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Smart DMB based on Hybrid DMB

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KBS (Korean Broadcasting System)

Number One Terrestrial Broadcaster in Korea

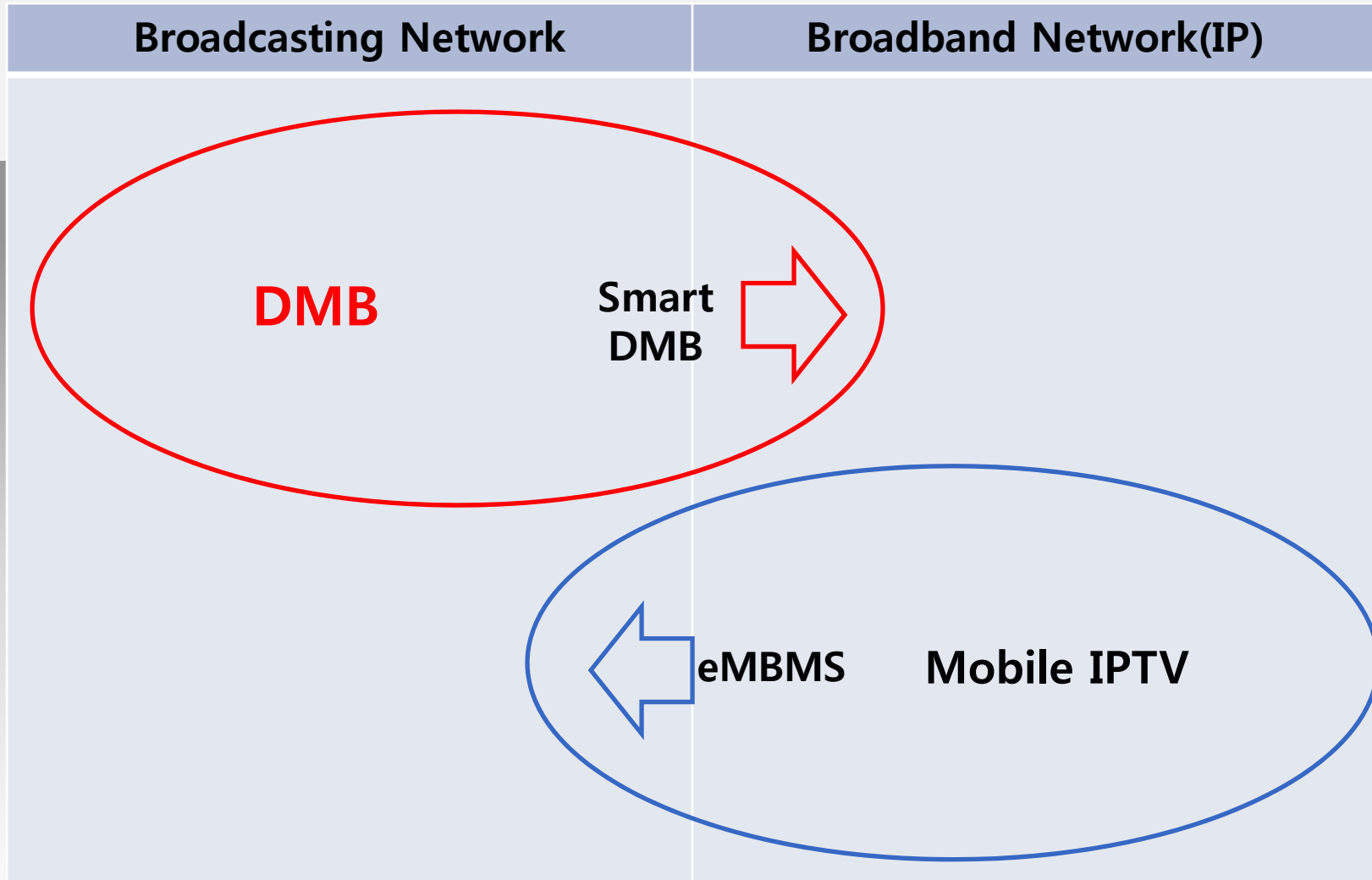


- A Public Company
- Broadcasting Station: 2 TV Channels,
6 Radio Channels
- Program Provider: 6 Cable TV Channels
1 Int'l TV Channel
1 Int'l Radio Channel

- leading HD/UHDTV technology
- leading **public mobile TV technology**

Introduction

Service positioning



Contents

- The traditional DMB
- A new technology: Hybrid DMB
- **A new service: Smart DMB**
- Factors to the success of DMB

Traditional DMB

We launched the T-DMB service on Dec 1, 2005



[전자신문 선정 2005 10대 뉴스] 국내-DMB등 차세대서비스 '첫선'

한미디스지(주) -작게 | 기본 | 크게

지면일자 2005.12.27

기사구분하기 | 원 PDF보기 | 인쇄/인원

[AD] 2011동경개최, LED/OLED, 차세대 조명 전시회, 참가사 모집

올유년 한해는 세계 처음으로 상용서비스에 들어간 차세대 통신서비스가 크게 부각됐다. 특히 휴대인터넷(와이브로)은 부산APEC정상회의에 참석했던 세계 각국 지도자들이 시연회 직접 참가할 정도로 집중적인 관심사였다. 세계 처음으로 선보인 위성 및 지상파디지털멀티미디어방송(DMB)도 시선을 모았다. 삼성전자가 연간 휴대폰 1억대 판매시대를 연 것을 포함, 디지털전자 제품이 연간 1000억달러를 돌파한 것도 올해의 기록 중 하나다. 그런가 하면 도감청 문제가 불거지면서 전직 국정원 관계자가 구속돼 파란을 일으키기도 했다. 무엇보다 올유년 세모를 뜨겁게 달군 것은 '황우석 파문'이었다. 난치기증의 윤리적 의혹에서 비롯된 황우석 파문은 마침내 줄기세포의 전위 논란으로 확대되면서 전국민을 쇼크 상태로까지 몰고갔다. 전자신문이 선정한 올해의 10대 뉴스를 순위별로 살펴본다. <편 집자>

