

High performance signaling in gathering intelligence from Mobile Networks

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Abstract

- ♣ Key intelligence from the network is not only the conversation exchanged between the parties but gathering the and characterizing the attributes of the conversation. Location, Handset and called and called identity. This presentation will examine the roles of signaling and the performance characteristics needed in modern mobile networks

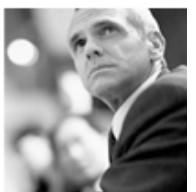
Agenda

- ♣ Changing world
- ♣ Behaviour monitoring
- ♣ SMS monitoring & Performance
- ♣ Prepaid monitoring & Performance



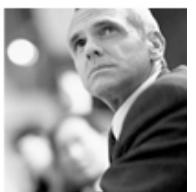
Different Worlds

- ♣ Size Zero banned in Milan & Madrid fashion shows
 - Allowed in London Fashion week
- ♣ Hormones in meat banned in EU
 - Allowed in US



Different Worlds

- ♣ Wiretap evidence admissible in NL since 1970's
- ♣ Not admissible in UK (2006)
- ♣ EIR 100% in South Africa in 1997
- ♣ EIR 100% in UK in 2002...



Same World

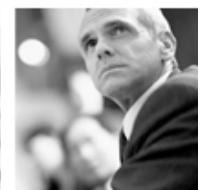
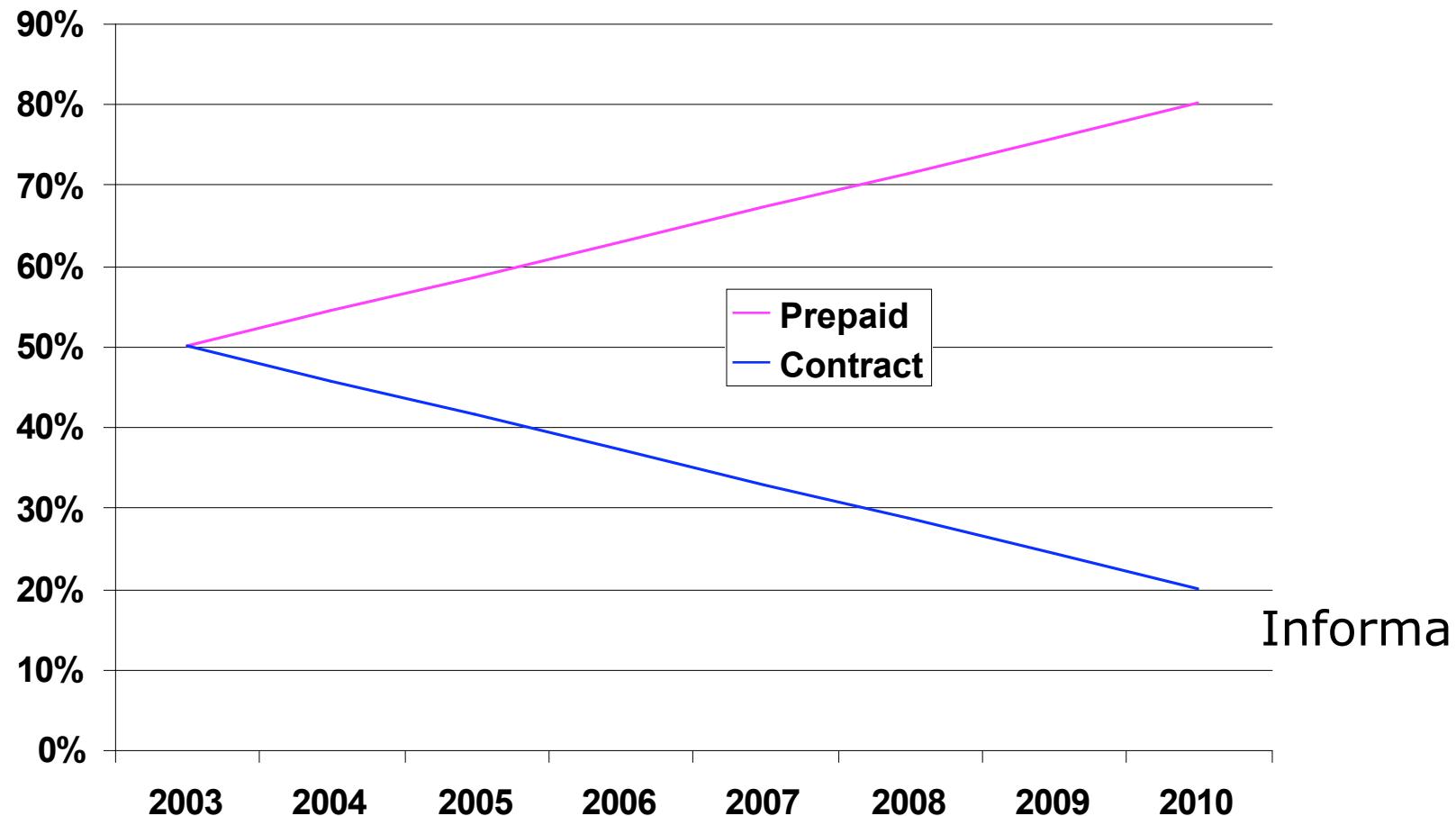
- ♣ Differentiation of services increases
- ♣ Wireless market penetration increases
- ♣ Individual usage increases



