Beating the Backhaul Challenge in Mobile

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Solutions Manager – Mobile

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- Amdocs
  - 16,000 staff; $2.8Bn revenues
  - Focussed on Telco and Cable operators
  - Billing, Customer Care and OSS
  - Customers include many major Tier-1 operators
- Acquired Cramer Systems in 2006
  - Complete BSS/OSS stack from order capture to fulfilment
- Customer Experience Systems
  - The “Intentional Customer Experience”

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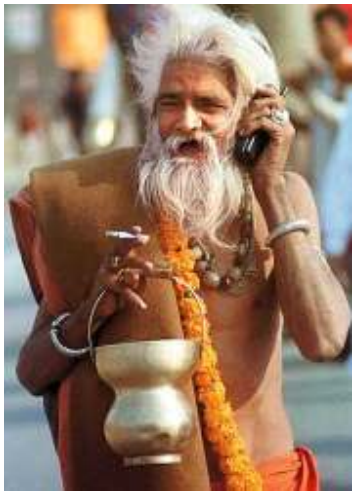
Agenda

- Market Trends
- Impact on Backhaul Transmission
- Alternatives
- Management Solution Requirements
- Benefits

POTS and PANS

- **P**lain **O**ld **T**elephony
- Rapid growth
- Basic Service
- Low Cost

- **P**retty **A**dvanced **N**ew **S**tuff
- Mature, Competitive Market
- Strong growth in data traffic
- Expanding market boundaries



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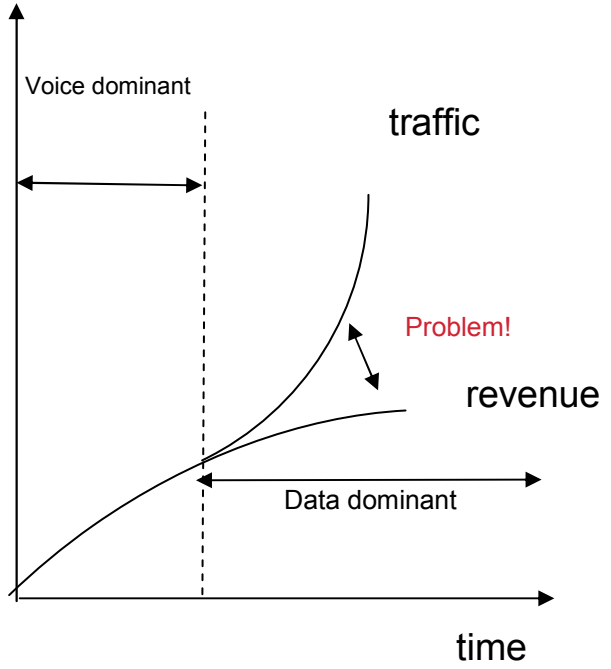
Challenges for mobile operators

- Rapid growth of data services, esp 3.5G

1000% growth in Mobile Broadband subscribers in last 12 months

GSM Association
April 2008



Source: Unstrung

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Challenges for mobile operators

- Rapid growth of data services, esp 3.5G
  - Huge demands on backhaul moves and changes

Backhaul CAPEX increase 50% over next 12 months

Typical capacity increase likely
2007: 6 Mbit/s
2008: 16 Mbit/s
2009: up to 60 Mbit/s for highest capacity sites

Vodafone Group CTO
Steve Pusey
March 2008

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Challenges for mobile operators

