OPPORTUNITIES OF ICT INDUSTRY IN TAIWAN
- ICT HARDWARE, 4G, SEMICONDUCTOR AND GAMING

BUSINESS SWEDEN TAIPEI

Aug 2015
Taipei
AGENDA

Taiwan’s 4G operators
- Taiwan’s information and communication hardware industry
- Taiwan’s semiconductor industry
- Success cases and drivers for Taiwan ICT industry
- Mobile gaming market in Taiwan
4G PENETRATION IS 25% AND EXPECTED TO REACH 10M USERS AND 43% PENETRATION BY END OF 2015

NUMBER OF 4G USERS PASSED 7.2 MILLION AND EXPECTED TO REACH 10 M BY END OF THE YEAR

INCREASED PENETRATION RATE DRIVES DEMAND FOR NEW SERVICES

SOURCE: NCC, CHT
A total of 270MHz of frequency spectrum, in the 700MHz, 900MHz and 1,800MHz bands, was auctioned for mobile broadband service in 2013 Oct. with six winners.

Foxconn’s subsidiary, one of the six winners of 4G bandwidth announced to acquire APTG

The next auction of a total of 190MHz of frequency in the 2600MHz will be released by end of 2015
AGENDA

- Taiwan’s 4G operators
- Taiwan’s information and communication hardware industry
- Taiwan’s semiconductor industry
- Success cases and drivers for Taiwan ICT industry
- Mobile gaming market in Taiwan
TAIWAN IS KNOWN AS A ICT MANUFACTURE HUB

- **Area**: 36,000 km² (1.2 times of Belgium)
- **Inhabitants**: 23 million (one of the world most dense population)
- **GDP per capita**: US$ 39,600 (PPP)
- **Capital city**: Taipei

- **PC penetration rate**: 88%
- **Internet penetration rate**: 85%
- **Mobile phone rate**: 113%
- **Smart phone penetration rate**: 65%
- **Digital TV penetration**: 80%

SOURCE: BUSINESS SWEDEN TAIPEI COMPILE
GROWTH FOR IT HARDWARE HAS BEEN STAGNATED
- DECREASED GLOBAL DEMAND FOR LAPTOP AND TABLET

PRODUCTION VALUE OF IT HARDWARE OF TAIWAN

Billion USD

<table>
<thead>
<tr>
<th>Year</th>
<th>Production Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>108</td>
</tr>
<tr>
<td>2010</td>
<td>120</td>
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<tr>
<td>2011</td>
<td>140</td>
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<td>2012</td>
<td>150</td>
</tr>
<tr>
<td>2013</td>
<td>133</td>
</tr>
<tr>
<td>2014</td>
<td>131</td>
</tr>
</tbody>
</table>

GROWTH FOR IT HARDWARE HAS BEEN STAGNATED

DEMAND FOR CLOUD COMPUTING AND DATA CENTER DRIVE SERVER INDUSTRY

SOURCE: MIC, 2015

*INCLUDE OVERSEAS PRODUCTION BY TAIWANESE COMPANIES
COMMUNICATION HARDWARE KEEPS STRONG GROWTH
- DRIVES COMES FROM SMALL CELL AND SET TOP BOX

PRODUCTION VALUE OF DATA COMMUNICATION HARDWARE OF TAIWAN

Billion USD

<table>
<thead>
<tr>
<th>Year</th>
<th>Production Value</th>
<th>Growth</th>
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<tbody>
<tr>
<td>2009</td>
<td>9</td>
<td>-10%</td>
</tr>
<tr>
<td>2010</td>
<td>11</td>
<td>20%</td>
</tr>
<tr>
<td>2011</td>
<td>13</td>
<td>40%</td>
</tr>
<tr>
<td>2012</td>
<td>14</td>
<td>50%</td>
</tr>
<tr>
<td>2013</td>
<td>16</td>
<td>10%</td>
</tr>
<tr>
<td>2014</td>
<td>18</td>
<td>5%</td>
</tr>
</tbody>
</table>

