

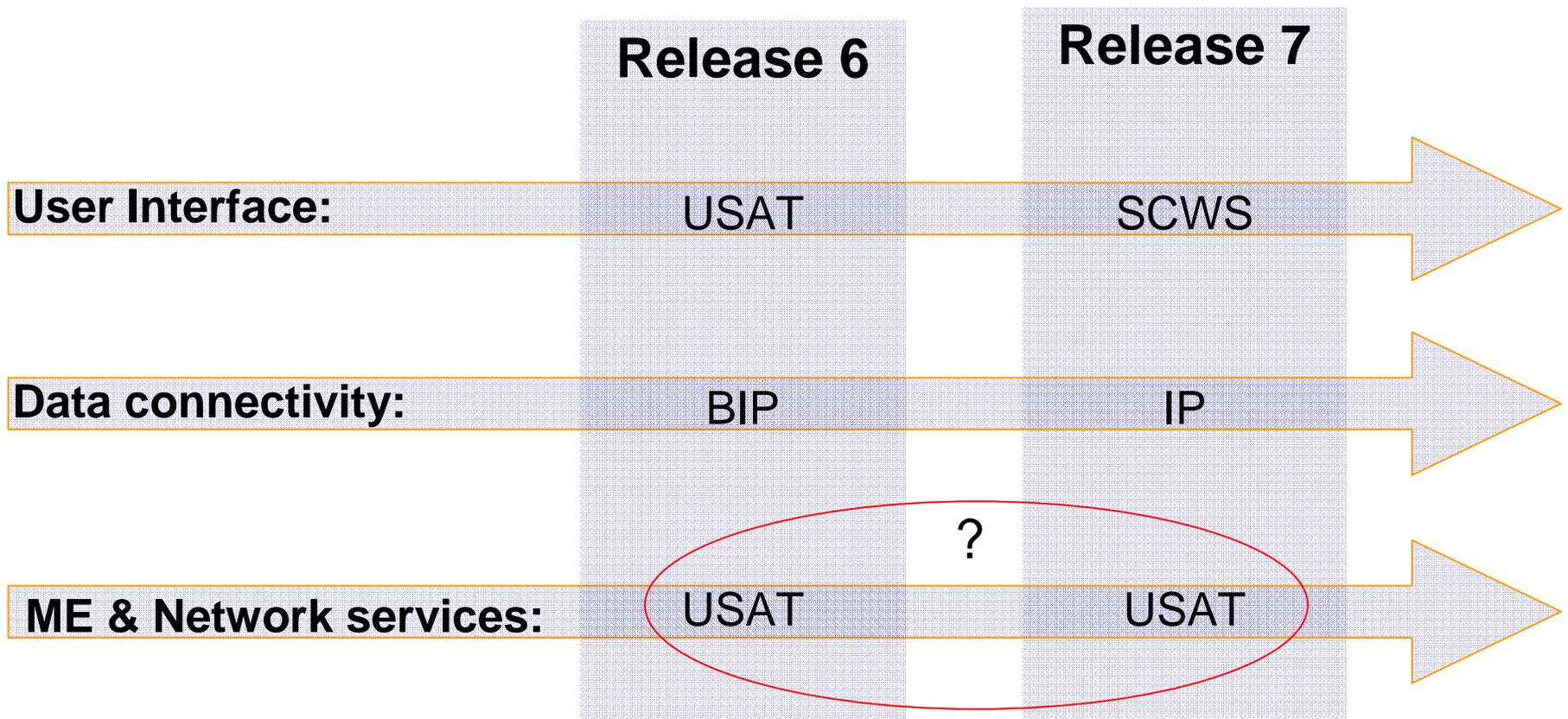
Implementation of USIM Toolkit over USB; Identified issues and proposed solutions

3GPP TSG CT6 Meeting #47
Cape Town, South Africa, 6 - 8 May 2008

C6-080127



UICC application framework evolution



What are the release 7 gaps?

Issue 1: critical

- ✦ SCWS applications (over EEM) requiring access to USAT functions suffer from polling delays

Issue 2: critical

- ✦ UICC IP connectivity is not under control
 - The UICC cannot setup the network connectivity parameters to be used for UICC IP communications with remote servers (e.g. APN, RAT, QoS)

Issue 3

- ✦ Application development is complex
 - Applications are split over IP and ICCD
 - e.g. SCWS to manage the UI and USAT to get local information
 - Maintenance of two frameworks

Issue 4

- ✦ Architectural limitations
 - It will be difficult to un-tie the USAT from the mobile digital baseband and elevate it to the application stack level
 - thus extensibility of USAT remains problematic

What are the solutions?

