



Telecom Billing Overview Reference Material



Objectives



- At the end of this course, you will be able to:
 - Explain Order to Payment: End-to-end scenario
 - Explain typical functionalities of billing systems
 - List down ingredients of a generic billing COTS product
 - ◆ Client side and Server side
 - Explain Billing Concepts
 - ◆ Customer, Account, service, charging models, Package etc.
 - Explain elements of Rating, Billing, Discounting and Payment processing as well as Dunning steps
 - Differentiate between
 - ◆ Retail vs. Wholesale billing
 - ◆ Roaming vs. Interconnect billing
 - Explain MNC billing
 - Describe Role of Mediation
 - List down billing COTS products
 - Appreciate TechM footprint in billing

Agenda

- Telecom Service Order E2E Scenario
- Typical TELCO Stack
- Billing System Composition
- Billing Concepts
- Telecom Service
- Mediation's Role
- How services are charged: Rating
- Discounts
- How services are billed : Billing
- Payments, Dunning/Collections, RA
- Retail, Wholesale, Interconnect, Roaming, MNC
- Billing Systems : Convergence, Interface, Expectations, Challenge , TechM presence



Telecom Service Order E2E Scenario:

Typical TELCO Stack

Billing System Composition

Billing Concepts

Telecom Service

Mediation's Role

How services are charged: Rating

Discounts

How services are billed: Billing

Payments, Collections and RA

Retail, Wholesale, Interconnect, Roaming, MNC

Billing Systems: Convergence, Interface,
Expectations, Challenge, TechM presence

Telecom Service Order: E2E Scenario

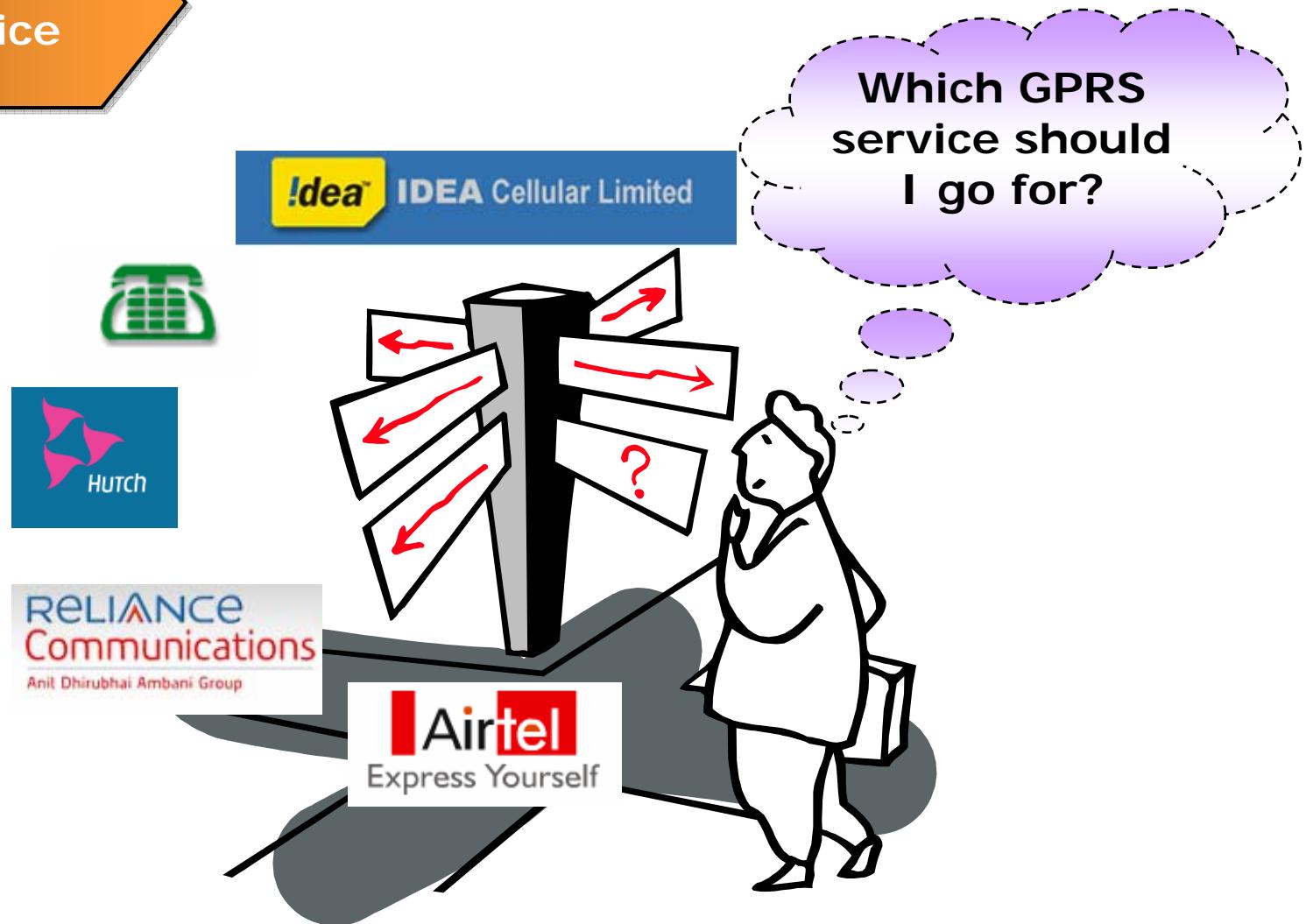


- Customer is looking for GPRS connection
- Lot of service providers are selling GPRS service
- Customer wants the service up and running by 20th of Nov 2008



Requirement and Choice of TELCO

Customer decides
for GPRS Service



Customer Requests

Customer Calls up a Service Provider



Can I have a GPRS service by 20th Nov?

Welcome Sir !
It is possible to make GPRS service available before 20th Nov.

We have different Plans for GPRS available...

Which plan are you looking for?



- Different channels available for Ordering
- Walk down to SP outlet and fill a form, WCS: Web Self Care etc.

CRM: Order Management



CSR Proposes to choose a GPRS service plan

Silver 100

INVOICE		
Mr A N Other 123 Mainstreet Road, Somewhere, USA Date 10/10/08		
Globe Telecommunications Ltd The Old Post Office Opposite Government House Colombo 01 Sri Lanka		
Account Number: 1234-5678-9		
Phone & TV Package		
Line Rental	0.00	10%
Phone Call	0.00	10%
Domestic Family	0.00	10%
International Family	0.00	10%
Mobile Subscribers	12.00	10%
Mobile Data	0.00	10%
Pay per View	0.00	10%
Internet	0.00	10%
Mobile address	10.00	10%
Mobile space (SMS)	0.00	10%
Bank giro credit	0.00	10%
Total on VAT	0.00	10%
Total on VAT	0.00	10%
Bank giro credit		
0000 0000 0000 0000 0000 0000 0000 0000		
0000 0000 0000 0000 0000 0000 0000 0000		

Gold 500

INVOICE		
Mr A N Other 123 Mainstreet Road, Somewhere, USA Date 10/10/08		
Globe Telecommunications Ltd The Old Post Office Opposite Government House Colombo 01 Sri Lanka		
Account Number: 1234-5678-9		
Phone & TV Package		
Line Rental	0.00	10%
Phone Call	0.00	10%
Domestic Family	0.00	10%
International Family	0.00	10%
Mobile Subscribers	12.00	10%
Mobile Data	0.00	10%
Pay per View	0.00	10%
Internet	0.00	10%
Mobile address	10.00	10%
Mobile space (SMS)	0.00	10%
Bank giro credit	0.00	10%
Total on VAT	0.00	10%
Total on VAT	0.00	10%
Bank giro credit		
0000 0000 0000 0000 0000 0000 0000 0000		
0000 0000 0000 0000 0000 0000 0000 0000		

Platinum 1000

INVOICE		
Mr A N Other 123 Mainstreet Road, Somewhere, USA Date 10/10/08		
Globe Telecommunications Ltd The Old Post Office Opposite Government House Colombo 01 Sri Lanka		
Account Number: 1234-5678-9		
Phone & TV Package		
Line Rental	0.00	10%
Phone Call	0.00	10%
Domestic Family	0.00	10%
International Family	0.00	10%
Mobile Subscribers	12.00	10%
Mobile Data	0.00	10%
Pay per View	0.00	10%
Internet	0.00	10%
Mobile address	10.00	10%
Mobile space (SMS)	0.00	10%
Bank giro credit	0.00	10%
Total on VAT	0.00	10%
Total on VAT	0.00	10%
Bank giro credit		
0000 0000 0000 0000 0000 0000 0000 0000		
0000 0000 0000 0000 0000 0000 0000 0000		

Product Catalog

Wireline
Product A
Product B



Wireless
Product A
Product B



GPRS
Silver 1000



CRM: Order Management

Customer Chooses a plan for a service



I would like to
go for
GPRS service
with
Gold 500 Plan

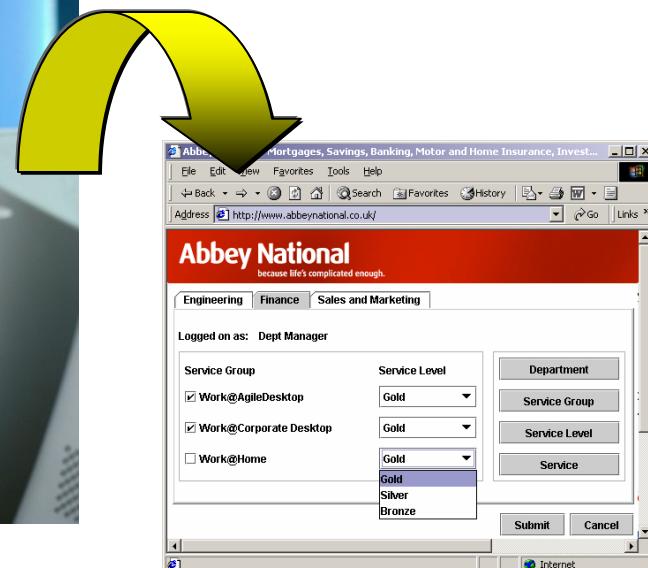
Gold 500	
Mr. & Mrs. Ober 1000 Main Street Anytown, USA 12345	Customer Number: 1234567890
INVOICE	
Invoice Number: 1234567890	Date: January 1998
Description of Goods or Services	
Platinum The Best Quality Platinum Available Now!	\$1,000.00
Interest Rate: 10% per year	\$50.00
Delivery Cost: Free	\$0.00
Total: \$1,050.00	
Bank: Gold Credit	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
PRINT NAME John Doe	
PRINT ADDRESS 1000 Main Street Anytown, USA 12345	

Order Capture

CSR creates Order for Provisioning and Activation

Work Order

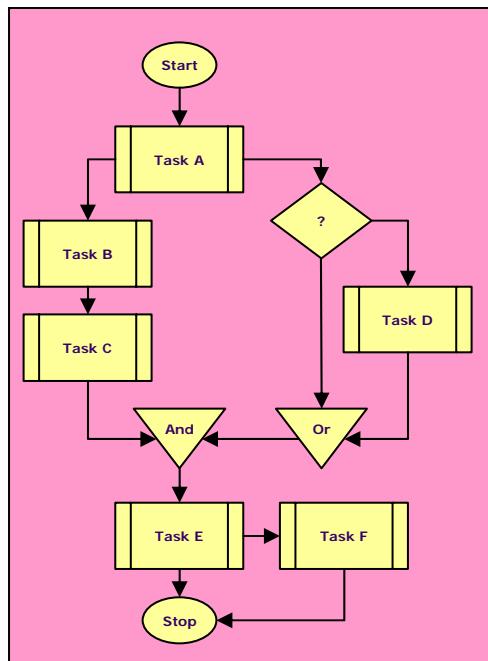
Name:	Bryant Construction
Address:	21 Main Street
City:	Monrovia
Contact:	Michael Smythe
Phone:	(818) 555-1414
Service:	- 20 phone lines - 1 High speed data connection
Due Date:	Jan 20 th 2008



- Data Captured during Order:
 - Customer Information along with Demographics
 - Selected Plan and associated set of service [s]
 - Planned Delivery date, Delivery address
 - Billing Address, Bill Cycle info and Payment Mode etc.

Provisioning and Activation

Customer's Service
is Provisioned and
Activated



Field engineer configures network



Connects equipments & tests it



Updates the status of work order



- Based on the order i.e. **Service** and **Action**, a proper workflow is triggered in order Management System
- Workflow= Set of tasks to be performed to fulfill an Order

A Perfect CRM

**CSR Informs
customer about
GPRS service
activation**

Welcome to ABC Telecom Sir...
Your GPRS service is activated
right on time.
Today is 19th.

Have a nice day!



What is L2C?

- What is Service Fulfillment Time?

Time frame between Capturing of an Order to Completion of an order so that customer can use that service



Using a Service



Systems in scope: Mediation, Rating, Discounting, Credit Control

Invoice for a Service

Customer gets an invoice/bill at the end of bill cycle

December						
SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

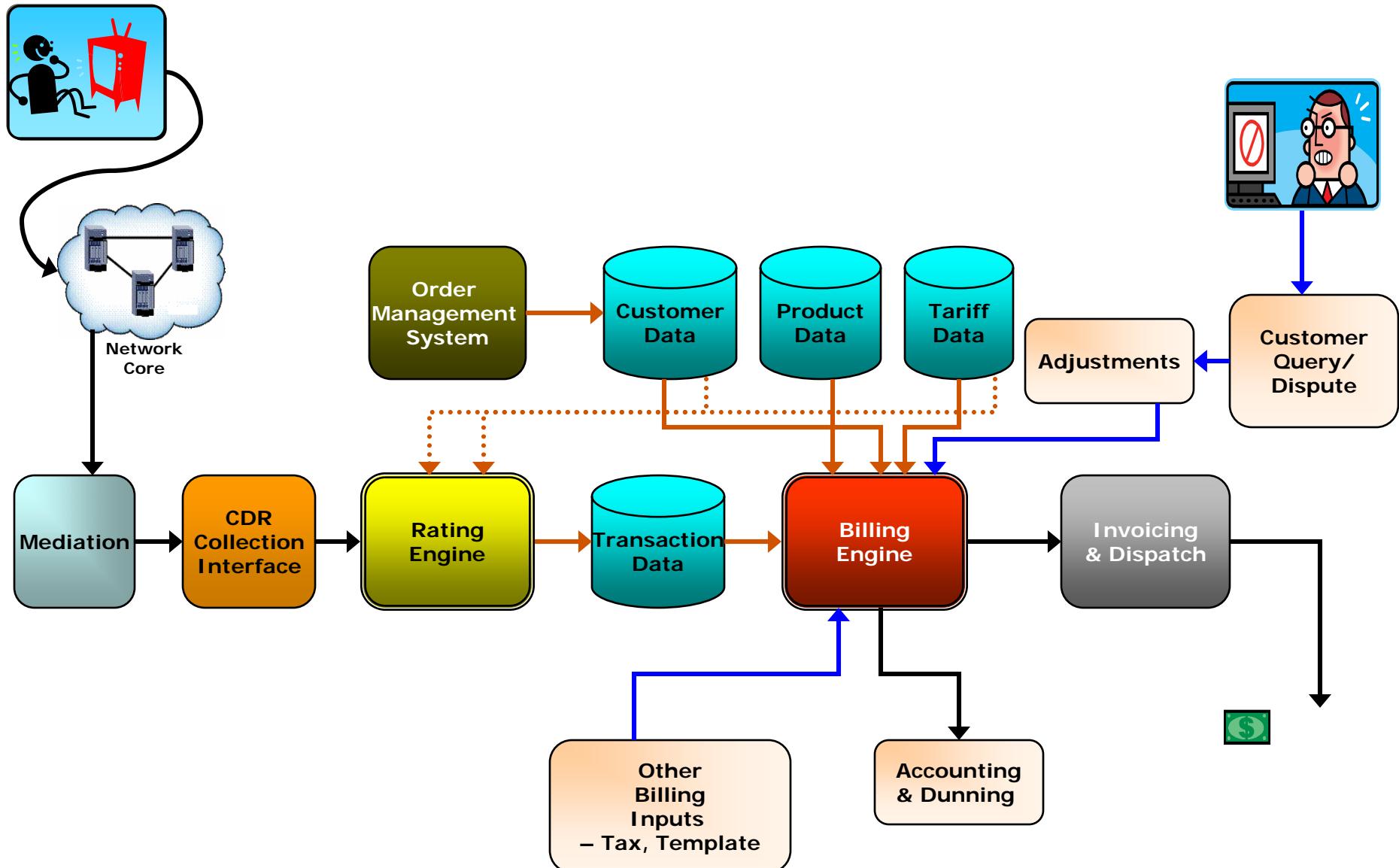
Customer's Bill Cycle :
Bill date 21st of every Month
Bill Frequency: Monthly



Invoice Date: 21st Dec 09
Invoice Amount: Rs. 1435/-
Payment Due Date: 30th Dec 09

Systems in scope: Billing, Bill Formatting/Presentation

What happens after service fulfillment?



Payment for a Service

Customer pays bill by a payment method captured during Order



Systems in scope: AR, GL, Collection, Dunning

Other Payment Methods:

2. Cheque



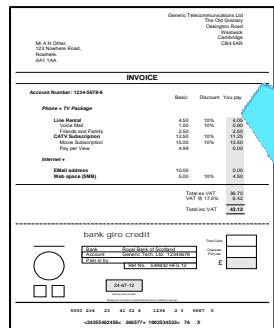
3. Credit Card



4. Direct Debit



A Typical Invoice of GPRS Service



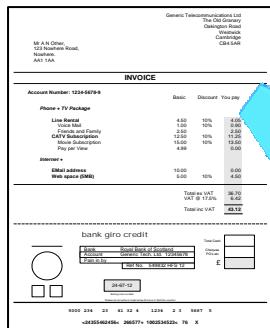
Invoice Number : 086930341
Invoice Date : 19-Aug-2008
Invoice Period : 19-Jul-2008 to 18-Aug-2008
Service Tax No : AAACB2100PST001
Credit Limit : 19800.00



Previous Bill Amount A	Payments B	Adjustments C	Current Charges D	Total Amount Due A - B + C + D	Due Date
3854.19	4000.00	0.00	4405.03	4259.22	03-Sep-2008

Please pay your bill before due date to avoid late payment charges.

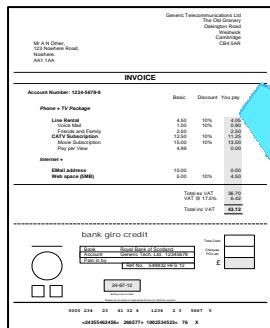
Summary of Charges



Summary of Charges

Particulars	Amount (Rs.)
Balance Carried Forward(A-B+C)	-145.81
Current Charges	
Monthly Charges	798.00
Feature Charges	425.00
Usage Charges	1555.64
Roaming Charges	1739.82
One Time Charges	0.00
Other Credits & Charges	0.00
Discounts	-598.00
Service Tax @ 12.00 %	470.46
EC + HEC (@3 % on Service Tax)	14.11
Total Current Charges	4405.03
Total Amount Due	4259.22

Charge Summary: Service Number wise



Account No.: 1.11302232

Invoice No.: 086930341

Invoice Date : 19-Aug-2008

Summary of Charges for Account No. 1.11302232

Balance Carried Forward

Sr. No.	Description	Date	Amount	Total Amount
	Previous Bill Amount			3854.19
	Payments			
1	Payment Received	28-Jul-2008	4000.00	
	Total Payments			4000.00
			Total	-145.81

Cellularwise Break Up

Sr. No.	Cellular Number	Monthly Charges	Feature Charges	Usage Charges+ Roaming	One Time Charges+ OCC	Discount	Service Tax	Cess Tax	Total	Total Amount
1	9850084000	249.00	130.00	847.40	0.00	-149.00	129.29	3.88	133.17	1210.57
2	9822007000	549.00	295.00	2448.06	0.00	-449.00	341.17	10.23	351.40	3194.46
	Total	798.00	425.00	3295.46	0.00	-598.00	470.46	14.11	484.57	4405.03

CREATE THE NEXT WAVE

CONFIDENTIAL© Copyright 2008 Tech Mahindra Limited

20

Feature and Usage Charges



Account No.: 1.11302232 Invoice No.: 086930341 Invoice Date : 19-Aug-2008

Charges for Cellular No. 9850084000

Monthly Charges

Rate Plan Description	Period	Amount
T496-Basic 249	19-Jul-2008 - 18-Aug-2008	249.00
Total		249.00

Feature Charges

Feature Description	Period	Amount
Ring Back Tone Charges	19-Jul-2008-18-Aug-08	30.00
Detail Billing-50	19-Jul-2008-18-Aug-08	50.00
SMS Originating Feature	19-Aug-2008-18-Sep-08	50.00
Total		130.00

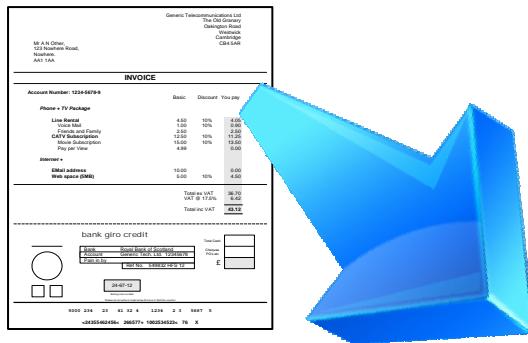
Usage Charges

Description	Volume	Pulse	Amount
Local Calls - Cellular		316	296.50
Local Calls - Fixed/WLL		31	31.00
Friends and Family Calls		21	4.64
STD Calls - Cellular		195	196.20
STD Calls - Fixed/WLL		9	11.70
SMS	213		16.00
Free Airtime SMS	197		
Total			556.04

"For details on Pulse rate pl. refer your tariff plan at www.ideacellular.com or call customer care"

SUMMARY breakup Feature, Usage charge category wise

Marketing Message



Get Internet on your mobile.
Choose your plan as per your requirement -

Rental: 0; WAP & Internet usage @ 2p/KB;
To activate: Sms GPRS to 54666

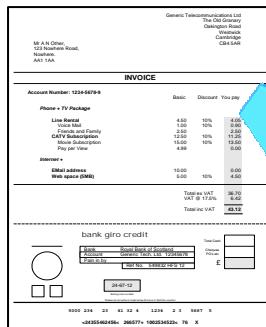
Rental: Rs.200/month; 500MB free,
Additional usage-2p/KB, Pulse-1KB;
To activate: Sms GPRS FUN to 54666

Rental: Rs.350/month; 1GB free,
Additional usage-2p/KB, Pulse- 1KB;
To activate: Sms GPRS POWER to 54666

Rental: Rs.1000/month; Unlimited WAP & Internet Usage; To activate: Sms GPRS NET to 54666

Live television on your mobile.
Enjoy LIVE TV on your IDEA GPRS mobile.
Enjoy AajTak, Etv Marathi, IndiaTv,
Zoom, NDTV, CNBC, Bindas & many more.
Sms IDEATV to 55456 and choose your plan.
SMS Charges-Rs.3/Sms.

Itemized Bill



Outgoing Call Details

Local Calls - Cellular

Itemized Details for Cellular No. 9850084000

Sr. No.	Date	Time hhmss	Number Called	Time band	Duration mmss	Pulse	Call Charges
1	19-Jul	11:41:36	09890295256	P	00:01	1	1.00
2	19-Jul	12:26:03	919975220586	P	00:21	1	1.00
3	19-Jul	12:41:40	919765228999	P	00:28	1	1.00
4	19-Jul	13:20:57	919823149259	P	00:40	1	1.00
5	19-Jul	13:24:18	919960496992	P	00:13	1	1.00
6	19-Jul	13:31:35	919765228999	P	00:57	1	1.00
7	19-Jul	13:37:48	919822084000	P	04:23	5	3.75
8	19-Jul	13:57:34	919822084000	P	00:54	1	0.75
9	19-Jul	16:52:52	09890339471	P	00:39	1	1.00
10	19-Jul	17:12:43	09922209000	P	00:36	1	0.75
11	19-Jul	17:15:57	099222786666	P	00:15	1	0.75
12	19-Jul	17:31:17	919960496992	P	00:17	1	1.00
13	19-Jul	18:20:09	09850294243	P	00:55	1	0.75
14	19-Jul	19:45:18	099601111506	P	00:41	1	1.00
15	19-Jul	20:28:53	09890295256	P	00:43	1	1.00
16	19-Jul	20:31:42	09960548000	P	00:28	1	1.00
17	19-Jul	20:55:11	09960548000	P	00:16	1	1.00
18	20-Jul	08:23:08	919960496992	P	00:21	1	1.00
19	20-Jul	18:45:27	919765228999	P	00:14	1	1.00
20	21-Jul	10:27:17	09975184165	P	00:06	1	1.00
21	21-Jul	10:29:08	09970700863	P	00:14	1	1.00
22	21-Jul	10:29:48	09970700863	P	01:45	2	2.00
23	21-Jul	12:54:18	098222084000	P	00:18	1	0.75
24	21-Jul	13:09:38	09763566556	P	01:00	1	0.75
25	21-Jul	14:10:19	09960774382	P	02:16	3	3.00
26	21-Jul	14:49:59	09960774382	P	01:04	2	2.00
27	21-Jul	14:53:52	09890320398	P	00:16	1	1.00

Note:

User had selected
Detail Billing-50
i.e. Itemized bill

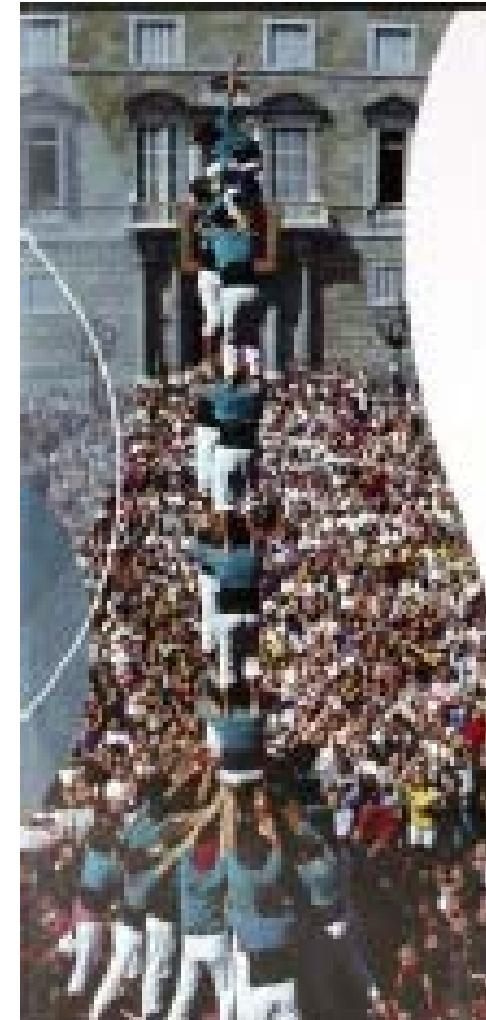
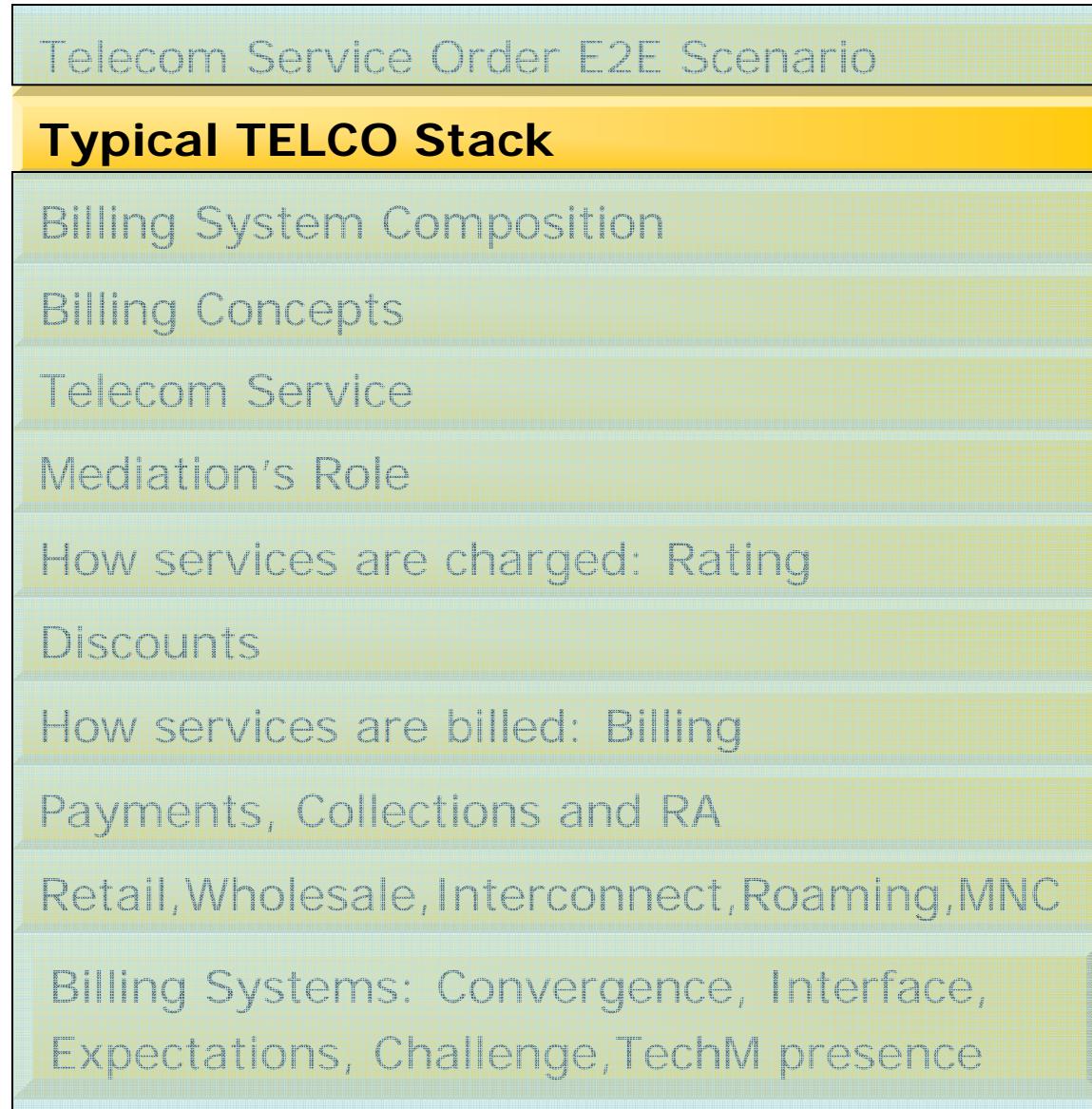
Different Systems Involved



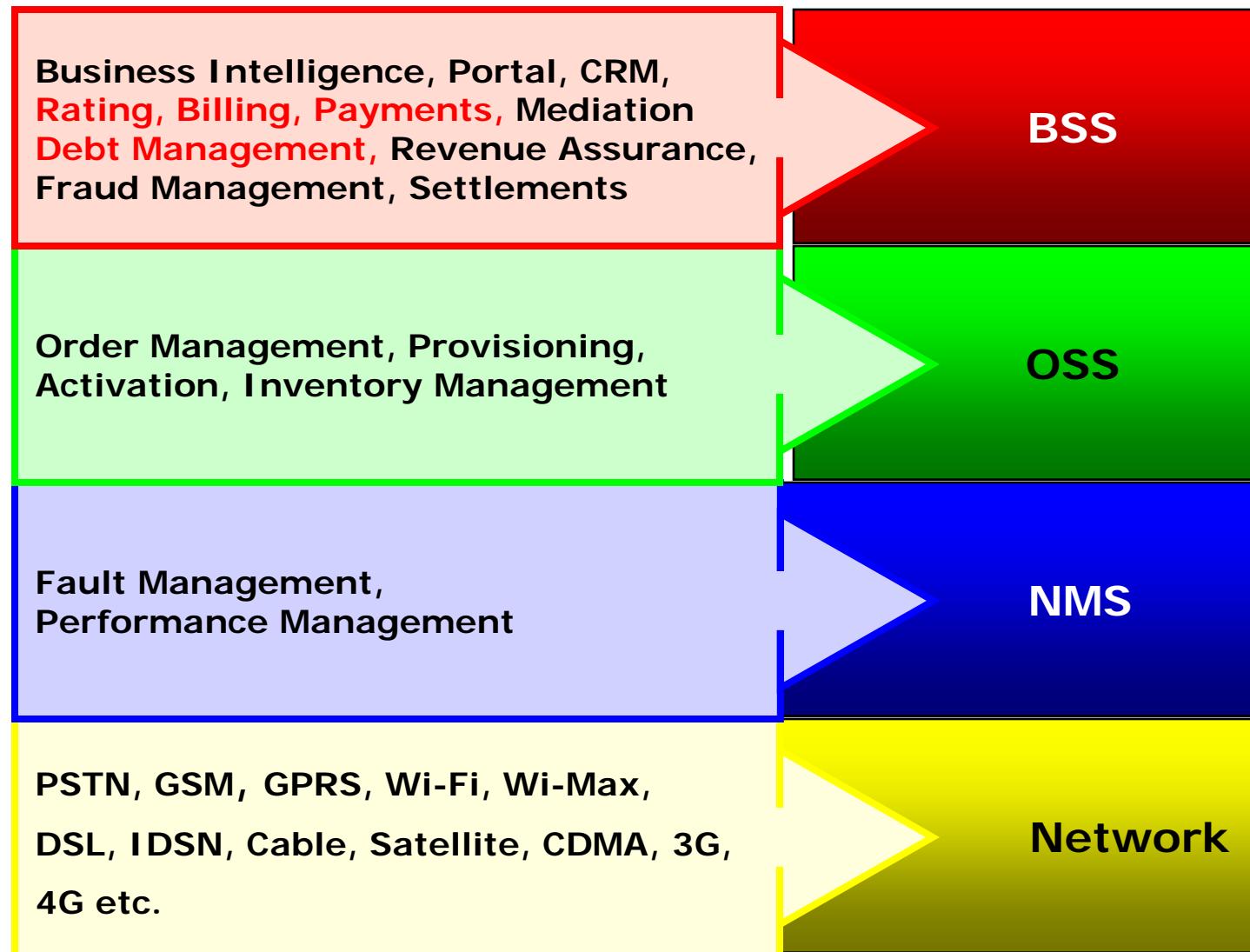
- Order Management
- CRM
- Rating and Billing
- Provisioning and Activation
- Inventory Management
- Workforce Management etc.

Note: Billing functionality comes into play only when service is activated.

Typical TELCO Stack



TELCO Stack / Telecom Umbrella



What are Billing Systems?



- It is at the heart of Service provider's set of systems
- It falls under BSS area
- This is the system which defines the Revenue Model
- It is the system wherein care is to be taken to make sure that customer is billed accurately in time ..no Overbill / no Under bill
 - Overbill ...Customer Dissatisfaction
 - Under bill ...Revenue loss

Billing System Composition



Telecom Service Order E2E Scenario

Typical TELCO Stack

Billing System Composition

Billing Concepts

Telecom Service

Mediation's Role

How services are charged: Rating

Discounts

How services are billed: Billing

Payments, Collections and RA

Retail, Wholesale, Interconnect, Roaming, MNC

Billing Systems: Convergence, Interface,
Expectations, Challenge, TechM presence

Billing System: Client & Server Side



■ Configurable Modules

- Generally GUI based modules
- Also called Online modules in some billing systems
 - ◆ Example: System Configuration, Customer Account Admin, Product and Plan Configuration, Discount Conf, Account Receivables etc.

■ Batch processing

- Batch processes are scheduled to run on high end machines
- Principle of caching used for performance enhancement
 - ◆ Benchmarking based on performance
 - ◆ Example of batch processes: Rating, Billing, Discounting, Bill formatting, Payments, Dunning etc.

