Source:	**NTT DoCoMo Inc., Ericsson**
Title:	**Progression of work on WLAN Interworking Scenario 4 & 5**
Document for:	**Discussion and decision**
Agenda Item:	**7.1.3, 7.2.2**
Contact:	**Dr. Masami Yabusaki**
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Attachments:	**SP-040720 ïLS on evolution of network architectureí**
	SP-040737 ïCR to TS 22.234 on New features of I-WLANí

1. Introduction

At the last SA2 meeting (SA2#43) a Liaison Statement was sent to TSG SA#26 on the subject of ïevolution of network architectureí (SP-040720). Within this LS it is requested that TSG SA provide guidance on how to progress with the WLAN Interworking scenario 4/5 work.

As the discussion within SA2 was triggered by the agreement of a CR in SA1 on ïNew Features of I-WLANí (SP-040737) this document considers the work on service continuity between I-WLAN and 3GPP systems within SA1 and its relationship to the work on the All-IP Network (AIPN) Feasibility Study (TR 22.978).

Based on the discussion provided below recommendations are made on the most effective method for progressing work on WLAN interworking scenario 4 and 5 within 3GPP.

2. Discussion

At the last SA1 meeting (SA1#26) a CR to TS 22.234 (Requirements on 3GPP system to Wireless Local Area Network (WLAN) Interworking) to introduce service continuity between I-WLAN and 3GPP systems was agreed. This was agreed after substantial debate and it was recognised that further work on this subject will be needed within SA1 in the future.

It was also agreed at the last SA1 meeting to present version 1.0.0 of the AIPN Feasibility Study in TR 22.978 to TSG SA#26 for information. One of the main topics covered within this study is mobility across a variety of access systems, one example of which being WLAN. It would appear that this work within the AIPN Feasibility Study and work on service continuity between I-WLAN and 3GPP are related. Since the CR to introduce the service requirements for service continuity between I-WLAN and 3GPP systems was agreed by SA1 there have been proposals to the last two SA2 meetings for a work item to investigate an architectural solution to satisfy these requirements. However, it has not been possible to agree upon such a work item within SA2. Based on this discussion SA2 has sent an LS to TSG SA#26 within which guidance is requested on how to progress with the WLAN Interworking scenario 4/5 work.

Based on the above it is reasonable to judge that the reason that SA2 have been unable to agree upon a work item to investigate an architectural solution for service continuity between I-WLAN and 3GPP systems is that the service requirements are not sufficiently detailed. This implies that further work is needed within SA1 to clarify the service requirements for this functionality.

Additionally, it is thought that further work within SA1 on service continuity between I-WLAN and 3GPP systems would be very similar to the current ongoing work on mobility across a variety of access systems within the AIPN Feasibility Study. This indicates that a coordinated approach is needed to ensure that this work does not diverge and result in two competing architectural solutions being designed.

As the work on the AIPN Feasibility Study is progressing well and is already covering the topic of mobility across multiple access systems it would appear that the most appropriate approach would be to consolidate further work on service continuity between I-WLAN and 3GPP systems within the scope of the AIPN Feasibility Study work item only. This would ensure that this work does not diverge and also enable work that

has already been undertaken within the AIPN Feasibility Study to be leveraged to elaborate service requirements for a general functionality that is not limited to only I-WLAN.

If the approach proposed above was adopted it would mean deviation from the current working practice of progressing work on WLAN interworking based on the scenarios originally described within TR 22.934. TR 22.934 and the scenarios defined within it played an important role in the initial work on WLAN interworking within 3GPP. However, this TR was produced early in Rel-6 and the Technical Specification for Requirements on 3GPP System to WLAN interworking (TS 22.234 approved at TSG SA#22) makes limited use of its content. In fact, work in some areas has deviated significantly from the content of TR 22.934. Therefore, there appears to be no reason to adhere to the scenarios provided within TR 22.934 for work on WLAN interworking in the future.

The work on WLAN interworking that was undertaken in Rel-6 should be considered a complete package (for Rel-6). Given the progress that has been made on the AIPN Feasibility Study aimed toward Rel-7 it would appear logical for the AIPN Feasibility Study to absorb future work on WLAN Interworking that goes beyond access to 3GPP PS services over I-WLAN (i.e. work beyond the scope of WLAN scenario 3 within TR 22.934).

