



## Video Traffic Optimization

Marwan Jabri, PhD  
*Founder and CTO*

Arabcom 2009



C O M M U N I C A T I O N S F O R A B O R D E R L E S S W O R L D



# We are the Leader in Converged Video

## Pioneer in Mobile Video

- Designed specifications for mobile video
- 200+ active patent matters / 28 core patents granted
- Founded, July 2001 in Australia
- Today: Petaluma, CA (HQ), 18 Global Locations

## Innovative Products

- Creating Video Revolution in Mobile
- Breakthrough end-to-end solution
- Solutions for entire eco-system (mobile, broadband, internet)
- Extensive applications and services

## Large Installed Base and Partner Channel

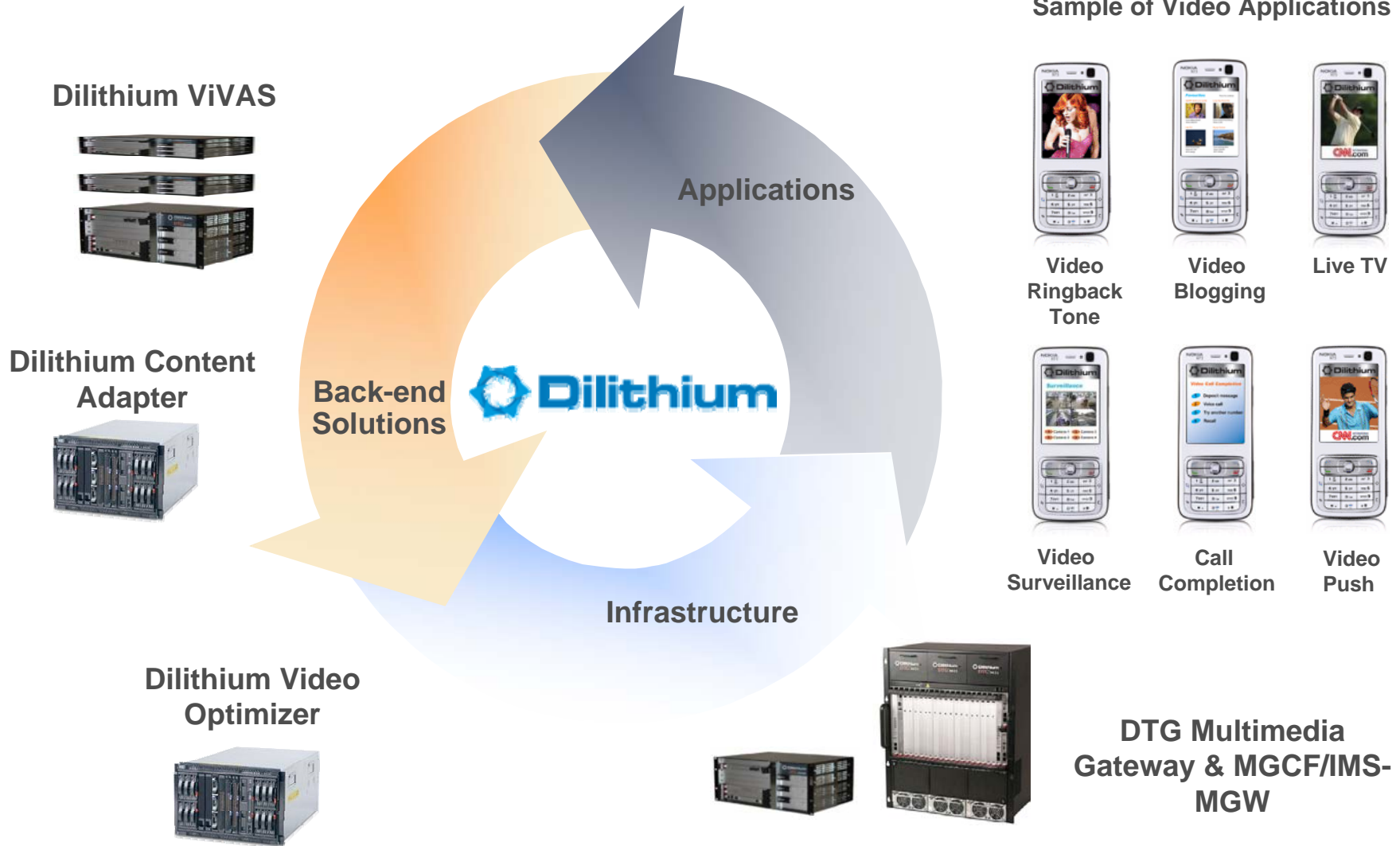
- 60% market share in 3G video

Vodafone	MTS	SK Telecom	Indosat
DT/T Mobile	Etisalat	KTF	Smart
FT/Orange	Zain	Singtel	Globe
Telecom Italia	MTN	China Unicom	Airtel
KPN	CHT	China Mobile	BSNL
		Telkomsel	Yahoo

- Prime or sole source to 10 of top 10 telco OEMs and leading SIs
- 150 customers / 60 countries / 6 continents – comprising 1.5B subs
- Profitable and cash flow positive- 7 consecutive quarters of 100%+ yr/yr growth