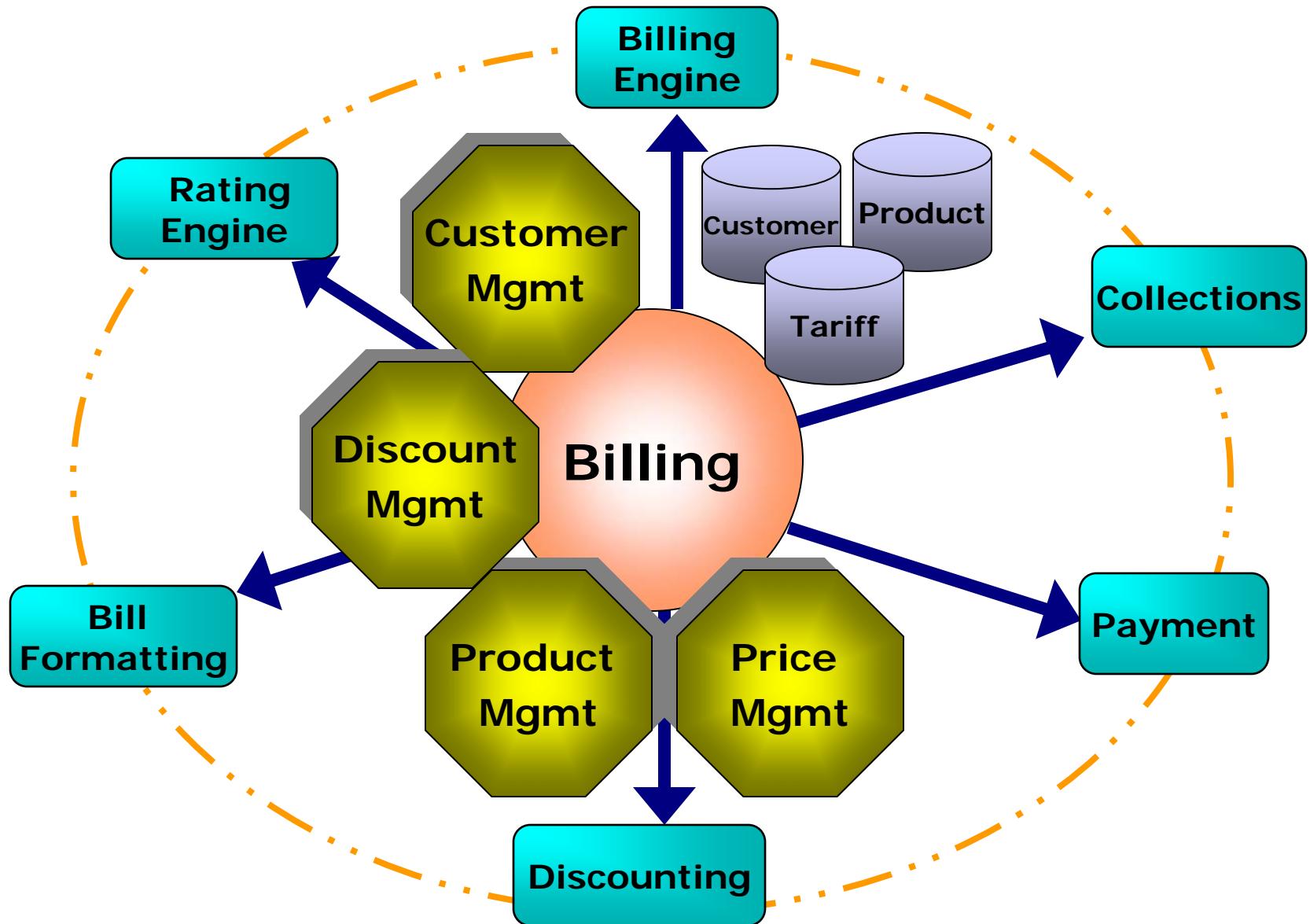
■ High end database

- Preferably Oracle

Who can do what!

A tight access control can be configured through User Admin type of modules in terms of which Modules, which functionalities, what type of access etc.

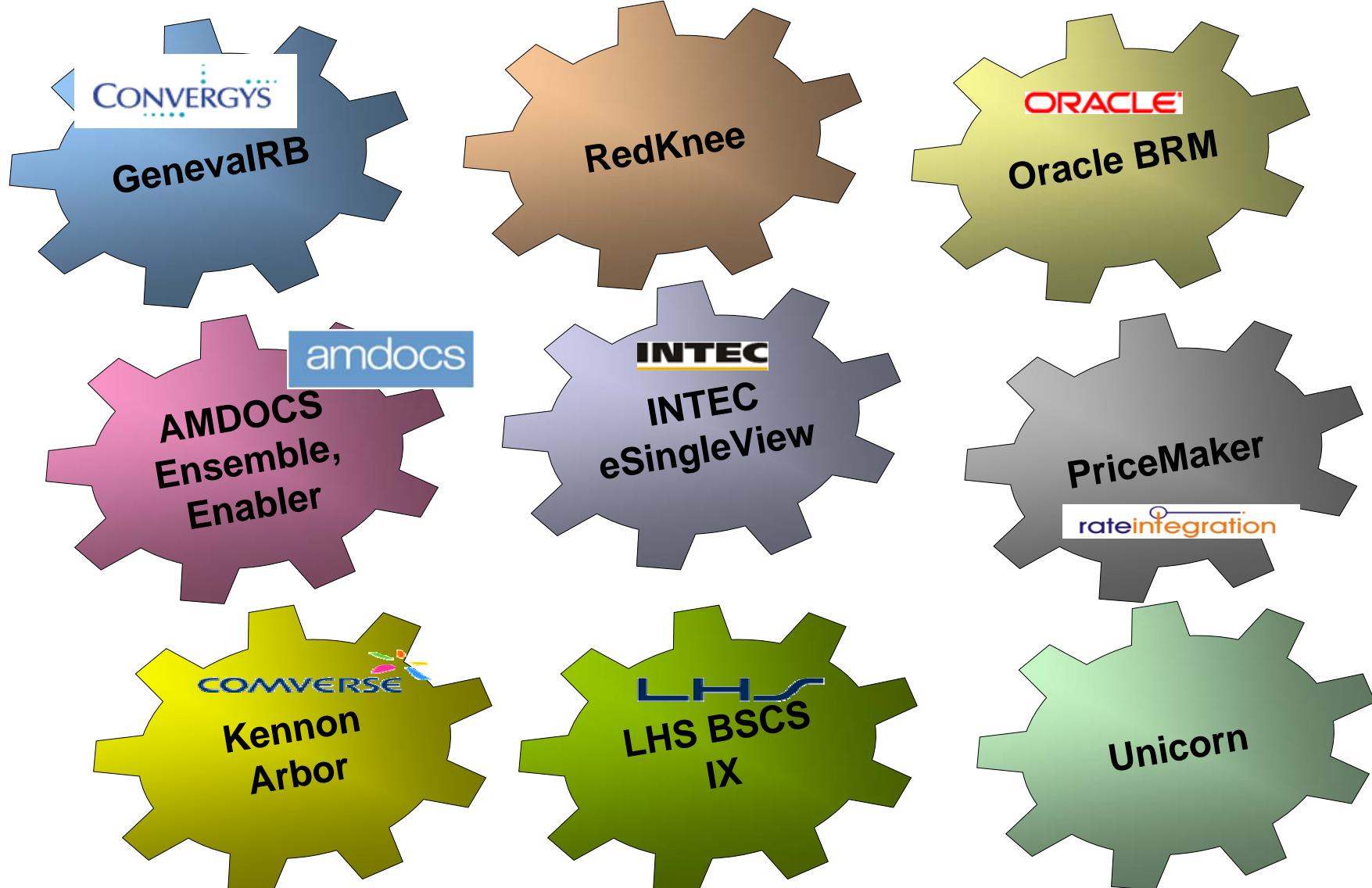
Billing System: Nut and Bolts



COTS Products in Billing Space



Who are other players!



Billing Concepts



Telecom Service Order E2E Scenario

Typical TELCO Stack

Billing System Composition

Billing Concepts

Telecom Service

Mediation's Role

How services are charged: Rating

Discounts

How services are billed: Billing

Payments, Collections and RA

Retail, Wholesale, Interconnect, Roaming, MNC

Billing Systems: Convergence, Interface,
Expectations, Challenge, TechM presence

Customer

Account

Subscription

Product/Service

Plan, Package

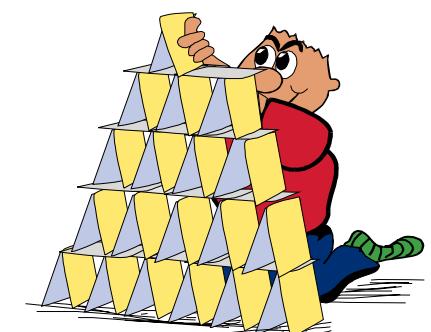
■ Customer

- Legal person/ Company who orders, uses and pays for the telecommunications services
- Customer is either an Individual or a Company who purchases services

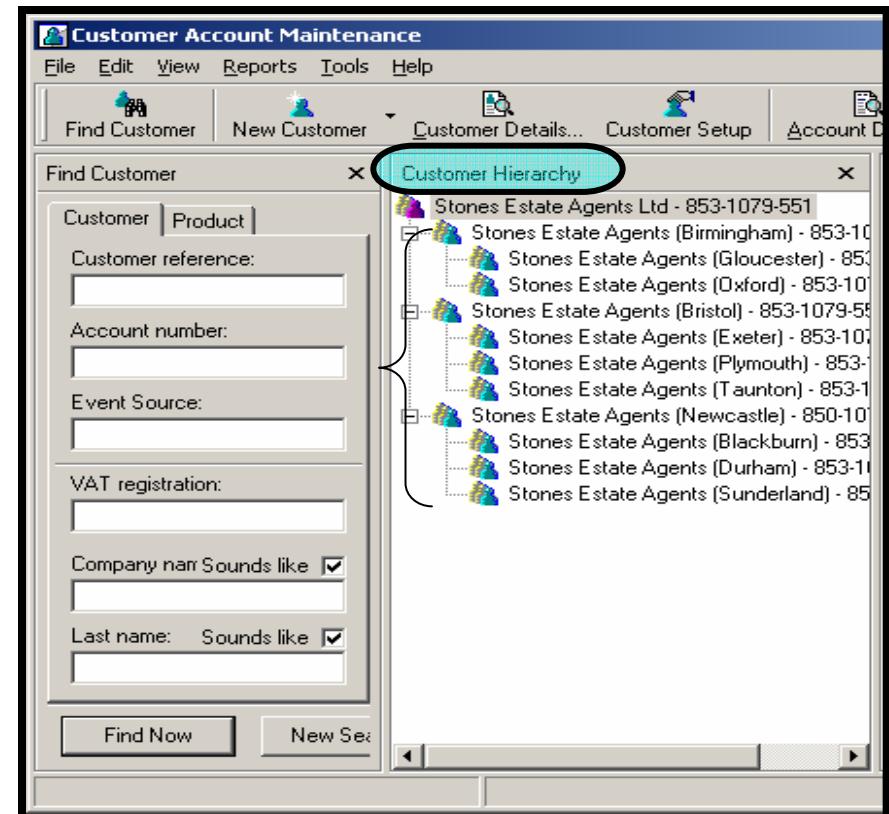
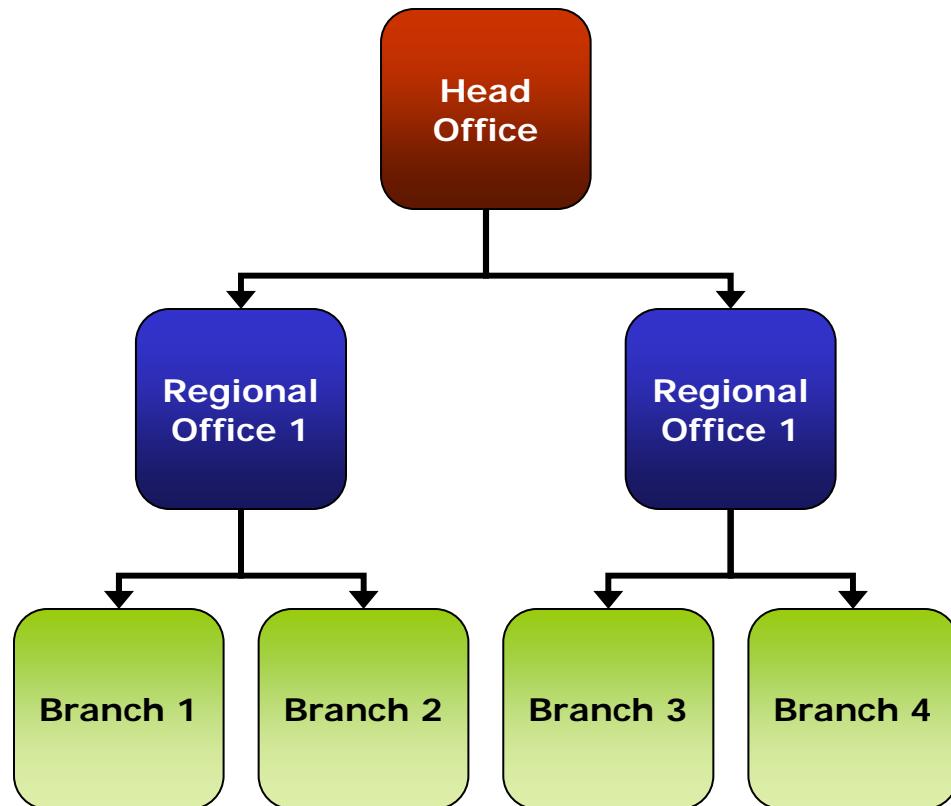
■ Customer Hierarchy

- Used to model real world hierarchy
- Customer can have one or more child customers
- A customer may be related to another customer in the hierarchy for the purpose of issuing statements

Note: In some billing systems instead of customer hierarchy there is an account hierarchy

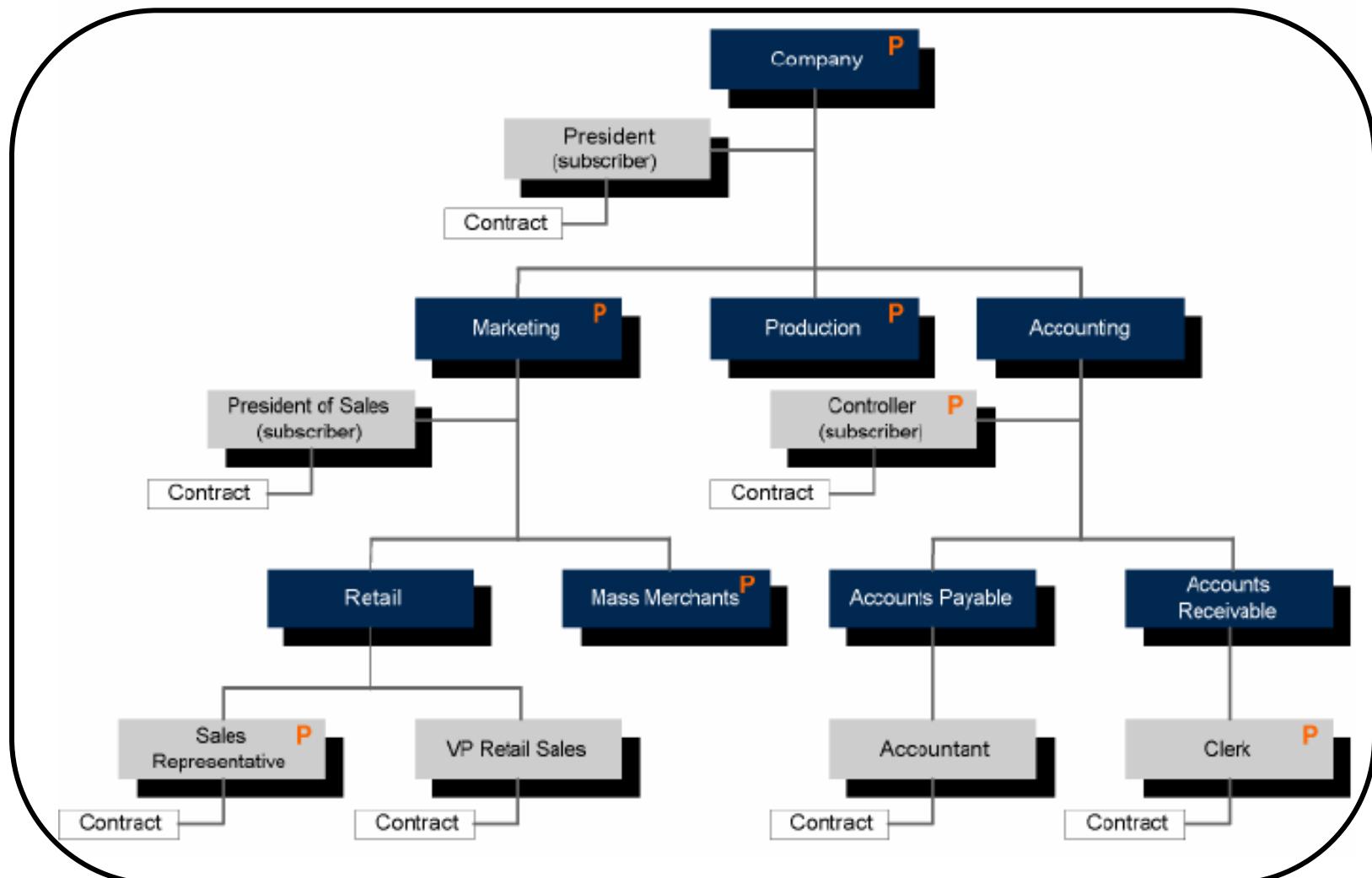


Customer Hierarchical Structure



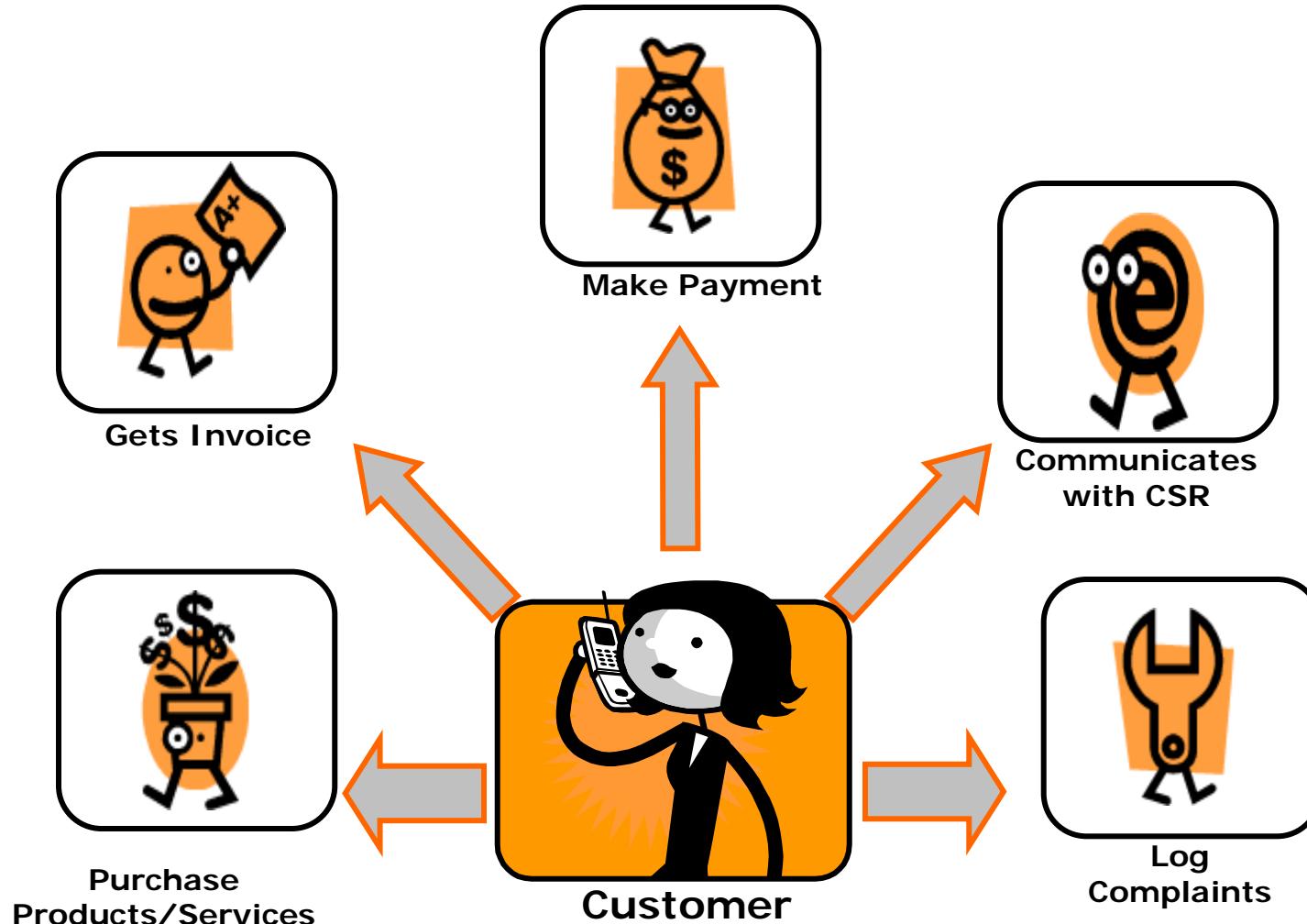
Example of Customer Hierarchy in Geneva

Corporate Customer Representation



Example of Customer Hierarchy in LHS BSCS IX

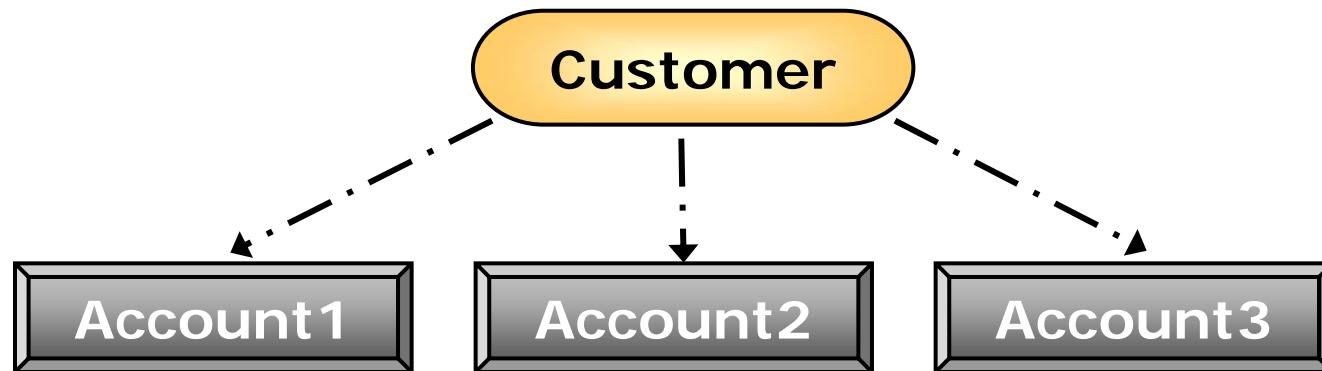
What all Customer can do?



Account

■ Account

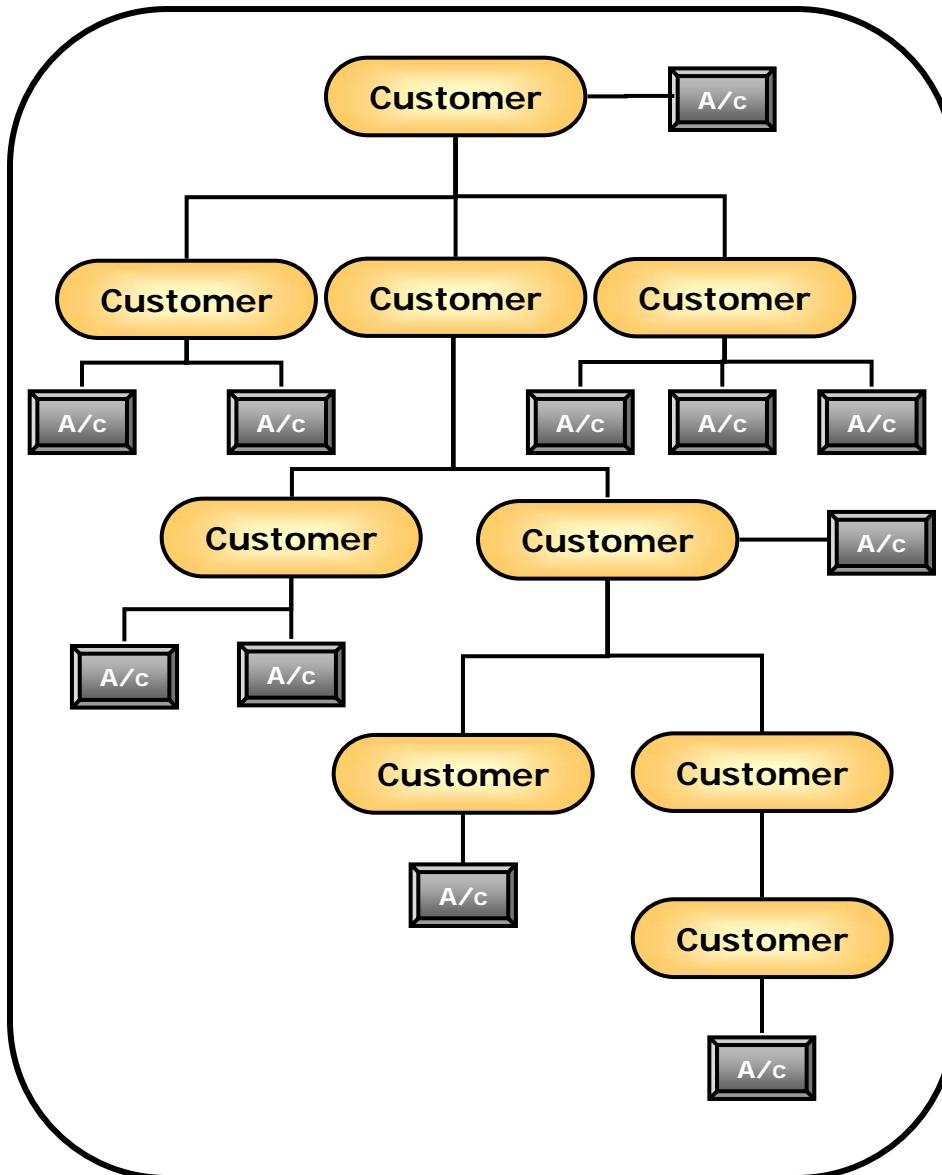
- Purchases/Modify services/products, Receives invoices and makes payment
- Customer can have one or more accounts



Note: Some billing system use concept of CONTRACT instead of ACCOUNT; whereas, in some Billing Systems, there is no notion of ACCOUNT or CONTRACT

- **Geneva, UNICORN:** Concept of Customer and Account
- **LHS BSCS:** Concept of Customer and Contract
- **AMDOCS Products:** Only concept of Customer

Complex Hierarchy of Customer and Accounts



- Customer can have Zero, One or More Accounts underneath
- In some billing systems Account is flat, which means it does not have hierarchy i.e. One can not have an account under an account. Example: Geneva
- In some billing system, account can be hierarchical in nature where as customer is single. Example: Unicorn
- In LHS instead of account, there are contracts

Attributes of Customer and Account

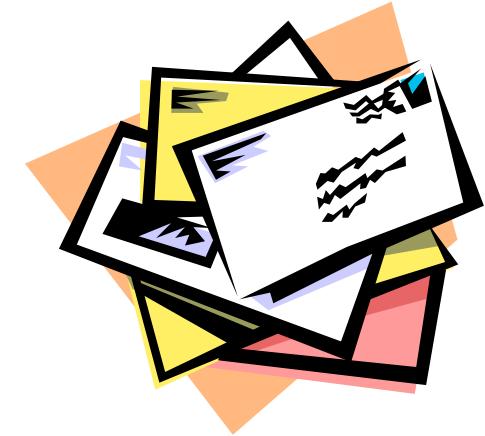


- Customer Type
 - Residential, Business, VIP
- Customer/Account Credit Rating
 - Credit Rating: Receive from Internal logic or External Credit Control system
 - Credit Class: Credit value, Terms and Conditions
- Customer Segment
 - Teenager, Old, Residential, Business
- Currency, Language
- Payment Method
 - Cash, Cheque, Direct Debit, Credit Card
- Payment Responsibility
- Bill Cycle
- Mode of Invoice
 - Paper, Fax, CD, Mail
- Date: Birth date, Anniversary

Note: Based on attributes such as Customer Type, Customer Segment etc. visibility of products/services and their associated plans can be controlled

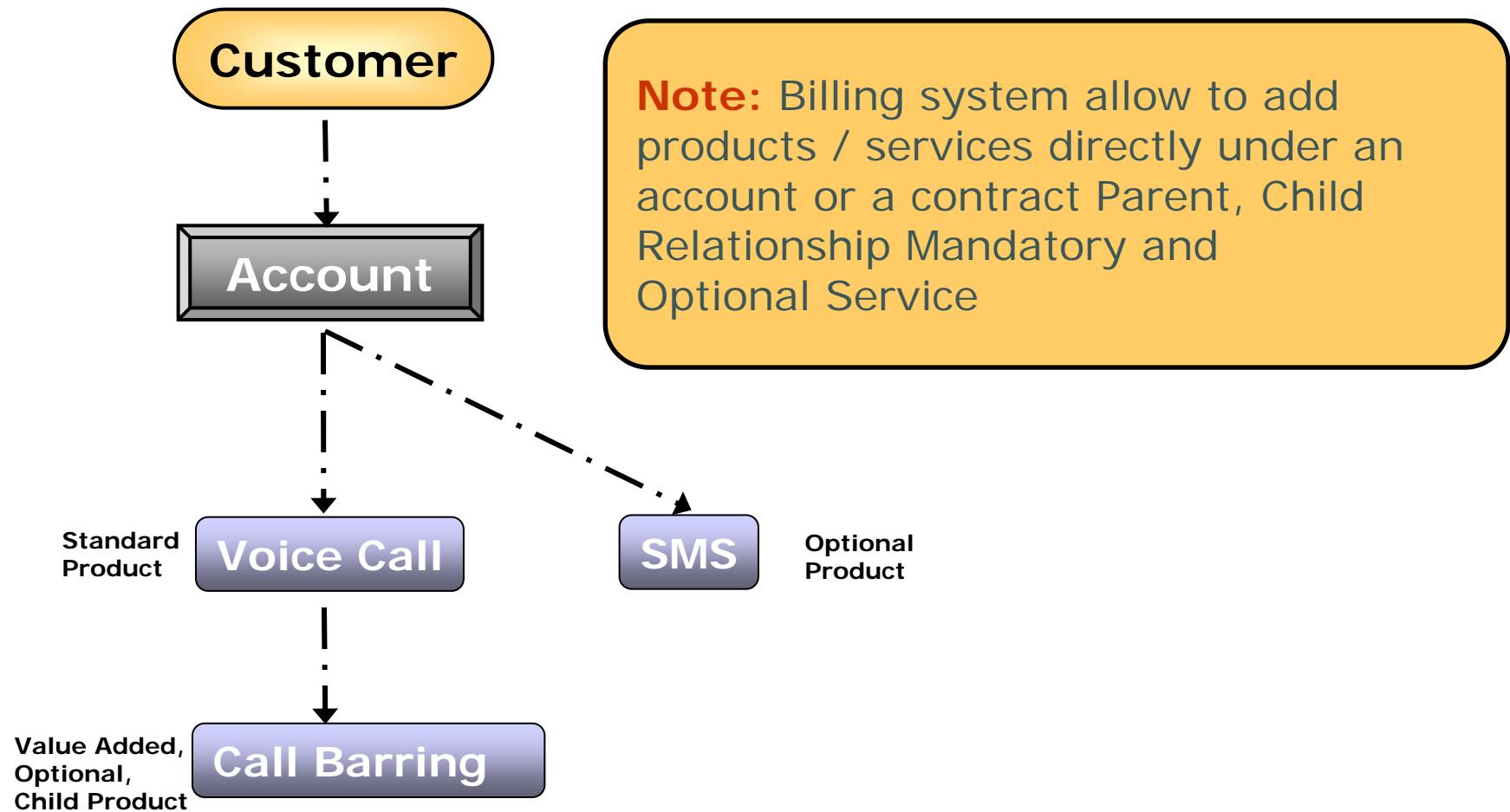
Customer Contacts!

- Multiple Contact addresses can be collected
 - Billing Address
 - Product Installation Contact Point
 - Finance Contact Point
 - Day-2-day contact Point
 - Legal Contact Point
- Bill is always sent to one contact address and that is billing contact address
- Summary or reports can be sent to more than one contacts
- All these attributes of customer and account are captured in CRM as a part of order management module

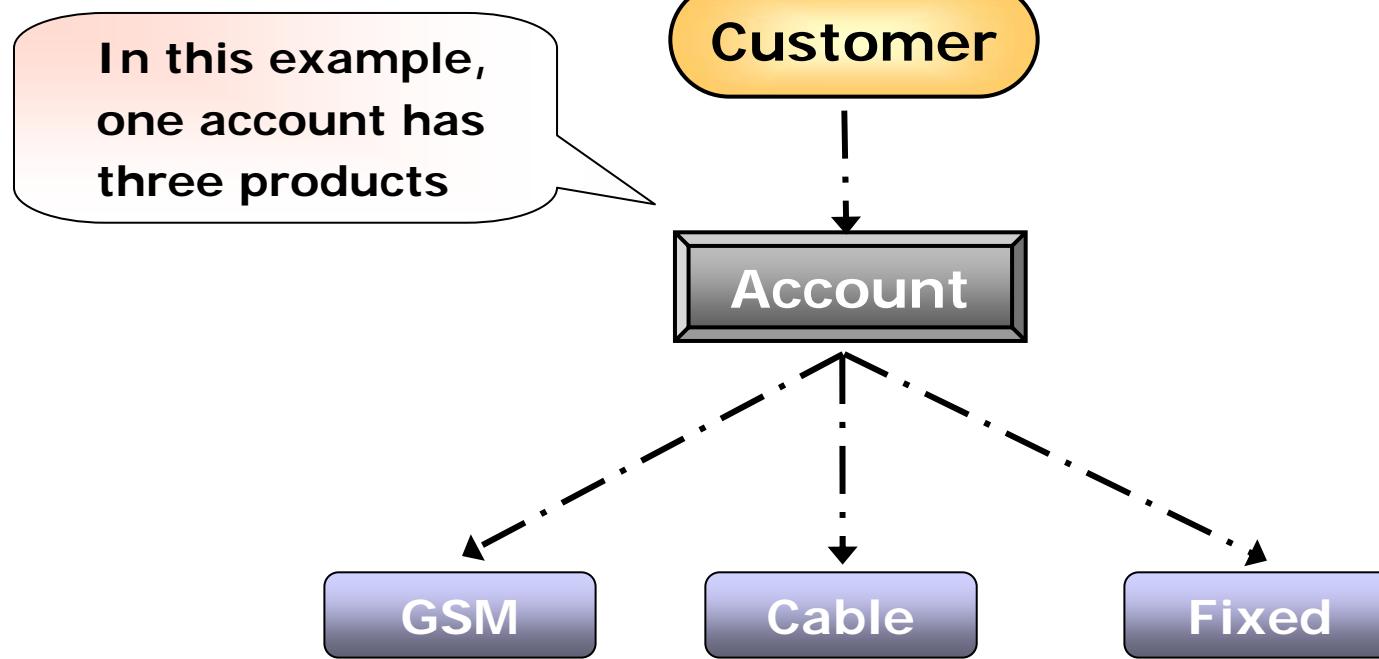


Product / Service

- Product/Service: *Represents a feature of service instance that can be provisioned to a customer*



Customer, Account and Service



Note: Products or Services can be added to an Account directly

Service Dependency

- Parent product/service
 - No dependency on anybody
 - Can be sold standalone
- Child Product/service
 - Depends on Parent product for its existence
- Example:
 - GSM Voice Call: Parent Product
 - ◆ Calling Line Identifier: Child service
 - ◆ Call Forwarding: Child service
 - ◆ Call Waiting: Child service
 - ◆ Itemized Bill: Child service



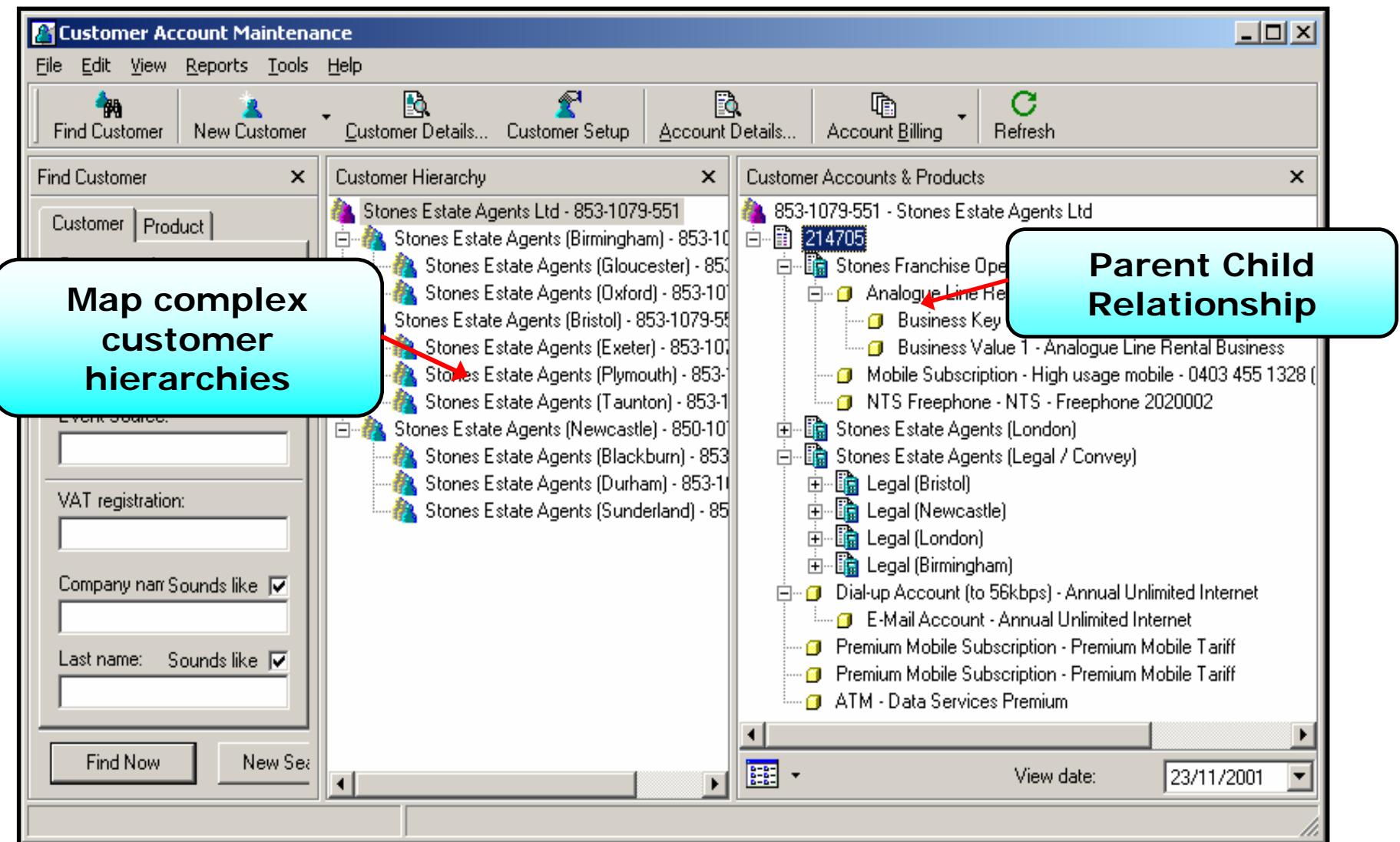
Service Dependency (Contd.)



