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Source: NextNav  
Title: Revised SID: Study on Indoor Positioning Enhancements for UTRA and LTE  
Document for: Approval  
Agenda Item: 13.2.3

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## 3GPP™ Work Item Description

For guidance, see [3GPP Working Procedures](#), article 39; and [3GPP TR 21.900](#).  
Comprehensive instructions can be found at <http://www.3gpp.org/Work-Items>

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Title: Study on Indoor Positioning Enhancements for UTRA and LTE

Acronym: FS\_UTRA\_LTE\_iPos\_enh

Unique identifier: [6300xy640018](#)

NOTE: If this is a RAN WID including Core and Perf. part, then Title, Acronym and Unique identifier refer to the feature WI. Please tick (X) the applicable box(es) in the table below:

<input type="checkbox"/>	This WID includes a Core part	
<input type="checkbox"/>	This WID includes a Performance part	

### 1 3GPP Work Area

<input checked="" type="checkbox"/>	Radio Access
<input type="checkbox"/>	Core Network
<input type="checkbox"/>	Services

### 2 Classification of WI and linked work items

#### 2.0 Primary classification

This work item is a ...

<input checked="" type="checkbox"/>	Study Item (go to 2.1)
<input type="checkbox"/>	Feature (go to 2.2)
<input type="checkbox"/>	Building Block (go to 2.3)
<input type="checkbox"/>	Work Task (go to 2.4)

NOTE: Core, Performance and Testing parts of RAN WIs are usually Building Blocks.  
If you are in doubt, please contact MCC.

#### 2.1 Study Item

Related Work Item(s) (if any)		
Unique ID	Title	Nature of relationship
	<a href="#">Study on Indoor Positioning Enhancements for UTRA and LTE</a>	

Go to §3.

## 2.2 Feature

Related Study Item or Feature (if any)		
Unique ID	Title	Nature of relationship

Go to §3.

## 2.3 Building Block

Parent Feature (or Study Item)		
Unique ID	Title	TS

This work item is ...

	<b>Stage 1 (go to 2.3.1)</b>
	<b>Stage 2 (go to 2.3.2)</b>
	<b>Stage 3 (go to 2.3.3)</b>
	<b>Test spec (go to 2.3.4)</b>
	<b>Other (go to 2.3.5)</b>

### 2.3.1 Stage 1

Source of external requirements (if any)		
Organization	Document	Remarks

Go to §3.

### 2.3.2 Stage 2

Corresponding stage 1 work item		
Unique ID	Title	TS

Other source of stage 1 information		
TS or CR(s)	Clause	Remarks

**If no identified source of stage 1 information, justify:**

Go to §3.

### 2.3.3 Stage 3

Corresponding stage 2 work item (if any)		
Unique ID	Title	TS

Else, corresponding stage 1 work item		
Unique ID	Title	TS

Other justification		
TS or CR(s) or external document	Clause	Remarks

**If no identified source of stage 2 information, justify:**

Go to §3.

## 2.3.4 Test spec

Related Work Item(s)		
Unique ID	Title	TS

Go to §3.

## 2.3.5 Other

Related Work Item(s)			
Unique ID	Title	Nature of relationship	TS / TR

Go to §3.

## 2.4 Work task

Parent Building Block		
Unique ID	Title	TS

# 3 Justification

Positioning mechanisms were specified in 3GPP as a key feature for UTRA and E-UTRA networks since Release-99 and Release-9, respectively; e.g., A-GNSS, OTDOA, E-CID, UTDOA.

On-going enhancements to the US FCC Enhanced 911 capability are focusing on in-building positioning.<sup>[1]</sup>

It is therefore beneficial for the 3GPP ecosystem to explore this area, studying the potential introduction of new capabilities in 3GPP to support indoor positioning within E-UTRA and UTRA.

