


- What's Next for Mobile Service? -
Mobile TV Business in Japan

Dec. 3th, 2007

President
MediaFLO Japan Planning Inc.
MASUDA, Kazuhiko

➡ Est. Dec. 27th, 2005

➡ Capital ¥450M (initial : ¥10M, capital increased Aug., 2006)

 Shareholders	KDDI	80%
	Qualcomm Inc.	20%


➡ Activities

 Introduction of MediaFLO Technologies.

 Effort to secure the Frequency/Business License

➤ Participation to the electric wave effective use policy committee (*) to which the Ministry of Internal Affairs and Communications enacts a secretariat

(※ "Technical Requirements for Efficient Use of VHF/UHF Bands" on Effective Spectrum Usage Policy Committee, Telecommunications Council)

 Market Research, Feasibility Study...

 Technical review for Japanese market environment

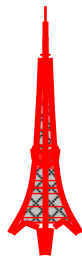
Broadcast infrastructure vs Telecom infrastructure

- transmission technology -

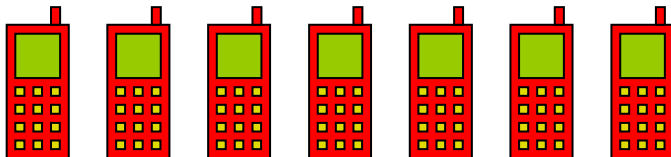
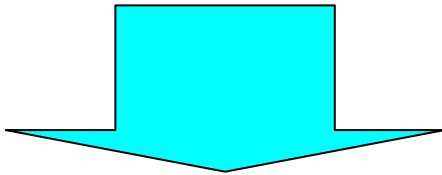
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Broadcast infrastructure

1 to N

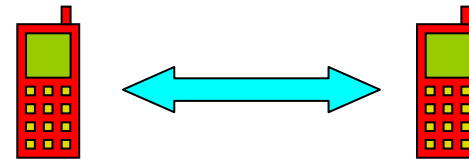


One-way

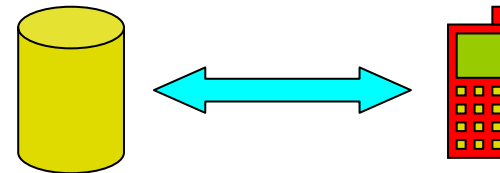


Telecom infrastructure

1 to 1



Peer-to-Peer



Server-Client

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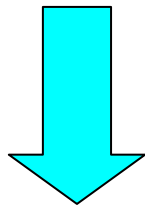
Broadcast infrastructure vs Telecom infrastructure

- Data-transmission capacity -

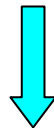
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Broadcast
infrastructure

NOT Depends on the Subs.



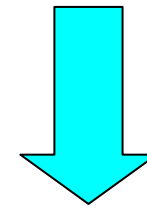
NO "capacity" concept



NO need continuous
CAPEX for the equipments

Telecom
infrastructure

Depends on the Subs.



Bit rate
Transaction



Need continuous
CAPEX for the equipments

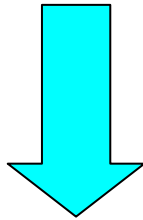
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Broadcast infrastructure vs Telecom infrastructure

- customer's point of view -

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Broadcast Infrastructure

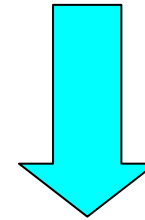


"simultaneous"

"extremely rich"

"push"

Telecom Infrastructure



"on demand"

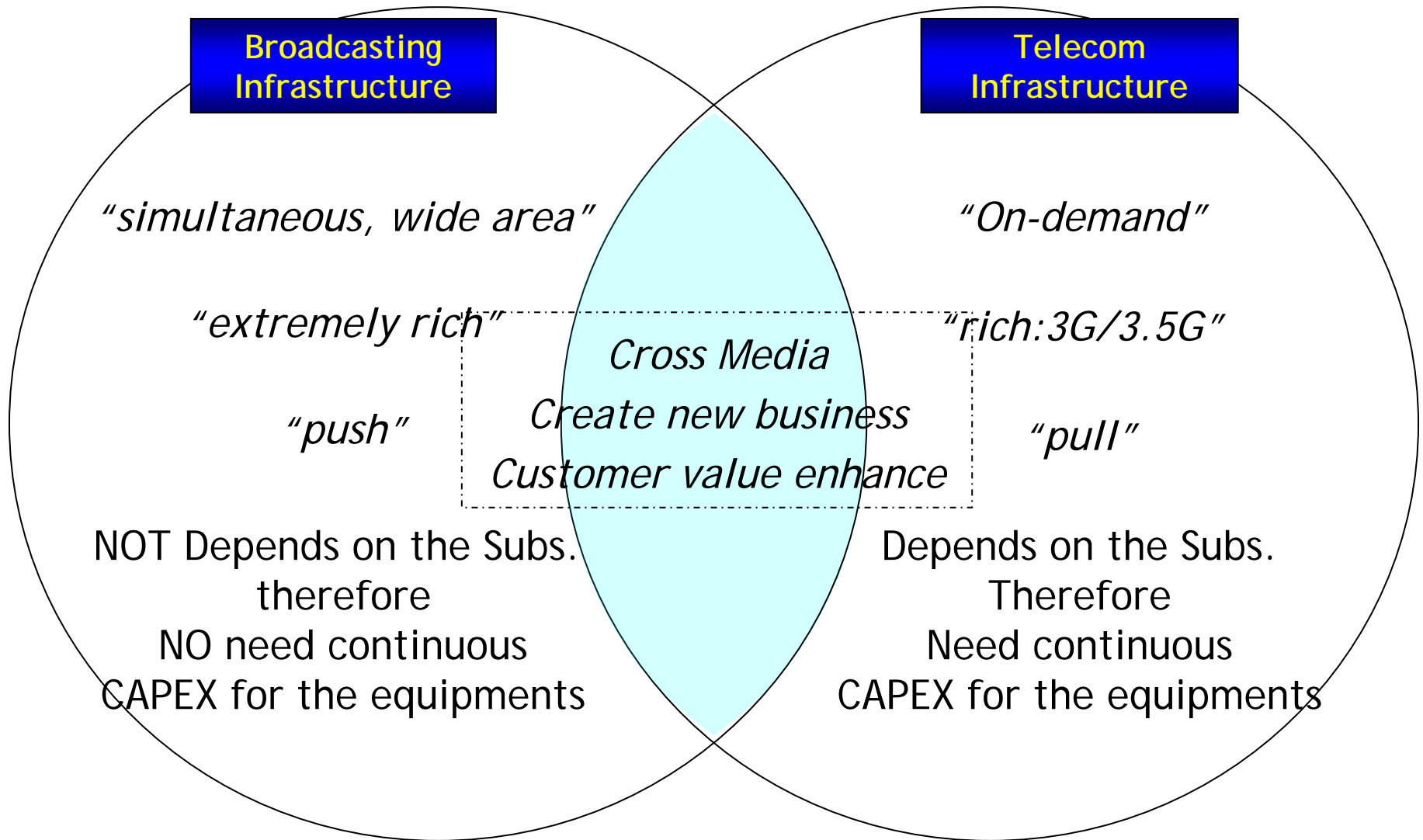
"rich : 3G/3.5G"