- Generally features of the products are child
- Hierarchy can go to any level but in real life at the most level of 3 would suffice
- One can not take a child product/service without taking a Parent Product/Service
 - This is applicable to package also

Customer, Account & Service: Geneva

Customer Account Maintenance



The screenshot shows a Windows application window titled "Customer Account Maintenance". The menu bar includes File, Edit, View, Reports, Tools, and Help. The toolbar contains icons for Find Customer, New Customer, Customer Details..., Customer Setup, Account Details..., Account Billing, and Refresh.

The main interface is divided into three main panes:

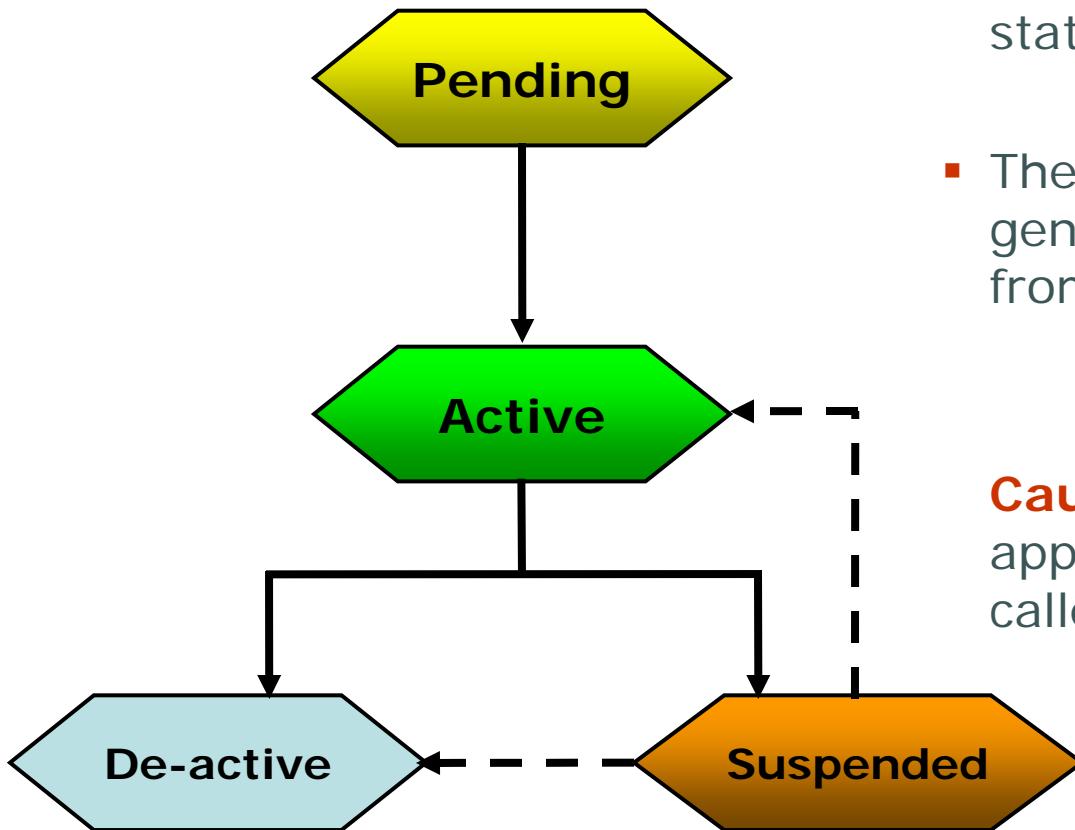
- Find Customer:** A search panel with fields for Event source, VAT registration, Company name Sounds like (with a checked checkbox), and Last name Sounds like (with a checked checkbox). It includes "Find Now" and "New Search" buttons.
- Customer Hierarchy:** A tree view showing the structure of "Stones Estate Agents Ltd - 853-1079-551". The nodes include:
 - Stones Estate Agents (Birmingham) - 853-10
 - Stones Estate Agents (Gloucester) - 853-11
 - Stones Estate Agents (Oxford) - 853-10
 - Stones Estate Agents (Bristol) - 853-1079-551
 - Stones Estate Agents (Exeter) - 853-10
 - Stones Estate Agents (Plymouth) - 853-11
 - Stones Estate Agents (Taunton) - 853-11
 - Stones Estate Agents (Newcastle) - 850-10
 - Stones Estate Agents (Blackburn) - 853-11
 - Stones Estate Agents (Durham) - 853-11
 - Stones Estate Agents (Sunderland) - 853-11
- Customer Accounts & Products:** A tree view showing the structure of account 214705. The nodes include:
 - Analogue Line Rental Business
 - Business Key
 - Business Value 1 - Analogue Line Rental Business
 - Mobile Subscription - High usage mobile - 0403 455 1328 (
 - NTS Freephone - NTS - Freephone 2020002
 - Stones Estate Agents (London)
 - Stones Estate Agents (Legal / Convey)
 - Legal (Bristol)
 - Legal (Newcastle)
 - Legal (London)
 - Legal (Birmingham)
 - Dial-up Account (to 56kbps) - Annual Unlimited Internet
 - E-Mail Account - Annual Unlimited Internet
 - Premium Mobile Subscription - Premium Mobile Tariff
 - Premium Mobile Subscription - Premium Mobile Tariff
 - ATM - Data Services Premium

A red arrow points from the "Map complex customer hierarchies" callout box to the "Customer Hierarchy" pane. A blue rounded rectangle highlights the "Parent Child Relationship" text and the "Analogue Line Rental Business" node in the "Customer Accounts & Products" pane.

Map complex customer hierarchies

Parent Child Relationship

Status: Customer, Account, Service

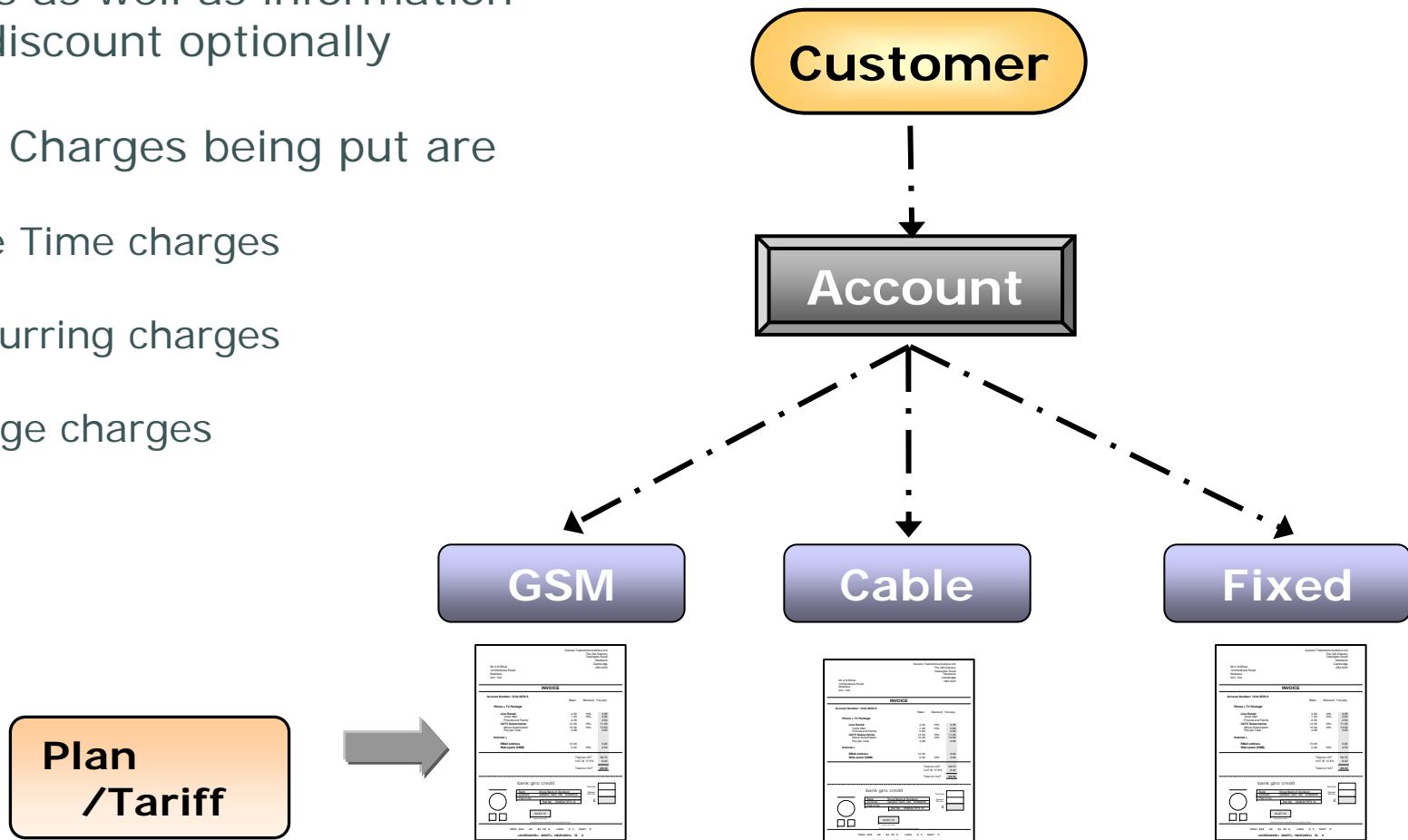


- During the lifecycle of Customer, Account and Service it can go through various states
- The states shown here are general ones and may differ from COTS to COTS product

Caution: Business Logic applies when state change is called for.

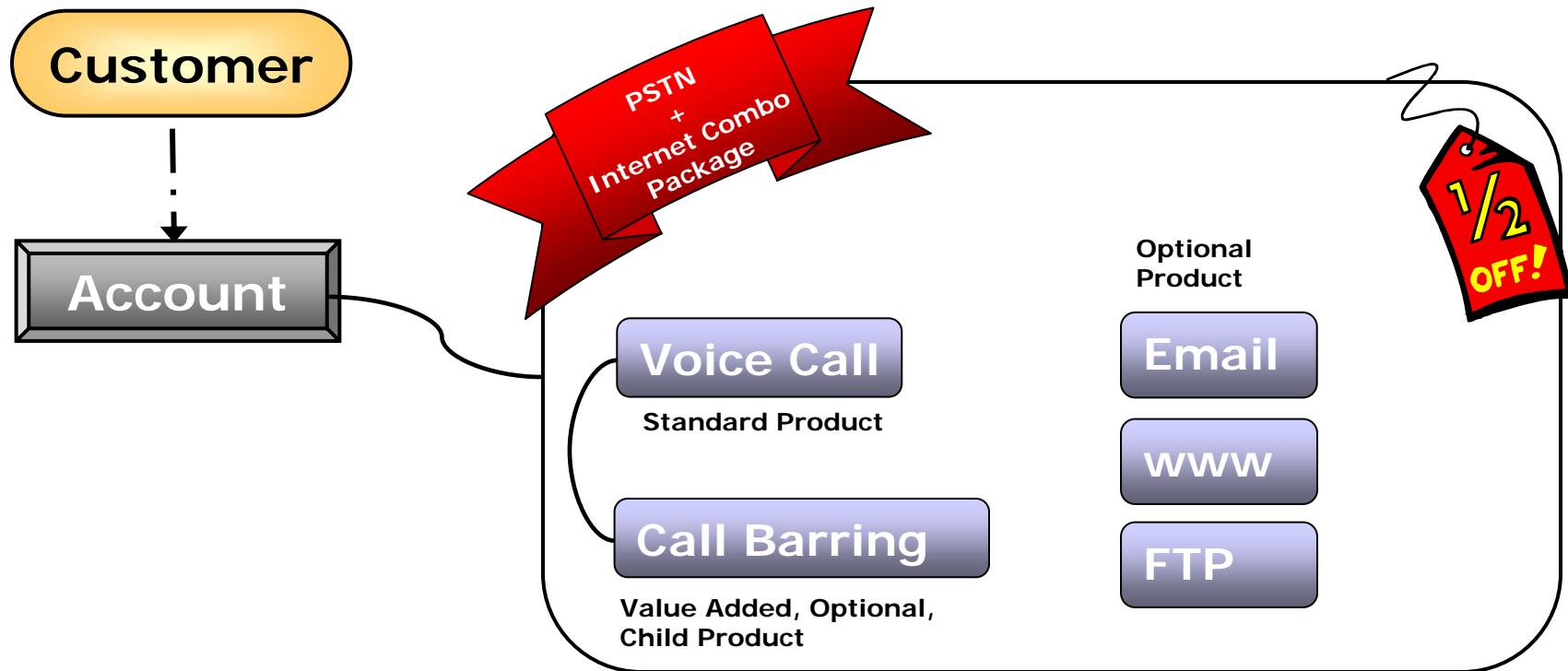
Plan/Tariff

- Plan or Tariff contains information about charging of services as well as information about discount optionally
- Typical Charges being put are
 - One Time charges
 - Recurring charges
 - Usage charges



Package

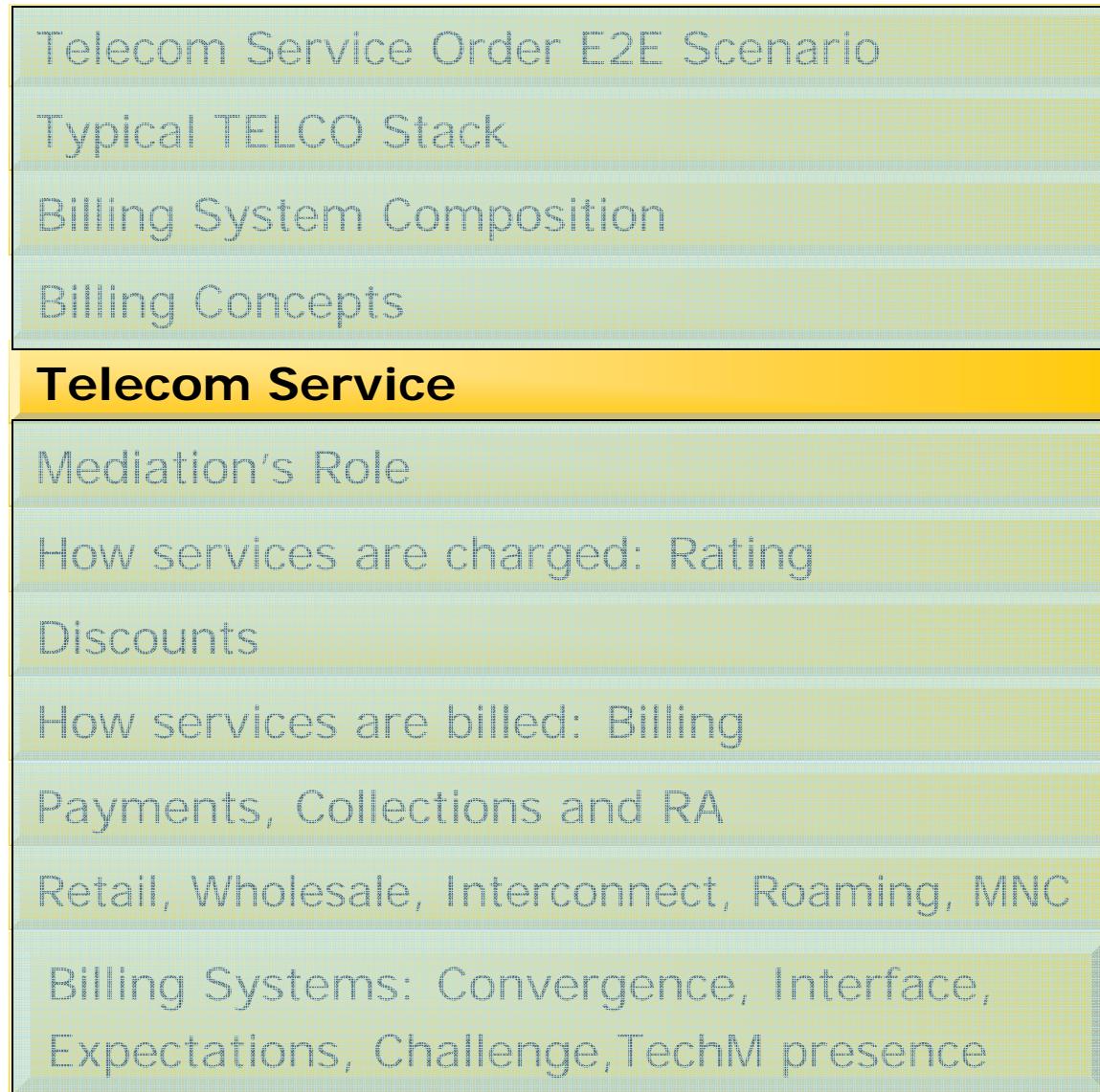
- Marketing strategy
- A set of similar or dissimilar products bundled together



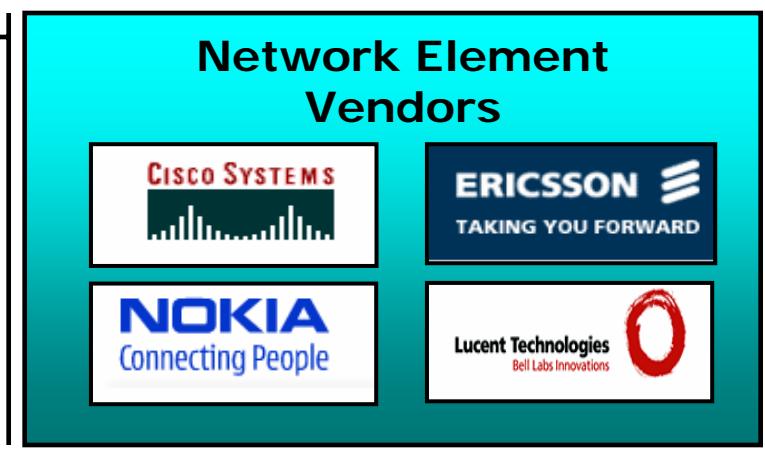
Note:

- There is an option available to define a product to be mandatory or optional within a package
- Package can span technology boundary thus convergence

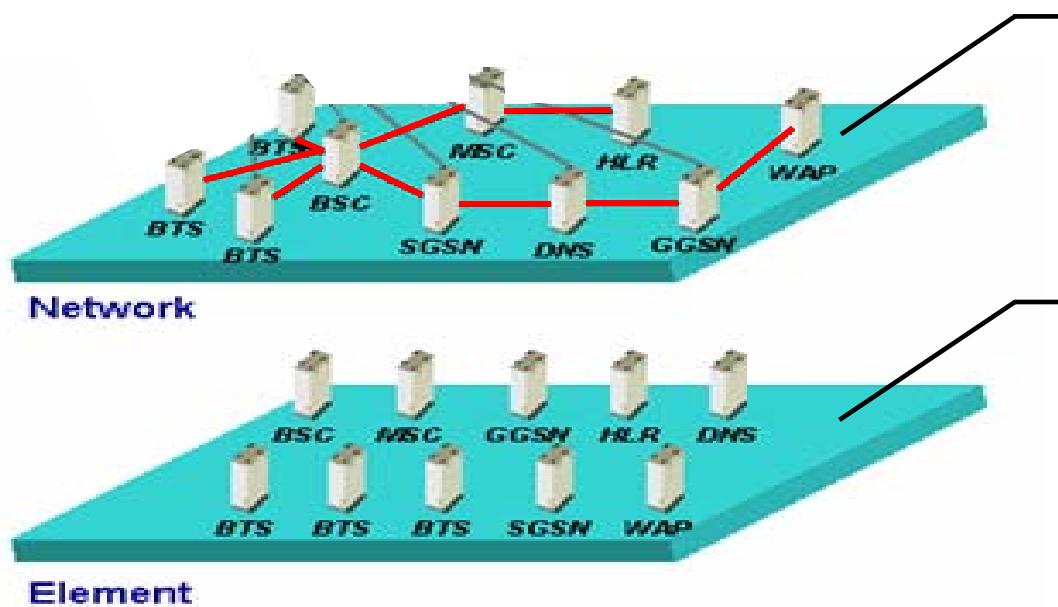
Telecom Service



Telecom Service: Network Elements



Telecom Service: Network



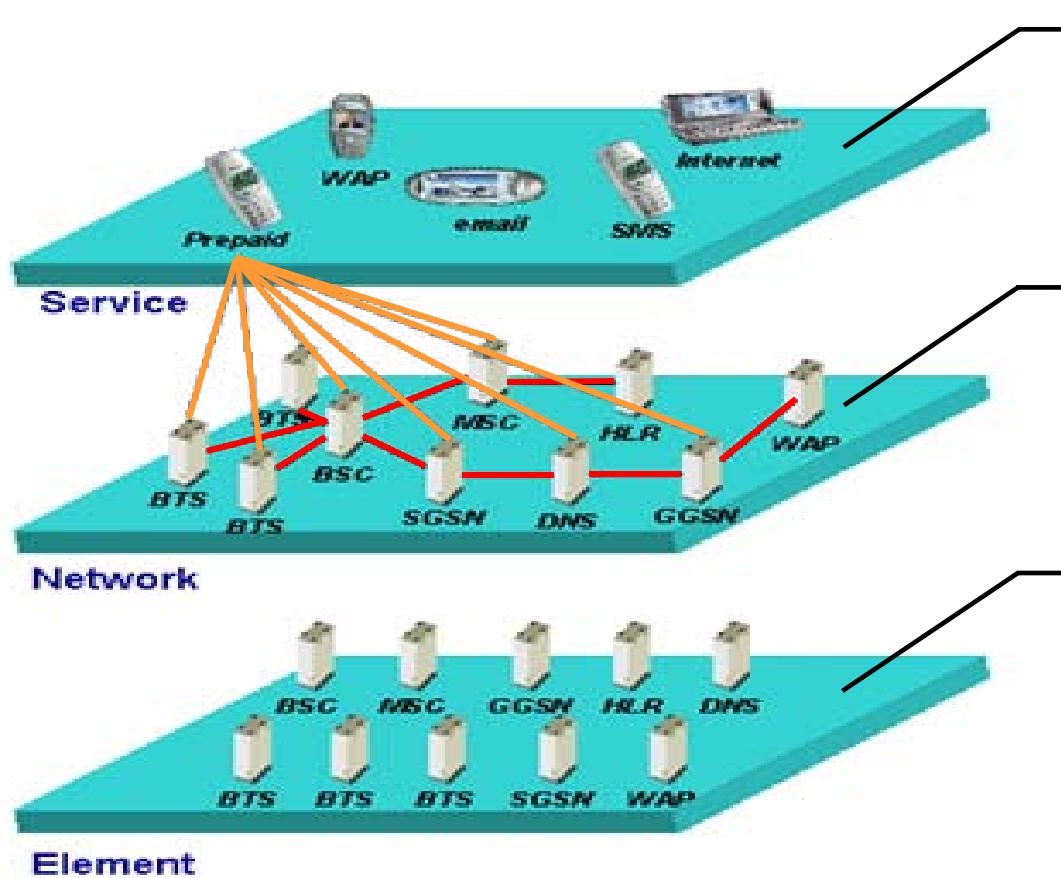
Communication Service Providers



Network Element Vendors



Telecom Service: Service



Communication Service Providers

 IDEA Cellular Limited



 Airtel
Express Yourself



 RELIANCE
Communications
Anil Dhirubhai Ambani Group

Network Element Vendors

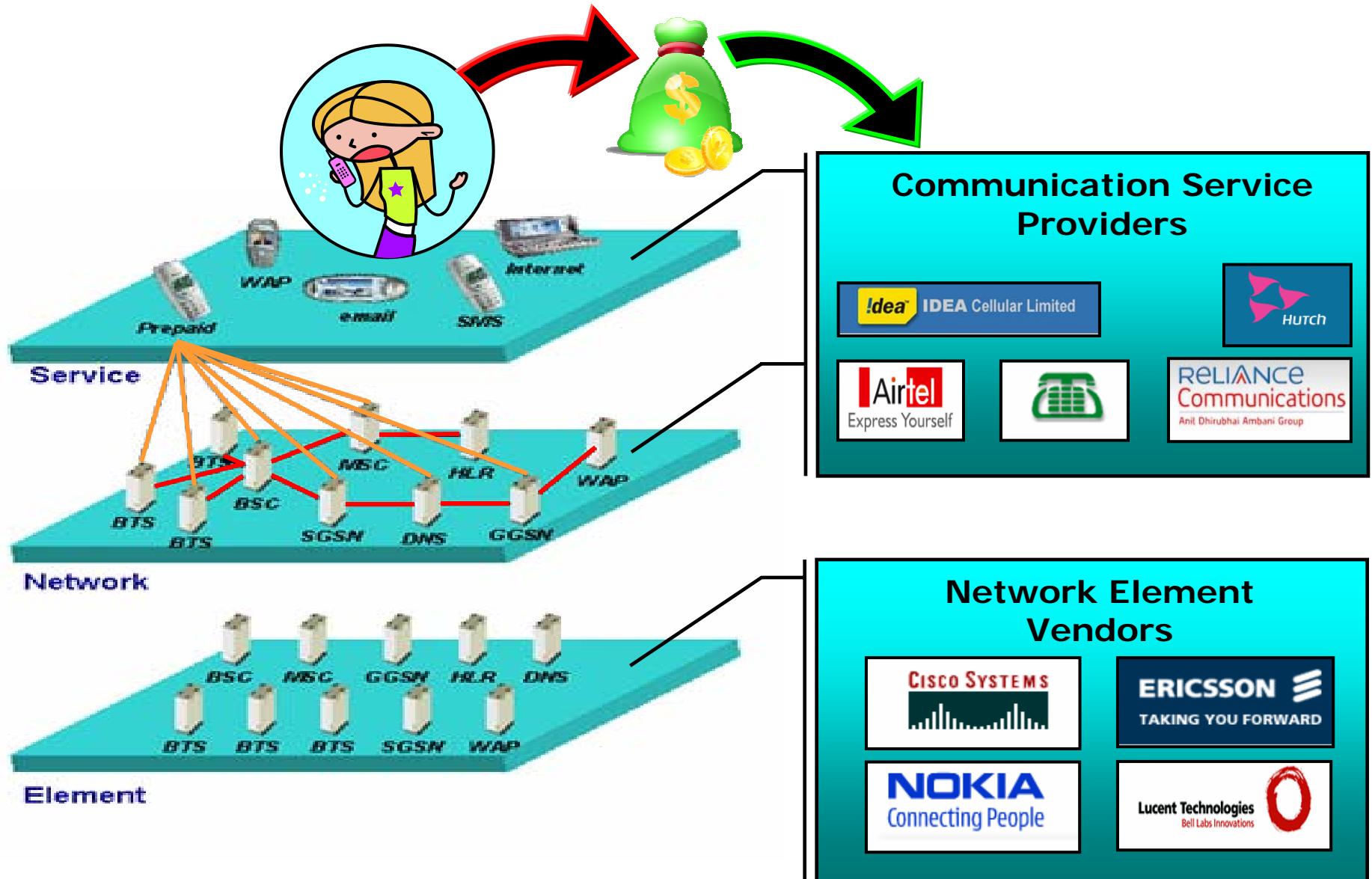
 CISCO SYSTEMS

 ERICSSON
TAKING YOU FORWARD

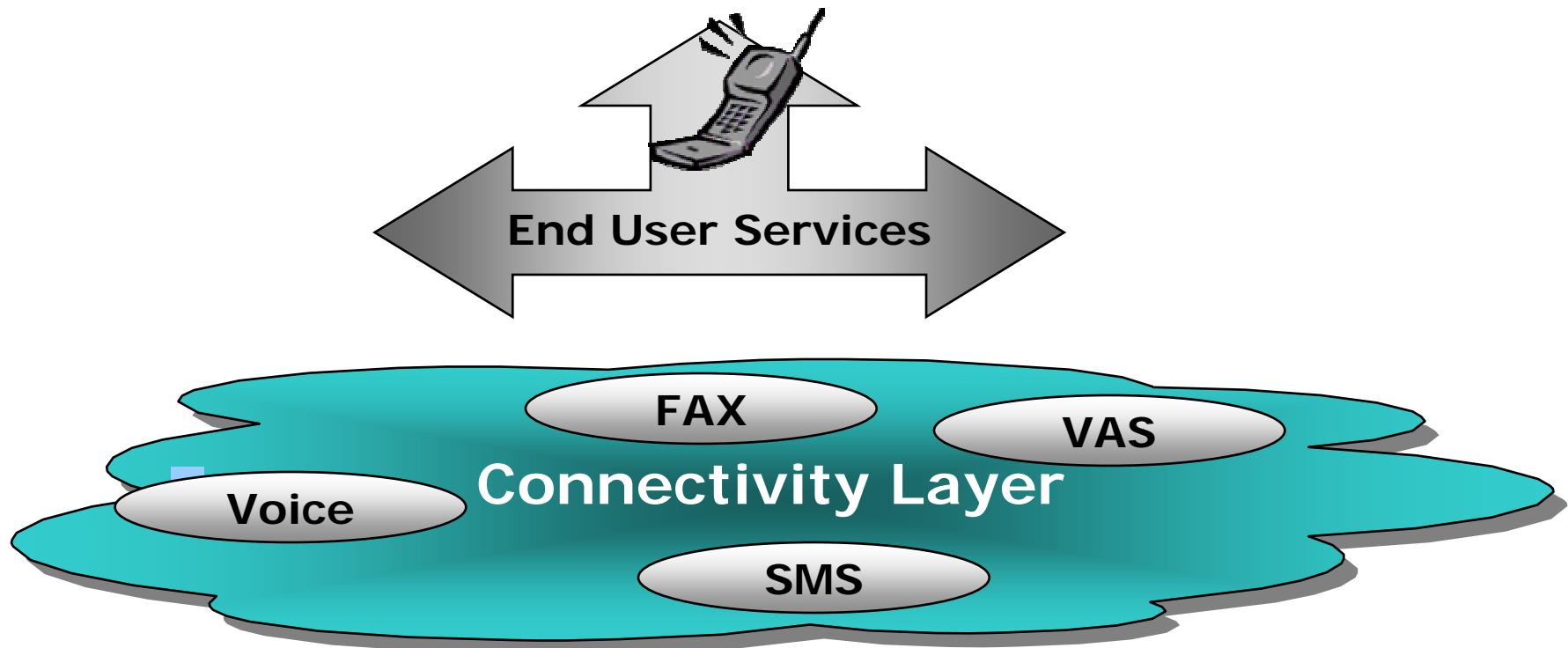
 NOKIA
Connecting People

 Lucent Technologies
Bell Labs Innovations

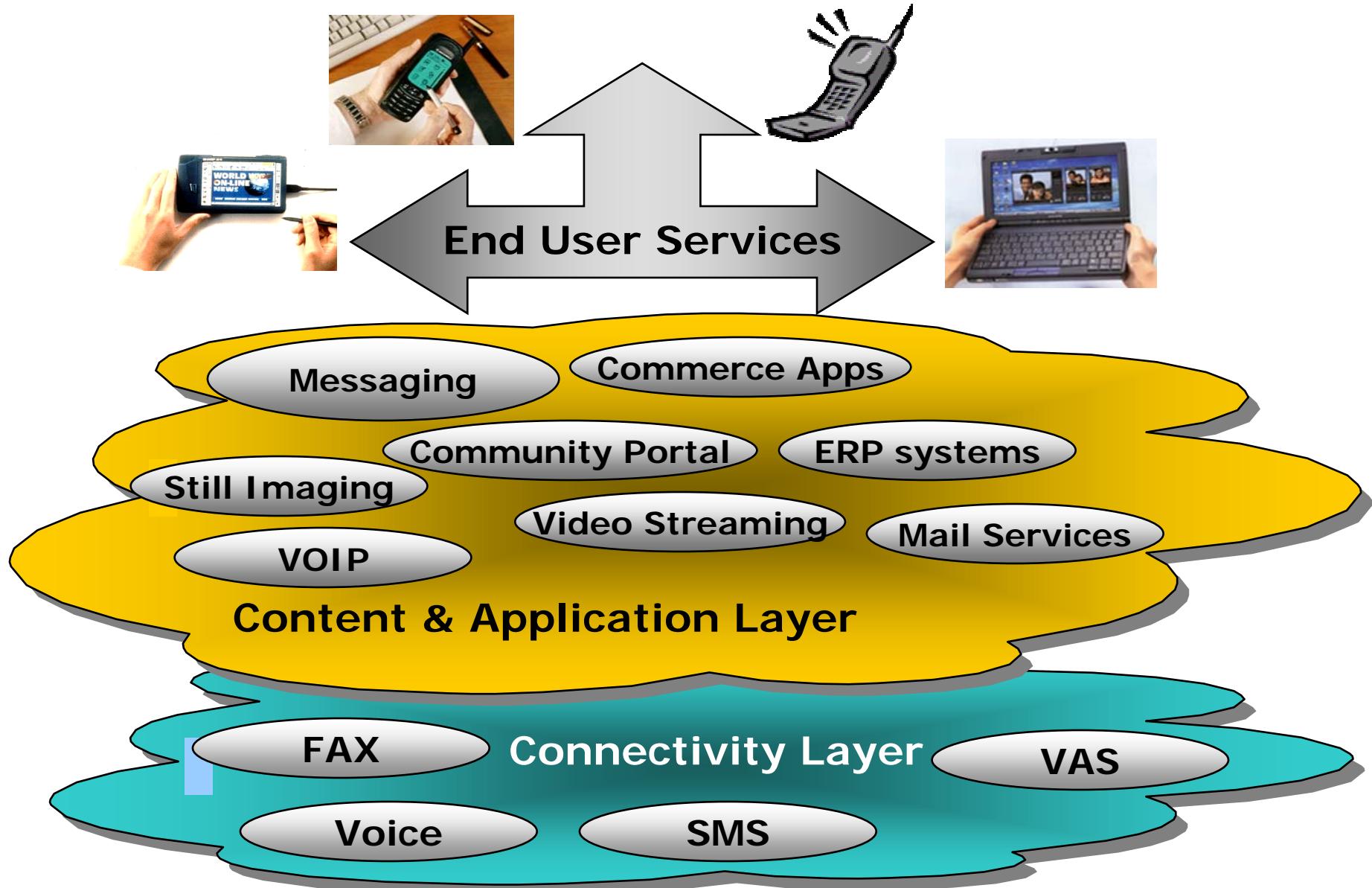
Telecom Service: Revenue



The Services Yesterday



The Services Today and Tomorrow



Non Network Service

Permanent VAS

- News Paper Sub
- Mobile on Rent
- Itemized Bill

Event VAS

- Change of Mobile No.
- Change of SIM
- Change of Rate plan

Network Service

Tele

- Voice
- SMS
- Data

Supplementary

- Calling Line Id
- Call Forwarding
- Call Waiting

Bearer

Any Service

Any Form

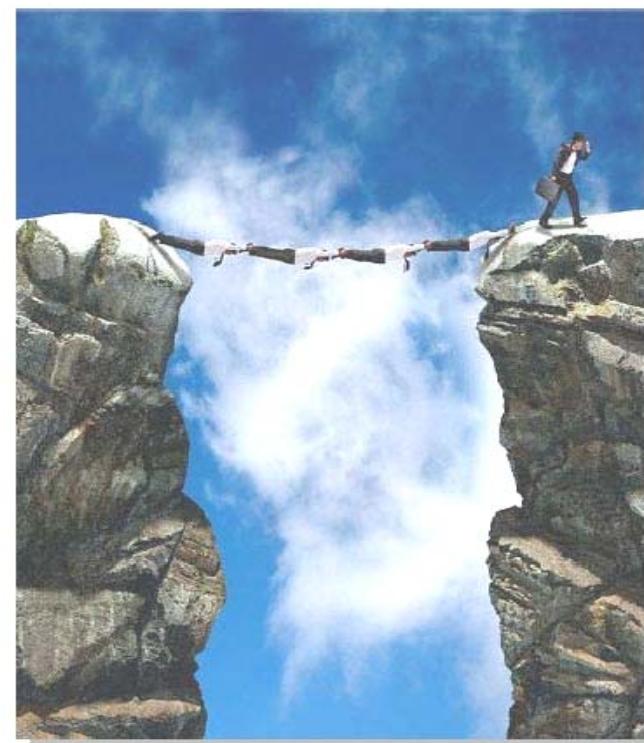
Any Place

Any Time

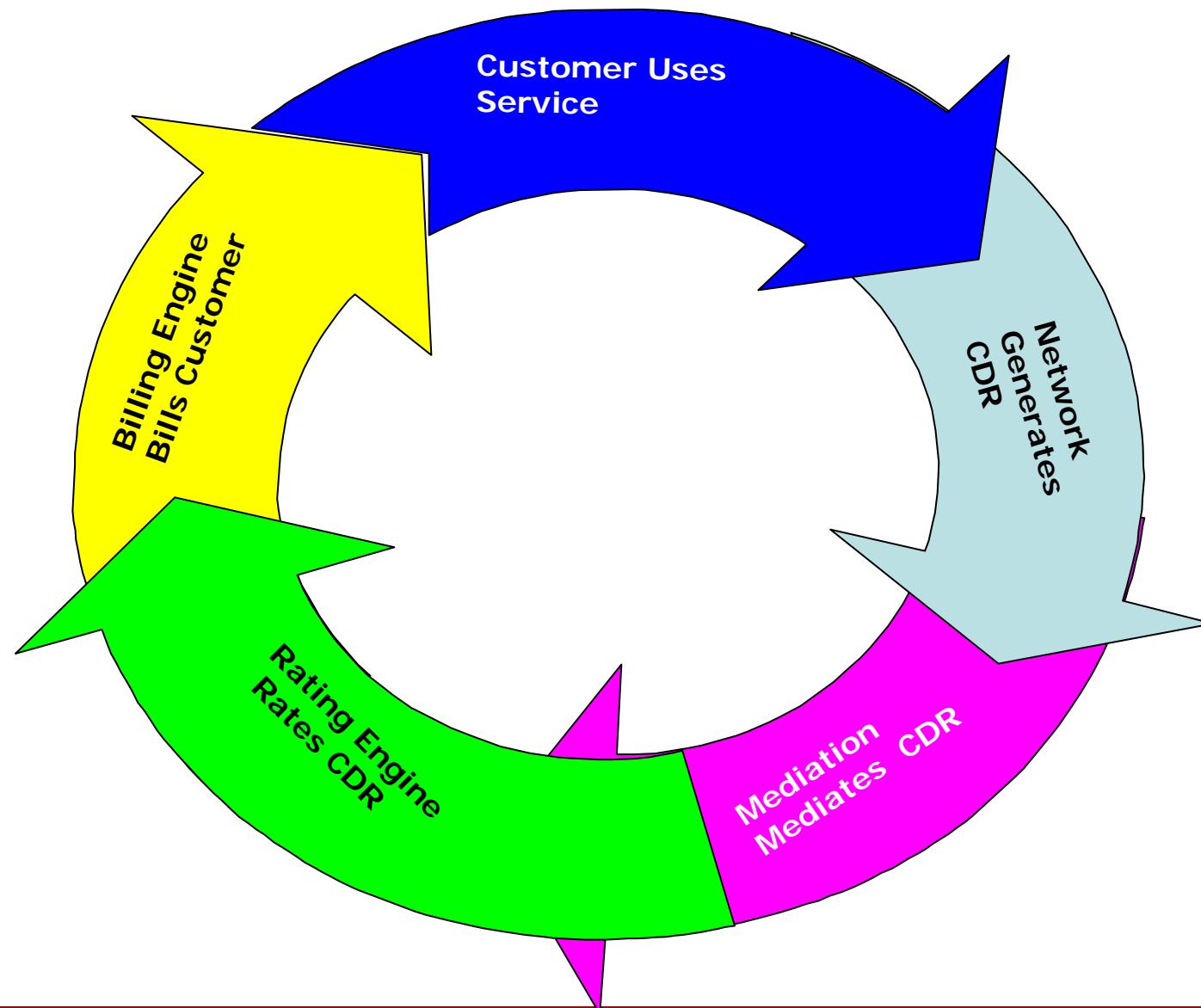
Any Device

Any Network

Wireless Can do it !



