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TITLE: Measuring mobile broadband data traffic – End user and access network centric approach

ITU ICT Indicators Meeting

Measuring Mobile Broadband Data Traffic – End user and access network centric approach

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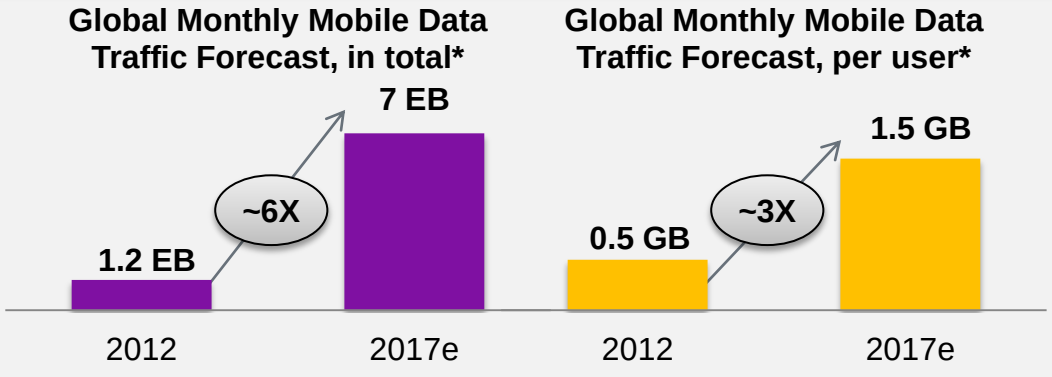
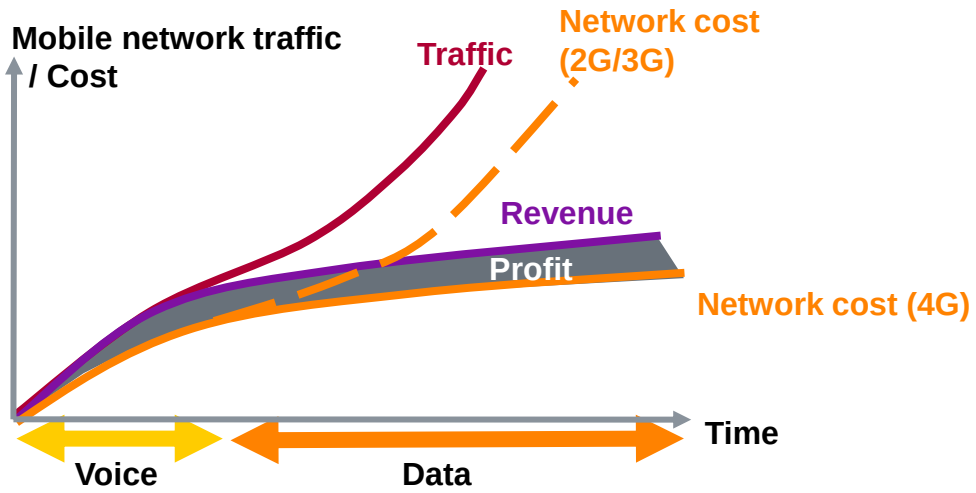
The Future of Mobile Communications

Mobile data traffic booms





New applications and devices drive usage

- Video Streaming, Mobile TV
- Communities, sharing
- Music Downloading, Audio Streaming
- Location
- Voice over IP
- Business on the move, email
- Navigation
- Online Gaming
- File Transfer, Personal Cloud

Source : NSN consulting ; Cisco VNI mobile, 2011 ; *1EB=1024PB, 1PB=1024TB, 1TB=1024GB

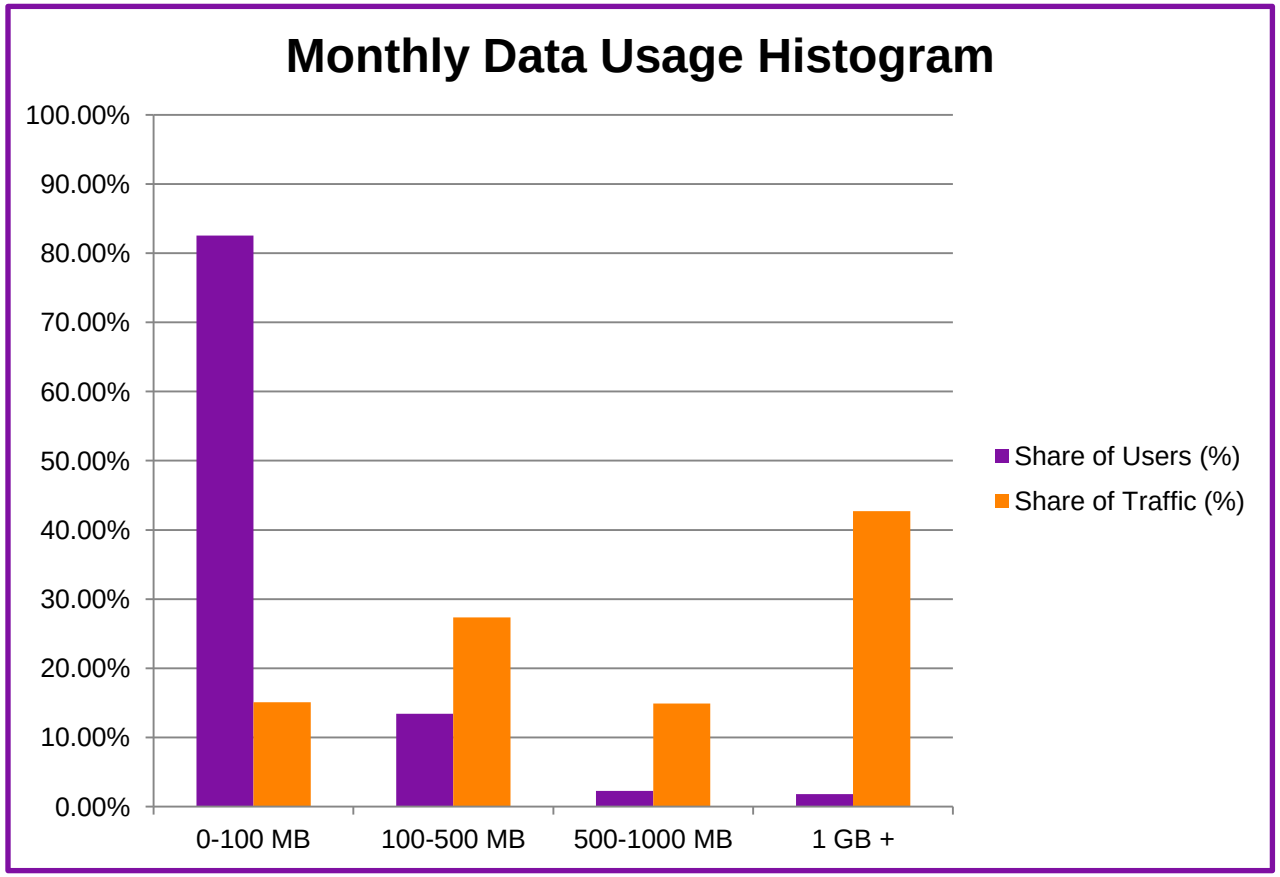
Indicator: Traffic per User

Indicator Definition

- Traffic (UL+DL) in MB per User
- Users' Share of Total Traffic (UL+DL)
  - Users can be further grouped by data usage (i.e. # of users in certain usage range)

