

Monetising Big Data in Smart Cities



Leaders in the New Last Mile.

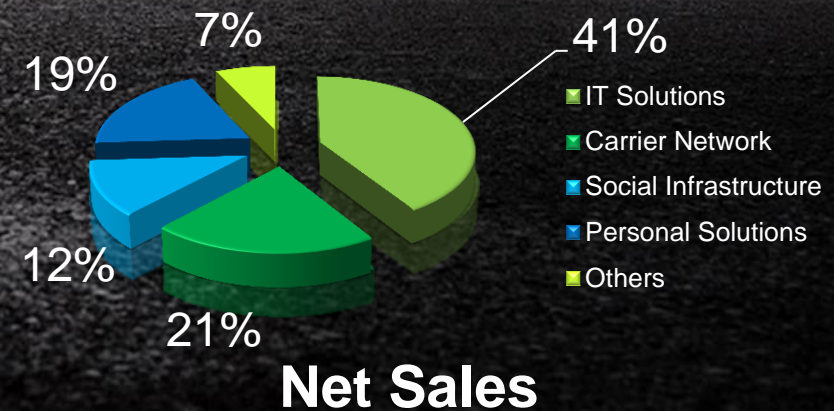
Brussels 6 September 2013
Gareth Price
NEC Europe Ltd.

Empowered by Innovation.

NEC Group at a glance

Key Facts

- Established July 17th, 1899
- Financials year ending 31 March 2013
 - Revenue US\$ 37B / € 29B
 - Carrier Networks US\$ 7.9B / € 6.1B
 - Europe US\$ 1B / € 800M
- Employees 109,000 worldwide



EMEA Corporate Market Profile & Portfolio

For Carriers



Mobile Backhaul Solutions

Indoor & Outdoor Small Cell Solutions



Carrier Cloud

SDN & NFV



OSS/BSS

Submarine & Broadcast



For Enterprises



Unified Communications



Collaboration



Data Centre and Cloud Solutions



Display Solutions

For Energy & Public Safety



EV Charging Infrastructure



Stable Energy Supply & Storage



Biometric Security



Immigration & Border Control



Government Cloud

Do you remember?

March 11 2011?

M9.0 6m 2.4m 40.5m 10m 1.8 μ s 24684



March 11 2011 (Japan's 3/11)

- 14:46:23 Earthquake 130km off Sendai coast
- 14:46:46 P-Waves detected
- 14:46:54 Emergency alert broadcast
- 14:47:17 S-Waves hit Sendai
- 14:48:15 S-Waves hit Tokyo
- 14:54:xx Regional Tsunami warning issued
- 15:09:xx Tsunami hits nearest coast

P-Wave

S-Wave

Warning time

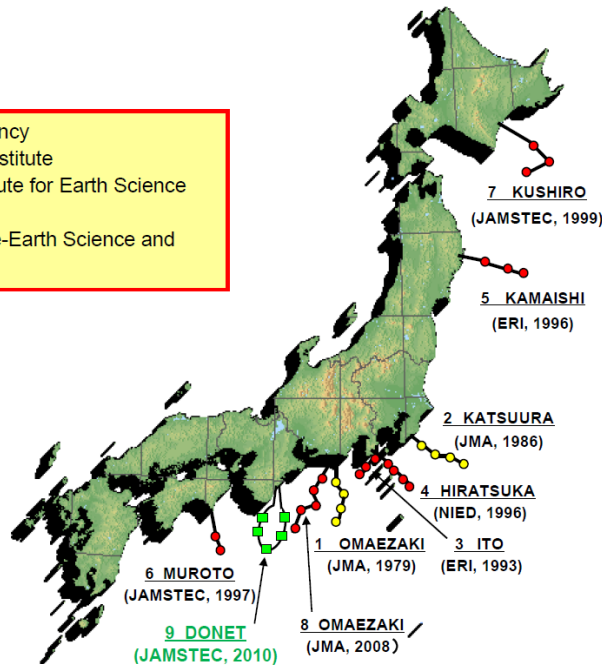
Ocean Bottom Observation Systems

System Owners

JMA : Japan Metrological Agency
 ERI : Earthquake Research Institute
 NIED : National Research Institute for Earth Science and Disaster Prevention
 JAMSTEC: Japan Agency for Marine-Earth Science and Technology

Note:

- In-Line (Digital)
- In-Line (Analog)
- NODE (Digital)



9 NEC supplied OBOS to date
 New 3yr plan starting 2012
 Over 5,000km of Submarine cable
 150 Undersea seismometers

M2M gives vital time, triggers emergency protocols

14:46:23 Earthquake 130km off Sendai coast

14:46:46 P-Waves detected

14:46:54 Emergency alert broadcast

Trains Stop
Elevators Stop
Cranes lower materials
Surgical Operations Stop
Phone receive alarms
Clocks receive alarms

TVs issues warnings
Gas is disconnected
Factory lines stop
Cars pull over
X-ray room doors open
Reactors start shutdown