Journey: From Service Usage to Billing



Mediation's Role



Telecom Service Order E2E Scenario

Typical TELCO Stack

Billing System Composition

Billing Concepts

Telecom Service

Mediation's Role

How services are charged: Rating

Discounts

How services are billed: Billing

Payments, Collections and RA

Retail, Wholesale, Interconnect, Roaming, MNC

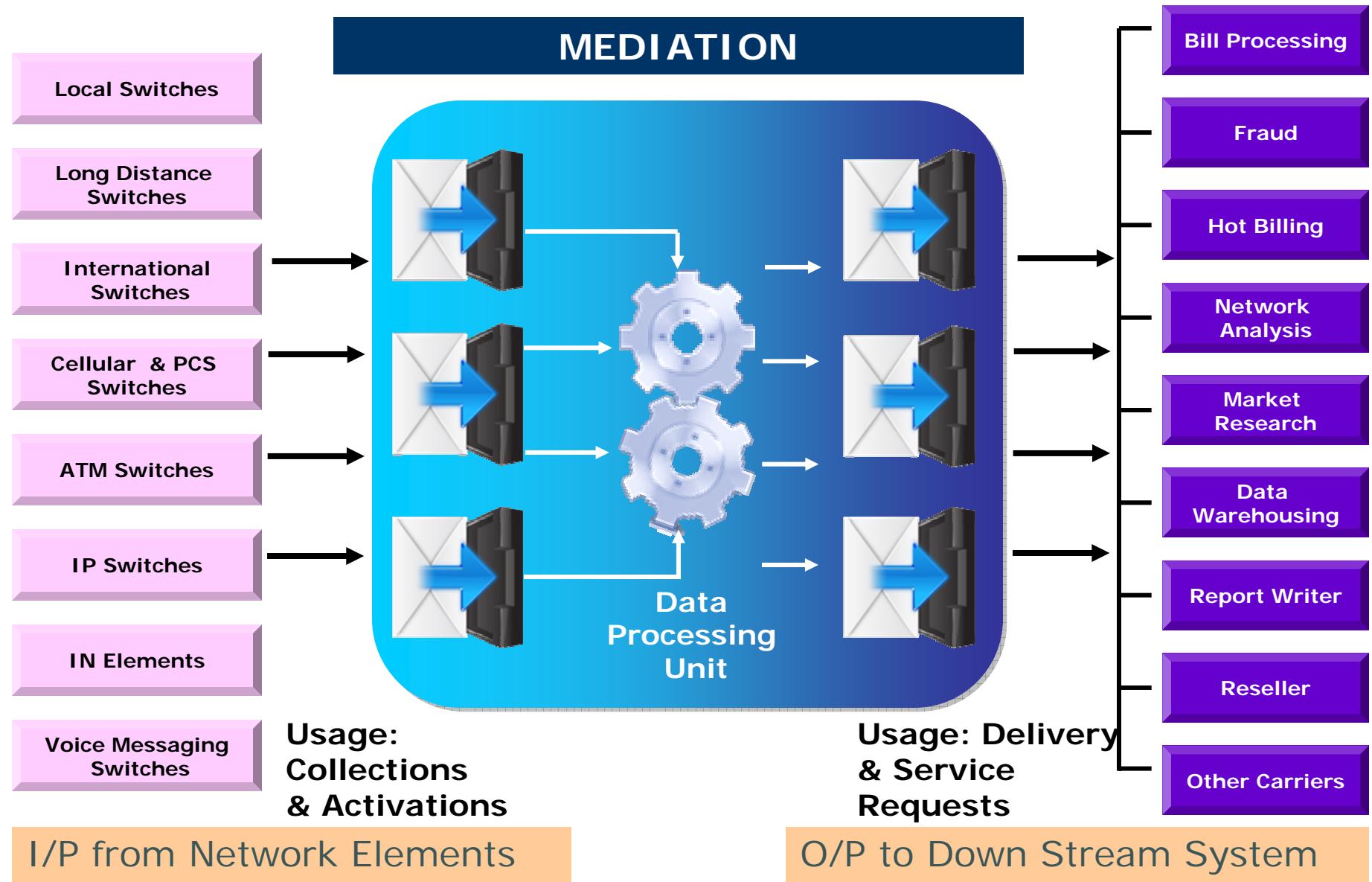
Billing Systems: Convergence, Interface,
Expectations, Challenge, TechM presence

Context of Mediation

Mediation Functions

Types of Mediation

Context of Mediation

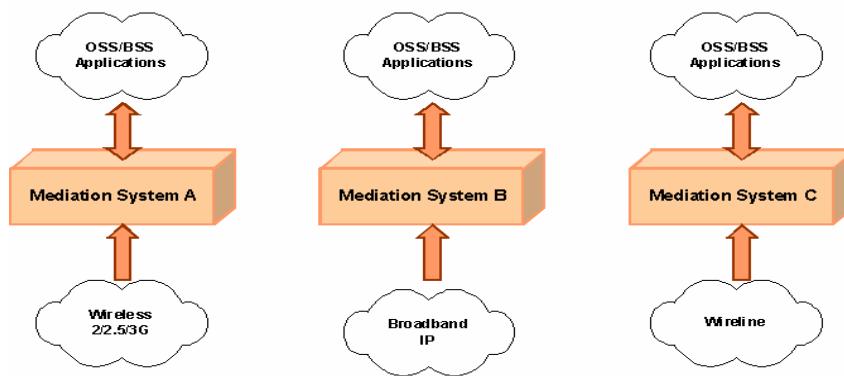


Mediation : Traditional vs. Convergent

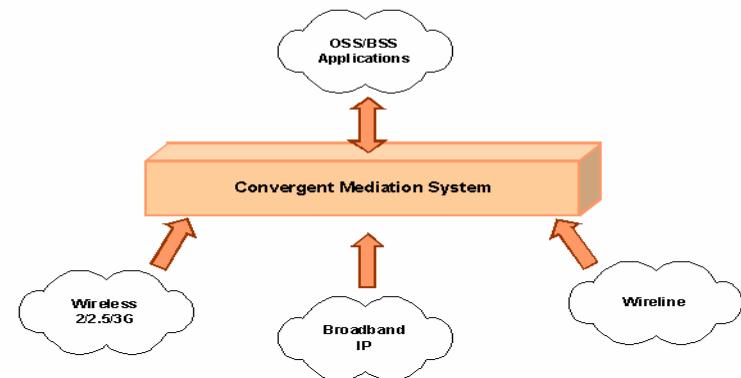
The extraction of raw customer usage data from diverse Network elements and transforming it into meaningful Business Information

Note: The introduction of next generation services has served to raise the importance of the mediation component as a critical one in the business plans of operators

Traditional Mediation



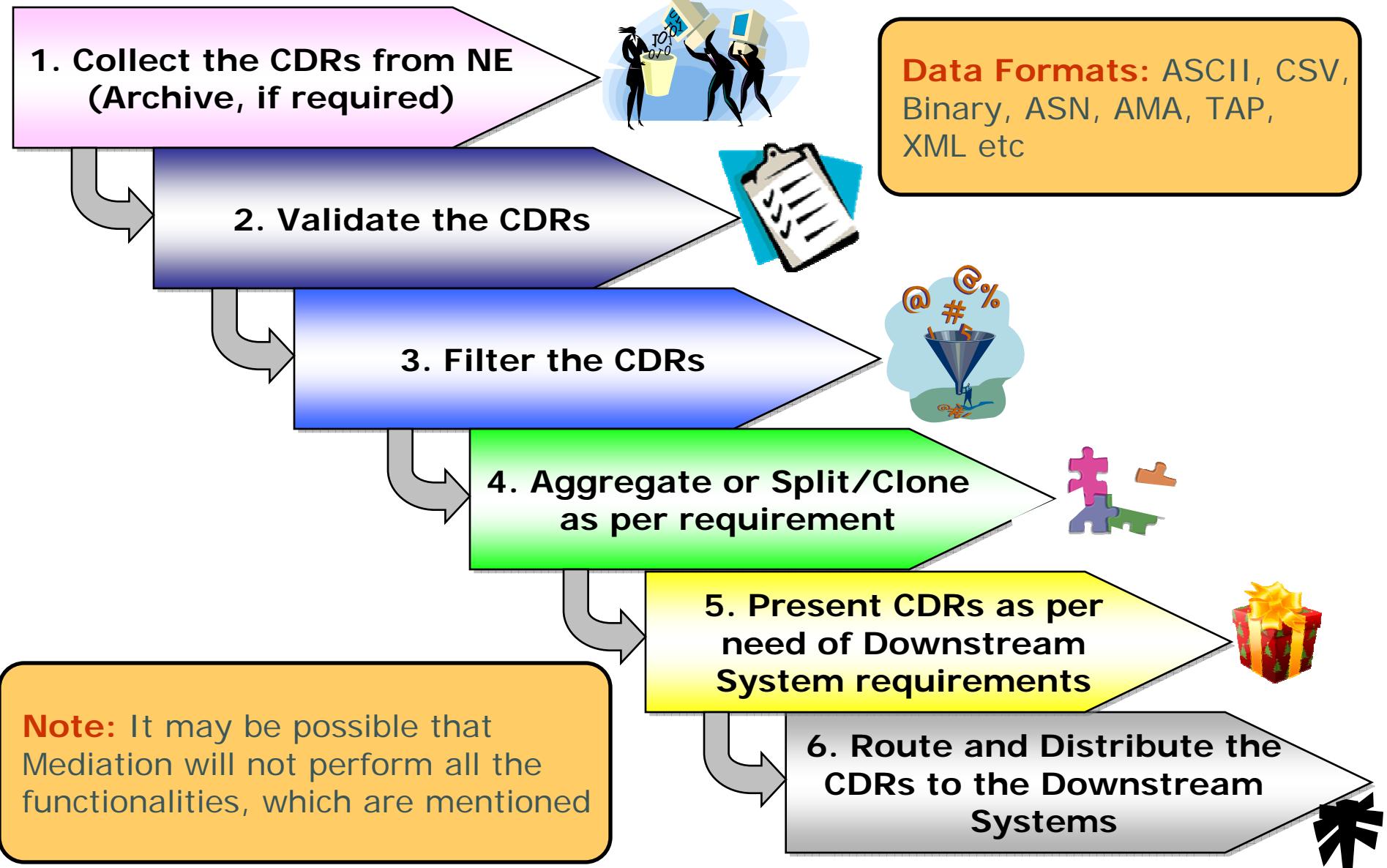
Convergent Mediation



One Mediation System per Network Element/Downstream Application

Advantages of Convergent Mediation
Flexibility , Financial Savings , Modular Design
Increased Services, Improvement in Customer Loyalty

Mediation Functionalities



Types of Mediation

Passive Mediation	Active Mediation
Collection of usage data after the Service has been provided.	In-service flow handling of requests in real-time.
Does not get involved in authentication of the subscriber or authorization of the service itself. Instead, it concerns itself with accounting for use after-the-fact. Thus its unidirectional.	Active mediation plays a pivotal role in the authentication of subscribers for the service, accounting in the form of prepaid balance or postpaid credit limit threshold checks and authorization or denial of the service. Thus its bi-directional
Data processed in batches.	<u>Prepaid data</u> – real-time Authentication, Accounting and Authorization (AAA) for any service in line with prepaid balances <u>Pay-at-once</u> – real-time AAA for any service at point of use/purchase <u>Postpaid</u> – real-time AAA for any service in a postpay environment.
Protocols: FTP, SFTP, XFERNG etc	Protocols: Diameter, Radius, GTP, GTP prime etc
Collection and routing of usage data to rightful downstream is vital for in time billing and RA activities.	The reliability and throughput of active mediation systems is vital to maintain continuity and avoid data and service loss.

How services are charged: Rating

Telecom Service Order E2E Scenario

Typical TELCO Stack

Billing System Composition

Billing Concepts

Telecom Service

Mediation's Role

How services are charged: Rating

Discounts

How services are billed: Billing

Payments, Collections and RA

Retail, Wholesale, Interconnect, Roaming,MNC

Billing Systems: Convergence, Interface,
Expectations, Challenge, TechM presence

Service Charging

Rating Models

Rating Process

Rejected Events

Rating Leftovers

Duplicate Check

Fraud Check

Service Charging

Usage

Pay for what u use

Which service

What time / day

Where is call
made

How long

CUG / NCUG

Friends and
Family

...

Non Usage

One Time

Installation Fee

Setup fee etc.

Recurring

Bill Frequency

Proration vs. Advance charge

Suspension, Reactivation

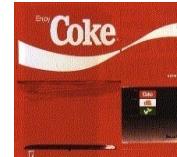
Event Based

Change SIM, Change Mob

Rate Plan
Change

Services and Basis of Charging

Service	Basic of usage charging
<i>Voice</i>	per minute, geography, time of day, call type...
<i>SMS, e-mail, UM</i>	per message, MT/MO...
<i>Mobile data</i>	per MB, APN, QoS, location...
<i>Stock quote</i>	no. of tickers, exchange, delayed/real-time...
<i>Video</i>	type of movie, day of week, free viewing period...



UoM for Rating Services!

- Can be anything, like...

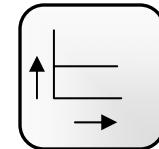
- Per message (e-mail, unified messaging)
- Per minute telephony, video conferencing
- Per MB (wireless LAN access, disk storage...)
- Per view (video-on-demand)
- Per kWh or equivalent (electricity, gas)
- Per litre (water)
- Per ticker symbol (WAP stock quotes)
- Per click (click-through advertising)
- Per seat (software application rental)
- Per \$ (commission on purchase)
- Per bullet (interactive games)
- Per touchdown (sports update video clips)



Rating Models

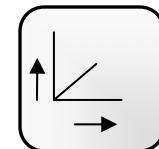
■ Constant / Flat rate

- One flat price irrespective of call duration or volume
- Example: SMS



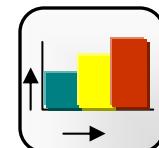
■ Linear Charging: Unit price per min proportional to duration

- Linear Charging
- Example: 1 min voice call 1 Rs.
- Then N min voice call will charge N Rs.



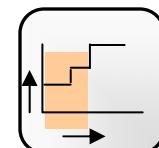
■ Staircase Tiered: Stepped Rating

- Non linear charging model
- Different rates at every step, take rate from each step for final calculation



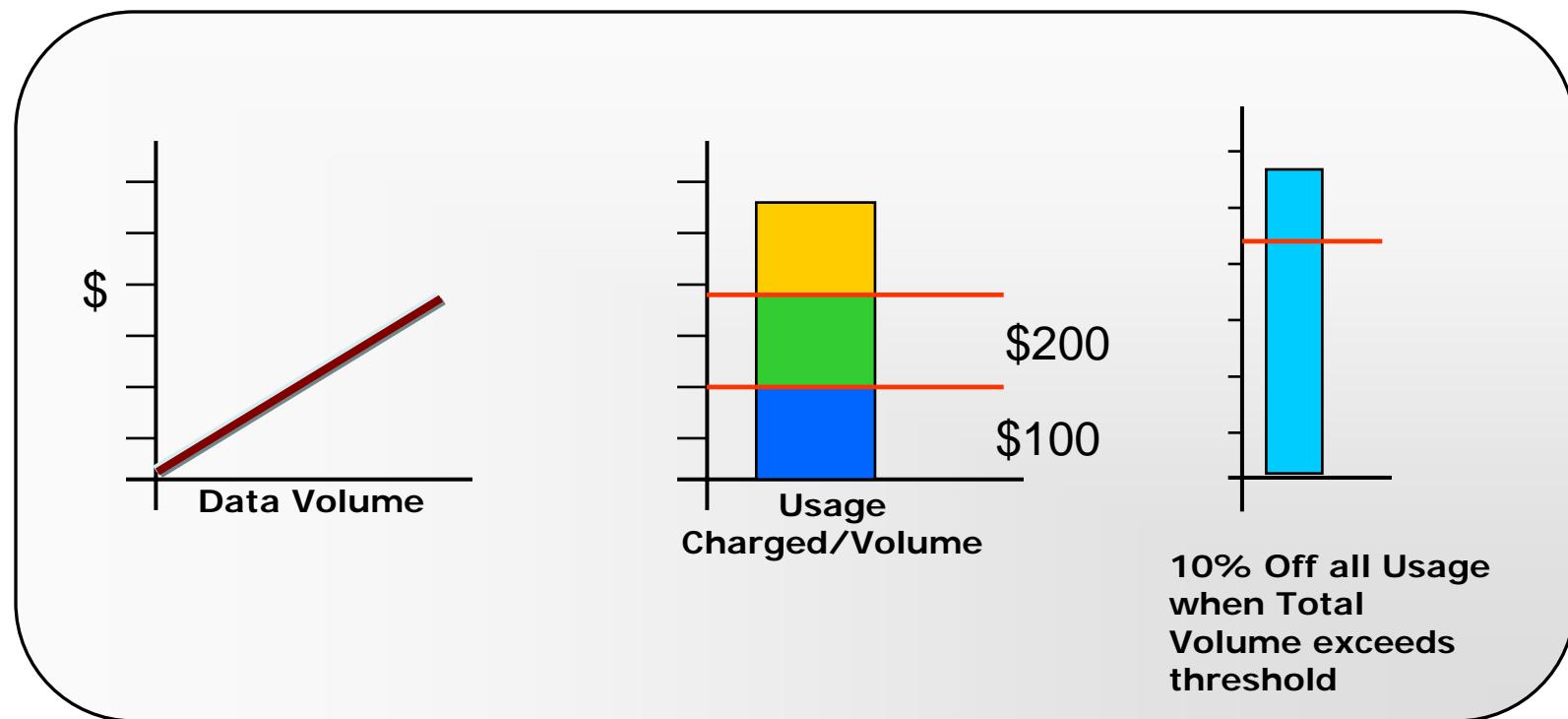
■ Staircase Threshold: Threshold Rating

- Non linear charging model
- Different rates at every step but look at call duration and which step the duration falls



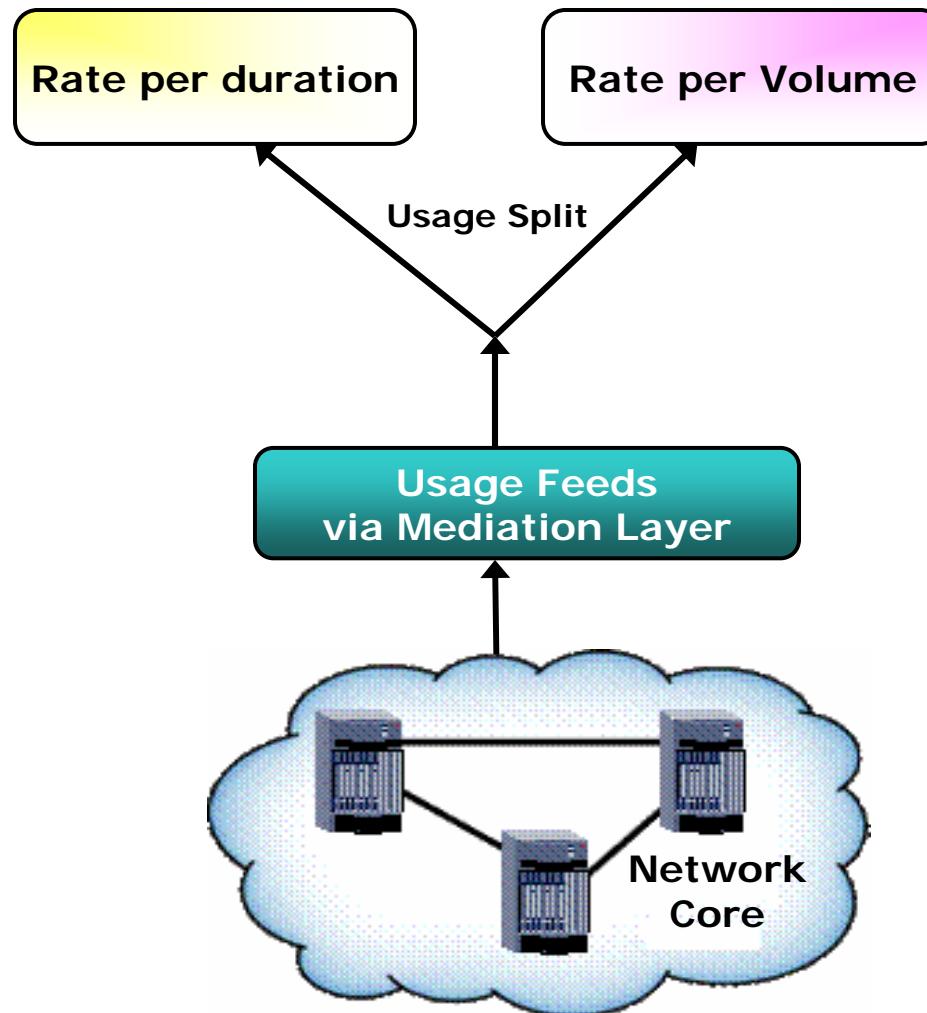
Rate by Volume

Rate by the quantity of data delivered (packets, Kbytes, etc.)



Multidimensional Rating

Rate for the duration as well as download volume for the session



Rating Dimensions

▪ Time Based

- Peak, Off Peak time
- Day, Evening, Night time
- Week day, Week end day
- Holiday special rate



Caution: Cover 24X7 without gap and overlap

▪ Geography Based

- Local
- Long distance
 - ◆ Regional
 - ◆ National
 - ◆ International



▪ Access Specific

- Toll Free
- CUG, NCUG
- Friends and Family
- On Net, Off Net



Time Band Configuration: Geneva

Rating Catalog Maintenance

Rating Catalog Maintenance - Spring 2001 News [Read Only]

File Reports Tools Help

Rating tariff type Premium Mobile Telephony Date 10/12/2001

Cost Bands Time Rates Event Classes Charge Segments Costing Rules Tariffs Tariff Event Bindings Test Tariff

Time rates:

Name	Description
Cheap	
Peak	
Standard	

Time rate diaries:

Version	Name	Start date	End date	Description
1	Premium Mobile Time Rate	12/1/1999		

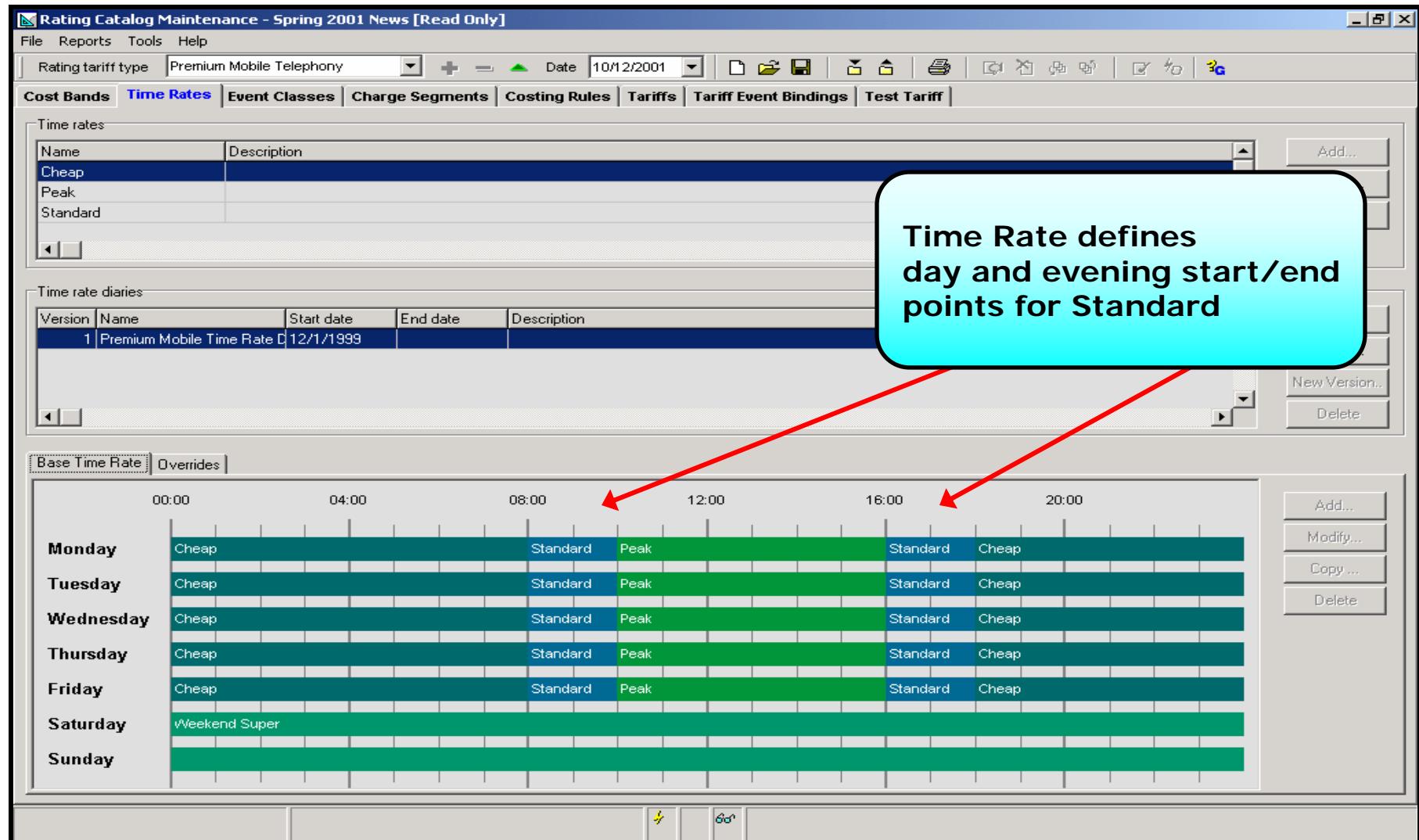
Time Rate defines day and evening start/end points for Standard

Base Time Rate Overrides

	00:00	04:00	08:00	12:00	16:00	20:00	
Monday	Cheap		Standard	Peak	Standard	Cheap	
Tuesday	Cheap		Standard	Peak	Standard	Cheap	
Wednesday	Cheap		Standard	Peak	Standard	Cheap	
Thursday	Cheap		Standard	Peak	Standard	Cheap	
Friday	Cheap		Standard	Peak	Standard	Cheap	
Saturday	Weekend Super						
Sunday							

Add... New Version... Delete

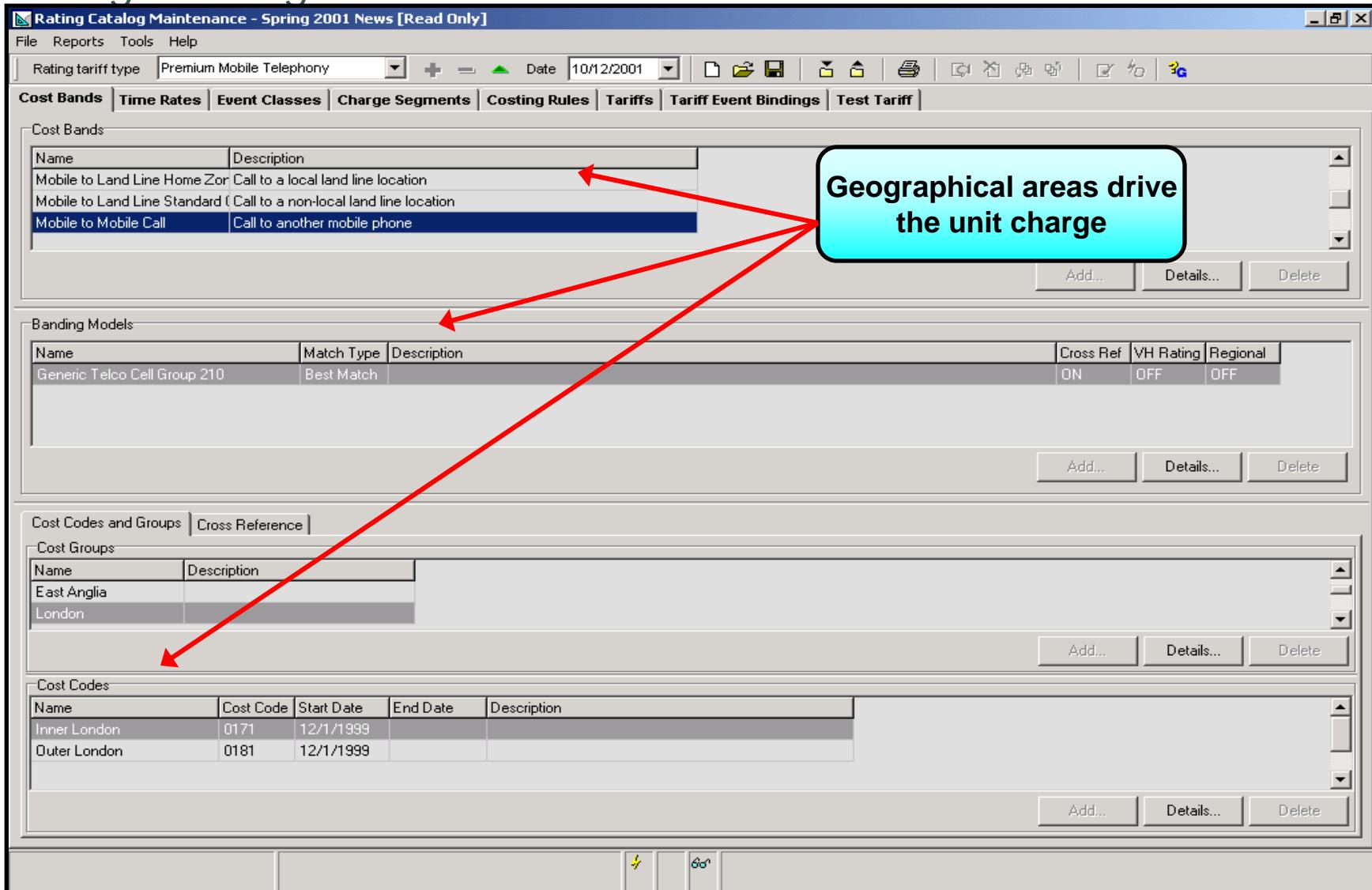
Add... Modify... Copy ... Delete



Distance Band Configuration: Geneva

Rating Catalog Maintenance

Geographical areas drive the unit charge



The screenshot shows the 'Rating Catalog Maintenance' application interface. A callout bubble highlights the text 'Geographical areas drive the unit charge'. Three red arrows point from this text to three specific sections in the application:

- An arrow points from the text to the 'Cost Bands' section, which lists geographical categories like 'Mobile to Land Line Home Zone Call to a local land line location' and 'Mobile to Land Line Standard (Call to a non-local land line location)'.
- An arrow points from the text to the 'Banding Models' section, which lists a single entry: 'Generic Telco Cell Group 210'.
- An arrow points from the text to the 'Cost Codes and Groups' section, which contains two groups: 'East Anglia' and 'London'.

Cost Bands

Name	Description
Mobile to Land Line Home Zone	Call to a local land line location
Mobile to Land Line Standard	(Call to a non-local land line location)
Mobile to Mobile Call	Call to another mobile phone

Banding Models

Name	Match Type	Description	Cross Ref	VH Rating	Regional
Generic Telco Cell Group 210	Best Match		ON	OFF	OFF

Cost Groups

Name	Description
East Anglia	
London	

Cost Codes

Name	Cost Code	Start Date	End Date	Description
Inner London	0171	12/1/1999		
Outer London	0181	12/1/1999		

Rate Plan: Geneva

Rating Catalog Maintenance - Spring 2001 News [Read Only]

File Reports Tools Help

Rating tariff type Standard Mobile Telephony Date 10/12/2001

Cost Bands Time Rates Event Classes Charge Segments Costing Rules **Tariffs** Tariff Event Bindings Test Tariff

Tariffs

High usage mobile tariff
Low usage mobile tariff

Rating Elements On Net Products

View By

Cost band Free

Event Class Direct Dial On Net

Basis

Start Date 1/1/1995

End Date

Time Rate Diary Mobile time rate diary

Step Group High usage

Costing Rules Mobile costing rules

Add... Modify... Delete...