"pull"

Users do NOT need to aware of their using technologies

Key Factor for Multimedia Broadcasting Service

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Mobile TV

3 Major Standards

DVB-H

ISDB-T

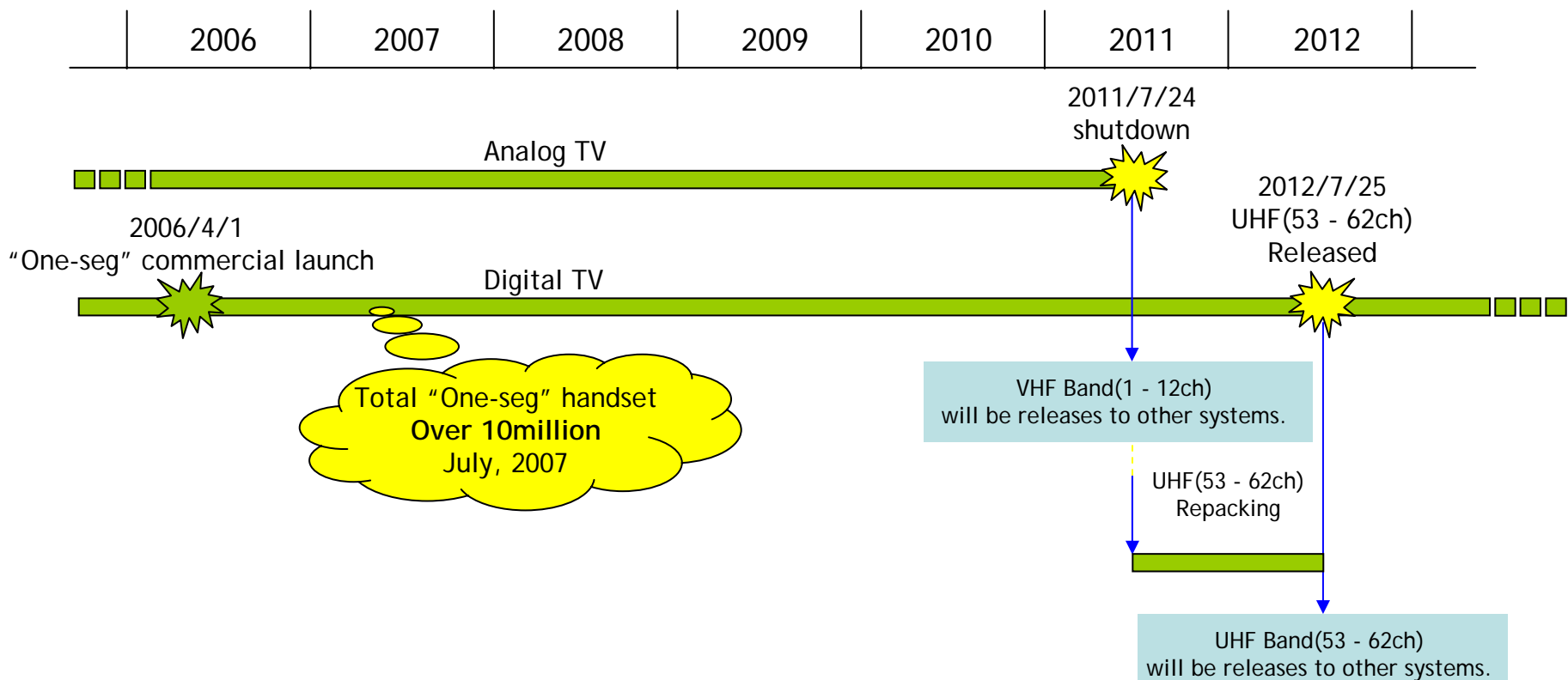
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Future VHF/UHF band roadmap

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The future roadmap for VHF/UHF band

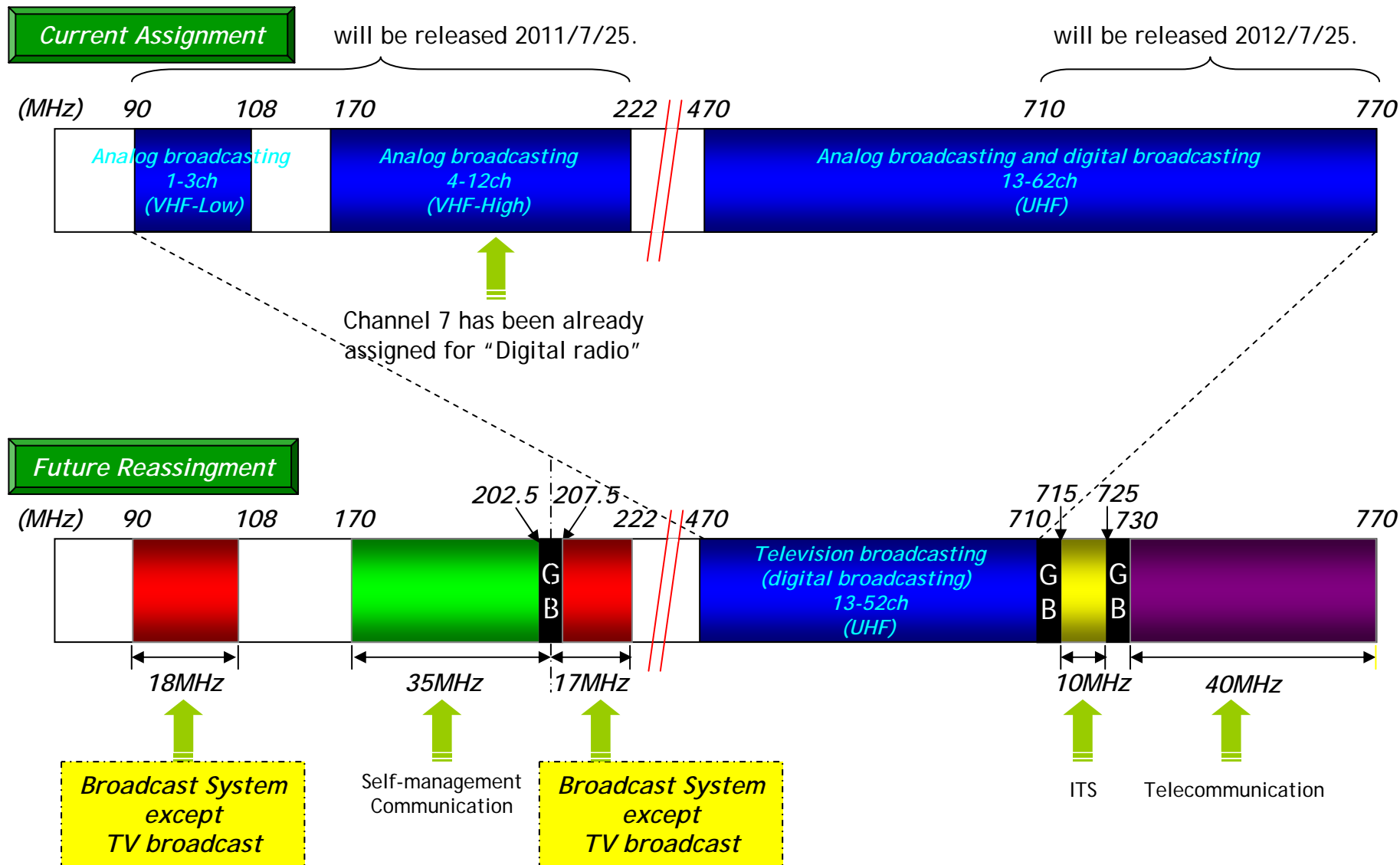
- Current analog TV broadcasting is scheduled to shutdown by July 24, 2011.
- Discussion of current analog TV band reuse started last year.
- Final report of current analog TV band reuse released on June, 27th 2007.