Solution 1

★ Solution 1: Solving the critical issues

- Enable polling triggering by UICC IP-based applications
- Define a toolkit Command for configuration of network connectivity parameters for UICC IP connections

Solution 2

★ Solution 2: Migration to an all IP architecture

- Move non-redundant USAT functions over IP
- Possibly re-use existing standards

Pros and cons of both solutions

Solution 1

★ Pros

- Require few standardization efforts
- Build on existing frameworks

★ Cons

- Solve critical issues only
- Architectural limitations thus extensibility will be problematic
- Added complexity due to maintenance of two different frameworks
- Performance (e.g. always constrained by AUTHENTICATE command timings)

Solution 2

★ Pros

- Solve all identified issues
- Allow easy extension of the USAT
- Unify the development framework & rationalize ME & UICC applications design
- Better overall communication performance
- HSP technology break can ease migration to IP
- Achieve complete migration towards IP

★ Cons

- Potential Redundancy
- Barrier for first implementations might be higher

Solution 2 detailed description

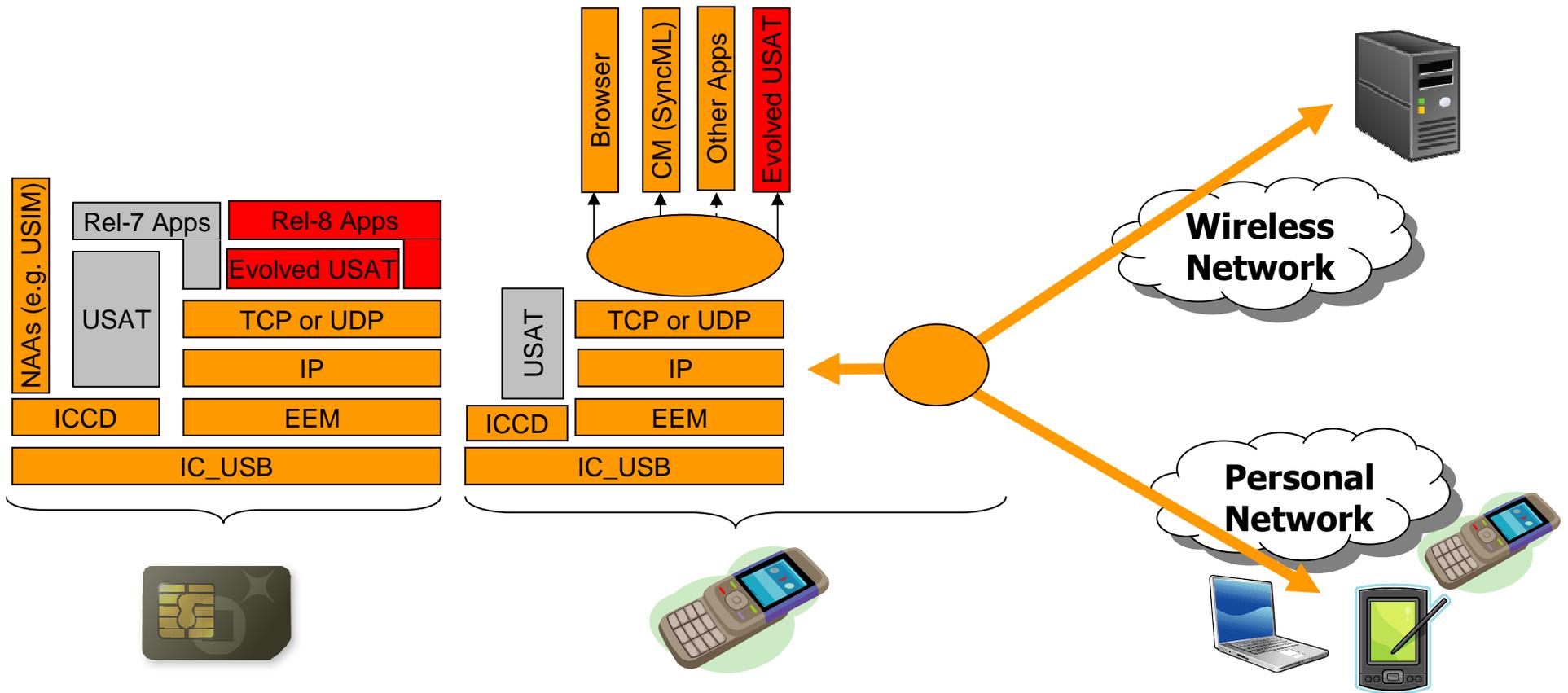
Evolved USAT proposed scope

- ✦ Support of SCWS over IP to provide a GUI for UICC based applications
- ✦ Support of ETSI TS 102 483 to provide remote/local IP connectivity for UICC applications
- ✦ Ability to configure access networks parameters used for UICC IP connectivity
- ✦ Support of non-redundant USAT functions over IP

