Location-based Services State of the Union

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Outline

- Global Trends in LBS Value Added Services

- Location-Based Services Future

- Telenity Experience
  - Challenges
  - Standards
  - Unified Platform

- Building Successful Global Business and Distribution Model

- Summary

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Current Trends

End-User Trends

- **A**nywhere-Anydevice Mobility
- **R**educed Costs
- **P**rivacy and Personalization
- **U**ser Experience and Content

Operator Trends

- Interest in High Accuracy
- Competition
- Adding value to core services
- Finding new ARPU drivers
- Positioning for new services
- Realizing new service concepts rapidly

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Global LBS Trends - Deployments

More then 50+ operators globally have launched or testing LBS

3

Americas

- AT&T Wireless
- Verizon Wireless
- Cingular
- Sprint PCS
- Nextel
- Bell Mobility
- Latin America

1

EMEA

- Vodaphone
- Orange
- Telia
- Turkcell
- SFR
- E-plus
- Telia Sonera
- O2

2

AsiaPAC

- Japan –
  - NTT Docomo
  - KDDI
  - J-Phone
- China
- South Korea
- Taiwan
- Singapore
- India

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LBS Trends– Deployments

- "Vodafone Live" Service
  - Friendzone – Find, Flirt and Chat
  - Priced at € 0.59 per SMS sent
  - Vodafone UK - Wholesale location
  - *Launched Find and Seek*

- VodafoneOmitel
  - Directory Assistance
  - *Find the nearest.*
  - *Route Assistance.*
  - *Delivered via voice and SMS*

- Bell Mobility
  - My Finder service includes Yellow pages and Directions
  - Charges $0.25 cents

- MMO2
  - Launched full range of WAP, Web and SMS services

gpsOne Deployments

Qwest Wireless

verizon wireless

SK Telecom

Sprint

NTT Do Co Mo

western wireless

SECOM

ALLTEL

LEAP

中国联通
CHINA UNICOM

KDDI

KTF

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LBS Trends

Before

- Dedicated Middleware
- Closed Business Model
- GPS, Cell ID
- Control Plane – SS7
- High Cost – slow acceptance
- SMS
- WAP

2004 and After

- Generic - Unified Middleware
- Open Business Model
- Rich Content
- User Plane – IP based
- Low Cost – faster acceptance
- A-GPS
- Bluetooth – GPS
- BREW Enabled
- J2ME Enabled
- Multimedia Enhanced
- Voice Enhanced
- Parlay/OSA API

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Lessons Learned

- **Questions to Ask**
  - Is it worth investing in mass market A-GPS?
  - Is there enough demand for pedestrian navigation?
  - Is Cell ID just enough? for mass market LBS such as find the nearest and discount coupons

- *Lesson – needed a platform that can contextually link applications together, more accurate content and compelling LBS enabled apps*

- **Lessons from Japanese Market**
  - KDDI, NTT DoCoMo and J-Phone launched mass market A-GPS
  - High packet cost has severely handicapped KDDI's A-GPS navigation
  - J-Phone has launched friend finder with limited success
  - Most LBS services are focused on niche tracking & corporate services
  - DoCoMo Claims cell-id system attracts 4-5 million users per month
 - All three carriers have opened location data to 3rd parties

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The Reality Check For Market

Global Wireless Subs top 1.3 billion in 2003
Forecasting over 2 billion in 2007
Source: EMC, Global Mobile 2003

Location & Presence

Messaging

New Services
- Classified Ads
- Buddy Finder
- Tracking
- Ring Back tones
- Proximity Chat
- Video Clip

Content & Service Delivery

Mobile phones open up new media channel for TV and content providers

Location is an integral part of all services
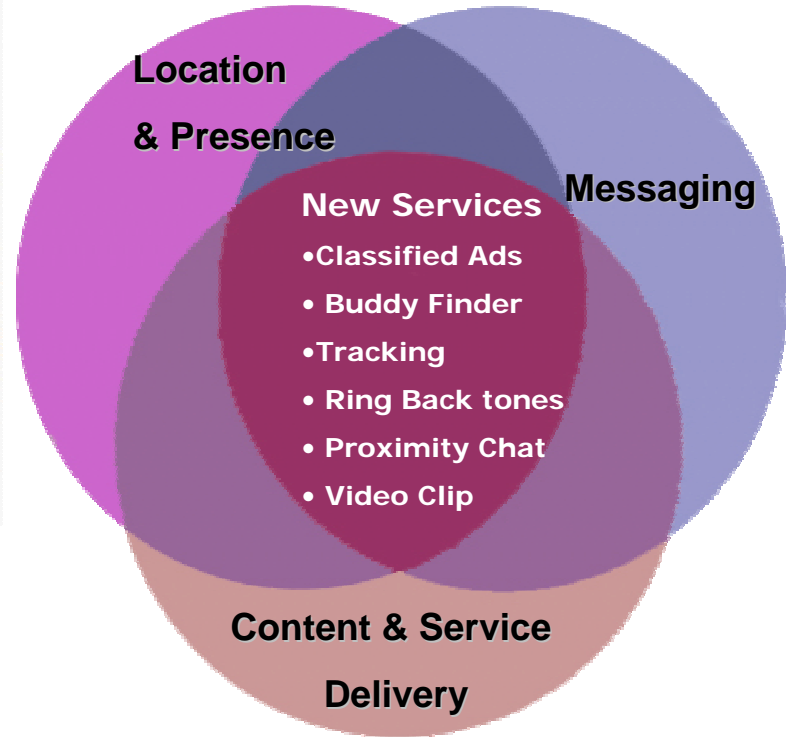
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Future Trends - US LBS Market

Mobile LBS applications are expected to generate approximately $2B in industry revenues in the U.S. by 2008

