



*MICS Seminar*

China's Broadband Wireless Industry:

A Scenario Approach

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June 2, 2003  
Lausanne, Switzerland

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## CONTENT



- Background: Methodology and theoretical underpinnings
- Dimension: Some facts, figures and policy evolution
- Approach: From actor-issue analysis to scenarios
- Output: Scenario implications of "Technology Rules"
- Q&A

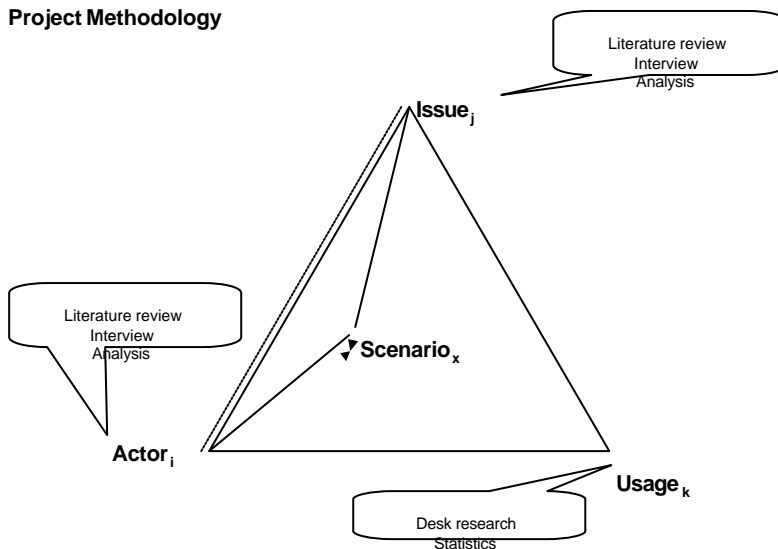
## Research Question

Who are the actors and what are the issues  
in China's broadband wireless landscape?



Scenarios for the development of China's broadband wireless landscape

## Project Methodology



## Literature Review

### Conceptual frameworks:

- Policy – Lasswell (1936)
- Telecommunication and policy – Geray (1999), Li and Whalley (2002), Schneider & Werle (1991)
- Forecasting and scenarios – Bourreau (2001), Camponovo & Pigneur (2003), Godet (2000), Kameoka (2002), Martino (2003), McBurney & al. (2002), Schwartz (1996)

### Empirical studies:

- Telecommunications in China – Dai (2002), Fan (1996), Mueller & Tan (1997), Mueller & Lovelock (2000), Tan (1999), Zhang & Peng (2000), Zhang (2002)
- Non-telecommunications in China – Nolan (2000), Pearson (1999), Shirk (1993)
- Telecommunications and regulation – Braithwaite & Drahos (2000)

## Quotes from the Literature Review

### Lasswell on Policy

“Who gets what, when and how?”

### Godet on Scenarios

“One cannot usually predict how a given phenomenon observed at one moment of time will evolve in the future”

### Li on the Telecommunication Industry

“An increased number of players means that the telecommunication industry is no longer characterised by a series of close and long term relationships between a handful of network operators and equipment manufacturers”

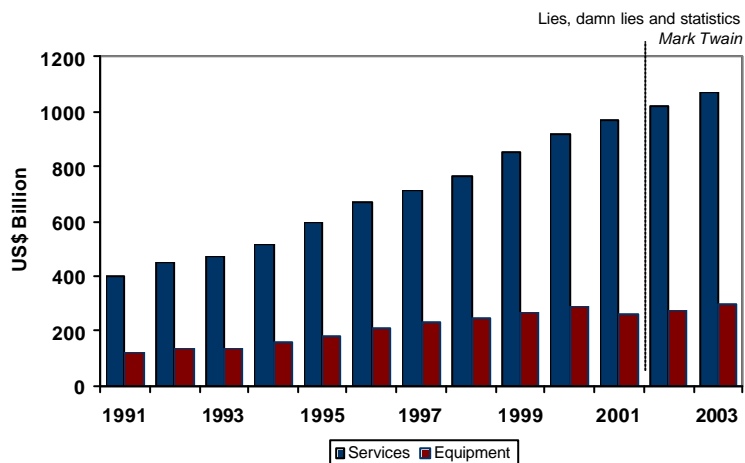
### Lovelock on Telecommunications in China

“Studies neglect the process of policy-making and that central control in China telecommunications policy-making has remained impressively consistent”