# Dilithium End-to-End Solution

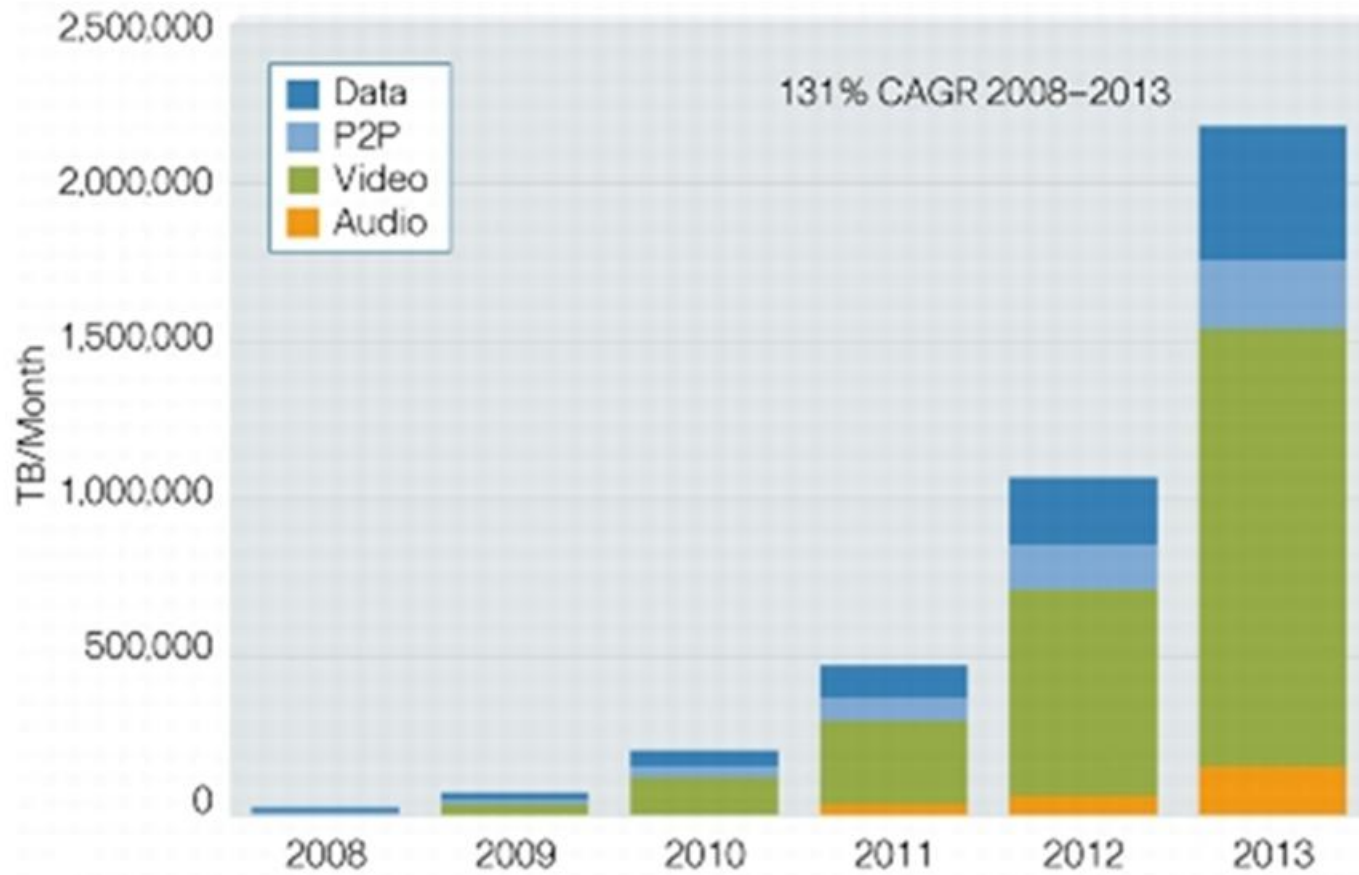


# Significant Global Customer Base

Relationships Representing over 1.5B subscribers

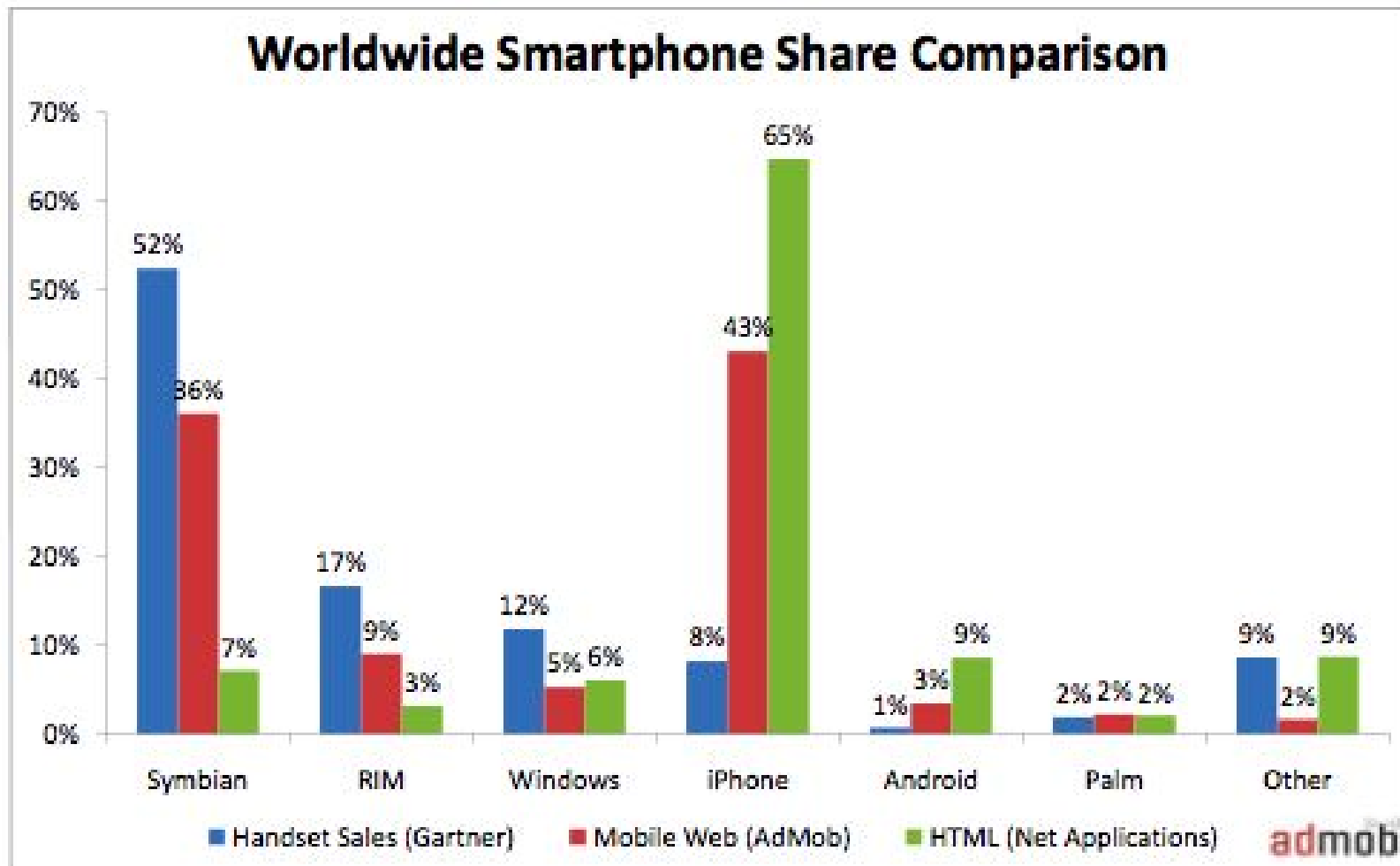


## Video is the fastest growing application



Source: Cisco, 2009

## Highest mobile web traffic is generated by new smartphones...



## Why Video Bandwidth Optimization?

- ▶ Mobile video traffic (ie. Netbooks, and laptops with datacards, handsets) represents a significant part of mobile data. Estimates range from 10% to 20% (projected to be over 60% by 2013).
- ▶ International data back-hauling charges are significant OPEX costs to operators especially in emerging countries.
- ▶ Video traffic is very likely to accelerate at higher rates with more advanced streaming support in iPhone OS 3.0 and other wide screen touch phones.

Bandwidth optimization at the video layer is an important tool in reducing network CAPEX and OPEX, while accommodating more subscribers with more satisfying customers experience.

## **Dilithium** What video bandwidth and traffic optimization can do

- ▶ Traffic and optimization at video layer aims at reducing bandwidth utilized in video browsing and streaming (HTTP progressive download, RTSP) while maintaining adequate video quality and improving the overall video experience.
  - ▶ Maintaining adequate video quality is a subjective issue and involves selecting a number of transcoding/trans-rating parameters, and not just re-quantization of video.
  - ▶ Improved customer experience results from having a more fluid video, less wait, less freezes and jitter.
- ▶ Video quality can be improved by using a more advanced codec and delivering better video quality at lower bandwidth (ie. Video source is in H.263, but terminal player support H.264).