Data sources

- Real-Time Traffic monitoring tools
- Gn/Gi interface probes
- xDRs



Source : NSN customer project

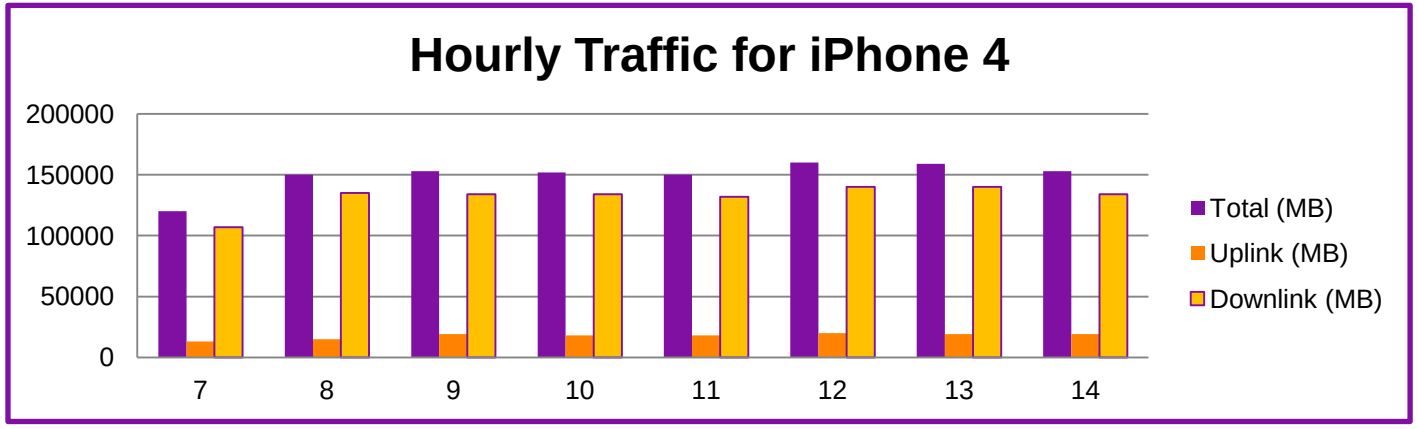
Indicator: Traffic per Device Model / Device Type

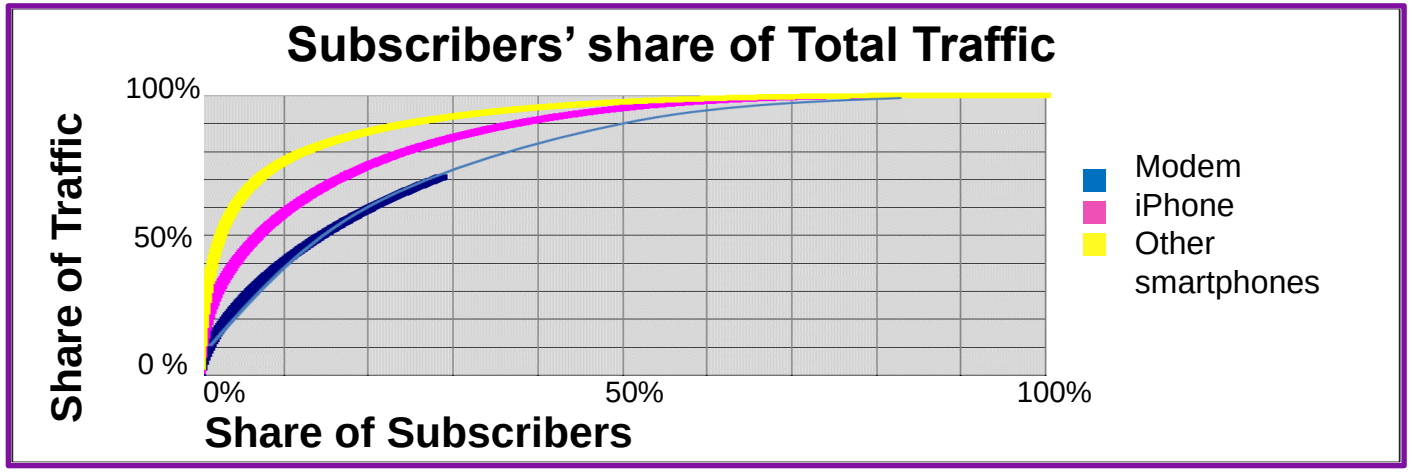
Indicator Definition

- Traffic (UL+DL) in MB per Device Model / Device Type

Data sources

- Real-Time Traffic monitoring tools
- Gn/Gi interface probes





Source : NSN customer project

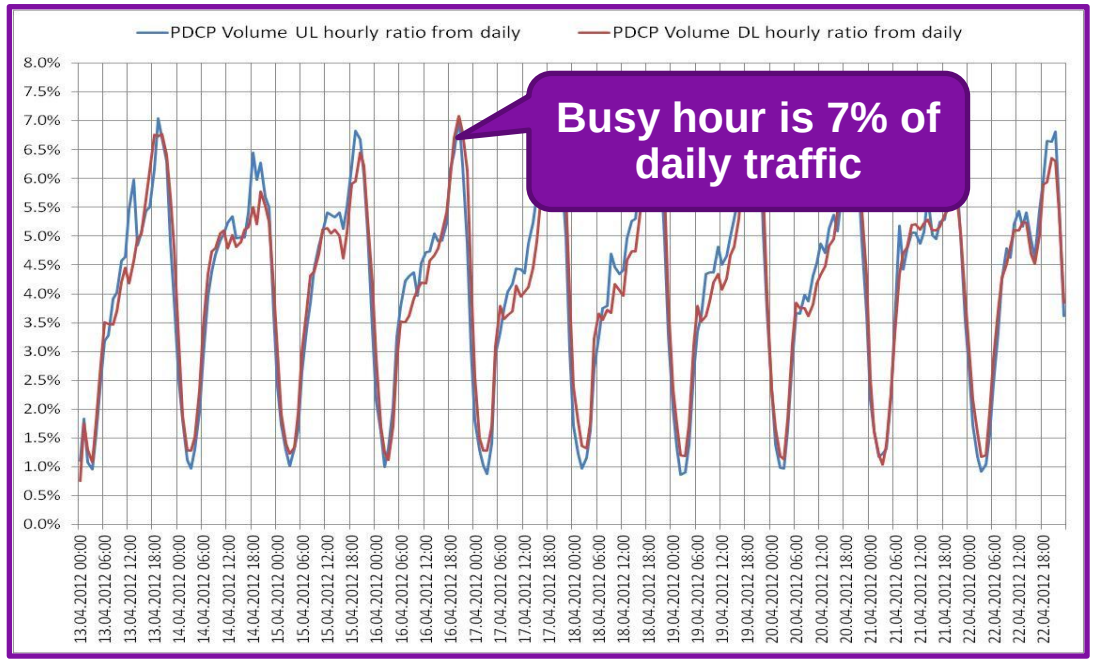
Indicator: Hourly Share of Daily Traffic