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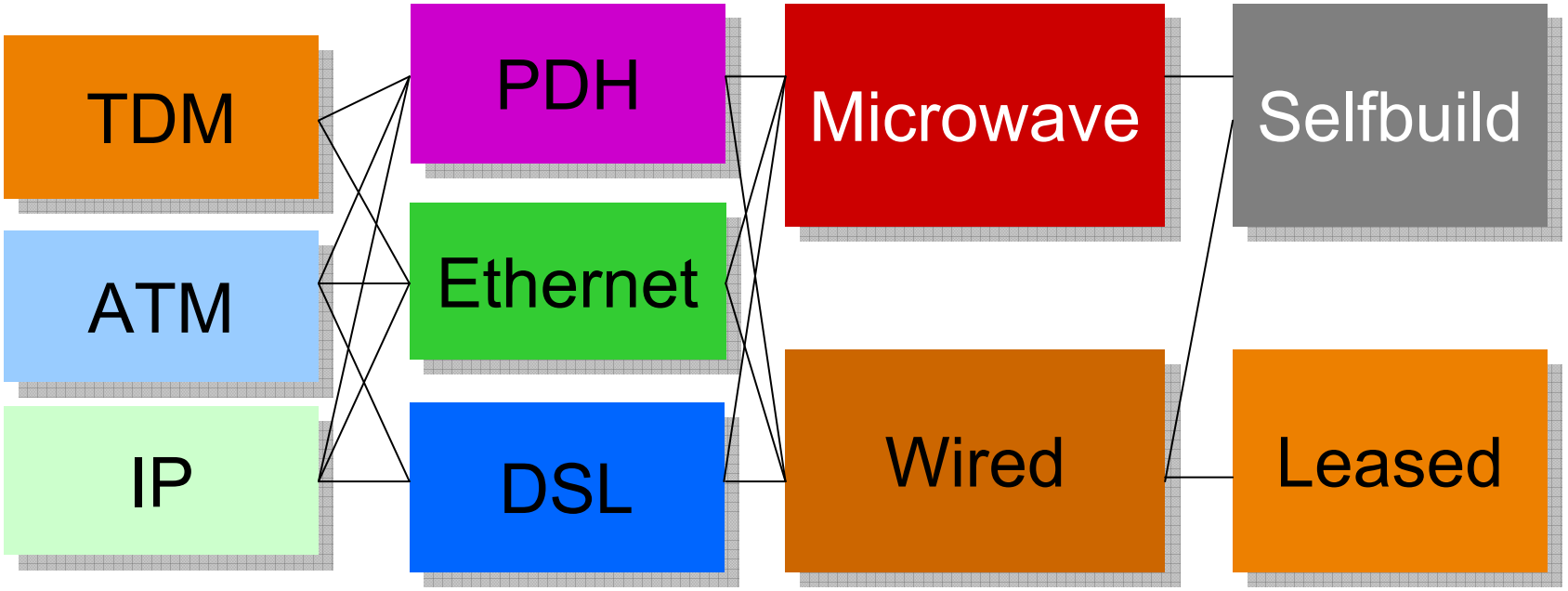
  - Proliferation of technologies to choose from



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Challenges for mobile operators

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  - Traffic engineering no longer a simple TDM problem

Xohm WiMax launch delayed 3 months.
"What's holding Sprint back is simply the logistics of building the network, and specifically the problem of provisioning "backhaul" connections to the Internet"

Barry West
CTO Sprint
April 2008

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Challenges for mobile operators

- Rapid growth of data services, esp 3.5G
  - Huge demands on backhaul moves and changes
  - Proliferation of technologies to choose from
  - Traffic engineering no longer a simple TDM problem
- Deliver customer experience at optimal cost
  - Can't easily determine optimal backhaul on per-cellsite basis
  - Takes too long to react to capacity shortfalls
  - Cost control to reduce wastage, increase efficiency

3Gb unused leased lines representing 10% of leased access network capacity

Tier 1 operator

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Challenges for mobile operators

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  - Can't easily determine optimal backhaul on per-cellsite basis
  - Takes too long to react to capacity shortfalls
  - Cost savings: reduce wastage, increase efficiency
- Increasing focus on assuring customer experience
  - Decrease impact of service outages
  - Customer experience matches expectation

Up to 70% of mobile outages are due to backhaul

Patrick Donegan
Analyst – Heavy Reading

March 2008

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Alternative Solutions for Traffic Congestion

Solving Congestion

Build More capacity

Regulate/ Police

Public Transport

Stay at Home

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…and mapped to the Mobile domain

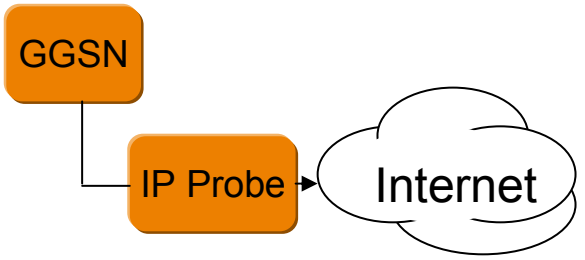
Build More capacity

Build/lease more backhaul of any technology

Metro-Ethernet
DSL Cable

Regulate/ Police

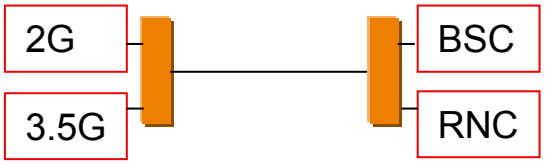
Filter and prioritise traffic via Deep Packet Inspection