◇DMB 와이브로 등 차세대 서비스 첫 선=지난 5월 위성DMB서비스가 서비스에 들어간 가운데 12월에는 지상파DMB서비스가 세계 처음으로 서비스되면서 IT코리야의 위상을 전세계인의 뇌리에 각인시켰다. 지상파 DMB는 특히 DVB-H 방식의 이동방송이 무제한 유럽-아메리카-중국 등 세계 각국에 시험서비스하는 결실로 진출, 장비업체들의 동반 해외시장 공략 가능성을 높여줬다. 휴대인터넷기술인 와이브로 역시 세계 표준에 채택되면서 해외진출 가능성을 한층 높인 가운데 부산에서 열린 APEC 정상회의에서 시연, 정상외교의 도우미로서 손색이 없을 정도의 찬란을 받았다.

6개 지상파 디지털멀티미디어방송(DMB) 사업자가 12월 1일 '지상파DMB 공동 개국 기념행사'를 갖고 첫 걸출을 축하했다.

Traditional T-DMB System







- Available Services

- Video Service : 320 x 240 (QVGA)
- Visual Radio Service : QVGA Slide Show
- Audio Only Service(similar to FM radio)
- Data & Information Service

- Specifications

- Video Codec : H.264 MPEG-4 AVC(Part 10)
- Audio Codec : BSAC (MPEG-4 AAC Available)
- Multiplex : MPEG-4 over MPEG-2 TS
- Transmission : Eureka-147 DAB System
- Bandwidth : 1.536MHz

T-DMB Channels and Services

		TV Services	(Visual) Radio	Data(Information) Services
VHF CH 8 (6MHz)	8A 	U1(MBN) Lotte Homeshop Home&Shopping		U1 Data
	8B 	mYTN WOW-TV	TBN	nBEEN 4 Drive (TPEG)
	8C 	QBS TVN TBS TV		QBS Data
VHF CH 12 (6MHz)	12A 	myMBC MBC Sports	myMBC Radio	My MBC Data DMB Drive (TPEG)
	12B 	KBS STAR KBS HEART	KBS MUSIC	KBS Clover KBS MOZENTPEG
	12C 	SBS uTV Hyundai Home	V-Radio Arirang Radio	SBS uData SBS ROADi TPEG

Quality issue

We needed to improve video quality to conform large displays
(smart phones)

Proposal 1

To upgrade legacy encoders to HEVC encoders

→ legacy receivers can't understand HEVC streams!

Proposal 2

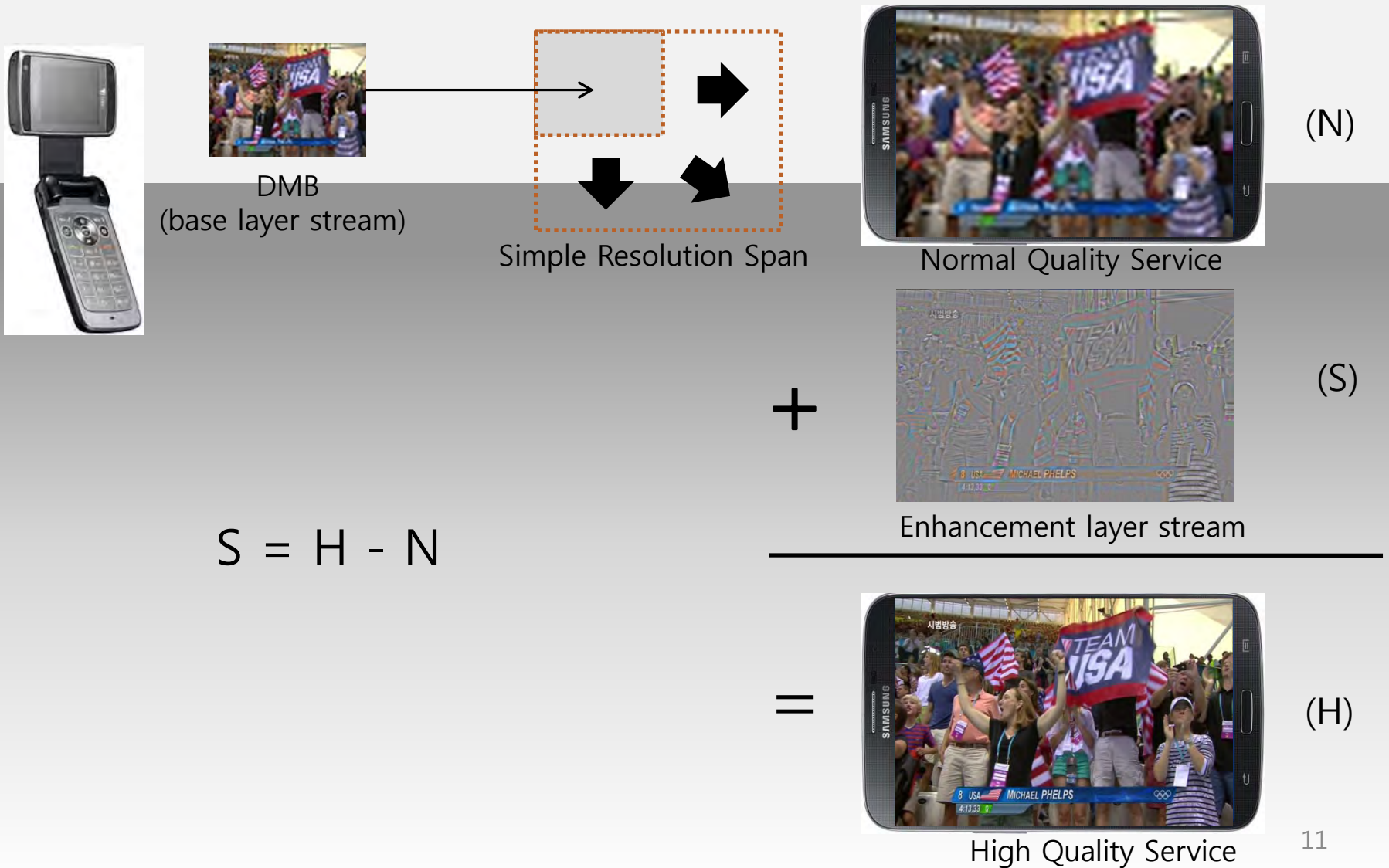
uses **layered coding** to **preserve** the legacy system