14:47:17 S-Waves hit Sendai

14:48:15 S-Waves hit Tokyo

M2M helping to restore Northeast Japan



Soil Desalination effort



After Tsunami Flooding



After desalination treatment



NEC sponsoring a new technique reducing recovery time from 2yrs to 4 months

Soil moisture, temperature and salinity measured and sent to CONNEXIVE for storage, sharing and analysis

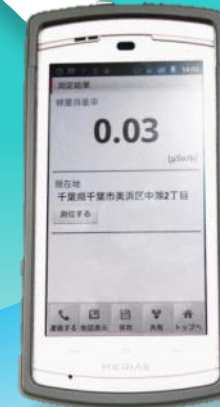
Radiation Monitoring effort



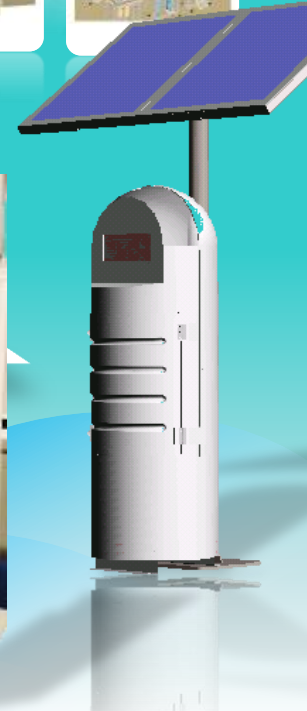
Sharing



Horizontal data re-distribution



- Parks
- Offices
- Farmland
- Danger zones
- Evacuation zones

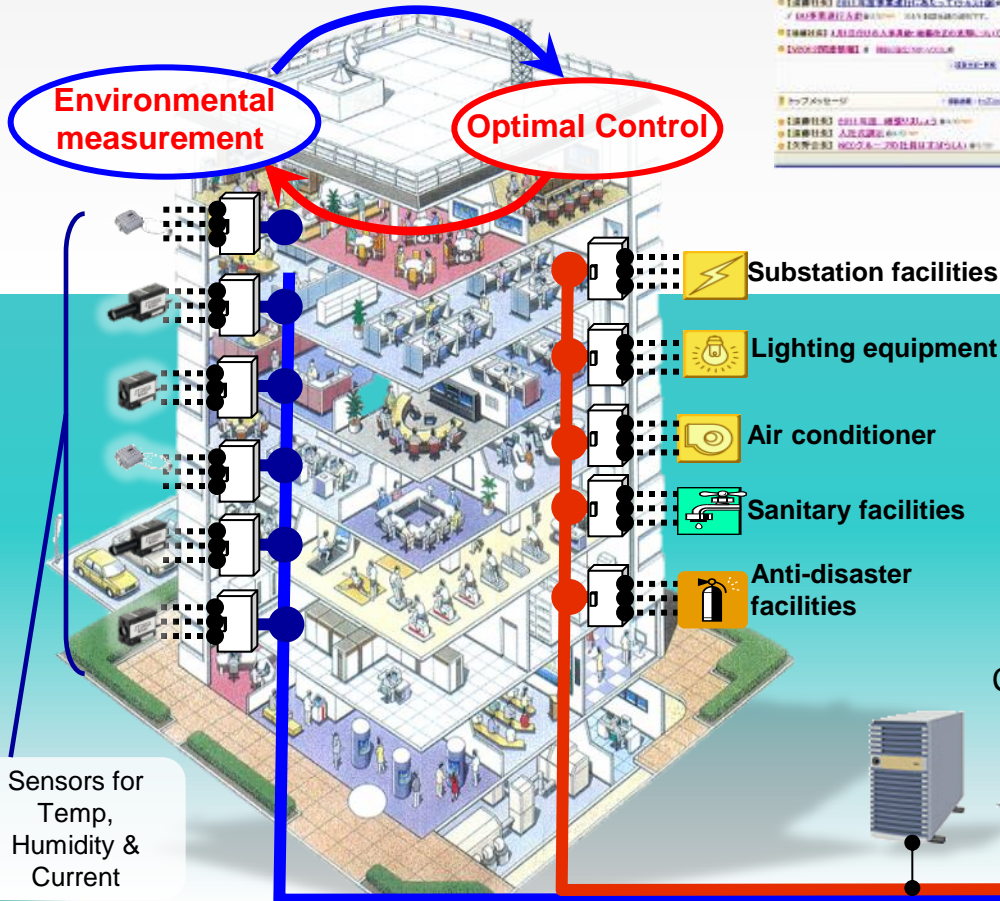
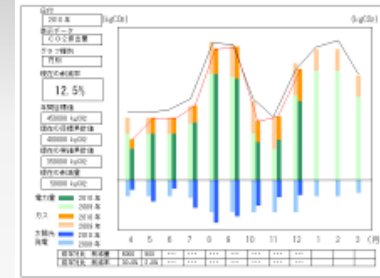


Monitoring and controlling precious Energy



Japan has an energy crisis
 Our system gives feedback to staff
 Collects data for big data analysis