Add gateway box at Internet egress

Public Transport

Compress and aggregate/mux



Add box per site

Stay at Home

Femtocells (40% of calls are made at home)

Use customers own broadband

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Choices will vary by region

Global map of “Last Mile” cellsite backhaul:

Region	North America	Western Europe	India	China, Japan, Korea	Global
Today	Majority is copper (T1)	70% Microwave	Mostly Microwave	Mostly fibre	Microwave 49% Copper 25% Fibre 26%
Available options	T3,Cable, Ethernet	DSL, Ethernet		Ethernet	

One size doesn’t fit all

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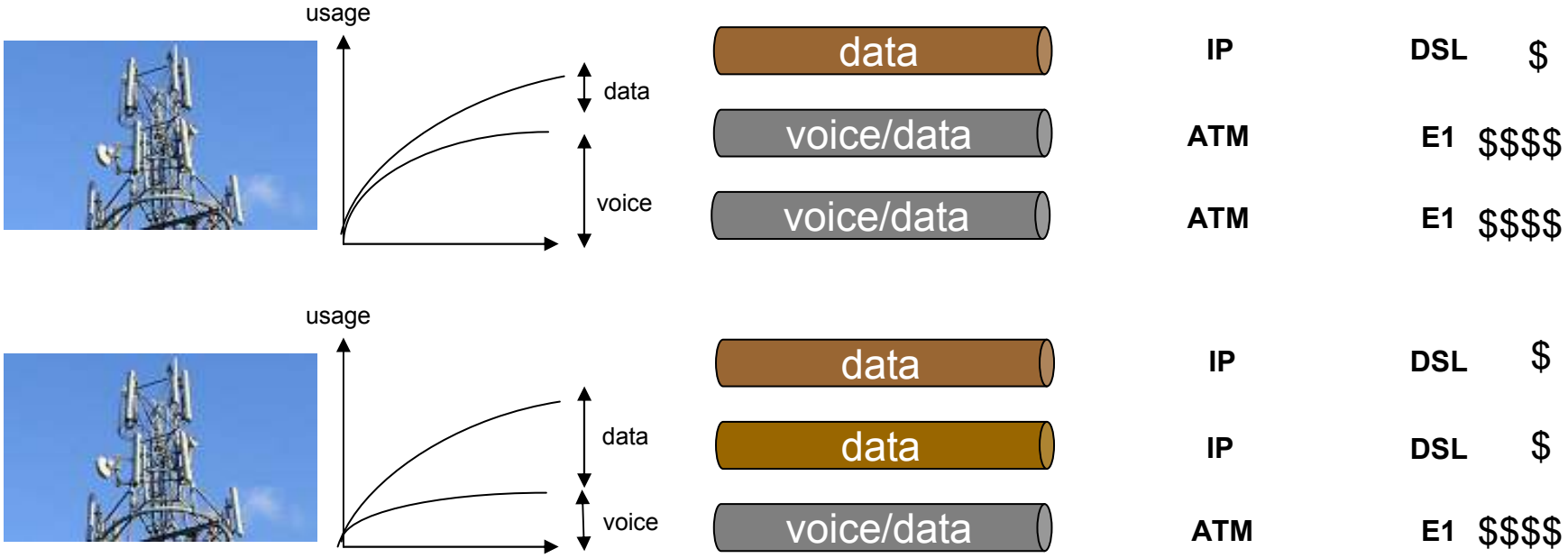
Example of growing backhaul complexity

- Demand based on actual voice and data usage
  - Pricing
  - Multiple suppliers
  - Availability
  - Volume
  - Individual calculation per site
  - Growing technical options
  - Equipment compatibility
  - Changing core network



