# Large Java™ Technology-based (U)SIM Cards—"The Advanced Mobile Communication Enabler for the Future"?

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# Goal of My Talk

To give an understanding of what is possible for secure federated communication between mobile devices with large sized Java$^{\text{TM}}$ technology powered (U)SIM's

# What Some People in Europe Think We Might Achieve!

# Agenda

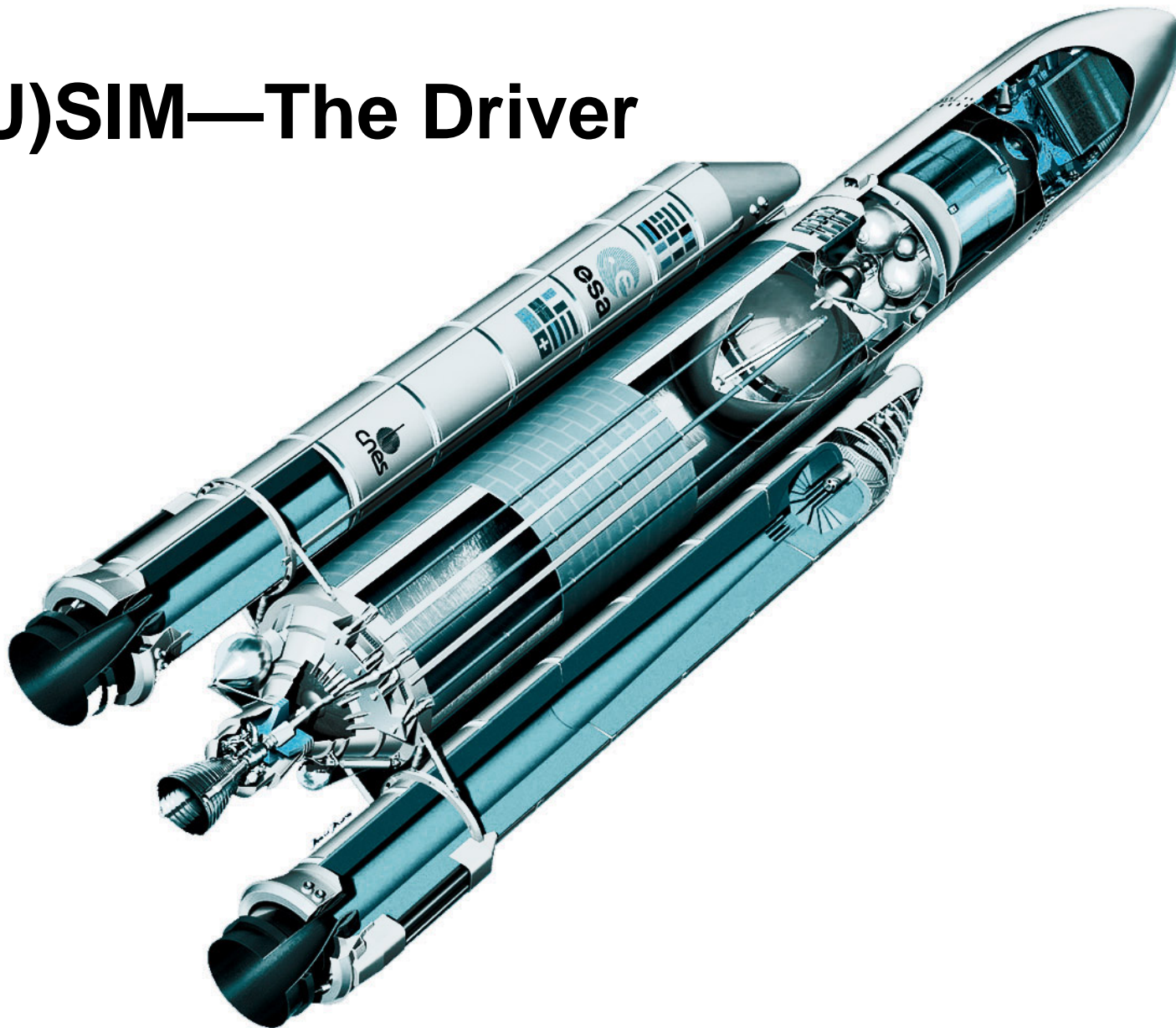Introduction—Background for Mega SIM

Use Cases—Phone and Java Card™ platform interaction, Demo

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Mobile Support—Manufacturers supporting