## CONTENT

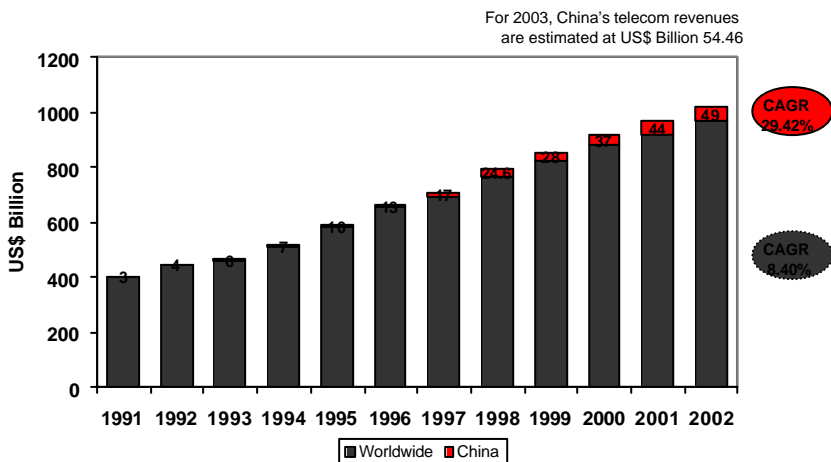
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## Worldwide Telecom Market Revenues (current prices and exchange rates)



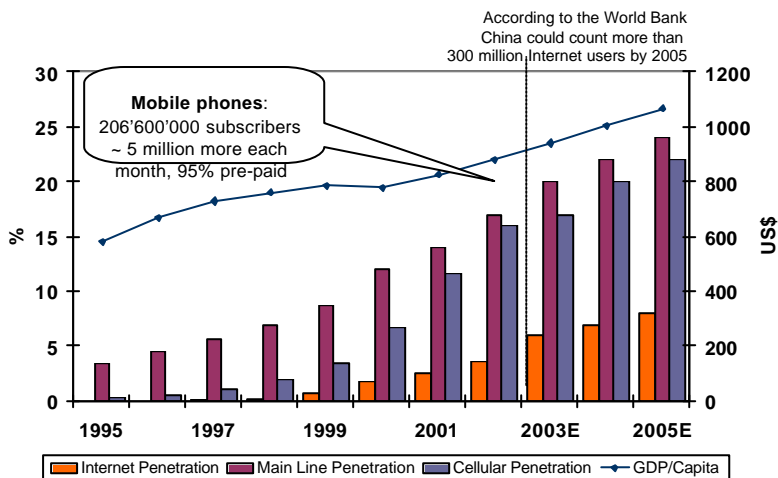
Source: ITU

### Telecommunication Services Revenues (current prices and exchange rates)



Source: ITU, MII

### China Telecommunication Statistics

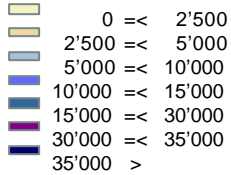


Source: MII, Merrill Lynch, World Bank

### Digital Divide "à la Chinoise" (by Province)

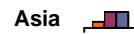
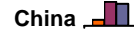
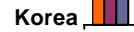
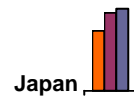
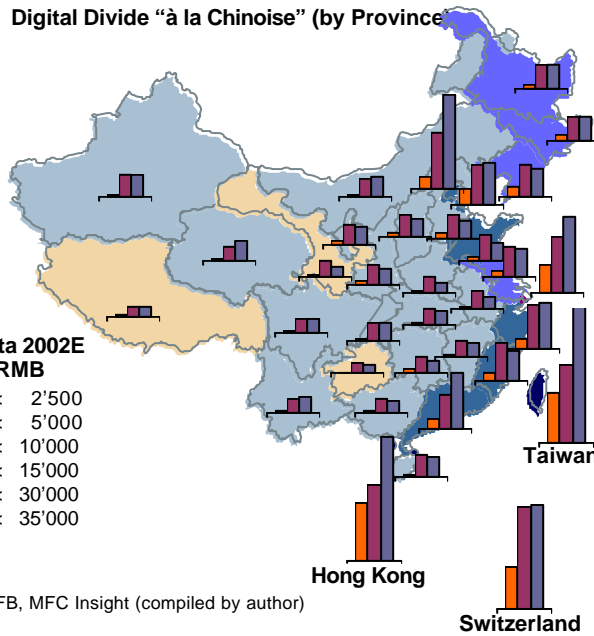


