

# **SA\_WS for Rel-12**

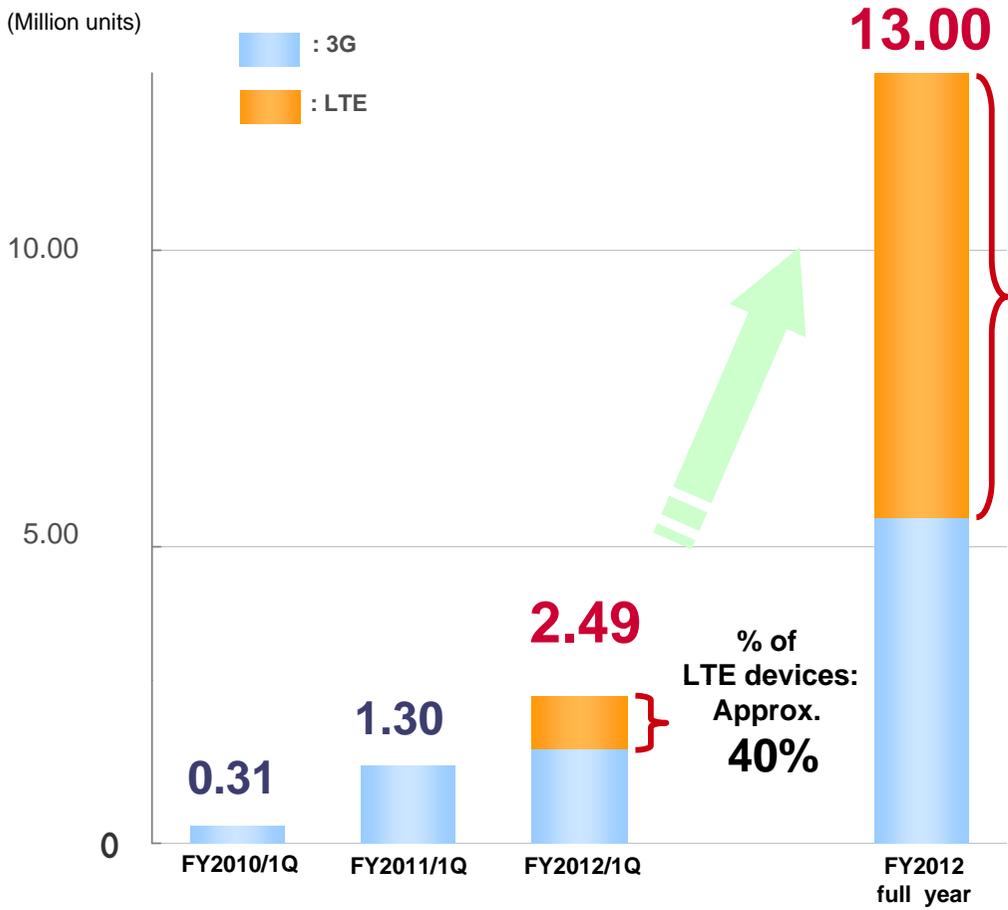
## **The Cost-Efficient Traffic Adaptable System**

**NTT DOCOMO Inc.  
2012 November**

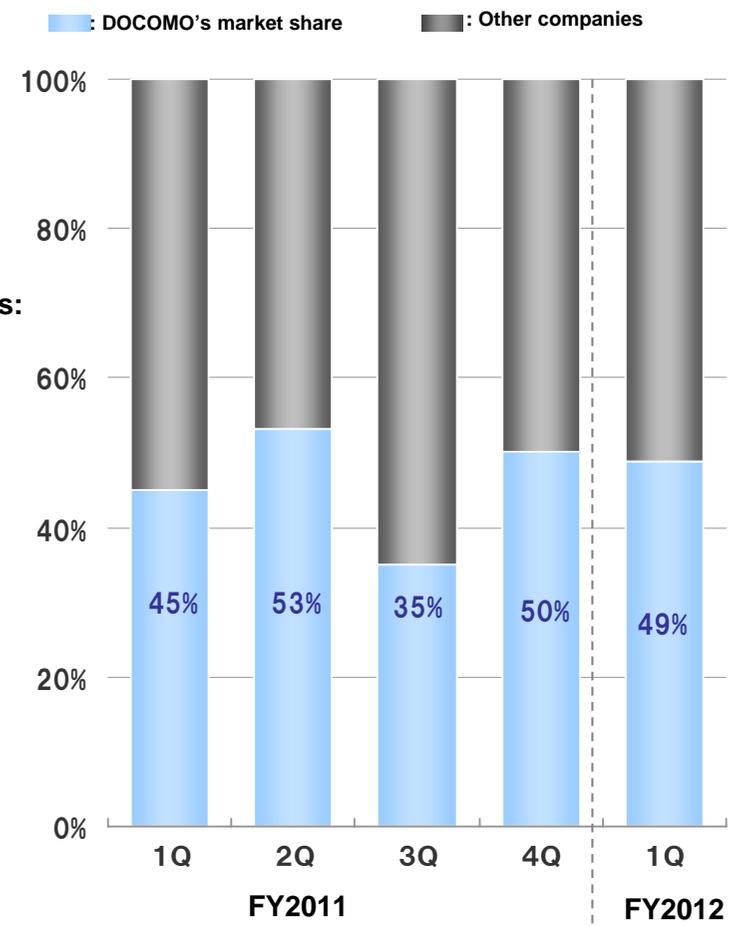
# Smart phone sales

- No. of smartphones sold in FY2012 1Q was 2.49 million, increasing sharply from the same period of last fiscal year
- DOCOMO's market share of smartphones sold remains high at approx. 49%