Hybrid DMB

- An evolution to better quality

Basic idea

Layered coding

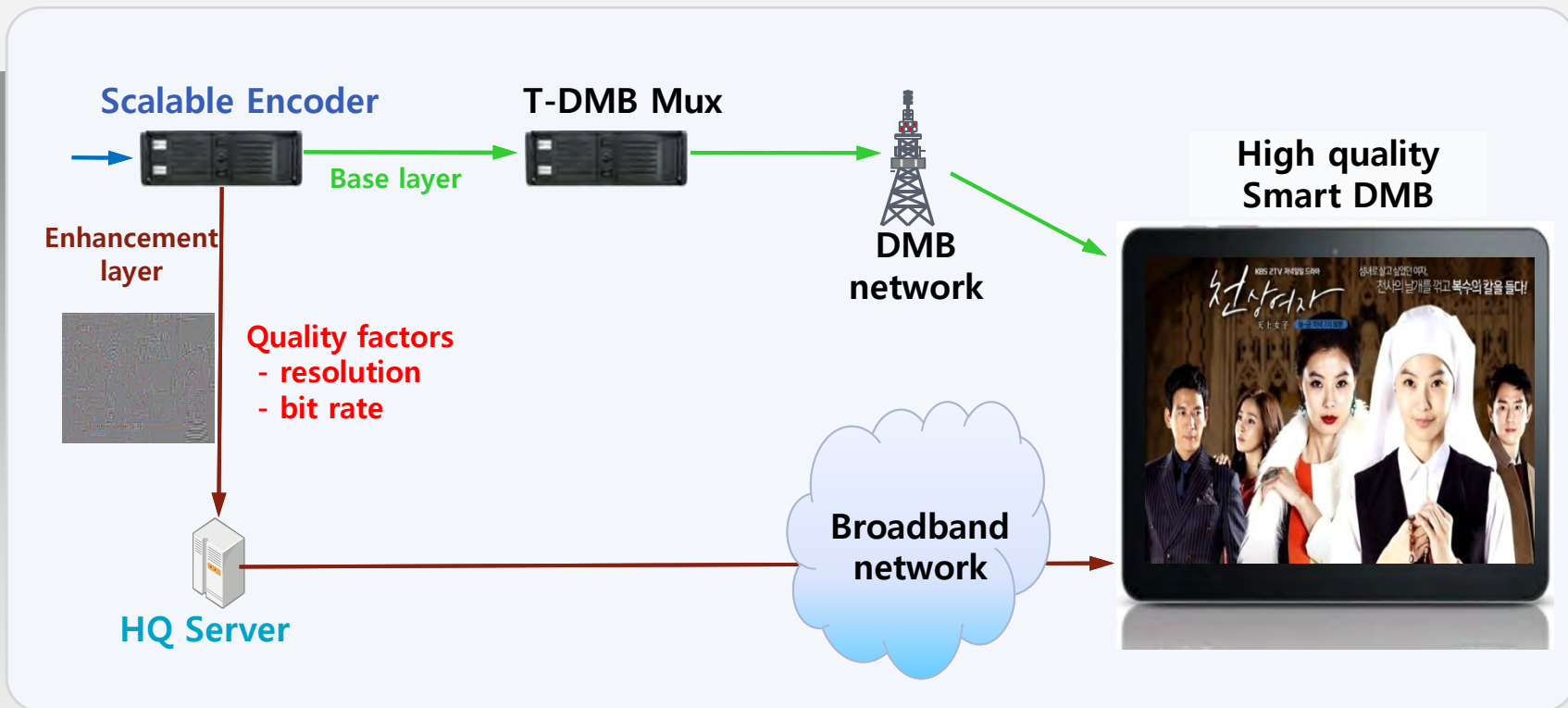


$$S = H - N$$

Basic idea

Layered coding

- Base layer = traditional DMB



- Quality options of the **1st generation** encoder(2013~)
 - resolution: 640 x 480 (fixed)
 - effective bit rates: 400 ~ 600 kbps