#### GDP per capita 2002E in Yuan RMB



Source: ITU, CSFB, MFC Insight (compiled by author)

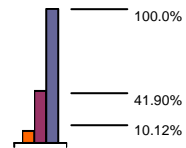
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Taiwan

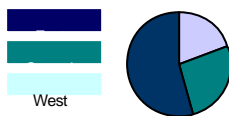
Hong Kong

Switzerland



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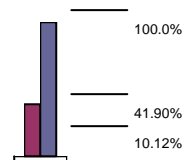
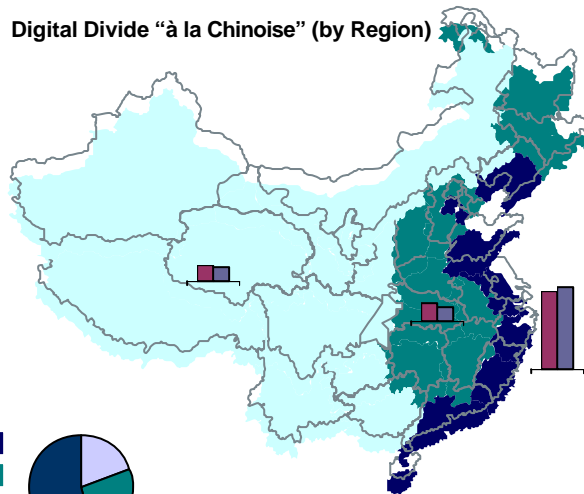
### Digital Divide "à la Chinoise" (by Region)



Mobile Subscribers (by Region)

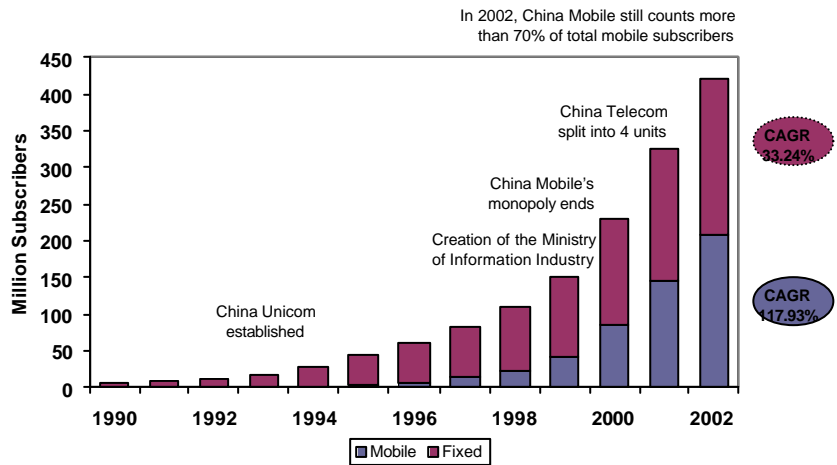
Source: CSFB

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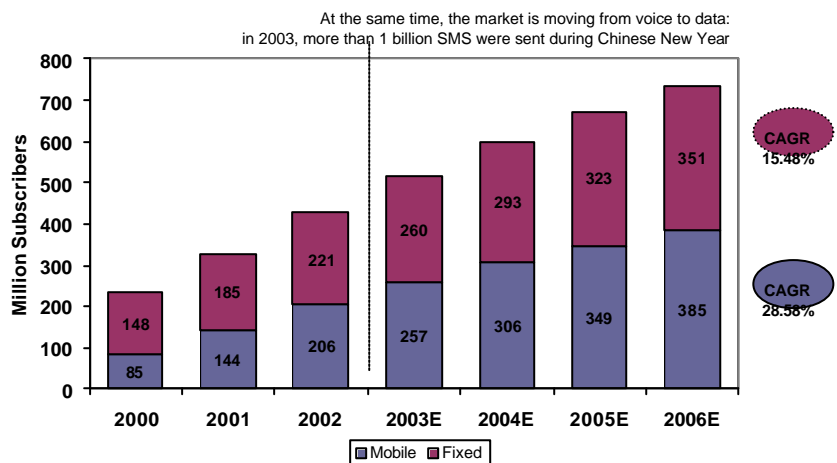


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### China's Mobile vs Fixed Lines: Leapfrogging and Managed Competition

