

A case study on WiBro in the Korean Telecommunication Market

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What is WiBro? (1/2)

- ‘**Wi**reless **Br**oadband’
- Official name
 - OFDMA(Orthogonal Frequency-Division Multiple Access)
TDD(Time Division Duplex) WMAN
- 6th global standard in 3G mobile communication
- WiBro as one of the mobile WiMAX

	Mobile WiMAX
Frequency band (GHz)	2.3 , 2.5(US), 3.5
Channel bandwidth (MHz)	3.5, 5, 7, 8.75 , 10(US)
Multiple access method	OFDMA

WiBro

WiBro service devices

- Mobile phone
- PMP
- USB modem
- Dongle (Only type available now)



What is WiBro? (2/2)

- Korea's homegrown portable internet service technology
 - Assigned as one of the core services to be nurtured under Korea's new growth strategy named "IT839" in 2004
- Developed by **Samsung Electronics**, two major **Korean telecom companies** (KT, SKT), and a Korean **national research institute** (ETRI)
- Purpose of WiBro
 - To own a source technology
 - To be the leader of the next mobile market

WiBro's poor performance in the market

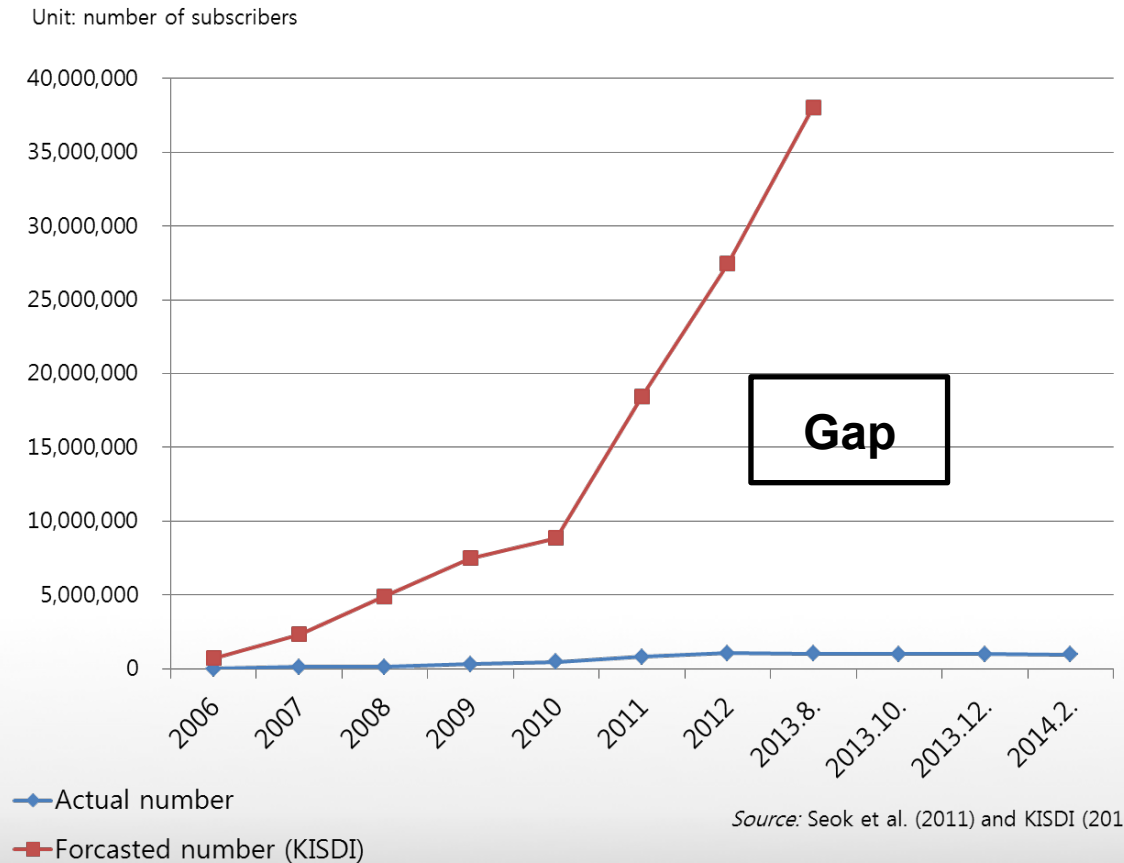


Figure1. The gap between the WiBro user estimation and reality in Korea

Research Question

- WiBro - WHY did it fail?
 - Was it technologically inferior?
 - Is the government accountable?
 - Or wrong business strategies?