## Smartphone sales



## Changes in market share of smartphones sold at mass retailers\*

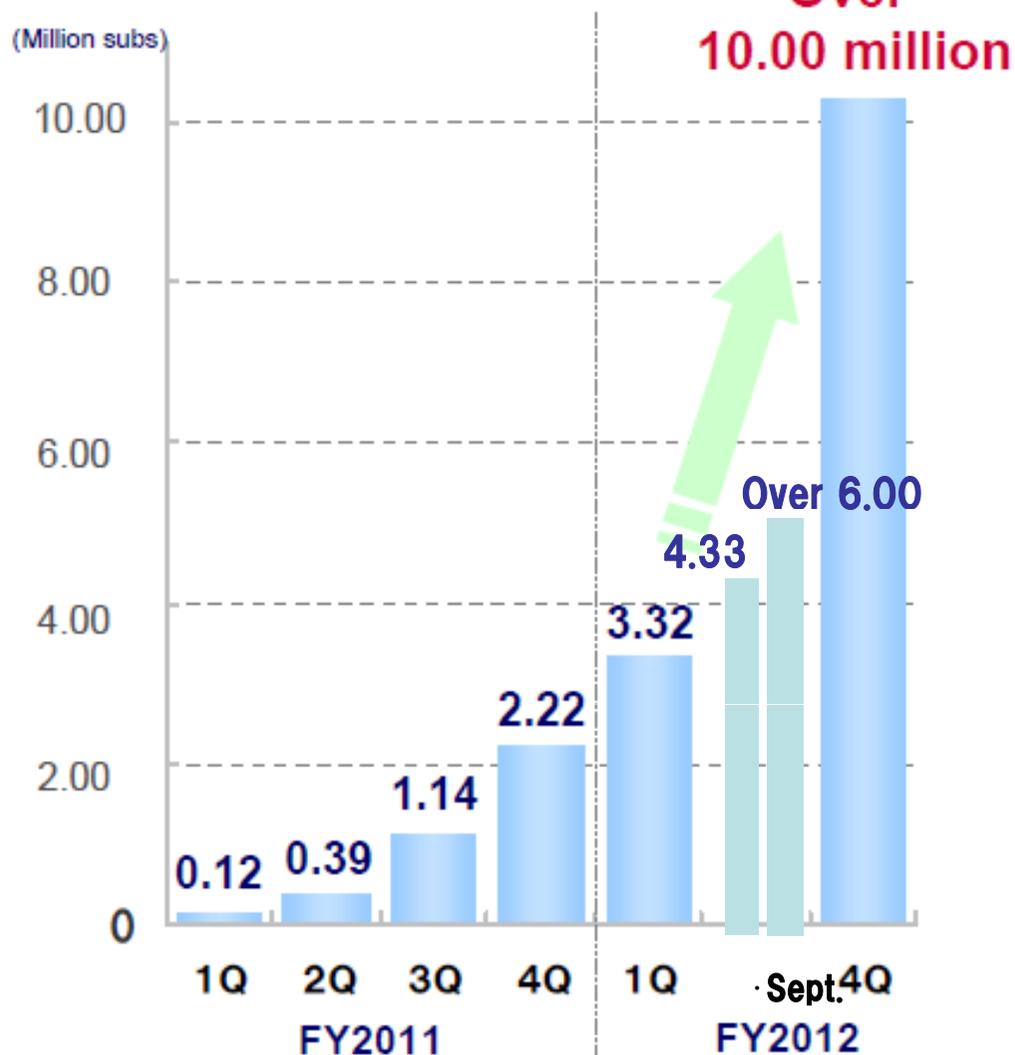


\* Market share distribution among devices carrying either of the 4OSs (Android/iOS/WindowsMobile/BlackBerry) in the mobile phone category, based on survey of track record of sales at major mass retailers across Japan by GfK Japan (Tablet devices not included)