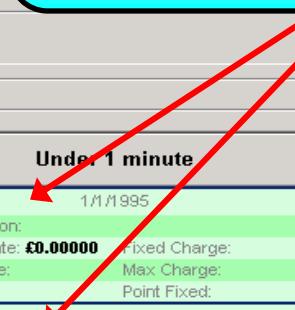
Rating Element Details

	Under 1 minute	Over 1 minute
On-peak	1/1/1995 Unit Duration: Charge Rate: £0.00000 Fixed Charge: Min Charge: Point Rate:	1/1/1995 Unit Duration: Charge Rate: £0.00000 Fixed Charge: Min Charge: Point Rate:
Off-peak	1/1/1995 Unit Duration: Charge Rate: £0.00000 Fixed Charge: Min Charge: Point Rate:	1/1/1995 Unit Duration: Charge Rate: £0.00000 Fixed Charge: Min Charge: Point Rate:

Active at current date Active after current date No element defined
 Active before current date No Time Rate/Charge Segment

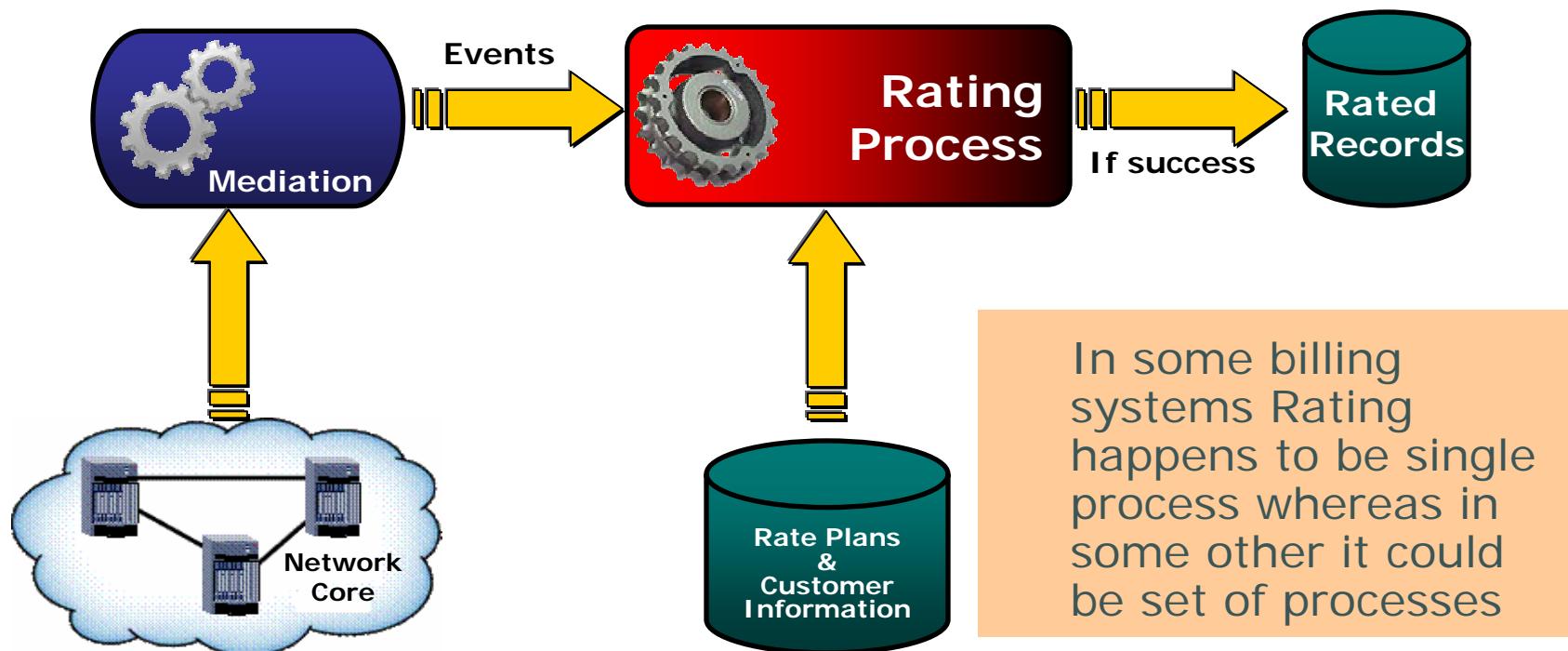
Add... Modify... Delete...

The geographical area, time of day, number of units etc. are linked to set each unit charge

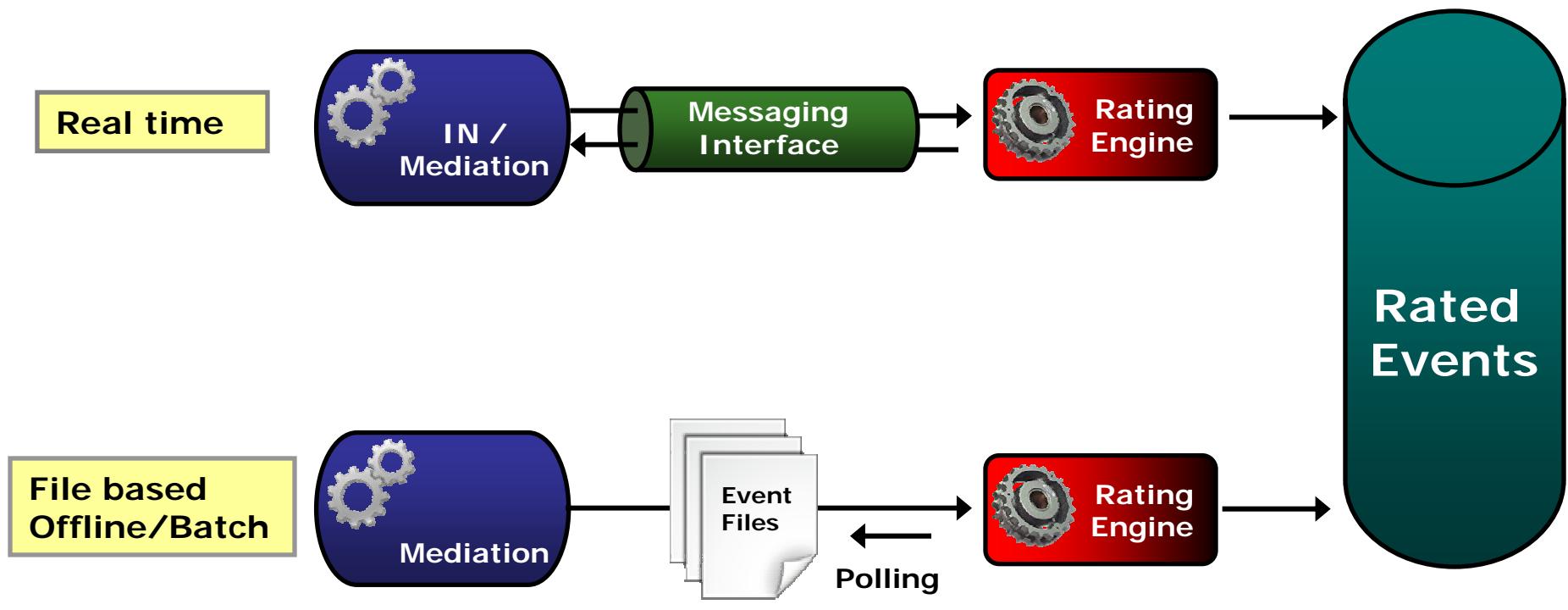


Rating Process

- Rating is the process of calculating costs for individual events and guiding each event to the account that is billable for it.
- A plan holds the set of rules with pricing that allows the Rating Engine to price events.

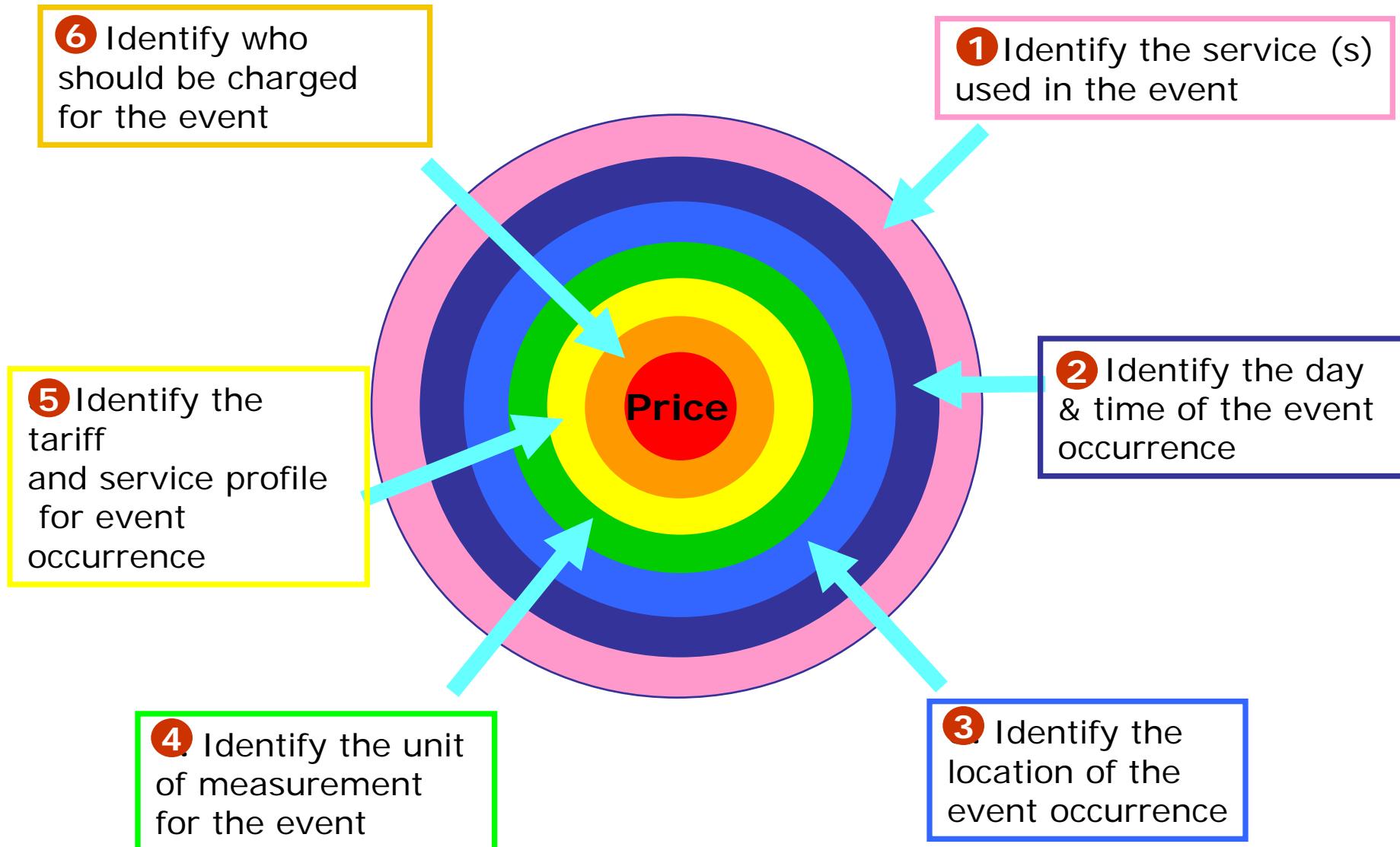


Rating Inputs



Although many billing systems today support prepaid (real time) as well as post paid (off line) but it could be available within single stack or as separate components. Many of them claim as near real time rather than real time.

Rating Logic in Nut Shell

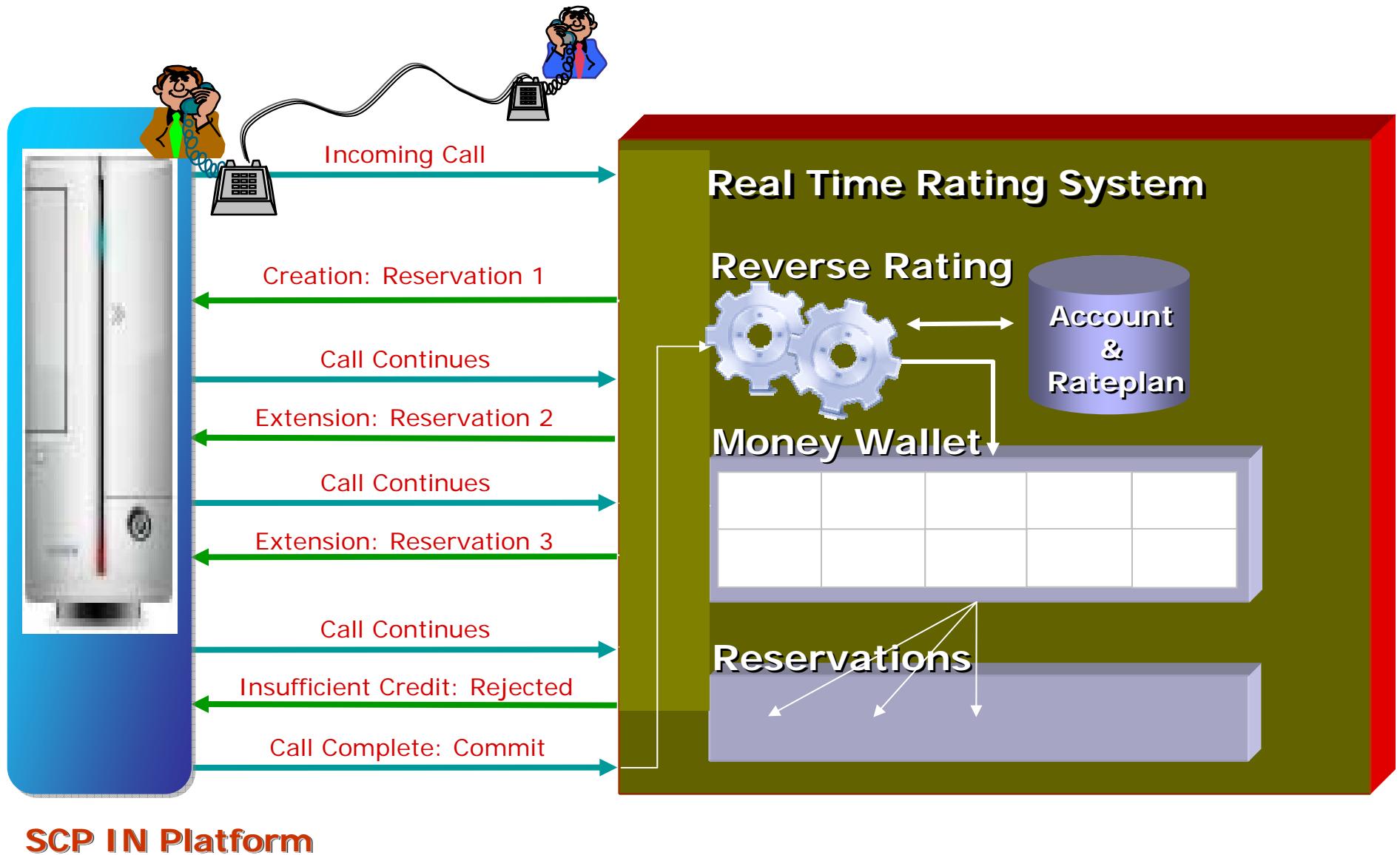


Prepaid Scenario



- Prepaid Billing needs
 - Real time balance check and reservation
 - Online charging during service usage (to make sure credit is not overshoot)
- Traditional billing systems support BATCH mode operation
- Pre-paid billing is generally taken care at IN platform which is a separate from post-paid billing system
- New generation convergent billing system offers pre-paid post-paid convergence

How call in Pre-paid works?



SCP IN Platform

 CREATE THE NEXT WAVE

Rating Leftover



- Is it possible to run multiple rating engine for load balancing purpose?
 - Yes
- Is there any way to undo rating?
 - Yes, some billing COTS product support undo rating
 - It the process by which already rated calls are unloaded from the database in case they have been wrongly rated
- What is re-rating?
 - Unloading wrongly rated events and rating them again by making proper changes

Rating Leftover



- Is it possible to rate pre-rated CDRs?
 - Scenario: Especially roaming scenario where in pre-rated CDRs are coming in side system and operator would like to add some extra charges to existing price
- Archival strategy for the CDRs
- Late event charging
- Event Guiding / Event Resignation

Duplicate CDR Check

- Done at various stages
 - At Mediation
 - ◆ Preferred
 - In Billing Systems
 - ◆ Towards entry to rating module
 - ◆ Towards entry to Billing module
- Can be done on Filename level or event level
 - Filename level: Quicker
 - Event level: Performance degrading
 - ◆ Hashing and bucketing concept used
- Curiosity
 - When duplicate CDR check is done at mediation level, why it is necessary to do it in billing systems?
 - What will happen if it is not checked anywhere?
 - What will happen if such event gets rated twice?



Discounts

Telecom Service Order E2E Scenario

Typical TELCO Stack

Billing System Composition

Billing Concepts

Telecom Service

Mediation's Role

How services are charged: Rating

Discounts

How services are billed: Billing

Payments, Collections and RA

Retail, Wholesale, Interconnect, Roaming, MNC

Billing Systems: Convergence, Interface,
Expectations, Challenge, TechM presence



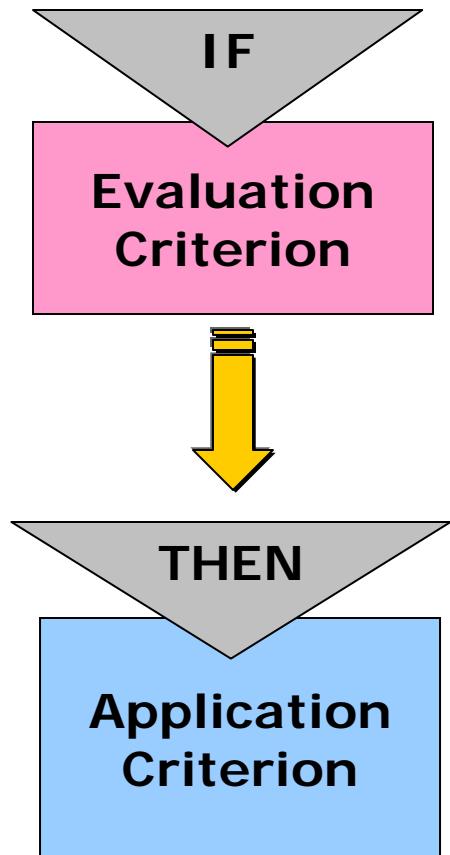
Rating vs. Billing

Single Product Disc

Cross Product Disc

Discount: An Introduction

- A powerful tool to ATTRACT and RETAIN a customer
- Rating Time vs. Billing Time
- Evaluation Criterion
 - Discount based on Service Revenue
 - ◆ RC or NRC or Usage any combination
 - ◆ Simple to Complex, Customer Loyalty
 - ◆ How old are you with the system?
 - Quantity: Number of Accounts, Services etc.
 - ◆ Indirectly how much revenue



Discount: An Introduction (Contd.)



■ Application Criterion

- Absolute or Percentage discount
- Flat or tiered discount: explanation
- Free units (messages, minutes) as discount

Note: In some billing systems rating time discounts is taken care during Rating whereas in some other it can be separate process and in few billing systems it is done during billing.

Single Product Vs. Cross Product

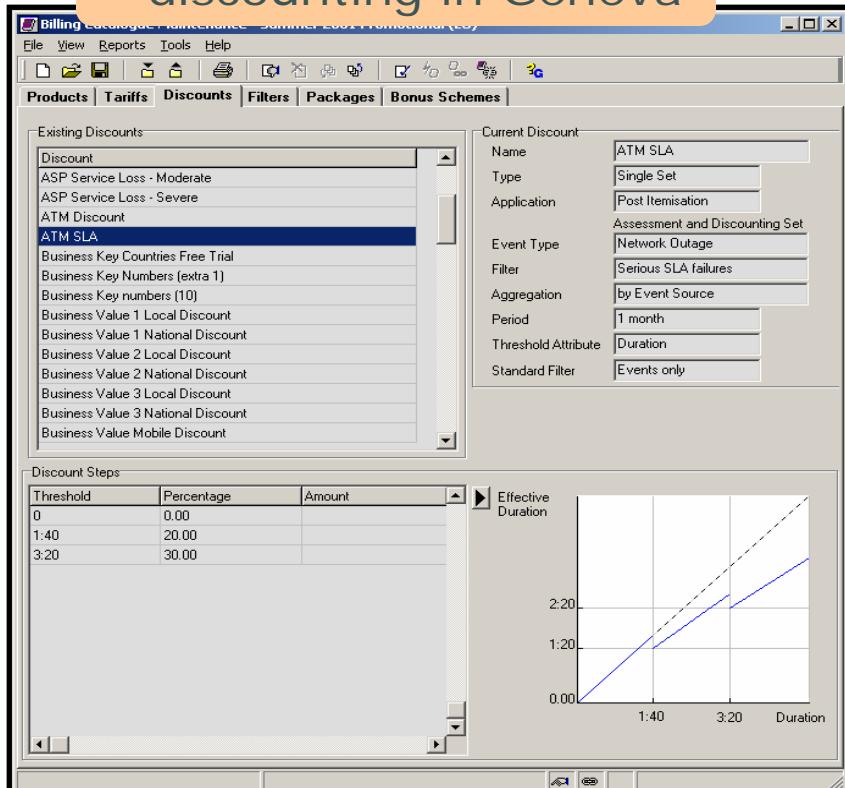


- Single Product Discount
 - Generally Rating time, only with usage charges
 - Limited Scope
 - Example: 10% discount on international call
- Cross Product Discount
 - Not possible during rating
 - More scope
 - Example: 10 MB down load free, per 1000Rs of Telephony usage
- Friends and Family discount, Free units as discount
- Discounting at total bill value level (e.g. Volume Threshold)
- Multiple discounts ...Priority is must ...which one to apply first
- Pro-rating of discounts

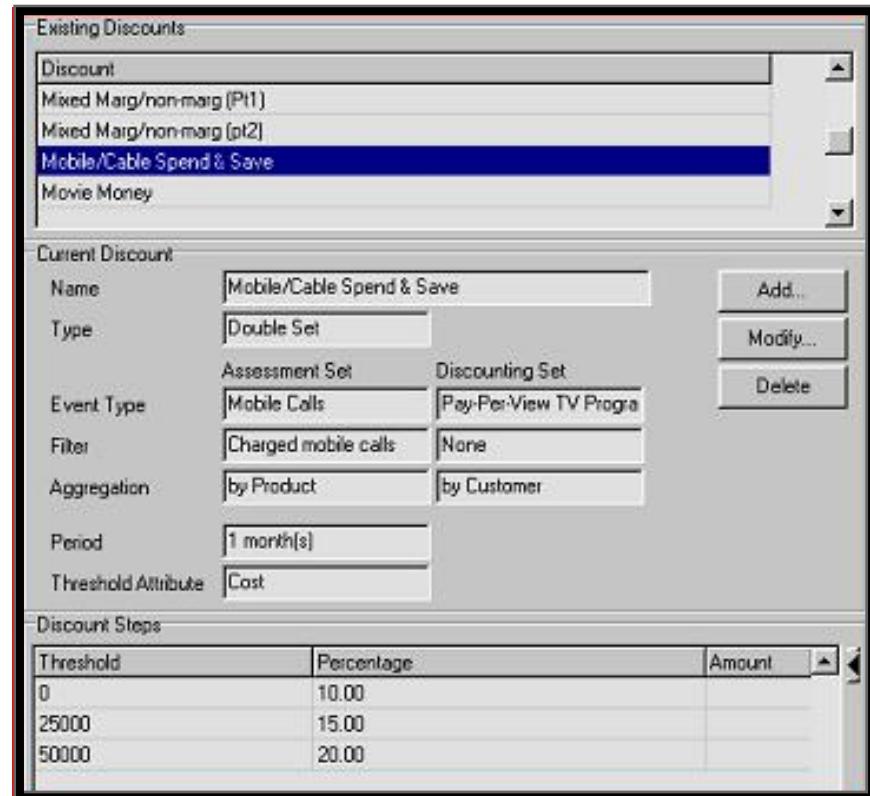
Note: Finally, let's not forget discount is an imagination.

Single Vs. Cross Product discount: Billing Catalog Maintenance

Single product
discounting in Geneva



20% off pay-per-view events for customers
spending more than \$50 on mobile calls
during December 2002 & January 2003



Cross-product
discounting in Geneva

What is Commitment Contract ?



Commitment Contract

- An agreement between a customer and service provider
- Commitment facilitates the customer to enjoys a discounted call and rental rate
- Customer enters into a Commitment Contract with service provider
 - to spend a specific amount over a specific period of time
 - to use service with reduced charging for specific period
- Customer is liable to be penalized in case fails to achieve the commitment
- A typical commitment product system monitors and tracks the call spend/service rental revenue or timeframe of the service
 - Based on the call spend/revenue & timeframe, the system calculates the discounts or penalties which are applied to the customers bills

Types of Commitment Contract



- Usage Commitments
 - Only the usage revenue is considered towards commitment
- Rental Commitments
 - Only the Recurring Rental is considered towards commitment
 - This Rental is eligible based on the service the customer's network has and the commitment
- Convergent Products
 - Both usage and rental is considered towards commitment
- Timeframe based Commitments
 - Customer can use a specific service with reduced charging provided he/she commits to opt for certain duration
 - In case of disconnection of service before the commitment period, he/she is liable to pay penalty charges specified in the contract

How Services are billed: Billing

Telecom Service Order E2E Scenario

Typical TELCO Stack

Billing System Composition

Billing Concepts

Telecom Service

Mediation's Role

How services are charged: Rating

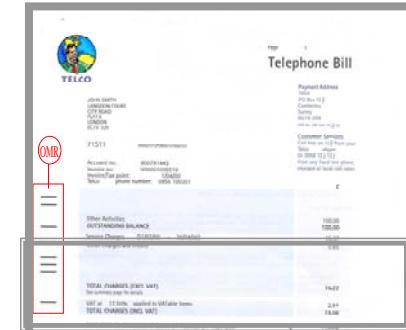
Discounts

How services are billed: Billing

Payments, Collections and RA

Retail, Wholesale, Interconnect, Roaming, MNC

Billing Systems: Convergence, Interface, Expectations, Challenge, TechM presence



Billing Process

Billing Engine Run

Types of Bills

Taxation

Bill Formatting

Billing Leftovers

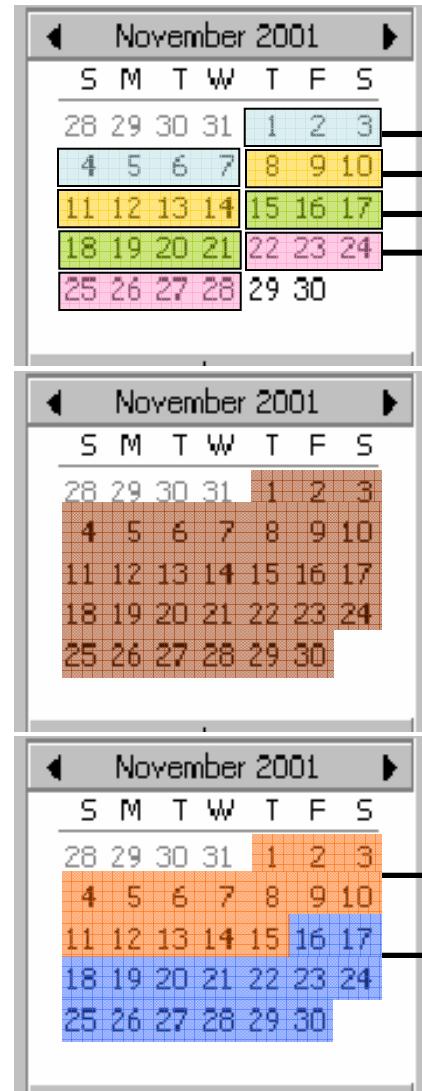
Billing Process



- When the billing engine runs, it checks
 - Which accounts align with present bill cycle and will pick up those accounts if their status is worth billing
 - After successful billing, Accounts bill date will change automatically based on the bill cycle
- Bills customer for Usage & Non-usage charges through bill cycle
 - Based on current status of the subscriber account/contract, the Billing process calculates the subscription, access and usage fees, depending on the rate plan.
 - ◆ Collects rated Call Detail Records (CDRs) from rating database
- Applies adjustments if any (credit or debits)
- Calculates and applies billing time discounts if any
- Applies Taxes

Bill Cycle

Bill Periods
&
Bill Cycles



Cycles
A/B/C
Weekly

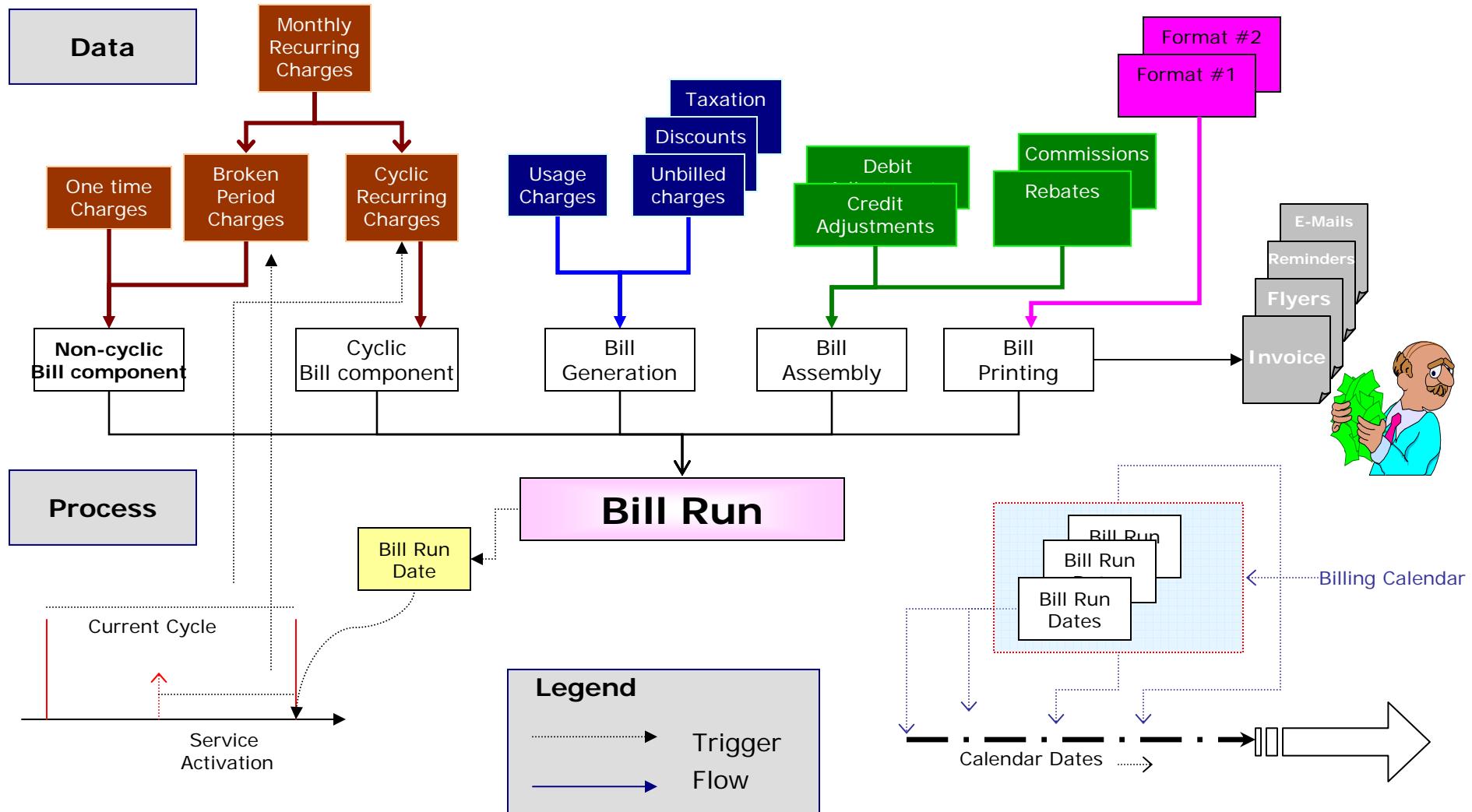


Cycles D/E/F
Monthly



Cycles G/H
Fortnightly

Billing Engine Run



Types of Bills

■ Initiation bill

- A bill that may be requested when an account is opened to cover initiation charges

■ Periodic bill

- A bill that is automatically generated at regular intervals for each account

■ Interim bill

- A bill that allows charges for events and credits adjustments processed for the account since the last bill generated.
- Periodic charges are not shown.

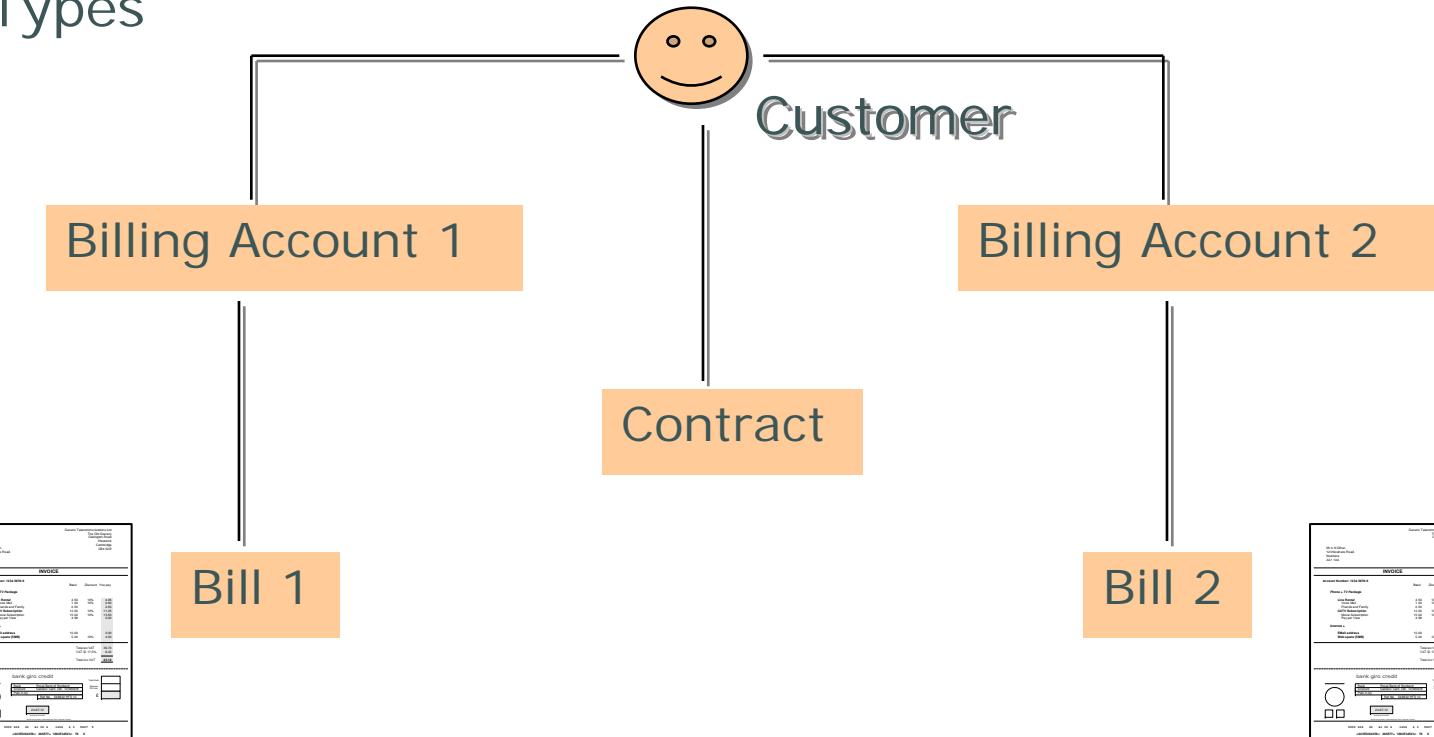
■ Final bill

- A bill that is generated when an account has been terminated, to bill all outstanding charges that are due.