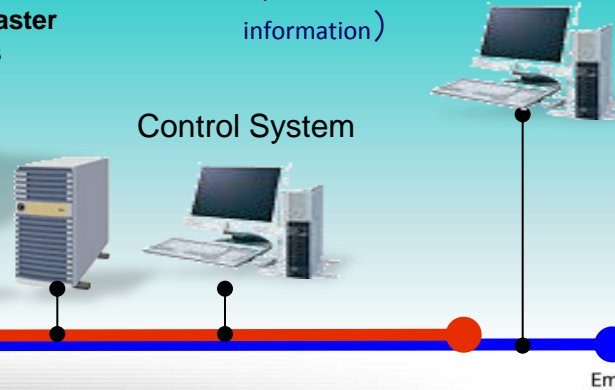
NEC Japan's staff portal



Visualization server

(Measurement of environment & energy)
 (provision of visualized information)

Control System

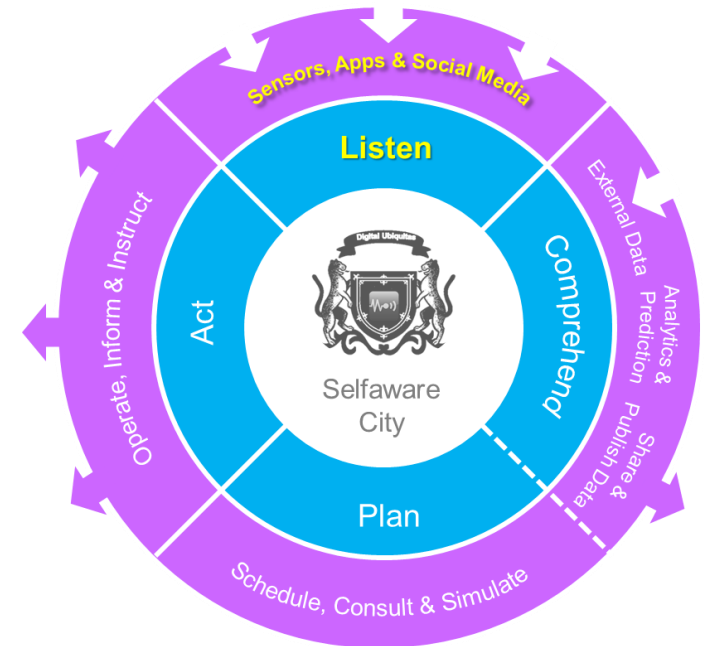
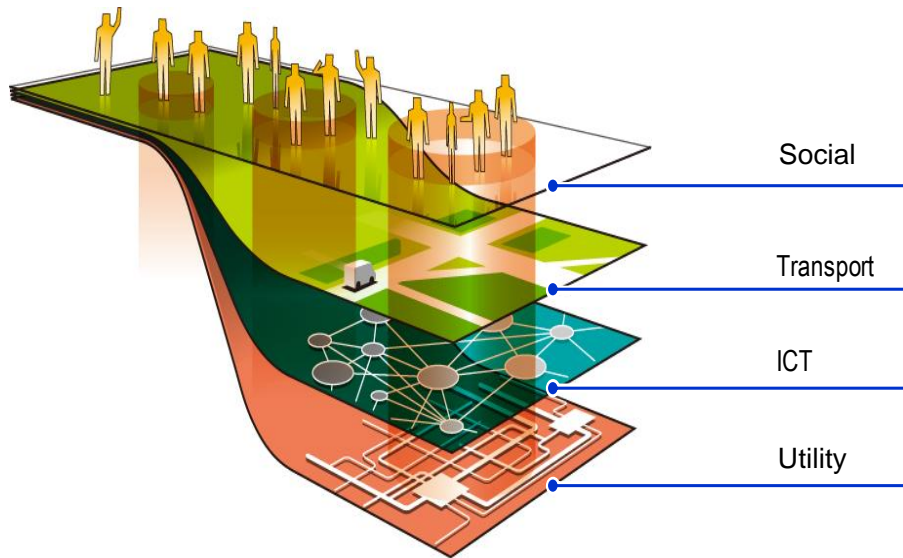


Electricity

Water

Gas

Sensors for Temp, Humidity & Current



NEC considers Smart City can be modeled as a layered structure:

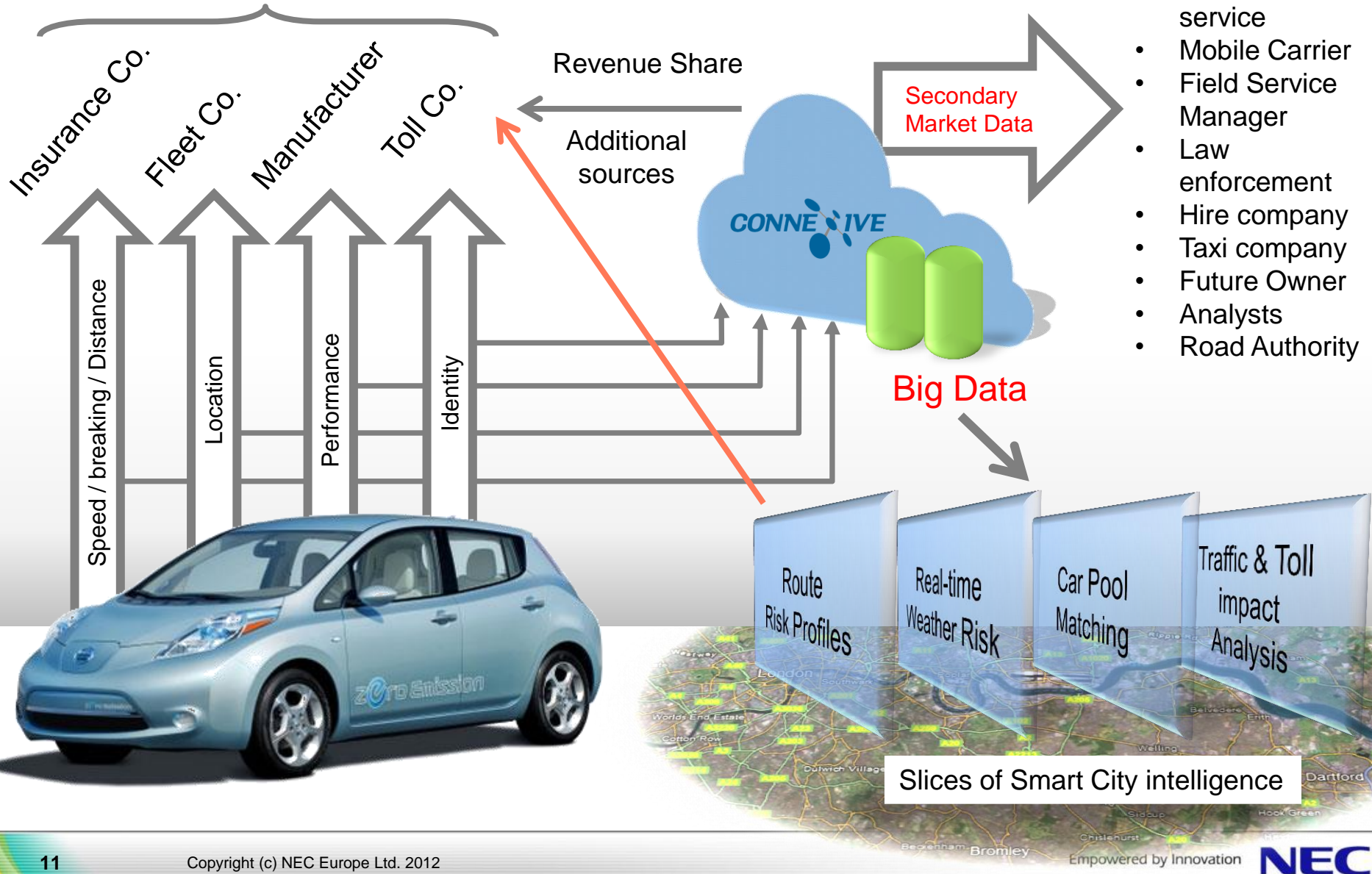


- **Sensors, Social Media and Apps** help acquire new input into city decision processes
- **Feedback** is critical in service automation and the influencing of citizen behavior

The Secondary Data Market and Big Data



Today: Primary Market Data (Siloed)