**Bandwidth optimization applies to 2G and 3G mobile and broadband networks**

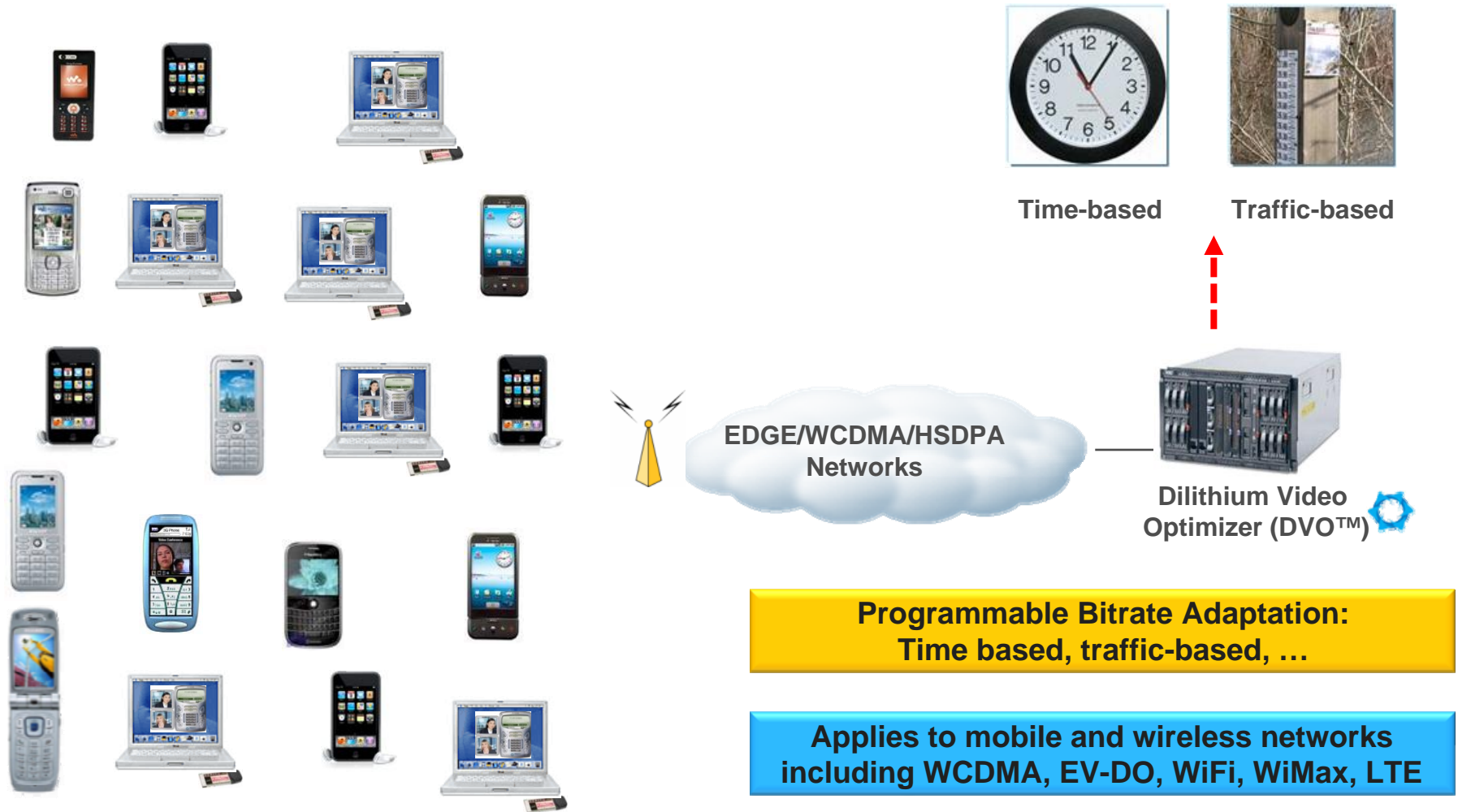


## Dilithium Video Optimizer™

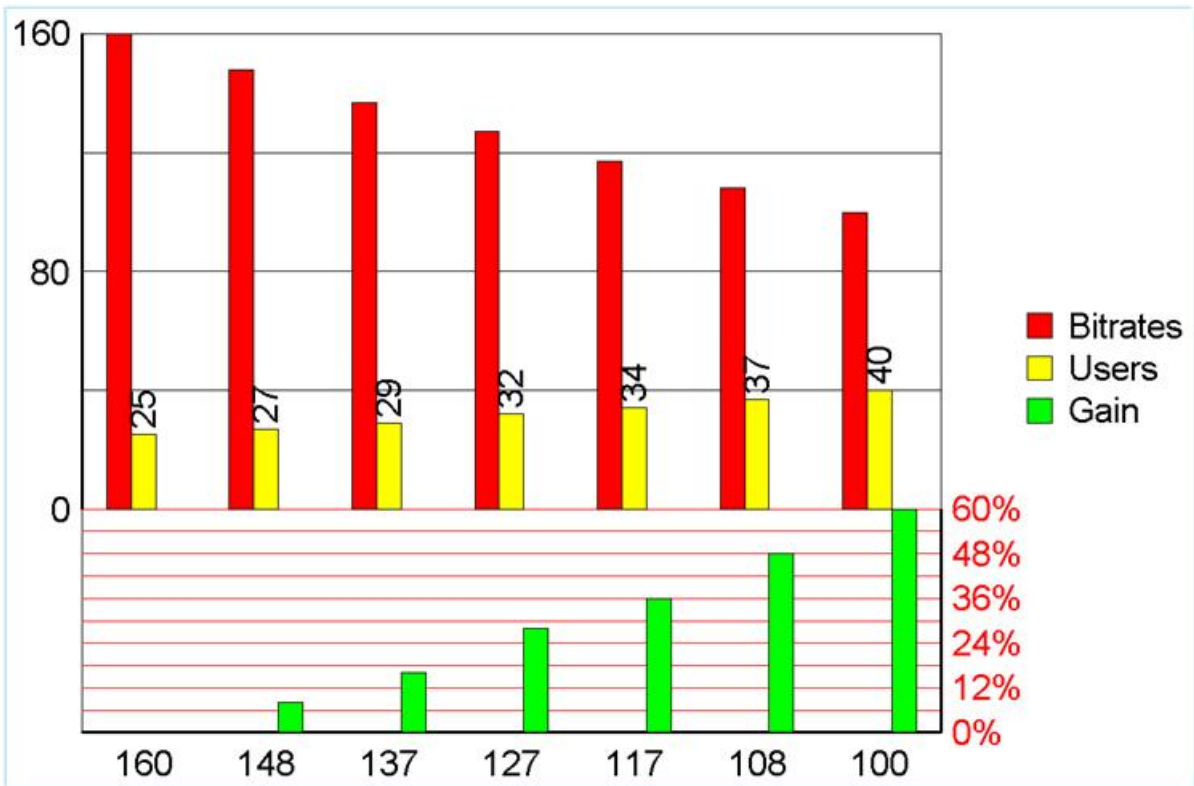
- ▶ The Dilithium Video Optimizer (DVO) is a solution to:
  1. Optimize video bandwidth to accommodate more subscribers and save network CAPEX and OPEX.
  2. Enable differentiated services: customers have option to pay more for higher video bandwidth.
- ▶ DVO is a solution based on Dilithium breakthrough and patented video transcoding, trans-rating, and media adaptation technologies.
- ▶ DVO has built in cache which also reduces costly international data back-hauling charges and maximizes optimization capacity.
- ▶ Seamless integration in networks thanks to advanced PHP based API.