[1] <http://www.fcc.gov/document/proposes-new-indoor-requirements-and-revisions-existing-e911-rules>

# 4 Objective

## 4.1 Objective of SI or Core part WI or Testing part WI

- The objectives of this study item are to study techniques for indoor positioning (RAT-dependent, such as e.g. OTDOA, UTDOA, E-CID, RFPM, etc and RAT-independent systems, e.g. A-GNSS, Terrestrial Beacon Systems, etc). The goals are to study potential 3GPP positioning enhancements in indoor and other challenging environments (e.g. urban canyons) and are to:
  - Define a 3D system model, including indoor channel model, to study indoor positioning [RAN1]
  - Develop baseline simulation scenarios and evaluate the corresponding baseline performance of the existing positioning techniques (e.g. A-GNSS, E-CID, OTDOA, UTDOA, or hybrids thereof) for indoor environments to establish a baseline performance [RAN1]
    - For the performance evaluations consider specifically: location accuracy (including latitude, longitude and altitude), yield, and time to fix.



RAN #69					Q4/2015										RAN #70				
R1L	R1U	R2L	R2U	R2J	R3	R4RF Core	R4RD Core	R4RF Perf	R4RD Perf	R1L	R1U	R2L	R2U	R2J	R3	R4RF Core	R4RD Core	R4RF Perf	R4RD Perf
82bis	82bis	91bis	91bis	91bis	89bis	76bis	76bis	76bis	76bis	83	83	92	92	92	90	77	77	77	77

L: LTE, U: UMTS, J: Joint, RD: RRM/demodulation

NOTE: In case further explanation of the time budget proposal is needed, then please explain this below.

~~additional comments to the time budget proposal: This time budget allocation should be re-evaluated at RAN#65.~~

- 5 Service Aspects
- 6 MMI-Aspects
- 7 Charging Aspects
- 8 Security Aspects
- 9 Impacts

Affects:	UICC apps	ME	AN	CN	Others
Yes		X	X		
No	X				
Don't know				X	

## 10 Expected Output and Time scale

New specifications [If Study Item, one TR is anticipated]						
Spec No.	Title	1st rsp. WG	2nd rsp. WG(s)	Presented for information at plenary#	Approved at plenary #	Comments
LTE TR 376.8xy	Study on Indoor Positioning Enhancements for UTRA and LTE	RAN1	RAN4	RAN #68	RAN #69	

NOTE: If this is a RAN WID including Core and Perf. part, then all new Core part specs have to be listed first and then all new Perf. part specs. Indicate "Core part" or "Perf. part" under Comments for each spec. By default a new specs can only be new for one of both parts.

Affected existing specifications [None in the case of Study Items]				
Spec No.	CR	Subject of the CR	Approved at plenary#	Comments

NOTE: If this is a RAN WID including Core and Perf. part, then all new Core part specs have to be listed first and then all new Perf. part specs. Indicate "Core part" or "Perf. part" under Comments for each spec. If an existing spec is affected by both (Core part and Perf. part), then it has to be listed twice with appropriate approval dates.

## 11 Work item rapporteur(s)

Vogedes, Jerome

**Company:** NextNav

**Email:** [jvogedes@NextNav.com](mailto:jvogedes@NextNav.com)

## 12 Work item leadership

RAN1 (primary), RAN4

**NOTE:** If this is a RAN WID including Core and Perf. part, then this WG specifies the WG leading the Core part. RAN WG4 is by default leading the Perf. part.

## 13 Supporting Individual Members

Supporting IM name
NextNav
AT&T
Blackberry UK, Limited
Broadcom
CSR
Electrobit
Ericsson
Harris Corporation
<a href="#">HiSilicon</a>
<a href="#">Huawei</a>
III
Intel
ITL
Motorola Solutions
NII
NSN
Polaris Wireless
Qualcomm Incorporated
Spirent Communications
<a href="#">SouthernLINC</a>
TeleCommunications Systems
THALES
T-Mobile USA
TruePosition
<a href="#">US Cellular</a>

US Department of Commerce
Verizon
ZTE