Monetising Data, Layer by Layer

M2M Services

Data Marketplace

Data Analytics /
Big Data

Data sharing /
Partner Integration

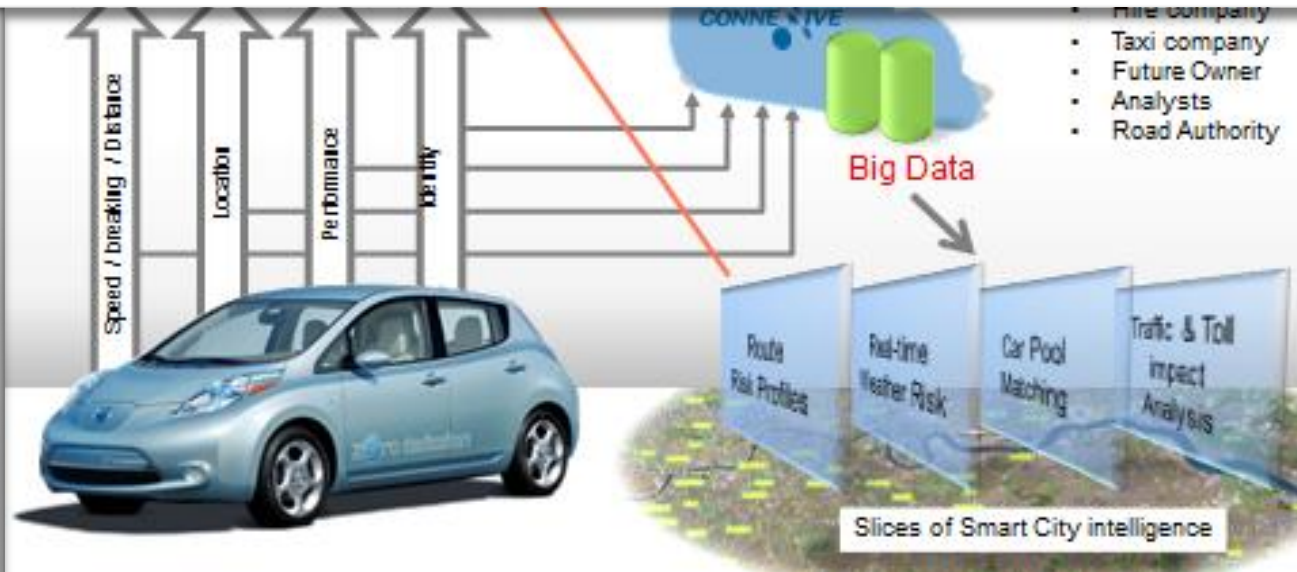
Data Storage / Repository

Device Integration

SDP /VAS /Enablers
for M2M

Connectivity

M2M Devices



1. Separate service and data from M2M technology
2. Share data with your eco-system or value-chain
3. Transfer partner integration cost to partners in the cloud
4. Monetise data through publishing & re-distribution
5. Systematic and speculative Big data analytics of data
6. Incorporate external data you don't have in Big Data analysis

3 Steps to a Secondary Market



1. Just my company

- Only I receive M2M data
- I integrate with my partners
- I forward to my partners
- All data goes to me

Hmm, perhaps I should not be the integration point?



2. Me and my Partners

- Selected partners and I receive data
- They integrate to the cloud
- I choose what data goes to which partner and when
- I probably sponsor this

Hmm, perhaps other people will pay for this data?

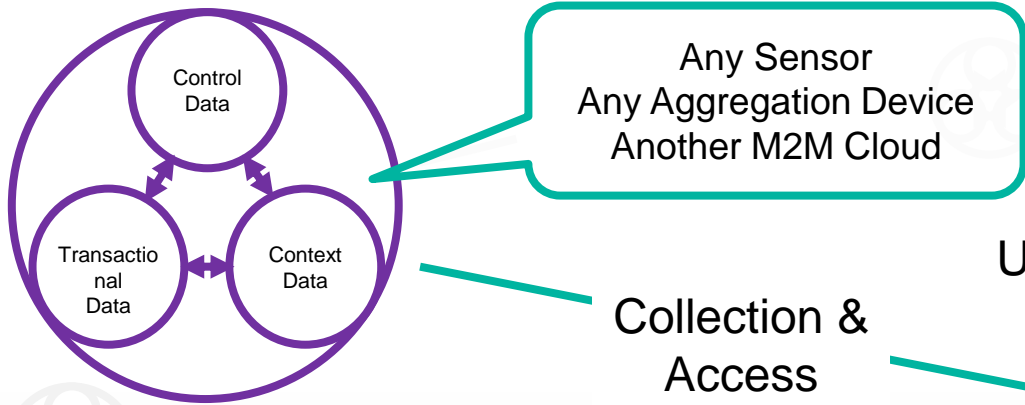


3. Anyone

- Anyone can buy data slices or subscribe to data feeds
- Data may be delayed for quality or competitive reasons
- I decide what can be shared and when

Wow, this subsidises my primary business purpose!

M2M Big Data Challenges

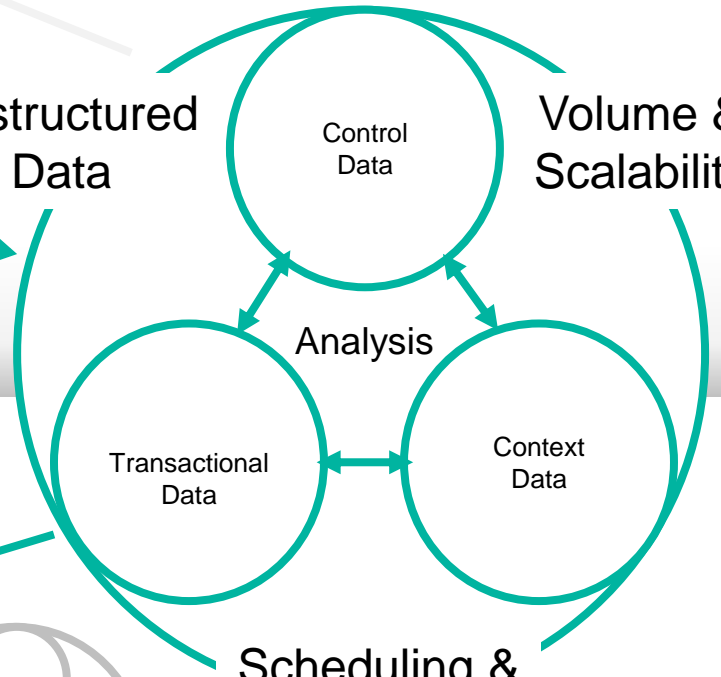


Collection & Access

Service	Number of Device	Update Freq.	Number of Event (and Detail)
Mobile Phone Location Base	50M Mobile Phone	1 event/min	830,000 event/sec
Probe Car	80M cars	1 event/min	1,330,000 event/sec
Home Electric Appliances	400K Home server	20 event/min	130,000 event/sec