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Result of the electric wave effective use policy committee

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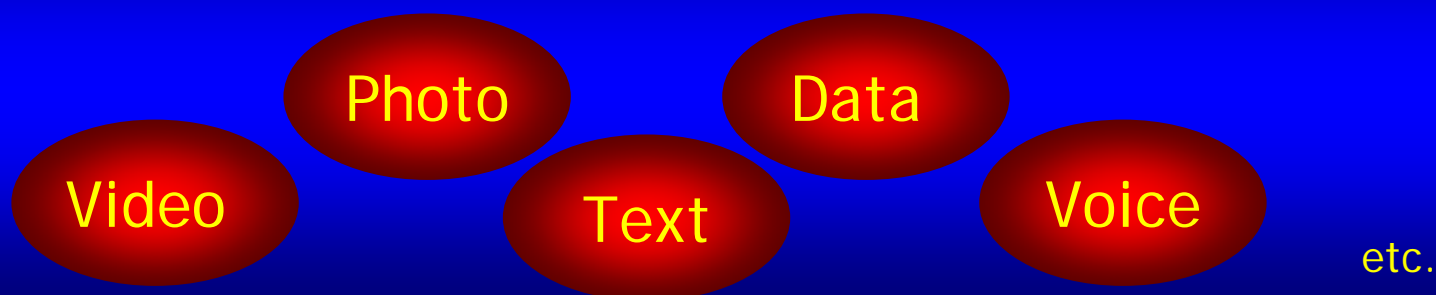


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What is “MediaFLO”?

Why KDDI is interested in “MediaFLO Technology”?

Multimedia offering



The method of contents transmission is plurality.

Realtime Streaming

Like TV / Radio

Clipcasting

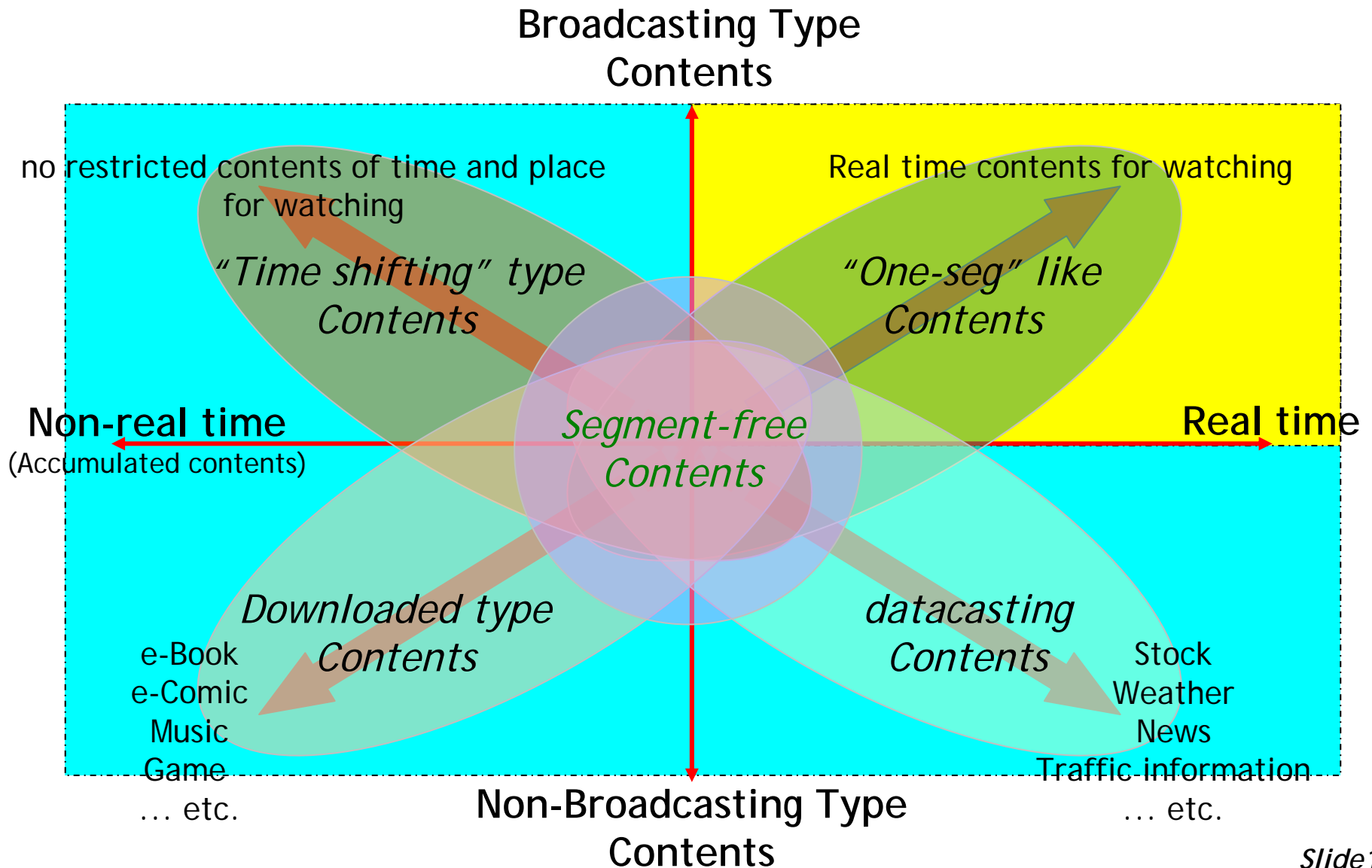
Like "ipod"

IP datacasting

Various data is distribution
by a bit stream.
Enjoy with
Viewer application.