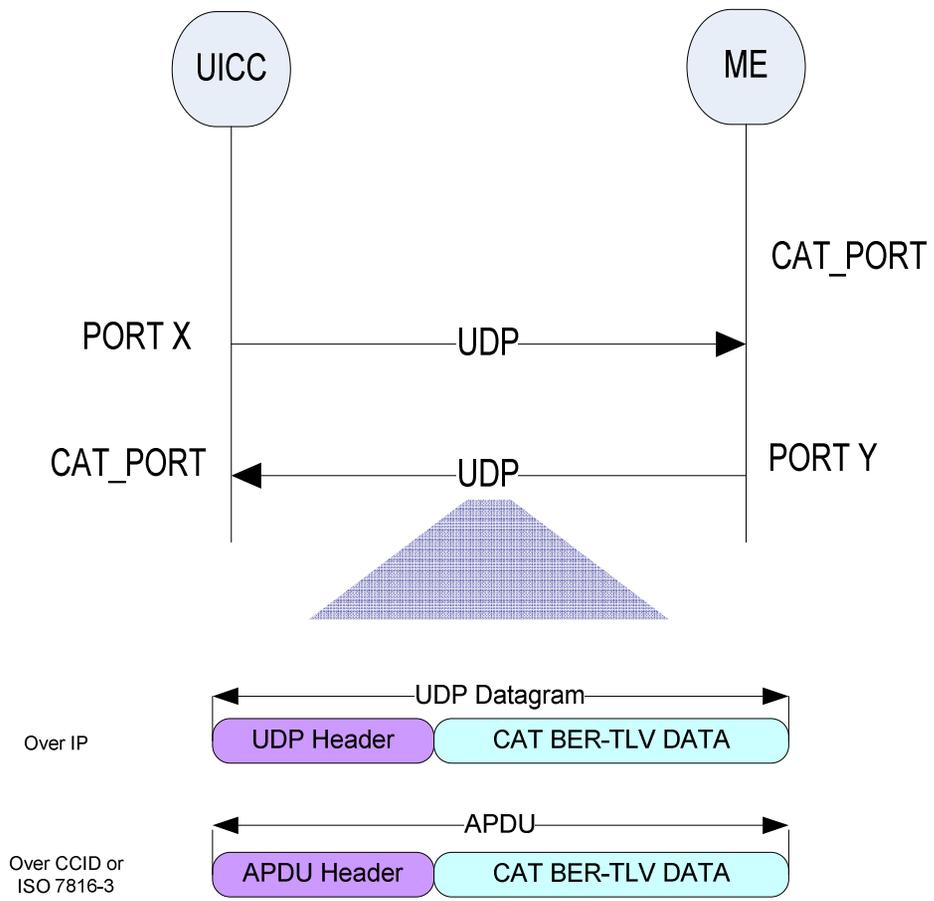
Candidate USAT functions for migration over IP

- ✦ All existing USAT functions except:
 - All USAT User Interface related functions (including frames)
 - BIP
 - but keeping BIP for Bluetooth and IrDA

Evolved USAT impacts on applications design



Evolved USAT proposed architecture



- ★ No concurrency between Toolkit over ICCD and Toolkit over UDP.
- ★ When both the ME and the UICC support Toolkit over UDP, the Toolkit over ICCD shall be disabled.

Rational

- ★ UDP minimizes resource consumption on both UICC and ME.
- ★ The re-use of TS 31.111 BER-TLV, which encodes the actual USAT commands, maximize synergies and minimize development efforts.

Conclusion

- ✦ The accompanying contribution provides a baseline for solution 2 specification
- ✦ A new command enabling the configuration of network connectivity parameters to be used for UICC IP remote connections is provided in C6-080128.
 - This change request applies to both solutions
- ✦ Keeping in mind that we have a unique opportunity due to HSP technology break, 3GPP CT6 is kindly requested to decide on the best way forward

Additional slides

Candidate USAT functions for migration over IP

Legend: Yes | No | Partially

- ✦ CALL CONTROL and MO SMS Control, COMMAND RESULT, LANGUAGE NOTIFICATION, LAUNCH BROWSER, PLAY TONE, PROVIDE LOCAL INFORMATION, REFRESH, RUN AT COMMAND, SEND DTMF, SEND SHORT MESSAGE, SET UP CALL, SET UP EVENT LIST, SET UP IDLE MODE TEXT, TIMER MANAGEMENT, TIMER EXPIRATION, RETRIEVE MULTIMEDIA MESSAGE, SUBMIT MULTIMEDIA MESSAGE, MMS Transfer Status, DISPLAY MULTIMEDIA MESSAGE, MMS notification download, TERMINAL APPLICATION, Send SS, Send USSD, Data download to UICC (SMS and CB), USSD Data Download
- ✦ EVENT DOWNLOAD
 - MT call; Call connected at near end (MT call); Call connected at far end (MO call); Call disconnected at near end; Call disconnected at far end; Location status; User activity; Idle screen available; Card reader status; Language selection; Browser termination; Data available; Channel status, Access Technology Change, Display parameters changed, Local connection, Network Information Change, Browsing status, Frames Information changed, I-WLAN Access status event
- ✦ DISPLAY TEXT, GET INKEY; GET INPUT; GET READER STATUS; MENU SELECTION, PERFORM CARD APDU, POWER ON CARD, POWER OFF CARD, SELECT ITEM, SET UP MENU, SET FRAMES, GET FRAMES STATUS
- ✦ MORE TIME, POLL INTERVAL, POLLING OFF
- ✦ PROFILE DOWNLOAD (as a basis for a service discovery mechanism)
- ✦ OPEN CHANNEL, CLOSE CHANNEL, RECEIVE DATA, SEND DATA, GET CHANNEL STATUS, SERVICE SEARCH, GET SERVICE INFORMATION, DECLARE SERVICE (for Bluetooth and IrDA only)