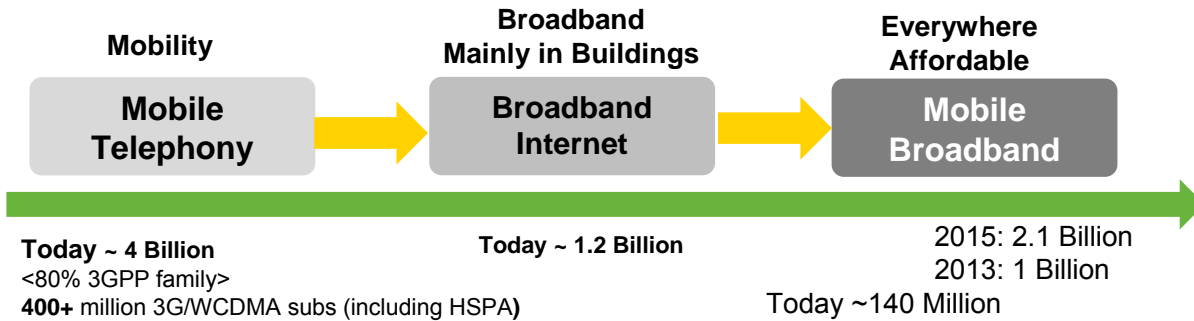


Breakthrough to NEC's LTE Mobile Broadband World

NEC's LTE/SAE Solutions
MWC 2010 - Barcelona

Towards True Mobile Broadband & Sustainability



Mobile Broadband in Connected Digital World:

- ✓ A reality today
- ✓ A dominant means of global broadband connectivity in the near future

Market Place

- ✓ Cost Vs Revenue does not add up
- ✓ New ecosystem & new players
- ✓ Trends toward being "Bit pipe provider"
- ✓ Shift in revenue stream



Operators

- ✓ Cost optimization
- ✓ New business models
- ✓ Customer satisfaction
- ✓ Revenue generation




Vendors

- ✓ Innovative solutions
- ✓ Greener Solutions
- ✓ E2E with lower TCO

NEC

C & C; True convergence of IT & Telecom

 <p>Lte</p>	 <p>Backhaul</p>
 <p>Femto</p>	 <p>Carrier Cloud</p>

Think Big – Deploy Small Cells Overlay LTE

Operator Status

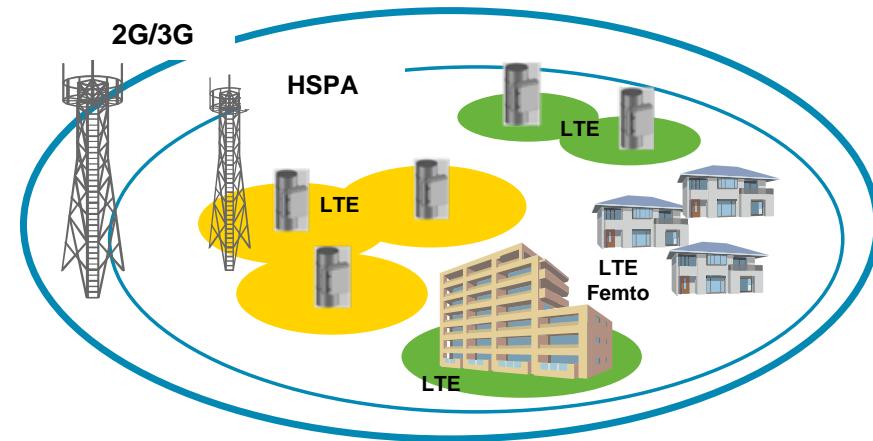
Deployment Strategy

Operator Benefits

- High data traffic exists at specific areas
- 2G/3G networks provide macro coverage
- Desire to minimise costs and still be ahead
- Target capacity and data cards users
- Deploy LTE overlay in high data traffic zones
- Deploy micro/pico/femto eNBs
- Fast LTE deployment and service delivery
- Build as you grow - New business revenue
- Minimise integration and network complexity

Future Outlook

- 2G&3G for ubiquitous voice & HSPA mainly for data
- ↓
- 2G&3G for voice, HSPA for ubiquitous data & LTE for data hotspots
- ↓
- 2G OR 3G for voice , HSPA for ubiquitous data & LTE for metrozone data