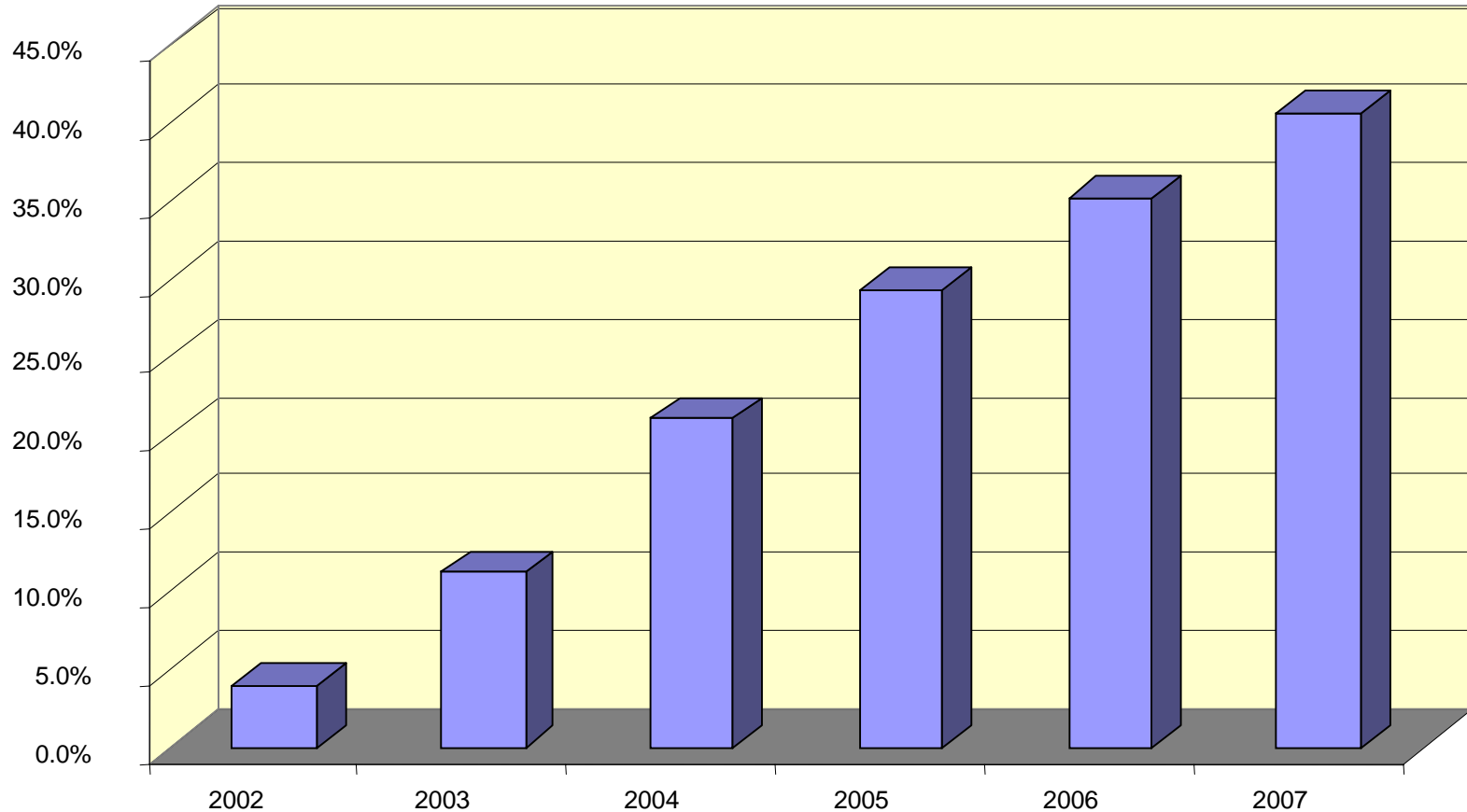| U.S LBS Revenues	2003	2004	2005	2006	2007	2008
Games	$0	$0	$0	$1	$2	$3
Tracker	$2	$4	$12	$66	$132	$235
Travel & Transport	$47	$88	$288	$664	$821	$952
Directory	$40	$71	$186	$412	$490	$579
Safety/ Other	$14	$25	$65	$153	$212	$280
Total	$104	$188	$550	$1,296	$1,657	$2,048

Source: Strategy Analytics 2003.

Frost and Sullivan research indicates average monthly

LBS ARPUs of $3.21 by 2007:
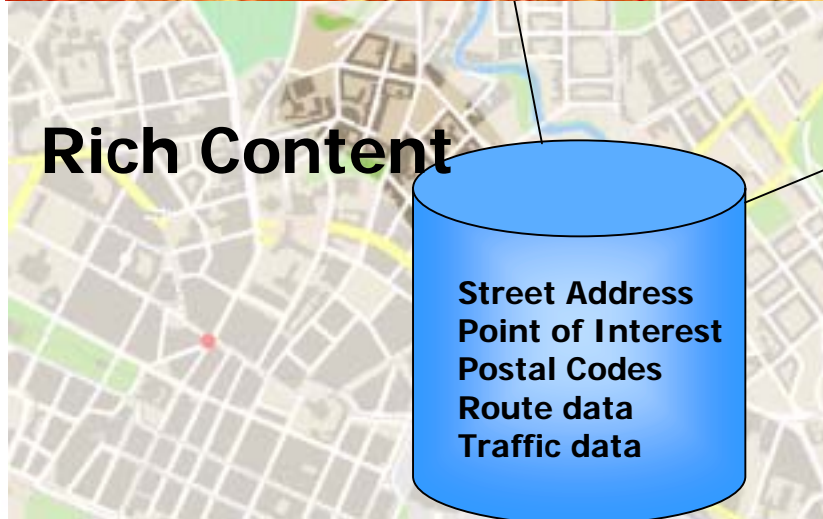
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Future Trends - LBS as % of Operator Revenue