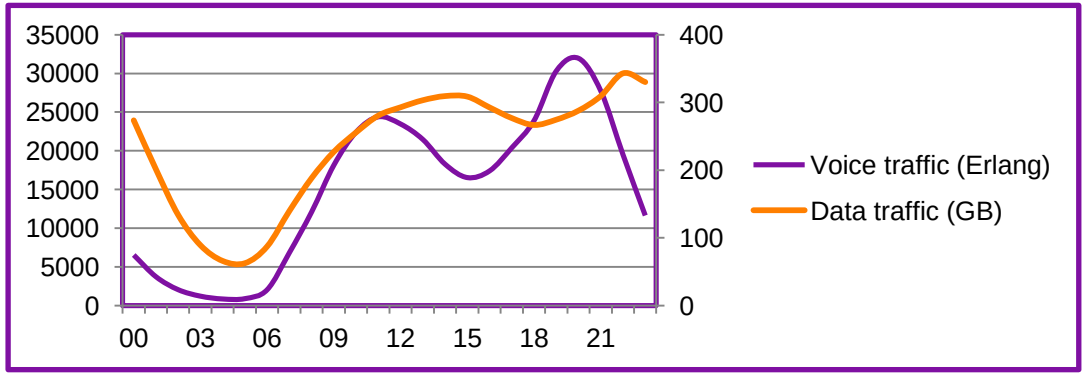
Indicator Definition

- Share of Traffic (UL/DL) per Hour of Daily Traffic

Data sources

- OSS PM counters
- Real-Time Traffic monitoring tools
- Gn/Gi interface probes





Source : NSN customer project

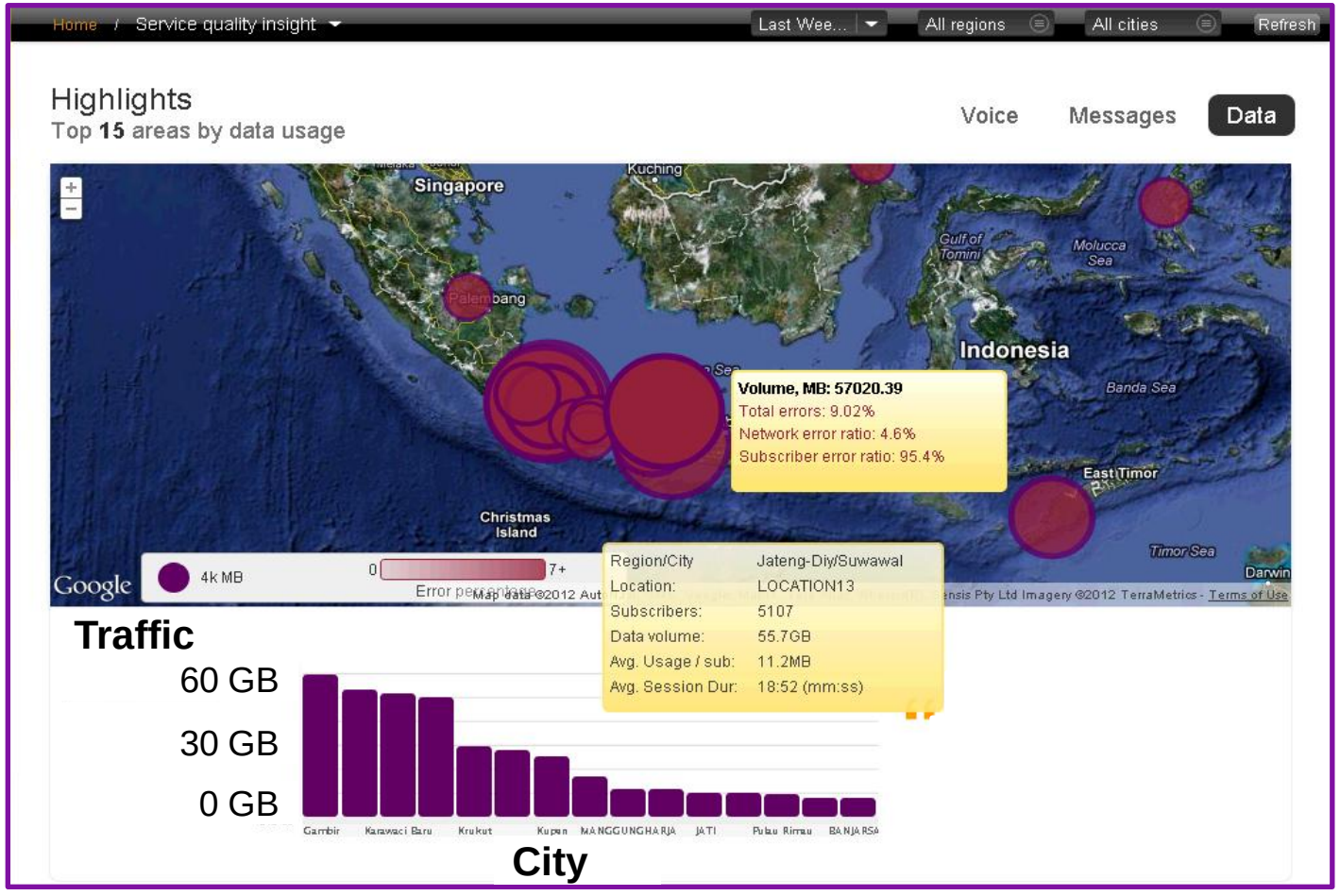
Indicator: Traffic per Cell/Cluster

Indicator Definition

- Traffic (UL+DL) in MB/GB per Cell
  - Cells can be grouped into clusters to provide a geographical level for analysis