Diversity of contents - contents types

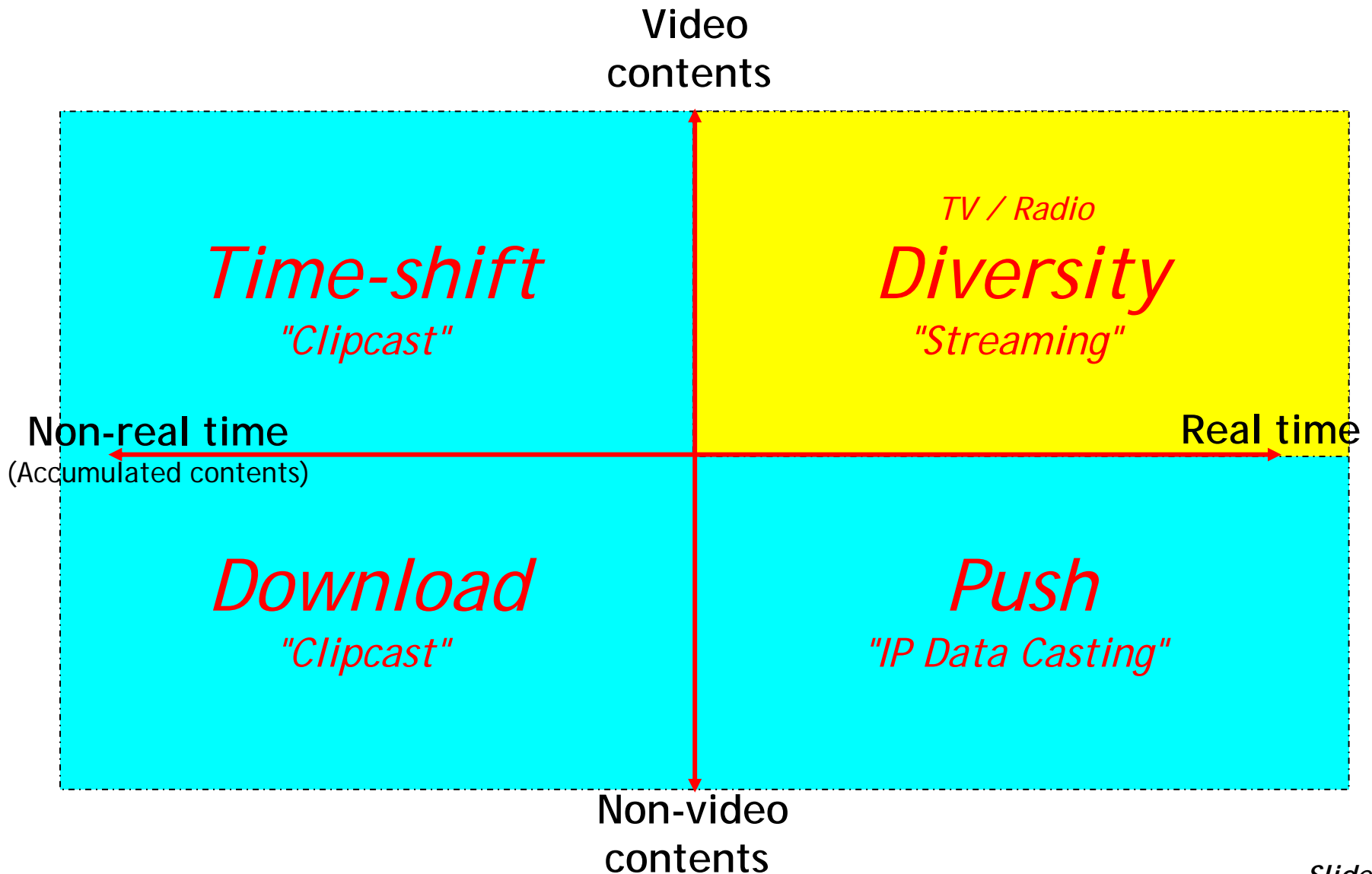
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The diversity of contents, and technology of MediaFLO

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The feature of MediaFLO [High quality video service]

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Video qualities

 High Quality

H.264/AVC, QVGA, 30fps

 Base Quality

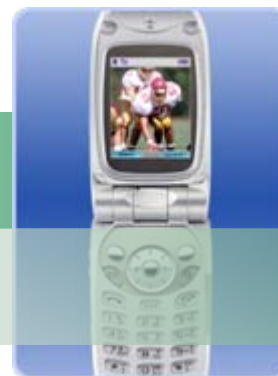
H.264/AVC, QVGA, 15fps

*note : ISDB-T

H.264/AVC, QVGA, 15fps only



Base Layer+Exp. Frame
30fps



Terminal A
(good RF condition)



Terminal B
(bad RF condition)

Base Layer
15fps

FLO broadcasting tower

The feature of MediaFLO [High efficient frequency usage]

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Bandwidth usage simulation (6MHz bandwidth case)

Streaming Video(H.264/QVGA/30fps) 20ch

➤ Sports, animation, news, music, etc.

➤ Total bit rate for Video approx. 4.4Mbps (about 220kbps x 20ch)

➤ Total bit rate for Voice approx. 640kbps (32kbps x 20ch)

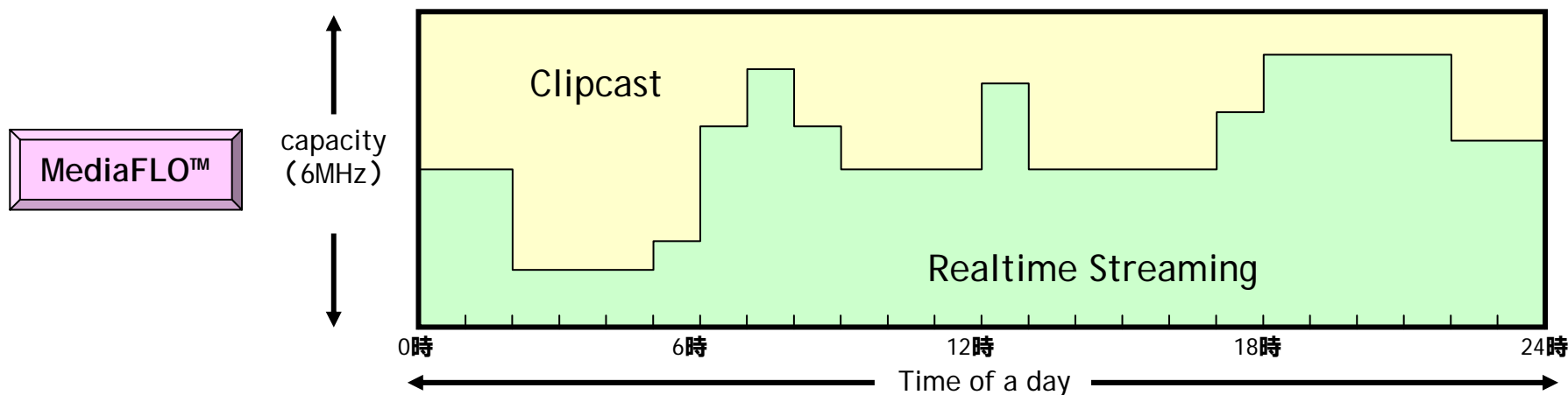
➤ Total bit rate for Video and Voice 4.4Mbps + 640kbps = approx. 5 Mbps

Streaming stereo music 10ch

➤ Total bit rate 480kbps (48kbps x 10ch)

Total bit rate for streaming approx. 5.5 Mbps

➤ In average, remaining 0.5 Mbps can be used for clipcasting etc.