Solution Limits—Any show stopper

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# (U)SIM—The Driver
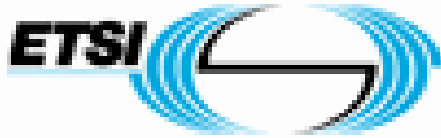
# Many Innovations Happening

| | |
|---|---|
| Functional Level | **ETSI Rel 4, Rel 5, Rel 6, Rel 7… Sun Java 3 platform—Class file** |
| Memory Size | **64KB to 256KB and more** |
| Technology | **$E^2$PROM, NOR flash, NAND flash** |
| | **32bits ARM core mono-chip, multi-chips** |
| Form Factor | **3FF, card body** |
| Interfaces | **ISO, HSP (MMC 4.0, USB 2.0 FS), contactless** |
| Applications | **JSR 177, DRM, CA, Secure Data Back-up** |

# ETSI Release 7 Requirements— Next Generation Additions…

- High speed interface
  - MMC—USB—both?

- Contactless support
  - Single Wire Protocol—C'less over ISO or HSPP—Zigbee?

- Large memories
  - Single chip with 16-64MB—separate Flash with 1GB?

- Secure local channel
  - TLS—GP secure messaging?

- Web server on card
  - BIP—TCP/IP on card?

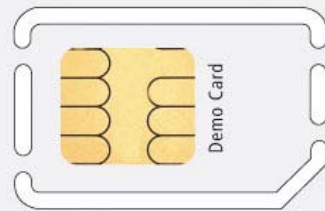# Many Additional Drivers and Navigators

ETSI

GLOBALPLATFORM

ZigBee™ Alliance

SIM ALLIANCE

JCF

3GPP

GSM ASSOCIATION

## NFC Forum

oma Open Mobile Alliance

3G 3RD GENERATION PARTNERSHIP PROJECT 2 "3GPP2"

IN-CLUB partners

# XXL-ON™ From Sagem Orga

A revolutionary
**Service Delivery System**
for the mobile world

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# XXL—A Revolutionary Service Delivery System for the Mobile World

**Personal Storage**

**Advanced Operator SIM Controlled Applications**

**Third Party Delivery Mechanism**
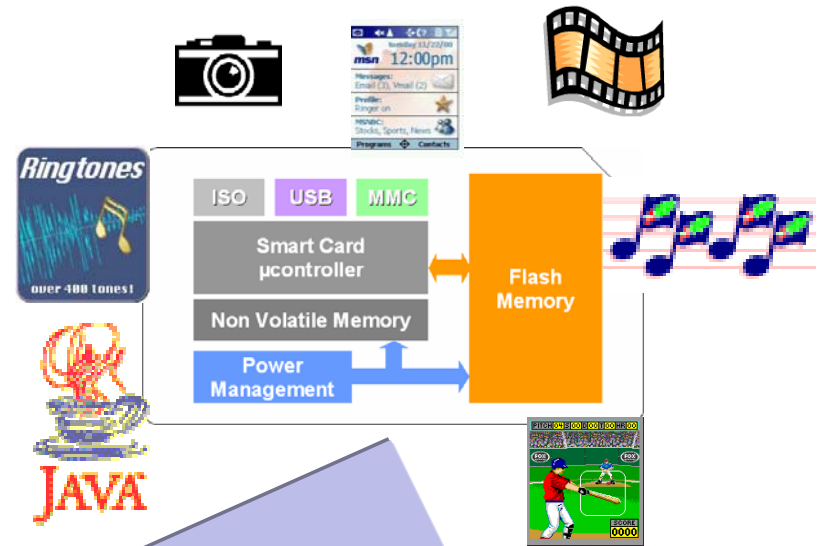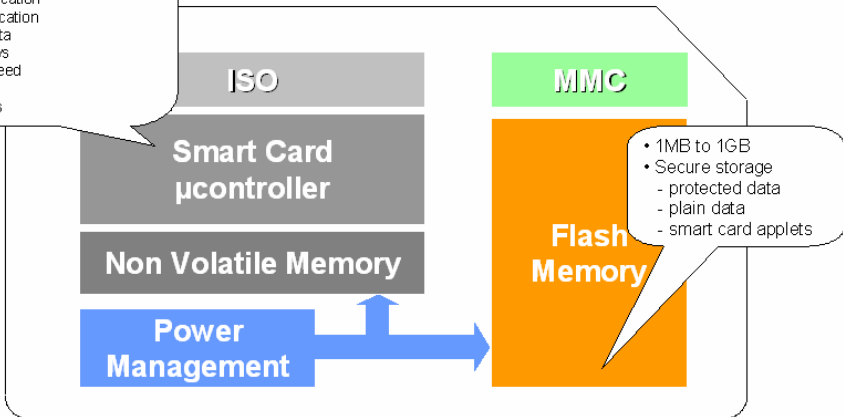
**Device Management**