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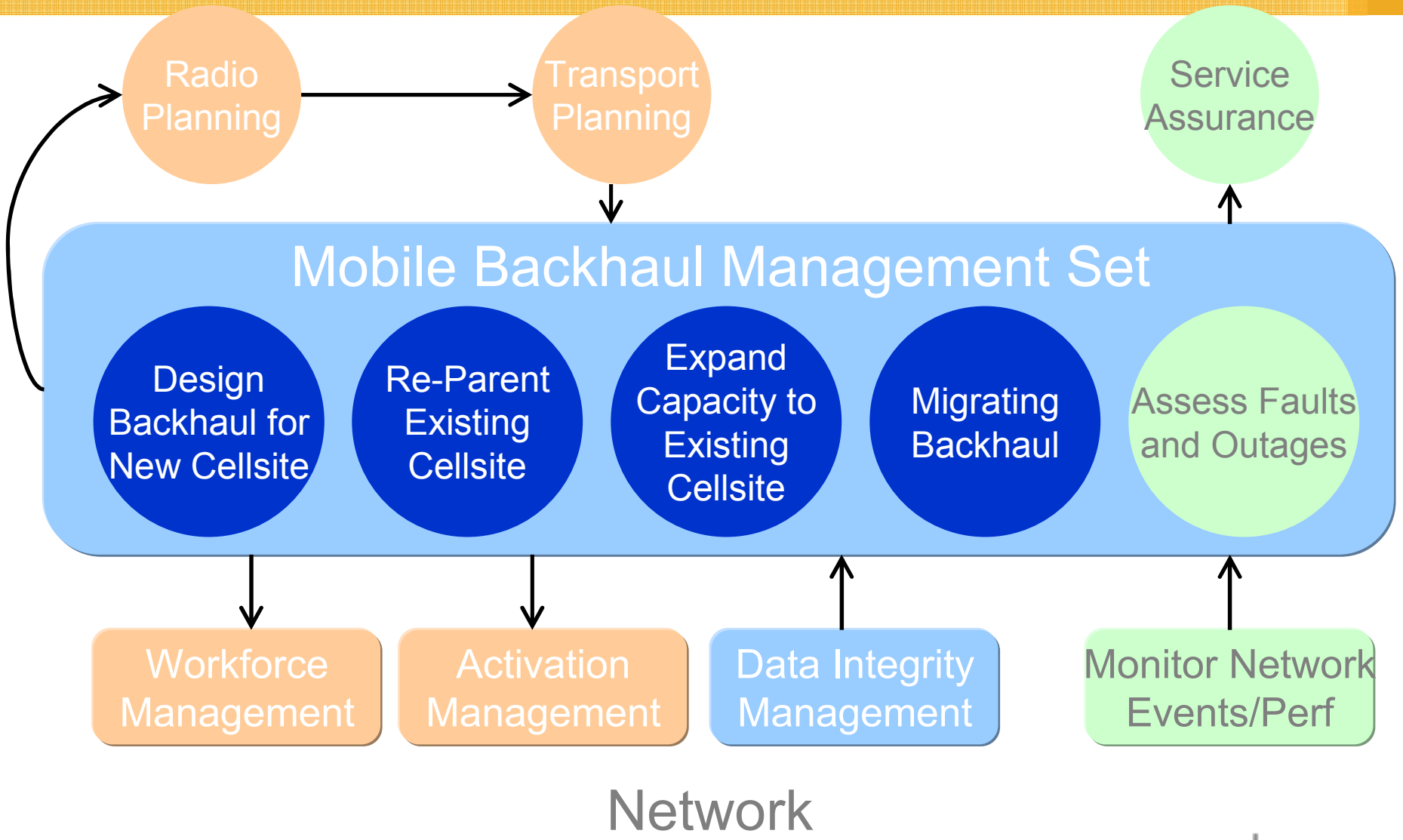
Amdocs Backhaul Management Solution
Process Overview