Source: Location Based Services, ARC Group

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Migration from Desktop to Mobile

Locate

Communicate

Rich Content

Street Address
Point of Interest
Postal Codes
Route data
Traffic data

1. Share location with friends
2. Send map, route and traffic info via SMS, MMS
3. Listen voice instructions
4. Share Myfavourate with SMS
5. Browse mydata

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What is next? - depth of applications and continuous UE

Link with Continuous User Experience

Safety Need
- Emergency E911
- Emergency E112
- Tracking

Community Need
- Buddy Finder
- Information - 411
- Traffic, Weather,
- Restaurants

M-commerce
- M-coupons
- Comparative shopping
- Ticketing

Operational Need
- Routing
- Directions
- Travel

Entertain Need
- Games
- Multimedia
- Video

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Location Service Evolution

Landmark-driven navigation services with 3D guidance/ video and A-GPS step-by-step accuracy

Location services with colour maps, tailored downloadable applications, enhanced privacy and enhanced accuracy (A-GPS)

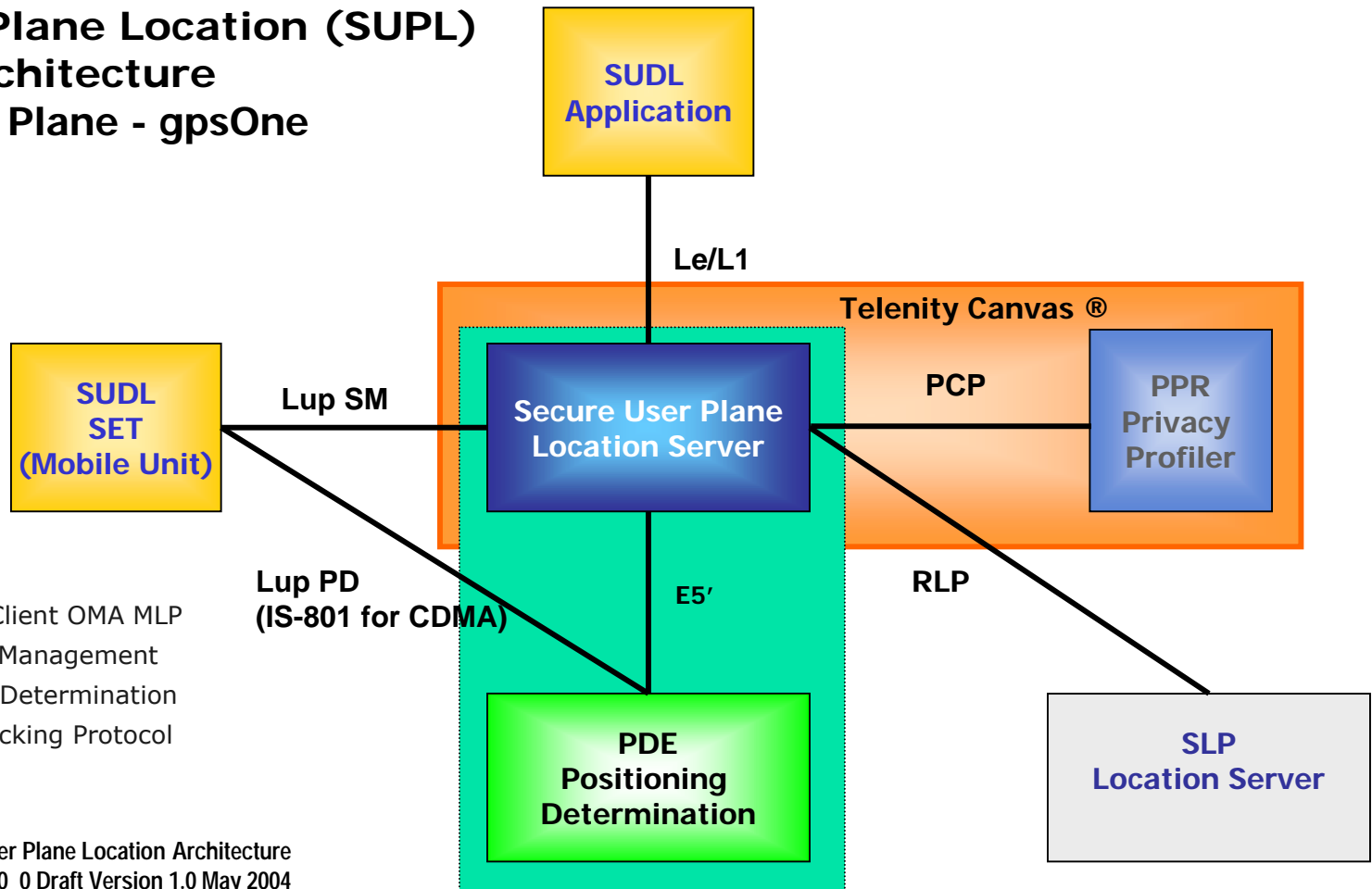**Cell-ID based finding services with B&W text and simple graphics**

Mass market

Early mass market

2003   2004   2005   2006   2007

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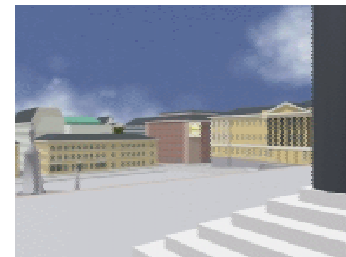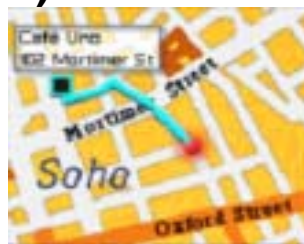
Standard – 3GPP Reference