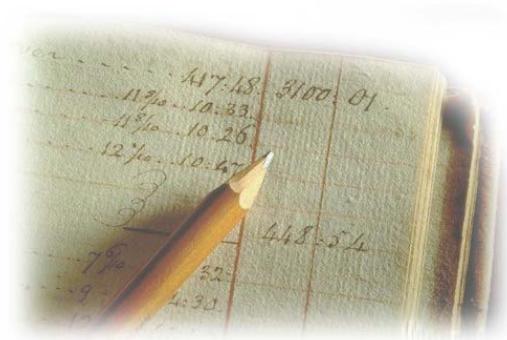
Split Billing Concept

- Billing Accounts– payment responsible customer– Concept in LHS
 - Single customer, more than one bill
- In some systems there can be, more than one invoice for a single customer using a concept called split billing– Geneva
- Multiple Invoices to single customer on the basis of services, Charge Types



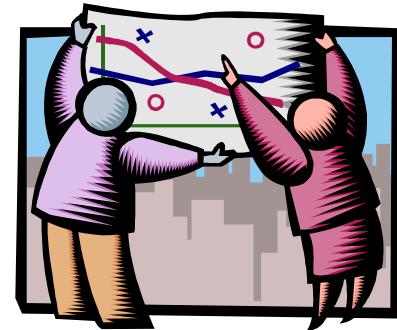
Taxation

- Billing systems support different taxation models which are followed across the world
 - Fixed and percentage taxation
 - Multilevel taxation
 - Pro-rating of tax
 - Zero tax/ tax exempt account
 - Surcharge on tax



Billing System: Additional Functionalities

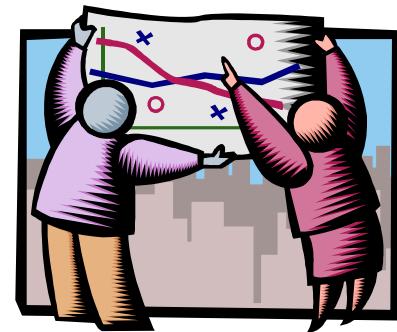
- Hot billing
- Dispute and Adjustments
- Itemized bill support
- Summary statement
- Cost Center report
- Copy bill, Reissue facility
- Test billing/ Simulation billing feature
- Rounding strategy



Billing System: Additional Functionalities

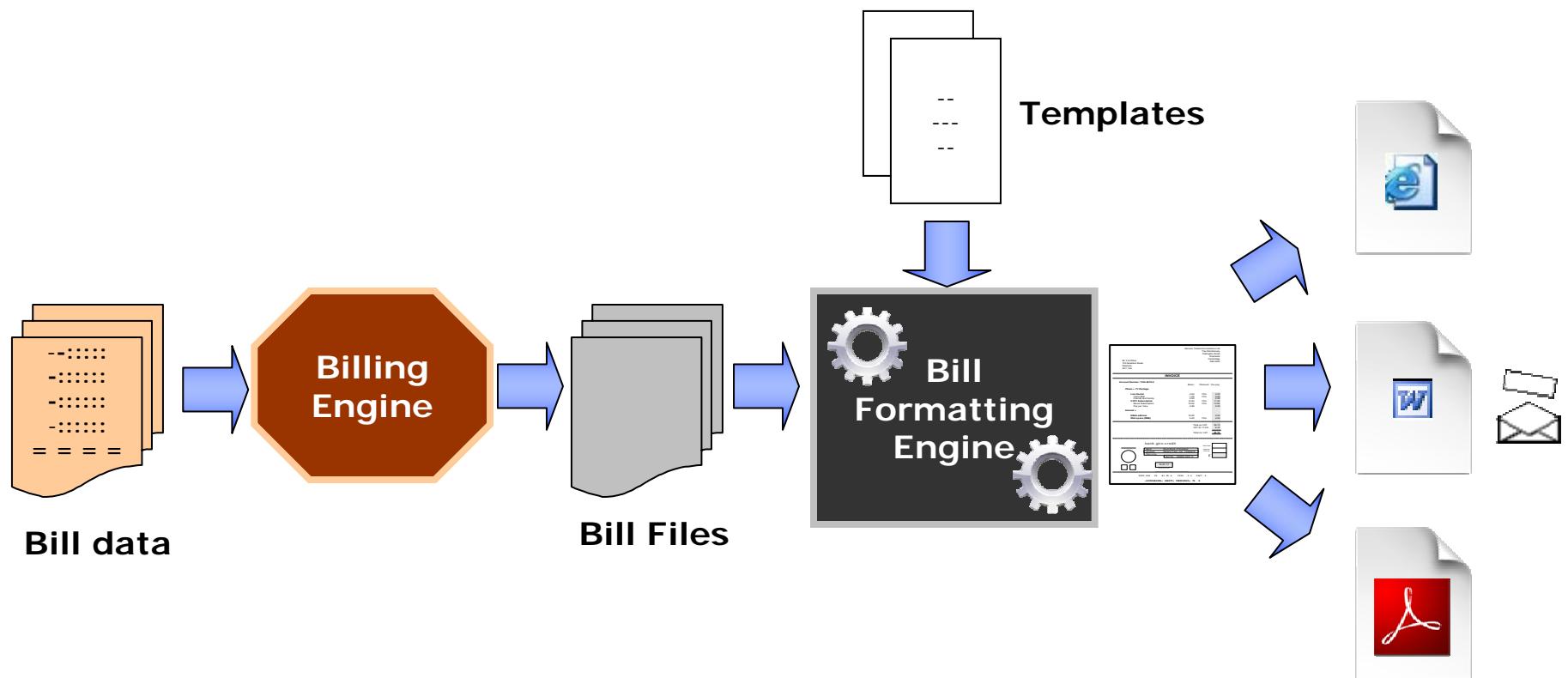


- Bill Suppression
- Bill Canceller & Re-bill facility
- Production Bill concept
- Exceptional Bill
- Zero activity bill



Invoice Formatting Process

- Most of the billing systems does not have invest formatting component because domain is different
- All such system export bill files to external bill printing engines



Invoice Format: Dimensions

Sections
• Postage Section
• Special Messages
• Remittance Portion
• Summary of Charges
• Service Activity Details
• Usage Details
• Usage Summary
• Branding (Static Text)



1. Marketing messages
2. Marketing inserts
3. Customer specific communications

Challenges
• Multiple formats, Multi-lingual, Multi-currency
• Special sorts for special layouts
• Flags for marketing inserts and messages
• Multiple bills for single customer

Media
• Paper
• Fax
• Tape
• CD-ROM
• EDI
• Mail Attachment
• Internet

What is the load?
• Normal Bill, Statement, Reports etc
• Welcome letter, Dunning letter, Reminders
• Red letter

Electronic Billing is the electronic delivery and presentation of financial statements, bills, invoices, and related information sent by a company to its customers

Electronic billing is referred to by a variety of terms, including the following:

EBPP

- Electronic Bill Presentment & Payment
- Typically focused on business-to-consumer billing and payment

EIPP

- Electronic Invoice Presentment and Payment
- Typically focused on business-to-business billing and payment

Services Available

- Viewing of bills on the web
- Analysis, sorting, grouping etc of bills online
- Check unbilled usage online
- Pay bills online
- Download bills in Excel, Word, PDF, PS, PCL, CSV, TSV etc
- Analyze spending on various criteria such as charge type, destination
- Receive bill alerts and notifications

Services specific to Corporate Customers

- Analyze monthly/quarterly/yearly expenses for employees
- Analyze most frequently called locations/numbers
- Audit employee usage
- Dynamically set limits for employees based on usage

Operational cost savings

- Eliminate the costs of sending bill on paper i.e. outbound cost of paper, printing, collation and postage
- Reduces billing costs per bill

Reductions in customer support costs

- Enables “customer self-care” leading to fewer inquiries, disputes and complaints

Revenue growth

- Faster payment realization
- Targeted offerings to different market segments
- Monitor customer adoption
- Product / service profitability

Ease of use

- Bill & Payment at finger step away (anytime, anywhere, any form, any mode)
- Web-based user interface is intuitive and simple to use
- Efficient and intuitive on-line journeys (e.g. ability to pay without having to log on)

Improved customer service

- Secure access of billing and payment information
- Improved information up front (e.g. ability to change email address [big call driver])
- Simple reports in familiar formats rather than large volumes of data
- Multi user access for business customers

Payments, Dunning/Collections

Telecom Service Order E2E Scenario

Typical TELCO Stack

Billing System Composition

Billing Concepts

Telecom Service

Mediation's Role

How services are charged: Rating

Discounts

How services are billed: Billing

Payments, Collections and RA

Retail, Wholesale, Interconnect, Roaming, MNC

Billing Systems: Convergence, Interface,
Expectations, Challenge, TechM presence



Payments



- Payment Modes
 - Cash, Cheque, Credit Card, Direct Debit, Standing Instruction, Bank Transfer, Lockbox
- Bill Item
 - Smallest head on invoice against which a payment can be made
- Payment Priority
 - Allocation of payment to bill items based on priority
- Invoice Payment Settlement Schemes
 - Oldest first vs. Selective

Payments and AR

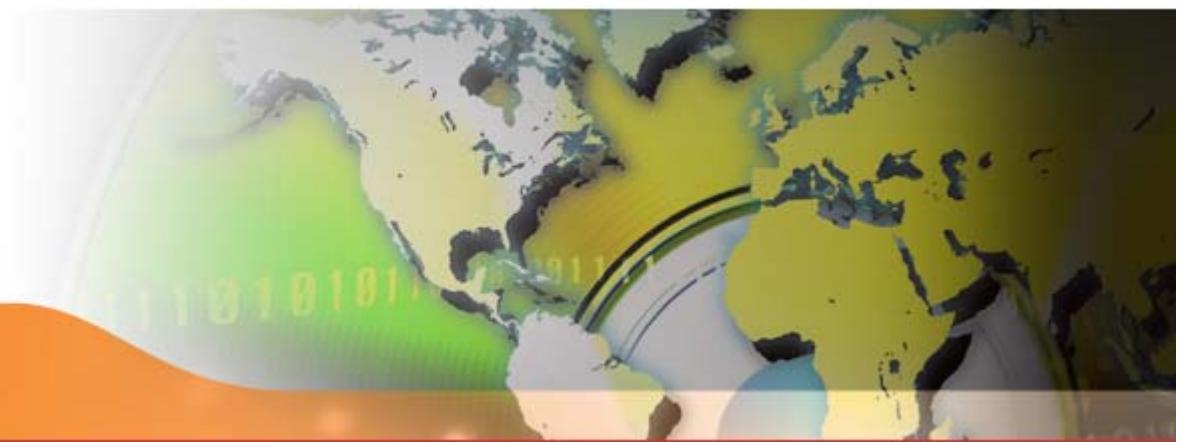


- Where all payment gets involved?
 - Payment for invoice, deposit payment etc.
- Role of AR
 - Generally Accounts Receivable module is used to take care of payment transactions and tracking from customer to operator
 - Typical Tasks of AR
 - ◆ Register payments, Maintain invoices, Maintain deposits, Query for statistics
 - ◆ Full/ Part/ Advance/ Single payment for multiple invoices, Refund/ Reverse payment, Payment transfer , Write off

AR: When Things Go Wrong...



- Correction
- Bounce
- Adjustment
- Write Off
- Transfer of Invoice
- Transfer of Payments



Credit/Debt Management

Credit vs. Debt Management



What is Credit/Debt Management in Telecom Industry?

- Any outstanding Invoice is followed up broadly in two stages
 - Credit Management Stage
 - Debt Management Stage
- In some Telecom Industry the stage of follow-up depends upon *Payment Term* they define for their product
 - Payment Term specify the period allowed to a buyer to pay the amount due
 - ◆ Each product can have a predefined payment term e.g. 14 days, 28 days or 3 months, etc.
 - ◆ Some big business customers can have special agreement/concession with the seller on payment term.
- What is the difference between Credit and Debt management ?
 - All follow-ups with the buyer
 - ◆ before the payment term is termed as *Credit management follow-up*
 - ◆ after payment term is termed as *Debt management follow-up*

Credit & Debt Management : How ?



How are credits/debts are followed-up?

- In credit management
 - the follow-ups are calls, SMS and reminder letters
- In debt management
 - Follow-ups could be stern letters (final reminder , breach notice, restriction notice, termination notice, etc)
 - It will then be followed –up by restriction actions e.g. Outgoing call barred (OCB), Termination of service (TOS), etc.
- Type of customer also dictates the kind of follow-up to be used
 - E.g. Value customer (big corporate) which are 20% of customers in company like BT but contributes 80% revenue
 - Volume customers (small business customers) which are 80% of customers in BT but contribute only 20% revenue
 - Value customer gets personal touch & softer follow-ups were as for Volume customer we have frequent and more automated follow-ups
- To reduce the cost and to improve the customer experience, credit & debit management follow-ups are managed holistically for all of customer product managed & billed in different billing systems

How customer rating/behaviour profiling helps credit/debt management?

- Need
 - For a business to maintain a positive cash flow it is important all buyers pay their outstanding invoice on time
- Solution : Customer Risk Profiling
 - Profiling a customer payment behaviours will help us analyse how quickly the old Invoices were paid
 - Capturing defaulting payment & broken promise we can further help built up customer profile
- Credit Rating
 - External Credit Agency can rate a customer on different financial factors
 - This will help us understand the credit worthiness of the buyer
 - if the customer's credit rating and profile is poor, the follow ups even at credit management stage could be frequent and severe.
 - In Debt management stage the restriction could be applied as early as possible
 - This helps the business to reduce the financial risk

Key Core functionalities of Credit/Debt Management

- Functionality for promise to pay/broken promise
- Functionality to setup monthly payment plan
- Ability to offshore (sub contract) part or full credit/debt follow-up activities
- Various reports to track performance of user agents & effectiveness of specific follow-up types
- Ability to manage user agent's leaves & prioritise work-package for them
- Ability to put cross pressure on customer by applying restriction action on key service
- Sensitive to care products & special customers (defence/government)
- Features to support external debt collection agency
- Special features like premium letters for valued customers
- Referrals to Account Managers before applying Restriction action
- Debt Write-off

Preparation for Dunning

■ Select for Dunning

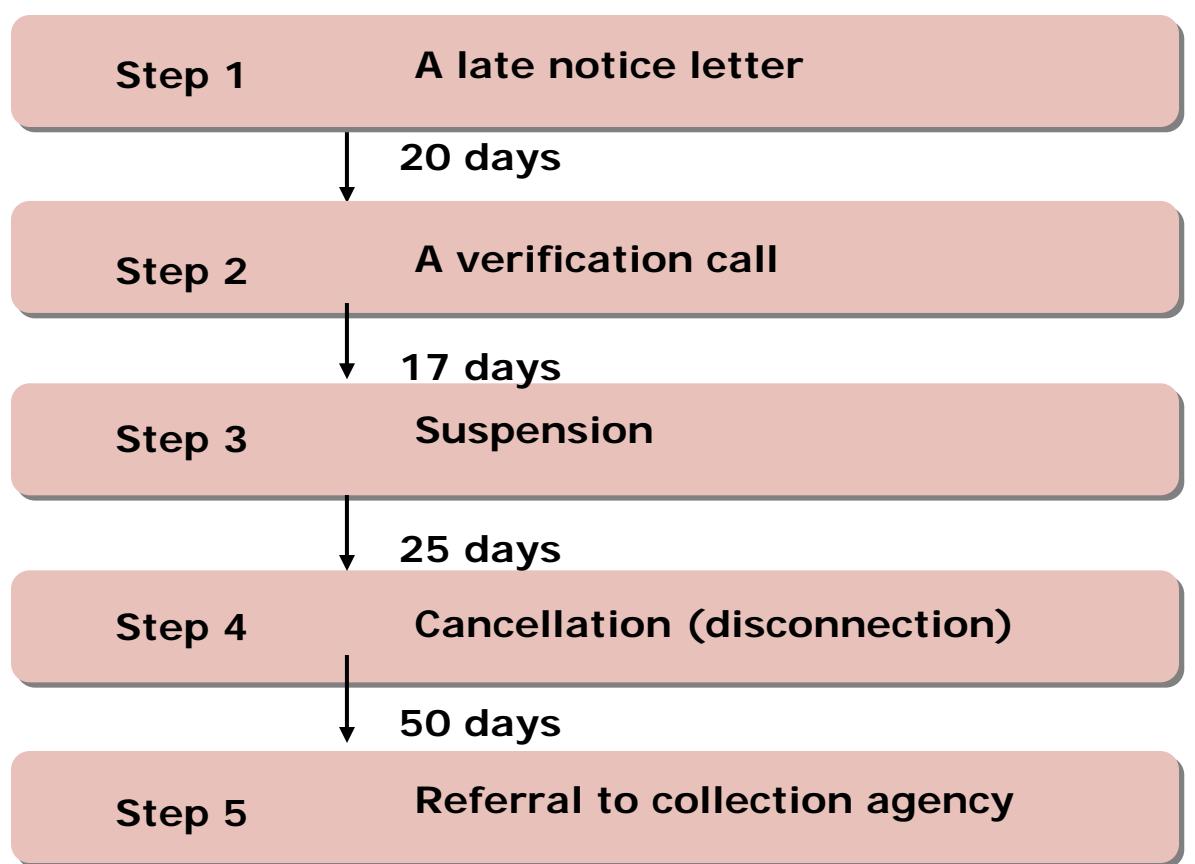
- all customer invoices with open amounts after due date
- selection criteria
 - ◆ by amount
 - ◆ by date (days after due date)
 - ◆ by customer group
 - ◆ by customer code
- other options
 - ◆ deselect specific invoices
 - ◆ change dunning fees
 - ◆ change late fees

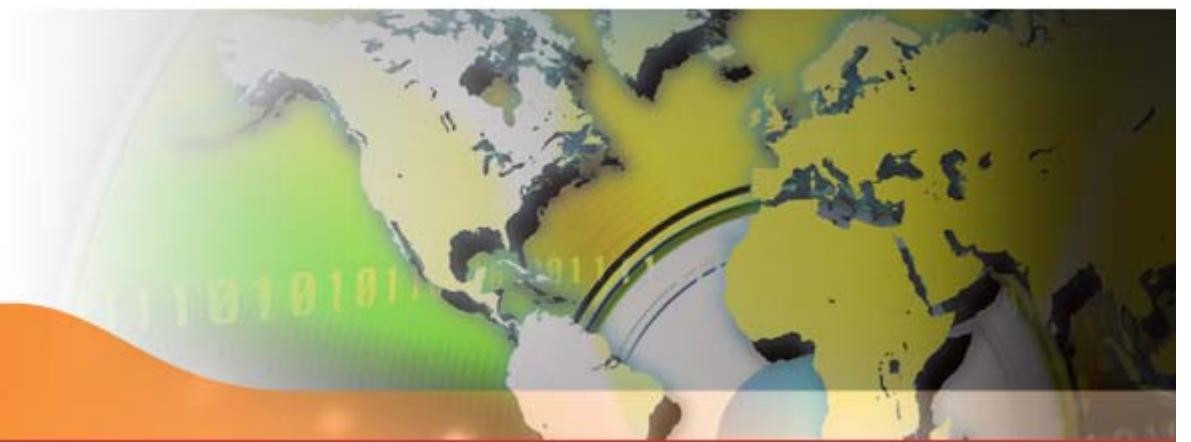


■ Start Dunning server processes



Dunning Procedure





Revenue Assurance



Revenue Assurance

Actions and processes used to ensure accurate capturing, monitoring and controlling of end to end revenue related incidents

The key areas of operation of a revenue assurance practice have evolved into the following:

- Revenue Leakage
- Cost Assurance
- Revenue Enhancement
- Regulatory Compliance

Revenue Assurance : Why it is required?



- Reducing revenue leakage
 - Safeguard against loss of revenue, it has been found that telecom companies regularly miss out billing 5% of their revenues
- Reducing customer churn
 - RA helps in monitoring the causes of customer dissatisfaction and controlling them methodically & effectively
- Maintaining billing accuracy standard
 - Both over-billing and under-billing is a cause of worry for the company. Under billing causes loss of revenue, over-billing results in loss of reputation
- Complying with regulatory requirements
 - Regulatory bodies impose certain standards to retain the licenses, which might include customer complaints, compliance to service levels and billing accuracy

Revenue Assurance : Why and How?



■ Why it is very important?

- $PAT = (Revenue Earned - (Operational Cost - Tax - Revenue Leakage))$
 - ◆ Revenue Leakage plays a crucial role to enhance PAT maximization
 - ◆ Leakage has to be less although efforts must be to for zero

■ Solution: Revenue Assurance System

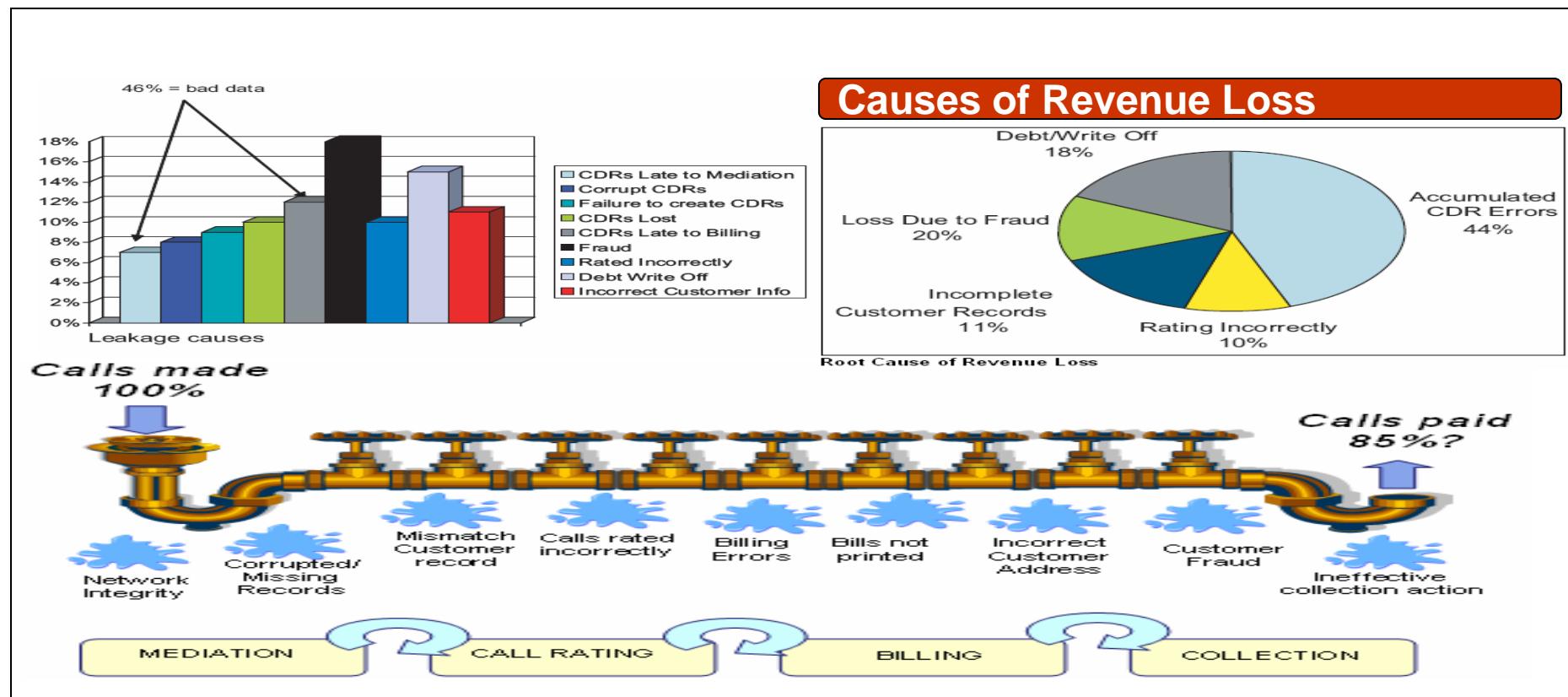
- Seek maximum visibility
- KPIs at all business process level from RA perspective
- Separate RA team taking care of only RA issues
- Make sure that Revenue Expected vs. Revenue Earned is in line/sync and not too much deviated either side
 - ◆ Constant monitoring and alerts
 - ◆ Find out the places of leakage in end-to-end process and make provision to prevent them if not minimize
- Delivered key Interconnect billing summary information (both for revenue and expenditure)

Revenue Leakage

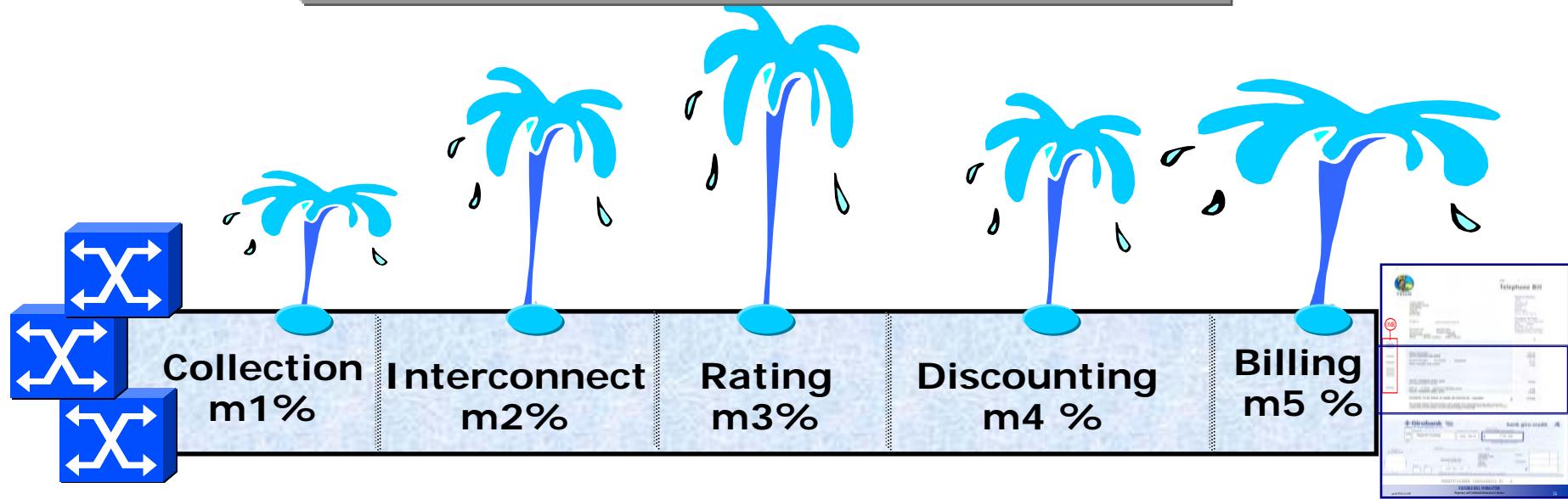
Revenue Leakage is often considered a hidden and uncontrolled cost of doing Business in the telecom industry.

As business flows from one process to another, a vital billable item may get dropped causing revenue leakage.

Revenue Leakage : Possible Sources



**Mantra !!! Prevent or Minimize
Revenue Leakage and areas of Fraud**



Switch	Raw CDR	Checked	Loss	...	Loss	Distributed	Loss
Switch 1	54913	54910	3	54910	0	54910	0
Switch 2	211238	211138	100	211138	0	211138	0
Switch 3	1867247	1867247	0	1865247	2000	1865247	0

RA : Different Approaches



- RA Approaches
 - Reactive
 - Let it occur and then I will react (daring approach)
 - doing something as a response to existing leakages
 - This approach helps resolve the cause of revenue lost
 - Active
 - On the fly
 - doing something to problems as they occur
 - This approach helps to initiate corrective response before revenue loss takes place
 - Pro-active
 - Prevention is better than cure
 - Acting in anticipation, by implementing controls and measures to prevent problems from occurring

Data Quality & Data Integrity vs. Process Improvement

- Data Quality & Data Integrity
 - This approach focuses on improving the quality of data to ensure accuracy of revenue
- Process Improvement
 - Review of the business processes supporting the generation and management of revenue generating events

Fraud Management: Set Limits



- Allows pre-set credit limits at Customer, Account, Service and Plan level
 - Setting threshold per day, week or month etc.
- Track abnormal usage daily through a node activity report
- Monitor Credit on-line
- Trigger → once the Usage Limit reached
 - Send SMS, Suspend the service for rest of the day etc.
 - Send Exceptional or Interim bill

Telecom Service Order E2E Scenario

Typical TELCO Stack

Billing System Composition

Billing Concepts

Telecom Service

Mediation's Role

How services are charged: Rating

Discounts

How services are billed: Billing

Payments, Collections and RA

Retail, Wholesale, Interconnect, Roaming,MNC

Billing Systems: Convergence, Interface,
Expectations, Challenge, TechM presence



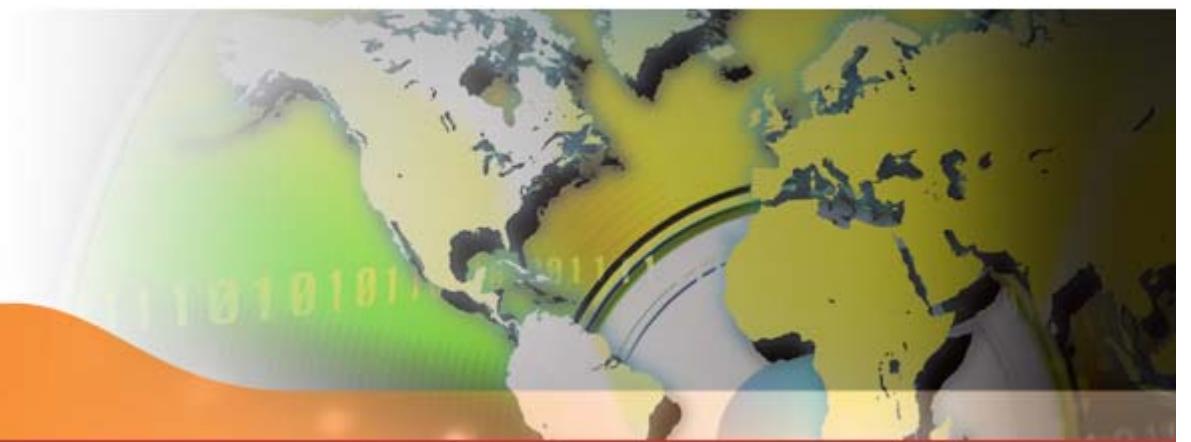
Retail

Wholesale

Interconnect

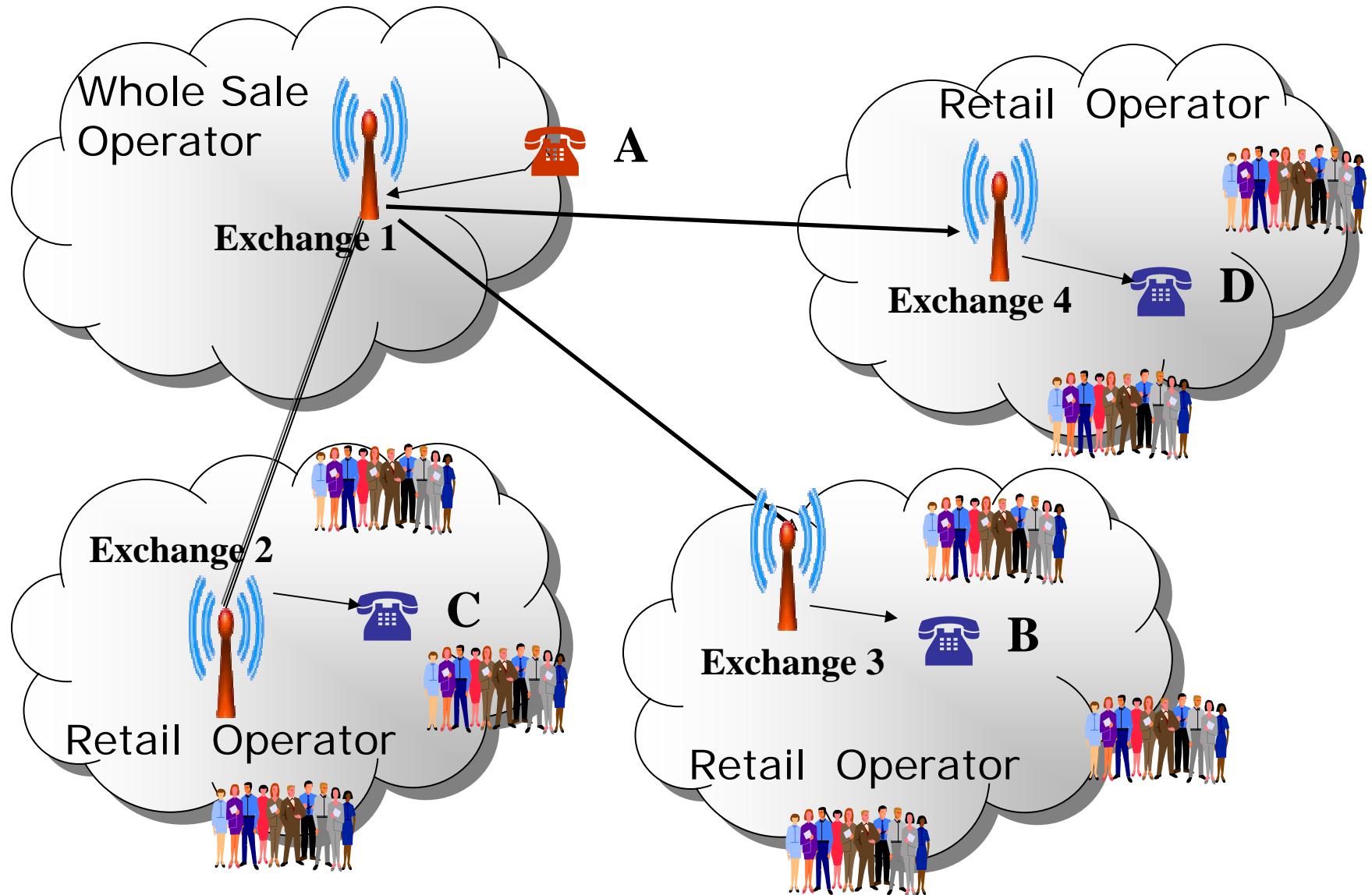
Roaming

MNC



Retail & Wholesale Billing

Retail and Wholesale Billing



Wholesale Operator

Wholesale Operator is one who provides network services and solutions to communications companies, network operators and service providers

Wholesale Customer

These customers take services from wholesale operator and in turn serve their retail end-subscriber. These customers include

- * Service providers and resellers * Global carriers
- * Internet Service Providers * National operators
- * Cable operators * Mobile operators
- * Communication Providers (CP)
- * Entrepreneurs and innovators in the communications marketplace

Wholesale Billing

Wholesale Billing refers to the billing arrangement/settlement between the wholesale operator and the wholesale customers referred above.

Wholesale Products



- Broadband
 - Virtual IP circuits between end users and service providers
- Local Loop Unbundling (LLU)
 - Circuits between OLO PoP (Point of Presence) in operator's exchange and end user premise
- Interconnect Circuits & Retail Private Circuits
 - Interconnect circuits are used to connect Wholesale Operator and OLO Sites, which carries all the usage traffic between OLOs
 - Retail Private Circuits are Circuits rented by the Mobile Operators to operate their mobile networks (Cell sites / Switch Sites)
- Conveyance Usage
 - The actual interconnect traffic

Wholesale Products contd..



- Wholesale Access (PSTN, ISDN)
 - Wholesale access is wholesale operator's PSTN voice Service Provider (SP) product
 - It enables SP's to offer their own branded telephony service to their own customers using the operator's network
 - Operator will provide, repair and maintain these lines.
 - Operator will provide a consolidated bill to the SP for all of their services
 - The SP sets their own prices and bills their end users
- Wholesale Calls
 - Wholesale operator supplies a calls only telephony service to a SP for them in turn to offer a service to their end users
 - The service will only be available on a operator maintained line
 - The SP is responsible for setting its own retail call charges and for billing its end users

Wholesale Products contd..



- White Label Managed Services
 - Wholesale operator offers both fully managed services (Broadband, Voice services etc) plus an extensive choice of customer service including contact centres and billing
- VAS Services
 - Wholesale operator (e.g.) providing the value added services like SMS, ring tone etc to service providers

- Mobile Virtual Network Operator (MVNO)
 - A mobile service operator that does not have its own licensed spectrum and does not have the infrastructure to provide mobile service to its customers (i.e., it does not own the network on which its voice and data traffic is carried).
 - Instead, MVNOs lease wireless capacity from pre-existing mobile service providers and establish their own brand names different from the providers
 - MVNOs typically offer subscription-based voice and data service, and the customers are not doing business with underlying wireless provider but with the MVNO brand
- A company that *does* have frequency allocation(s) and all the required infrastructure to run an independent mobile network is known simply as a Mobile Network Operator (MNO)
- MVNOs are roughly equivalent to the “switchless resellers” of the traditional landline telephone market.
- Switchless resellers buy minutes wholesale from the large long distance companies and retail them to their customers

- Mobile Virtual Network Enabler (MVNE)
 - A MVNE does not have a relationship with end-user customers.
 - Instead, a MVNE provides infrastructure and services to enable MVNO's to offer services and have a relationship with end-user customers.
- Virtual Mobile Virtual Network Operator (vMVNO)
 - A vMVNO is an MVNO that has approved indirect sales relationships with the network providers.
 - The vMVNO model works well for companies that are not sure what carrier will in the end suite their needs best or companies who want access to all carriers but can not go direct to all carriers due to the increased load on human or capital resources.
 - The vMVNO model saves companies millions of dollars and allows them to start selling literally within 2-3 weeks.

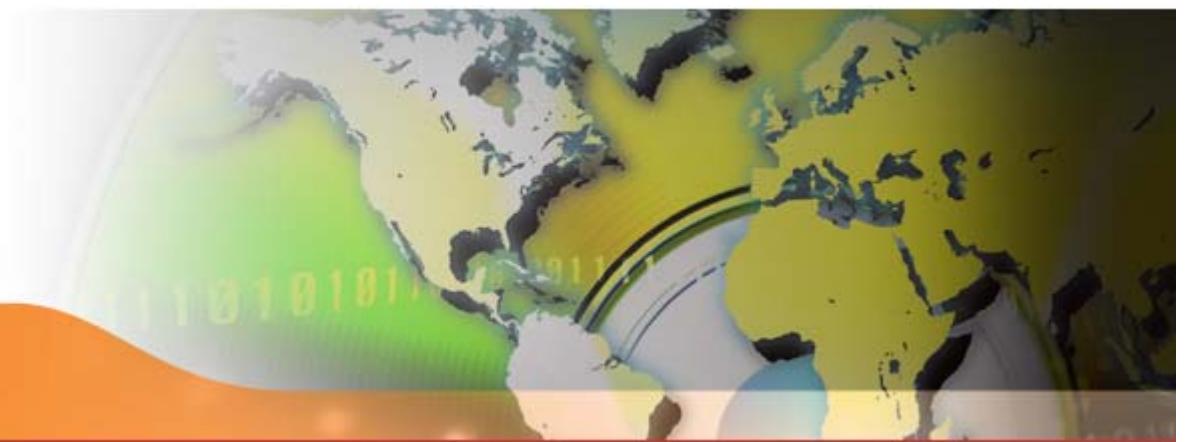
Retail vs. Wholesale

Retail	Wholesale
Operator bills end retail customer	Operator bills another Communication Provider or Service Provider or reseller
Huge customer base	Less customer base
Invoice is the only purpose and is company's image	Invoice means lot of settlement issues
Has to be competitive to survive	Not as competitive as retail
Generally single currency	Multi currency possible
Invoice details by call i.e. itemized bill	Being wholesale that granularity is not required
Rating customer's is prime job all the time although billing is important leg	Billing customer is on bulk usage basis with flat RC
Competitive and complex discounting in place	Discounting based on relation and volume of business

Retail vs. Wholesale (Contd.)