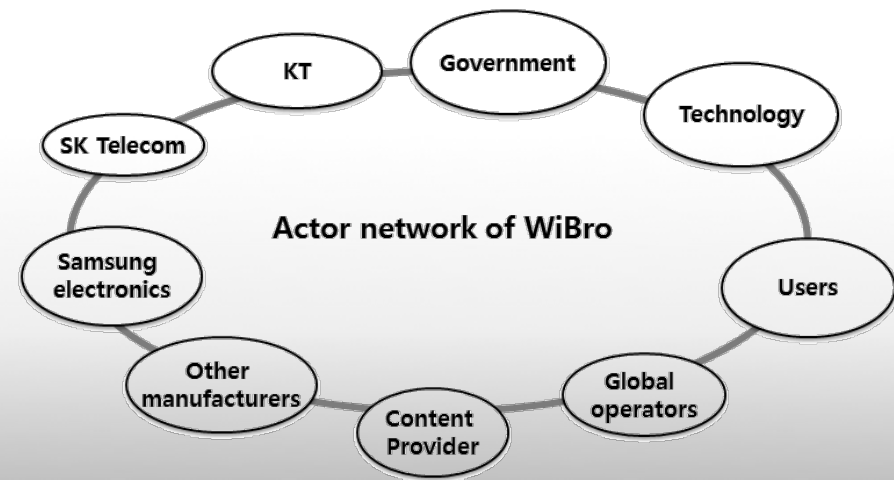
What is the core reason for the failure of WiBro?

*RQ. What are the main causes of WiBro's failure, or **reverse salient** of the WiBro system in the Korean telecommunications market?*

Actor Network Theory & Technological Systems

Actor Network Theory (ANT)

- Innovation and diffusion of a technology system is “collective achievement” of diverse actors (Van de van, 2005)
- Multi-directional interrelationships of components in a system
- Technology is more than a simple artifact
- Dependent on a network constituted by various actors
- Emphasis on standardization
 - Or the term ‘Translation’ in the ory
 - Becoming a *de facto* standard is important



Actor Network Theory & Technological Systems

Technological Systems and the concept of Reverse Salient

- Technological system is a network that includes a wide range of components like political organizational, legal, technical factors
- A system grows when all of its components coexist and are in balance
- Reverse salient in a system
 - A “lagging element” that delays the growth of the entire system
 - Needs to be corrected for the system to continue to grow
 - What are the reverse salient of WiBro in Korean telecom market?

So, what are the reverse salients of the WiBro system?

Methodology

- **Case study**
 - In-depth interview with 8 key experts
 - Document and archival records

Table1. WiBro interviewees

Group	Organization	Expertise/Major
Governmental institution	ETRI	Mobile service policy research
Telecom company	SKT	Access/Solution (Member of WiBro team until disintegration)
Manufacturer	Samsung Electronics	Business planning
University	Korea Advanced Institute of Science and Technology	IT and telecom industry, spectrum management
		Marketing, Economics
	Seoul National University of Science & Technology	Mobile, wireless telecommunication
	Yonsei University	Mobile networks
	Korea University	Mobile networks

Case Study

- Identified the actors within the WiBro system
- Examined the actors' activities in three domains



The diagram consists of three white rectangular boxes arranged horizontally. Each box has a subtle drop shadow beneath it. The first box on the left is labeled 'Technology', the middle box is labeled 'Government', and the third box on the right is labeled 'Business'. The boxes are evenly spaced and centered vertically within the slide content area.

Technology

Government

Business

Assessment of actors in the **technology** domain

WiBro in comparison with competing 3G technologies

	WiBro (Wave 1)	WiBro (Wave 2)	HSDPA	CDMA 1x EV-DO
Standard	IEEE 802.16e	IEEE 802.16e	3GPP	3GPP2
Voice & Data	Both simultaneously	Both simultaneously	Separate (only voice)	Separate (only voice)
Data loading speed	Download 19.97Mbps / Upload 5.04Mbps	Download 37.44Mbps / Upload 10.08Mbps	Download 13.97Mbps / Upload 2.0Mbps	Download 2.4Mbps / Upload 153kbps
Connection time	0.3 sec.	0.3 sec.	2.4 sec.	0.8 sec.

Source: TTA (2007)

Assessment of actors in the **technology** domain

- WiBro technology itself had comparative advantages over competing technologies in the market
- Time-to-market advantage over LTE
- Conclusion
 - Technology of WiBro is not the core problem (reverse salient)
- But, technology alone is not sufficient.

Assessment of actors in the **government** domain

- Different results from the literature and in-depth interview
 - The interviewees disagreed with the problems drawn from the literature

Reverse salients in government domain

	Literatures	In-depth interviews
Reverse salients in government domain	<ul style="list-style-type: none"> • Belated permit on VoIP functionality • Granting business license for WiBro to the operators that have alternative technology 	<ul style="list-style-type: none"> • Ineffective WiBro promotion strategy in global stages • Government's unsuccessful management on WiBro consortium of stakeholders

Assessment of actors in the **business** domain

- Similar results from the literature and in-depth interview
- More and greater diversity of reverse salient components for business domain (relative to technology and government)

Reverse salients in business domain

Literatures & In-depth interviews	
Reverse salients in business domain	<ul style="list-style-type: none">- Lack of demand from mobile users- Expensive service plan- Uncertain business model- Insufficient investment on facilities from MNOs- Limited device types- Lack of contents