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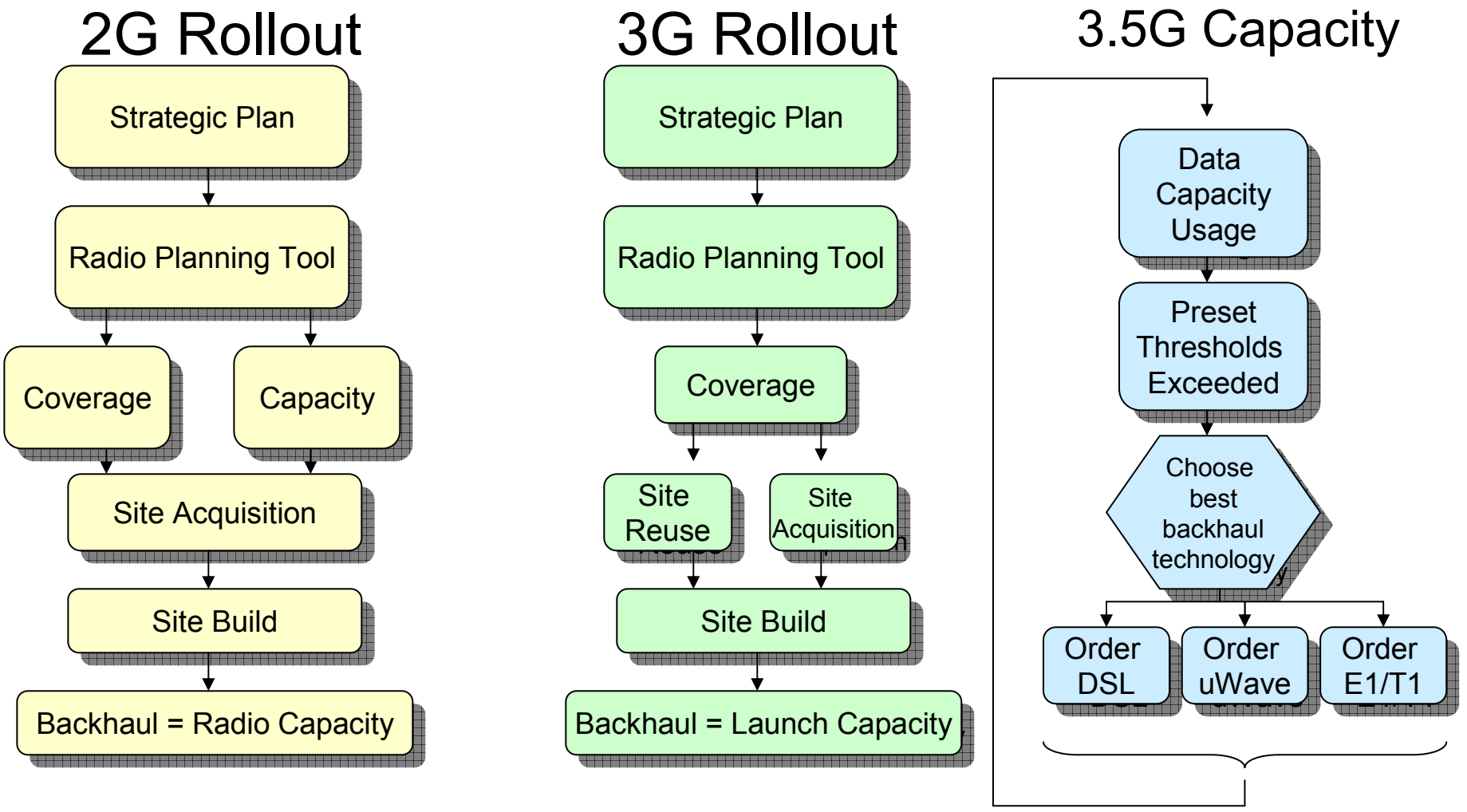
3.5G needs a different planning approach



