL GEMALTO CONVER- GENCE OFFER	3
GEMALTO CONVERGENCE SOLUTION IN DAY-TO-DAY LIFE	5
WHAT IS THE SMART CARD BASED SOLUTION VALUE IN CONVERGENCE	7
GLOSSARY	9

Previously reliable revenue streams are being squeezed by traditional competition, regulatory pressure and new players. And customer behavior is also evolving - ease of access to communication technology is the priority for a population very much at home on the move.

Telecom operators are adapting their offers to meet customer demands - they're offering IP network coverage at home and in urban area, for example, and giving customers unlimited service access (voice and data) on any device and via any connection (Wireless, DSL, Wifi...).

This convergence of services, based on multiple channels and multiple devices, can be optimized with Gemalto know-how. We have built a dedicated offer, spanning different form factors such as the smart USB Dongle, SIM/USIM, to give operators a real advantage in all these key areas:

- **strong authentication** - maintaining the link with subscriber (and ensuring billing!)
- **device personalisation** - deploying and configuring the operator environment on any device
- **security** - protecting the link between customer and operator and guarding against phishing and spoofing, for example
- **connectivity** - enabling any communication application and generating new revenues

Gemalto also provides a complete server infrastructure to manage the convergence offering throughout its life cycle, and support customer interactivity.

The aim of this document is to briefly describe the four solutions included in Gemalto convergence offer, and demonstrate how it fits the different telecom players context and strategies in merged Internet and mobility services.

Introduction

> Ecosystem evolution

Previously reliable revenue streams are being squeezed by traditional competition, regulatory pressure and new players. And customer behavior is also evolving - ease of access to communication technology is the priority for a population very much at home on the move.

> Global Gemalto Convergence offer

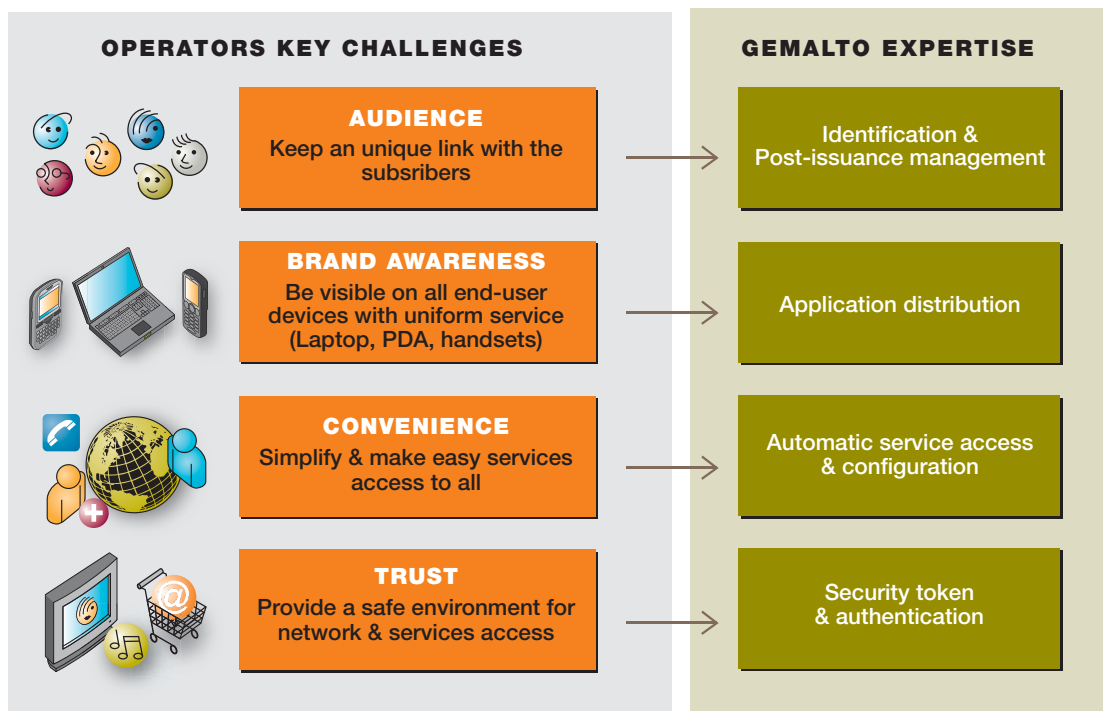
On top of defining price attractive offers in order to avoid churn to IP communication alternatives, operators have to deal with a number of key drivers:

- **Consolidate its audience:** they need to identify and know their subscribers, in order to constantly propose new services for maintaining subscriber interest

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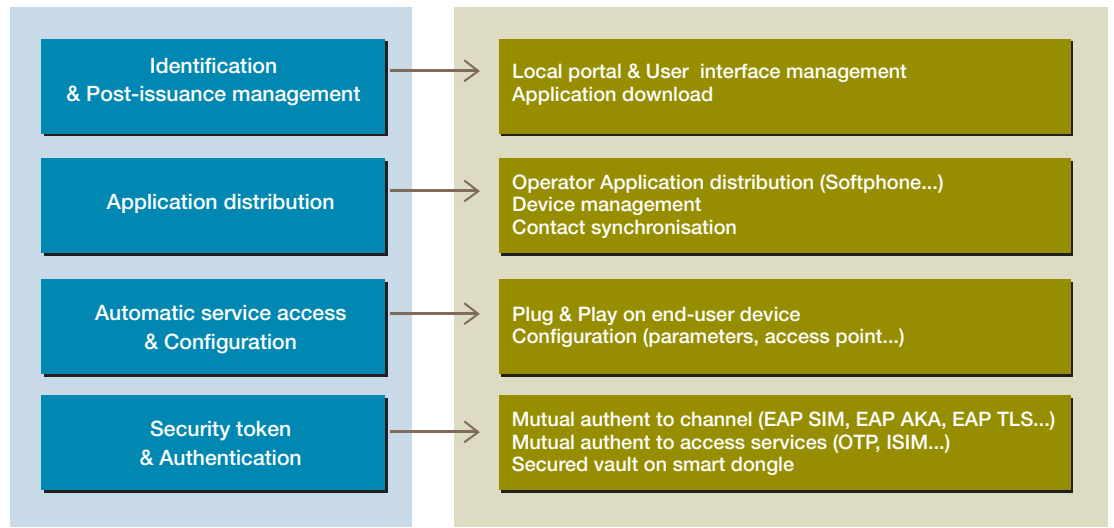
- **Address any subscriber devices:** they need to provide access to operator services from everyday subscriber devices
- **Provide the subscriber with a safe environment:** they need a secured and authenticated link for a trusting relationship between subscriber and services
- **Deploy ready to use solution:** subscribers want plug-and-play solutions without complexity barrier.

Fig1: Operator key challenges



The Gemalto Convergence offer has been built on the key assets of the smart card in terms of subscriber identification, data and channel security, device configuration and subscriber connectivity management.

Fig2: Smart card key assets



As described before, the subscriber is now using different types of devices and requires the most appropriate connectivity on each of these devices. To address this convergent ecosystem, Gemalto define several offers to match operator characteristics (pure mobile Operator, mobile and ISP,...) and operator segmentation.

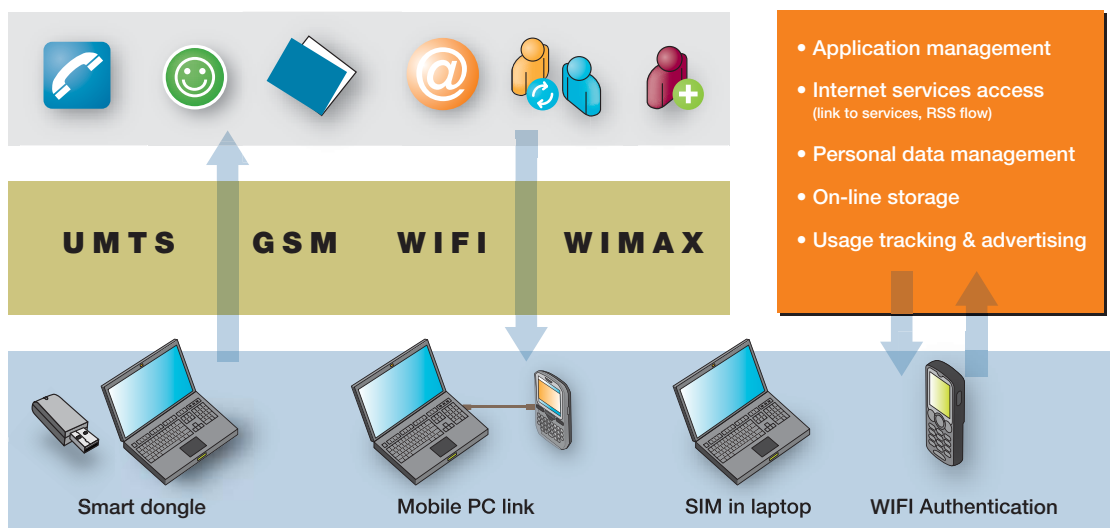
• **PC Link application:** By connecting a mobile phone to a PC with a local link (USB cable or WiFi for example) the subscriber automatically gains the benefits of an advanced personal data management solution, with local synchronization and on-line storage, and simple access to internet operator services with SIM -based authentication.