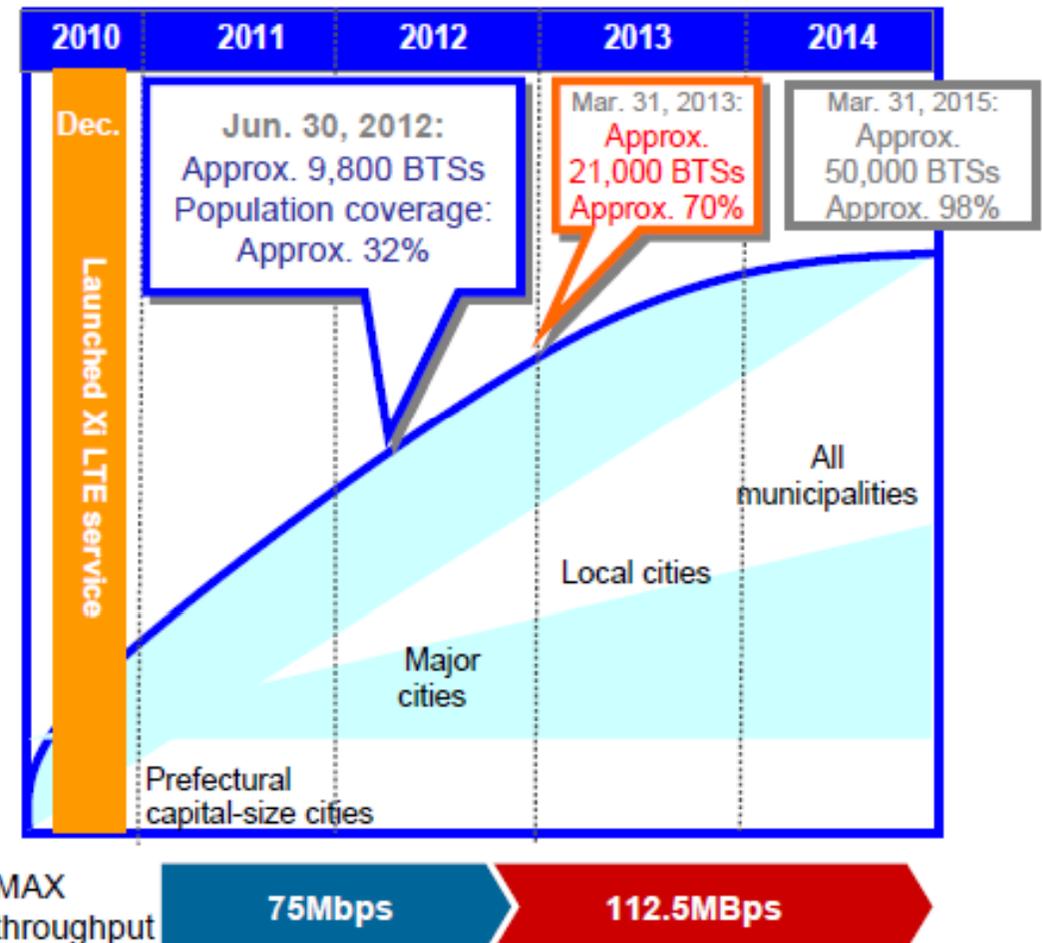
# Promotion of Xi (LTE) Service

- Xi subscriptions grew steadily to over 5 million as of Aug. 19, 2012.
- Making steady progress in coverage expansion, aiming to complete installation of cumulative 21,000 Xi base stations by Mar. 31, 2013.

