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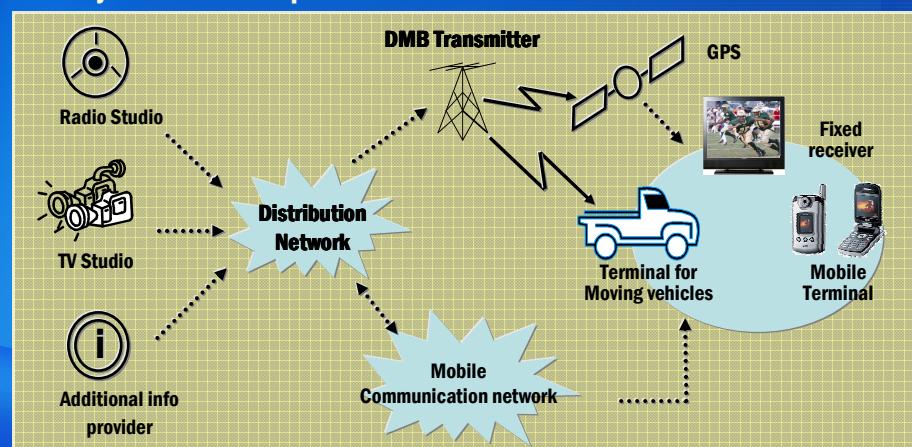
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Introduction of DMB

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1. Definition

- Provides video and data services as well as CD-quality audio service
- AV and data standard extension of Digital Audio Broadcasting(DAB)
- Fully backward compatible with Eureka-147



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2. Characteristics of T-DMB

Personal

- Personal services using individual receiver
 - . Mobile phone, PDA, Notebook PC, DMB receiver

Mobile

- Seamless reception of broadcasting contents
 - . Any time, anywhere
 - . Good reception at the speed of 150 km/h

Interactive

- Bidirectional services linked with mobile communication network
 - . PPV, on-line shopping, internet services

Personal Mobile Interactive **Multimedia Broadcasting Service**

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3. Available Multimedia Service

Audio only service

- Stereo(CD-like)

Video service

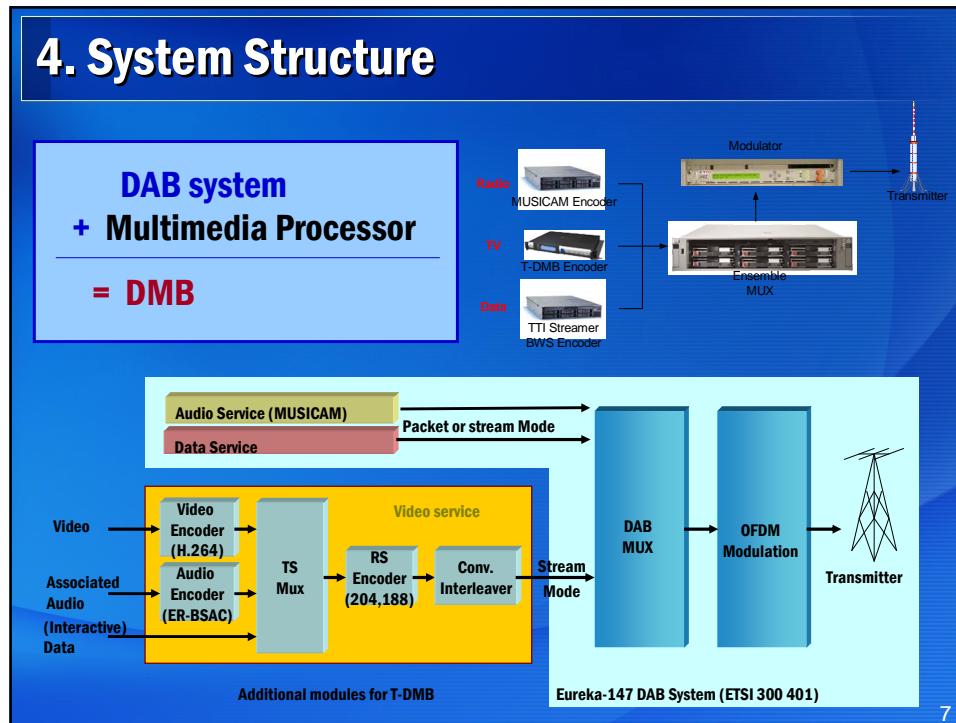
- Video : VCD quality(7" LCD)
- Audio : Stereo(FM-like)
- Program related Data