3. Conclusions and recommendations

Based on the discussion provided within section 2 of this contribution, it is recommended that TSG SA advise SA1 to consolidate the work on service continuity between I-WLAN and 3GPP systems within the scope of the AIPN Feasibility Study to ensure that these pieces of work do not diverge. This would enable the work on mobility across a variety of access systems within the AIPN Feasibility Study to be leveraged to produce service requirements for a general functionality rather than one limited to I-WLAN only.

Furthermore, it is recommended that the future work on WLAN interworking should not continue based on the scenarios within TR 22.934 and that work that goes beyond access to PS services over I-WLAN (i.e. scenario 4 and 5 of TR 22.934) be absorbed within the work on the AIPN Feasibility Study (TR 22.978). In effect this will mean that work on scenario 4 and 5 will not be considered within the future work on WLAN interworking and all work relevant to session continuity and mobility across multiple access systems will be consolidated within the work on AIPN. This information should be provided to both SA1 and SA2 in response to the request for guidance within the LS received from SA2 on evolution of network architecture.

Based on the above it is concluded that the CR to introduce service continuity between I-WLAN and 3GPP systems presented by SA1 to TSG SA#26 for approval is no longer necessary. Therefore, TSG SA#26 should return the CR to SA1 for further elaboration. SA1 should also be advised that further work within the AIPN Feasibility Study should be undertaken before presenting CRs on the subject of service continuity and mobility across multiple access systems to TSG SA.

3GPP TSG-SA WG2 Meeting #43   **Tdoc S2-043891**
Seoul, South Korea, 15 - 19 November 2004   **rev of S2-043725**

Title: LS on evolution of network architecture

Response to: -
Release: Release 7
Work Item: -

Source: SA2
To: RAN, SA
Cc: CN

Contact Person:
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Attachments: S2-043650

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1.   Overall Description:

During the SA2 #43 meeting, Tdoc S2-043650 (attached) brought to the attention of SA2 the different network evolution activities that are taking part in different groups in 3GPP. In particular, it identifies the work on All-IP Network (AIPN) done in SA1 and the UTRAN evolution proposals shown in the recent RAN Evolution Workshop held in Toronto (some of which had architectural implications well beyond UTRAN).

Also, during both the SA 2 #42 and #43 meetings, SA 2 have held extensive discussion on a WID relating to WLAN scenario 4/5 work. Currently there is no agreement within SA 2 as to whether or not this work should focus only on WLAN-3GPP interworking, or, whether it can focus on interworking to any other generic RAT. SA 2 would appreciate guidance from SA on this matter.

SA2 strongly encourages other working groups to continue the work in this area. However, SA2 believes that there is a need to coordinate the architectural evolution of CN and RAN(s) in order to ensure that they follow a complementary path. As the leading working group on overall UMTS architecture, SA2 would like to inform RAN and SA that we plan to take this coordination role as well as overall responsibility for network evolution. SA2 expects close coordination with RAN and SA groups working on UTRAN or CN evolution and would like to be kept informed on the progress of this work in RAN and other SA groups.

        Note: the terms of reference for 3GPP SA 2 can be found at http://www.3gpp.org/TB/SA/SA2/ToR.htm

2. Actions:

For RAN and SA: to kindly take the above information into account when discussing the outcome of the RAN evolution workshop.

For SA: to give SA 2 guidance on how to progress with the WLAN scenario 4/5 work.

3. Dates of Next TSG-SA WG2 Meetings:

TSG-SA WG2 Meeting #44   26 Jan - 02 Feb 2005   EU

TSG-SA WG2 Meeting #45   04 - 08 April 2005   CN

Source: **Vodafone**
Title: **Future SA 2 work related to ì RAN evolutionî ; AIPN; and WLAN scenario 4/5**
Agenda item: **12.1**
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1   RAN Evolution Workshop

3GPP TSG RAN held a workshop on ìRAN evolutionî in Toronto 2-3/11/04.

Although the focus of many of the workshop presenters was on the radio technology, several of the presentations showed anticipated developments in the system architecture behind the radio interface (see REV-WS022, 23, 24, 25, 26, 27, 31, 37, 40, 41 at
ftp://ftp.3gpp.org/workshop/2004_11_RAN_Future_Evo/Docs/
).