Xi subscriptions



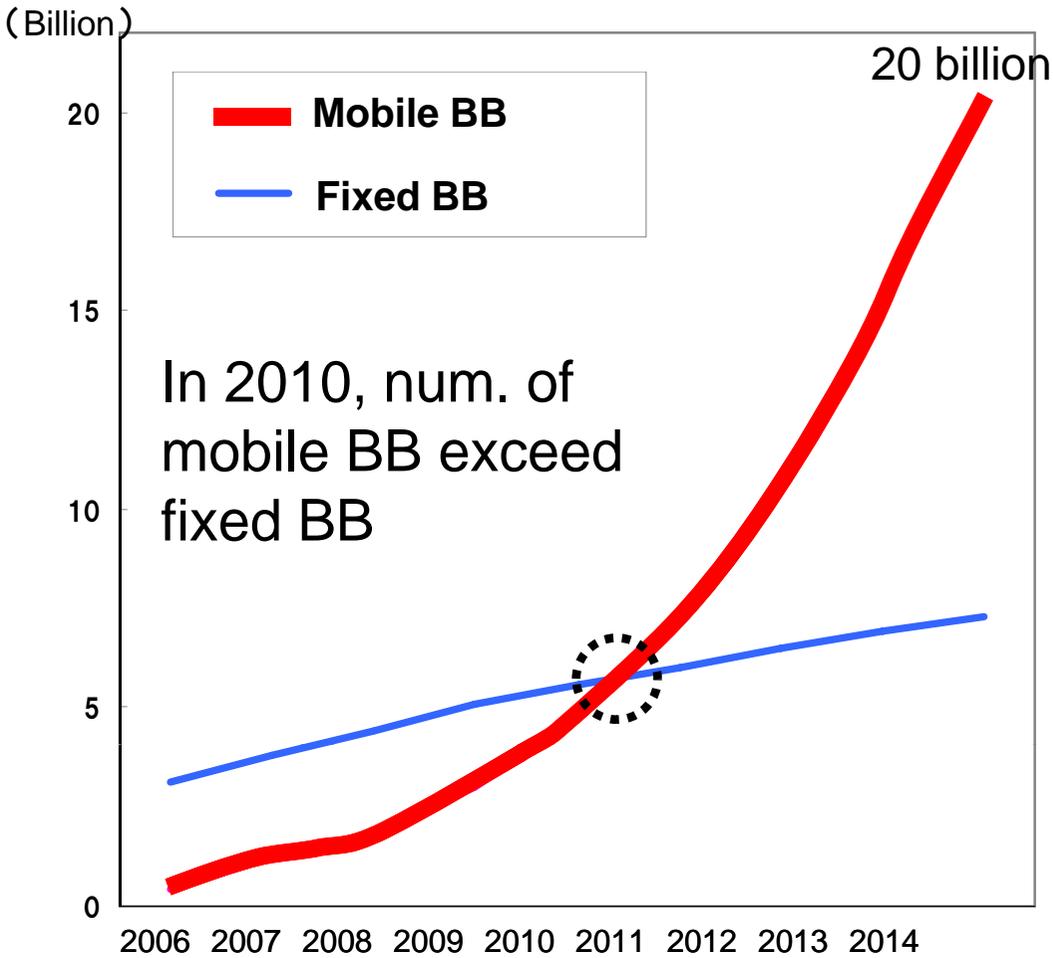
Xi Coverage expansion plan



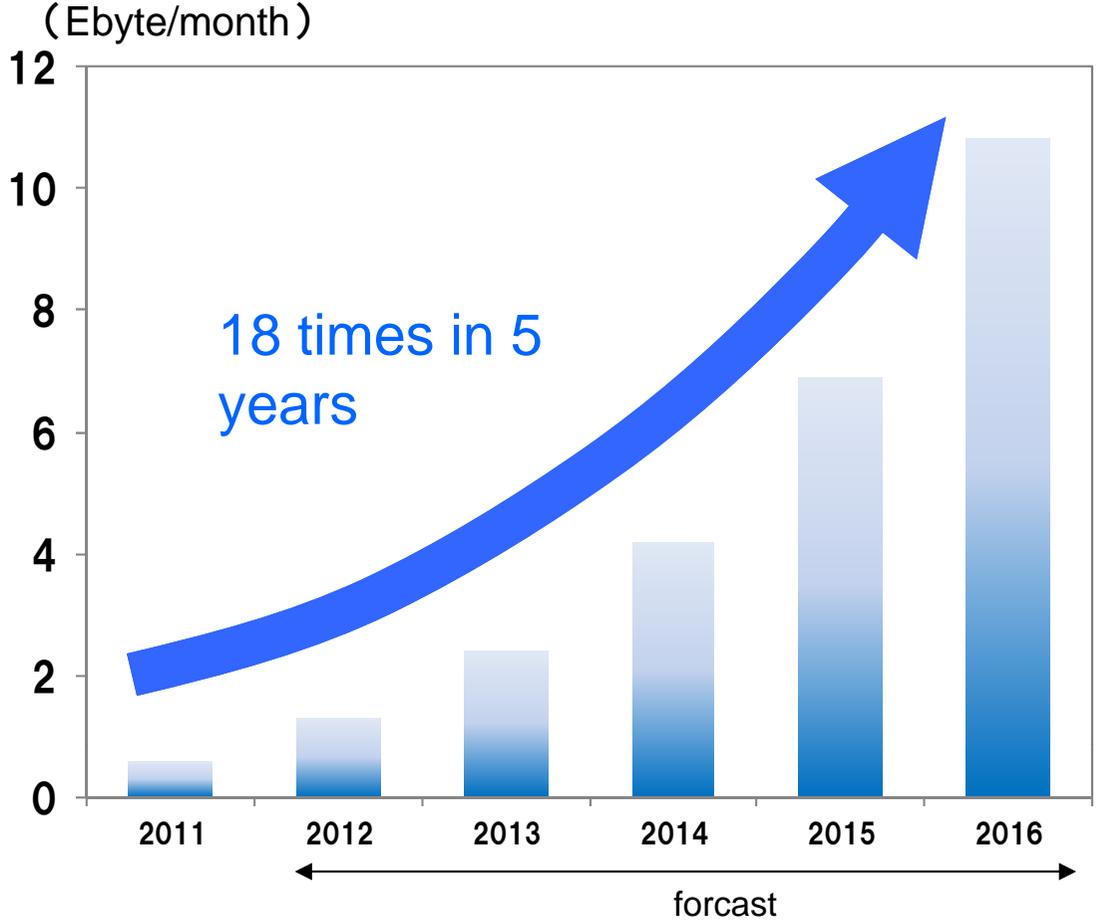
# Data Traffic Growth

Mobile data traffic increase rapidly due to smartphone

Num. of BB subscribers



Mobile traffic data



[ref1] Ovum :Mobile Broadband Users and Revenues Forecast Pack to 2014 (2009)  
<http://www.giiresearch.com/report/ov85564-mobile-brband.html>  
 [ref2] Infonetics Research: Mobile broadband subscribers overtake fixed broadband (2011)  
<http://www.infonetics.com/pr/2011/Fixed-and-Mobile-Subscribers-Market-Highlights.asp>