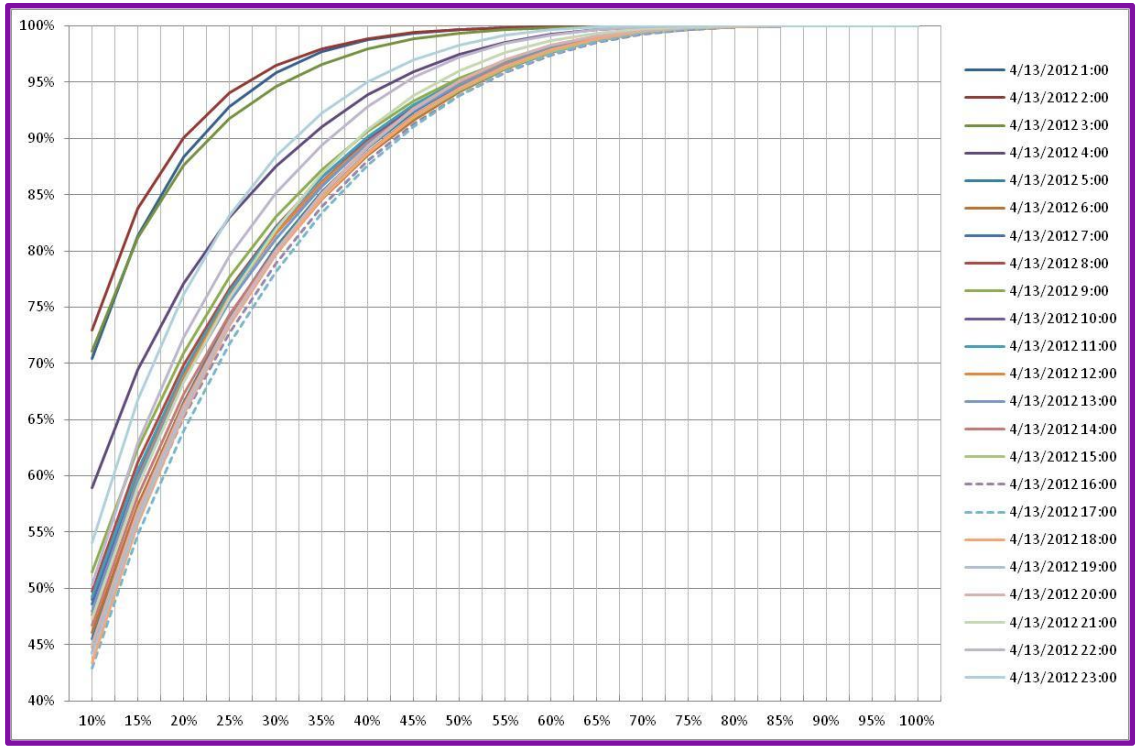
Data sources

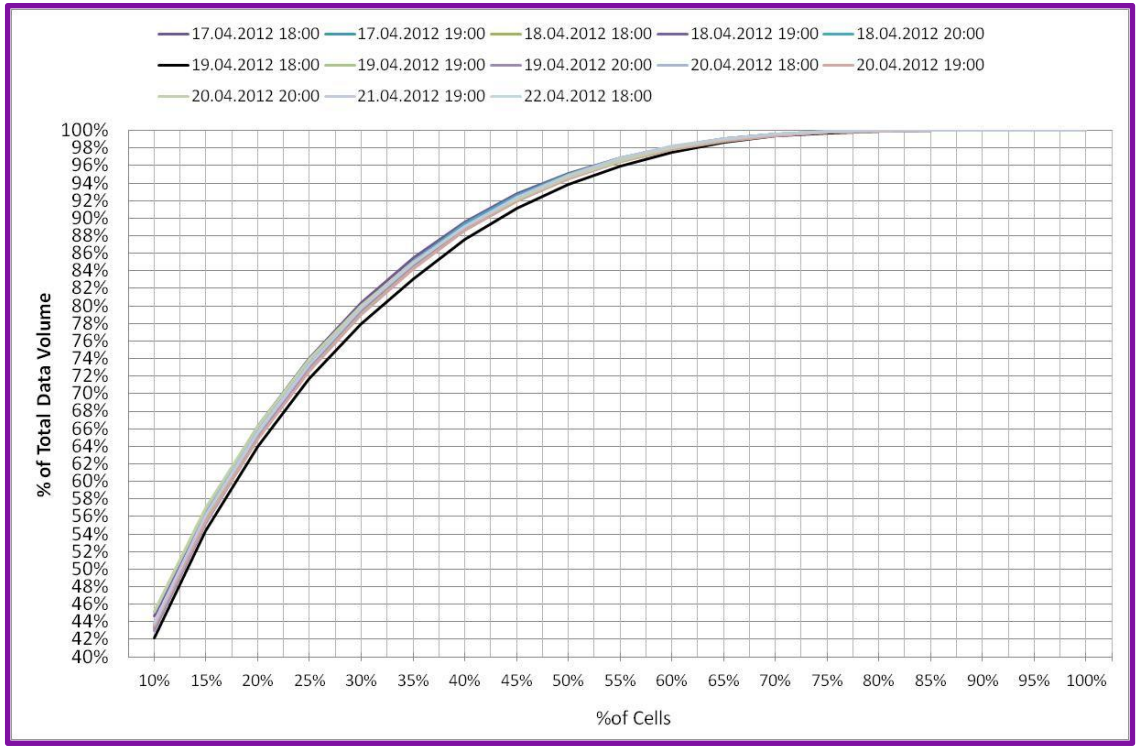
- OSS Performance Management counters
- Real-Time Traffic monitoring tools
- Gn/Gi interface probes
- xDRs



Source : NSN customer project

Indicator: Traffic per Cell/Cluster





10% of cells contribute from **43% to 73% of total traffic** (data volume) depending on hour

Approximately **54% of total traffic** is contributed by **15% of the cells** during the busy hour