Data service

- Electronic Program Guide
- Headline news, Weather, Stocks
- Traffic, Navigation
- Slide show, Broadcasting Web Service, etc.

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4. System Structure



5. Transmission Parameters

Signal	COFDM			
Modulation	DQPSK			
Channel Coding	Convolutional : variable rate, constraint length = 7			
Time Interleaving	Ms	Depth = 384		
Frequency Interleaving	MHz	Width = 1.536		
System Bandwidth	MHz	1.536 MHz		
Effective Data Rate	Mbps	0.8 ~ 1.7 Mbps		
Mode		I	II	III
Application		Terrestrial(SFN)	Terrestrial	Satellite/Cable
Frequency Band	GHz	< 0.375	< 1.5	< 3
Sub carriers		1,536	384	192
Sub carrier interval	KHz	1	4	8
Guard interval	us	246	62	31
Symbol length	us	1,000	250	125
Frame length	ms	96	24	24
IV				123
				500
				48

* COFDM : Coded Orthogonal Frequency Division Multiplexing

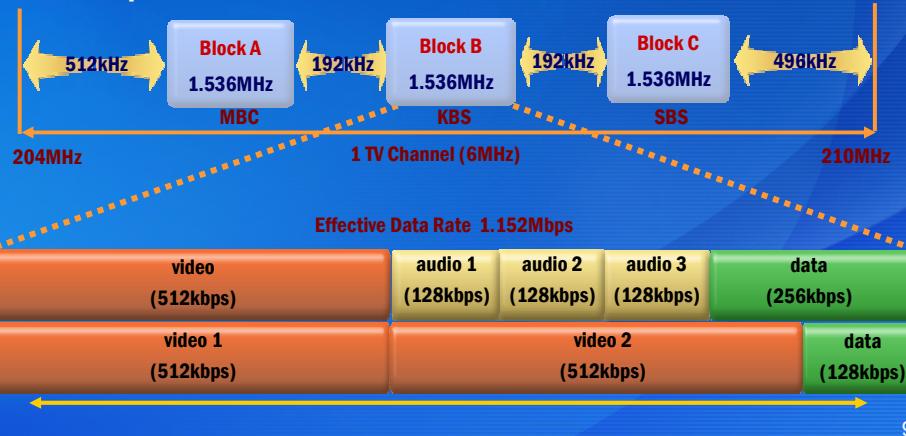
* DQPSK : Differential QPSK

6. Spectrum Utilization

■ Usable Spectrum for T-DMB

- VHF Band-III (TV ch-7~ch13, 174~216MHz)
- L-band (1452~1492MHz)

■ Example: Ch.12 in Korea



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7. Technologies for T-DMB

● A/V Encoding

- MPEG-4 Part 10 AVC(H.264) and BSAC/AAC
- Increase Frequency Usage Efficiency

MPEG-4
AVC
Video

MPEG-4
BSAC/AAC
Audio

MPEG-4 BIFS
Interactive
Contents

● Interactive Data

- MPEG-4 System core2D Profile(BIFS)
- Video Program associated Data Service

MPEG-4
SL
Encapsulation

MPEG-4
SL
Encapsulation

MPEG-4
SL
Encapsulation

adaptation

● Error Correction

- RS-Coding, Convolutional Interleaving
- High Quality in Audio/Video

MPEG-2 TS Multiplexing

transport

● Transmission

- OFDM(Orthogonal Frequency Division Multiplexing)
- Good service quality in high speed moving vehicle