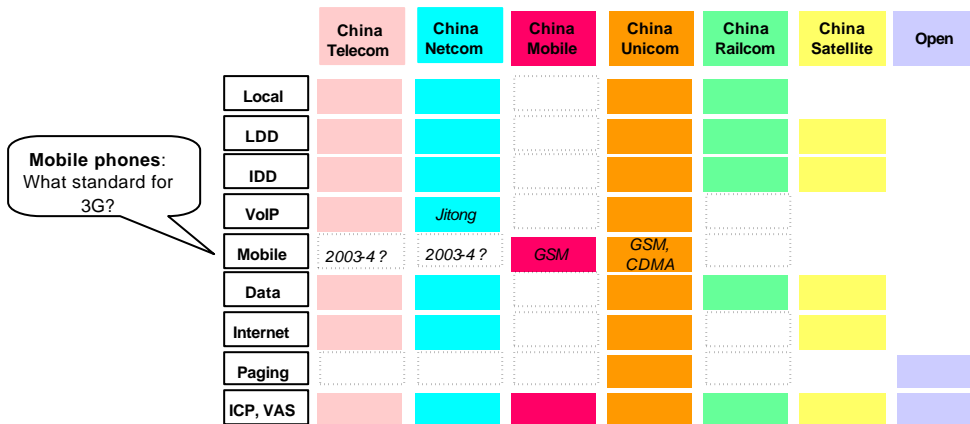


### China's Mobile vs Fixed Lines



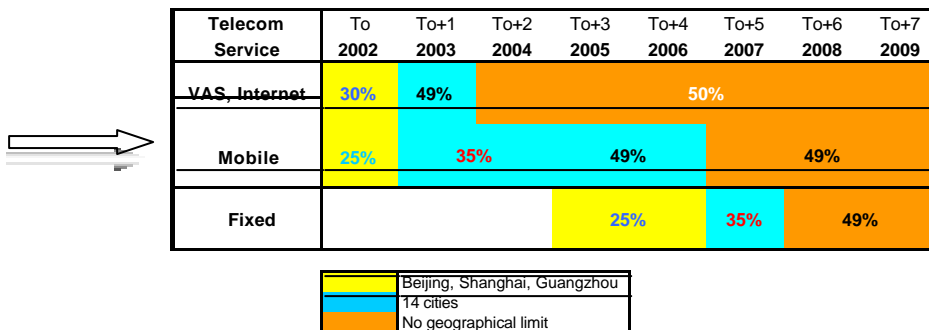
### Market Structure of the Telecommunication Sector in China

Foreign operators are conspicuous by their absence except for small stakes by Vodafone and Hutchinson



Source: France Telecom

### Telecommunication opening, after WTO accession



Source: WTO

## China's Changing Telecom Environment

1	1978	Creation of the telecommunication monopoly
	1984	Leading Group for Revitalisation of the Electronics Industry takes responsibility for planning telecommunications sector growth
	1985	7 <sup>th</sup> Five-Year Plan propels telecommunications as a national priority
	1987	First cellular mobile telephone system introduced in China
	1993	Registration of <b>China Unicom</b> , organised by then MEI, first competitor of China Telecom
2	1996	Launch of GSM network
	1998	China's 9 <sup>th</sup> NPC approves an ambitious reform of the information and telecommunications industry and merges all the information and telecommunications related regulatory institutions into one single regulator, the <b>Ministry of Information Industry (MI)</b>
3	1999-11	<b>Sino-US agreement</b> to open the telecommunication market to international competition (WTO Reference Paper and commitments)
	2000-09	PRC Telecom <b>Regulations</b>
	2001-11	China joins the <b>WTO</b>
	2002	<b>Restructuring</b> of China Telecom and China Netcom; Launch of CDMA and GPRS
4	2003	PAS allowed in major cities and first WLAN hot spots; Launch of CDMA2000 1X
	2004	Telecommunication <b>Law</b> and 3G Mobile <b>licenses</b>

## Priorities of the Chinese Government and Trends in the Policy Making Process: Telecommunications

### Very much inward looking...

- Build out infrastructure (CCF, IPO, etc.)
- Preserve state assets and generate revenues
- Foster domestic competition and internationalisation to keep barbarians at the gate

### But at the same time...

- More transparency
- More involvement from the State Council less power at MI
- Rise of consumer advocacy
- Rise of foreign influence

### What the World Bank thinks about ICT Policy Making in China...

The telecom legal and regulatory environment has not kept up with the major changes in ICT sectors since the current telecommunications law was enacted in 1987. This has created uncertainty for new entrants and investors. Telecommunications regulation has been based on fragmented administrative decrees dealing mainly with technical standards and service tariffs. The overall framework for increasing competition has lacked transparency and inhibited entry of new players and the quick development and adoption of advanced technologies.

