The Global Change in the Telecom Industry -- a Taiwan Case

Keynote in
Extreme Communications
A Radical Rethinking of Business, Technology and Communication Strategies

Dr. Mao Chi-Kuo
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The Media Lab, MIT
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Demographic Background

- **Land Area**
  - 36,000 KM²
  - (≅ 2 X Massachusetts)

- **Population**
  - 22.5 million

- **Household**
  - 6.8 million

- **Per Capita Income**
  - U$ 12,000
Telecom Deregulation Schedule

1996
- DGT reformed
- Telecom Act 1st Amend

1997
- Mobile Opened
- Satellite Opened
- DGT reformed

1998
- Lease line Opened
- Chunghwa formed
- Telecom Act 2nd Amend

1999
- Fixed Opened
- Telecom Act 3rd Amend

2000
- Submarine Cable Opened
- ISR Opened
- Chunghwa Domestic IPO

2001

2002
• Date of Establishment: July 1st, 1996 (reformed from DGT)
• Number of Employee: 29,000
• Total Capital: US$ 2.8bn
• Total Asset: US$ 13.0bn
• Total Liability: US$ 2.2bn
• Shareholders’ Equity: US$ 10.8bn
• Total Revenue (2001): US$ 5.2bn
• EBIT: US$ 1.34bn (2001 — 7th place: Taiwan + China together)
• Awards: Best Corporate Governance in Taiwan 2003 (by The Asset)
  Most Committed to Creating Shareholder Value 2003 (by FinanceAsia)
Telecom Market Profiles
# Telecom Market Structure

<table>
<thead>
<tr>
<th>Types</th>
<th>Business Categories</th>
<th>Sub Total</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type I</strong></td>
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<td></td>
<td>68</td>
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<tr>
<td>Fixed</td>
<td>Fixed Network</td>
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<tr>
<td></td>
<td>Leased Circuit</td>
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<td></td>
<td>Submarine Cable</td>
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<td>Mobile</td>
<td>Cellular Services</td>
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<td></td>
<td>Radio Paging</td>
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<td></td>
</tr>
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<td>Mobile Data</td>
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<td></td>
<td>Dispatching Radio</td>
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<td>1900MHz Low Tier Radio</td>
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<td></td>
<td>CT-2</td>
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<td>Fixed Satellite Services</td>
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<td>Satellite TV Program Relay</td>
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<td><strong>Type II</strong></td>
<td>Internet Access</td>
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<td>Voice Simple Resale</td>
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<td></td>
<td>i-phone</td>
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<tr>
<td></td>
<td>others</td>
<td>124</td>
<td></td>
</tr>
</tbody>
</table>

Dec. 2002
Market Profiles (1)

Penetration (population based)

- Local Phone
- Mobile
- Internet
- Broadband / Internet

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Market Structure Change

Dec 1997 (Before)

- Fixed: 74%
- Mobile*: 22%
- Data: 4%

Revenue: US$ 5.5 bn

Dec 2001 (After)

- Fixed: 35%
- Mobile*: 55%
- Data: 10%

Revenue: US$ 9.9 bn

Private operators started servicing since 1998
Highlights on Mobile & Broadband Businesses
Take-off of Broadband Market

ADSL:
Monthly application: 85,000 lines
Max Installation: 7,000 lines/day

Cable Modem

Over 1 mn
Growth of Mobile Market

Accumulated Subscribers

Total Market (4 major players)

CHT Market Share %

CHT subs

CHT Regain No.1

CHT Lose No.1

Accumulated Subscribers

CHT's Market Share

0/Q2 0/Q3 0/Q4 0/Q1 0/Q2 0/Q3 0/Q4 0/Q2 0/Q3

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Telecom: Taiwan Case
CHT’s Mobile & Data Revenues

Mobile Revenue

<table>
<thead>
<tr>
<th>(US $ mn)</th>
<th>1H/00</th>
<th>2H/00</th>
<th>1H/01</th>
<th>2H/01</th>
<th>1H/02</th>
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</thead>
<tbody>
<tr>
<td>CAGR: 16%</td>
<td>665</td>
<td>760</td>
<td>803</td>
<td>876</td>
<td>902</td>
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</tbody>
</table>

Data Revenue

<table>
<thead>
<tr>
<th>(US $ mn)</th>
<th>1H/00</th>
<th>2H/00</th>
<th>1H/01</th>
<th>2H/01</th>
<th>1H/02</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAGR: 26%</td>
<td>275</td>
<td>367</td>
<td>405</td>
<td>419</td>
<td>439</td>
</tr>
</tbody>
</table>
CHT’s Revenue Mix Shift

Q1 2000
- Mobile: 24%
- Fixed: 66%
- Data: 10%

Total Revenue of Q1 2000: US$ 1.28bn

Q4 2002
- Mobile: 37%
- Fixed: 43%
- Data: 20%

Total Revenue of Q3 2002: US$ 1.35bn
Market Trends
Market Trend
-- From PSTN to Mobile & Data

