

DOCSIS Settop Gateway (DSG)

Mark Rice Director
Asia Marketing and Business Development
Texas Instruments

Minds in Motion



DSG Introduction

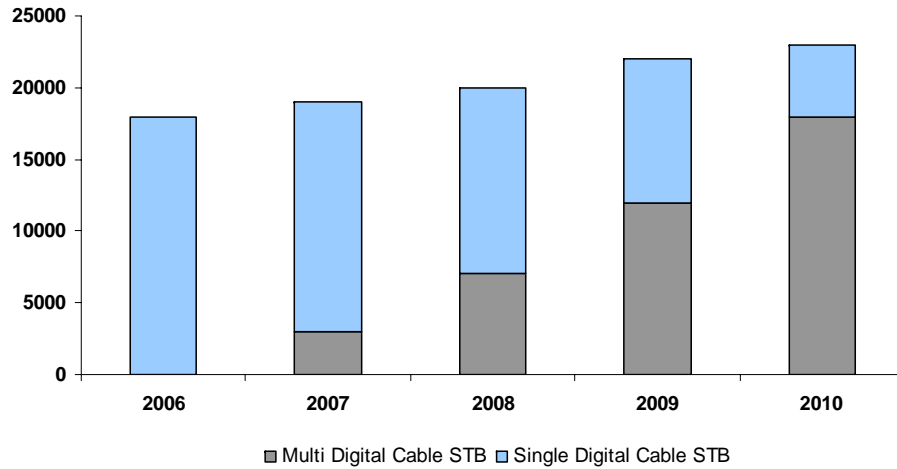
- **DOCSIS Set-top Gateway (DSG) purpose is to provide MSO's with a standardized, low cost, fast, 2 way communication method with OpenCable™ compliant digital TVs or Set-Top Boxes, replacing the proprietary legacy Out Of Band (OOB) communication method for Conditional Access**
- **Replacing the Legacy OOB Control with DSG Enables MSO's to converge on a single IP network for Voice Data & Video management lowering infrastructure cost**
- **DSG Target Market is NA & Korean MSO's.**
 - DVB-C based MSO's e.g. Europe, would not use DSG, but are a market for **eCM** application in STB & DTV towards IPTV and Home Entertainment Box market direction

Minds in Motion



Market Size

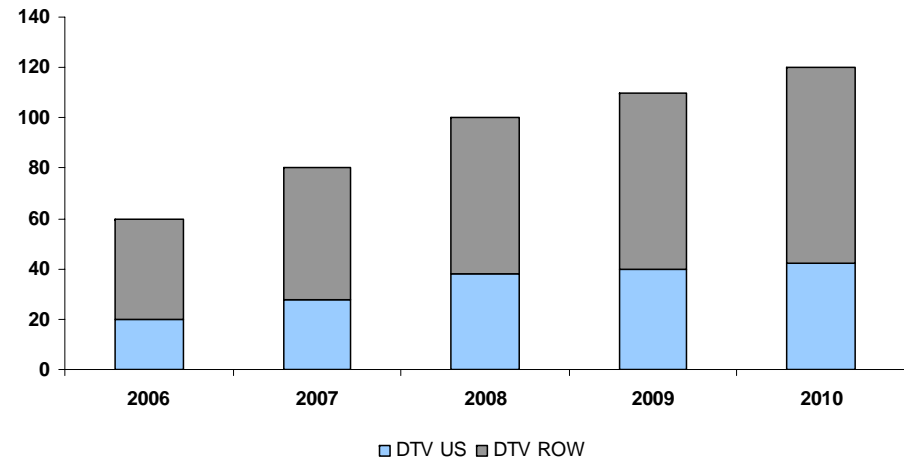
Digital Cable STB Shipments (K)



	2006	2007	2008	2009	2010
Multi Digital Cable STB	0	3000	7000	12000	18000
Single Digital Cable STB	18000	16000	13000	10000	5000