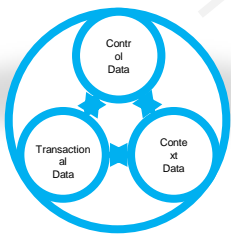
Unstructured Data

Volume & Scalability

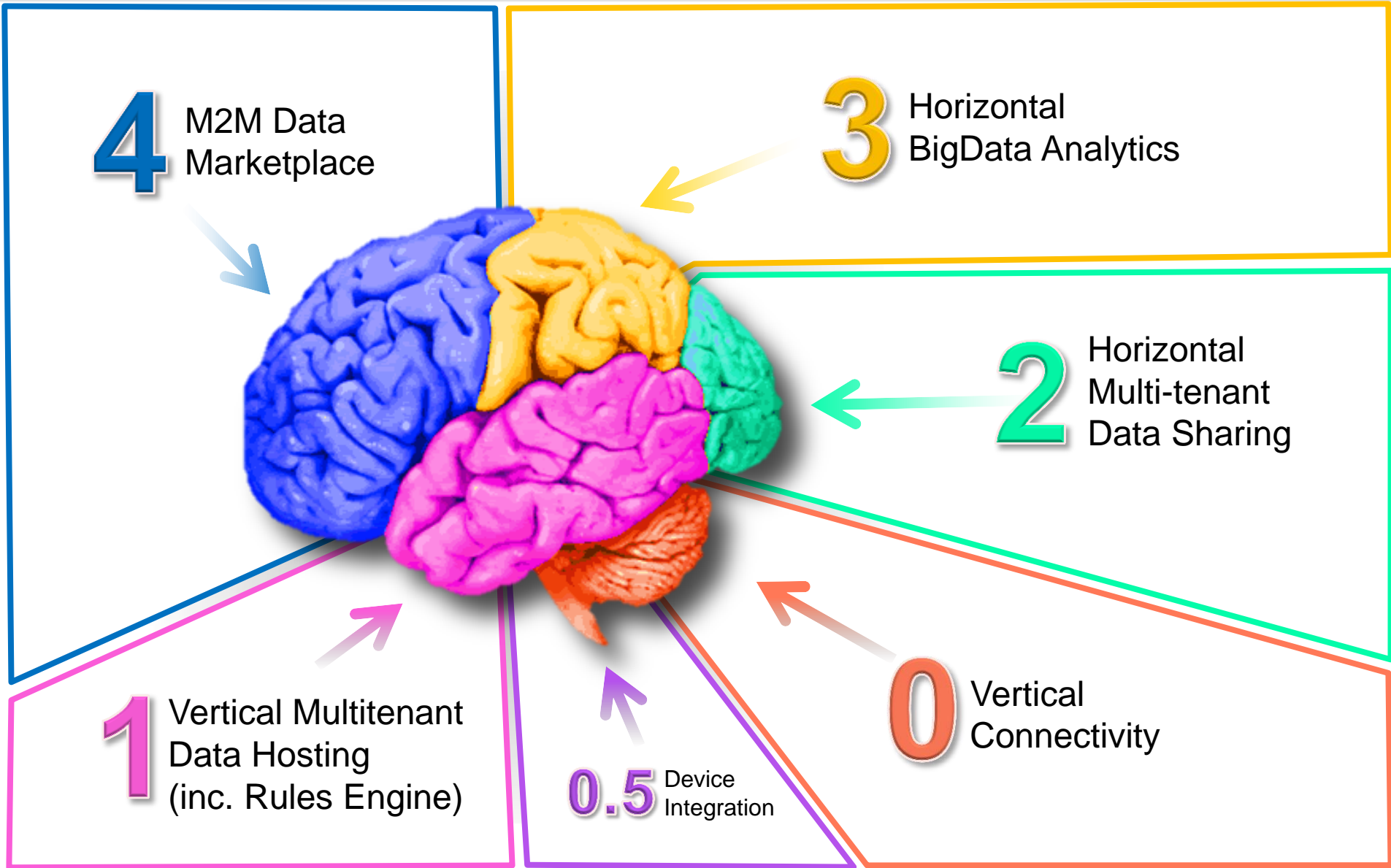