Secure User Plane Location (SUPL)
Architecture
**IP User Plane - gpsOne**

- Le/L1: External Client OMA MLP
- Lup SM: Service Management
- Lup PD: Position Determination
- PCP: Privacy Checking Protocol
- RLP :Roaming

Reference: OMA Secure User Plane Location Architecture
OMA-AD-SUPL-AD-V1_0_0 Draft Version 1.0 May 2004

SUDL Application

Telenity Canvas ®

Le/L1

Lup SM

Secure User Plane Location Server

SUDL SET (Mobile Unit)

PCP

PPR Privacy Profiler

Lup PD (IS-801 for CDMA)

E5′

RLP

PDE Positioning Determination

SLP Location Server

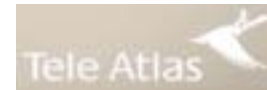telenity

Telenity Company Overview

- **Founded in December 2000**

- **Corporate headquarters in Connecticut USA**

- **Over 100 people, 70+ engineers**

- **Wireless Industry**

  - **Content & Service Delivery, Messaging, Location and Presence**

- **Contributing member of key standards organizations**
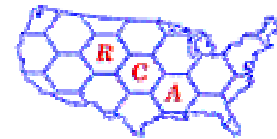
Telenity Customers and Partners
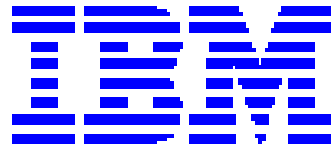
Serving more than <u>40 Million</u> Subscribers

Building Successful Global Partnership

Telenity and Nortel Networks –

- Leading NEP reselling Telenity's LBS products and applications world wide

  - **Latin American & Caribbean Market**

    - Nortel currently serves up to 47 countries

    - Successfully deployed Telenity LBS tracking solution in the TSTT network in Trinidad and Tobago (Aug 2004)

  - **Asia Pac – India**

    - Aggressively reselling in India - the worlds fastest growing Market

  - **Europe**

    - Nortel is leading supplier of GSMR deployment in Europe – Showcasing Telenity LBS solutions worldwide
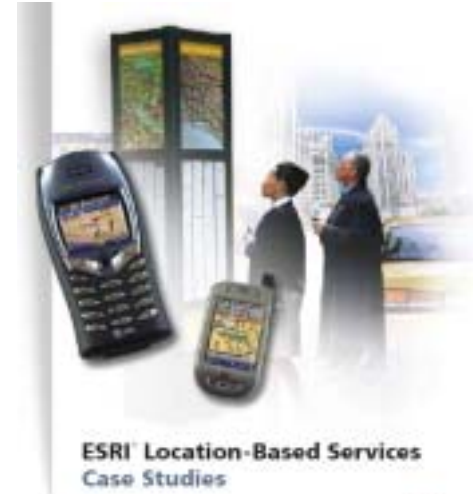
Building Successful Global Partnership

Telenity and ESRI –

- Embedding ESRI ArcIMS and ArcSDE

- Successfully deployed and integrated in Telco operators

- Marketing world-wide with Telenity NEP partner – Nortel

- Marketing world-wide with Telenity CEP Partners - IBM, HP and SUN

**ESRI Location-Based Services Case Studies**

Telenity Value Proposition

Service Delivery Platform and Applications for all of Voice, Data and Video Enhanced Services Needs

Canvas® Service Delivery Platform

- **Location Based Services Platform**
- **Content Management - iCON**
- **Service Delivery**
  - OSA/Parlay, Telecom Application Server (TAS)
  - Service Creation Environment (SCE)
  - Integrated IN and Voice Enabled Service
- **Multimedia Messaging MMSC/SMSC**
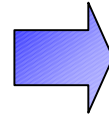
Canvas® Enabled Applications

- **Location-based Buddy Finder**
- **Location-based Resource Tracking**
- **Location-based City Guide**
- **CoolRings Ringback Ringtones**
- **Talking Billboard**
- **Classified Advertisement**
- **Sponsored Call**
- **Pay4me**
- **Smart Alert**
- **Multi-cast voice conference**

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Operator Challenges

Each vertical point-to-point solution calls for new development to integrate disparate components
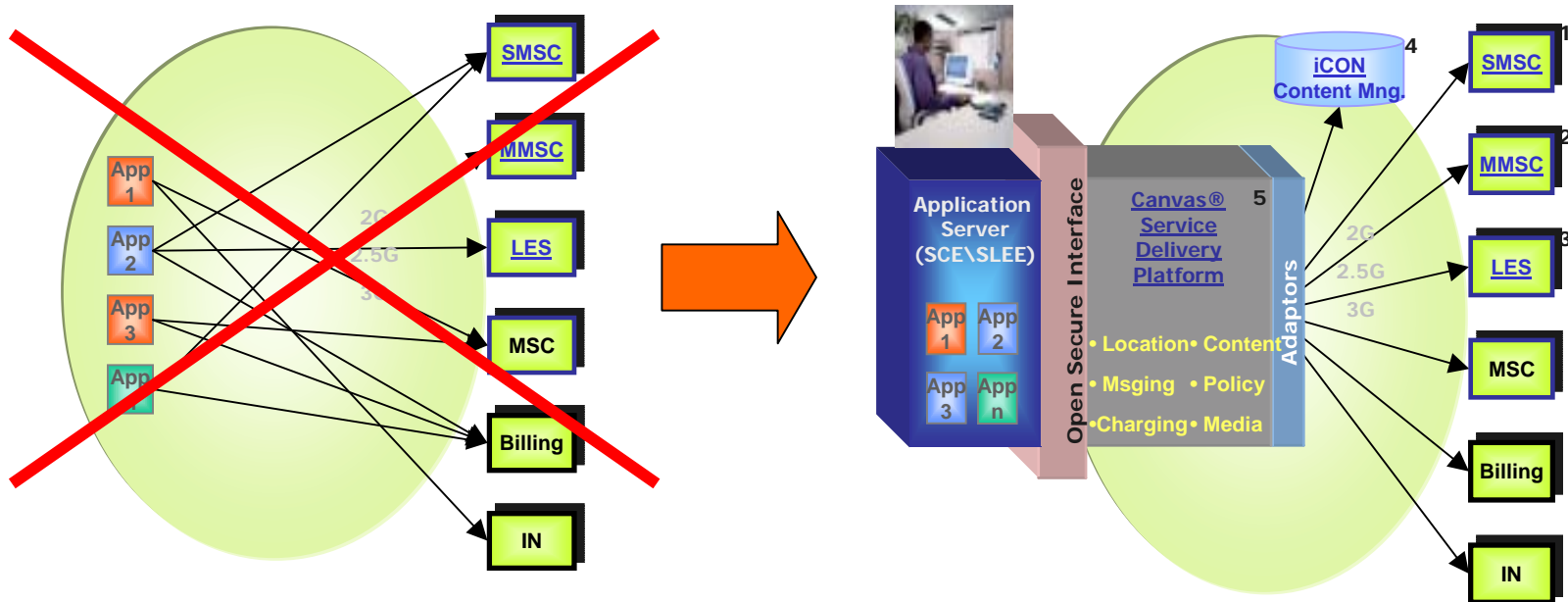
Operators focus shifts to "advantage marketing"