Source： NSN customer project

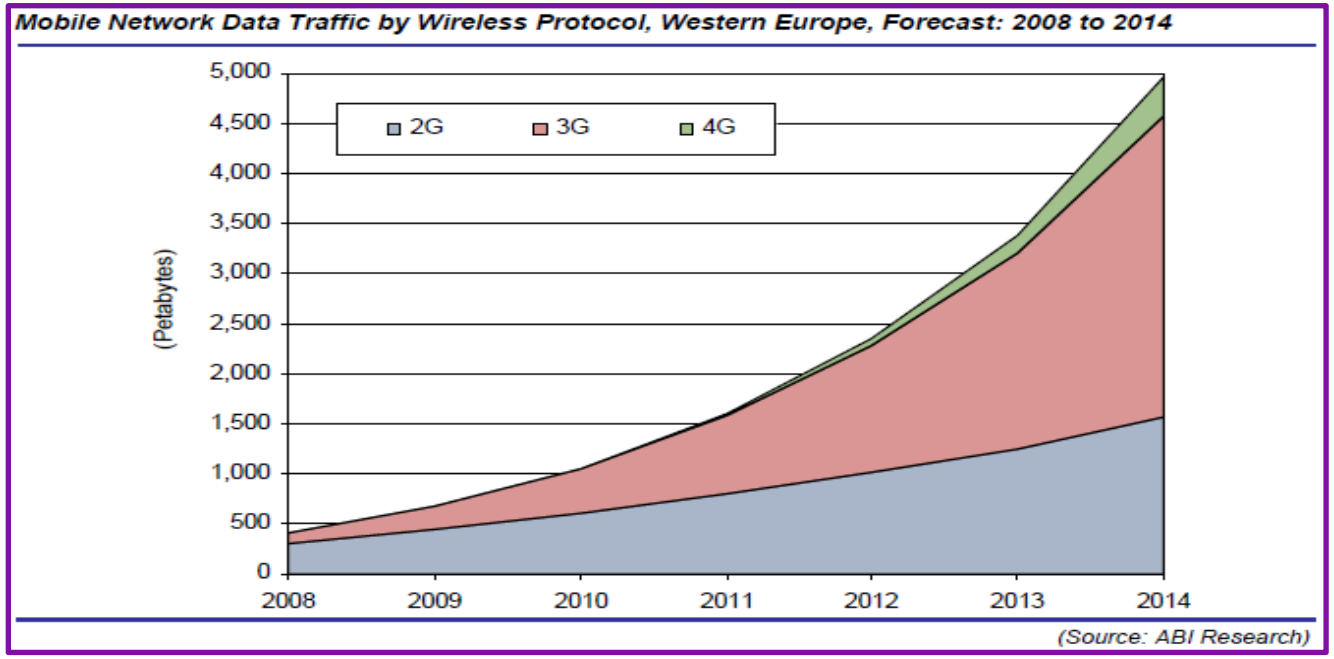
Indicator: Traffic per Technology

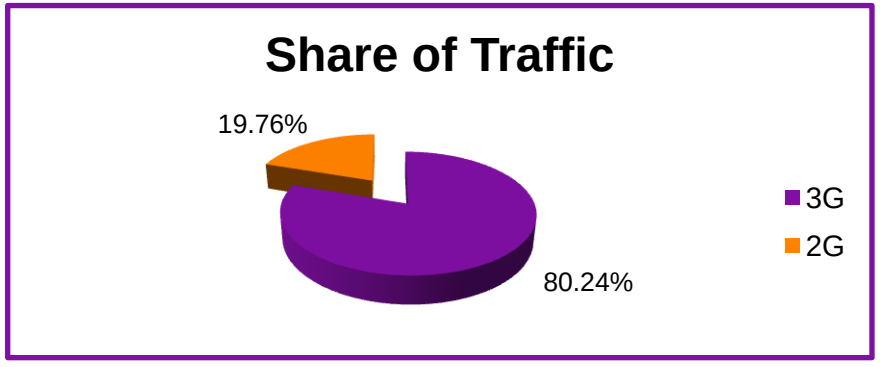
Indicator Definition

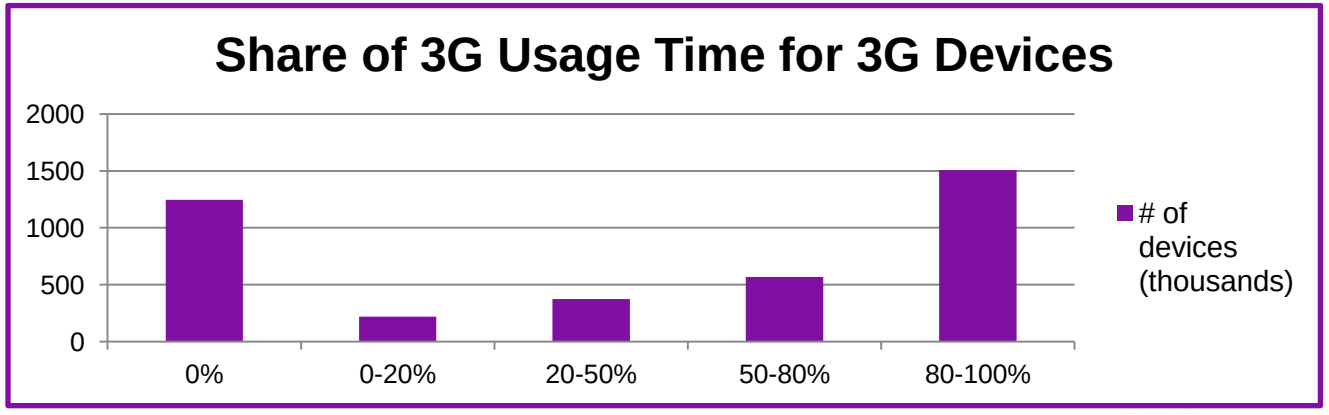
- Traffic (UL+DL) per Radio Access Technology (2G/3G)
- Time spent on 2G/3G per User