• **Smart Dongle:** By inserting Smart Dongle in a USB port on the PC, the subscriber gains access to operator IP services including voice and IM, and gains the benefits of the operator's proposals for attractive services using multimedia content and video, for example.

• **Embedded smart card in PC:** The operator can easily build packaged offers for the corporate sector, including a PC with a complete and off-the-shelf connection manager.

• **Multi mode handset:** By using the SIM-based solution for managing GSM/3G service access and WiFi/Wimax service access, the operator can come to the subscriber with a uniform trusted environment and combined offer.

Fig3: Gemalto offer



As well as providing different form factors to address subscriber devices, Gemalto is enlarging its current OTA solution in order to provide the operator with an efficient way of managing the life cycle of the application set delivered. For each of these form factors, this over the Internet (OTI) infrastructure offers the operator:

- **Application management:** Download, update, and delete applications offered
- **Internet service access:** Provide direct links to services, promote specific services depending on subscriber interests, offer information flow (RSS)

- **Personal data management:** Synchronize contact books for unification between all devices, back-up personal content and offer services for simple subscriber management of this content (picture printing, for example)
- **On-line storage:** Provide unlimited storage space for the subscriber, automatically accessible when device connected
- **Usage tracking and advertising:** Analyze subscriber behavior, using this privileged link to consolidate the audience and attract advertising capital

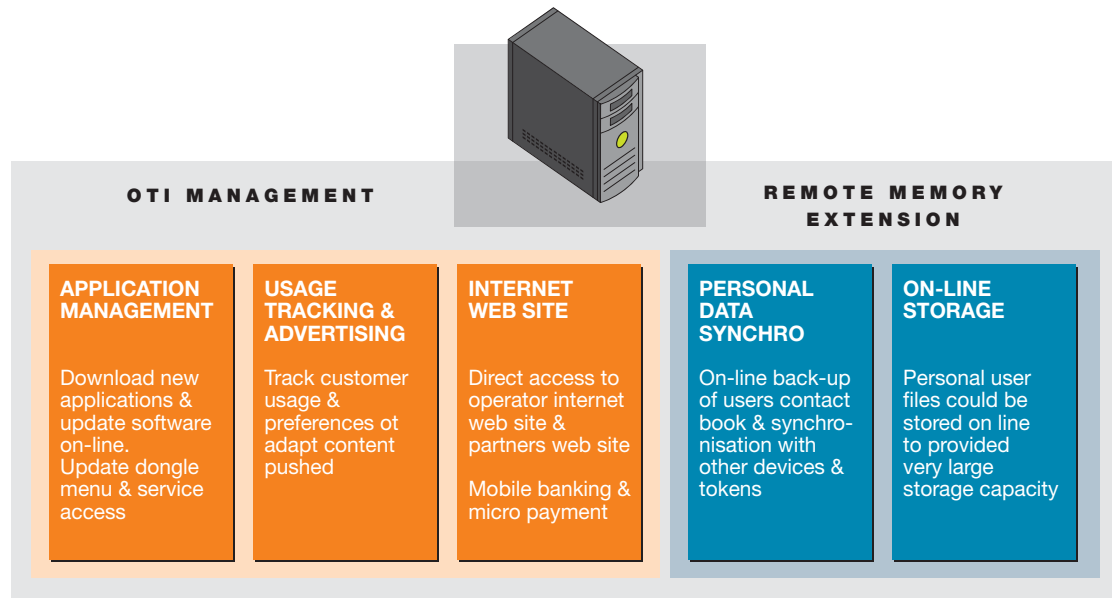


Fig4: Convergence offer management center

> Gemalto convergence solution in day-to-day life

Active youth & PC-link:

Barbara is a young artist working in Paris She's creating her line of clothing and has just opened a shop. In the evening, she enjoys seeing her friends and generally goes for a drink or to a night club. Barbara gets a mobile phone and a mobile PC-link Application provided by her mobile operator.

- Barbara needs to closely monitor her bank account as she has invested a lot in her own store. With the PC-Link applications, she can easily and securely access the bank web site, from her home or her shop. She easily connects her phone to her PC, wherever she is, and then retrieves all the web services

on the operator branded tool bar PC-link displays on the PC once connected.

- She sends SMS advertising to her customer base from her PC, by launching group SMS to her professional contact book list - she has one-click access to SMS and MMS over IP options on the tool bar.
- At night, Barbara stays in touch with all her friends by launching the Softphone application, to have some fun with her web cam.

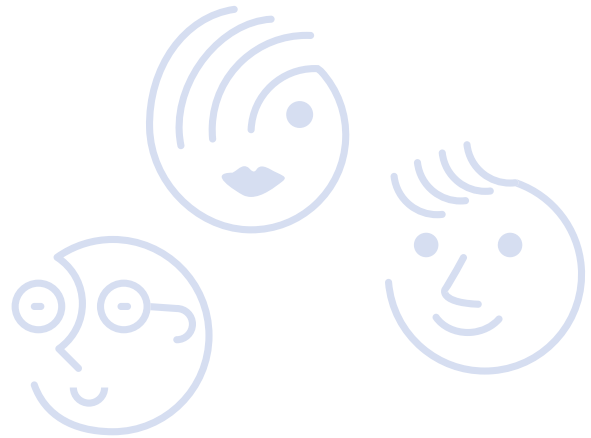
Business workers & Smart Dongle:

Anthony works for the London office of a major audit company. He works hard, frequently very late at night, and he visits customers all around the world several times a year. He's good at his job, but he's not particularly organized. When traveling, Anthony likes to stay in touch with all his friends and colleagues sending his phone bill through the roof. Thanks to the Smart Dongle, Anthony now has a fashionable token that resolves most of his issues:

- At work, he receives all communications including voice and IM on the computer he's working on. He can also use the communication set to contact colleagues based everywhere in the world, at a very attractive price.
- When he gets home, he can finalize the PowerPoint presentation he stored on Smart Dongle on his personal computer, and start communicating with his friends to organize his next week end. Thanks to buddy list management, he only receives calls from his friends: all others are redirected to his voice mail.
- When traveling for business, he still benefits from the attractive communication subscription he gets with Smart Dongle and can spend time over the phone with his London office to prepare for a very important customer meeting.
- At night, he can access his own environment from any internet café, and start exchanging content, navigating preferred internet services and communicating with friends using the same environment.

Fleet manager & Embedded smart card in PC:

Eddy manages the PC and mobile fleet for a big international company. Thanks to the new service offered by his mobile operator, he can now easily manage both devices for each employee. Access to the LAN is highly secured with VPN embedded in the SIM in the PC. All the credentials are stored and managed by the SIM. This SIM is linked to the mobile subscription, to allow employees to communicate on Wifi networks on the PC. It reduces the global cost of communication for the company and eases the day-to-day life of sales staff traveling a lot abroad.



Sarah and her Multi mode handset:

Sarah is a young girl studying abroad for one year. She is living in a family and takes care of the children in the evening. To stay in touch with her parents and family back home, she has a specific subscription to access both GSM and IP broadband networks from her mobile. She can talk to her nearest and dearest whenever she wants, without worrying about the cost, as she benefits from Voice Over IP. One a unique device, she can now switch from one network to the other - and keep the conversation going!

> What is the smart card based solution value in convergence ?