Same World

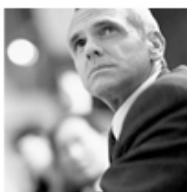
- ♣ More Laws
- ♣ More Data to analyse
- ♣ More Anonymity

The World went Mobile Prepaid



Rise of Identification by Behaviour

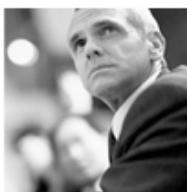
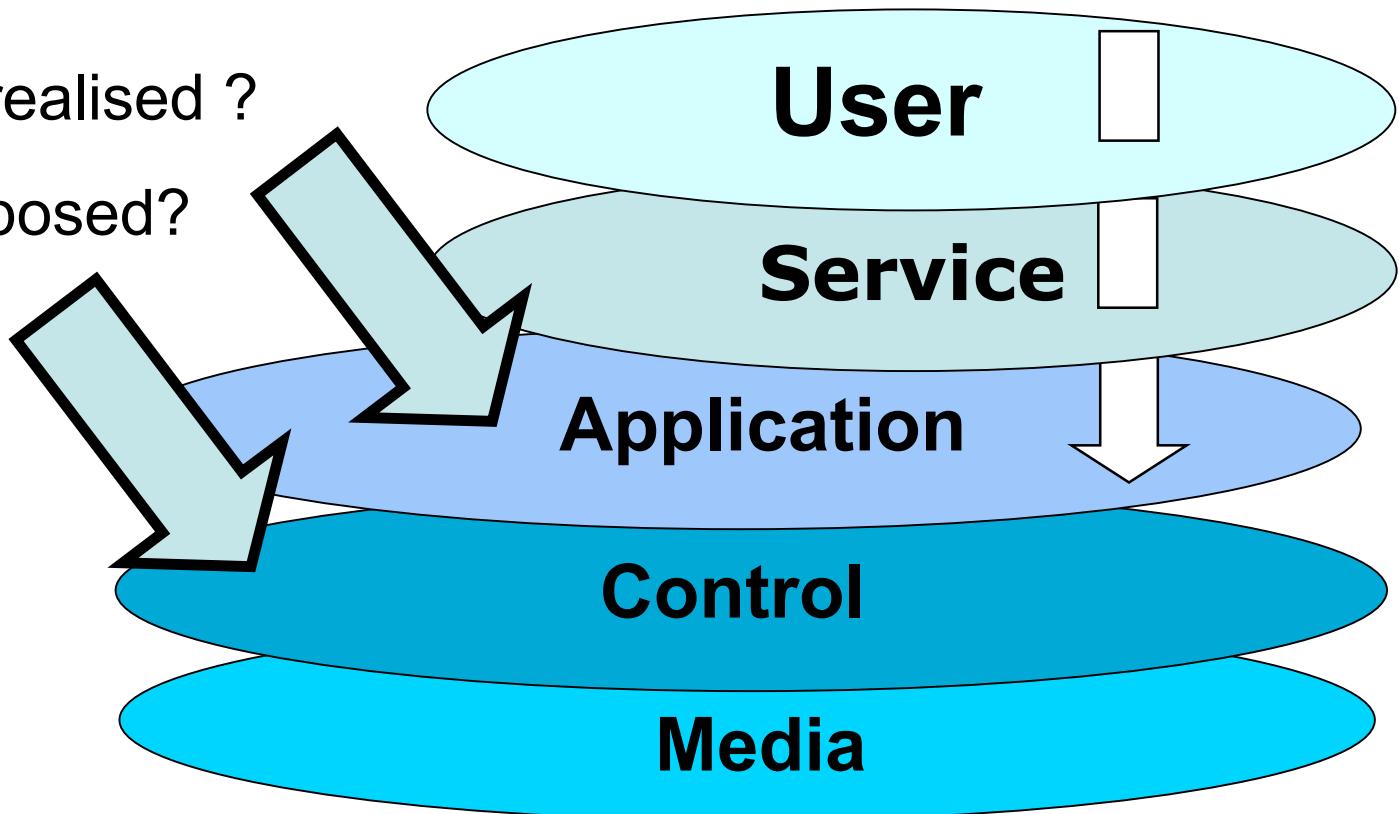
- ♣ Behaviour became a key to identity
 - Called numbers
 - Phone swapping (IMEI changes)
 - Location patterns
- ♣ Just as mobile services became more complex
 - Service usage patterns
- ♣ Where can we find this "Complex Behaviour"



Usage Behaviour Complexity

Where is it realised ?