#### Regulating China's ICTs

- Upgrade China's ICT legislation, increase competition in ICT sectors. create an effective ICT regulatory environment, allow private and foreign investments

#### Developing network infrastructure and information content

- Establish universal access, enrich Chinese information content

#### Developing effective e-commerce

- Upgrading payment and delivery systems

Source: Dahlman and Aubert (2001). China and the knowledge economy - seizing the 21<sup>st</sup> century, World Bank

### Early Conclusions and Late Hypotheses

- Since its inception, China's ICT policy making has been (and remains) under strong domestic political competition, both from competing ministries (e.g. the Ministry of Information Industry and the Ministry of Railways) and inside the government (conservative and reformers)
- Most of the legislative process surrounding ICT has been mostly crafted in a trial-and-error fashion (until the formal accession to the WTO) by the Ministry of Information Industry

Maintaining "informed ambiguity" around both sectors procures two distinct advantages:

- gain time in order to understand where the technology is going (convergence)
- provide room for bargaining at the WTO and fill legislative vacuum

### Quotes...

“In today’s institutional governance system any country that tries to strengthen its national information infrastructure must do so in close interdependence with the global environment”.

Mansell and Wehn (1998), Knowledge Societies

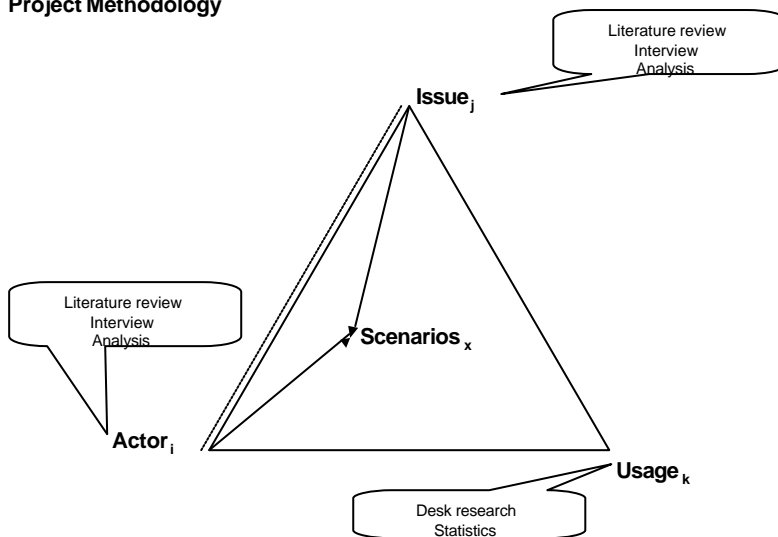
“A leapfrog development of the information industry requires an open, law-based and competitive external environment”.

Wu Jichuan, MII (2001)

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## Project Methodology



## Mapping Actors: Perspectives

Infogate

Some Actors in the ICT Policy-Making Process



Source: Based on and updated from Lovelock (1999) and Zhai (2002).  
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LSE

Infogate

Public Economic Actor Network in the Early 1990s



Source: Schneider & Werle (1991).  
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LSE

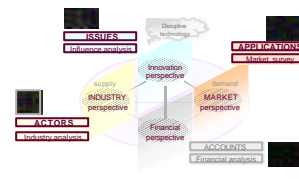
Policy Network of Information



Source: Schneider & Werle (1991).  
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### Market Scorecard (MSC)



Source: Lovelock (1999), Pigneur & Camponovo (2003), Schneider & Werle (1991)

### Actors in China's Broadband Wireless Telecommunication

- Companies
  - Operators (*China Mobile*, *China Unicom*, *China Netcom*, *China Telecom*, *Vodafone*)
  - Manufacturers (*Qualcomm*, *Nokia*, *Motorola*, *Ericsson*, *TCL*, *Bird*, *Huawei*, *UTStarcom*, *Siemens*)
  - VASP (*SumitMobile*, *MezzMe*)
- State
  - State Council, Ministry of Information Industry, State Development and Planning Commission
- Organisations of States
  - WTO, ITU, APEC
- Business Organisations
  - *CMCA*, *AmCham*
- NGOs and Mass Publics
  - Consumer associations, end-users
- Epistemic Communities of Actors
  - Consultants, academics, think tanks, *ECCF*