Based on its key assets, smart card based solution allow to operators to:

Maintain & enhance a safe relationship with the subscriber

- Mutual authentication

It warrants the highest security level to access network and allows safe service deployment and billing them without risks. By increasing subscriber confidence in on-line service usage, operators will automatically extend the revenue potential of these services.

- Increased surface of contact

Whatever the device used, thanks to SIM connectivity the subscriber is connected to the operator infrastructure. This allows the operator to:

- adapt services to the device currently used
- route information on the device currently used
- stay in touch with the subscriber whatever the device

This permanent subscriber contact is a key asset for the operator who wants to follow and adapt offers to customer behavior, and to leverage his subscriber base to generate advertising revenues.

Control & manage the devices and services

- Auto-install service & operator branding

Whatever the device chosen to deploy convergence services, the smart card automatically installs the access parameters. On the Smart Dongle, for instance, the Launch pad that appears on the PC screen is a powerful mean highlighting operator branding on a device it does not so far access directly.

- Remote device management

With a smart card on board, the device can be easily managed through OTA or OTI, to perform software updates, reference tracking, or customer database maintenance.

- Export the same token in various devices

Embedded in new form factors, the SIM card can be deployed directly on the PC, or in the laptop on the USB port as Smart Dongle. The operator still benefits from the existing infrastructure, while extending services to new areas.

Uniform & seamless end user experience - whatever the device

- Provide portability of environment and parameters

The portability offered by a token brings high value to the operator offer, as the end-user is not limited to one device only.

He or she can retrieve all their data and preferences, whatever the terminal used, directly on the token (Smart Dongle, PC-link) or by accessing a remote server

- Improve security and thus customer acceptance

By providing users with the same security level they benefit from in GSM, the operator ensures the acceptance of the new services to a non-techno customer base.

Reuse existing infrastructure

- HLR Auc / Well known personalization process

Authentication to new networks (WiFi, other WLAN) and to services are based on IMSI/KI and (U)SIM algorithms. The operator can deploy new solutions easily and quickly with no additional costs.

- Unified customer management (billing, care, and so on)

Using the existing infrastructure helps operators to capitalize on consolidating different customer management functions, such as billing, customer support, and promotions.

Glossary

SMART CARD : In this paper a smart card can take more than ISO 7816 card format, and embed a secure silicon that will ensure the processing of functions such as cryptographic computation, device management operation (protocols) or SIP and HTTP support.

AKA : Authentication Key agreement protocol defined by 3GPP used in 3G mobile networks. This is the mechanism by which the User Equipment is authenticated in a 3G network.

UICC : The Smart Card platform able to support USIM, ISIM and other smart card applications.

SIM : Subscriber Identity module used in GSM networks.

USIM : Universal Subscriber Identity module used in UMTS networks.

ISIM : IMS Subscriber Identity module

SIP UA : Session Initiation protocol User Agent

OTI : Over the Internet. This acronym comes from OTA (Over the Air) which is the remote card management mechanism used in mobile telephony (GSM, UMTS). With new networks, the need is to address the card using IP protocols. This is what is done with OTI mechanism that can apply to any smart card described in this document.

ETSI : European Telecommunications Institute, where are defined and produced most of standards used to define USIM, ISIM and SIM.

IEEE : Institute of Electrical and Electronics Engineers, in charge of Wifi and Wimax.

3GPP : Third generation partnership project, in charge of defining services and network architectures for mobile telecommunications.

3GPP2 : Third generation partnership project 2, in charge of defining a services and network architectures for mobile telecommunications. This forum re-use most of 3GPP specifications and is mostly used in North America.

AuC Authentication center : Authentication server used in 3G and 2G networks. This is the part in charge to generate the Authentication vector used to authenticate the User equipment through the USIM (or SIM). Using the EAP-SIM, EAP-AKA, ISIM, GBA, allows to re-use this server to generate authentication vectors that will be used at different layers of the service (Access network, IMS network, and service itself). Using this same server, help the operator to ease the subscriber billing as all access are managed through the same equipment.

HSS Home Subscriber Server : This is the subscriber database that is used in IMS networks. This HSS is very close to an HLR/AuC equipment.

A wide range of solutions

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