Where is exposed?



Control Plane

- ♣ Behavioural attributes exposed
- ♣ Large volumes of information
- ♣ Dynamic environment
 - Changes in Service topology
 - Changes in Technology

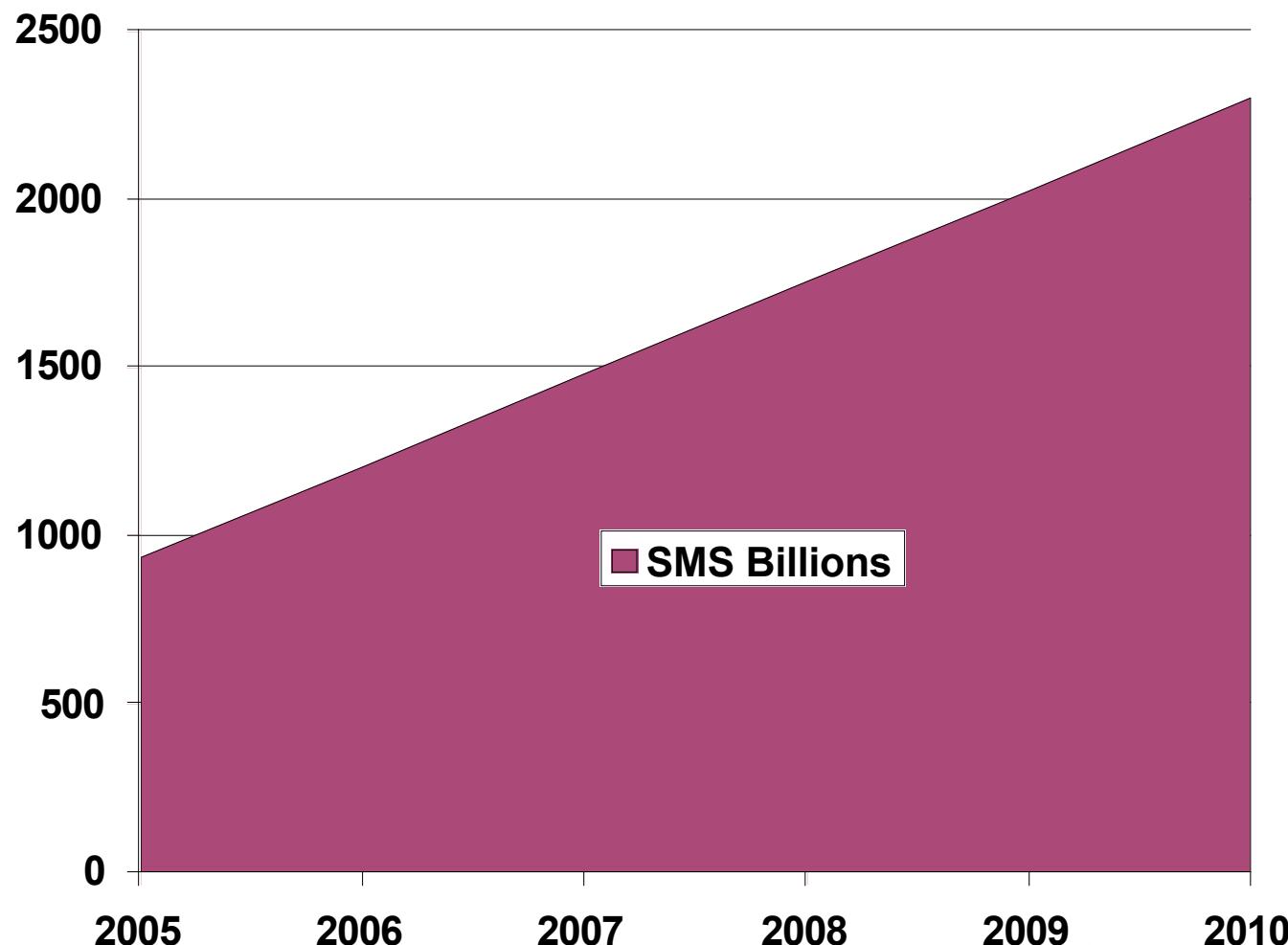




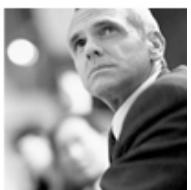
One Focus. One Vision. One Company.