LTE/SAE References – Commercial, Trials & Announcements

Commercial/Trials

NEC Selected as Vendor for LTE / SAE solution

- NEC has been selected by **NTT DoCoMo** to provide eNode B and EPC infrastructure solutions
- NEC has been selected as Super 3G Handset Vendor **for NTT DoCoMo**
- NEC has been selected by **NTT DoCoMo** to Provide Operations Support Systems (OSS)
- NEC has been selected by **KDDI** to provide eNodeB infrastructure solutions

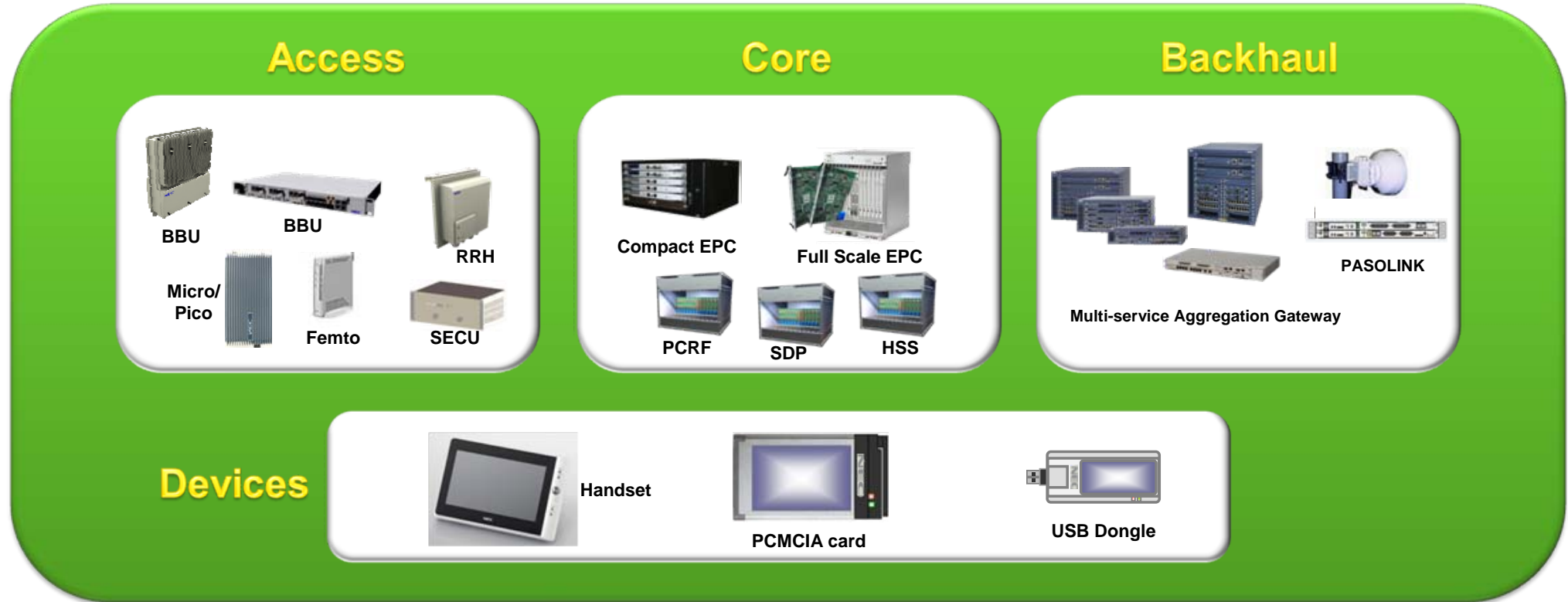
NEC Selected also as Vendor for LTE / SAE pilot trials

- NEC has been selected by **Telefonica**
- NEC has been selected by **Several global operators.**
- Others to be announced