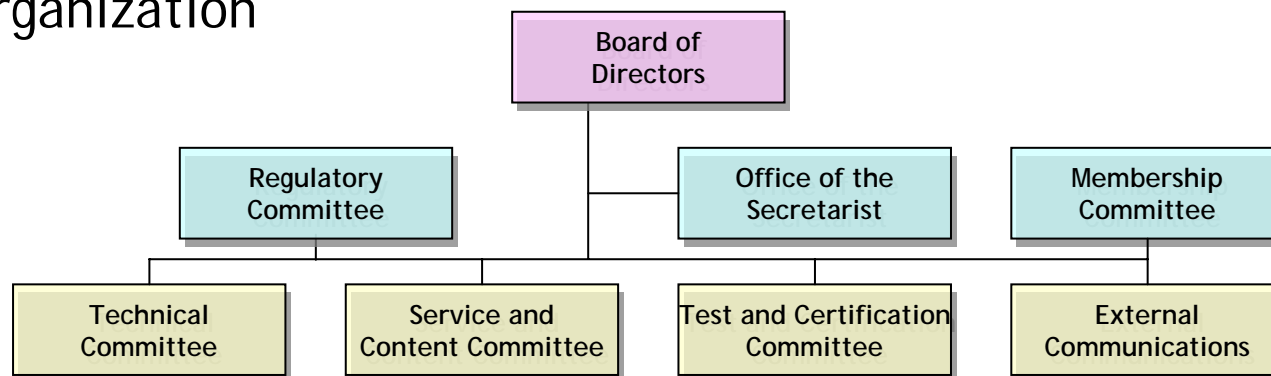


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➤ FLO Forum [<http://www.floforum.org>]

■ The voluntary association to standardize MediaFLO, established in July, 2005

■ Organization



■ Forum members (as of Mar. 2007) 80 companies (incl. 11 Japanese companies)

➤ Standardization status in FLO Forum

■ Nov. 2005 Complete Air Interface Spec.(AIS)
Standardization

■ Working towards to the feature expansion

FLO Forum Members (as of Mar. 2005, 80 companies)

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Standardization organization

TIA

- January, 2006 Starts standardizing operation in TIA.
- July, 2006 Complete the standardization (TIA-1099) as TR-47.
- October, 2006 Complete the standardization of Minimum Performance Spec.
 - (Device:TIA-1102, Transmitter:TIA-1103, Application Protocol:TIA-1104)

ITU

- The 2nd half of 2003 Start activity that FLO to be indicated in ITU Recommendation
- May, 2007 ITU SG6 adopted the ITU Recommendation which indicates FLO technical specifications in addition to ISDB-Tone segment and DVB-H.
(Latest version DNR ITU-R BT.[DOC.6 / 374] Broadcasting of multimedia and data applications for mobile reception by handheld receivers)

➡ USA

 MediaFLO USA, Inc. established

- Secured frequency by the auction.

 The trend of each cellular carrier

- Verizon Wireless Launched from Mar. 2007
- SprintNextel Under trial
- T-Mobile USA Under trial
- at&t(former "Cingular") will launch in this year

 Other Mobile TV technology trends in the U.S.

- Crown Castle gave up commercialization DVB-H service "MODEO" after the trial.

➡ Other

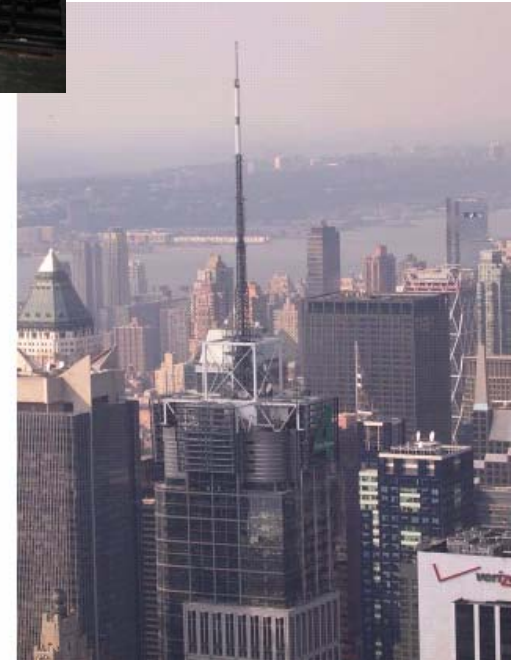
 Trial is proceeding or planned in some countries such as Great Britain and Taiwan.

Broadcasting Center (MediaFLO USA Inc.)



(Source: Nikkei Business Publications "Tech-On" <http://techon.nikkeibp.co.jp>)

The example of broadcast equipment



Commercial Terminals

(for Verizon Wireless, USA)

Commercial terminals from LG and Samsung

(Source: Broadband Watch)



SHARP, KYOCERA, Motorola, Inc., Pantech, etc.
have developed the trial handset

MediaFLO Future Services

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IP data casting will also be supported for the future

Traffic data channel



Weather data channel



Weather



(Source: K-tai Watch)

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Status of MediaFLO in Japan

Outline of Market Research for MediaFLO

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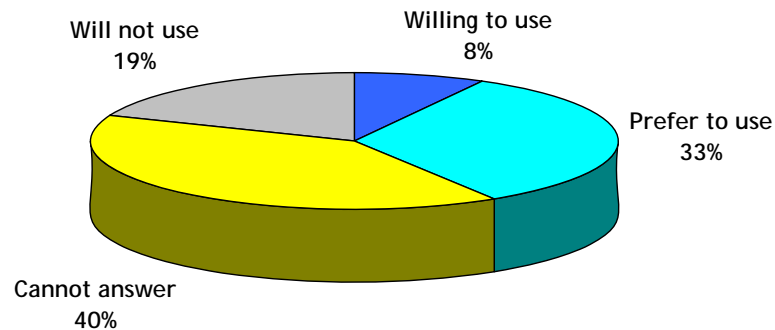
Research method	Web research	CLT (Central Location Test)
Surveyed person	All demographic segments of Japanese	High ARPU user in a Tokyo metropolitan area
Service explanation method	The image video for about 4 minutes explains the feature and the contents of service	The same service introduction image as left column, and “touch and try” experience by areal terminal.
Consultation period	October 1, 2006 to October 3	September 30, 2006 to October 3
effective replies	3000 samples	227 samples
Attribute	<p>Gender : Male 50.5% / Female 49.5%</p> <p>Age : 19 and below 8.8% 20-35 years old 34.4% 36-59 years old 53.2% 60 and over 3.6%</p>	<p>Gender: Male 44.1% / Female 55.9%</p> <p>Age: 19 and below 2.2% 20-35 years old 49.3% 36-59 years old 45.8% 60 and over 2.6%</p>
	<p>MediaFLO Japan Planning Inc. KDDI, Inc. Qualcomm Japan, Inc. (Consultation : Accenture)</p>	

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Market Research Results (1)

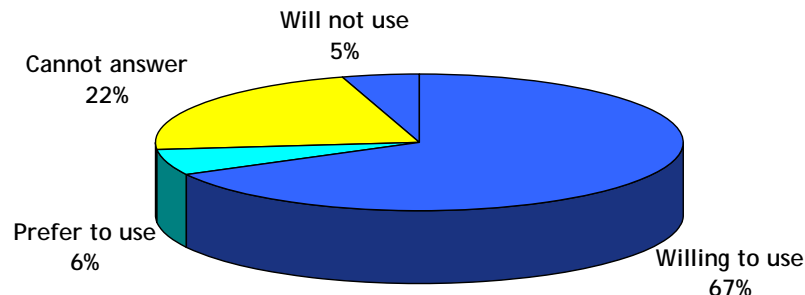
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Q1: Would you like to use MediaFLO Service?