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Empower Your Network for New Ideas

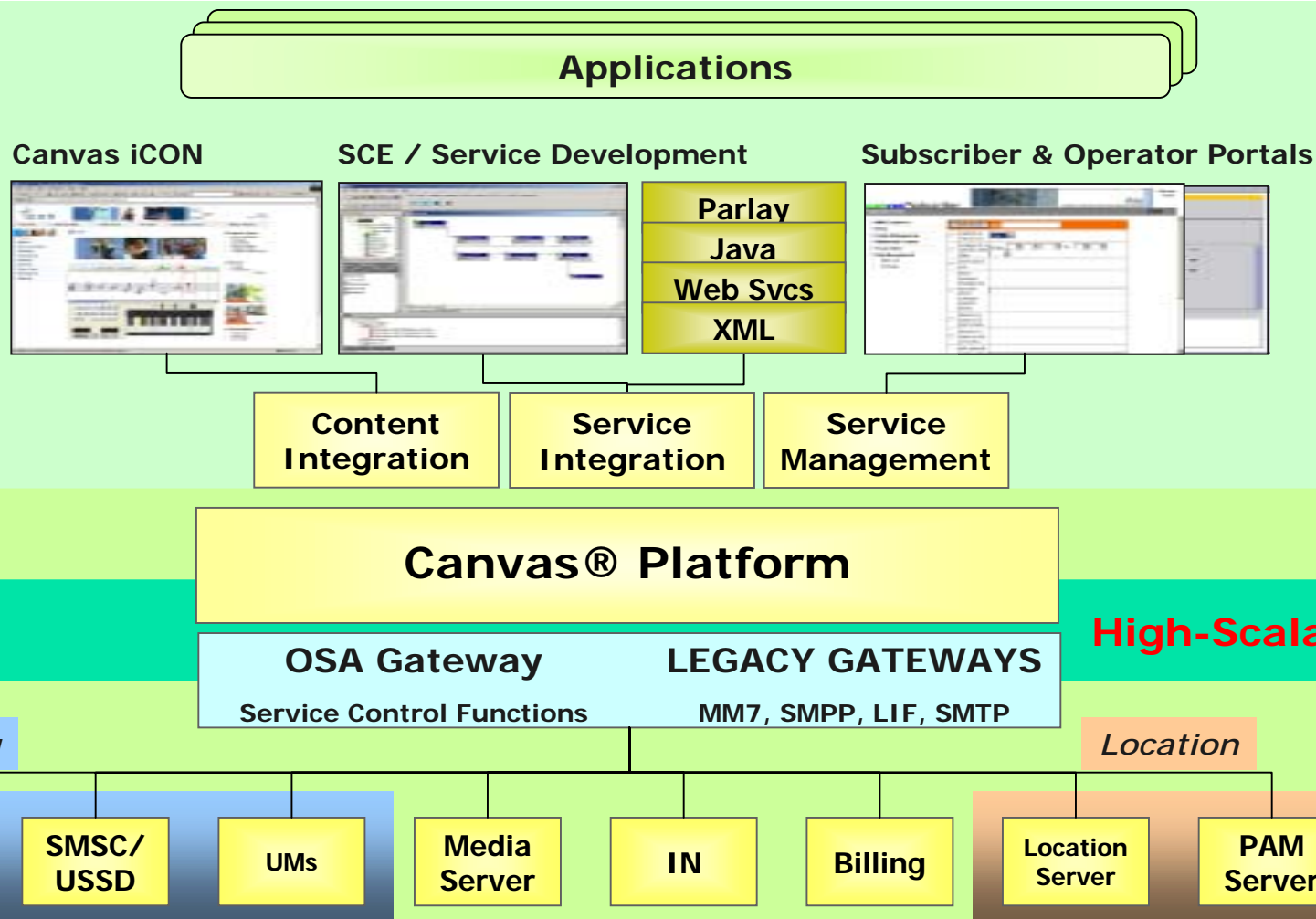# Canvas® Unified IP based - Location Enabling Server (LES)