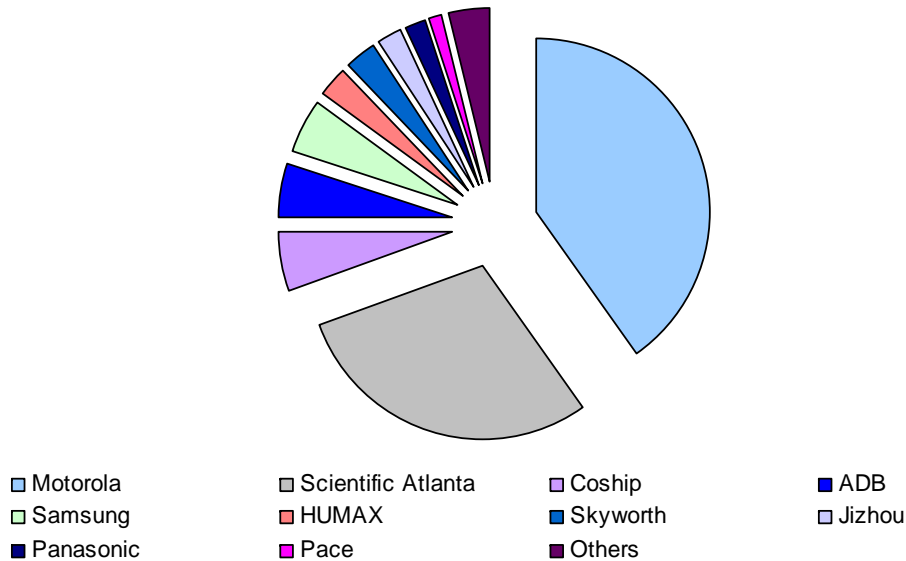
(Note: DTV & STB forecasts based on amalgamating CIBC, In-Stat outlook.)

DTV Shipments (M Units)



STB & TV OEMs

DigitalCable STB OEMs (2005 Share)



OEM	Units (K)	Share %
Motorola	6271	40
Scientific Atlanta	4552	29
Coship	850	6
ADB	800	5
Samsung	775	5
HUMAX	450	3
Skyworth	450	3
Jizhou	350	2
Panasonic	310	2
Pace	190	1
Others	592	4
Total	15590	100

(In-Stat June 2006)

Open Cable Applications Platform (OCAP) has gained credibility with TV OEMs such as:

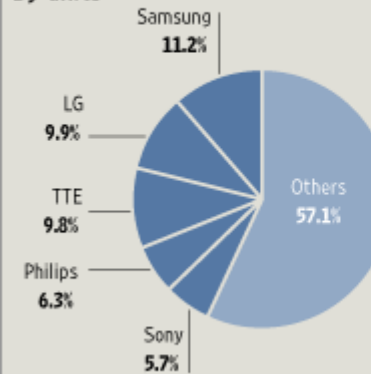
- Samsung
- LG
- Panasonic

NA MSO Time Warner is currently in field trials with Samsung. Cox and Comcast are expected to undergo trials Mid'07.

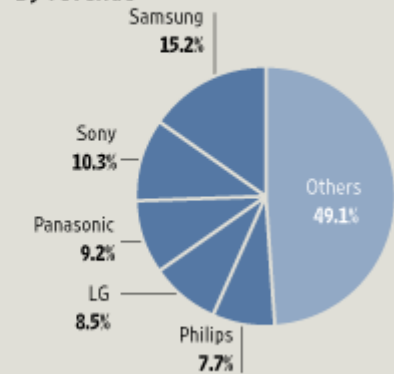
Currently trials are with LOOB, DSG will be turned on next.