Comparison



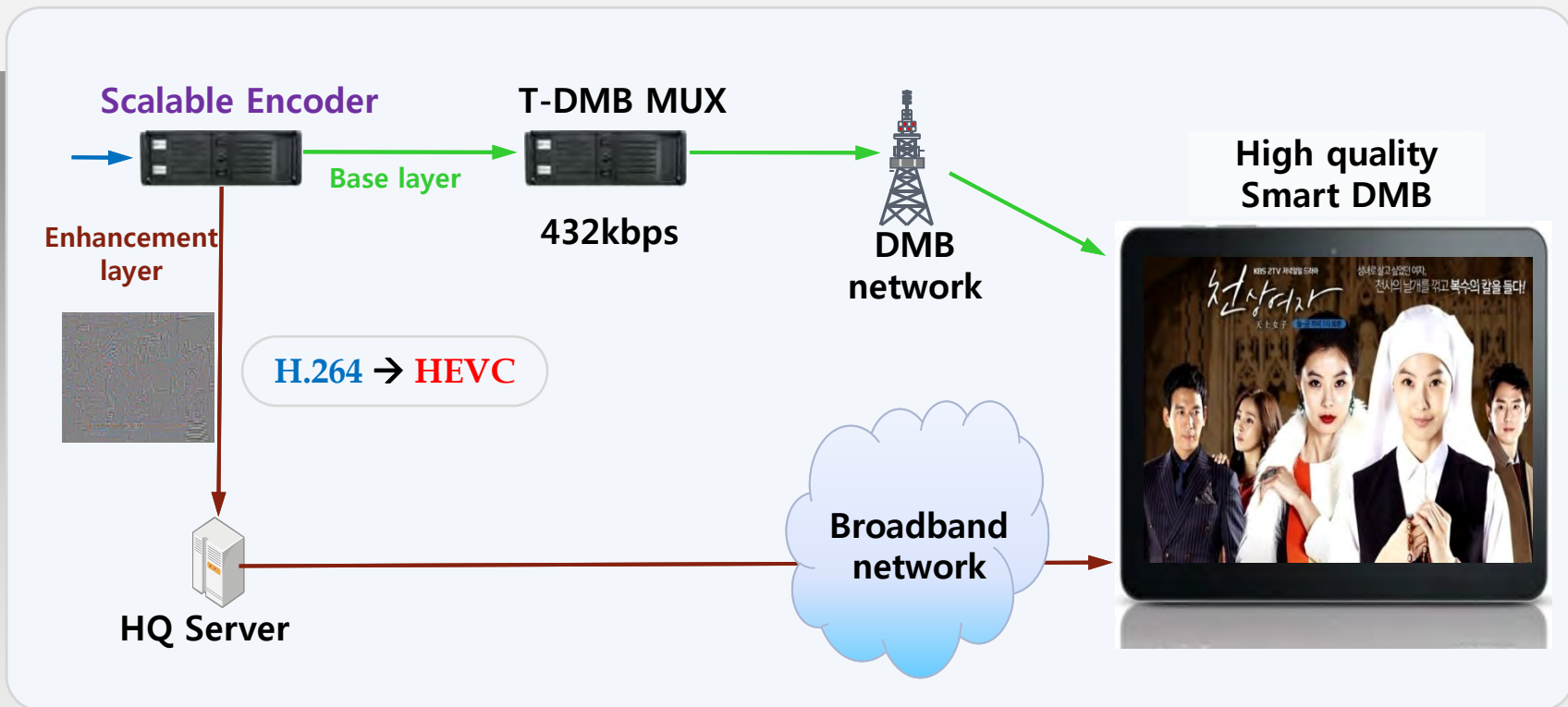
Traditional DMB
320 x 240

Hybrid DMB
640 x 480



2nd Generation (2G)

HEVC is ready



- Quality options of 2G encoders

1. 640X480: (typical) 250kbps
2. 960x540: (typical) 600kbps
3. 1280X720: (typical) 700Kbps

v.

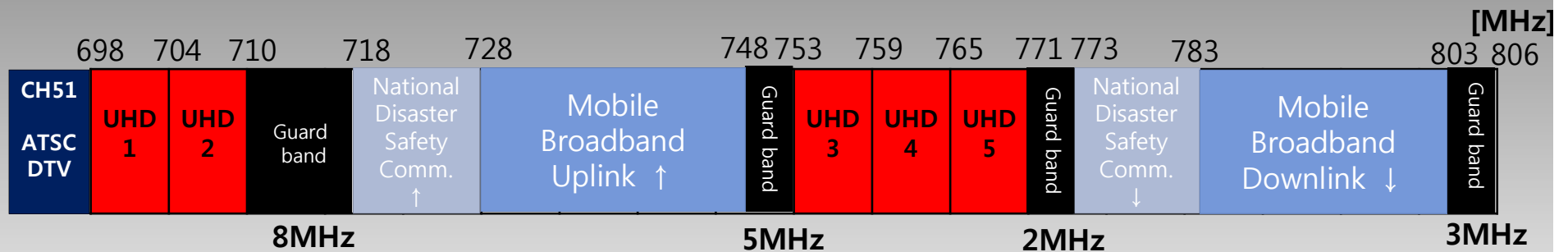
- Quality options of 1G encoders

1. 640X480: (typical) 430kbps

What's the next?