Overall analysis

- Technology



- Government



- Business

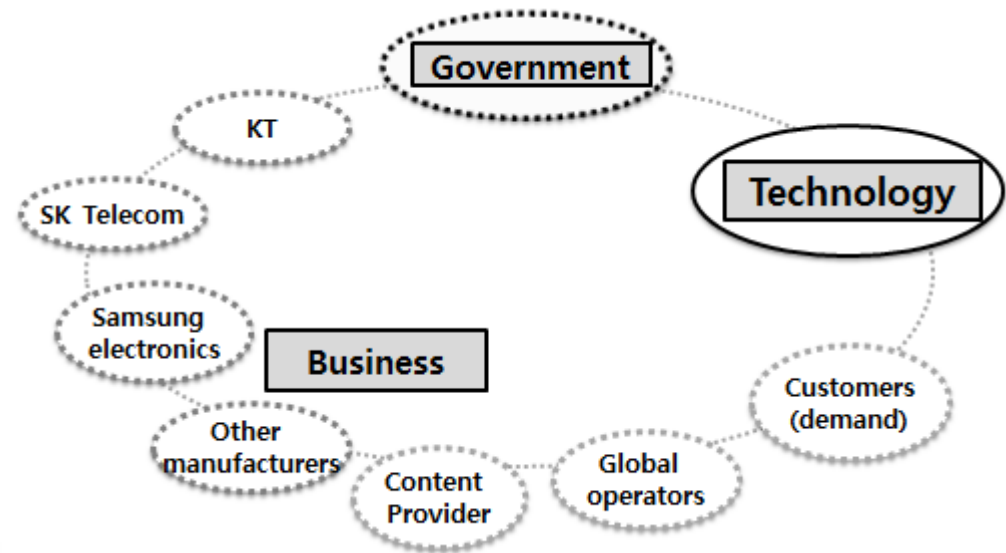


Figure. Weakened actor network of WiBro due to reverse salients, particularly in the business domain

Analysis on the reverse salients of WiBro

- Two types of reverse salient in WiBro case
 - Underlying reverse salient
 - Apparent reverse salient
- Apparent reverse salient
 - Found in business domain
 - Apparent and easily identifiable
- Underlying reverse salient
 - Found in government domain
 - Heavily contributing to the problems in business domain

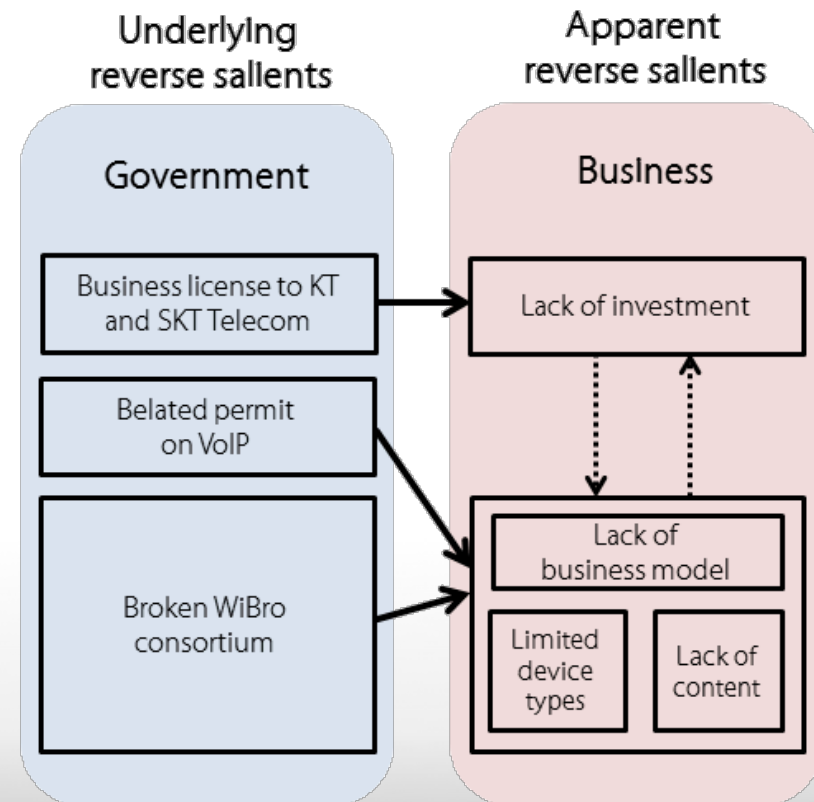


Figure4. Reverse salients of WiBro on two levels

Conclusion

- This study looked into why WiBro failed despite the government's unprecedented active support and sufficient technology
 - Actor network theory
 - Technological systems and the concept of reverse salient
- Identified reverse salients
 - Apparent reverse salient in business domain
 - Underlying reverse salient in government domain
- Contribution of this study
 - Investigation on the failure of WiBro under theoretical constructs
 - Identifying important factors from the interviews with the key experts in the field

Limitation and Further Studies

- Limitation
 - Methodological limitation of qualitative approach
 - Challenges of interviewing the managers due to the sensitivity of the issue
- Further research
 - Comparison of WiBro with the success case, LTE
 - A comparative analysis with other major mobile WiMAX market
 - ✓ 'Clearwire' in the US
 - ✓ 'UQ' in Japan
 - Study on user factors that affect the adoption and discontinuation of WiBro service (Quantitative data-based study)

Thank you.