Forward Error Correction

EU-147 DAB Stream Mode

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8. T-DMB Service Category and Standard

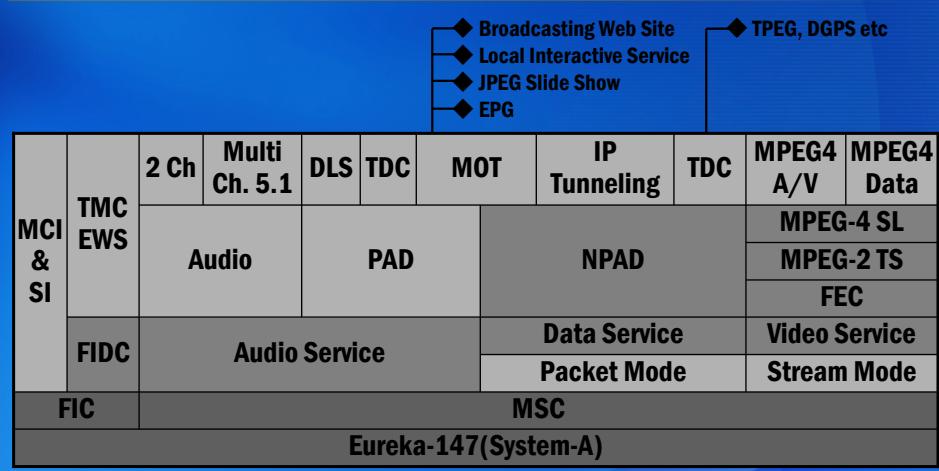
Type	Quality		Technology
Audio	Near CD quality stereo(BER 10 ⁻⁴)		MUSICAM(MPEG-1,2, layer 2)
Video streaming (DMB)	Video	7" display	MPEG-4 AVC(H.264)
	Audio	Near CD Quality	MPEG-4 BSAC
	Data	Many applications	MPEG-4 BIFS
	Multiplex	A/V/D	MPEG-4 SL, TS
	Channel	Mobile, Urban (BER 10 ⁻⁸)	RS(204, 188), Convolutional Byte interleaver
Data	EPG, news, weather, stock, traffic information, etc.		PAD, NPAD, TDC, MOT, BWS, IP-tunneling, Slideshow, etc.

※ AVC : Advanced Video Coding, PAD : Program Associated Data, TDC : Transparent Data Channel,

※ BWS : Broadcasting Web Site, BSAC : Bit-sliced Arithmetic Coding, EPG : Electronic Program

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9. Broadcasting Protocol in T-DMB



※ DLS : Dynamic Label Segment, EWS : Emergency Warning System, FIC : Fast Information Channel

※ FIDC : Fast Information Data Channel, IP : Internet Protocol, MCI : Multiplex Configuration Information

※ MOT : Multimedia Object Transfer, MSC : Main Service Channel, NPAD : Non PAD

※ PAD : Program Associated Data, SI : Service Information, TDC : Transparent Data Channel

※ TMC : Traffic Message Channel

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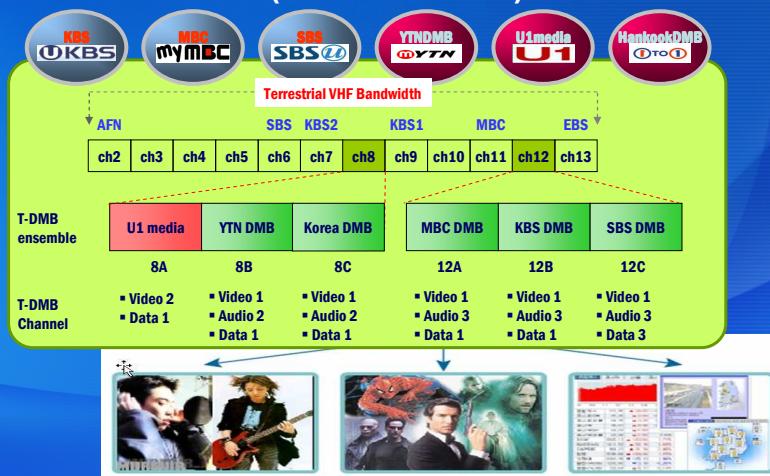
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Service in Korea