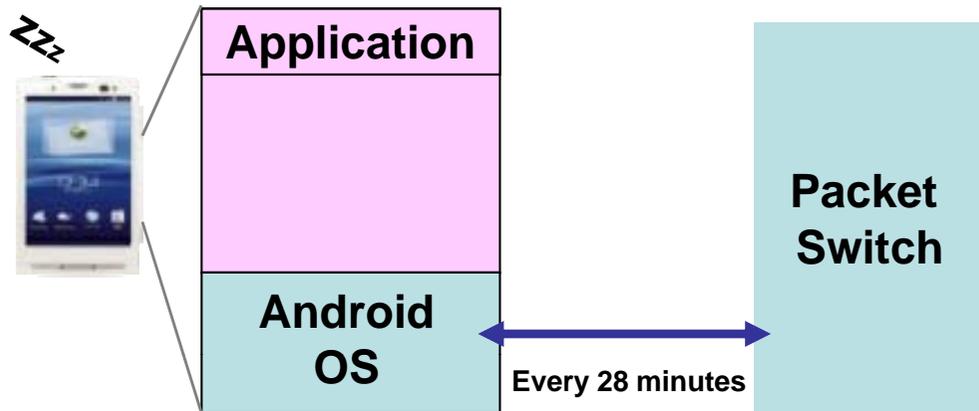
[ref] CISCO 「Cisco Visual Networking Index」 (2012.02)  
[http://www.cisco.com/web/JP/solution/isp/ipngn/literature/white\\_paper\\_c11-520862.html](http://www.cisco.com/web/JP/solution/isp/ipngn/literature/white_paper_c11-520862.html)

# Example: C-Plane signalling traffic increase

- Given the popularity of VoIP/Chat applications that constantly send/receive data, C-Plane and U-Plane traffic between the device and network have been sharply increasing.