Data sources

- Real-Time Traffic monitoring tools
- Gn/Gi interface probes







Source： NSN customer project

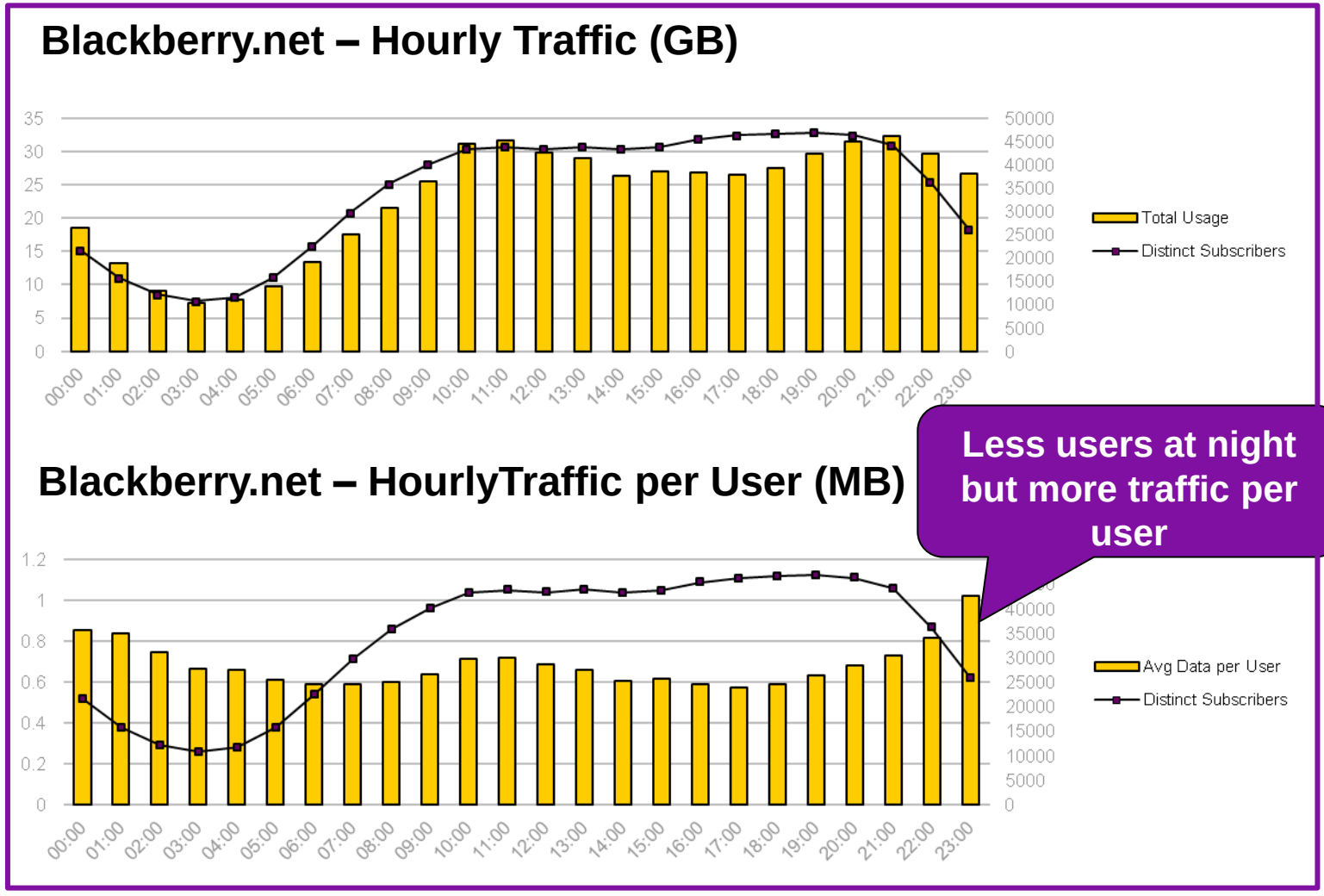
Indicator: Traffic per Access Point

Indicator Definition

- Traffic (UL+DL) in GB per Access Point

Data sources

- Real-Time Traffic monitoring tools
- Gn/Gi interface probes



Source : NSN customer project

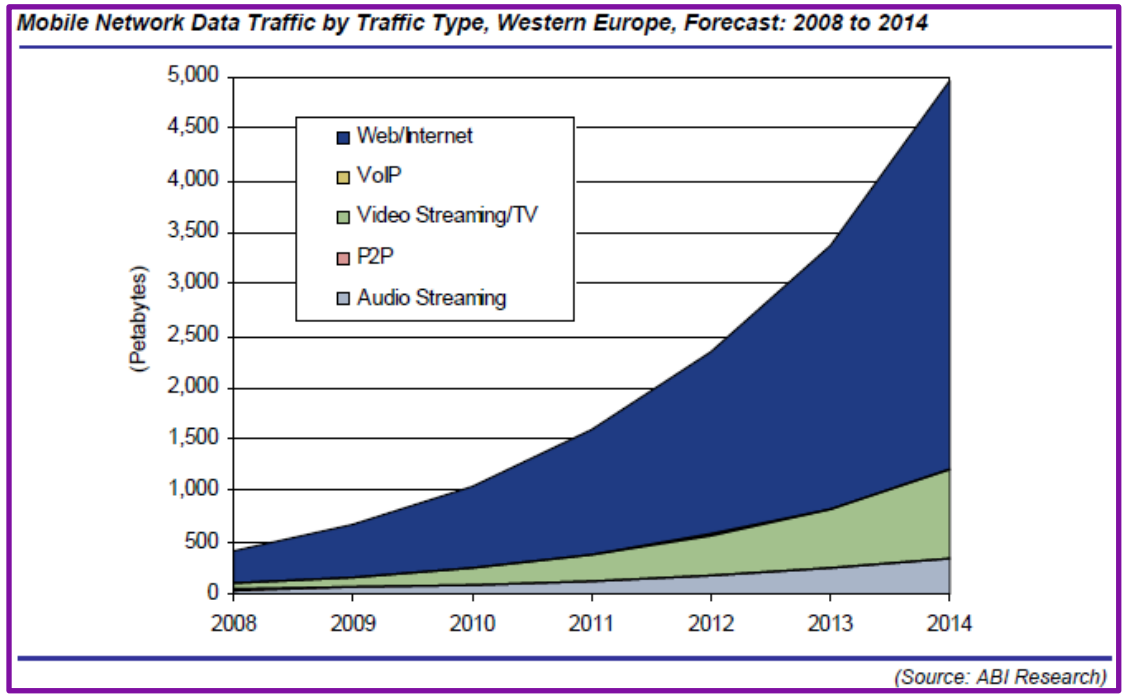
Indicator: Traffic per Application Protocol / Protocol Category