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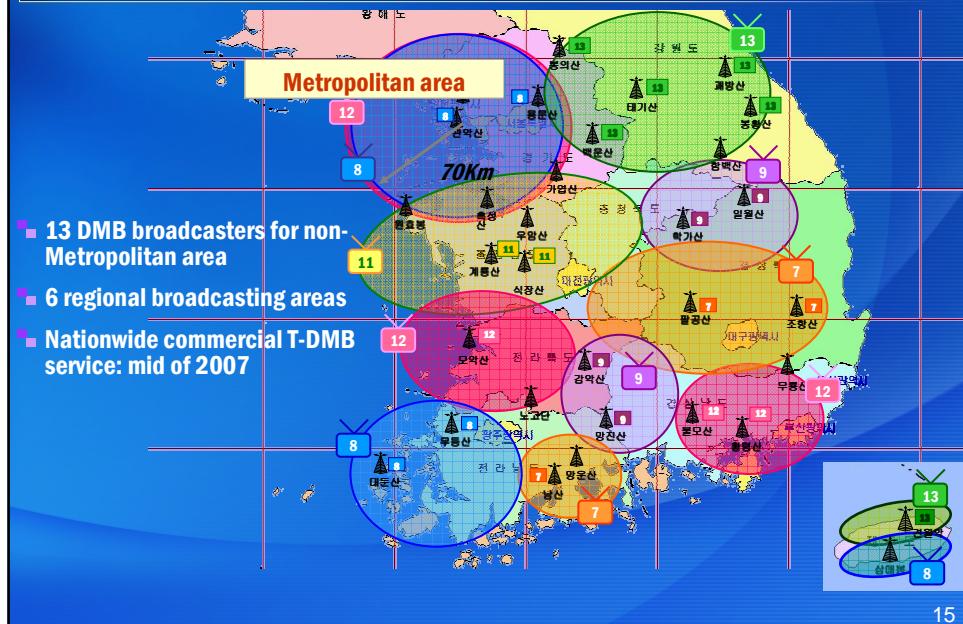
1. Commercial Service in Korea

- Launched in Dec. 2005 covering Seoul metropolitan area
- Total Channel : Video 7 Audio 13 Data 8
- Spectrum : VHF Band III (TV channels 8 & 12)



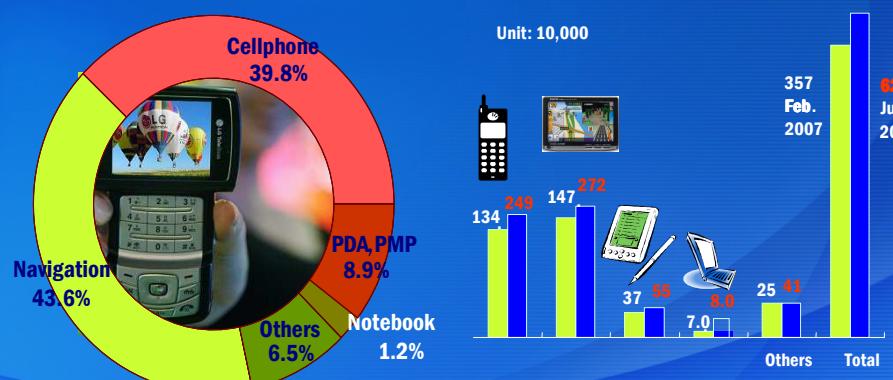
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2. Nationwide DMB Network