Control Plane Example SMS

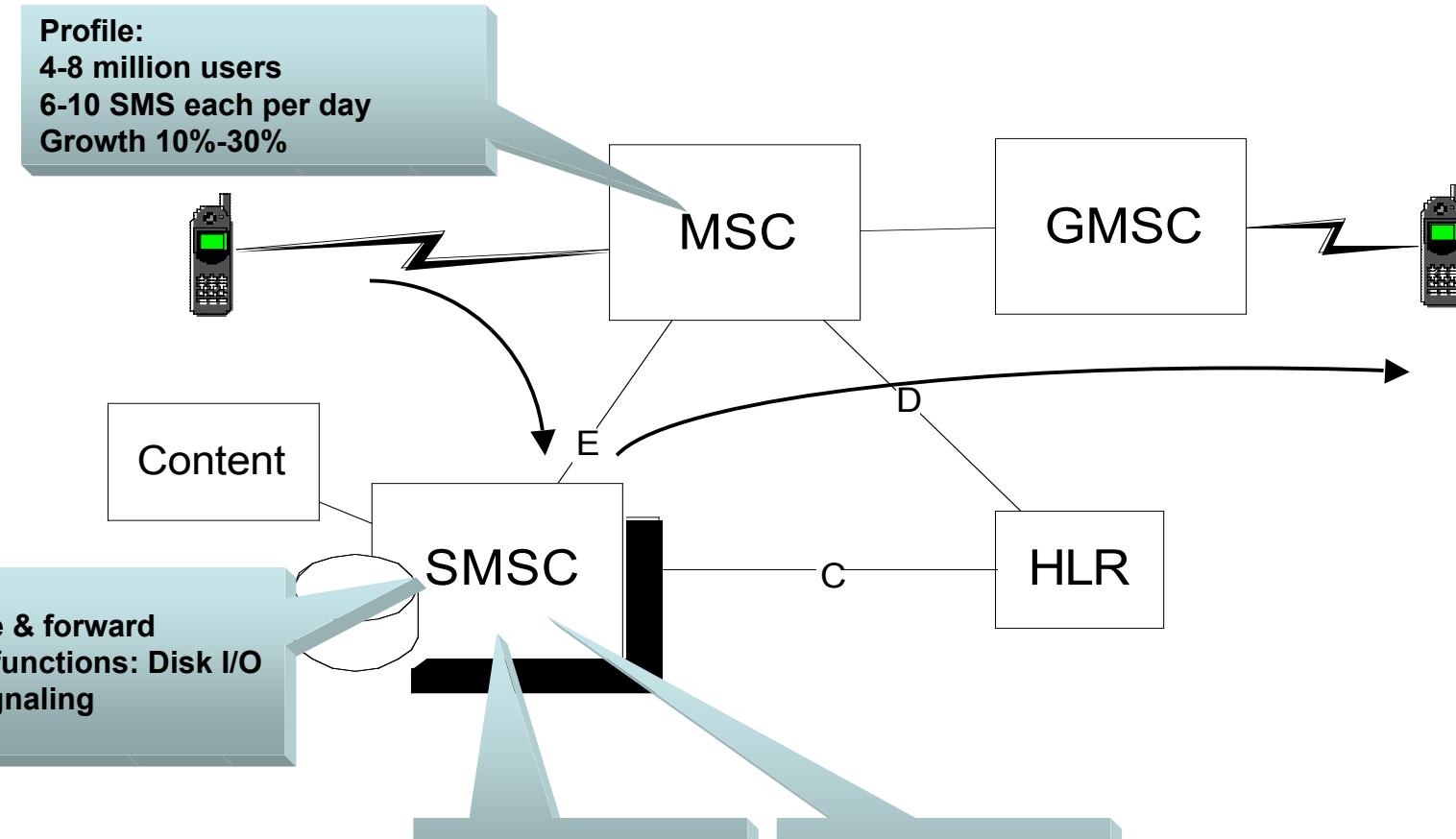
SMS What's Happening?