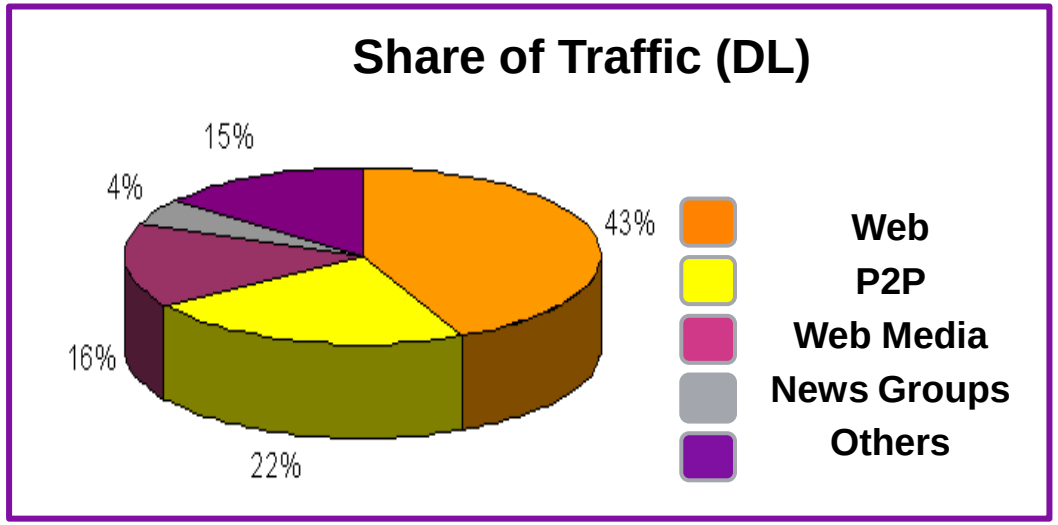
Indicator Definition

- Traffic (UL+DL) in GB per Application Protocol / Protocol Category

Data sources

- Real-Time Traffic monitoring tools
- Gn/Gi interface probes





Source : NSN customer project

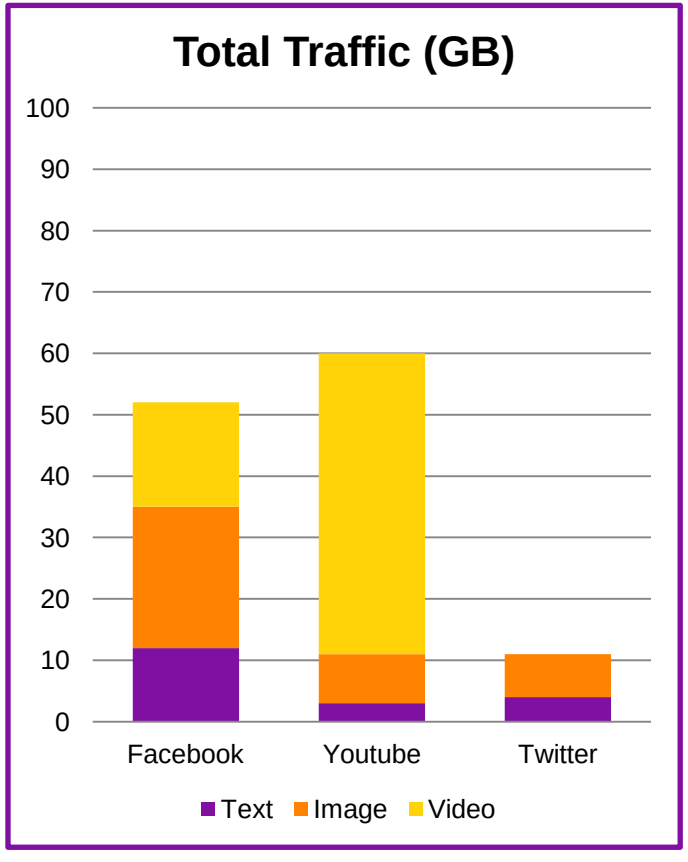
Indicator: Traffic per Domain / Service

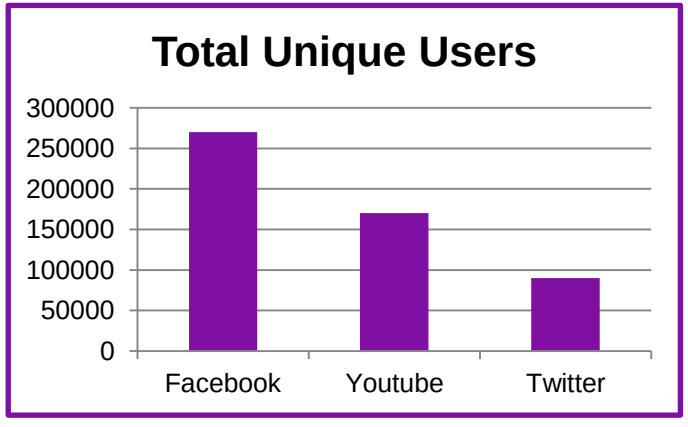
Indicator Definition

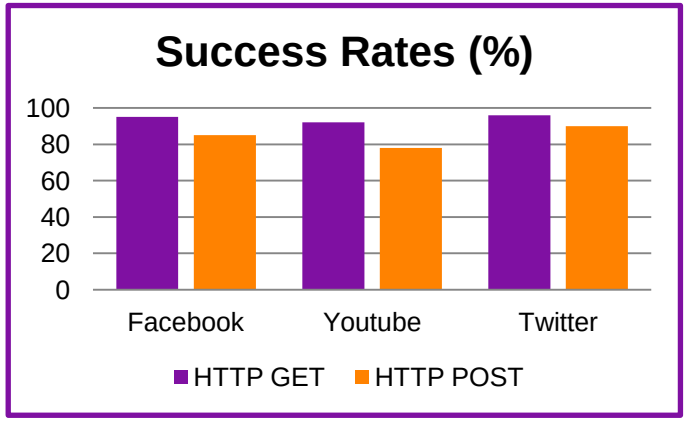
- Total Unique Users per Internet Domain (Service)
- Traffic (UL+DL) in GB per Internet Domain (Service)

Data sources

- Real-Time Traffic monitoring tools
- Gn/Gi interface probes







Source : NSN customer project

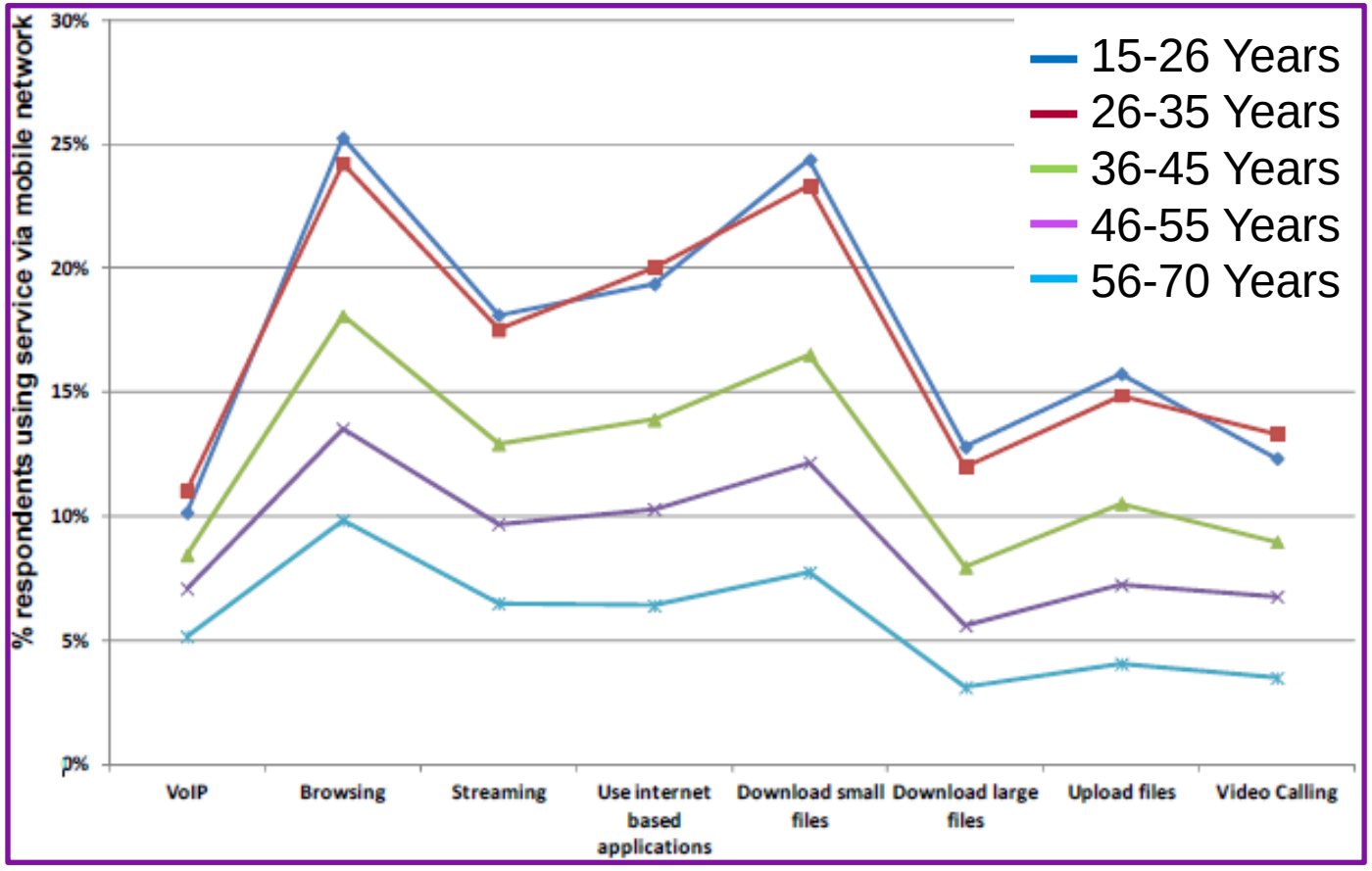
Indicator: Mobile Data Service Usage by Age

Indicator Definition

- Use of Mobile Data Services by Age / Age Group
- Traffic (UL+DL) per Mobile Data Service by Age / Age Group