Intentions to use
by Web research

Approx. 41%



Intentions to use
by CLT

Approx. 83%



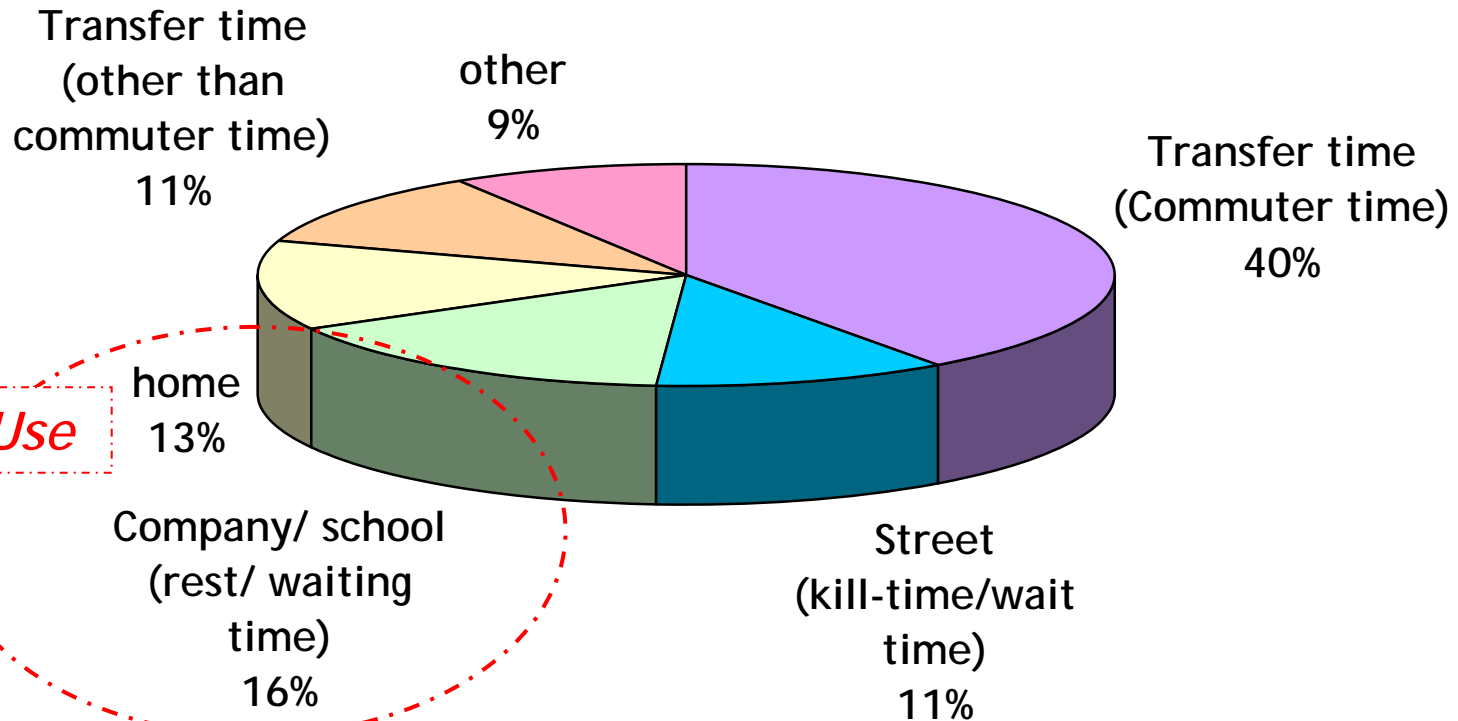
Service of a "substance guided type"

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Market Research Results (2)

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Q2: When would like to use MediaFLO in your life scene?
(Web research result)



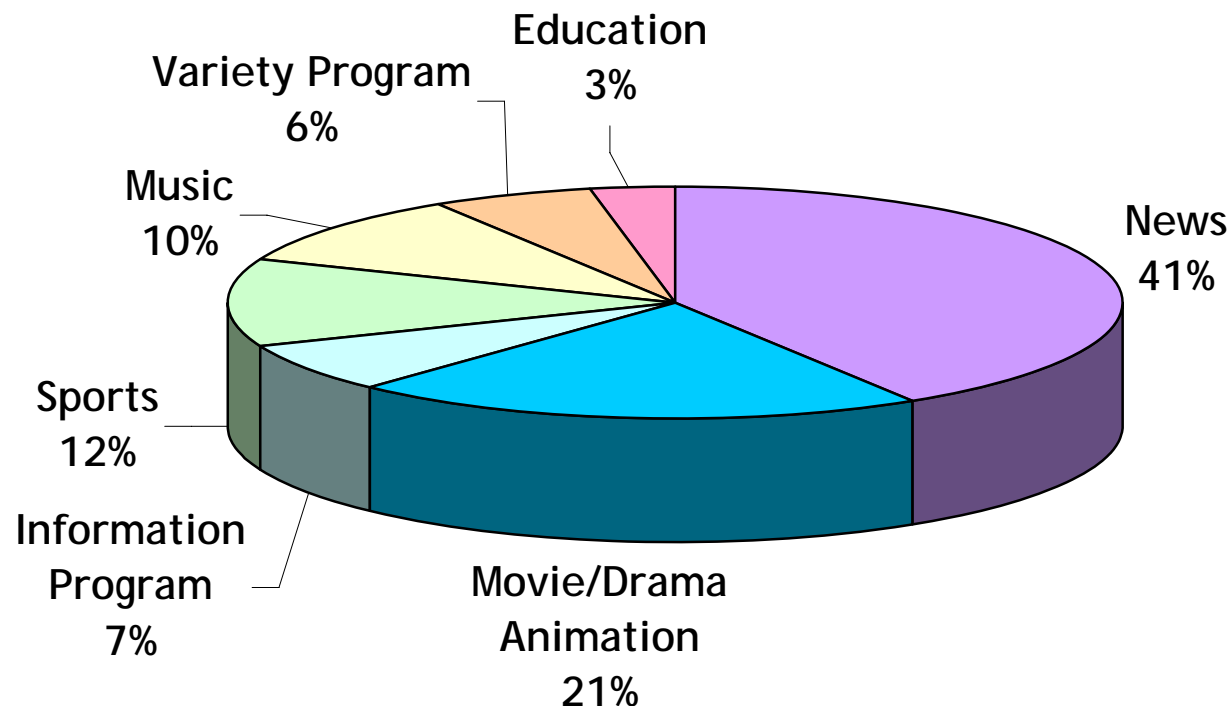
The intentional use in the time of moving or killing time is remarkable.
And indoor use needs, such as a house and a company, also exists.