SOURCE: MIC, 2015
SEVERAL IT AND COMMUNICATION HARDWARE RANKED NUMBER ONE IN THE WORLD

PRODUCTS MADE BY TAIWAN* RANKED TOP IN THE WORLD, 2012

World share

Productions value
Million USD

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Notebook

Motherboards
Cable Modems
Blank Optic Disks
WLAN CPEs
PND
xDSL CPEs
Servers
IC Package
LCD Monitors
Tablet
Foundries
Desktops
Digital Camera
Mask ROMs

* INCLUDES OVERSEAS PRODUCTION

SOURCE: 2013 INDUSTRIAL DEVELOPMENT IN TAIWAN, BUREAU OF INDUSTRY DEVELOPMENT, MOEA

WORK WITH TAIWANESE HARDWARE VENDORS FOR SOURCING AND TECHNOLOGY INTEGRATION
IMPORTANT PARTNER FOR GLOBAL IT BRANDS
- GLOBAL IT INNOVATION CENTER

- Taiwan vendors supply 90% of notebook and desktop PC and 80% WiFi products globally
- Product made in Taiwan like IC foundry, IC package, blank optical disk, Mask ROM are ranked number one in the world
- IT products made by Taiwan like notebook, tablet, LCD monitor, server, motherboard, CPE, PND etc. ranked number one in the world

TAIWAN COMPANIES ARE EXPERIENCED WITH ASIAN RESOURCE INTEGRATION AND GLOBAL LOGISTICS

SOURCE: INDUSTRIAL DEVELOPMENT BUREAU, MOEA
AGENDA

- Taiwan 4G Operators
- Taiwan information and communication hardware industry
- **Taiwan semiconductor industry**
  - Success cases and drivers for Taiwan ICT industry
  - Mobile gaming market in Taiwan
TAIWAN SEMICONDUCTOR INDUSTRY CONTINUES STRONG GROWTH

PRODUCTION VALUE OF SEMICONDUCTOR INDUSTRY OF TAIWAN

US billion

INTERNET OF THINGS AND MOBILE PAYMENT DRIVES THE DEMAND

SOURCE: MIC, 2015
**TAIWAN IS WORLD NO.1 FOR IC FOUNDRY AND PACKAGE**

TSMC and ASE are world biggest IC foundry and IC package manufacture.

**WORLD TOP 10 IC FOUNDRY, 2014**

<table>
<thead>
<tr>
<th>2014 Ranking</th>
<th>Company</th>
<th>Revenue (USD million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TSMC*</td>
<td>24,976</td>
</tr>
<tr>
<td>2</td>
<td>Global Foundries</td>
<td>4,350</td>
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<tr>
<td>3</td>
<td>UMC*</td>
<td>4,350</td>
</tr>
<tr>
<td>4</td>
<td>Samsung</td>
<td>2,990</td>
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<tr>
<td>5</td>
<td>SMIC</td>
<td>1,969</td>
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<tr>
<td>6</td>
<td>Tower Jazz</td>
<td>828</td>
</tr>
<tr>
<td>7</td>
<td>VIS*</td>
<td>790</td>
</tr>
<tr>
<td>8</td>
<td>Hua Hong</td>
<td>685</td>
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<tr>
<td>9</td>
<td>Dongbu HITek</td>
<td>531</td>
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<tr>
<td>10</td>
<td>IBM</td>
<td>515</td>
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</tbody>
</table>