Scheduling & Prioritisation

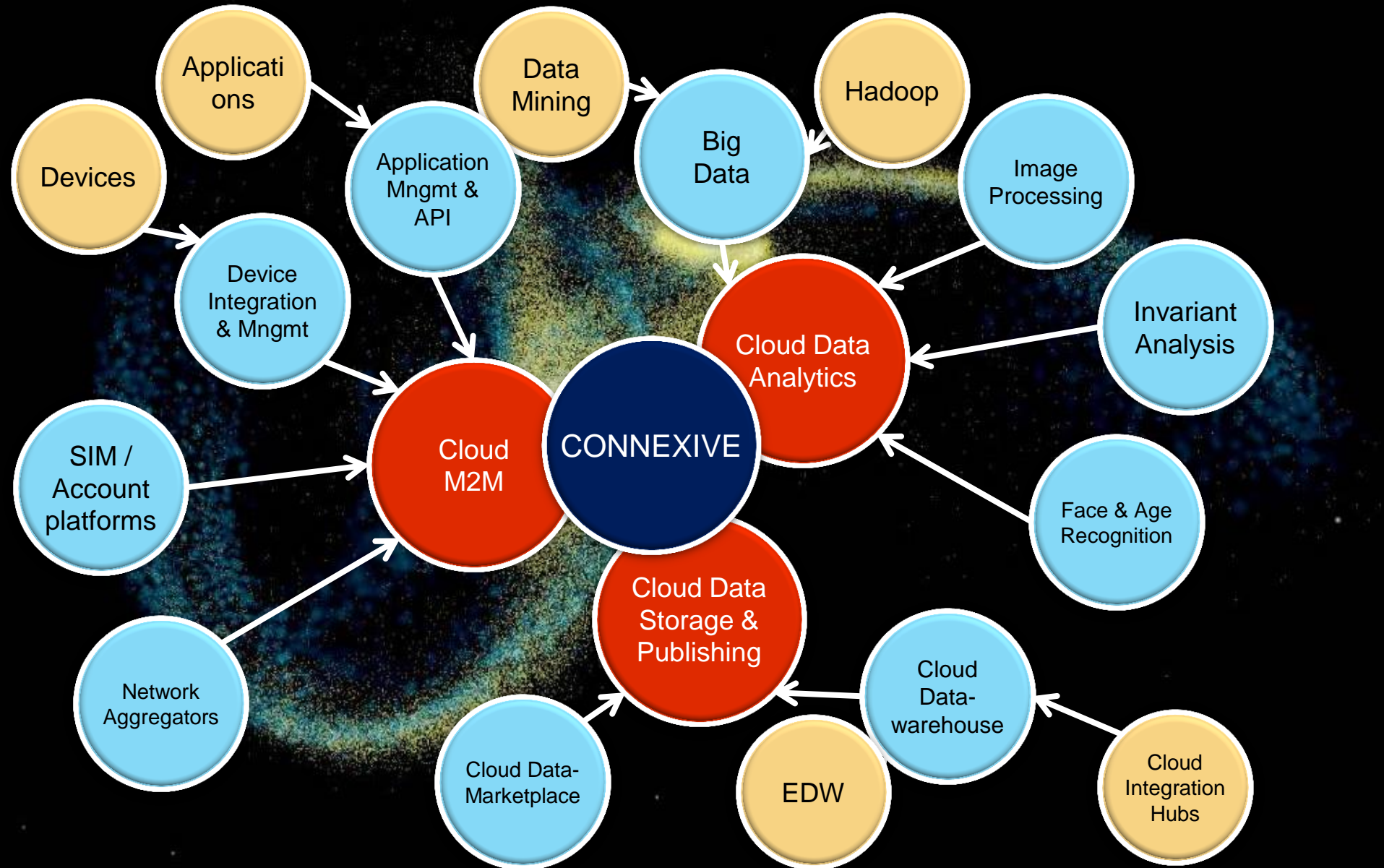
Re-distribution:
Privacy,
Policy &
Ownership