# Example Bitrate Adaptation: Network Video bandwidth Shaping & Optimization



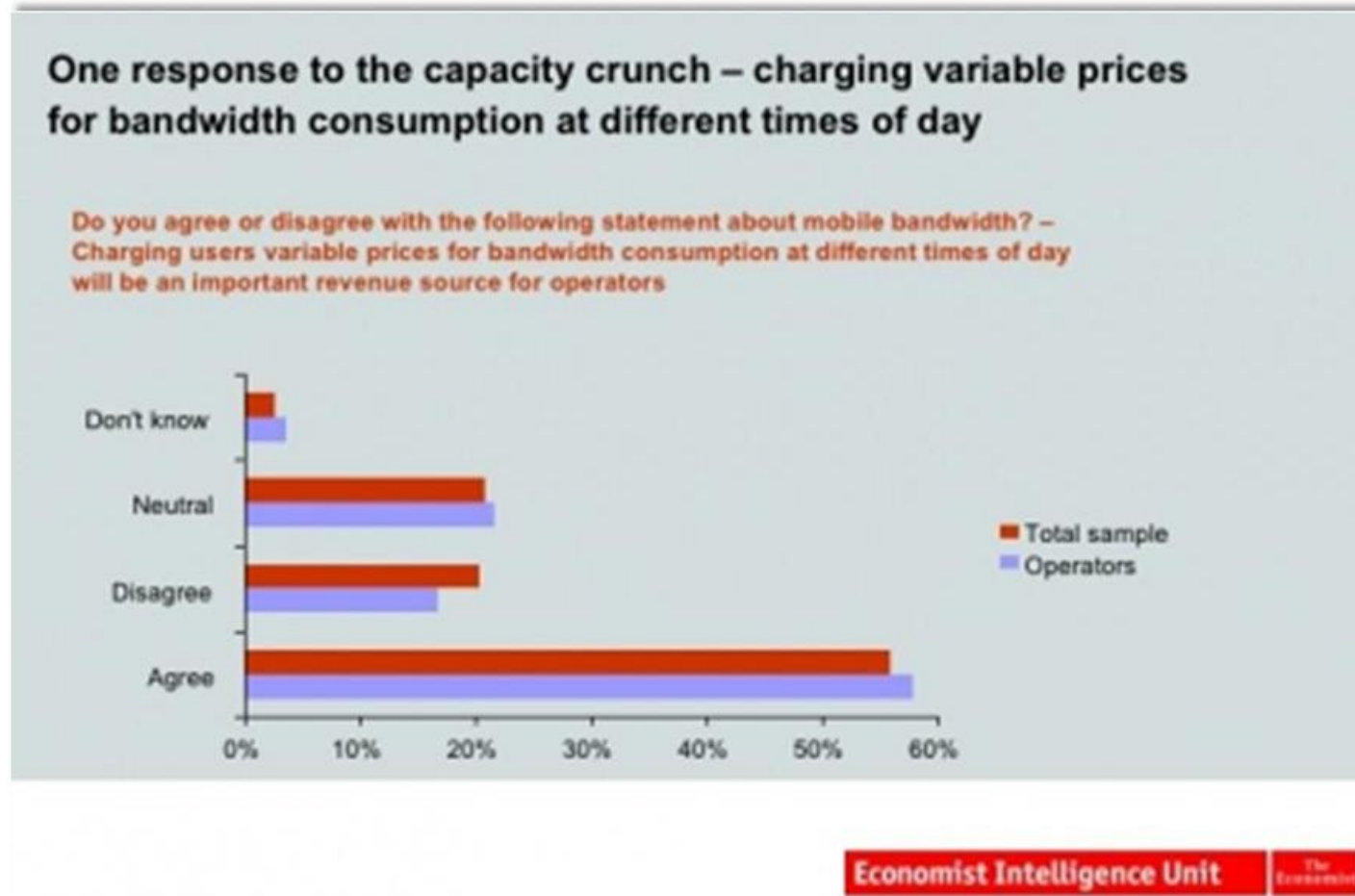
## Example User Accessibility Gains (e.g. on a 4Mb downlink)



Bitrates (kbps)	# Users	Gain
160	25	0
148	27	8%
137	29	16%
127	32	28%
117	34	36%
108	37	48%
100	40	60%

**The allocations depends on link capacity, whether GPRS, WCDMA, HSDPA or EV-DO.**

## Operators Views on variable pricing on bandwidth



## Key Benefits of the DVO

### On-the-fly bandwidth optimization

Support for widest range of media codecs and file formats

### Network Agnostic

Operates for 2G, 3G and broadband.

Support for video accessed by Mobile Data terminals and handsets (iPhone, G1, ...)

### Video Unicoding™

Build on Dilithium Patented Market Leading Audio and Video Transcoding Technologies

### Dilithium Video Optimizer



### Flexibility

Scalable Software solution.  
PHP Based API.  
Easy integration in workflow

### Advertising & Playlist Support

Pre- and post roll ad insertion  
image overlays and text tickers

### Built-in Caching

Maximizes DVO capacity and  
minimizes international data back-hauling costs

### Carrier Grade

Built for Carriers  
Seamless Integration with  
operator networks  
Best IOT record

## Summary

- ▶ Dilithium has built a global leadership position in video
  - ▶ 60% global share in 3G operator segment, covering 1.5 Billion subscribers
  - ▶ Prime or sole source to 9 of top 10 telecom OEMs
  - ▶ Diverse end-to-end solutions addressing mobile, broadband, and Internet
  
- ▶ DVO is an important tool to accommodate more and satisfied customers
  - ▶ On the fly video bandwidth optimization.
  - ▶ Live and VoD Optimization to mobile data terminals (e.g. laptops with datacards) and the iPhone
  - ▶ Built-in caching to reduce international data back-hauling costs and minimize optimization resources.
  - ▶ Carrier-grade highly scalable software solution with full redundancy - Scales to support millions of subscribers.
  - ▶ Seamless integration in operator networks.