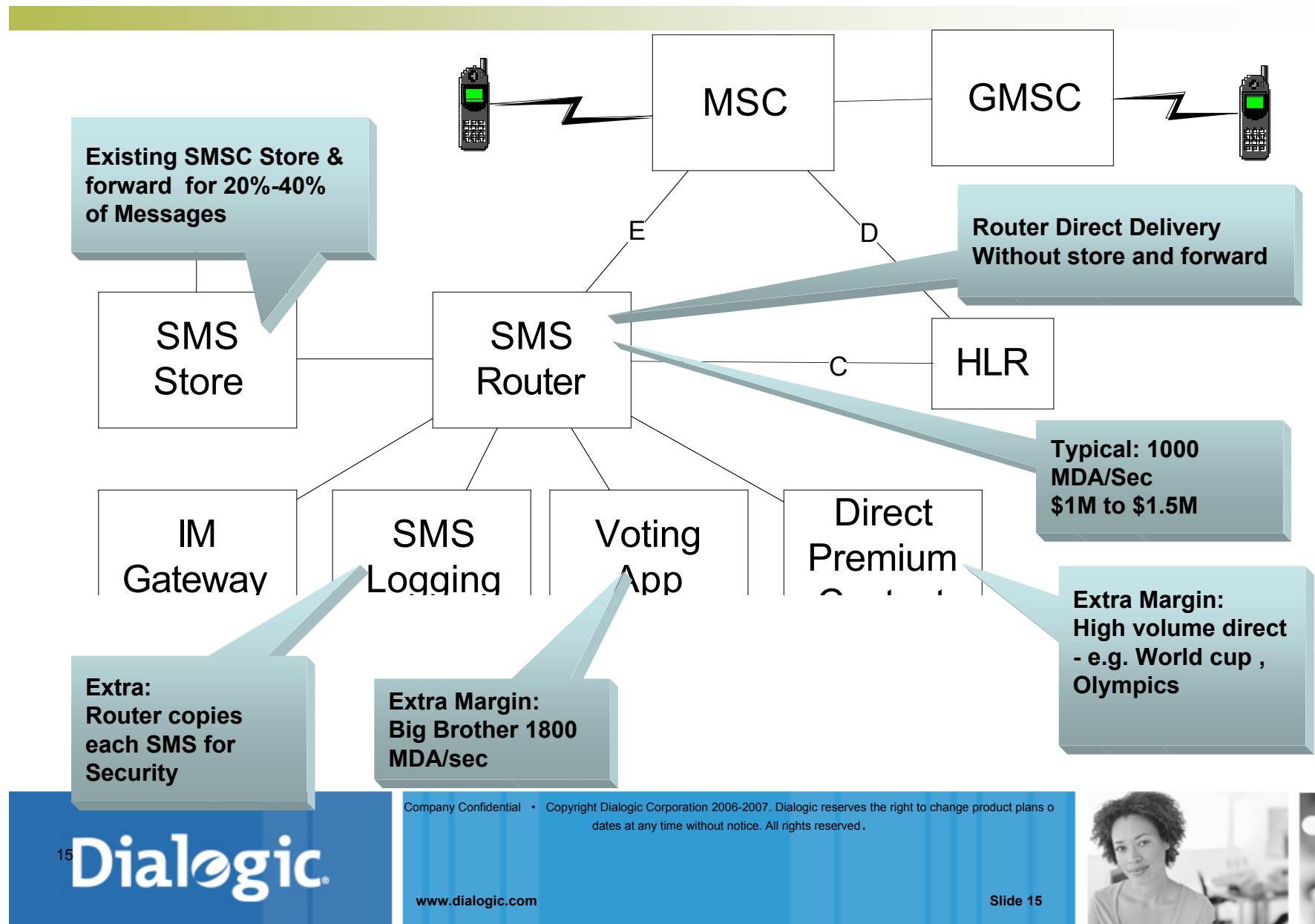
Gartner



Service Topology in Flux

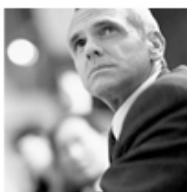


SMS router Architecture



Demands on Signaling Monitoring

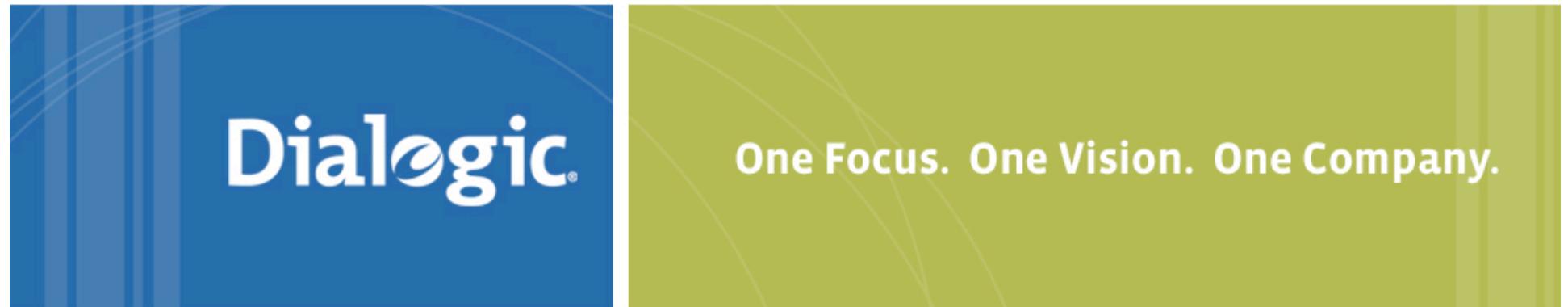
- ♣ Parallel the demand on the SMS vendors
- ♣ Classic SMSC Vendor
 - Improve performance and lower 3rd party costs
 - Cheaper Platforms, Disk IO & Signaling, SIGTRAN
 - Adopt SMS routing
- ♣ SMS Router Vendor
 - Very high performance demands:
 - 1000 to 20000 MDA/sec solution price below \$1000 per MDA/sec
 - 2 Mbps to 10 Mbps of Signaling over IP or TDM (64 to 640 links)
 - Signaling below \$200 MDA/sec
 - Maintain price performance over Classic SMSC
- ♣ Price per unit Performance is Key