Product Announcements

- NEC to Show Smallest All-in-One Compact LTE Base Station at MWC 2010
- NEC to Exhibit LTE Concept Terminal at MWC 2010
- NEC develops the world's first 3-Dimensional Simulator for LTE SON
- NEC Develops One of the World's Leading Mobile Base Station Transmitter Amplifiers
- NEC Introduces Compact LTE Wireless Base Station at Broadband World Forum Europe 2009
- NEC Produces World's Smallest Class All-in-One Compact Core Network System (EPC) for LTE
- DOCOMO, NEC, Panasonic Mobile Communications, Fujitsu Push Ahead with LTE Mobile-Terminal Platform
- Casio Hitachi Mobile Communications to Merge with NEC's Mobile Terminal Unit

NEC's End to End LTE/SAE Offering



NEC's eNB – Flexible Solution

Small cells

Micro/Pico eNB
(BB+RF)



LTE Femto

LTE outdoor hotspot enabler

In building, residential and enterprise

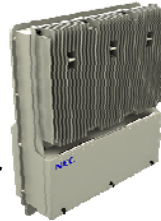
Plug and Play

Distributed Solution

Indoor



Outdoor



RRH



SECU



Most compact BB unit

Flexible & Scalable

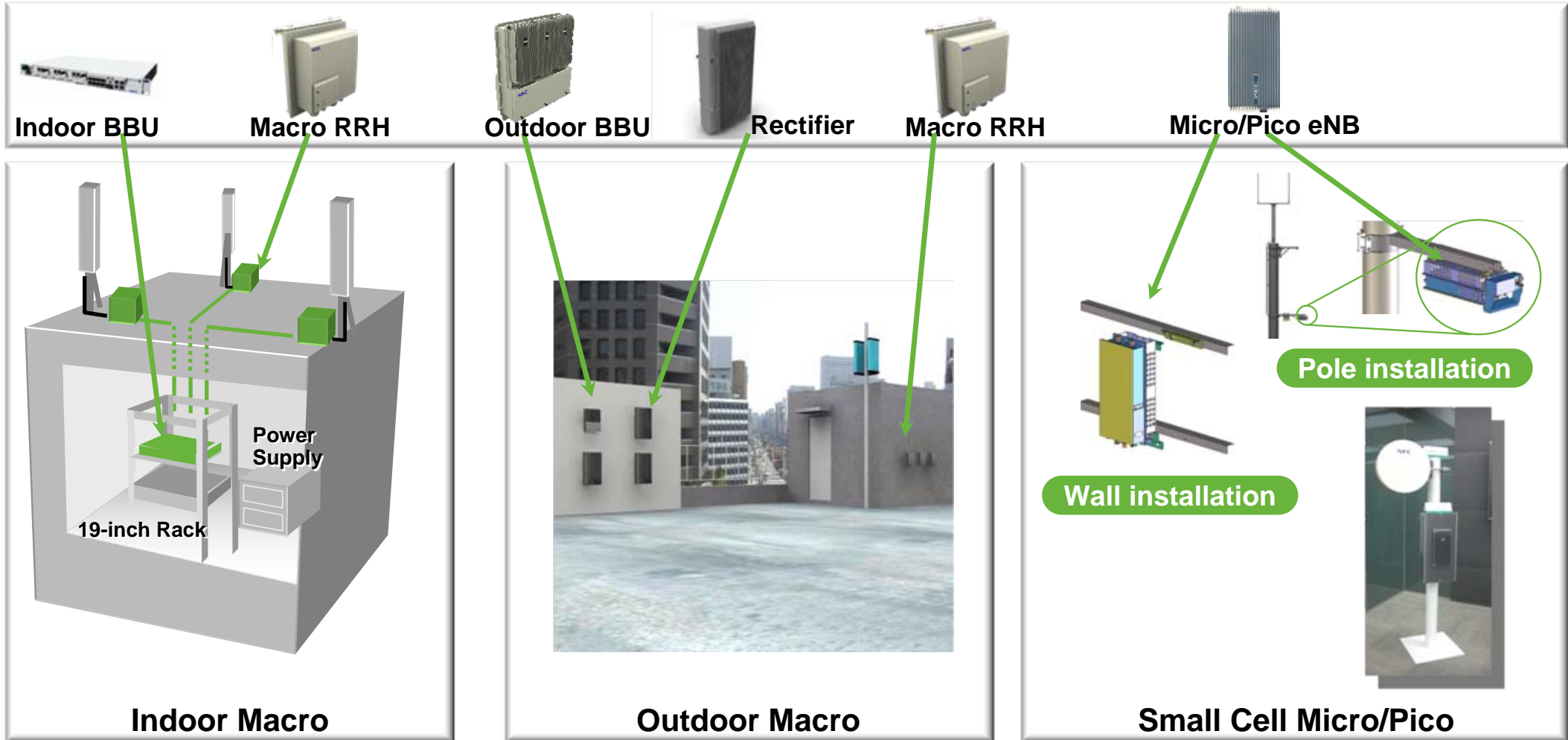
Green solution – passive cooling

High capacity

Industry leading power efficiency

3G support at RF unit

NEC's eNB – Deployment Options



NEC's EPC – Scalable Solution

Compact EPC



MME/P/S-GW all in one

NEC middleware platform

Standard ATCA platform

Expandable to Full Scale

MME P/S GW



MME + S-GW + P-GW

MME

S-GW

P-GW

MME

S/P-GW

Comprehensive functions

NEC middleware platform

Standard ATCA platform

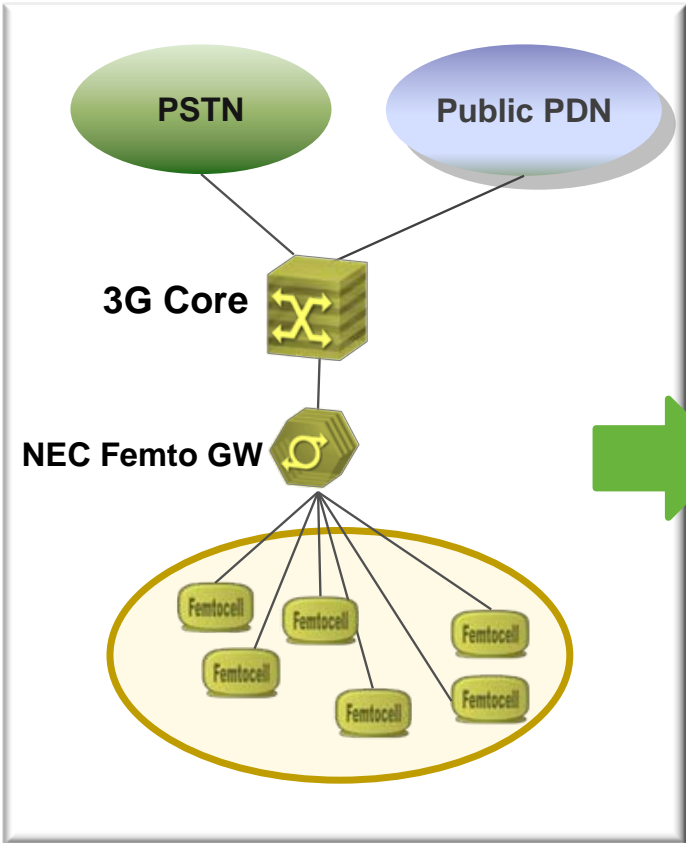
Flexible and scalable

Service & Mobile Aware

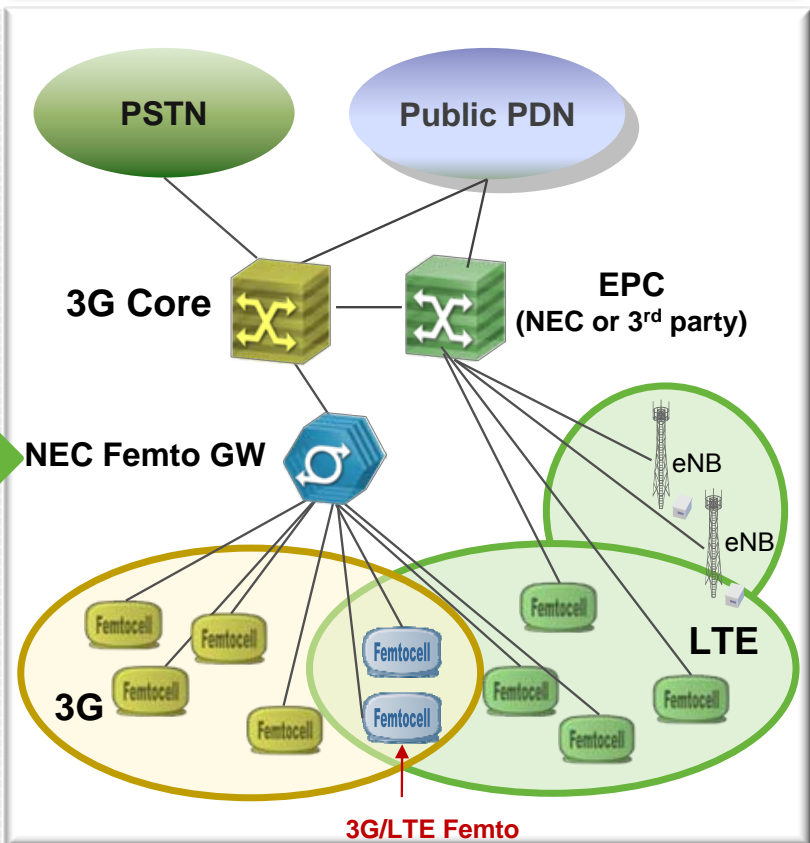