# What Is Meant by Mega SIM?

- Combination (U)SIM and MMC- Card—8Mbyte to 512 Mbyte in 2006; 1- 4 Gbyte (2007)

- Current (U)SIM roadmaps up to 512Kbyte in 2006

- New UICC-Terminal Interface—A high speed communication protocol for smart cards (MMC or USB or switchable)

# XXL-ON™

- Java Card OS & Global Platform
- Programmable Security Application
  - SIM/USIM application
  - WIM application
  - user application
- Security Data
  - secret keys
  - random seed
  - user ID
  - PIN codes

**ISO**

**MMC**

**Smart Card µcontroller**

- 1MB to 1GB
- Secure storage
  - protected data
  - plain data
  - smart card applets

**Non Volatile Memory**

**Flash Memory**

**Power Management**

**Ringtones**
over 400 tones!

**ISO** **USB** **MMC**

**Smart Card µcontroller**

**Flash Memory**

**Non Volatile Memory**

**Power Management**

# See What I Mean

# The Java Card Platform World Changes the Saying

The world is not getting smaller
it's getting bigger!

# 1000 Fold Increase

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# XXL—Constriction Free Choices Examples…

## Storage

- Personal Multimedia Data (Photo, Music, Video clips)
- Pre-loaded and Downloaded Applications (Games)
- MMS Messages
- Secure/NS phonebook
- Corporate data (web)
- Adult content
- Secure/NS Calendar and T9 dictionary

## XXL On

- Network Operational System File
- Subscriber identification data
- SMS/Phone book back-up

## Applications

- Handset/Operator service customization
- Contents Service (Contents Down-load, …)
- Online 3D Game Service (GameLock and scoring)
- VOD/ Broadcasting Service—DRM Subscriber
- Webserver

# What's New With a Mega SIM Such as XXL?

- Interface
  - Enhanced access to the Card memory
  - Customisable access by a specified explorer
  - Colour capability

- Memory
  - Memory size is creating opportunities
  - Memory capability is used by customer

- Future control of the Flash memory by the SIM
  - Improve Content security
  - Improve content portability, reduce churn, and ease new services usage…………..continued……...

# What's Possible With a Mega SIM Such as XXL?

- Segmented handset provisioning

- Segmented handset customisation

- Content
  - Operator content (e.g., music, sport clips)
  - 3rd party content (e.g., trailer, Ringtones, adult)
  - Customer content (e.g., personal files, pictures, safe personal storage)

- Applications
  - Operator applications (e.g., real player)
  - 3rd party applications (e.g., demos, shareware, games)…