Dialogic Components for SMS Monitoring

- ♣ Full high performance software range from MAP & CAMEL to M3UA
- ♣ Prices in the \$10's per MDA/second
- ♣ High density card solutions
 - ~upto 2000 MDA/second per card on Card (i.e. MAP on the board)
- ♣ Hi-Z on most products
- ♣ SIGTRAN monitoring in 2007
- ♣ ATM monitoring in 2007

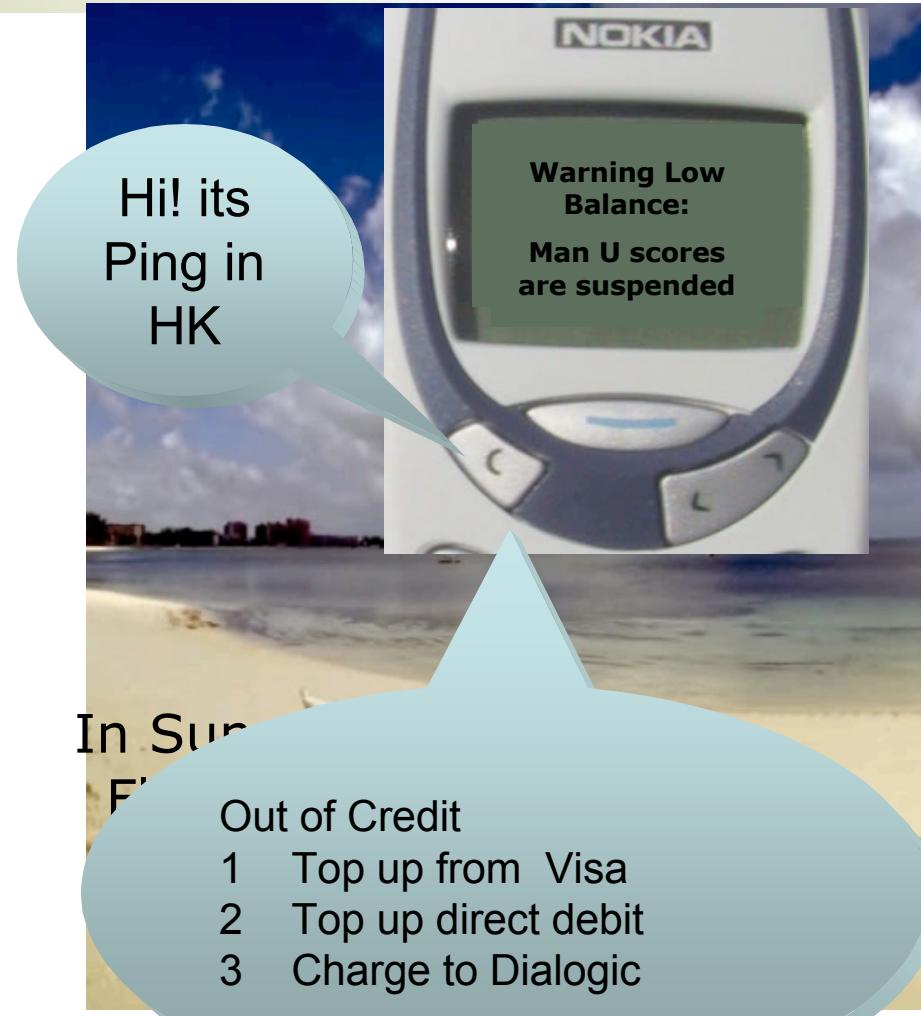




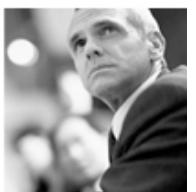
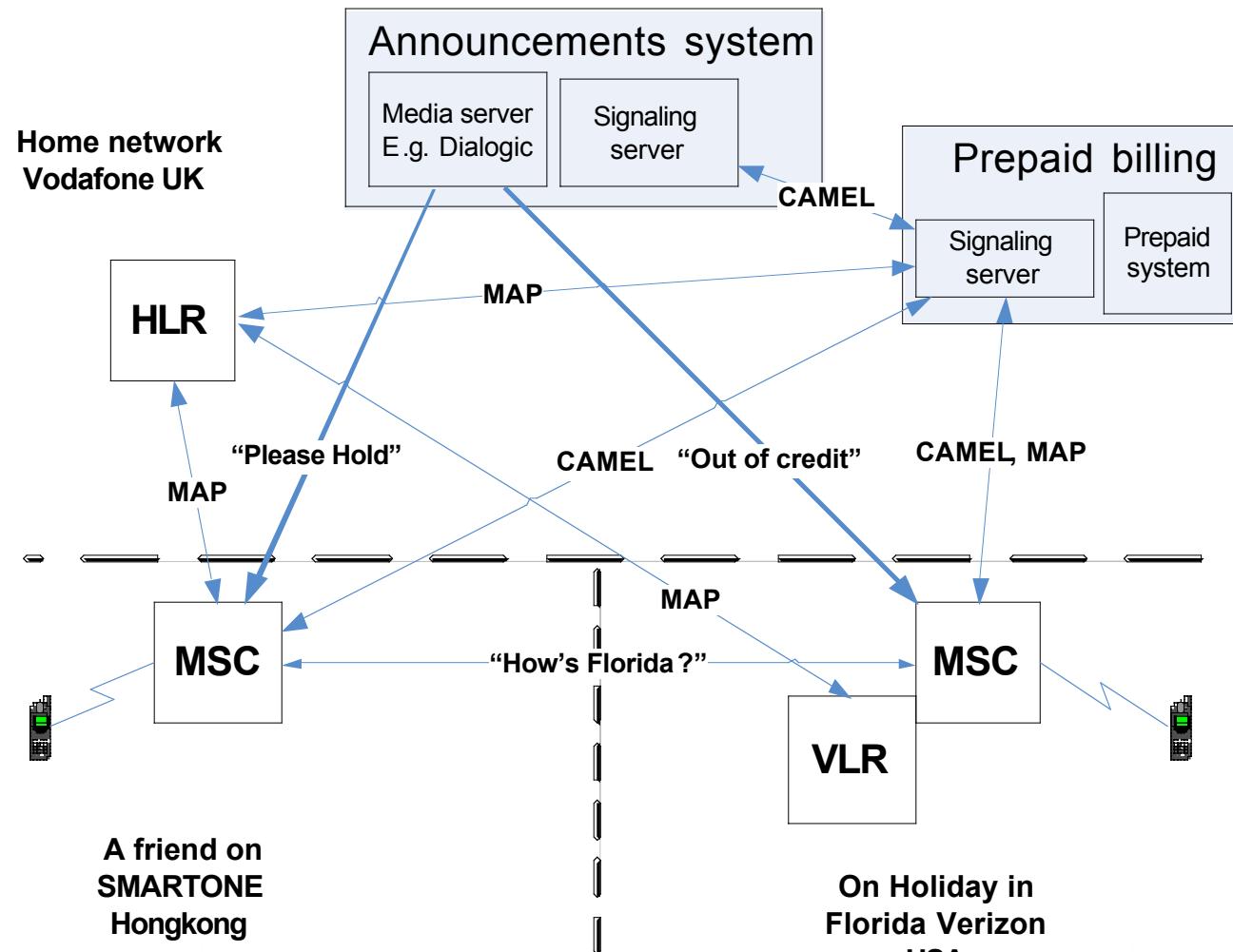
Control Plane Example

Mobile Prepaid

Behaviour Scenario

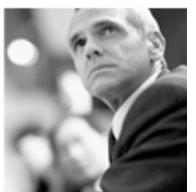


Topology to monitor



Prepaid Systems Characteristics

- ♣ 7 million users 0.5 - 2 Busy Hour Call Attempts per user
(BHCA) = 3.5M to 14M BHCA and increasing
 - Signaling high as \$0.20 but typically \$0.05 to \$0.10 per BHCA (call models etc vary this)



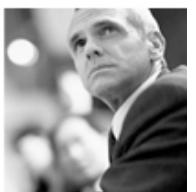
Demands on Signaling Monitoring

- ♣ All New Services to available on Prepaid Immediately
- ♣ Delivering evermore complex user interaction via Voice, SMS, Video, Web = more BHCA
- ♣ Higher monitoring performance - Systems in 10's Million BHCA+
- ♣ Better Price performance