There is an expectation that **UHDTV** system will provide a mobile TV mode

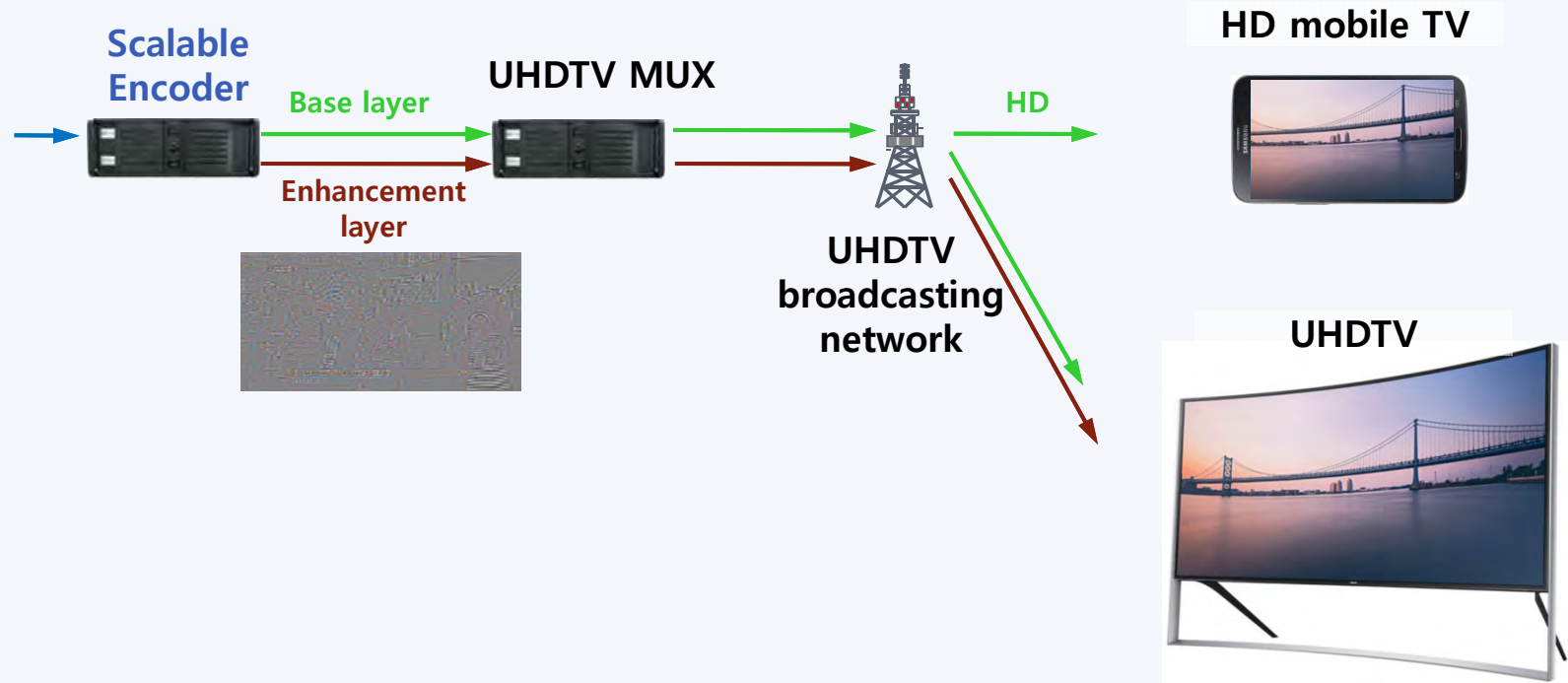
Recently, the government has allocated five 6MHz bands for UHDTV



- 40 MHz frequency bandwidth for mobile broadband network,
- 30 MHz frequency bandwidth for UHD broadcasting network,
- 20 MHz frequency bandwidth for the national disaster safety communications network, and
- 18 MHz frequency bandwidth for guard bands.

(July, 2015)

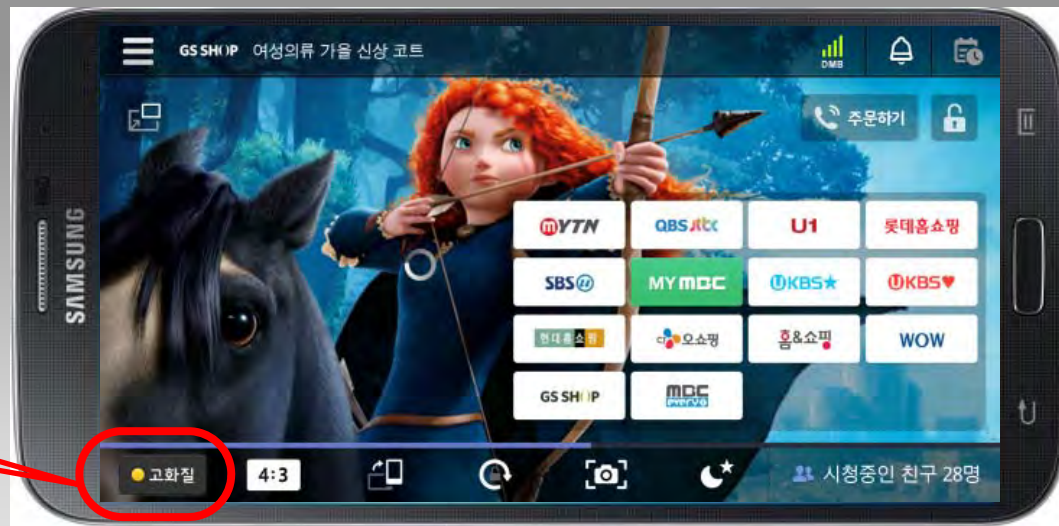
What's the next?