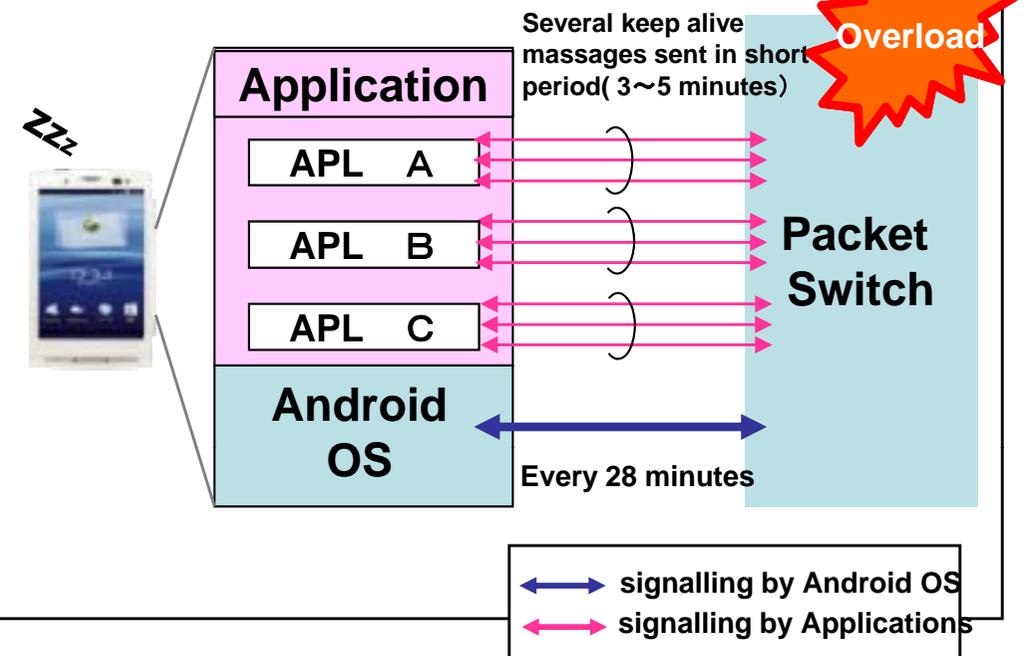
## OS Background Traffic

Keep-Alive messages by Android OS on every 28 minutes without user control



## User Application Traffic

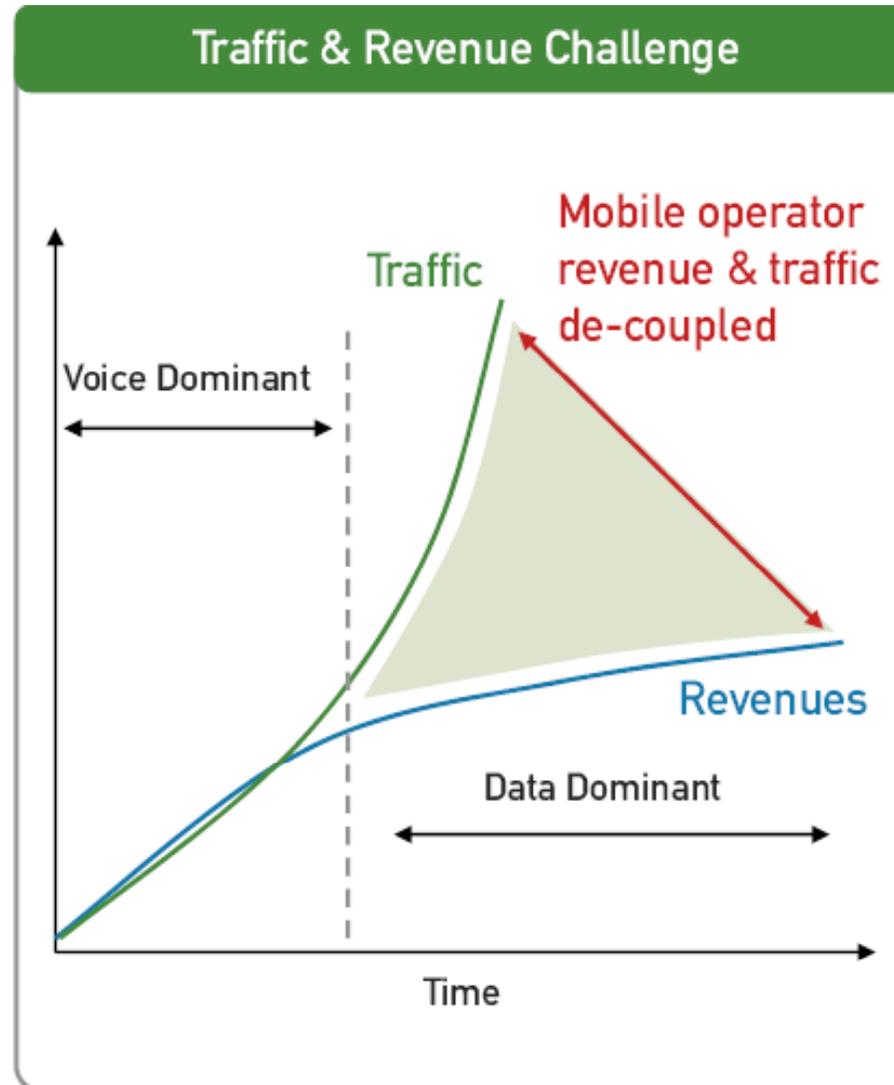
Many Keep-Alive messages by every application in addition to those by Android OS



**Rel-12 network is required to adapt to increased traffic**

# Traffic & Revenue Challenge

The network is required not only to be optimized for increased traffic, but to be **more cost-efficient**.



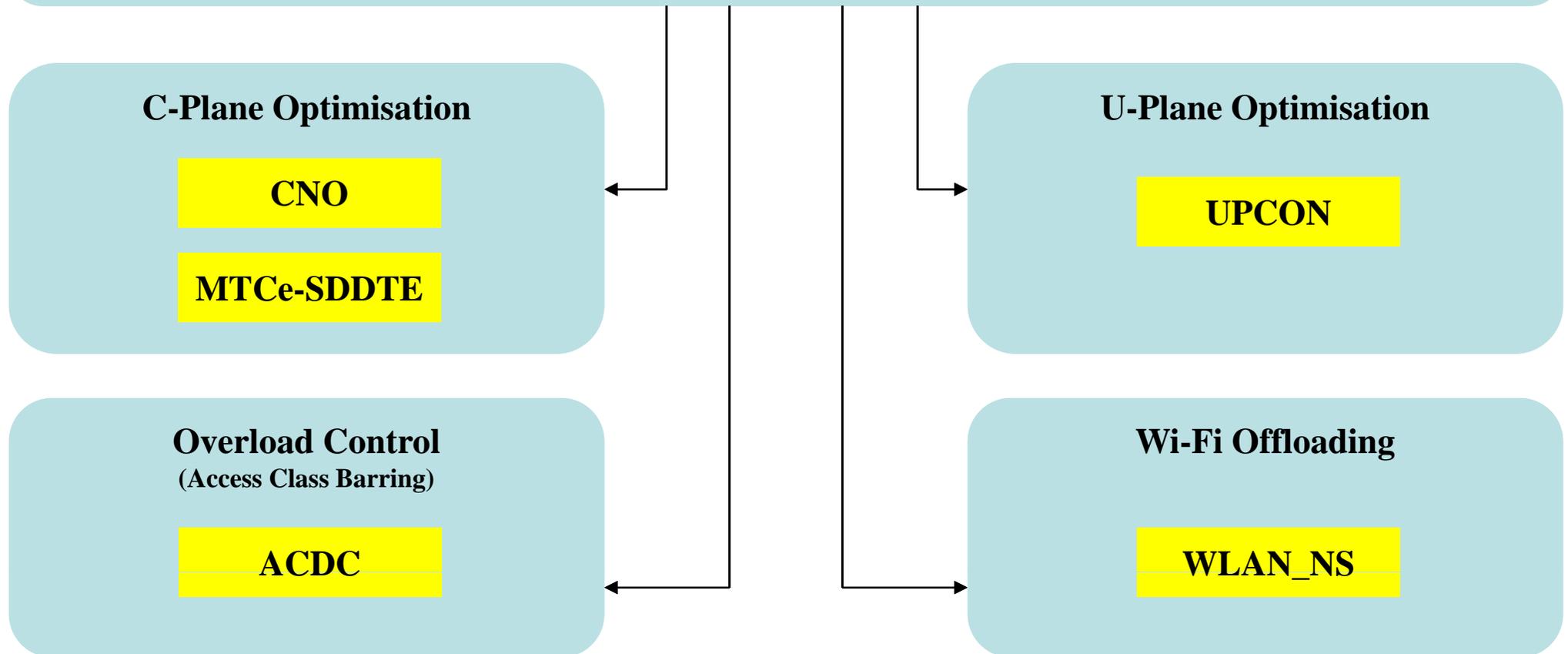
# Summary of RAN WS

- Common and converged requirements identified
  - Capacity increase to cope with traffic explosion
  - Energy saving
  - Cost efficiency
  - Support for diverse application and traffic types
  - Higher user experience/data rate
  - Backhaul enhancement