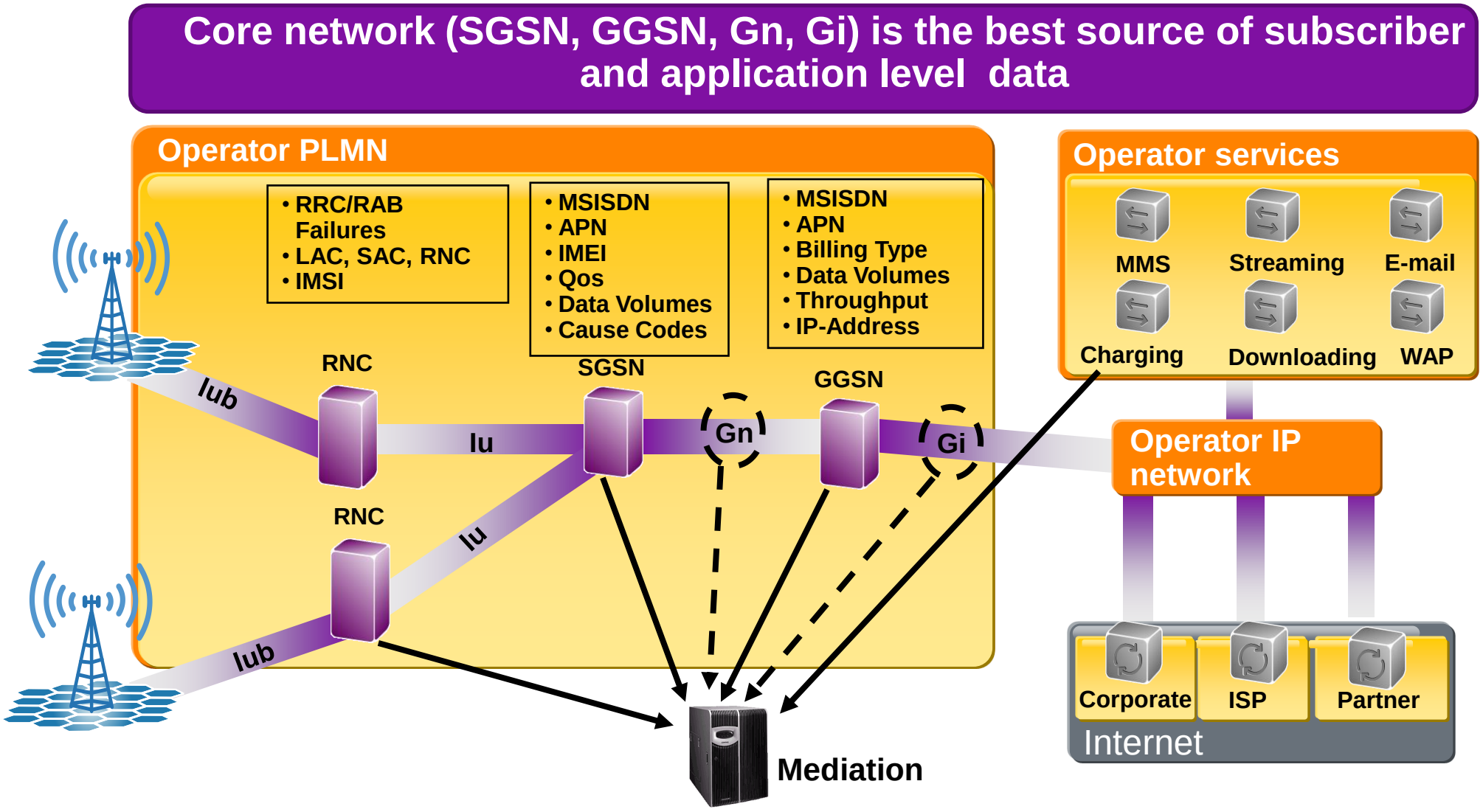
Data sources

- Surveys
- Real-Time Traffic monitoring tools
- Gn/Gi interface probes
- Customer Relationship Management Systems



Source： NSN study; base: 21,000 mobile phone owner respondents from maturing and emerging markets; multiple answers possible

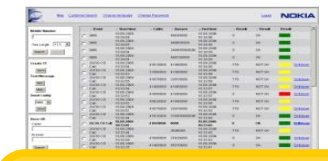
Data Collection and Dissemination

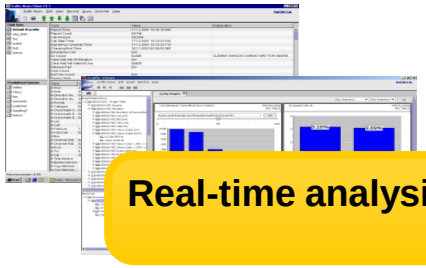


Data Collection and Dissemination (cont'd)

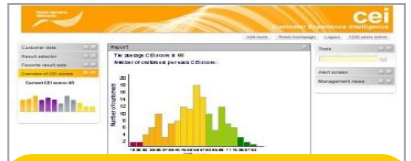
…
Management
Customer Care
Network Engineering
Marketing & Sales
Product Lifecycle
Network Operations
…

Web clients


Customer Care


Real-time analysis


Long-term reporting


Customer Analytics

Data processing and enrichment

Mediation & control

Data warehouse

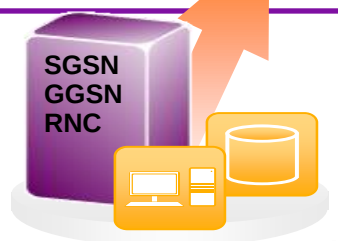
Customer repository

CRM

BSS

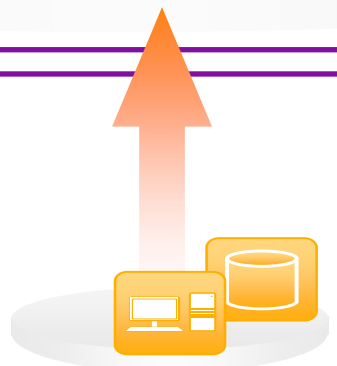
Inventory

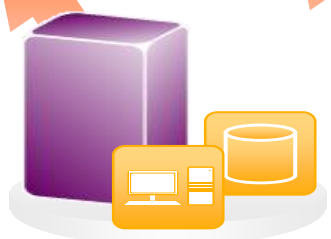
Data collection



Real-Time Traffic Monitoring tools / Signalling logs


Gn, Gi probes


IP Flows + DPI


CDRs from SGSN, GGSN, ICD, PoC, IMS


Terminal Agents

Conclusions and Recommendations

Mobile data traffic behaves differently from traditional Voice and SMS

- Device evolution and diverse range of applications drive growth in data traffic
- Analysing mobile data usage across different dimensions (user, application/service, device, cell/cluster, time) is important to better understand the relation between traffic and revenue
  - Understand how capacity is utilized in different parts of the network at different times (e.g. Central Business District and sub-urban housing areas)
  - Understand different user profiles and how they drive traffic and revenue
  - Understand how Over-The-Top services and applications contribute to traffic and revenue
  - Applying Fair Usage Policy to balance traffic, revenue and QoS

Sourcing and processing indicator data

- Sourcing and processing the transactional data needed for this analysis sets new requirements for mobile operators' IT systems (big data)
  - Volume of transactional data is far greater than that of traditional Network Management statistics data
  - Analyzed information and insights need to be made available in near real-time for timely and automated decision making and actions