M2M Cloud Platform Maturity Levels



The M2M data ecosystem

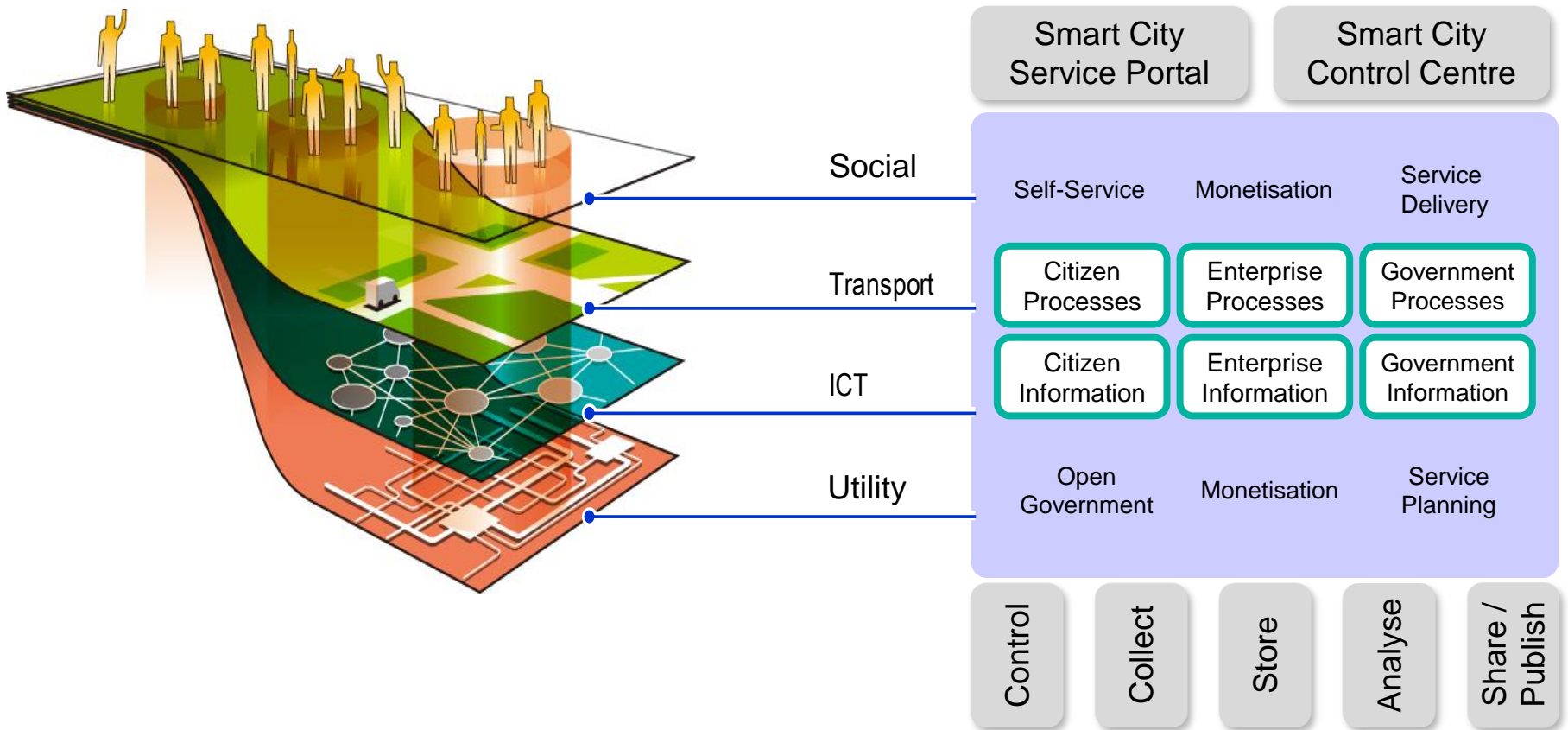


■ Generic Analytics technology in NEC



Smart City are cities which are able to listen and comprehend

NEC considers Smart City can be modeled as a layered structure:



Today: Real World + M2M + Big Data + Cloud



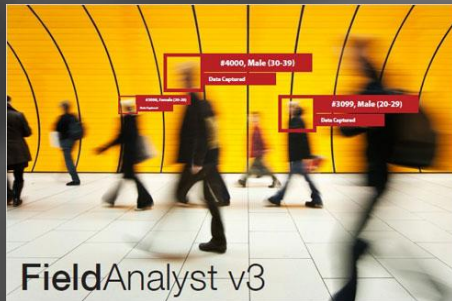
Invariant Analysis
Geofencing



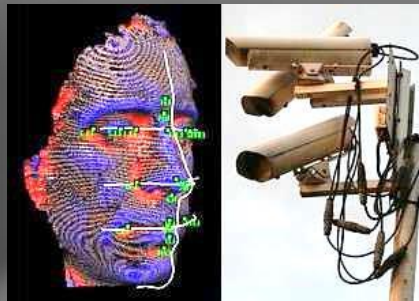
Shin-Tomei Expressway
Traffic Control System



120+ Farms in
New Zealand using
CONNEXIVE to
manage lawful
fertilizer use –
paying monthly.



FieldAnalyst v3



- Audience Aware Advertising
- Audience Analytics
- In-car driver face recognition



NFC,
Cloud & M2M

CONNEXIVE

ToppenForms MechaCool
Cold Chain in the Cloud



\$20m Invariant
Analysis deal with
Shimane Nuclear
power plant in 2013.

Contact Us



Contact

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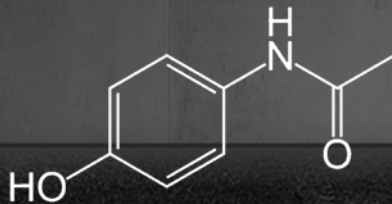
Tel: +44 208 836 2000

NEC's Engagement Vision

Customer Driven Evolution

One stop shop for the New Last Mile

- Consulting
- Services
- Partnership



Pain relief

Digital Services

- Transactional
- Analytical
- On-demand

Delivered from our cloud

Real World Networks

- Fit for data growth
- Shaped by local needs
- Real world sensing

Enabled by Mobile Backhaul
M2M and Small Cells

Service Driven Networks

- Responds to external stimuli
- Shaped by business and service context

Enabled by SDN and NFV

“The network is becoming less an architected ‘structure’ and more a programmable ‘fabric’, continually shaped by dynamic service needs and highly varied user contexts”