### Issues in China's Broadband Wireless Telecommunication

- Additional actors
- Capital (foreign)
- Intellectual Property Rights (IPR)
- Development of applications
- Market maturity
- Alignment of players in value chain
- Shift from voice to data
- Standard choice
- Standard timing
- Locus of decision
- Alternative networks
- Cannibalisation of technology
- Role of government/regulator
- Openness and transparency
- Implementation of regulations
- Locus of regulatory process
- Spectrum

Market  
Uncertainty

Technological  
Uncertainty

Regulatory  
Uncertainty

### From Actor-Issues....

- IPR
- Alignment of players in value chain
- Standard choice
- Timing of standard
- Locus of decision
- Role of government/regulator
- Transparency
- Manufacturers, Government
- Operators, manufacturers, VAS
- Manufacturers, operators, government
- Government, operators, manufacturers
- Government, operators, manufacturers
- Operators, organisation of States
- Operators, manufacturers, organisation of States

### To Scenarios

- Techno-fetichism – Technology rules  Continuous emergence of alternative technologies threatens the government's attempt to regulate and redistributes the strength of players in the value chain
- Level playing field – The market rules  Operators and manufacturers take a proactive stance towards industry development
- Techno-nationalism and the public good – Regulation rules  The government maintains its central role and dictates the development of the industry to the other actors

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## Scenario A: Technology Rules

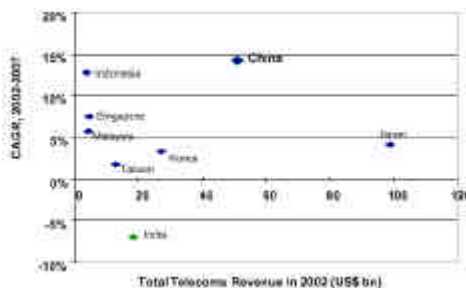
“Korea, Japan and China to Spend Over \$250 Million on 4G Technologies and Services.”

“WLAN will encourage Asian electronics makers to develop new types of terminals tailored made for the Asian markets, which will take us much close to the pervasive broadband model.”

“China is one of the biggest VoIP markets in the world, and to combine this with WLAN will allow operators to capitalize on the existing VoIP opportunities.”

“WLAN will destroy the barriers between fixed and mobile operators.”

Source: Pyramid Research (2003)



### Scenario A: Technology Rules

“In contrast to 3G, WiFi wireless access can emerge in a decentralized, bottom-up fashion (although it is also possible for this to be centrally coordinated and driven by a wireline or mobile service provider). While the prevailing business model for 3G services and infrastructure is vertically integrated, this need not be the case for WiFi. This opens up the possibility of a more heterogeneous and complex industry value chain .”

W. Lehr and L.W. McKnight (2003)

Implications for actors:	emergence of other/new operators, diminished role for government & regulators
Implications for issues:	IPR shifts from manufacturers to content providers
Implications for usage:	diversification of access devices

### WLAN Rationale

Following the hands-off approach of most telecoms regulators overseas, the Ministry of Information Industry has deemed this bandwidth unregulated.

High population density (Asia is first choice for WLAN infrastructure)


WLANs are also useful new tools for the two fixed-line operators to make good on the government's commitment to promote competition.

increasing affordability and popularity of laptop computers, the terminal of choice for WLAN surfing. Personal digital assistants (PDAs) represent another, though less prevalent, form of WLAN terminal. However, the power-hungry nature of 802.11b chips and PDAs' small screens limit their appeal.

China Mobile is deploying an integrated WLAN/general packet radio services (GPRS) network, meaning customers can use GPRS connections outside of hot spots and WLAN within. China Unicom is reportedly planning a code division multiple access (CDMA) 1x/WLAN service.