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Market Research Results (3)

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Q3: Which is your most interest content genres when you will use
(Web research result)



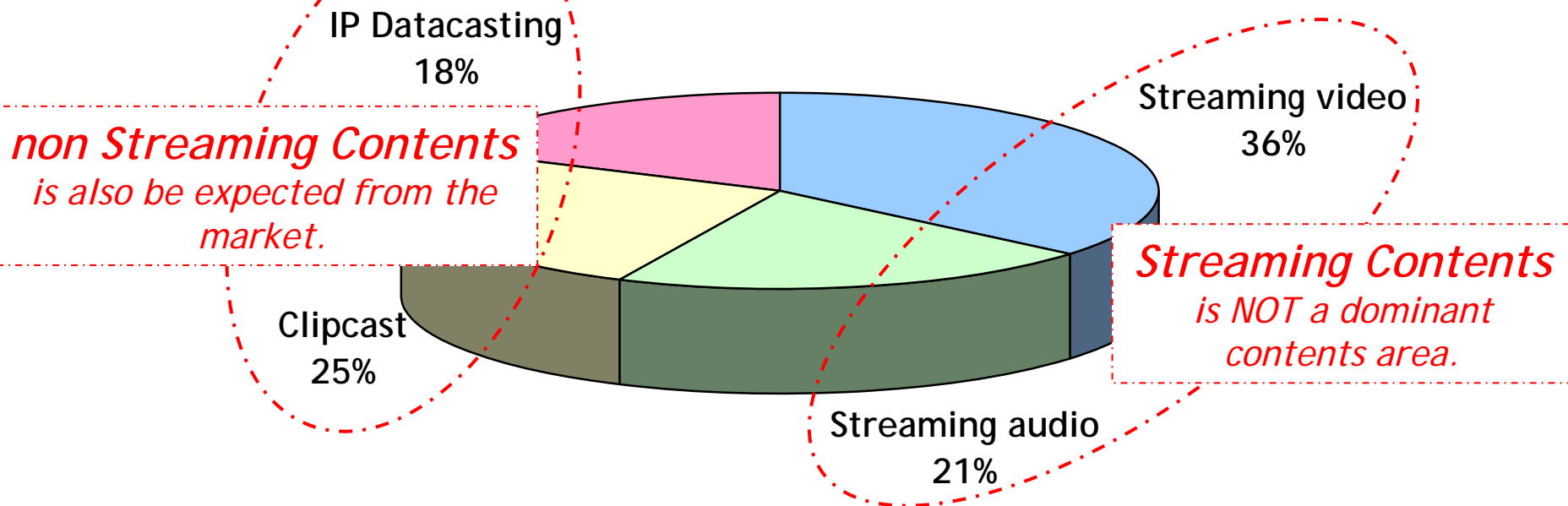
The needs of immediacy contents like news are remarkable.
And the needs of high quality contents,
such as movie/drama/animation, also exists.

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Market Research Results (4)

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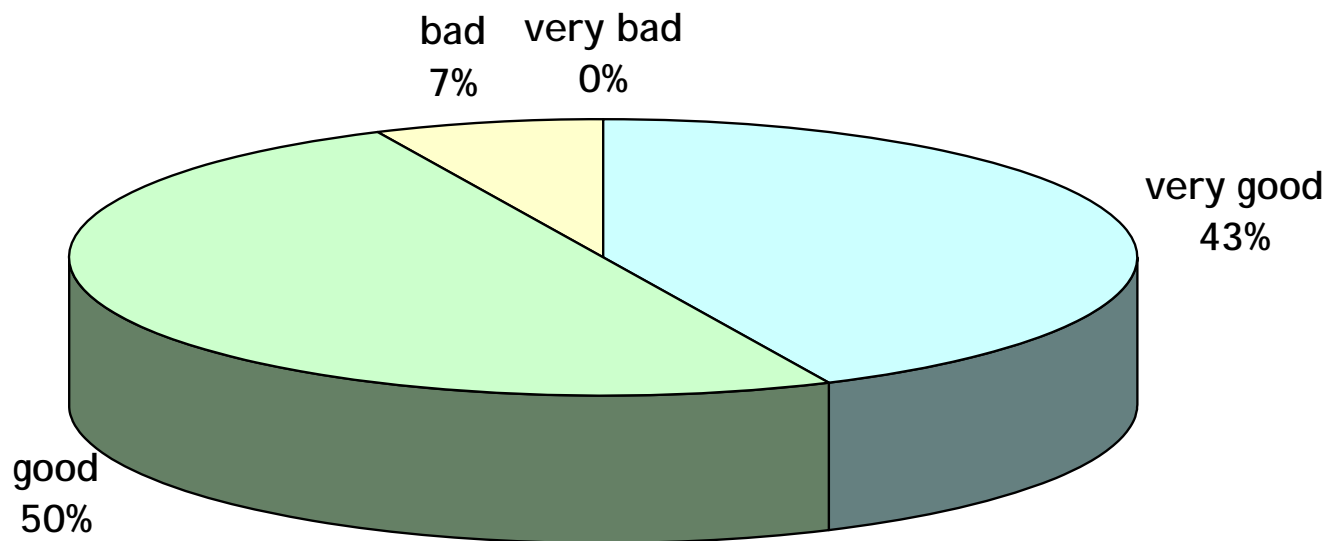
Q4: When a channel can be assigned to the following four kinds of MediaFLO services, what kind of distribution is desirable?
(Web research result)



They are not only streaming contents needs in the market, but also there are the needs like a cellular contents.

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Q5: (After actual operating) How did you feel about the smoothness of the animation of an image. ?
(CLT result)