Smart DMB

What is "Smart DMB"?

- Smart DMB is based on **high quality hybrid DMB**
- A "Smart" standard of mobile TV in Korea



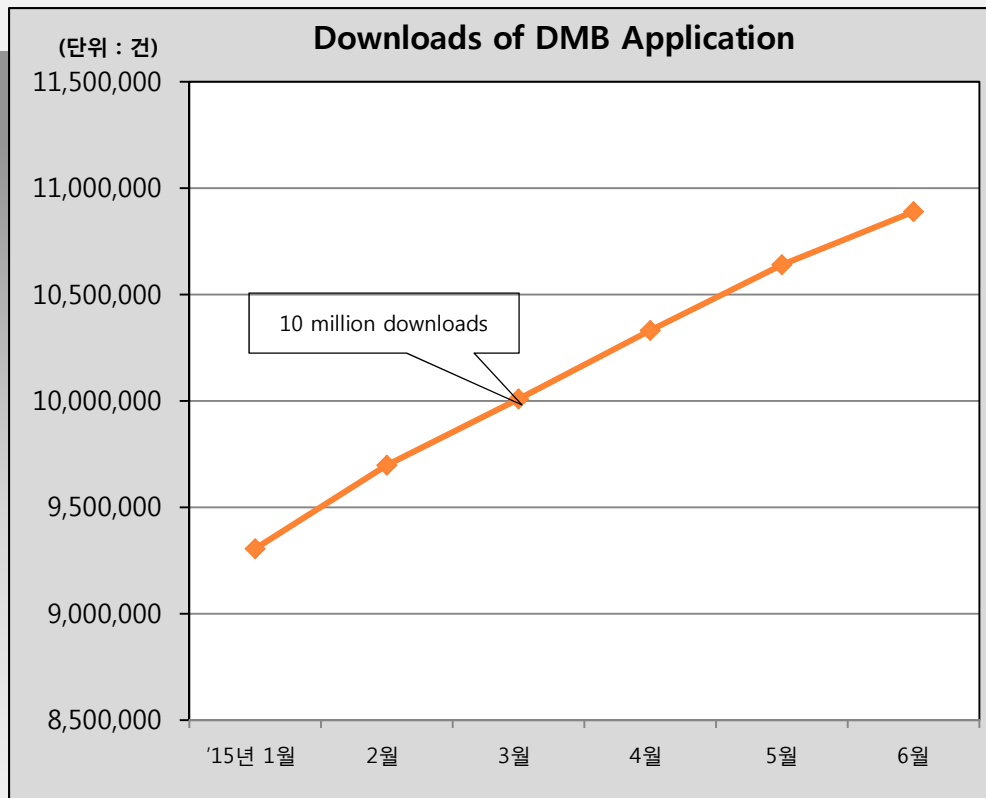
High quality service button

- Conventional service is **free**
- High quality service is in service now!
 - provides **4 times better** video quality than the conventional service
 - uses broadband networks
 - but, **saves 60%** of data volume compared with broadband streaming services

Statistics

Download of the application

App stores : Google play, T store, U+ store, LG smart world, NAVER app store etc.



Number of downloads in 2015

JAN	9,305,845
FEB	9,698,374
MAR	Reached 10 million downloads 10,009,339
APR	10,331,557
MAY	10,639,818
JUN	10,889,698

**310,000 downloads
per month**

Statistics



Receivers



- Target device: [smart phones](#)
- # of smart phones available in Korea:

For traditional DMB : 162 models (95%)

For HQ Smart DMB : 66 models

Manufacturer	models
	Galaxy S2
	Galaxy S2 LTE
	Galaxy S2 HD
	Galaxy Note
	Galaxy R Style
	Galaxy S3
	Galaxy Note2
	Galaxy Grand
	Galaxy Pop
	Galaxy S4
	Galaxy S4 LTE-A
	Galaxy Mega
	Galaxy Grand(new)
	Galaxy Note3
	Galaxy Win
	Galaxy S5
	Galaxy Grand2
	Galaxy S5 Wideband LTE-A
	Galaxy Note4
	Galaxy Note Edge
	Galaxy Grand Max
	Galaxy A5
	Galaxy A7
Galaxy Note4 LTE-A	
Galaxy S6	
Galaxy S6 Edge	
	Optimus 3D
	Optimus Black
	Optimus EX
	Optimus LTE
	Optimus 3D CUBE
Optimus View	

Manufacturer	models
	Optimus LTE TAG
	Optimus LTE 2
	Optimus G
	Optimus View2
	Optimus G Pro
	Optimus LTE 3
	Optimus G2
	View3
	G Flex
	G pro2
	G3
	G3 Beat
	G3 cat.6
	GX2
G3 A	
G3 Screen	
AKA	
G4	
	Vega Racer
	Vega LTE
	Vega LTE M
	Vega Racer 2
	Vega S5
	Vega S5 Special
	Vega R3
	Vega Number6
	Vega Iron
	Vega LTE-A
Vega Secret Note	
Vega Secret Up	
Vega Iron2	
Vega Popup Note	