The modest capital expenditures associated with these deployments make WLAN intriguing to operators in an environment of spending constraints. With wide-scale third-generation (3G) deployments unlikely before the middle of 2004, WLAN looks like the best bet for developing the mobile data market in the interim (jumpstart)

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## Appendix

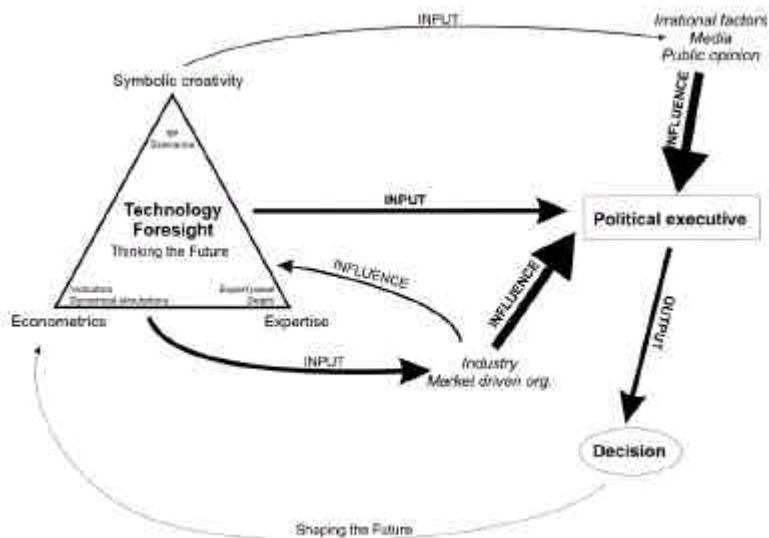
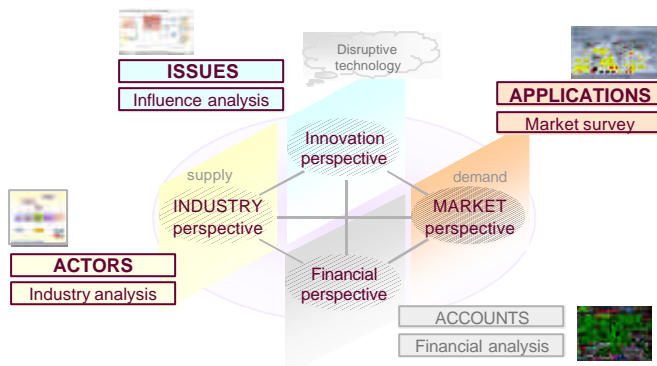


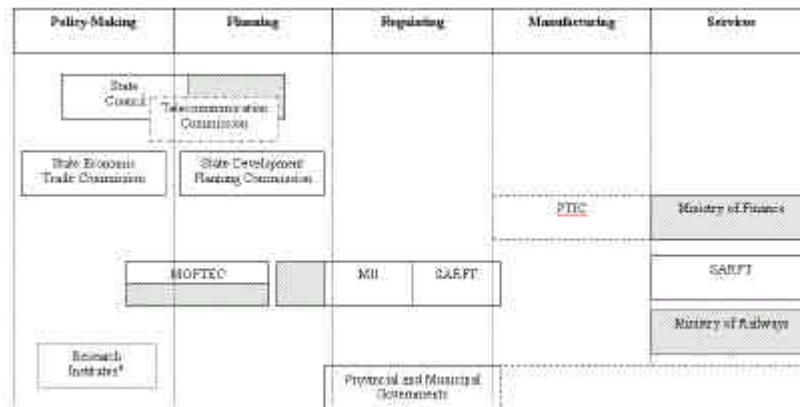
Fig. 1. A dynamic process for decision-making.

Source: Idier (2000)

Market Scorecard (MSC)

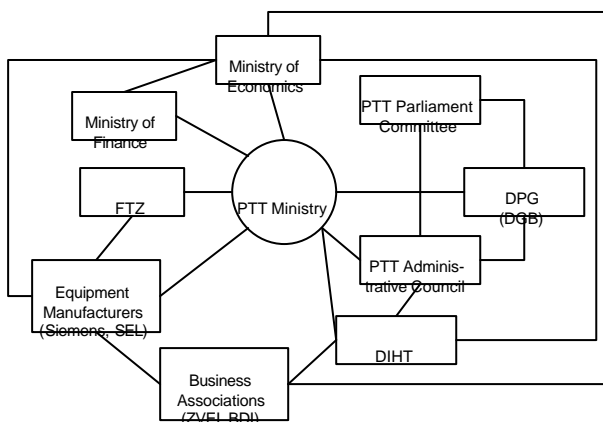


Source: Pigneur & Camponovo (2003)



Source: Based on and updated from Lovelock (1999) and Zita (1987)