Retail	Wholesale
Although low amount, big margin	High amount but comparatively small margin
Use of A number and B number for rating	Generally flat fix charges irrespective of usage
Low risk of errors	High risk of errors
Low rate of dispute	High rate of dispute
Very often requires customization	Customization is rare
High implementation and operational cost	Comparatively less cost
Market drives the tariffs and discounts as well as customer churn	Relation drives
Mass market targeted	Specific market targeted

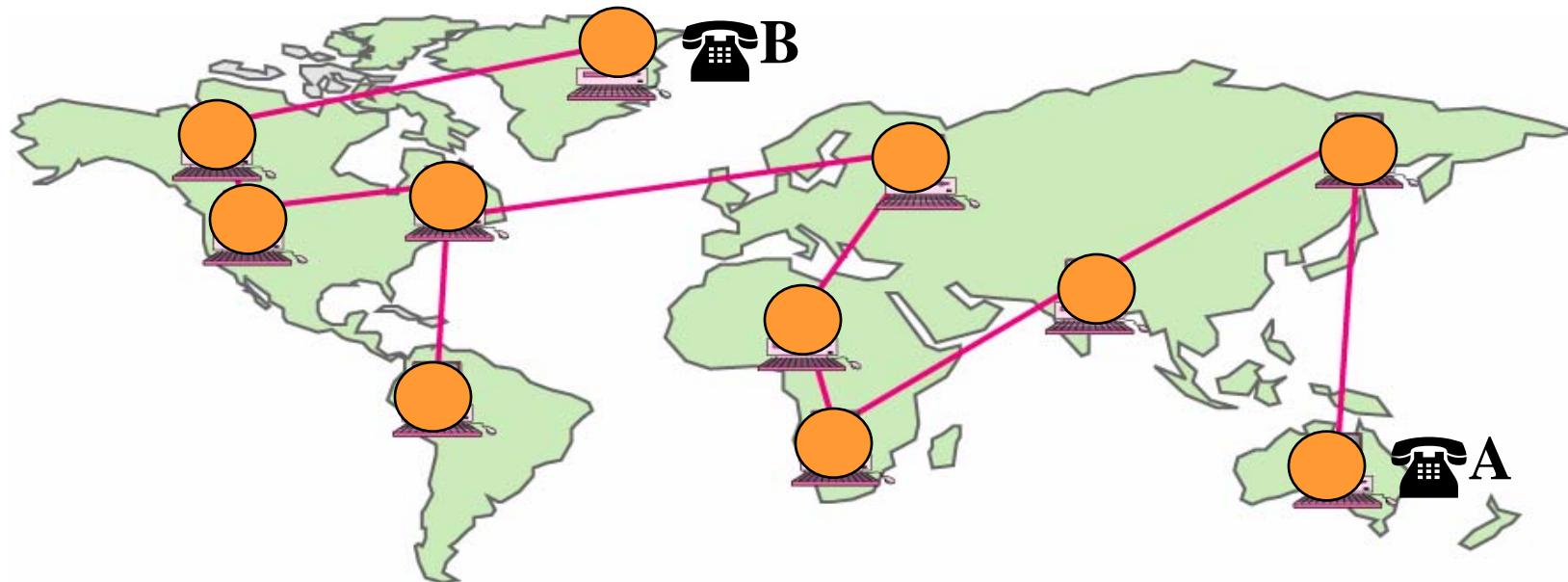


Interconnect Billing



What is Interconnect?

- Interconnect is the process of handling calls for other operators
- The basic aim of an interconnect solution is to produce an invoice for the calls received from another operator and to validate the invoices received from other operators for the calls they have handled for you

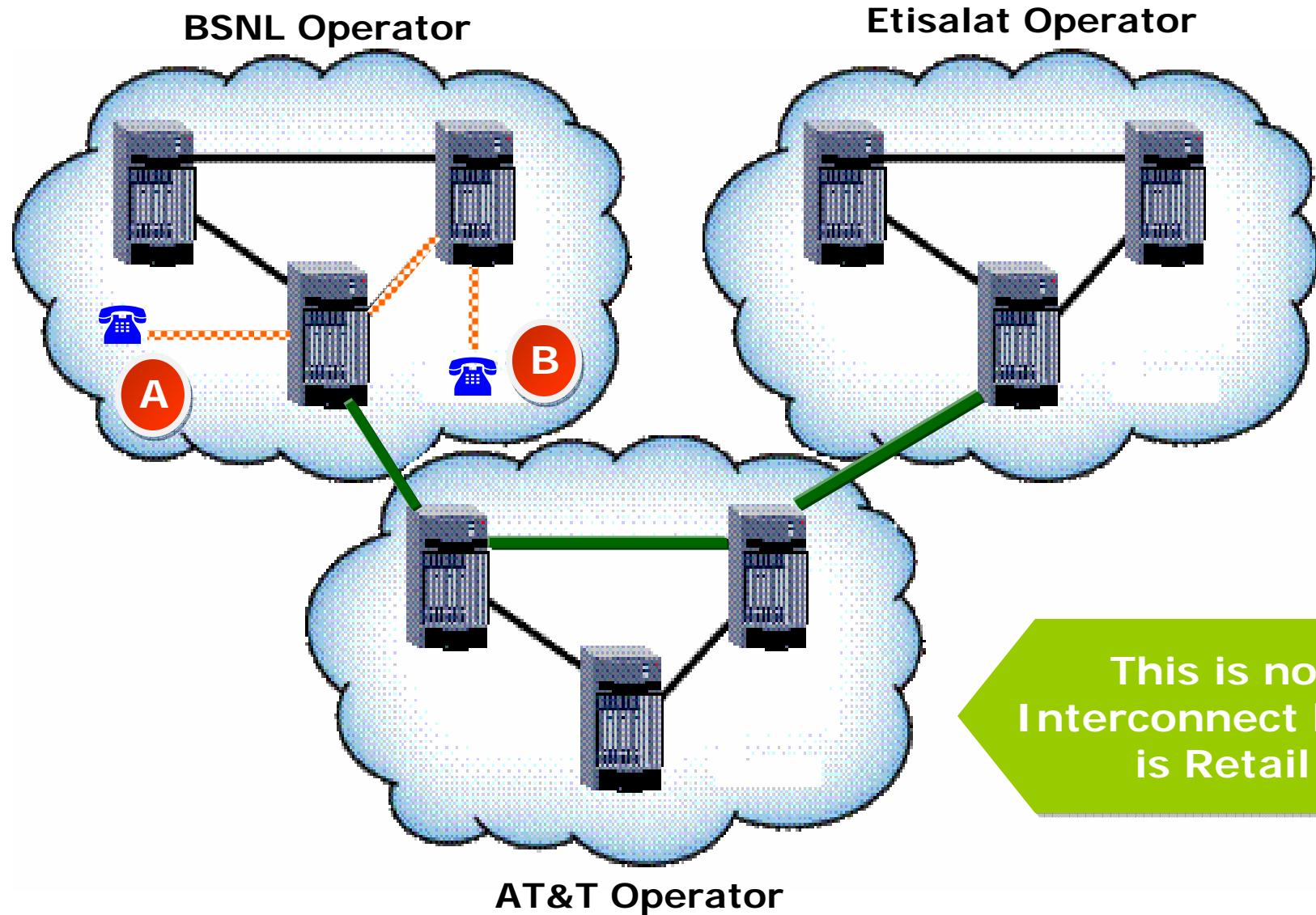


Objectives of Interconnect



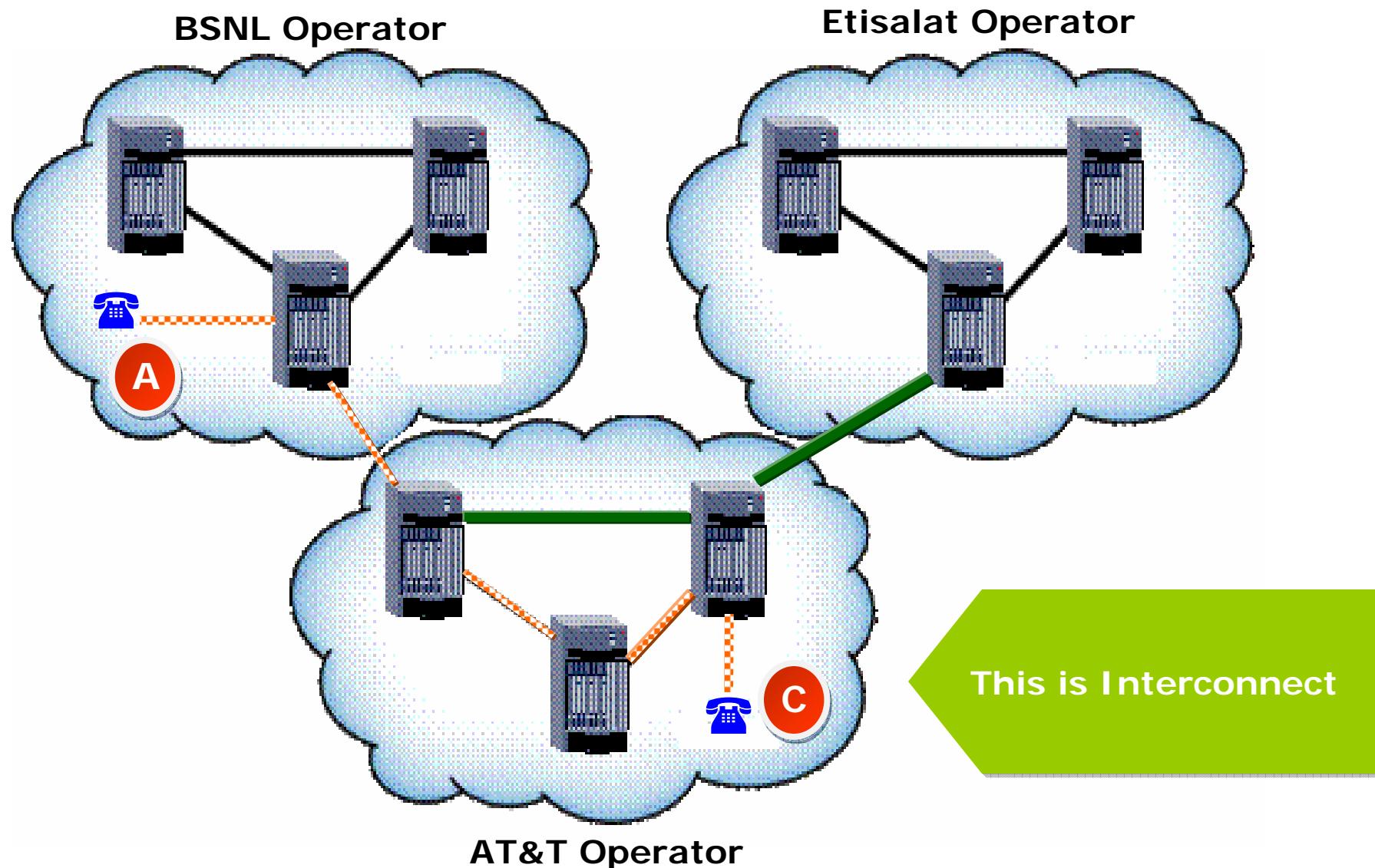
- Invoice other operators
- Verify invoices from other operators
- Analysis of network traffic, costs and revenues
- Meet audit and regulatory requirements

What is Interconnect, What it is not..

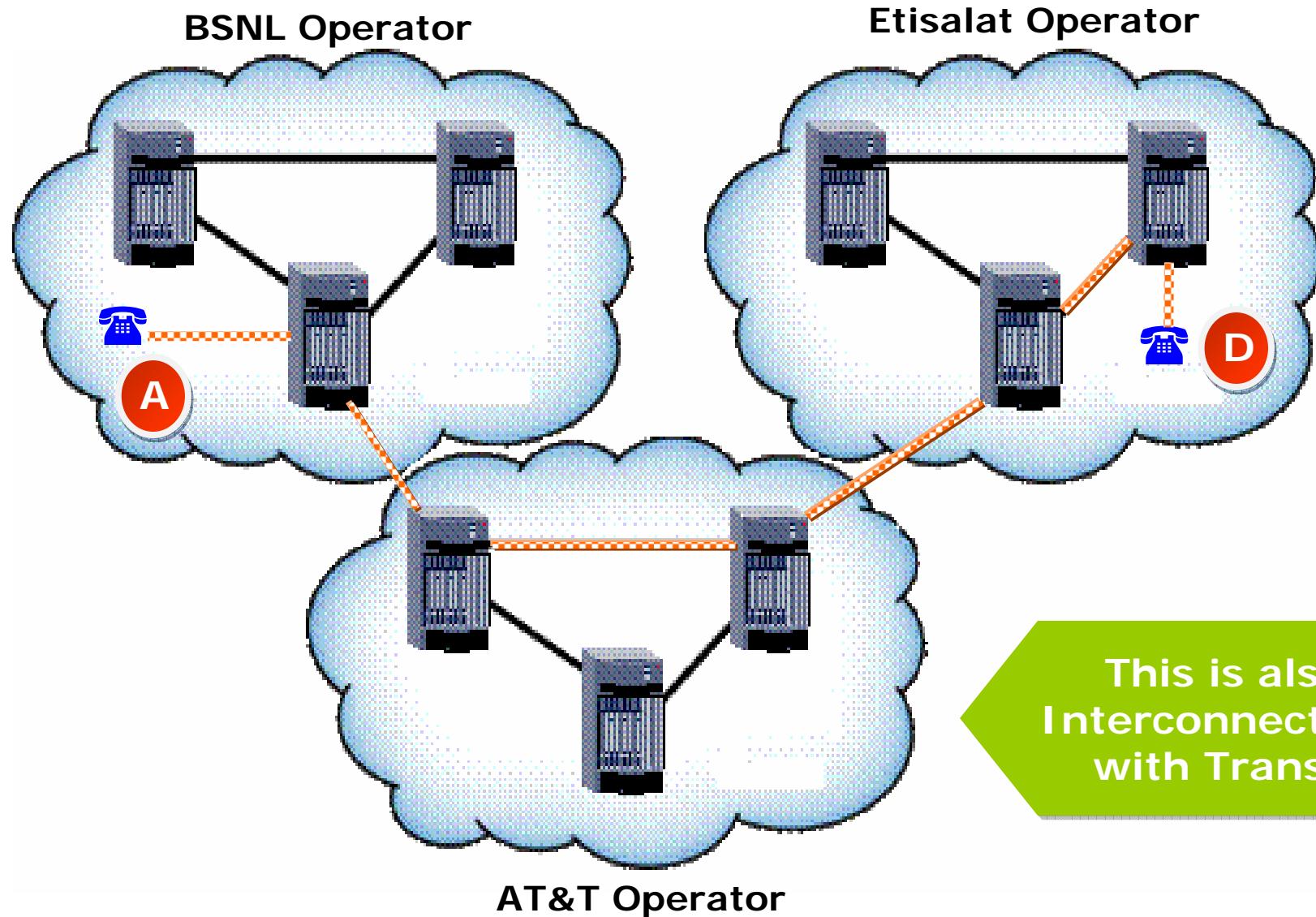


This is not
Interconnect but it
is Retail

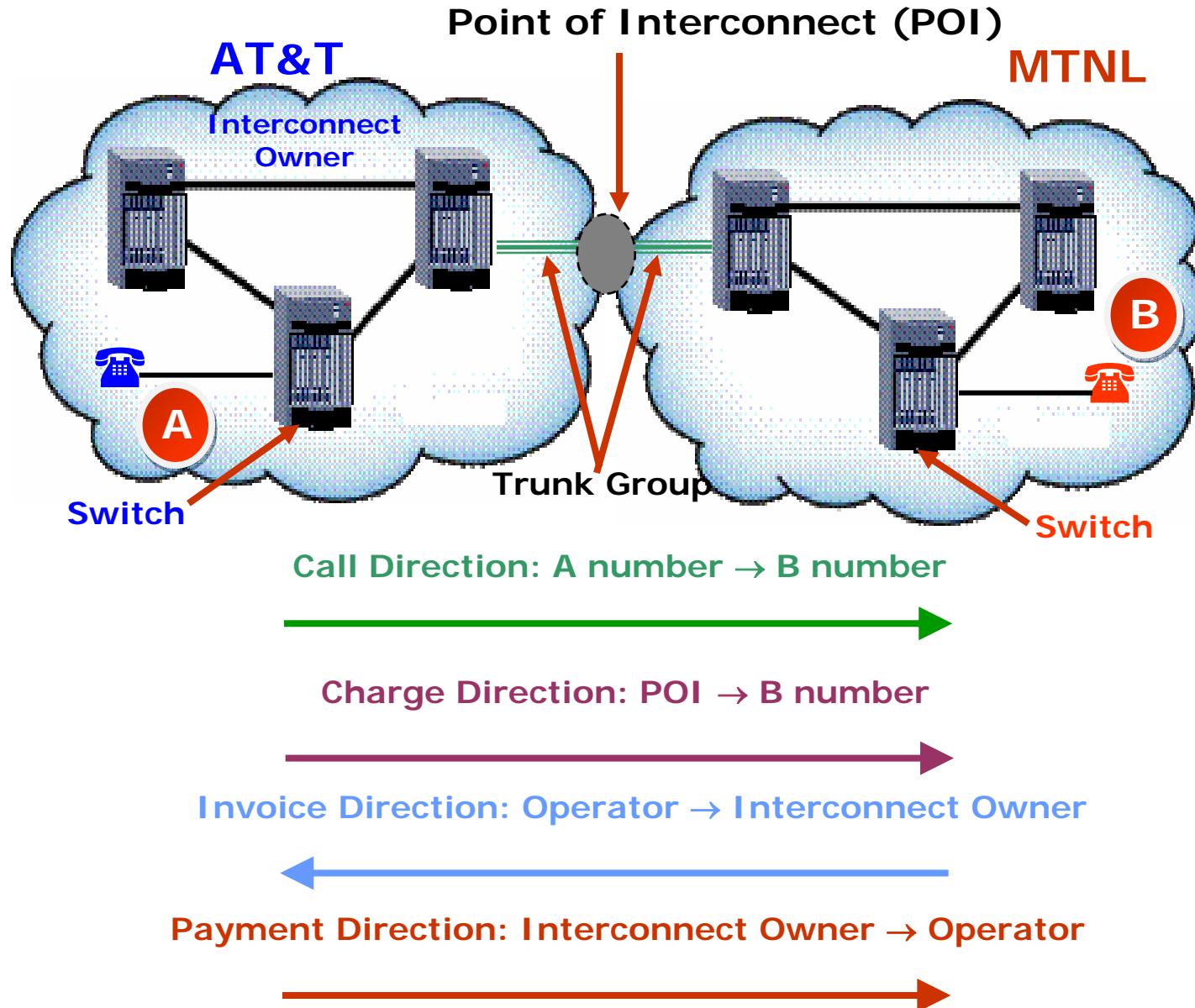
What is Interconnect, what it is not..



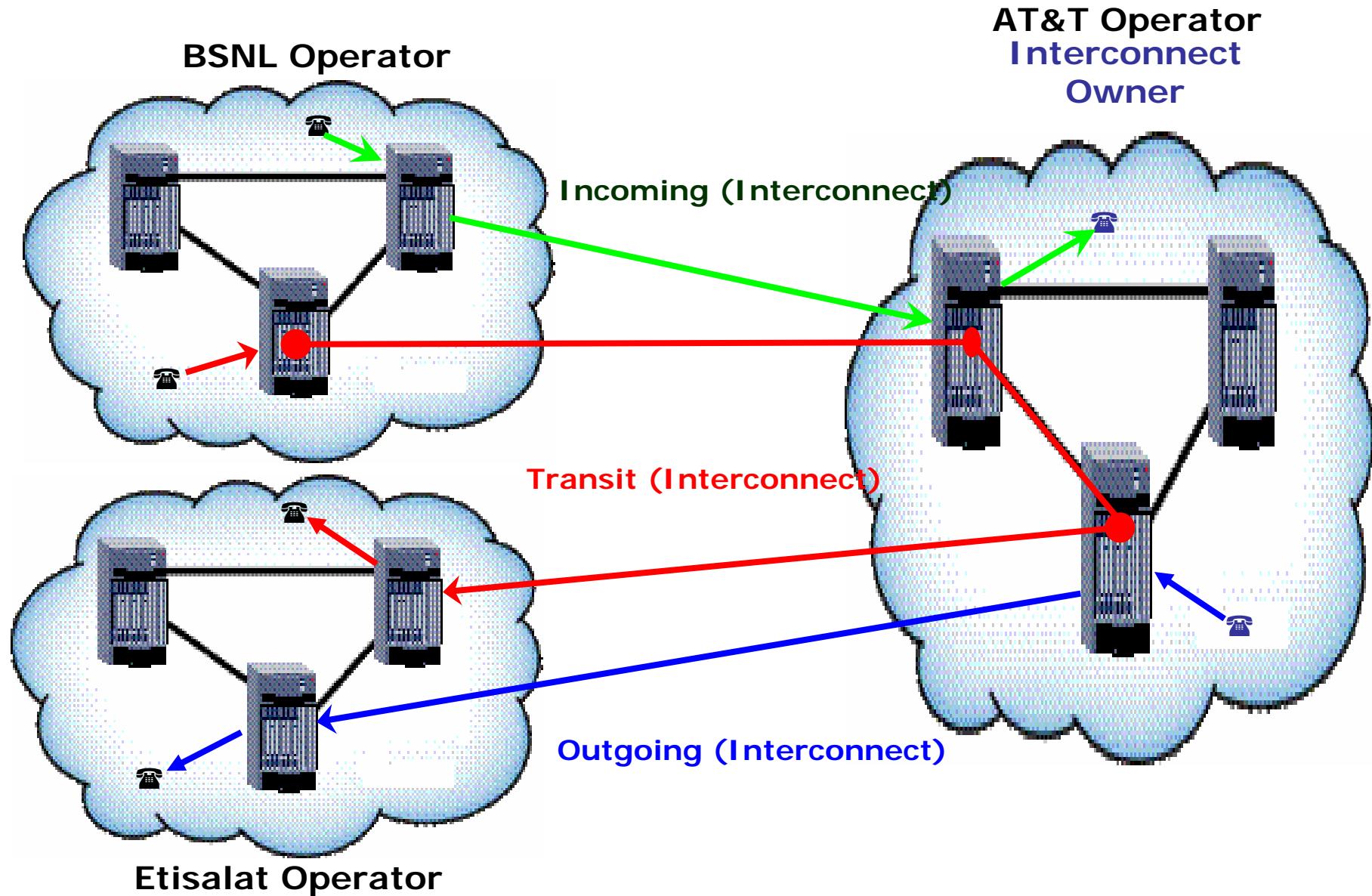
What is Interconnect, What it is not..



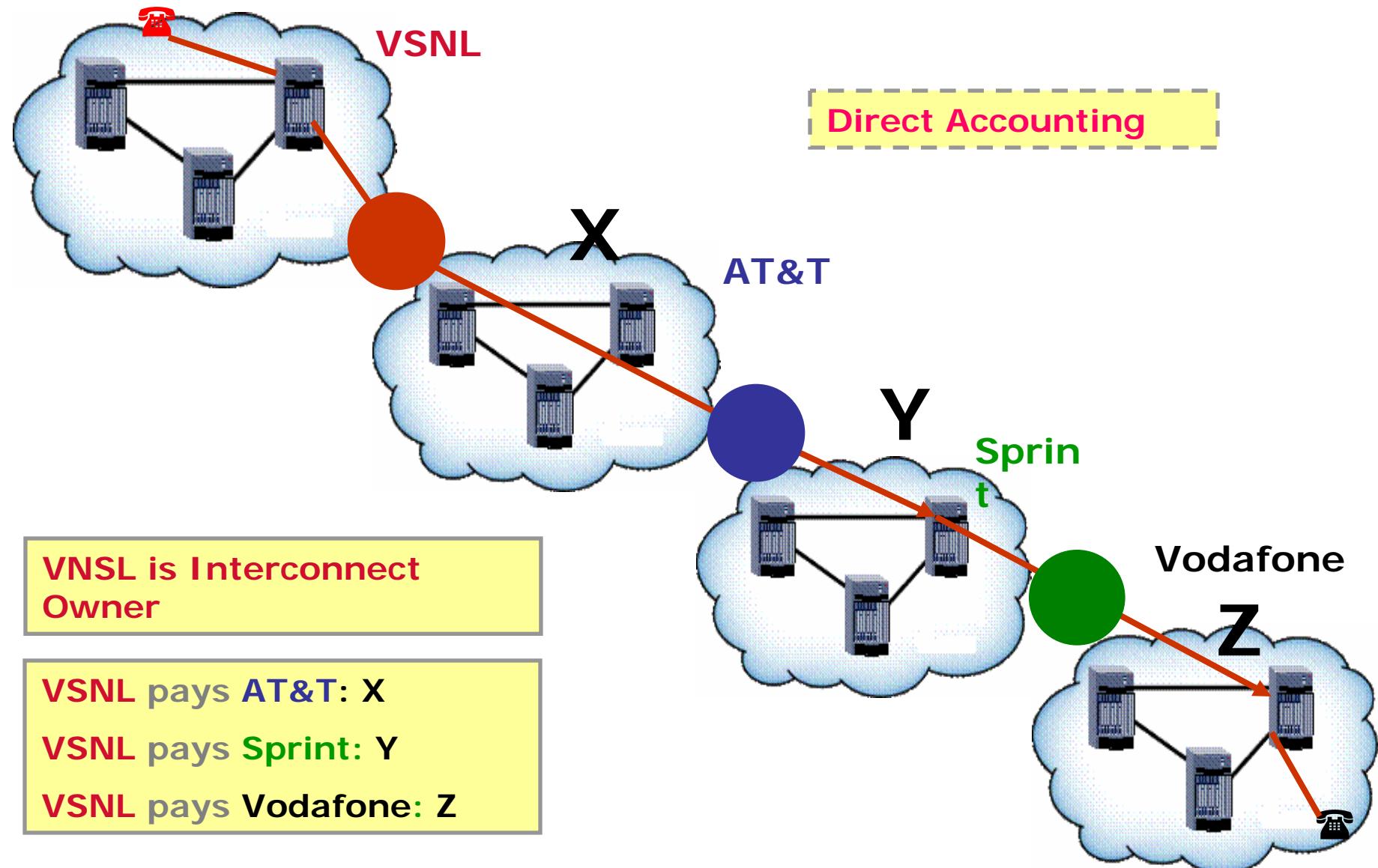
Interconnect Terminologies



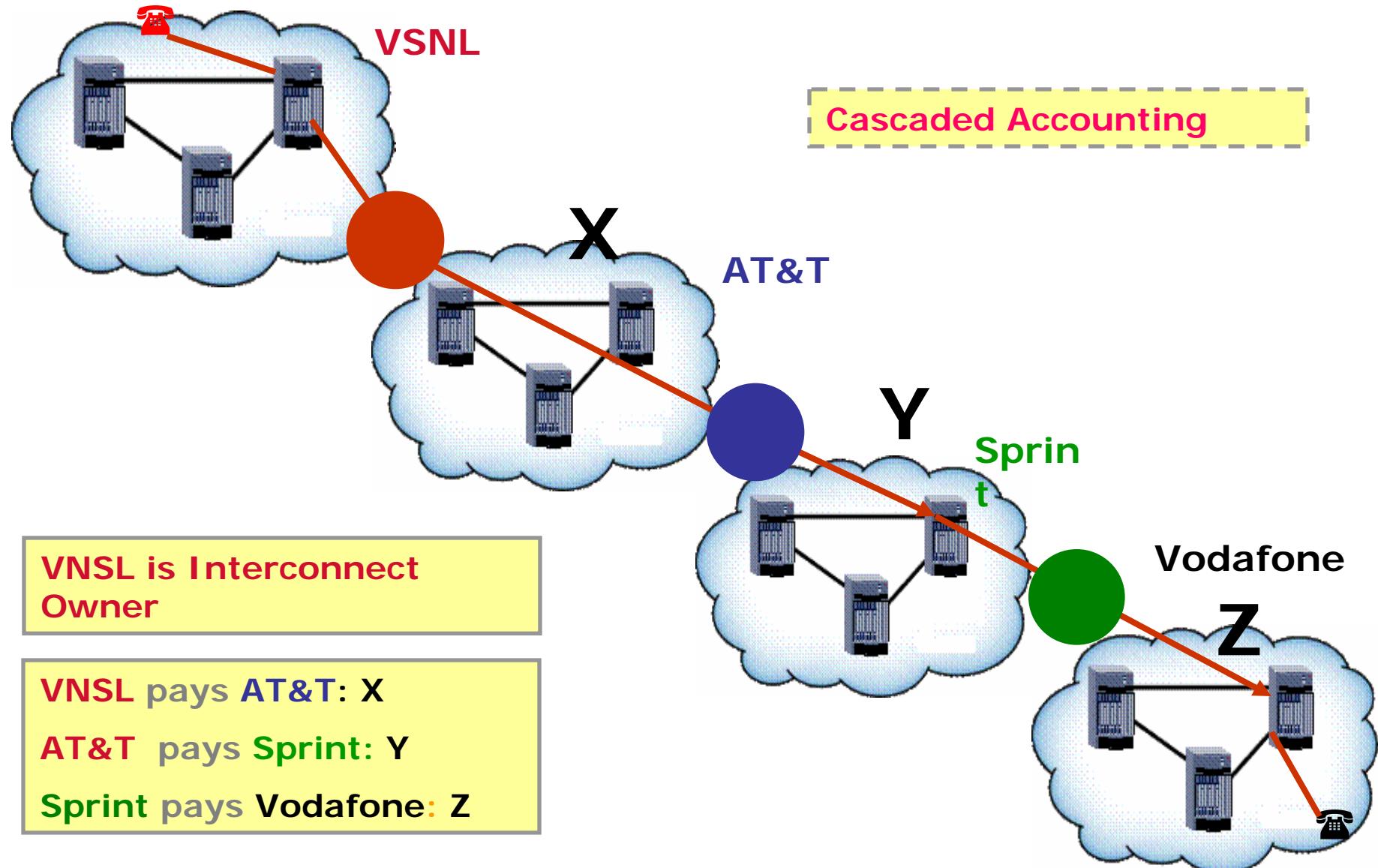
Interconnect Scenarios

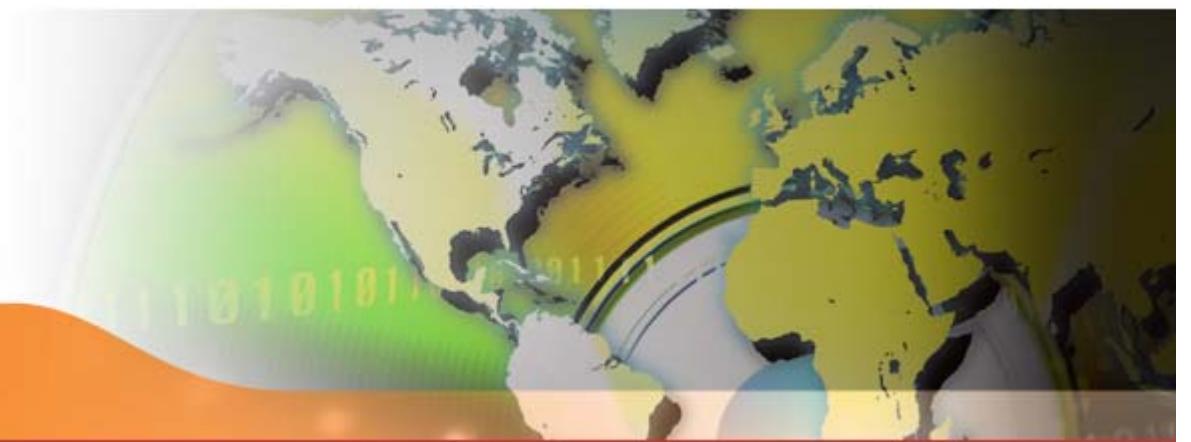


Interconnect : Direct Accounting



Interconnect : Cascaded Accounting





Billing in Roaming Scenario



Roaming



- What is Roaming?
 - Ability to use one device in foreign network
- Concept of Roaming
 - Customer goes in a visiting network which is other than home network
- National and International roaming
 - Customer may go for roaming within country or across country
- How does a network know about roaming?
 - IMSI = MCC + MNC + SIN
 - Check with HLR of home network and allow/disallow
 - If allowed then use MoU Rate plan and charge and generate TAP OUT file
- MoU for Roaming Partners

How Roaming Works?



Mr. Conrad is a subscriber of Hutchison Indonesia Telecom. So, it is his home network. It is also called HPLMN (Home Public Land Mobile Network)

How Roaming Works? (Contd.)



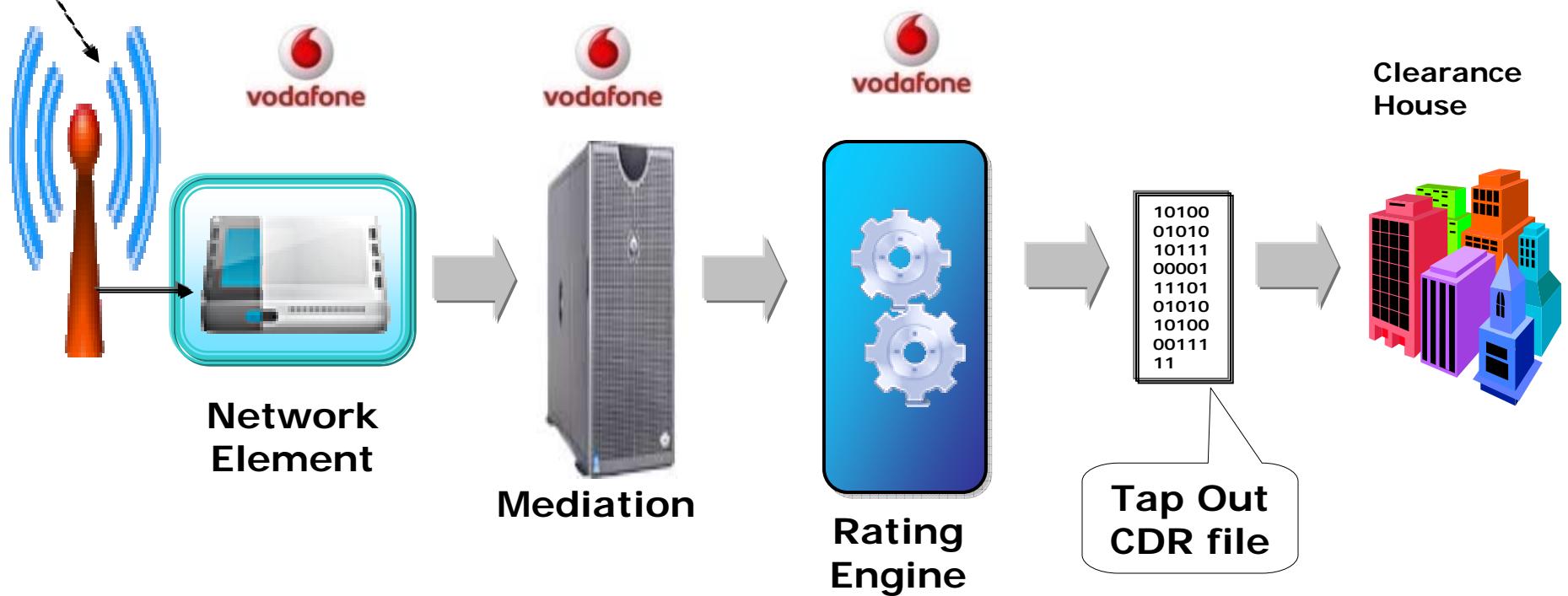
One fine day, he visits India and makes a call to his friend in UK from Vodafone network. Vodafone network in India is called VPLMN (Visiting Public Land Mobile Network)

After validation and verification with home network (Hutchison Indonesia), he is allowed to make a call.

