New Trends, New Markets, New Models
Opportunities for China’s IC Industry over the Next 10 Years

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President, CEO & Executive Board Member
Semiconductor Manufacturing International Corp.

China Semiconductor Technology International Conference
March 13, 2011
New Computing Cycle Characteristics

- Smartphones
- Kindle
- Tablet
- MP3
- Cell phone / PDA
- Car Electronics
  - GPS, ABS, A/V
- Mobile Video
- Home Entertainment
- Games
- Wireless Home Appliances
- Mobile PC's

Source: Morgan Stanley, Mary Meeker

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Worldwide Shipments –
Smart Connected Devices

(in millions)

>3.5X growth in 5 yrs.

Smartphones
Mobile PC’s
Desktop PC’s

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### Mobile Devices Shift Economics

<table>
<thead>
<tr>
<th>Component</th>
<th>Desktop</th>
<th>Notebook PC</th>
<th>iPhone 3GS</th>
<th>32GB iPad</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cost</td>
<td>Cost</td>
<td>Cost</td>
<td>Cost</td>
</tr>
<tr>
<td></td>
<td>% of Total Semi</td>
<td>% of Total Semi</td>
<td>% of Total Semi</td>
<td>% of Total Semi</td>
</tr>
<tr>
<td>Processor</td>
<td>$180.00</td>
<td>$122.50</td>
<td>$15.50</td>
<td>$16.00</td>
</tr>
<tr>
<td></td>
<td>58%</td>
<td>57%</td>
<td>22%</td>
<td>11%</td>
</tr>
<tr>
<td>Logic &amp; Other</td>
<td>$35.00</td>
<td>$47.50</td>
<td>$22.25</td>
<td>$55.50</td>
</tr>
<tr>
<td></td>
<td>11%</td>
<td>22%</td>
<td>32%</td>
<td>39%</td>
</tr>
<tr>
<td>Memory</td>
<td>$95.00</td>
<td>$45.00</td>
<td>$32.50</td>
<td>$71.00</td>
</tr>
<tr>
<td></td>
<td>31%</td>
<td>21%</td>
<td>46%</td>
<td>50%</td>
</tr>
<tr>
<td>Total Semiconductor</td>
<td>$310.00</td>
<td>$215.00</td>
<td>$70.25</td>
<td>$142.50</td>
</tr>
<tr>
<td></td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>% Semiconductor</td>
<td>~36%</td>
<td>~34%</td>
<td>~41%</td>
<td>~48%</td>
</tr>
<tr>
<td>Total BOM</td>
<td>$873.00</td>
<td>$632.50</td>
<td>$172.00</td>
<td>$299.00</td>
</tr>
<tr>
<td></td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

**Shift from ‘Wintel’ to other new platforms**

Non-leading edge Silicon goes from 5% to 25%

Note: BOM for Notebook PC is the mid-point of the range

Sources: iSuppli, Gartner, Barclays Capital

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Exponential Unit Growth Continues

IC Units (B)

- Mobile Connected Devices
- Increase in Usage
- Multiple Platforms and Applications
- Emerging Market Growth
- Driving Lower ASP's
- Shifting Device Economics

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Semiconductor vs. Wafer Output
Peak to Peak CAGR Growth Rates

Revenue Growth Rates Accelerate

1. Period from '00-08 and '08-'14
2. Period from '00-'08 and '08-'14
Source: Gartner Dataquest

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Revenue by Tech Node

Source: iSuppli
IDM Outsourcing History and Forecast

Source: ITRI & IEM, July, 2010

CAGR
2009 - 2020F: +18%

kWPM (8'' equivalent)

Year


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Merchant Market Semiconductors grow 40% from 2010 to 2014F on total Semiconductor Markets of $300B and $360B, respectively.
Semiconductor Industry has recovered from the financial crisis, reached 30.6% growth in 2010, and surpassed the pre-crisis market size

China is the world’s largest market for semiconductors, and played an important role in the recovery, resulting from domestic demand and government stimulus policies

The market is complex and rapidly changing, with a clearly visible “Butterfly Effect.”
Emerging Economies: Huge Opportunities

“80% of the world is within cell range, but only 20% have internet access.”

- Nokia Strategy and Financial Briefing
Growth Accelerates Across Developing Nations

Mobile Cell Phone Device Shipments (000's)

- 12% CAGR

Mobile PC Shipments (000's)

- 25% CAGR

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developing Nations</td>
<td>50%</td>
<td>18%</td>
</tr>
<tr>
<td>Developed Nations</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>32%</strong></td>
<td><strong>13%</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developing Nations</td>
<td>45%</td>
<td>37%</td>
</tr>
<tr>
<td>Developed Nations</td>
<td>9%</td>
<td>14%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>32%</strong></td>
<td><strong>13%</strong></td>
</tr>
</tbody>
</table>

Source: Gartner

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Technology Stimulates Economic Growth

“A device [cell phone] that was a Yuppie toy not long ago has now become a potent force in the economic development of the worlds poorest countries”

- Economist (2008)

“...an extra 10 mobile phones per 100 people in a typical developing country leads to an additional 0.59 percentage points of growth in GDP per person.”