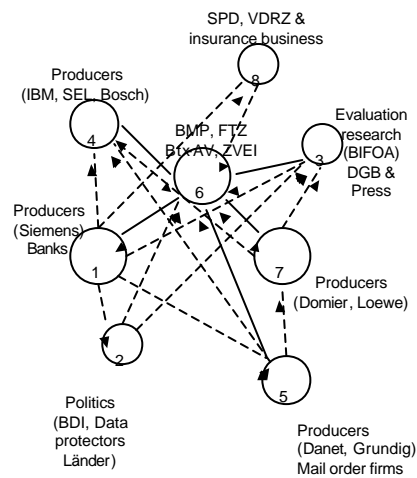
**Political-Economic Actor Network in the Early 1970s**



BDI: National Association of German Industries  
 DGB: Association of German Trade Unions  
 DIHT: German Chamber of Industry/Commerce  
 DPG: PTT Workers' Union  
 FTZ: Central Office for Telecommunications Technology  
 SEL: Standard Elektrik Lorenz  
 ZVEI: Central Association of the Electrical Engineering Industry

Source: Schneider & Werle (1991)

**Policy network in Videotext**



--- Asym. Info exchange (>30%)  
 ▲ Sym. Info exchange (>30%)  
 Size of circle indicates aggregate influence/reputation

### Some definitions: Policy and the Making of Policy

- Policy is what the government says and does about perceived problems.
- Policy making is how the government decides what will be done about perceived problems
- Policy making is a process of interaction among governmental and non-governmental actors
- Policy is the outcome of that interaction

### Policy-Process Theories...

Several theoretical frameworks of the policy process

- Stages heuristic**, or a series of stages
- Institutional rational choice**, or how institutional rules alter the behavior of intendedly rational individuals motivated by material self-interest
- Multiple-streams framework**, or three streams of actors and processes (problem, policy and politics)
- Punctuated-equilibrium framework**, or long periods of incremental change punctuated by brief periods of major policy change
- Advocacy coalition framework**, or interaction of advocacy coalitions
- Policy diffusion framework**, or adoption as a function of both the characteristics of the specific political system and a variety of diffusion processes
- Funnel of causality, arenas of power, cultural theory, constructivists framework, policy domain framework**, etc.



Who gets what, when and how?

Harold Lasswell, 1936

## Regulatory Policy-making

The study of regulatory policymaking is dominated by two perspectives:

- Regulatory agencies are vested with vast discretion and are the major force in regulatory policy (Wilson, Katzman)
- Regulatory agencies are dominated by their environment – Interest groups, legislative committees, economic forces and technological change are among the determinants of policy (Stigler, Lowi, Sabatier)

## Mind the Gap...

“The modernists of 1910 and the 1970s were right about the direction of change but simplistic about its consequences. Like pundits on the information revolution, they moved too directly from technology to political consequences without sufficiently considering the continuity of beliefs, the persistence of institutions, or the strategic options available to statesmen.”

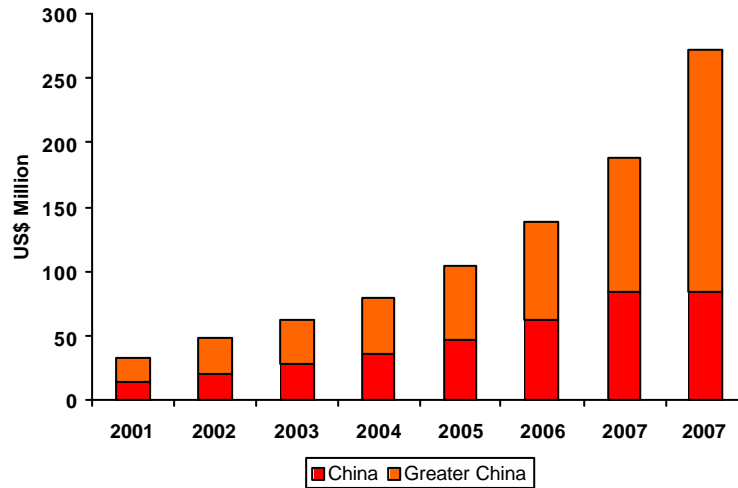
R. Keohane and J. Nye  
Power and interdependence in the information age  
Foreign Affairs (1998)



Will the Chinese government manage policy leapfrogging?

- Digital divide
- Techno-nationalism
- Implementation of WTO commitments
- Politics as usual

### WLAN Market Forecast for Greater China (2001-2007)



Source: Avaya(2002)