3. Terminal Types

Totally 6.3million Receivers sold
in Korea until the last July



4. Available Terminals

High Price Devices \$400 ~ \$800	 Erantech iubi BLUE	 DigitalCube i-STATION	 DigitalCube i-STATION V35	 Zen Networks LEO V10	 New Media Life TAVI	 Samsung yep	 neoSOL CLIOD CLIOD PMP3550	 Gigatelecom Tube ND-100	 Cowon A2 T-DMB	 Hyundai Autonet HNA-6220	 Samsung DMB-T450	 Samsung DMB-T750	... more
Mid Price Devices \$200 ~ \$500	 Samsung SPH-B2300	 P&C PT-K1800	 P&C PT-L1800	 LG KD-1200	 LG SB-100	 LG LT-1000	... more						
Low Price Devices \$50 ~ \$120	 Cobalt Technology DMB STICK-K1	 Cerings CTD-100	 UVBro Technology ARTEMIS	 MNBT UD-100	 Caros KSD-7070S	 Perstel DR 402 VK	... more						

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5. Responses from Users

T-DMB Satisfaction Rate



	Item	%
Satisfaction	Watch any where	49.0
	Same contents to home TV channel	27.7
	Mobile reception	16.1
	Audio & Video reception with a single device	5.8
	Contents only for DMB	1.3
Dissatisfaction	Coverage	73.3
	Same contents to home TV channel	11.1
	Contents	6.7
	AV quality	6.7

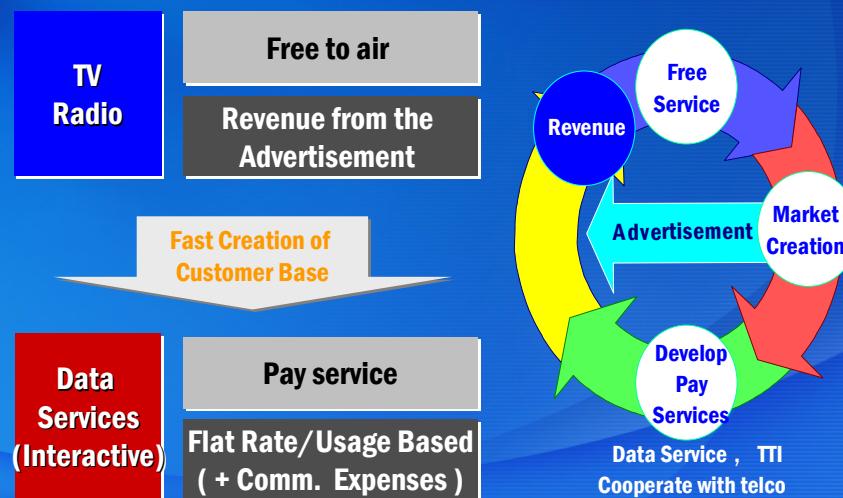
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III

Business Model

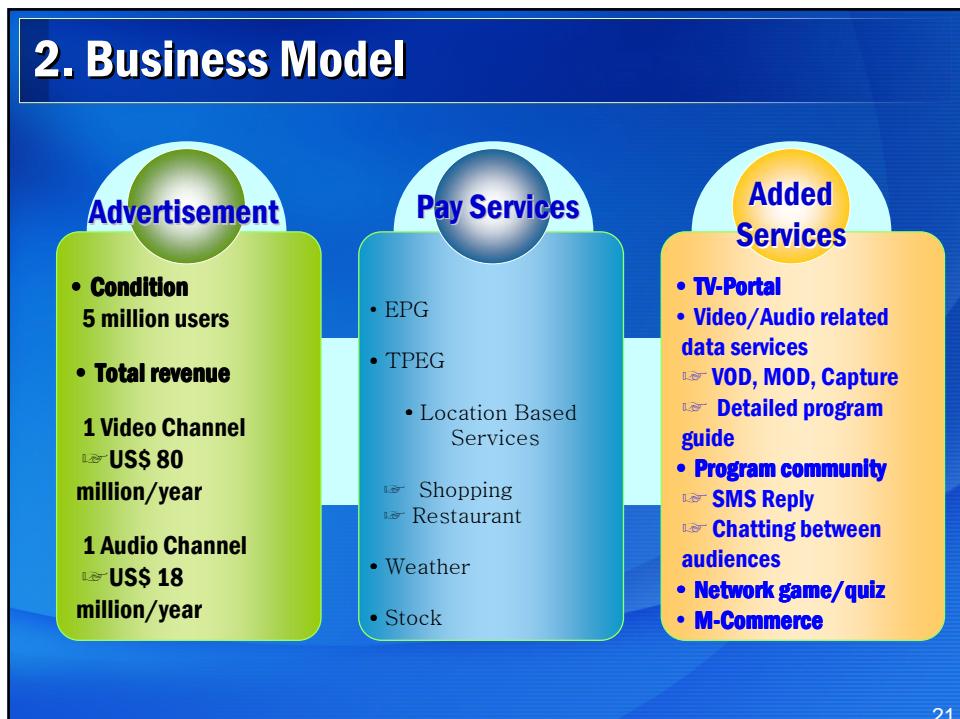
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1. Business Model