Net work based Location Based Applications

Telenity LBS Applications	Trusted LBS Applications	Third-Party LBS Applications
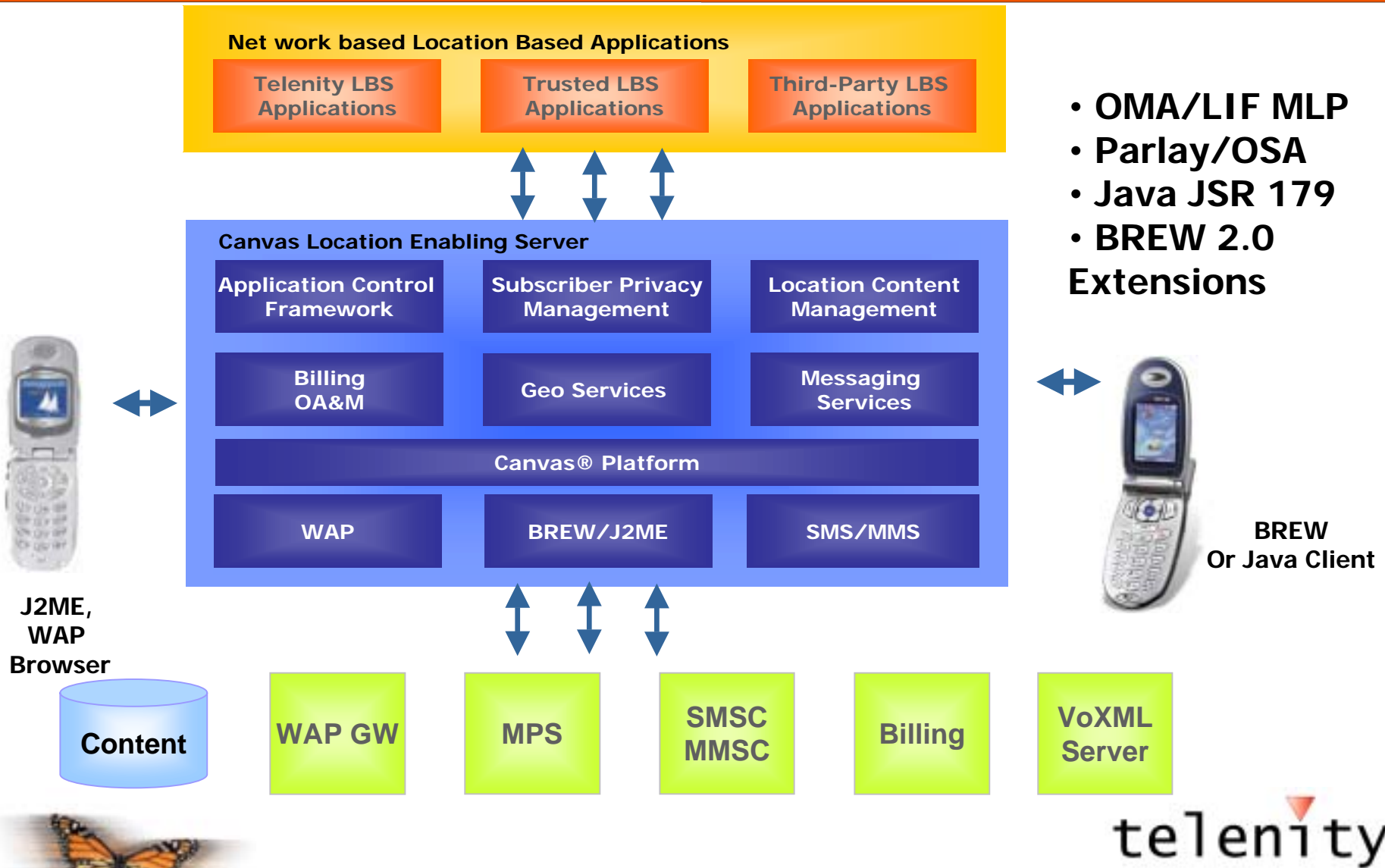
- **OMA/LIF MLP**
- **Parlay/OSA**
- **Java JSR 179**
- **BREW 2.0 Extensions**

Canvas Location Enabling Server

Application Control Framework	Subscriber Privacy Management	Location Content Management
Billing OA&M	Geo Services	Messaging Services

Canvas® Platform

WAP	BREW/J2ME	SMS/MMS

J2ME, WAP Browser

BREW Or Java Client

Content	WAP GW	MPS	SMSC MMSC	Billing	VoXML Server

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Fleet Management

- **Key Features**
  - Fleet manager and the tracked entities
  - Management via Web, SMS, WAP
  - Real-time monitoring & status results
  - SMS messaging and SMSC connection
  - Task assignment access to task register
  - 3rd party tracking access to couriers
  - Last known location and timestamp.
  - Activation via subscriber provisioning
  - Configure job notification (SMS, WAP..)
  - Set receipt of an alarm in area
  - Send route information (directions etc.)
  - Reporting for Tracking, Resource, Job status, Dispatcher summary

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Locate, Monitor and Communicate

007 Member (David)

Buddy Finder Service

LES

007 Member (Mark)

SMS

SMS

SMS

Your location Is requested By David

Buddy Finder Provides the information !!!