# Why Does This Technology Help?…

### (U)SIM          Flash Card



|  | (U)SIM | Flash Card | |
|---|---|---|---|
| **Strength** | • Secure<br>• Controllable<br>• (carrier's product) | • Large storage for<br>• Multimedia services<br>• High speed interface<br>• Multimedia based GUI | • Backward compatibility<br>• Large memory size<br>• High speed interface<br>• Multimedia based GUI |
| **Weakness** | • Slow speed interface<br>• Limited storage for<br>• New services<br>• Text based GUI | • Not secure yet<br>• Not controllable | |

# Agenda

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# New UICC-Terminal Interface (MMC or USB)

## Introduction

- Currently ongoing discussions in standardisation (ETSI-SCP) about what is the future interface: MMC or USB

- Proposal to use MMC interface, which, for a full flavoured solution, requires new additional contacts

- Additional proposal to use USB interface, which can be implemented on existing 8-contact ISO

- Discussion now ongoing for more than 1 year; No decision currently as of March 2006 in ETSI SIM standardisation; Third option of dual support maybe likely…………**BUT**……not stopping trials!

# Use Cases

## Multimedia File Management

- Able to store multimedia files (such as MMS, pictures, MP3 files, video clips)

## MMI on UICC

- Possibility to store card issuer's MMI in the UICC

- The terminal can detect the type of UICC (which operator, which service providers, which features) and upload the whole MMI that the card issuer has defined for its purposes and its services

# Use Cases

Real-time Multimedia Data Encryption/Decryption

- Directly encrypt/decrypt data stream (such as streamed video and music)

- Receive multimedia files (e.g., audio or video) encrypted using rights stored inside the UICC

- The content and its decryption key should be stored in the UICC

- The decryption process could be executed inside the card

Big Phonebook Management from the UICC

- Big memory cards will offer the opportunity to provide big phonebooks portability with some additional parameters (such as voice activated dialling)

# Use Cases

## Web Server on Smart Card

- UICC can be considered like a web server to which an Internet connection can be established with a usual Internet browser

- Through a WEB server it will be possible to offer a new range of services such as the possibility to access UICC files (e.g., the phonebook, the MP3 and videos list) via a web interface

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# Use Cases

## Anti-virus on UICC

- The usage of the UICC as a storage device or the downloading of new applications and services leads to the need of anti-virus running on the UICC itself, as it happens in a PC environment

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# Use Case Summary

**Direct / Indirect cnx to PC**

**Multimedia File**

**RT Encryption / Decryption**

**Terminal Applications**

**Anti virus**

**Smart Card WEB server / TCP-IP**

**MMI / GUI Portal**

**Phonebook**
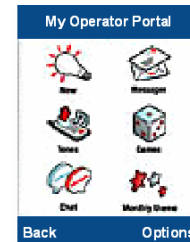
# Provisioning Demo—Abaxia

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# XXL SIM—Operator Interest Examples

E-Plus: Germany

T-Mobile: Germany

Vodafone: Global

TIM: Italy

FT/Orange: UK, France

H3G UK: UK, Hong Kong, Italy, Austria

………………and more…Spain, Eastern Europe

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# XXL Supporting Handsets—Overview (Mar '06)
S, S, LG, HTC and Continuing

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# General Industry Limitations **Today**

- Direct SIM control of MMC memory limited in today's demos

- No high speed protocol standard agreed

- No standard way for modifying handsets

- Limited number of silicon suppliers

- **BUT**……………these are being overcome rapidly!

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# Current Environment Support

- Symbian

- Linux

- Windows Mobile

- RTOS feature phones

- Java ME platform—JVM™ software/OS evolutions
  - Esmertec
  - SavaJe

# JCPSM Program/JSR Help—MSA May Solve These

- UI Management—Ideal screen app management
  - CDC commands needed
  - JSR 75 missing options e.g., EF reading
  - JSR 226—launch, call log, service handler
  - Multi-tasking
  - JSR 258