World-wide TV market share for third quarter 2006

By units

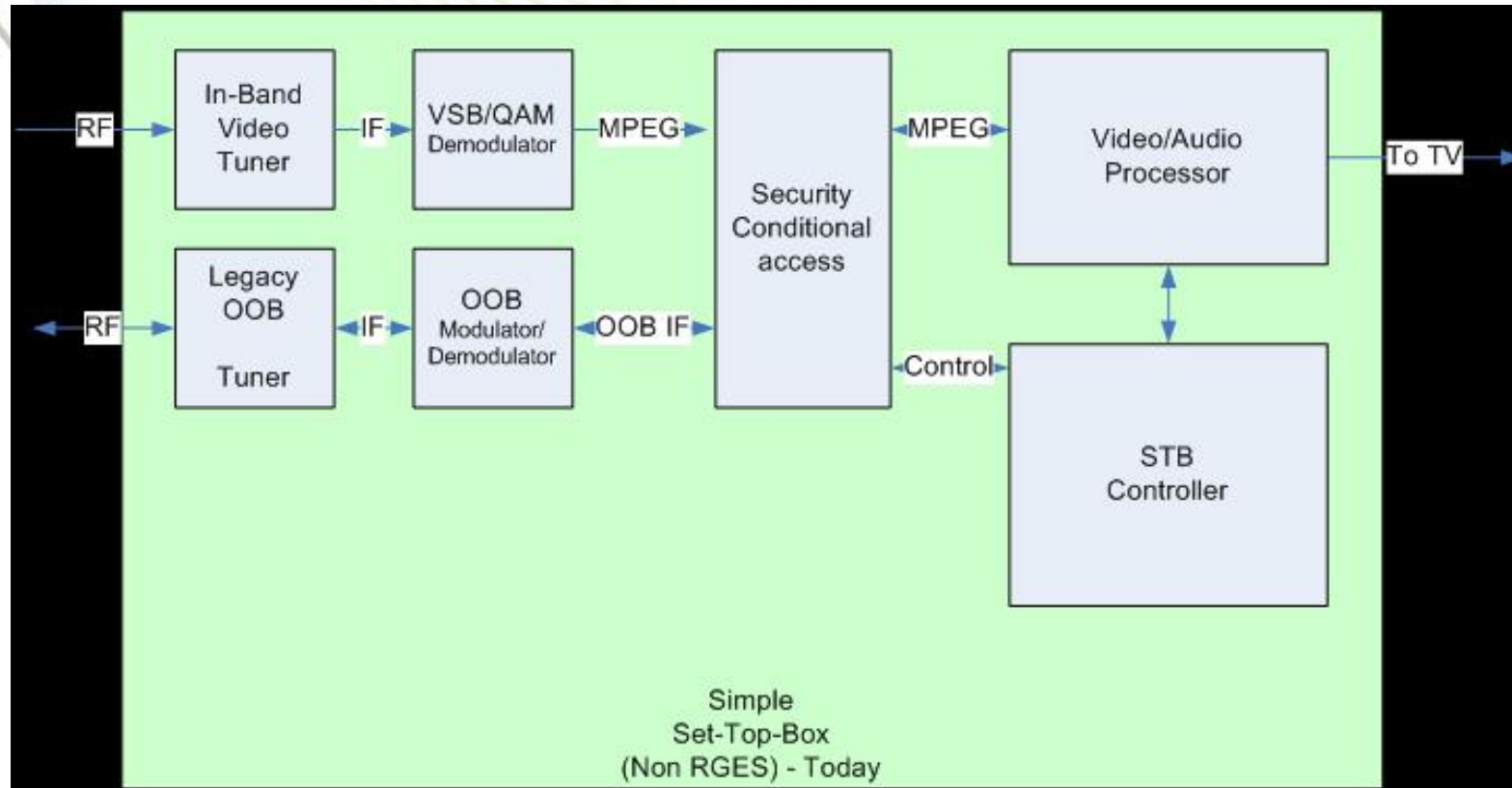


By revenue



Source: DisplaySearch

Today's STB



- Legacy Out Of Band (OOB) is a simple, slow, and proprietary transport
- C/A is proprietary dominated by S/A and MOT
- No line of site for IPTV

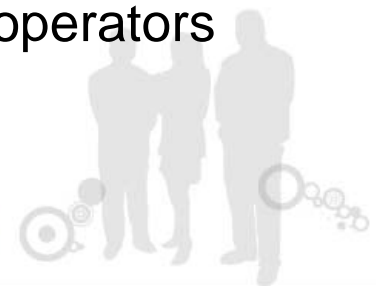
Minds in Motion



Industry Incentives

- FCC mandates Digital ready/cable ready TV's enabling CE providers to play in the proprietary STB/DTV MSO controlled market
 - Digital tuner in every 13' + TV
 - Moving to open platform Use of Cable Card / Downloadable security
 - consumer electronics devices sold at retail can decode premium programming through a conditional access system (cable card)
- Move away from core STB technology
 - Remained primarily proprietary in nature
 - Hampered the introduction of high bandwidth-interactive services
 - Standards-based products for MSO digital video services to address competitive threats from satellite/DSL video operators