Manufacturer	models
	Galaxy S3
	Galaxy Note2
	Galaxy Pop
	Galaxy S4
	Galaxy S4 LTE-A
	Galaxy Mega
	Galaxy Note3
	Galaxy Win
	Galaxy S5
	Galaxy Grand2
	Galaxy S5 Wideband LTE-A
	Galaxy Note4
	Galaxy Note Edge
	Galaxy Grand Max
Galaxy A5	
Galaxy A7	
Galaxy Note4 LTE-A	
Galaxy S6	
Galaxy S6 Edge	
	Vega LTE-A
	Vega Secret Note
	Vega Secret Up
	Vega Iron2
Vega Popup Note	
	G4
	Has a plan to upgrade various models

Media Services

High quality video



[Conventional service]



[High quality service]

- Free TV

- no payment for the content

- Saving data

- : requires only 40% of broadband data consumption compared with typical internet streaming service

[Amount of data for 1 hr]

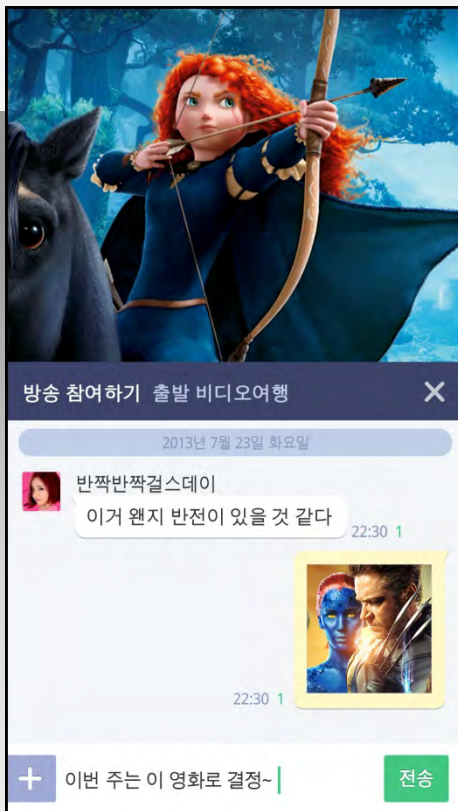
Broadband streaming service	Smart DMB HQ
400~550Mbytes	120~150Mbytes

- High quality DMB channels

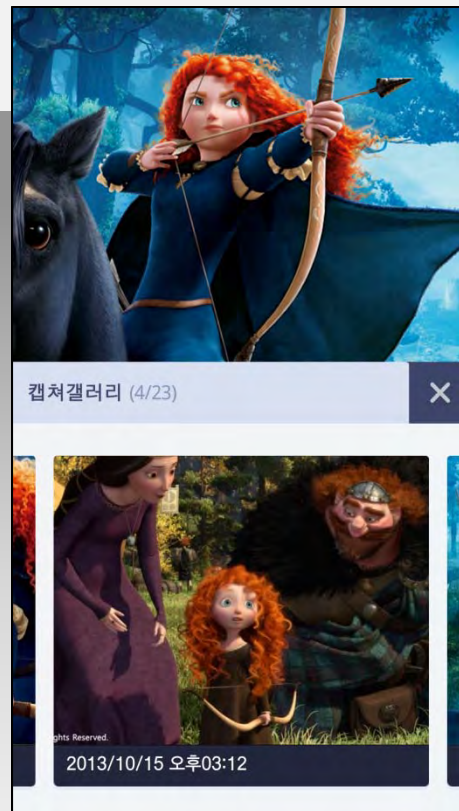
- | | |
|-------------|-----------------------|
| ❖ KBS HEART | ❖ U1 |
| ❖ KBS STAR | ❖ GS Shop |
| ❖ My MBC | ❖ Lotte home shopping |
| ❖ SBS u TV | ❖ Home&shopping |
| ❖ mYTN | ❖ MBC Sports+ |
| ❖ QBS | |

Media Services

Community



[Chatting Room]



[Capture gallery]

- **Chatting room**
 - you can talk to other users watching the same program
- **Capture gallery**
 - you can upload captured images and brief descriptions

Media Services

Video clips



- **Video clip service**

- provides various video clips including major broadcasters' contents

- **Commercials (BM)**

- making money with putting commercials before video clips

(launching in the 4th quarter, 2015)

Business Models

Advertisement



[Full-page AD]



[Banner AD]



[Zapping time AD]

Business Models

Home shopping



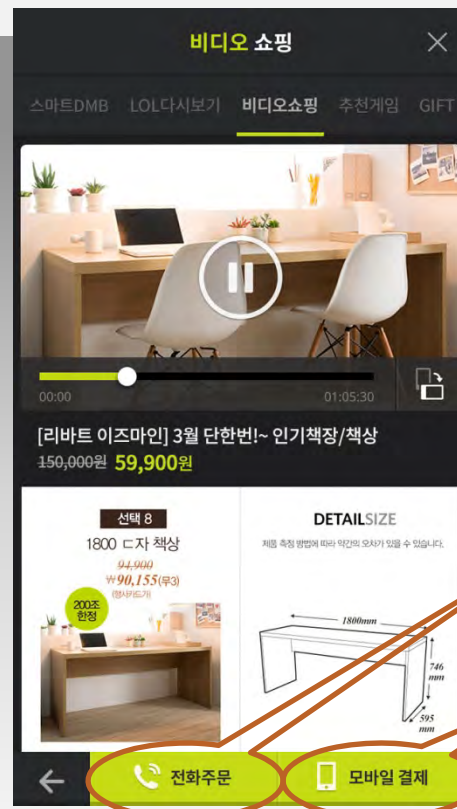
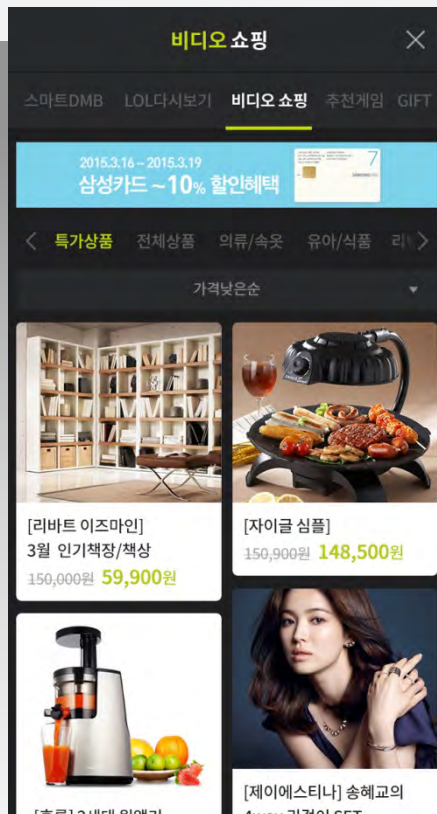
- 5 home shopping channels