Reference: RWS-120045 (p.2)

# In Rel-12, SA should achieve:

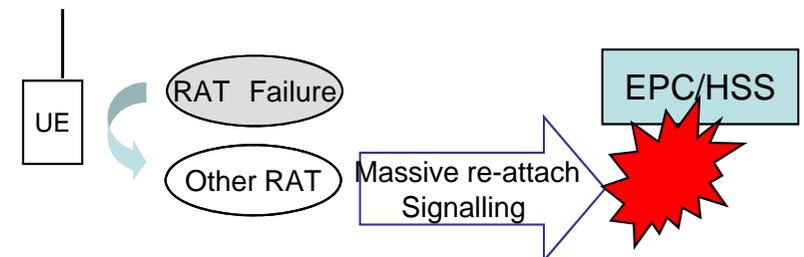
## Cost-Efficient, Traffic Adaptable System



Most of these aspects are aligned with RAN\_WS Summary (refer P2 of RWS-120045)

# CNO (Stage 2)

- Overview of the Study Item
  - ➔ This activity tried to resolve Core NW signalling reduction/handling scheme especially in the case of a node failure and/or its recovery phase triggers surge of signalling.
  - ➔ e.g. a huge spike produced in core network when the radio network response to a failure.
  - ➔ e.g. a huge UE re-attach causes in the case of HLR (and other network nodes) restarts from a failure.
- How does this help?
  - ➔ Operators experience these event sometimes in daily operation, hence the improvement expected in imminent needs.
  - ➔ Resolved scheme tend to be operator specific, but more consistent and sophisticated scheme are foreseen via standardization.
- Status as for now
  - ➔ The Study Item has been progressed.
  - ➔ Expected inclusion in R12

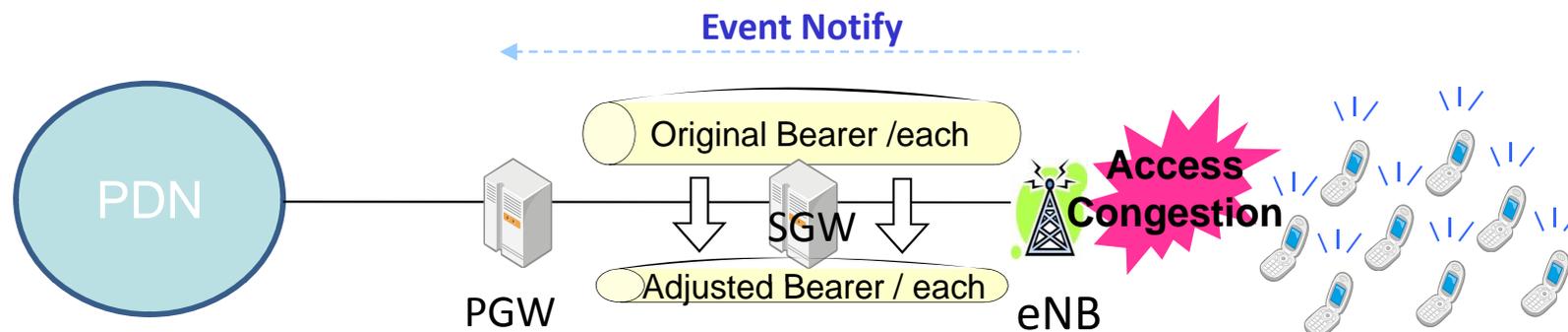


# SDD-TE (Stage 2)

- Overview of the Work Item
  - Creating solutions for small data transmissions which reduce signalling traffic in the RAN and CN.
  - Enhancements of control-plane solution (T5) for device triggering
  
- How does this help?
  - Reduce signalling traffic for Small Data Transmission
    - Network will be able to optimize device triggering based on T5
    - Reduce RAN signalling load when UE transmits small data frequently.
  