Minds in Motion



DSG Based OOB

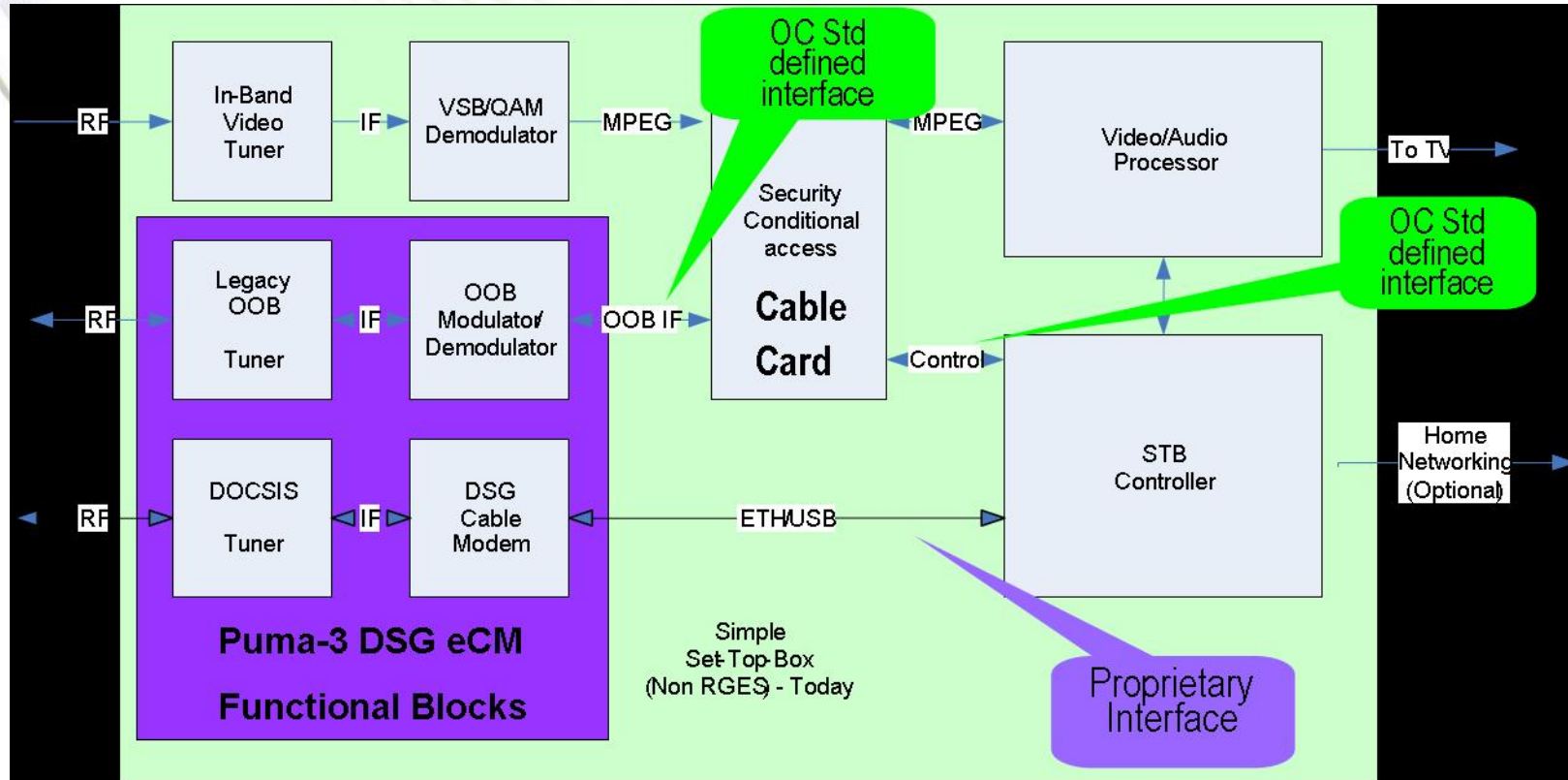
- DSG is a standardized communication between Set-Top Boxes and central office video systems
- Tunneling OOB messages over DOCSIS - Replacing proprietary legacy Out Of Band
- Open IP based signaling
 - Reuses DOCSIS networks (operational costs)
 - Higher bandwidth
 - Reusing investment in head end (CAS, billing)
 - Enables Data gateway functionality
- Built upon the standard DOCSIS two way CM with special SW provisions changes to support TV broadcast needs
 - One Way operation support – robust TV support
 - Management of STB/eCM ; SW download, various operation modes
 - Backward Compatibility with Legacy OOB networks

Minds in Motion



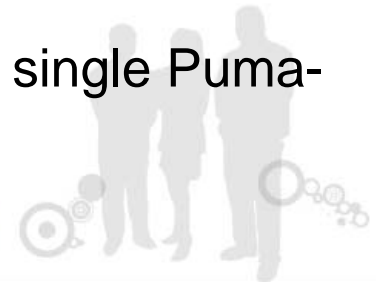
source:

TI's DSG Offering



- TI provides the full OOB connectivity solution based on a single Puma-3 chip
 - DSG/eCM
 - Full LOOB support

Minds in Motion



TI DSG Leadership

■ Certification

- A TI based SW& HW platform has been 1st to certify for 2 way DSG in CW37

■ Standard Participation

- TI is active in the DSG and OC reflector driving the architecture via ECN process
- TI has implemented various standard modifications which are in process of standard updated like Secure SW download support
- Participation in CL's Interop and STD activities

Minds in Motion



Leadership (Cont.)