- One-click order button
 - people don't need to press telephone numbers

Business Models

Video shopping

home shopping is based on channel
Video shopping is based on VOD



- Video clips introduce products

- Order by calling a representative
- for old people

- Order by internet payment
- for young people

Business Models

SHOPPL

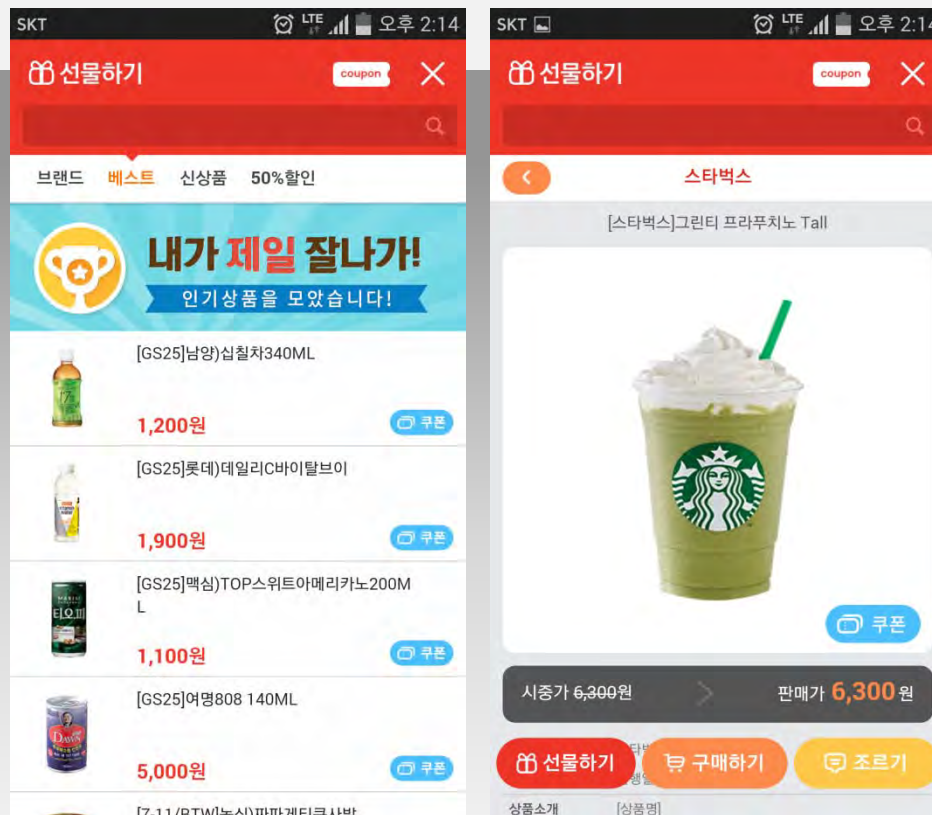
Providing the information of products featured in a program



- Products featured in TV

Business Models

Gifting

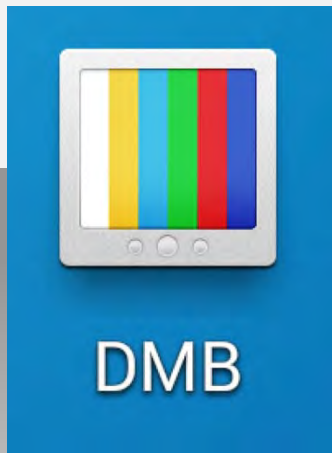


- Purchasing a gift for me
- Sending a gift to your acquaintances
- Asking your acquaintance for a gift
- 800 mobile coupons for 7-eleven products, coffee, bakery, cosmetics, musics, etc.

Factors to the success of DMB

"Content is everything"

Case study: T-DMB v. S-DMB



v.



Terrestrial-DMB		Satellite-DMB
December 1, 2005	Date of birth	May 1, 2005
-	Date of death	August 31, 2012
November 25, 2013	Date of rebirth	-
Terrestrial broadcasters (major content providers)	Main Founders	A big telecom
Free	Payment	Not free

And the most important factor is/was...

Receiver issue

How many people have DMB receivers?

→ # of receivers > 100 million (cumulatively)

Almost everyone has **free access** to **DMB** in Korea



Any Questions?

You can email me at dinu@kbs.co.kr

Thank you very much!