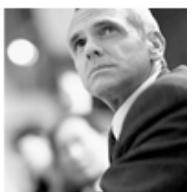
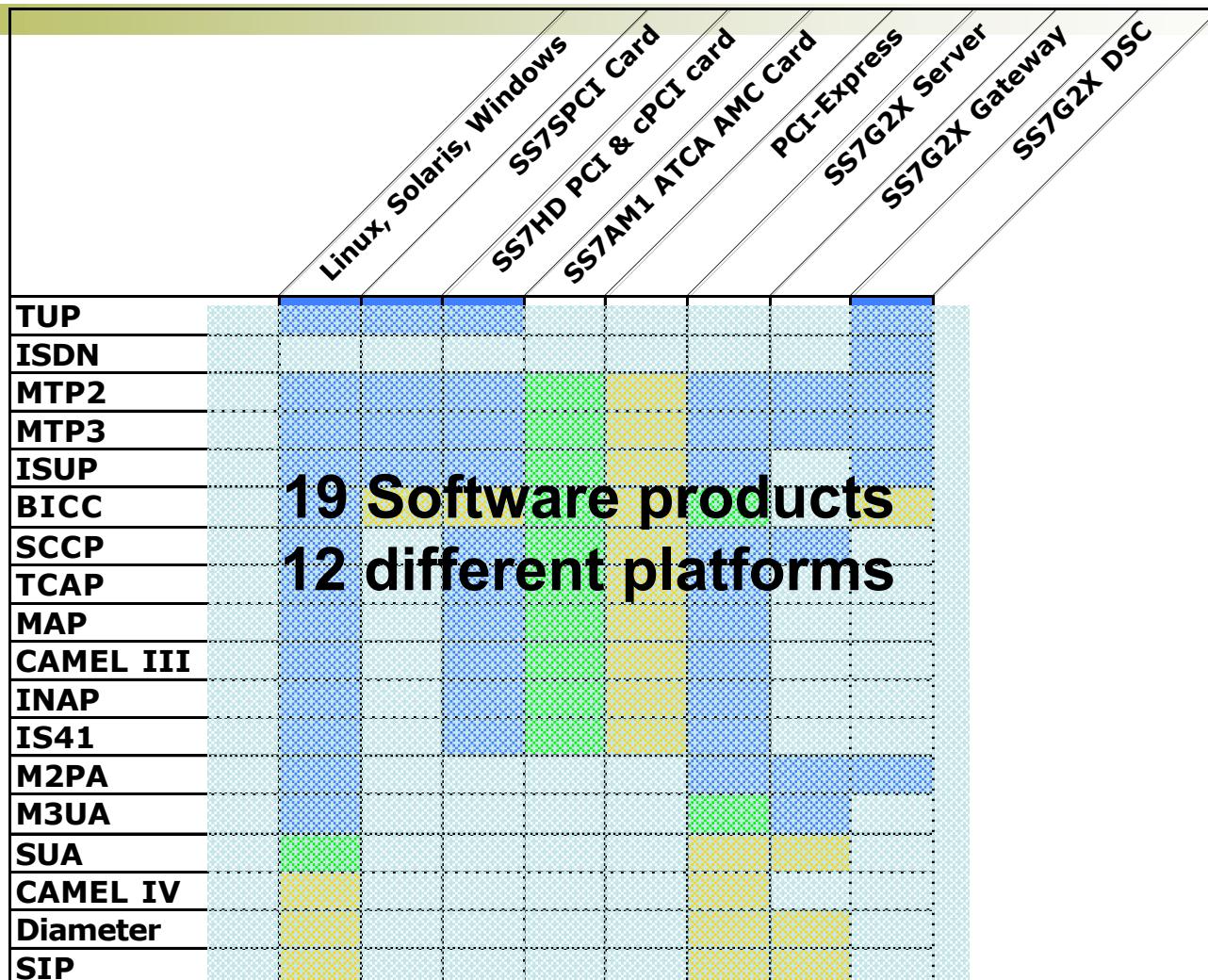


Dialogic Components for Prepaid Monitoring

- ♣ Complete software available CAP,ISUP,BICC...
- ♣ Low Price - High Performance
 - From 800,000 to 14 Million BHCA
 - A few cents to a few 1/10 cents per BHCA
 - Software, Server, Card solutions
 - Hi Z
- ♣ SIGTRAN Monitoring in 2007
- ♣ ATM Monitoring in 2007
- ♣ CAMEL IV & Diameter to follow



Software platform Portfolio Breadth



Dialogic High End Performance

Platforms	Format	SS7 Links	HSL Links ATM/IMA	HSL Links Q703	H1-Z	E1/T1	Concurrent Transactions	Circuits	BHCA (millions)	MDA / Sec	MSU / sec	M2PA Links	M3UA Routes
Low Density Card	PCI	4			N	4	4096	4096	0.8	136	629		
High Density Card	PCI	64			2Y	4	32768	32768	17.5	2245	24900		
High Density Compact PCI	cPCI	128			4Y	16	32768	32768	17.5	2245	24900		
AMD Card in Development	AMC	128	Later		4Y	4			TBA	TBA	TBA		
PCI-Express Future	PCI-e	124	4	4Y		4			TBA	TBA	TBA		
SS7G2X Server	RMS	128			6	12	65536	65536	16.56	3500	18700	128	512
SS7G2X Gateway	RMS	128			6	12					12640	128	512
SS7G2X DSC	RMS	128				12					12000 (est)	128	

500 MDA/sec

= 1M SMS users

2M BHCA

= 1M prepaid users

1800 MDA/sec

= Big Brother televoting SMS peak

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Summary

♣ SMS & Prepaid

- Undergoing change
- Higher performance for both Applications needed
- Improvements in price per unit performance needed

♣ Dialogic

- High end performance signaling
- Winning Price performance



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