Locate monitor and communicate among friends, family and employees
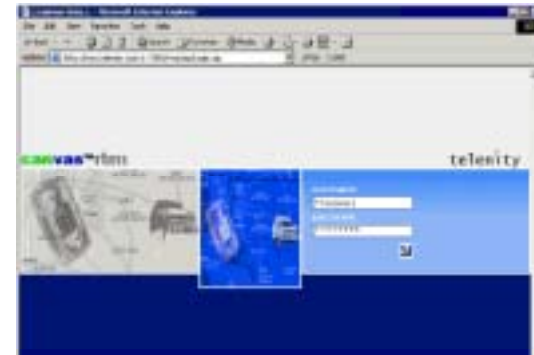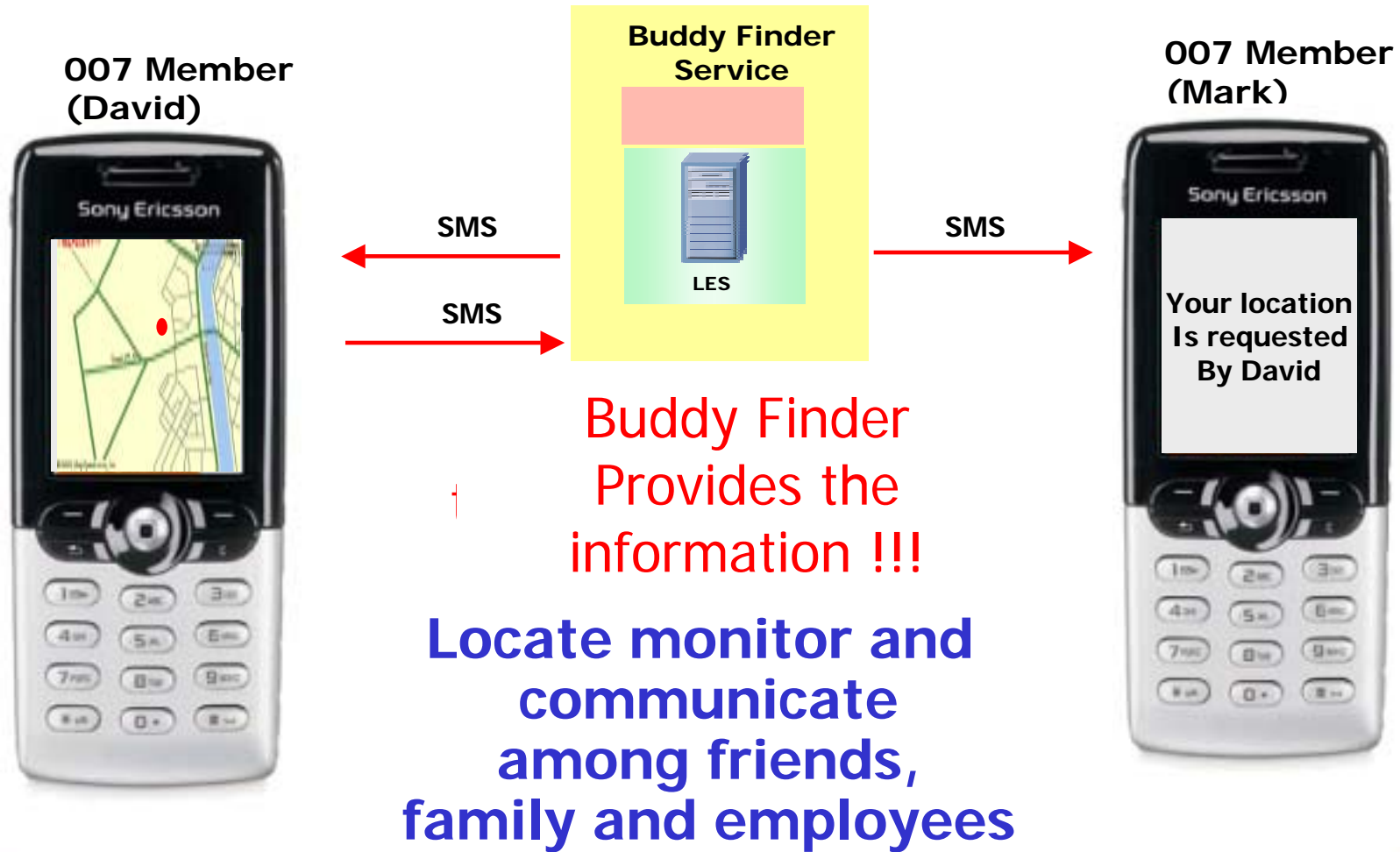
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Turkcell Case

Telenity LBS Experience

About Turkcell

► Celebrates the 10th year in the mobile market (operational since Feb 1994) **Listed on the New York Stock Exchange (NYSE)** with more than 2 billion USD of annual revenue levels.

► The leading GSM 900 Operator in Turkey w. **19 Million subscr.** (end of 2003);

   ➢ **6th largest operator in Europe** according to subscr. base

► 3 brands **TURKCELL** **HAZIR KART** SHUBUO TURKCELL HİZMETİDİR

► Directly & indirectly creates employment for 20,000 people in Turkey

► Represented on the Executive Committee of the GSM Association

► Other operations (through its international subsidiaries) are carried in *Kazakhistan, Georgia, Azerbaican, Moldavia, Northern Cyprus*) for an additional 2.5 M subscribers...
New entrant for *Ukraine* & *Iran*...