Self Organization

NEC's 3G & LTE Femto – Flexible Migration

3G Femto Network



3G Femto & LTE Network



NEC Offers

- Investment Protection to current customers
 - Reuse of 3G Femto GW HW for LTE femto
 - Option to connect to NEC's EPC or 3rd party EPC
- Multiple architecture options
 - Femto GW presence
 - Direct link to EPC
- Multiple Femto GW migration options
 - 3G & LTE GW in the same chassis
 - 3G & LTE GW in different chassis
 - EPC in the same chassis as GW

NEC's OMC – Common for LTE & EPC

Main Server



Powerful processing server

Highly scalable from 1 unit

Flexible standard 19"

Storage

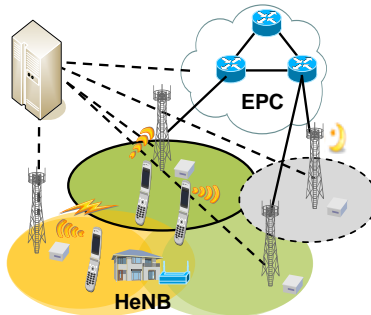
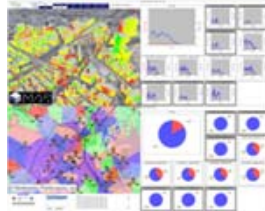


Easy NW/capacity expansion

Scalable from 2 units

Flexible standard half 19"