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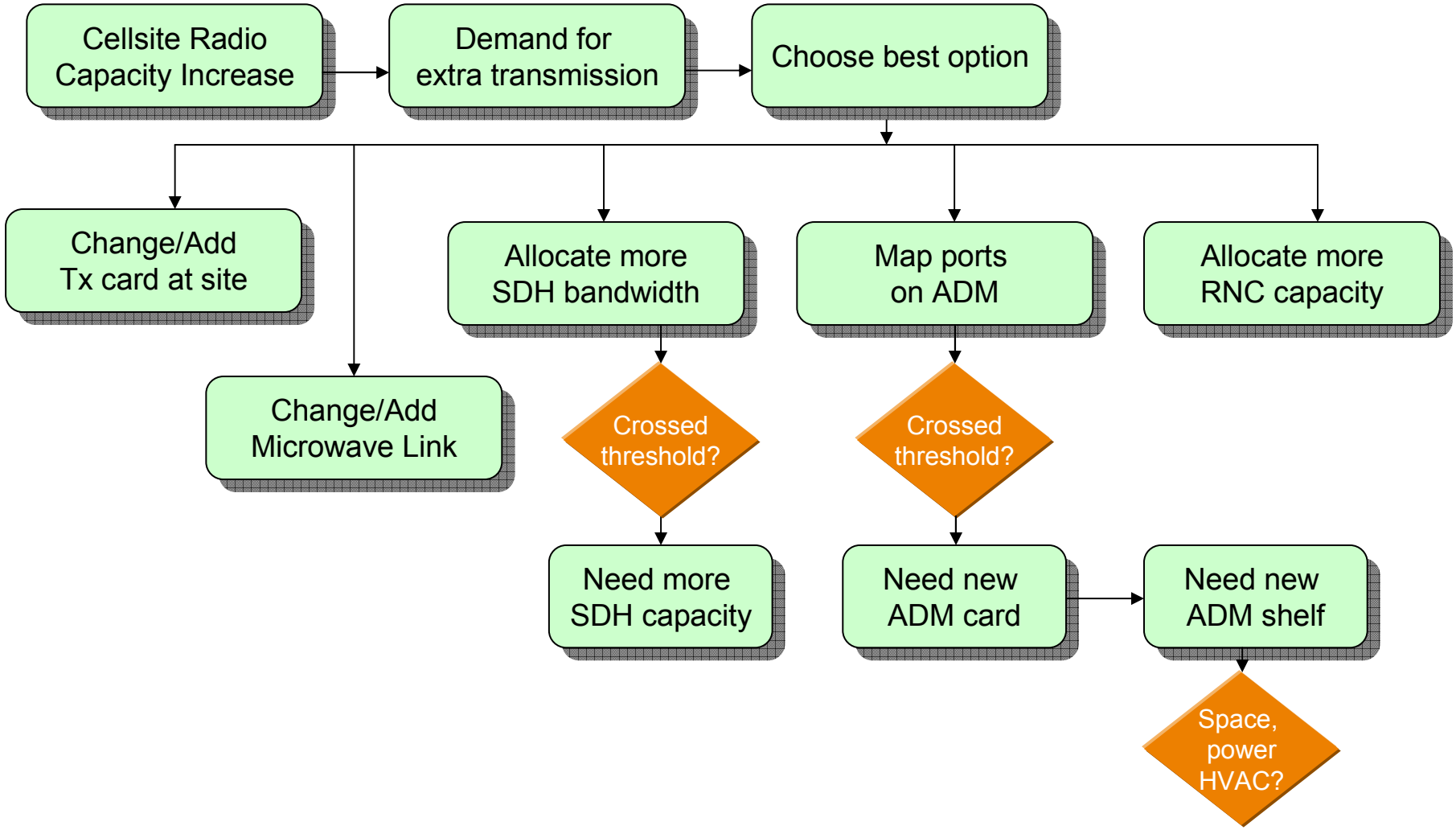
Implications of capacity upgrades



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Challenges for mobile operators

- Rapid growth of data services, esp 3.5G
  - Huge demands on backhaul transmission
  - Range of technologies to choose for each circuit
  - Design and assign of packet and circuit networks
- Need for accurate equipment resource mgmt
  - Cost control to reduce wastage, increase efficiency
  - Financial reporting
- Increasing focus on customer experience
  - More demanding service assurance targets
  - Rapid impact analysis on outages

Backhaul Management Solution

- Efficient and Effective Processes
  - Automation of common processes to design and allocate new circuits, moves, changes
  - Manual operations for less common activities
- Accurate Inventory
  - Inventory holds all devices, physical and logical circuit information
  - Synchronised with NMS/EMS from RAN and transmission vendors
- Service Assurance
  - Directly accessible information and reports for fault diagnosis and impact analysis.