■ Product Validation

- 100% DSG-ATP coverage capabilities in house- in accordance with CableLabs
- Close Cooperation with Digital Key Stone – Development support for CL test environment
- TI-DSG Host simulator – in house development test and debug tool
- High DOCSIS Coverage with DSG:
 - DSG-Disabled - 100%
 - Enabled Basic Mode – 95% -Interface limited
 - Enabled Advanced Mode – 30% - CMTS limited
- Extended DSG functionality testing:
 - Extended SWDL
 - PUMA-3 based, dual Eth/USB interface to eSTB operating testing.
 - Legacy OOB functionality

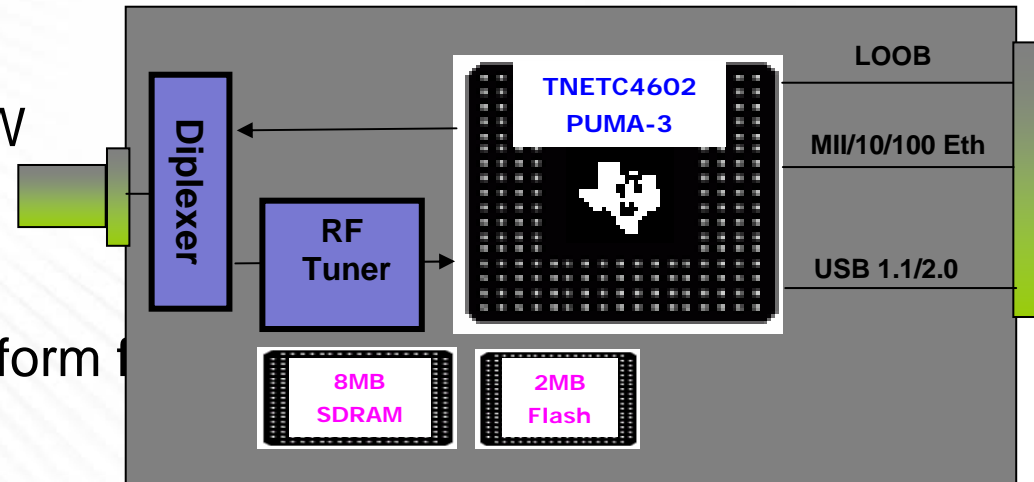
Minds in Motion



TI- DSG HW

HW Delivery: TNETC830

- **PUMA-3 based**
 - DOCSIS 2.0 compliant HW
 - ETH, USB host interface
 - LOOB interface
 - ODM porting to customer form factor
- **HDK consists of:**
 - PUMA-3 documentation
 - HW Design guidelines for easy integration
 - HW related test report for DOCSIS & DSG certification
- **HDK is not :**
 - Small form factor or form factor correct



Minds in Motion

SW Developer Kit

- **Full DOCSIS & DSG SDK consisting of:**
 - Full DOCSIS & DSG certifiable SW
 - Release notes, SW specification , Installation guide, User's guide
 - Architecture & API Documents + Programmers guide
 - SW test report for DOCSIS & DSG certification reference

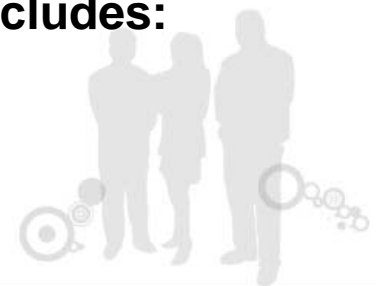
Accessories & Tools:

- **TI-DHS – TI DSG Host simulator, PC based SW tool, for integration, support, test & debug**
- **Certificate tool**
- **Certification wave submission guidelines and procedure documentation**

Support & Services

- **TI provides engineering support on HW & SW side which includes:**
 - HW design review – SCH, Layout
 - SW design review – API, customizations

Minds in Motion



TI Developer Conference

19 - 26 June 2007 • Beijing • Shanghai • Shenzhen • Taipei

Thanks!

Minds in Motion



Technology for Innovators™

 TEXAS INSTRUMENTS