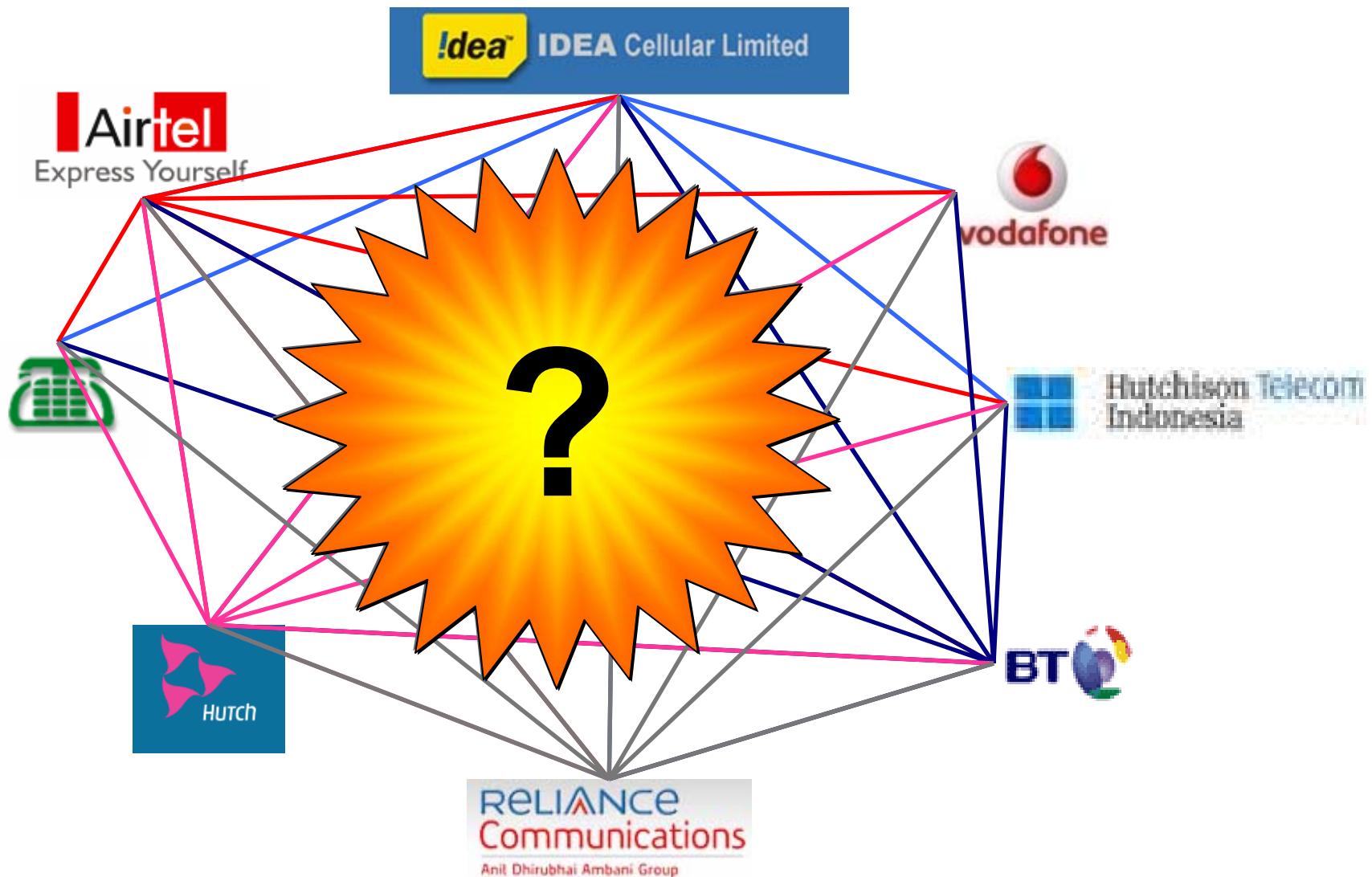
Roaming CDR Flow



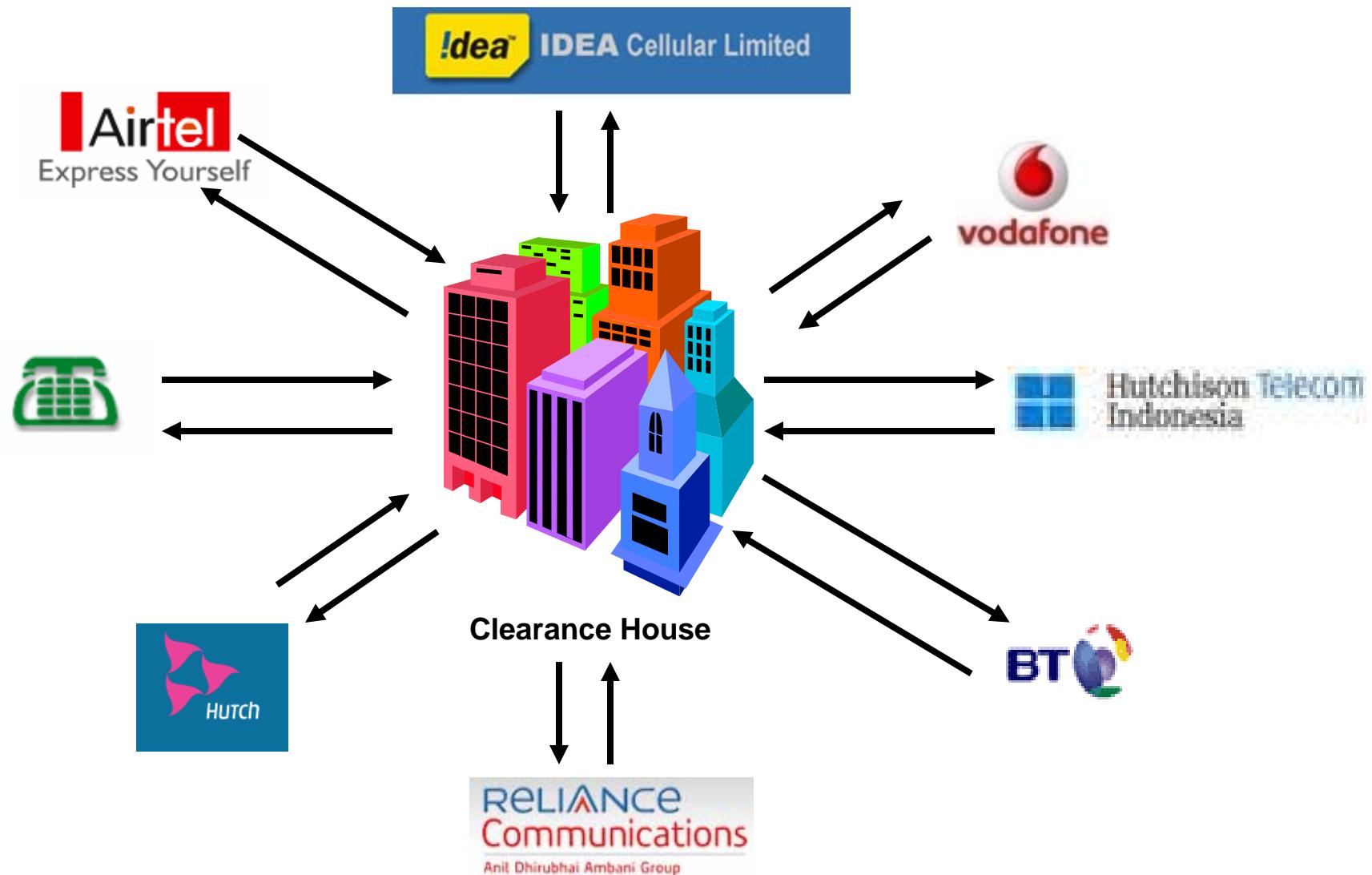
CDR is generated & passed through Mediation to Vodafone network's rating engine. Rating engine detects the caller to be a roamer and uses roaming rate plan for rating purpose. Being a roaming CDR, it is passed on to CH.

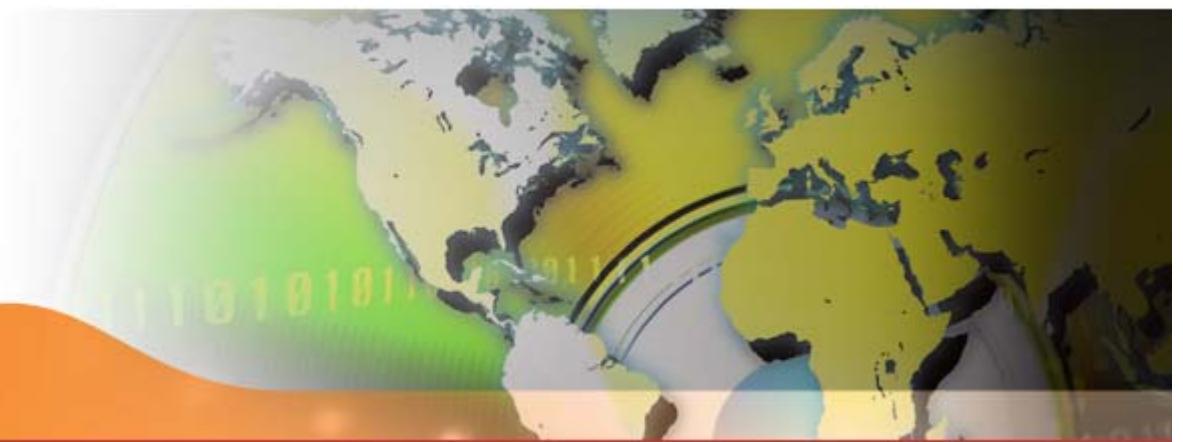


Roaming: TAP Files Flow



Solution: Clearance House





MNC Billing

MNC Billing



What is MNC?

- MNC (Multi National Customer) is a big enterprise customer who has presence in multiple countries (Legal entities in at least two countries) and consumes various telecom services from one or more service providers including external suppliers
- Complexities involved in MNC Billing
 - Multi Country (language, tax, vat)
 - Multi currency
 - Multi Languages
 - Invoices in Local languages
 - Multi client
 - Hierarchies (MNC complex hierarchy, addresses, roles, cost center)
 - Data privacy requirements
 - Business portal
 - Number of interfaces
 - Managed services

MNC Billing : Different billing models



- Product Instance Billing
 - Similar to how a retail customer is billed
 - How it is perceived?
 - ◆ Here product instance is created for each and every inventory ordered by MNC.
 - Less maintenance cost because less complexity
- Inventory Based Billing (IBB)
 - IBB is a suite of systems & processes
 - Flexible environment where billing inventory data (pre-priced inventories) can be loaded, validated & despatched for billing
 - The inventory can be loaded into IBB either from supplier invoices or the Central Repository
- IBB Benefits
 - Easy to implement from billing point of view
 - No complex price structures, discounts etc.
 - Inventories instead of product instances – Think of a situation of creating/managing > 50K product instances in Billing COTS like Geneva under a single account!!

- A Resource Unit (RU) is defined as an amount of something.

ARC vs. RRC

- An ARC is an Additional RU Charge and RRC is a Reduced RU Charge.
- In this type of Billing, customer pays fixed amount per month to the Service Provider/Operator which is linked to the baseline charges. Any change in the inventory/charges compared to the initial baseline are tracked on monthly basis and that results in adjustment at a pre-defined interval (e.g. Quarterly, Half-yearly etc)
- Example :- If the initial baseline is that there are 2000 RU to be charged each month and following the asset audit there are found to be 2100, then the initial invoice would need to have 100 ARC's added as would invoices 1 and 2. In month 3 an adjustment would be raised on the bill for 300 ARC's and the baseline would be set at 2100.

ARC/RRC Advantages



- ARC/RRC advantages to the customer include:
 - Having certainty over there spend month on month
 - Ability to view changes in the asset estate as they take place and review them to see if there is a new business use or an issue
 - They get unified central bill and report – forces a one bill approach
 - Currency and exchange rates issues are removed

TEM: Telecom Expense Management



■ TEM : What is it ?

- TEM stands for Telecom Expense Management
- Solutions to automate the entire telecom lifecycle including contract sourcing, ordering, inventory management, invoice processing/auditing, wireless expense management and reporting/analytics

■ How TEM works ?

- Controls costs, monitors quality and manages all communication devices and services.
- Allows MNC's to reduce your telecom expenses immediately and begin to plan for new initiatives that will help MNC to gain a competitive advantage.



TEM Capabilities



- Contract acquisition, audit and management
- Automate ordering and billing
- Build and manage an accurate voice, data and wireless inventory
- Invoice management including invoice reception, audit, supplier invoice verification & reconciliation, and authorization for payment
- Automated methods for tracking and resolving billing disputes
- Use reports to help you optimize network price/performance
- Have data to help you better negotiate with carriers and other service providers
- Reduce and/or reallocate staff
- Audit processes
- Create a cost center that enables internal charge backs
- Plan for future revenue-generating telecom spend

Billing System: Leftovers

Telecom Service Order E2E Scenario

Typical TELCO Stack

Billing System Composition

Billing Concepts

Telecom Service

Mediation's Role

How services are charged: Rating

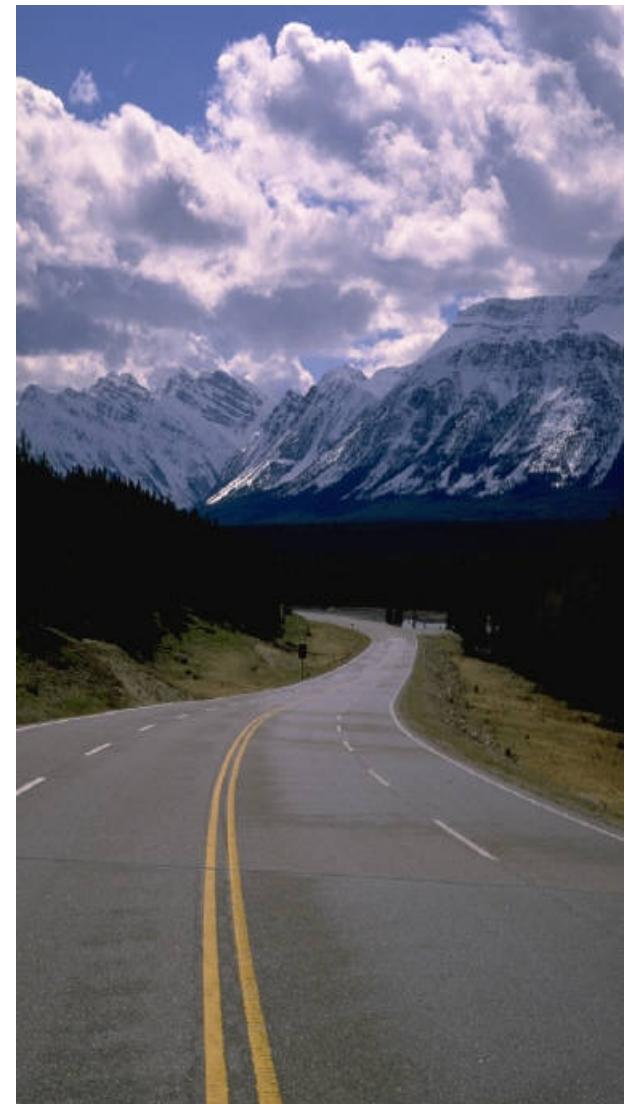
Discounts

How services are billed: Billing

Payments, Collections and RA

Retail, Wholesale, Interconnect, Roaming, MNC

Billing Systems: Convergence, Interface,
Expectations, Challenge, TechM Presence



What Does Convergence Mean to customer?

For the customer it may mean:

- Provide “One-Stop” shopping for buying communication services
- A single Invoice
- A discount for total usage of communication services
- A single contact number for customer care
- New services: integrating networks for seamlessly integrated service delivery



Convergence: For an operator



- Across services/technologies, Across post-pay and prepay
- What operator needs?
 - Investment or Tie ups, so MoU and settlement
 - Need to have Provisioning and Activation system talking to multiple network elements
- What are positives for an operator?
 - Support packaging and integration of multiple services
 - ◆ Allow carrier to bundle products into one package
 - ◆ Rate events based on cross-product discount schemes

Convergence: Services & Applications



Voice

Voice call →
Video call →
Chat call →
Multimedia call →

Messaging

Mail (email, video mail, picture mail, voice mail) →
SMS ← EMS → →
MMS → IM →

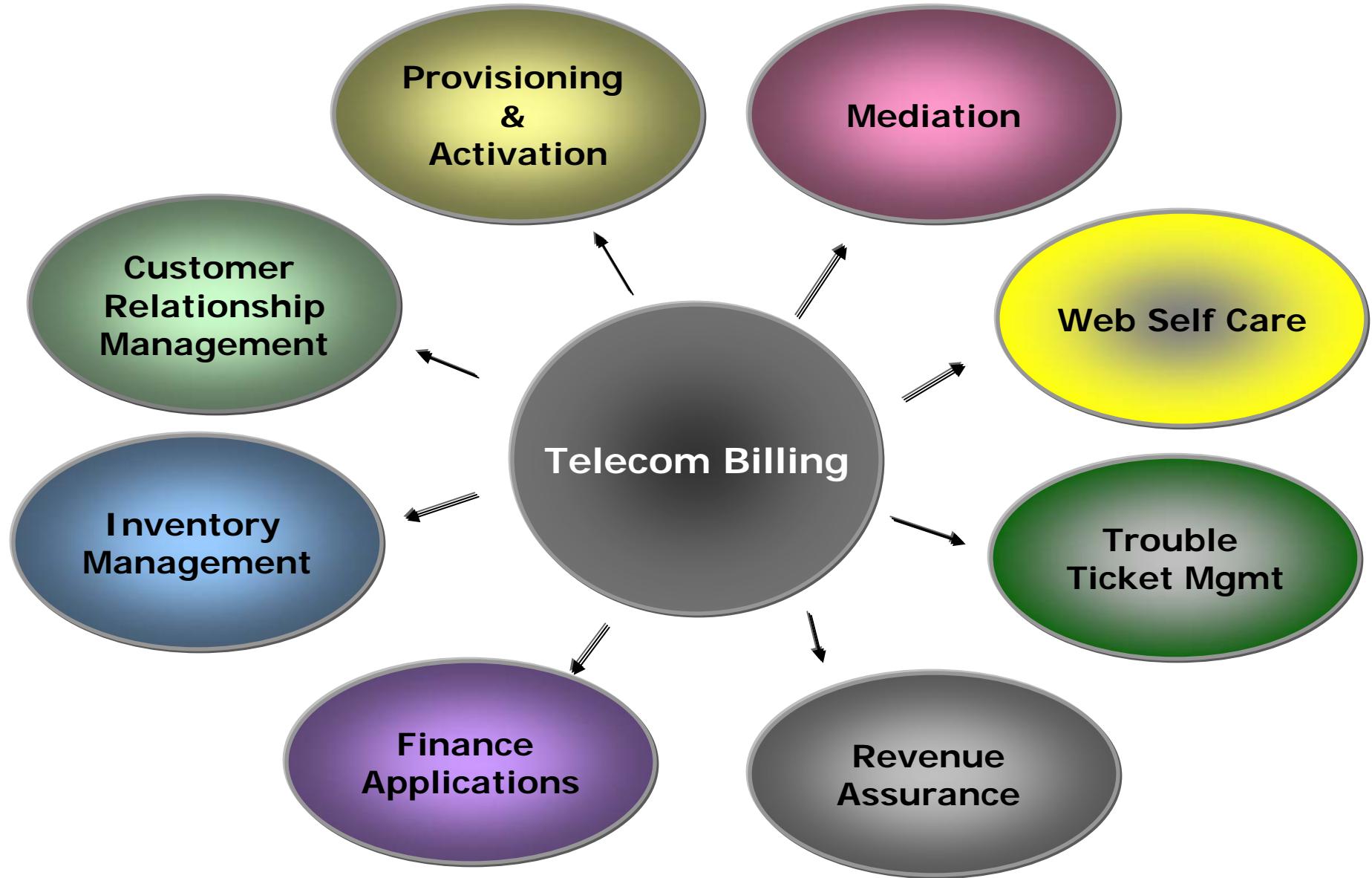
Content-on-demand

Browsing (Internet) →
Download (Content) →
Streaming (VoD) →
Push (LBS) →
Broadcast (IPTV) →
Peer-to-Peer (Gaming) →

Network

VPNs →
Telephony →
Security →
Grid Computing →
Collaboration →

Billing System: Interfaces



Billing Systems: Expectations



- Service convergence, Technology convergence
- Pre-pay Post-pay marriage

Convergence

- High throughput and operation flexibility
- Scalability and performance
- Tens of Millions of CDRs per day

High Throughput

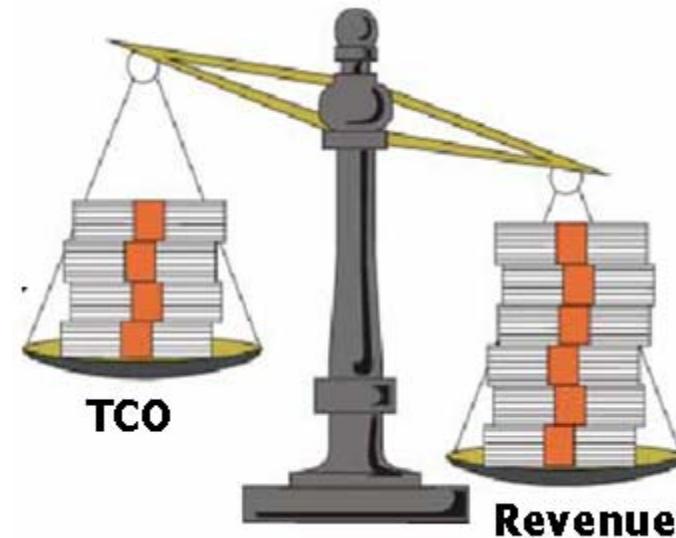
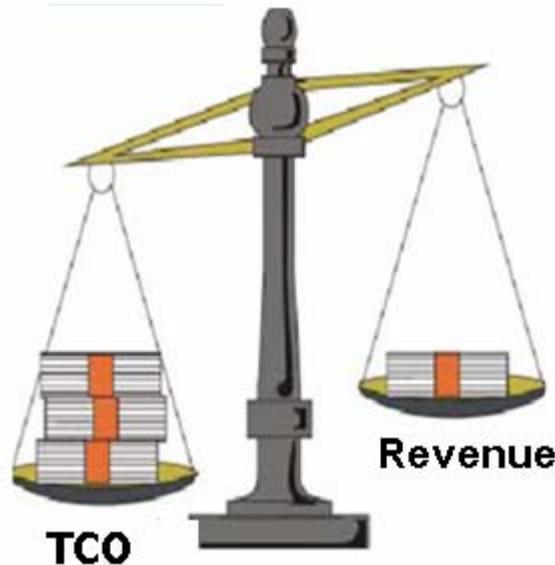
- Support for retail, wholesale
- Support for roaming, Interconnect
- MVNO, Local Number Portability

Business Model Support

- CRM, Mediation, Provisioning, Inventory
- Clearance house

Best of Breed Integration

Billing Systems: Challenges



TechM Projects in Billing Domain



- Telecom FIJI: Unicorn Billing System
- MTC Kuwait: Price Maker, Geneva
- BSS IT Strategy:
Advanced Rating Solution
- Geneva IRB
- mCEL Mozambique: BSCS iX:
(Migration Project)



TechM Projects in Billing Domain (Contd.)



- Thuraya Dubai: BSCS iX
(Migration Project)



- Egypt: BSCS iX
(Migration Project)



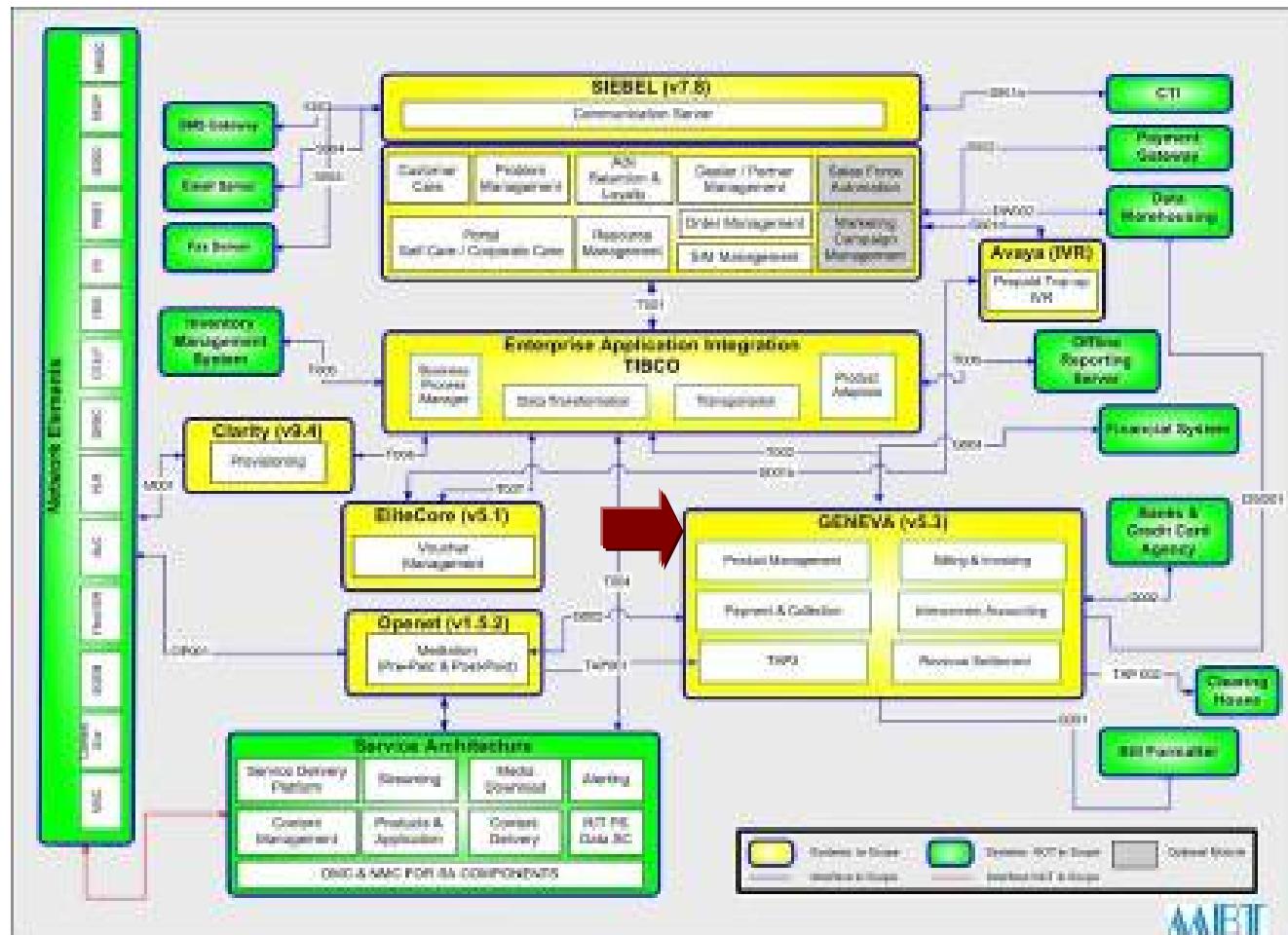
- Egypt: BSCS iX
(Migration Project)



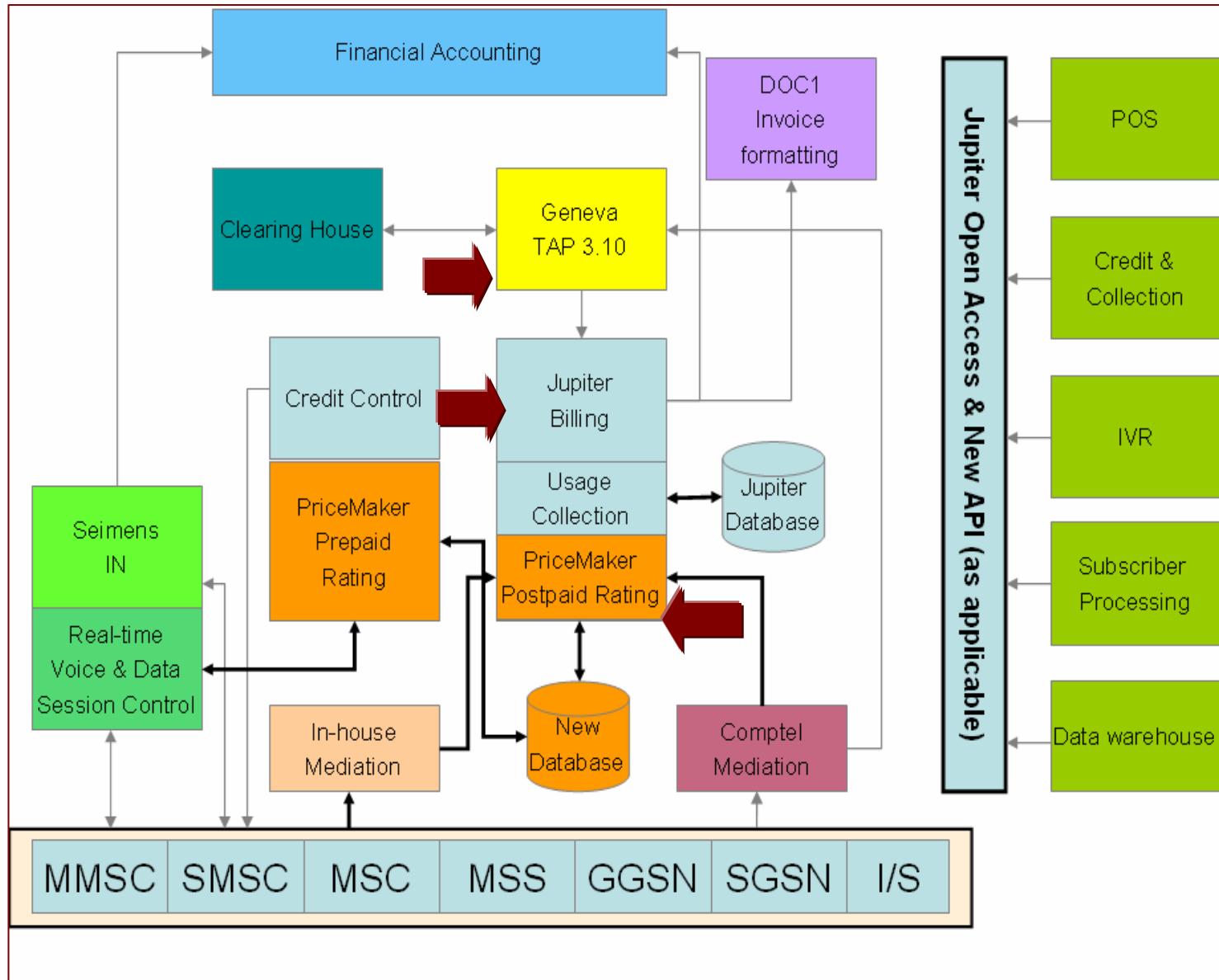
- BT Wholesale: Geneva IRB
- BT Retail: Geneva IRB
- PIPEX Wireless: Geneva IRB



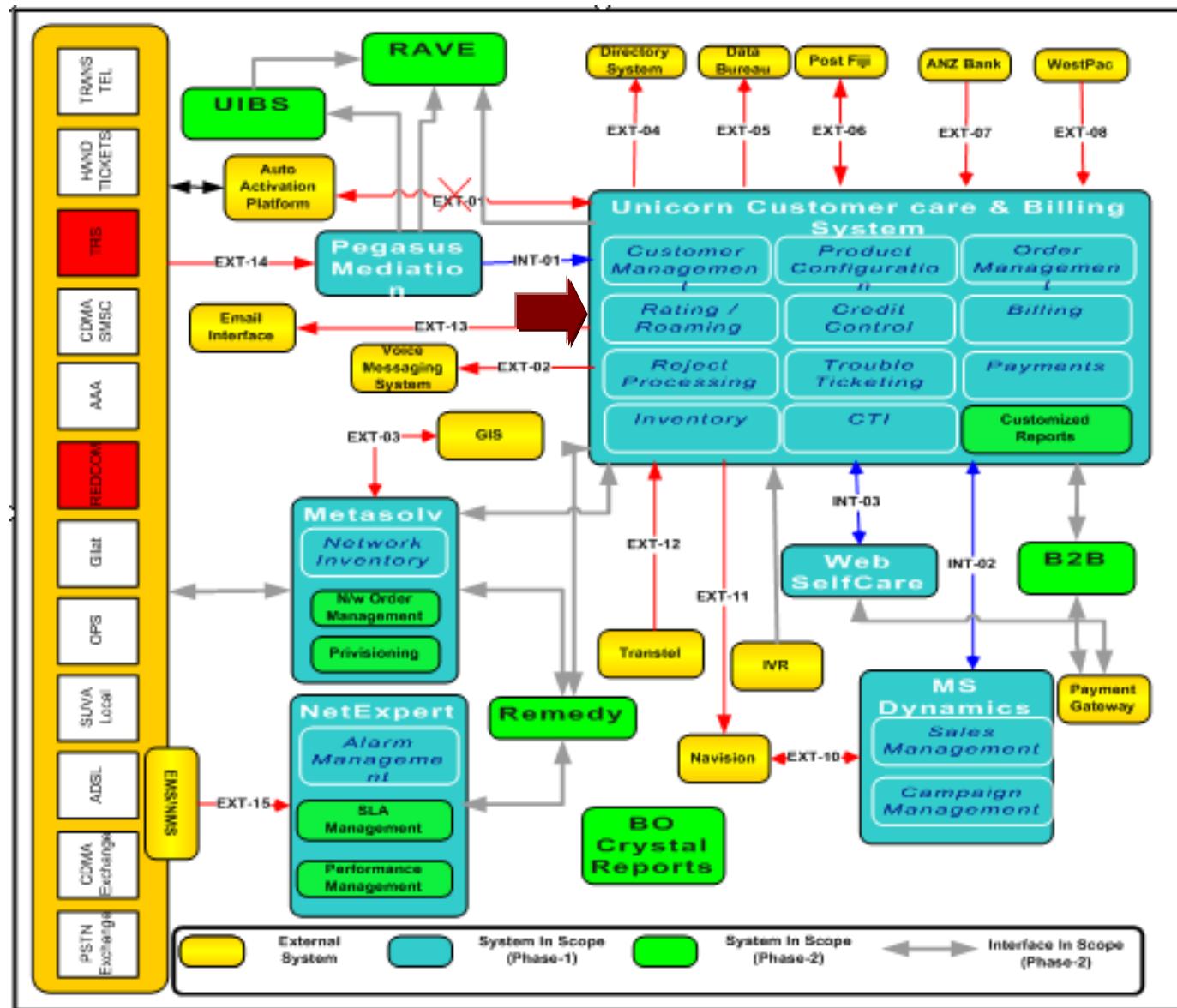
Hutchison Indonesia Solution



Adjunct Rating: MTC (Fastlink), Jordan



TFL Fiji Solution Architecture



Helping Hands

BSS CSU

Piyush Maheshwari

Surjit Mukherjee



BT and ATT IDU

Manish P, Prashant

**Gajendra, Abhinav,
Ajit Talekar**

Sanjivani, Akshay

Vallabh, Manish D



ESG Team

Prakash Kajave

Sanjeev, Sujoy

Prasad, Bhushan

**Keertee, Mamta,
Debabrata, Yogesh**

Summary

- In this session we have learned:
 - The Order to Payment: End to end scenario
 - The typical functionalities of billing systems
 - Ingredients of a typical billing product
 - ◆ Client side and Server side
 - Billing Concepts
 - ◆ Customer, Account, Service, Charging models, Package
 - ◆ Bill Cycle, Discount, Dispute and Adjustments



Summary (Contd.)

- Rating, Billing, Discounting and Payments/dunning
- Differentiate between
 - ♦ Retail vs. Wholesale billing
 - ♦ Roaming vs. Interconnect billing
- MNC Billing factors
- Revenue Assurance
- The role and functionality of Mediation
- Various COTS products in available in billing space
- TechMahindra's footprint in telecom billing space



List of Acronyms

AR	Account Receivables
AAA	Authentication Authorization Accountability
APN	Access Point Name
BSS	Business Support System
COTS	Commercial Of the Shelf
CRM	Customer Relationship Mgmt
CSR	Customer Support Rep
CDR	Call Detailed Record
CUG	Closed User Group
CP	Communication Provider
E2E	End to End
EBPP	Electronic Bill Presentment & Payment
EIPP	Electronic Invoice Presentment and Payment
FTP	File Transfer Protocol

GPRS	General Packet Radio Service
GL	General Ledger
GUI	Graphical User Interface
HPLMN	Home Public Landline Mobile Network
IN	Intelligent Network
ISDN	Integrated Services Digital Network
IMSI	International Mobile Subscriber Identity
IBB	Inventory Based Billing
KPI	Key Process Indicators
LAN	Local Area Network
LLU	Local Loop Unbundling
MNC	Mobile Network Code
NMS	Network Mgmt System
MT/MO	Mob Terminated/Mob Origin

List of Acronyms

MB	Mega Byte
MVNO	Mobile Virtual Network Operator
MNO	Mobile Virtual Operator
MCC	Mobile Country Code
MNC	Multi National Customer
NCUG	Non Closed User Group
OSS	Operation Support Systems
OCB	Outgoing call barred
PAT	Profit After Tax
POP	Point of Presence
PSTN	Public Switch Telephone n/w
POI	Point of Interconnect
RC	Recurring Charge
SP	Service Provider

SMS	Short Message Service
SIM	Subscriber Info Module
SCP	Service Control Point
QoS	Quality of Service
RA	Revenue Assurance
TELCO	Telecom Company
TEM	Telecom Expense Management
TCO	Total Cost of Ownership
VPLMN	Visiting Public Landline Mobile Network
VIP	Very Important Person
VAS	Value Added Service
WCS	Web Self Care
WWW	World Wide Web
WAP	Wireless Application Protocol

Thank You