Summary

- Growing challenges of backhaul
  - Rapid growth of data services, esp. 3.5G
  - Need to deliver customer experience at optimal cost
  - Increasing focus on assuring customer experience

Summary

- Growing challenges of backhaul
  - Increasing loads on aging cable plant
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"Cramer simplifies the complexity of operating multi-technology, multi-service mobile networks." – Netcom Norway

- Solution Capabilities
  - Automatically determine optimal backhaul technology
  - Design and assign best route
  - Maintain comprehensive inventory

"Cramer has proven its ability to automate network build and rollout, to improve the use of network assets and to quickly take the operator live." – 3 Sweden

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  - Save CAPEX and OPEX by optimal transmission design
  - Reduce errors in network configuration
  - Reduce impact and duration of outages

O2 UK can now identify service impact for corporate customers in less than 30 seconds.

"Cramer gives us tight control over our actual network and its planned evolutions, enabling us to maintain quality of service delivered to the end customers." – SFR

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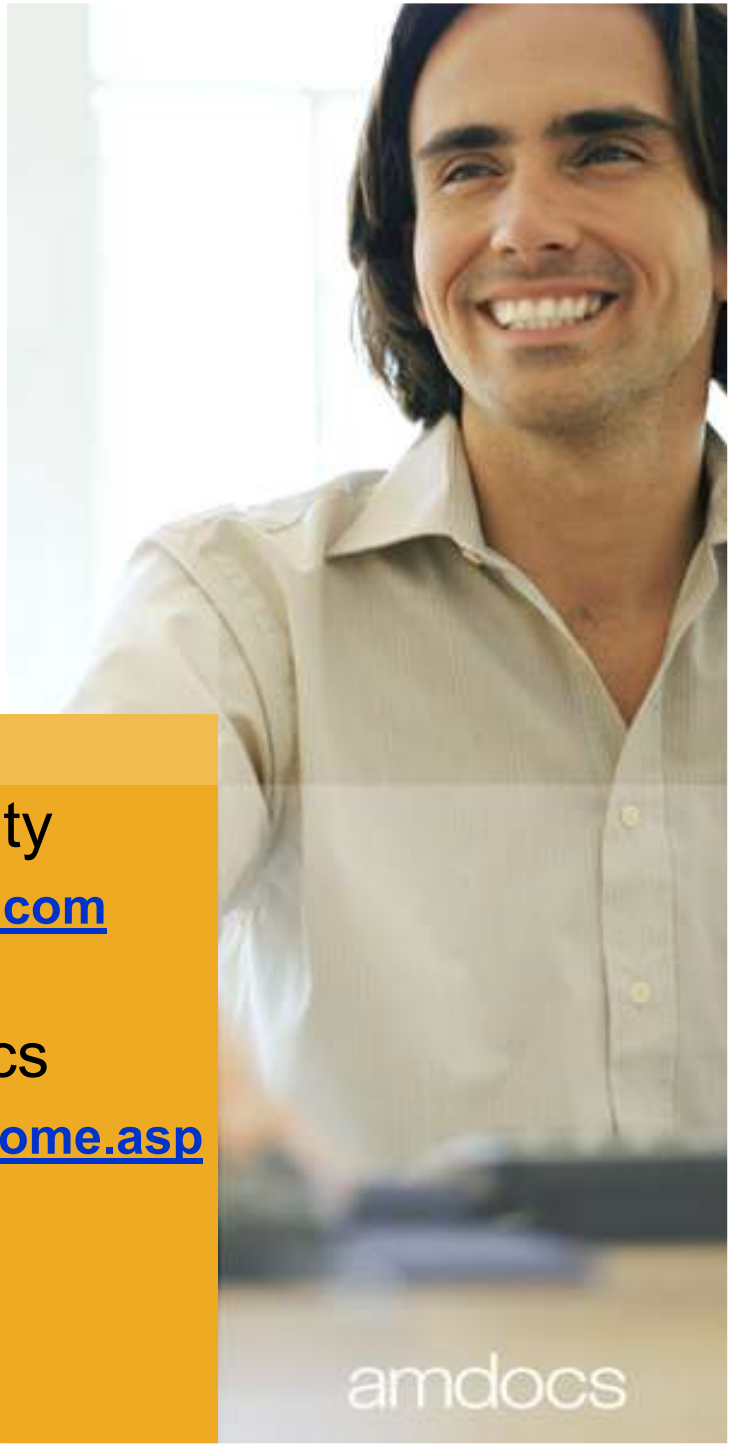
Thank you



For more information on backhaul capacity management visit **www.oss-mobilesolutions.com**

To listen again to this or any other amdocs webinar visit **http://amdocs-oss-central.com/home.asp**