- Mobile & Data lead telecom market’s growth

### Total Market

**Dec 1997**
- Mobile: 16%
- Data: 4%
- Pager: 6%
- Local: 33%
- ILD: 21%
- DLD: 20%

**Dec 2001**
- Mobile: 18%
- Private Mobile: 36%
- CHT Mobile: 18%
- Pager: 1%
- Data: 10%
- ILD: 7%
- DLD: 6%
- Local: 22%

### Chunghwa Telecom

**Q1 2000**
- Mobile: 24%
- Fixed: 66%
- Data: 10%

**Q4 2002**
- Mobile: 37%
- Fixed: 43%
- Data: 20%
Market Trend
-- From Narrow- to Broad-band

- Narrowband shifts significantly to broadband
- Telco’s revenue also benefited from this shift

CHT’s ISP Subscriber Base and Revenue Mix

- HiNet (ISP) BB Revenue
- HiNet (ISP) Dialup Revenue
- BB subs/Total subscriber
Market Trend
-- Access (Bandwidth) 1\textsuperscript{st}, Content 2\textsuperscript{nd}

- Two learning curves w/ about 1-year time lag

- ADSL monthly application
- VAS (paid contents) Revenue

60,000± lines/month
Challenges Ahead
Challenge
From Mobile Voice to Mobile VAS

- Mobile competition and growth
  - Coverage ➔ System Capacity & Quality ➔ VAS
  - Mobile voice product matured, ARPU drops; VAS has to be the new “star” to maintain mobile business’ growth

- Mobile VAS revenue share is still relatively shallow
  - Is 3G the answer?
  - Mobile-Internet or Mobile-internet?

![Diagram showing the transition from mobile voice to mobile VAS]

Source: YesMobile

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Telecom: Taiwan Case
Challenge

The Convergence of Telecom & Media (1)

- Broadband telecom network is capable to deliver video (multimedia) content to compete w/ cable TV
  - It’s **on-demand, interactive, pay-per-view**
  - Bandwidth >10Mps via FTTB+VDSL under ADSL rate
    - Consumers can access more quality contents
    - Providers are willing to provide quality contents

- Regulatory Issue
  - Fair competition b/w operators; CATV’s trouble in Taiwan

- Technical Issue
  - Internet w/o boundary, quality contents require boundary
  - Internet vs. “intranet”, managed IP or VPN solution?
    - Quality, Protection of IPR

- Marketing Issue
  - From Study’s PC to Living room’s TV set
    - Is TV set still the “right” display? Is set-top-box necessary?
Challenge
The Convergence of Telecom & Media (2)

- What content to be carried? ? How to charge it?

- Content Delivery Network
  - Network Architecture
    - Core Network, Access Network, capacity issue
  - Network Technology
    - Legacy systems, new generation tech, migration strategy

- New Business Model (new learning curve to build-up)
  - Telco’s positioning: new media platform
  - Other roles: ISP, ICP, Content aggregator?
  - External Partnerships: Application Program Provider, Content Distributor, Content Producer

- Distribution issue
  - How to make the existing distribution channels accountable and feel “tangible” to the sale of pay-content
    - vs. sale of ADSL lines/handsets
Challenge
The Convergence of Fixed & Mobile Services

■ WLAN
- Until today WLAN has a promising device market, but not the service market
- In Taiwan, 80% of the access points (AP) are used in residential market
  - Hot-spot business is limited
  - Business market is slow due to economy and security

■ WLAN and 3G
- Comparison
  - WLAN is for someone, at some place, in sometime
  - 3G is for anyone, at any place, in anytime
- From an operator’s point view
  - WLAN is preferred to be used by a stationary user accessing to the Internet; 3G is for moving user to access Internet
  - Integrated carriers who provide both fixed and mobile services prefer to this view, but not the sole mobile operator
Both broadband and mobile services in Taiwan, consumer market outperforms business market for the past 3 years

Will dot-com come back?
- Many interesting cases observed
- Dot-com re-defined
  - Any business which takes Internet’s advantage to re-shape its competitiveness – equivalent to e-business?
  - The leverage could be even higher when Internet power (information flow) combined w/ logistic support (physical flow) and on-line transaction (monetary flow)
    - This can convert a corner store into a regional business
- If dot-coms come back, they will be in a very much different look – not limited to Yahoo! or e-Bay types
From 1990s, encouraged by Wall Street investment analyst, the split of mobile/data unit from Telco to run independent business became a fashion
- Integrated carrier suffered

Chunghwa’s experience suggests that
- the incumbent can leverage on the mobile / data businesses to recreate itself employee value (vs. NTT)
- the mobile / data unit can also leverage on incumbent’s well established channels to distribute service
- via this strategy, mobile operation won’t feel vulnerable under the convergence of fixed and mobile technology

Will Telco return to integral model?
Thank You