**WORLD TOP 10 IC PACKAGE MANUFACTURE, 2014**

<table>
<thead>
<tr>
<th>2014 Ranking</th>
<th>Company</th>
<th>Revenue (USD million)</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>ASE</td>
<td>4,046</td>
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<tr>
<td>2</td>
<td>Amkor</td>
<td>3,081</td>
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<td>3</td>
<td>SPIL</td>
<td>2,505</td>
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<td>4</td>
<td>STATS ChipPAC</td>
<td>1,586</td>
</tr>
<tr>
<td>5</td>
<td>PTI</td>
<td>1,317</td>
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<tr>
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<td>JCET</td>
<td>977</td>
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<tr>
<td>7</td>
<td>J-Devices</td>
<td>833</td>
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<tr>
<td>8</td>
<td>UTAC</td>
<td>734</td>
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<tr>
<td>9</td>
<td>ChipMOS</td>
<td>725</td>
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<tr>
<td>10</td>
<td>Shinko</td>
<td>669</td>
</tr>
</tbody>
</table>

SOURCE: IC INSIGHT, MIC, 2015/03

*TAIWANESE COMPANY
WORLD TOP 20 IC DESIGN FIRMS, FIVE ARE TAIWANESE
TAIWAN IC DESIGN RANKS NUMBER TWO WORLDWIDE

TOP 20 IC DESIGN COMPANIES, REVENUE AND YEAR ON YEAR GROWTH, 2013

WORK WITH TAIWANESE IC DESIGN COMPANY FOR GLOBAL MARKET

SOURCE: IC INSIGHTS, 2014
IOT AND MOBILE PAYMENT DRIVE THE MARKET

SOC, SENSOR, IDENTIFICATION, CONNECTIVITY AND LOW POWER CONSUMPTION ARE KEY TRENDS

SoC (system on chip)
- Multi-processing chips
- Compact
- Low cost

Power consumption
- Low power consumption
- Re-charging technology
- Energy harvesting

Sensor and identification
- MEMS
- Imagery
- Finger print and voice identification

Connectivity
- Integrate wireless communication technology like NFC

OPPORTUNITY FOR SWEDISH TECHNOLOGY COMPANIES TO APPROACH TAIWAN SEMICONDUCTOR VENDORS

SOURCE: COMMUNICATION COMPONENT MAGAZINE, 2014/08
AGENDA

- Taiwan 4G Operators
- Taiwan information and communication hardware industry
- Taiwan semiconductor industry
- Success cases and drivers for Taiwan ICT industry
- Mobile gaming market in Taiwan
SUCCESS CASES OF SWEDISH ICT COMPANIES 
LEVERAGE ON TAIWAN'S ICT STRENGTH FOR EXPORT

Company A: PC accessory, Swedish Design

Company B: Touch technology, Swedish Technologies

Company A: Product made in Taiwan
Sell to Global Market

Company B: License to ICT industry in Taiwan
and sell to Global Market

USE STRENGTH OF TAIWAN TO DEVELOP YOUR GLOBAL DEPLOYMENT STRATEGY

SOURCE: BUSINESS SWEDEN TAIPEI COMPIL
GLOBAL TRENDS DRIVES THE TRANSITION OF ICT INDUSTRY OF TAIWAN

- Big Data drives data center and server industry
- Device maker move down to the value chain to offer platform and services
- Small, low power consumption, sensor and identification is needed for IC
- Advanced communication technology drives demand for small cell

STRONG DEMAND FROM TAIWAN ICT INDUSTRY FOR SOFTWARE AND SERVICE INTEGRATION AND PARTNERSHIP
AGENDA

- Taiwan 4G Operators
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**TAIWAN RANKS WORLDWIDE #5 BY REVENUE OF GOOGLE PLAY AND #10 BY IOS APP STORE**

**TAIWAN RANKS #5 BY GOOGLE PLAY REVENUE**

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country 2014</th>
<th>Vs. 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Japan</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>United States</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>South Korea</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Germany</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>Taiwan</td>
<td>↑1</td>
</tr>
<tr>
<td>6</td>
<td>United Kingdom</td>
<td>↓1</td>
</tr>
<tr>
<td>7</td>
<td>France</td>
<td>-</td>
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<tr>
<td>8</td>
<td>Hong Kong</td>
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<tr>
<td>9</td>
<td>Australia</td>
<td>↓1</td>
</tr>
<tr>
<td>10</td>
<td>Canada</td>
<td>↑1</td>
</tr>
</tbody>
</table>