SON



Hybrid Architecture

3D radio propagation modeling

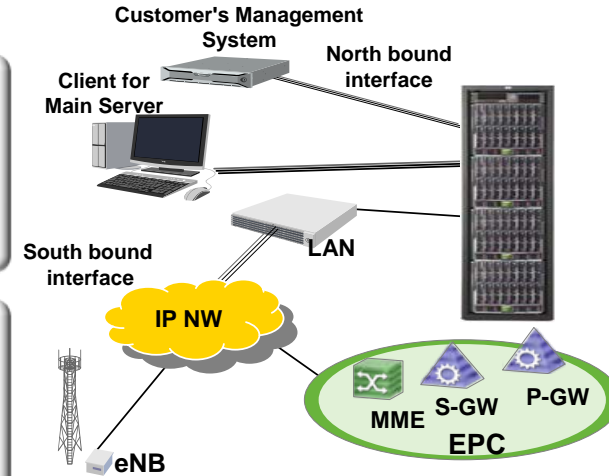
Urban user mobility modeling

Improved efficiency and quality

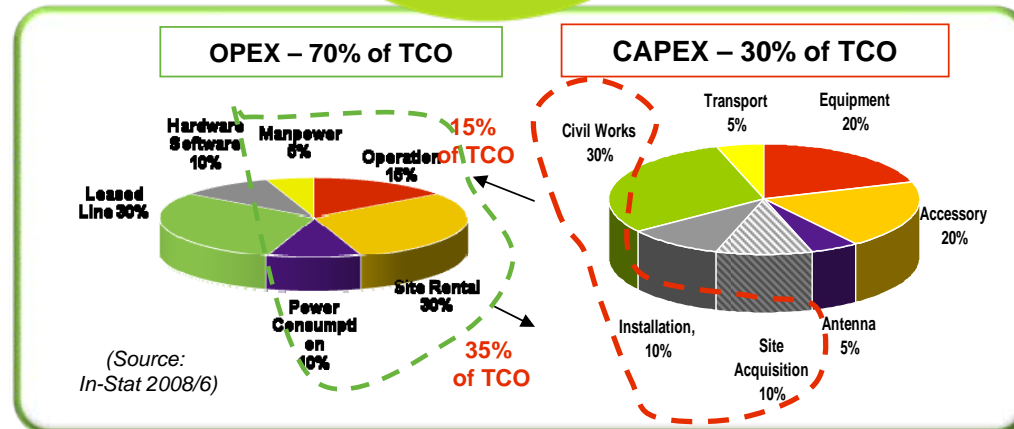
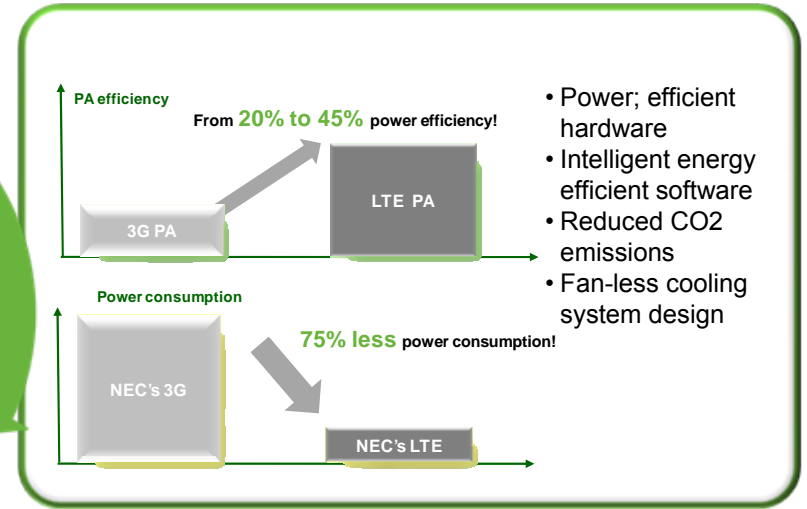
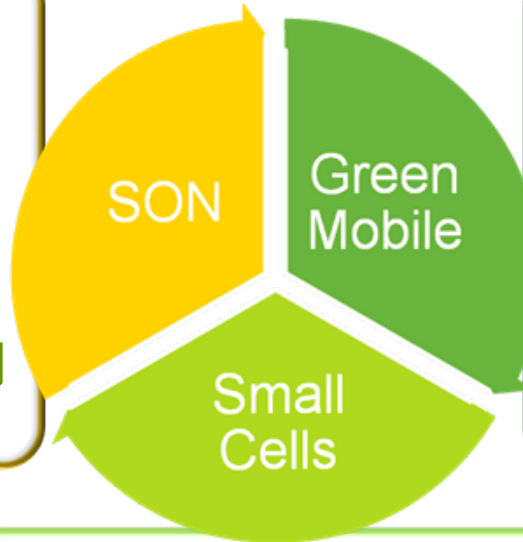
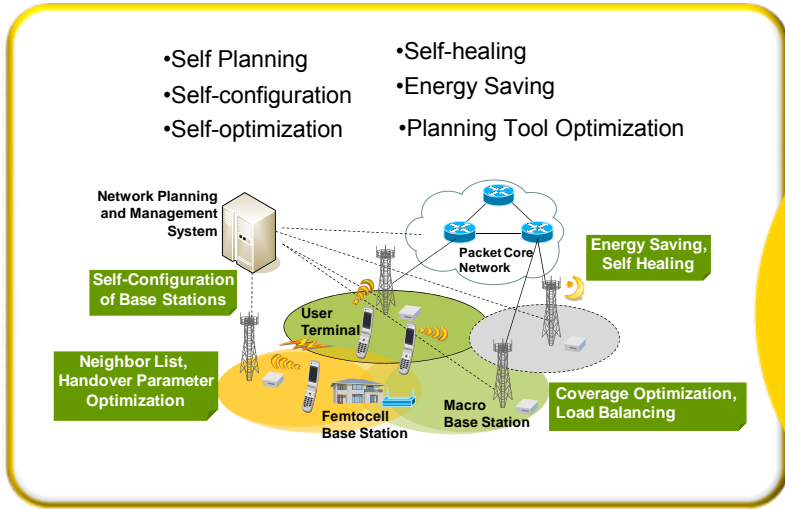
Validation in realistic environment