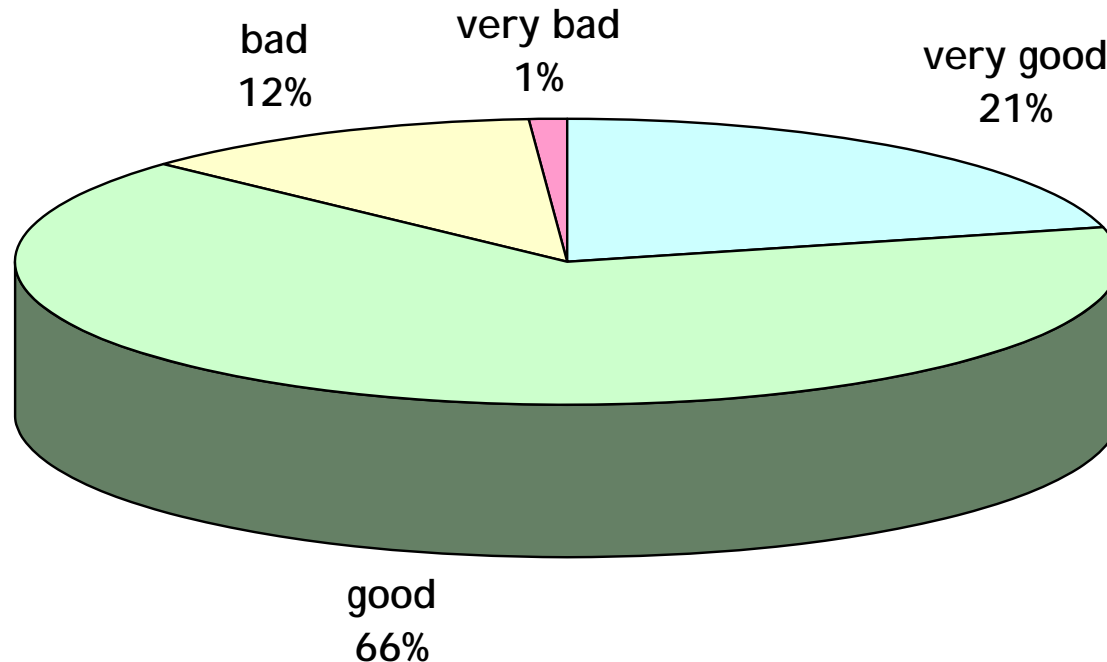
About 30fps video quality, it was a very good reaction.
Higher quality contents needs exist.

Market Research Results (6)

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Q6: (After actual operating) How did you feel about the style which chooses a program from an electronic program guide?

(CLT result)

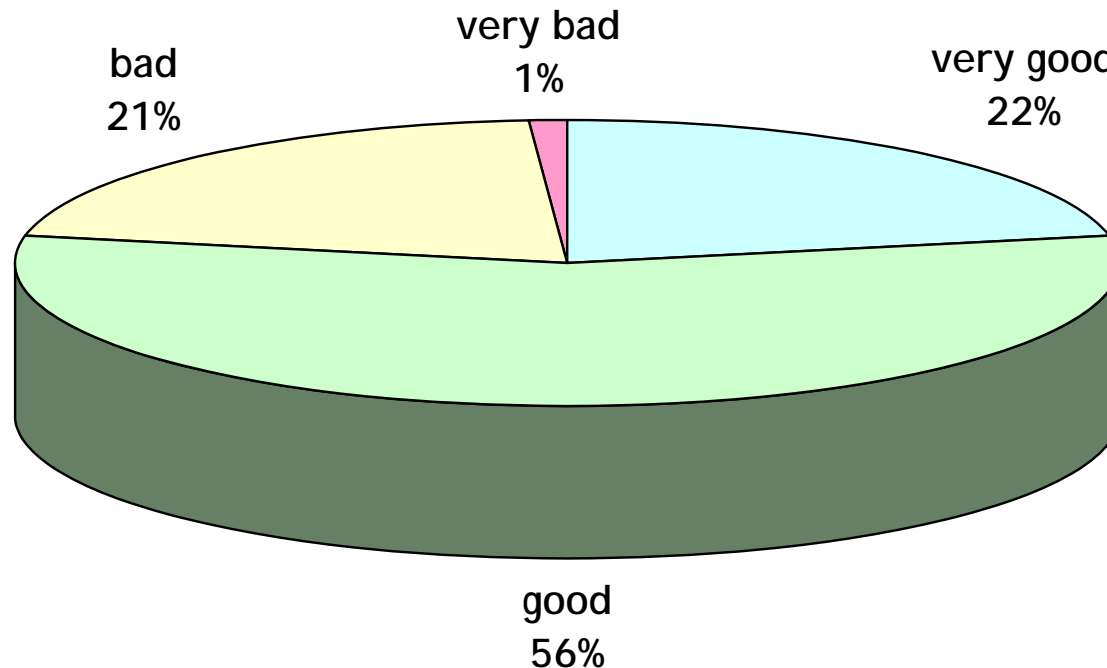


Since it is service for cellular phones,
User Interface is very important.

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Q7: (After actual operating) How did you feel about the change time to other channels?

(CLT result)



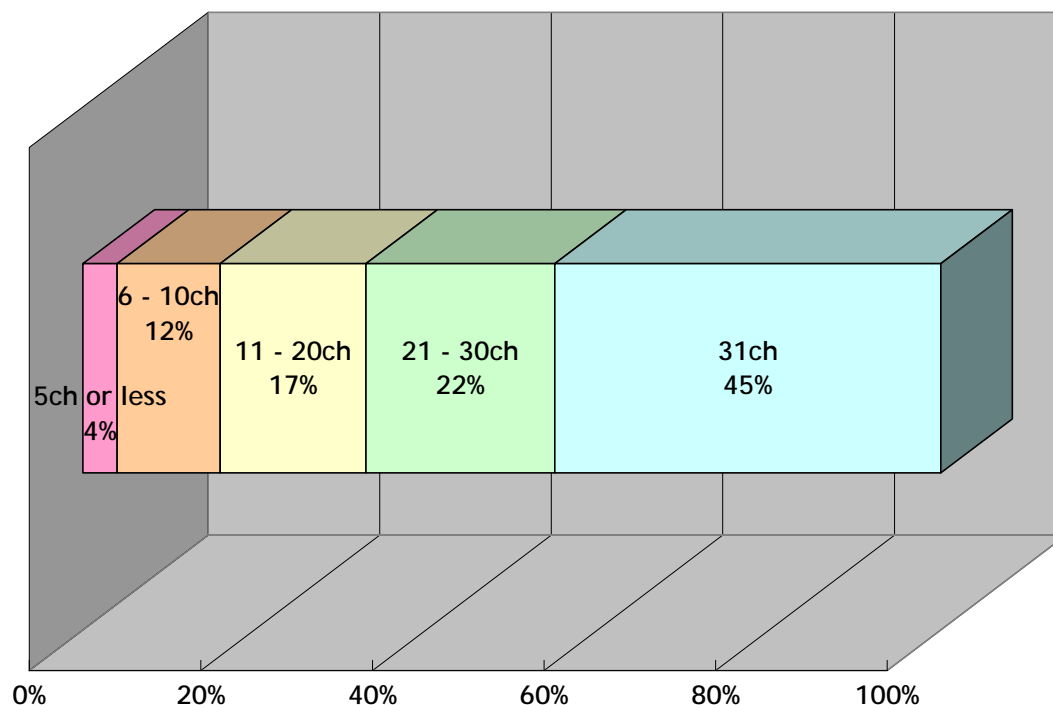
Zapping time is comparatively short systematically.
The evaluation about zapping time in overseas are also high.

Market Research Results (8)

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Q8: As the lineup which can be chosen with the whole service,
Please answer the number of channels considered to be indispensable.

(CLT result)



The replies with "20 or more ch necessity" are about 2/3 of the whole.
Multi-channel needs are very great.

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In-door Testing@KDD Designing Studio

Contents

real time contents



Pre-encoding contents



... and one more is coming soon

IP Data Casting

➤ Dummy data - stock info, weather, news, sports news

Application



Handset



KDDI Designing Studio in-door testing

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Thank you!