- Status as for now
  - The Work Item has been progressed.
  - Expected inclusion in R12

# UPCON (Stage 2)

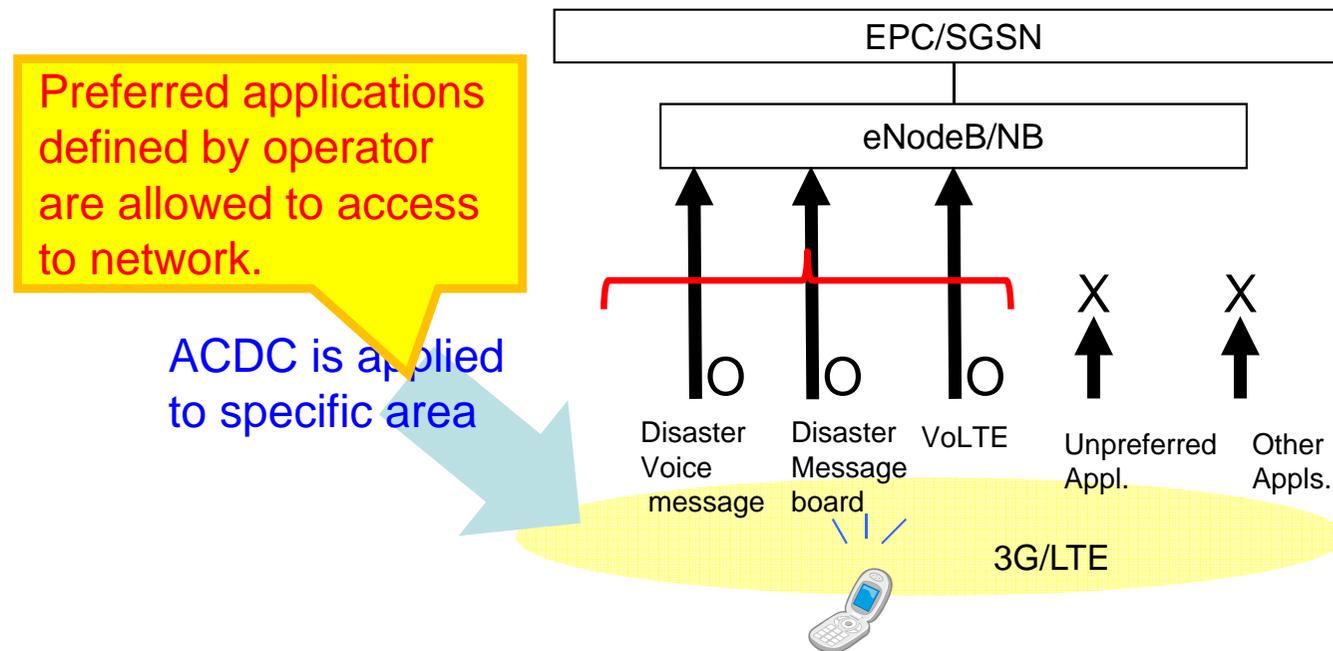
- Overview of the Work Item
  - User Plane Congesting management scheme aims to resolve better U-plane resource allocation especially in case of resource shortage of a RAT.
- How does this help?
  - A sophisticated resource allocation scheme to be considered to accommodate maximum users enable to access even in a congestion case.
  - Not an old fashioned first come first served based scheme.



- Status as for now
  - Started the TR phase in SA2

# ACDC (Stage 1)

- Application-specific Access Class Barring mechanism to allow MNO to bar communication of unwanted applications in the granularity of application.



- How does this help?
  - ➔ ACDC enables operators to reduce C/U-plane traffic from barred apps
  - ➔ Avoids complete shutdown of network in emergency situation, while allowing important (regulation/humanity-related) apps.
- Status as for now:
  - ➔ New TR 22.806 is now actively drafted in SA1.

# WLAN\_NS (Stage 2)

## ● Overview

- Technical alignment between 3GPP and Wi-Fi Alliance Hotspot2.0/Passpoint.

## ● How does this help?

- Better user experience by 802.11u, enhanced ANDSF and SIM-based authentication.
- Enhancements to IP flow control and network selection for WiFi Offloading.
- 3GPP playing a key role in the industry-wide WLAN related activities.

## ● Status

- Active discussions ongoing on TRs...

# SDO Activities on Wi-Fi



Working Groups  
(IREG, BARG, TADIG,  
FF, TSG, etc)  
create guidelines as PRD



- WRIX

Liaisons to  
Updating PRDs

Liaisons to  
Update WRIX specs



- WiFi Roaming White Paper
- Recommendations
- Based on 3GPP / WFA / WBA Specs

Liaisons to:  
- Tell WBA/GSMA requirements  
- align 3GPP specs and  
GSMA/WBA Requirements

Liaisons to  
- Tell WBA/GSMA requirements  
- align HS2.0 and  
GSMA/WBA Requirements



- RADIUS
- Diameter
- EAP
- Transport..  
as background  
technology



Liaisons to align  
3GPP / HS2.0 specs



- HotSpot2.0

Adaptation of IEEE technology



- TS23.402 architecture (e.g. non-3GPP)
- ANDSF
- Rel-12 SaMOG, NBIFOM, etc
- Alignment with HS2.0 (Rel-12 WLAN\_NS)

# Summary

- Creating standards that enable operators to deploy Cost-efficient Traffic Adaptable System should be the focus area for Rel-12.
- Outcome of RAN Workshop should be considered.
- The following WID/SIDs help achieve this.

Area	WID/SID Name	Responsibility
C-Plane Optimisation	CNO	SA2
	MTCe-SDDTE	SA2
U-Plane Optimisation	UPCON	SA2
Overload Control	ACDC	SA1
Wi-Fi Offload	WLAN_NS	SA2

<sup>NTT</sup> docomo