- Smart Agent—Communication stream management
  - JSR 177, JSR 75 (file system access), JSR 257 (Contactless)
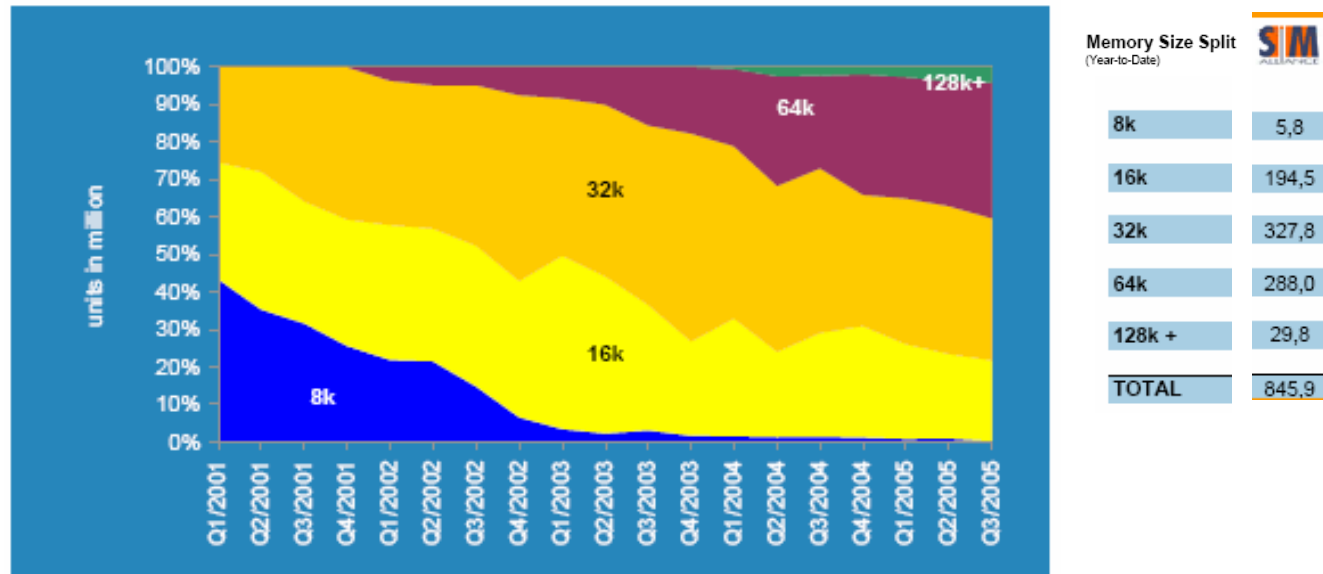  - Multi-tasking needed e.g., Home screen
  - CDC

# Concluding Round-up

# Will Mega SIM's Rule?

Historically the market would indicate no. From SIMalliance market figures for 2005 we have still 20% of the global market utilising 8 or 16k conventional non-Java technology-based SIM's. With new operators in emerging markets still only requiring this "conectivity" level. 128k+ Technology was introduced 2 years ago and still occupies only 4% of the market share.

64k was introduced 5 years ago and taken 4 years to now occupy a consistent 35% of the market.



Market by Memory Size

| Memory Size Split (Year-to-Date) | |
|---|---|
| 8k | 5,8 |
| 16k | 194,5 |
| 32k | 327,8 |
| 64k | 288,0 |
| 128k + | 29,8 |
| TOTAL | 845,9 |

# Customers and the Market… Does It Fit?

- Phone number portability is now viewed as mandatory
- Phone complexity has increased to the extent it is now in danger of the "video player" effect
- Although the world of Data-based PC is moving to voice the world of mobile voice is moving much faster to Data PC functions
- The mobile has become an invaluable business and personal tool
- Customers like flexibility and "cool" add-ons **BUT** hate configuration changes
- …………..so can we learn from the PC world?