3D Simulator

Flexible standard 19" server



NEC's Added Value - Lower TCO



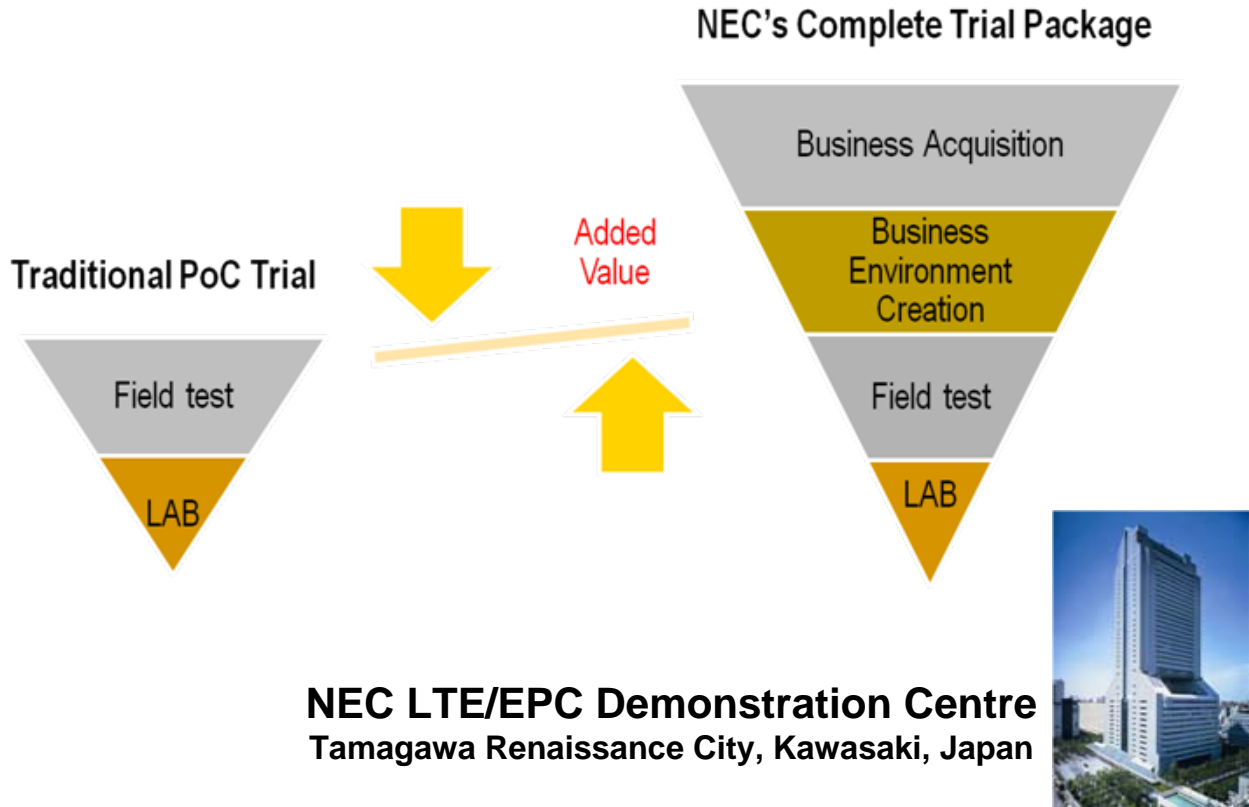
Experience NEC's LTE Mobile Broadband World

Trial

Empowered by Innovation
NEC

Training

Empowered by Innovation
NEC



Empowered by Innovation

NEC