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2. Business Model

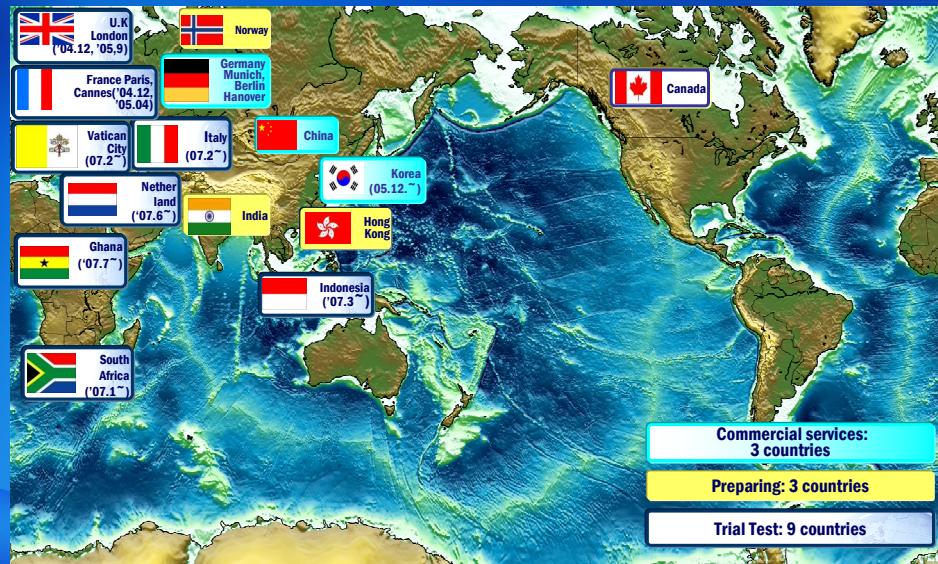


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IV DMB Overseas Launching Status

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1. DMB Overseas Launching Status



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V Future Service

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1. Future Service : Personalized T-DMB

- Dynamic program guide and contents browsing according to program genre and user preferences
 - ToC (Table of Contents) based browsing in terms of segment units
 - Event/index-based summary and access for news programs
 - Keyword-based segment search



* Services: Personalized News, Personalized T-Learning, etc.

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2. Future Service : Advanced T-DMB

Doubled Data Rate

- 1.062 Mbps → 2 Mbps



① Multichannel Services

double the number of programs

② High quality AV service (7" → 15" SD-quality video and 5.1 ch audio)



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3. Future Service : 3D T-DMB

- 3D DMB Verification System
 - 3D AV media processors on T-DMB Transmitter/Receiver
 - Features
 - Compatible with the standard T-DMB
 - 2D/3D display selectable



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THANK YOU

Jo, GueJo

Gue-jo.jo@itu.int

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