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# …PC Is Now About Software Not Hardware

- Virus protection

- Pfshing and ID fraud

- Payment terminal

- Wireless

- Subscription

- Data storage—Remote

- Applications—Remote

- TV, Music, Video

- Shared experience—Gaming, gambling, publishing

# (U)ICC Future
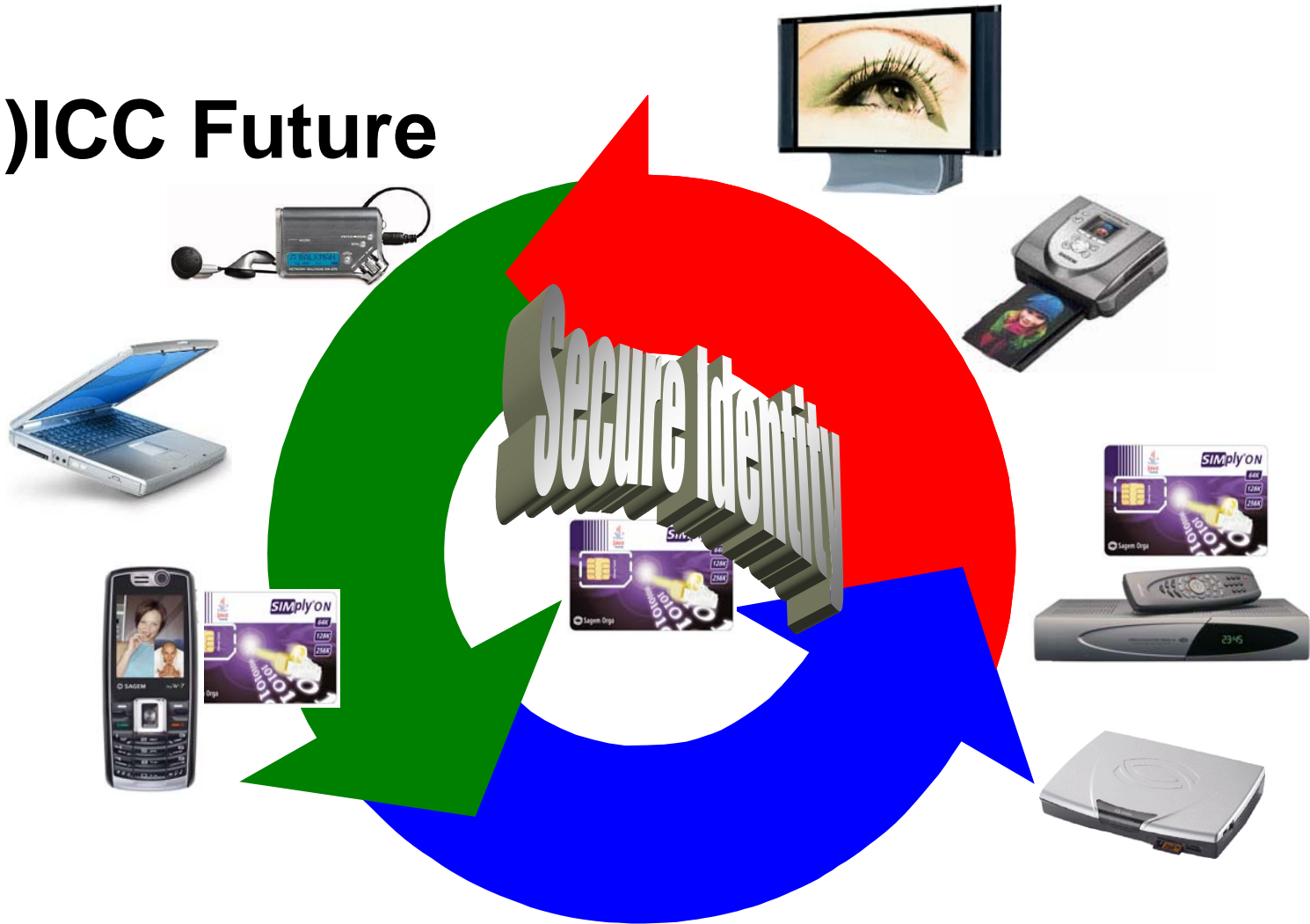
**Convergence of the World of Mobile Communication and the World of Digital Communication**

# One Voice—Many Languages!

thank you
merci
danke
obrigado
gracias
shnorakalutiun (armenian)
aciu (lith)
multumesc (rom)
spasibo

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