The summary of the meeting is in tdoc REV-WS044 and it identifies the

ìNeed for input from SA on different subjects e.g.:
-        Potential New functional splits between Radio Access Network and Core Network
-        Evaluation of the ratio between Peak and Average throughput for service delivery to determine optimisation of the backhaul
-        Determine the throughput per userî

It is believed that various companies are preparing proposals for Study Items/Work Items that will be presented to TSG RAN for approval.

Many of the architectures that were presented depicted the new radio interface as a totally new RAT. The interconnection of this new RAT with the existing 3GPP system might be via Iu or via Gn or ìat Giî.

Although no detailed architecture descriptions were proposed, several speakers hypothesised about new architectural features. Examples include: connecting the Iu interface to the base station site; or placing the SGSN functionality into the base station site. However important issues were frequently omitted (eg charging, legal interception, encryption of the user plane from the Base station site), and, many of these are interesting to SA Working Groups including SA 2.

2   All IP Network (AIPN)

Within SA 1 there is a large piece of work progressing on the ì requirements for an All IP Networkî. One of its conclusions MIGHT (or might not) be that specifications for ì network controlled mobility between heterogeneous RATsî should be developed.

This work could well link to the RAN evolution work ñ alternatively it could diverge from it.

3   WLAN scenario 4/5

This work is under active discussion within SA 1 and SA 2. In SA 1, the discussions on WLAN seem to be treated in a separate drafting group to those on AIPN. Again, this work could converge or diverge from the AIPN and/or RAN evolution work.

4 Scope of SA 2

SA 2 is believed to have overall responsibility for the system architecture of the 3GPP system. Hence it seems sensible that SA 2 prepare some proposals as to how these different work areas within 3GPP can be converged, rather than permitting (or even encouraging) their divergence.

5 Proposals

a)   that SA 2 draft a work item for SA to consider when discussing the RAN evolution report.

b)   that SA 2 consider the ì RAN evolutionî aspects while discussing/revising the scenario 4/5 WID.

Source:	**SA1**
Title:	**CR to 22.234 on New features of I-WLAN for Rel-7**
Document for:	**Approval**
Agenda Item:	**7.1.3**

Meeting	SA Doc	TS No.	CR No	Rev	Rel	Cat	Subject	Vers. Current	Vers New	SA1 Doc
SP-26	SP-040737	22.234	010	-	Rel-7	B	New features of I-WLAN	6.2.0	7.0.0	S1-040995

CR-Form-v7.1

CHANGE REQUEST

⌘ **22.234** CR **010** ⌘rev **-** ⌘ Current version: **6.2.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: | UICC apps⌘ [ ]   ME **X** Radio Access Network **X** Core Network **X**

Title: ⌘	New features of I-WLAN	
Source: ⌘	SA1 (Samsung Electronics Co.)	
Work item code:⌘	WLAN-SC	**Date:** ⌘ 15/10/2004

Category: ⌘ **B**	**Release:** ⌘ **Rel-7**

Use <u>one</u> of the following categories:
F (correction)
A (corresponds to a correction in an earlier release)
B (addition of feature),
C (functional modification of feature)
D (editorial modification)
Detailed explanations of the above categories can
be found in 3GPP TR 21.900.

Use <u>one</u> of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)
Rel-7 (Release 7)

Reason for change: ⌘	According to the agreed principle at SA1#23, service continuity for I-WLAN is proposed as a new feature.
Summary of change:⌘	Add a new feature for supporting service continuity across the 3GPP system and I-WLAN.
Consequences if not approved: ⌘	No service continuity support between I-WLAN and the 3GPP system.

Clauses affected: ⌘	new section 6.3

	Y	N		
Other specs ⌘	X		Other core specifications ⌘	TS 23.234, TS 24.234, TS 29.234, TS 23.060
affected:		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘	

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

****** FIRST MODIFIED SECTION ******

6 Service requirements

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6.3 Support for service continuity

Service continuity between I-WLAN and 3GPP systems which allows ongoing 3GPP PS based services to survive a change of the access network shall be provided.

A change in service quality may occur as a consequence of the transition between systems due to the varying capabilities of the access technologies and their associated networks. As the target network may not support an equivalent service, it is possible that some services may not survive.

****** END OF MODIFICATION ******