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LBS Available Today

▶ YayınCell (CellInfo) –**Cell Broadcast** based location info-

▶ EkipMobilCell (Fleet Tracking) –**Mobile Positioning** System based tracking & management messaging service
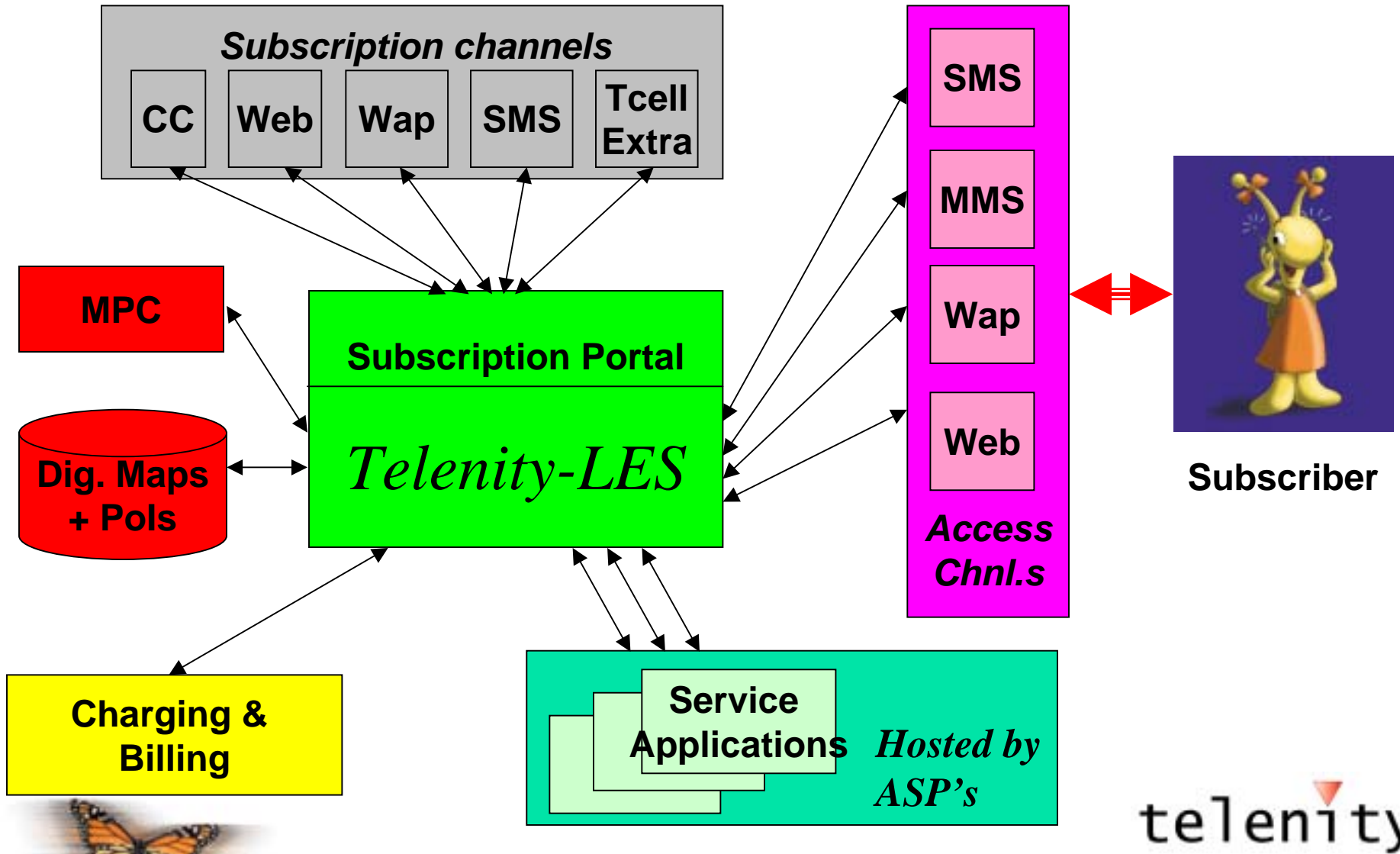
▶ Shubuo LBSs:
- ➤ DevGöz (BigEye): through GSM-A Award Winner GPRSLAND
- ➤ NeNerede (WhatWhere), Eczane (Pharmacy), GezEğlen (Entertainment)
- ➤ AvantajYakala
- ➤ Hava (Weatherinfo)

▶ 808 TouristInfo Channel – Cell Broadcast based weather and other local info for visitors/tourist.

▶ Others; provided by the certified business partners...

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Turkcell Way forward

Subscription channels

| CC | Web | Wap | SMS | Tcell Extra |

MPC

Dig. Maps + Pols

Subscription Portal

Telenity-LES

Charging & Billing

Service Applications *Hosted by ASP's*

SMS

MMS

Wap

Web

Access Chnl.s

Subscriber

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Turkcell way forward

► User's access to the service;

  ➢ Generic subscription through SMS, web, call center channels of the operator (Turkcell)

  ➢ Nickname per subscription provided by the operator

  ➢ Subscription per service achieved by using nicknames (service providers)

  ➢ After both generic and service based subscriptions, subscriber is informed about the consequences of the process.

► Service provider's access to the common location server (Telenity - LES)

► Different charging models for customers (content, service based)

► Agreements with the ASP's (revenue sharing models?)

Look to the future

▶ Mobile Terminals
- ➤ Screen resolutions (2 Mega pixel?)
- ➤ Handset capabilities (Symbian, Java, etc.)
- ➤ The delivery of a LBS content should be displayed by any mobile telephone model

▶ Maps
- ➤ Available & updated
- ➤ High enough resolution (depending on service offering)

▶ GPS
- ➤ Accurate geographical info
- ➤ A-GPS, EOTD?

Look to the future

► Possibilities for new services;

   ► Use of Point of Interests (PoI); restaurants, hospitals, kiosks banks/ATMs (address+telephone); should be updated & reliable

   ► Proximity based community services (Chatting)

   ► Multi-player games in a real world (FRP's – fantasy role play)

   ► Routing/Navigation (map based applications)

   ► Traffic information

   ► Advanced fleet/asset/person tracking

   ► City sightseeing

   ► Reverse geo-coding; whereamI?-like

► Emergency services

► Location based mobile marketing opportunities (promotions/discounts, advertisements, etc.)

► Subscribers feel "*real personalization*"!...

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Summary

- Location enabled application will drive acceptance, penetration and revenue

- Content must be accurate and must have broad coverage

- Business Case is in the User Experience - turn it into better Viewer Experience

- Programmable Networks will drive new services

- Customers do not buy LBS – they buy a service that will use LBS as a preference setting on a "standard" content portal

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Thank You

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