**TAIWAN RANKS #10 BY IOS APP STORE REVENUE**

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country 2014</th>
<th>Vs. 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>United States</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Japan</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>China</td>
<td>-</td>
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<tr>
<td>4</td>
<td>United Kingdom</td>
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<td>5</td>
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<td>8</td>
<td>France</td>
<td>-</td>
</tr>
<tr>
<td>9</td>
<td>Russia</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Taiwan</td>
<td>↑2</td>
</tr>
</tbody>
</table>

SOURCE: METAPS
52% TAIWANESE GAMERS SPEND MONEY ON GAMES
TAIWAN RANK #1 IN THE WORLD FOR AVERAGE DAILY SMARTPHONE USE

52% spend money on or in games
72% play mobile games
9,6M Taiwanese Gamers (population 23M)

World #1
Taiwanese spends 200 minutes on smartphone per day

World average is 142 minutes

Devices with Android and iOS System in Taiwan 8:2

SOURCE: MILWARD BROWN, NEW ZOO
TAIWAN IS A GOOD TEST MARKET FOR JAPANESE AND ASIAN GAMERS

The sorts of games and genres that are popular in Japan are equally as popular in Taiwan

Increase in competition and heavy ad spending by local app developers and publishers, the barrier to entry for the Japanese market is extremely high for most Western developers

Western games like Candy Crush and Clash of Clans are successful in Taiwan

Looking to target Japan with your mobile game? Try Taiwan first
ROLE PLAYING IS THE TOP GAME CATEGORY IN TAIWAN
TOP 10 CATEGORIES ACCOUNTS FOR 8% OF TOTAL REVENUE

TAIWAN GOOGLE PLAY TOP GROSSING CHART, CATEGORY FREQUENCY, SEPTEMBER 2014

Other 13%
Role Playing 21%
Strategy 18%
Casual 8%
Action 9%
Casino 7%
Simulation 6%
Card 6%
Arcade 4%
Puzzle 4%
Sports 4%
KING AND SUPERCELL ARE HOT IN TAIWAN, AN EASIER AND EFFECTIVE ENTRY POINT INTO ASIA

### December 2014

<table>
<thead>
<tr>
<th>Dec Rank</th>
<th>Nov Rank</th>
<th>Title</th>
<th>Developer</th>
<th>Category</th>
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<tbody>
<tr>
<td>1</td>
<td>5</td>
<td>LINE Everybody's Marble</td>
<td>LINE</td>
<td>Casual</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Dot Arena</td>
<td>LemonGame</td>
<td>Strategy</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>LINE</td>
<td>LINE</td>
<td>Communication</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>Tower of Saviors</td>
<td>Mad Head</td>
<td>Puzzle</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>LINE Rangers</td>
<td>LINE</td>
<td>Action</td>
</tr>
<tr>
<td>6 NEW</td>
<td></td>
<td>Pili Heroes</td>
<td>WeGames</td>
<td>Strategy</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>決戰神魔</td>
<td>IWPLAY WORLD</td>
<td>RPG</td>
</tr>
<tr>
<td>8</td>
<td>6</td>
<td>Summoners War</td>
<td>Com2uS</td>
<td>RPG</td>
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<tr>
<td>9</td>
<td>8</td>
<td>Candy Crush Saga</td>
<td>King</td>
<td>Casual</td>
</tr>
<tr>
<td>10</td>
<td>12</td>
<td>Clash of Clans</td>
<td>Supercell</td>
<td>Strategy</td>
</tr>
</tbody>
</table>

AN EASIER AND EFFECTIVE WAY ENTRY POINT INTO ASIA MARKET THROUGH TAIWAN

SOURCE: METAPS
CONTACT US

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