### China: World’s Largest Electronics Manufacturing Industry

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010 (E)</th>
<th>2011 (F)</th>
<th>2012 (F)</th>
<th>2013 (F)</th>
<th>2014 (F)</th>
<th>2015 (F)</th>
<th>CAGR 2011-2015</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cell Phones</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(M units)</td>
<td>600</td>
<td>690</td>
<td>720</td>
<td>930</td>
<td>980</td>
<td>1020</td>
<td>1060</td>
<td>1115</td>
<td>1180</td>
<td>4.7%</td>
</tr>
<tr>
<td><strong>TV</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(M units)</td>
<td>84.8</td>
<td>90.3</td>
<td>99</td>
<td>105.4</td>
<td>111.7</td>
<td>118.4</td>
<td>126.7</td>
<td>136.8</td>
<td>146.4</td>
<td>7.0%</td>
</tr>
<tr>
<td>Including: LCD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16.8</td>
<td>25.1</td>
<td>57.4</td>
<td>71.8</td>
<td>82.6</td>
<td>94.2</td>
<td>105</td>
<td>120</td>
<td>138</td>
<td>13.7%</td>
</tr>
<tr>
<td><strong>Computers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(M units)</td>
<td>120.7</td>
<td>136.7</td>
<td>182.2</td>
<td>222.3</td>
<td>255.7</td>
<td>288.9</td>
<td>332.3</td>
<td>388.8</td>
<td>458.8</td>
<td>15.7%</td>
</tr>
<tr>
<td>Including: NB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>86.7</td>
<td>108.6</td>
<td>145.9</td>
<td>180.0</td>
<td>210</td>
<td>237</td>
<td>276</td>
<td>328</td>
<td>394</td>
<td>17.0%</td>
</tr>
<tr>
<td><strong>DT PC</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>34</td>
<td>28.1</td>
<td>36.3</td>
<td>42.3</td>
<td>45.7</td>
<td>51.9</td>
<td>56.3</td>
<td>60.8</td>
<td>64.8</td>
<td>9.1%</td>
</tr>
<tr>
<td><strong>Digital Cameras</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(M units)</td>
<td>74.9</td>
<td>81.9</td>
<td>80.3</td>
<td>83.8</td>
<td>87.2</td>
<td>90.6</td>
<td>94</td>
<td>98</td>
<td>102</td>
<td>4.0%</td>
</tr>
</tbody>
</table>

Source: MIIT, TRI, 2011
China’s IC Industry Continued Growth

Worldwide IC Market by Region

<table>
<thead>
<tr>
<th>Year</th>
<th>IC = In China</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>6.7%</td>
</tr>
<tr>
<td>2005</td>
<td>24%</td>
</tr>
<tr>
<td>2010</td>
<td>32%</td>
</tr>
<tr>
<td>2015</td>
<td>35% (E)</td>
</tr>
</tbody>
</table>

Unit: $Billion

Source – iSuppli Corporation Global and China AMFT

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Chinese Market – High Growth Potential

**Chinese Consumer Electronics Market Growth**
(Billion US$)

- 2007: 110
- 2008: 118
- 2009: 129
- 2010E: 144
- 2011E: 159
- 2012E: 172
- 2013E: 185
- 2014E: 201

CAGR 2007—2014E: 9.0%

**Chinese IC Market – Domestic Chip Demand & Supply**
(Billion US$)

- Chip Demand:
  - 2007: 110
  - 2008: 118
  - 2009: 129
  - 2010E: 144
  - 2011E: 159
  - 2012E: 172
  - 2013E: 185
  - 2014E: 201

- Chip Supply:
  - 2007: 80
  - 2008: 95
  - 2009: 110
  - 2010E: 125
  - 2011E: 140
  - 2012E: 155
  - 2013E: 170

Gap will be $21.7B USD in 2013

Source: EMIS
Source: iSuppli & SMIC forecast
China IC Design Industry –
Rapid Growth, Foundry Demand Surging

- China’s 2011 IC Design Industry forecasted revenue: USD 5.7B in 2011
- China’s 2015 IC Design forecasted revenue: ~USD 10.1B in 2015 by iSuppli

Source: CSIA & iSuppli, 2011

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# 2010 China Top 10 Fabless Companies

<table>
<thead>
<tr>
<th>Company Ranking</th>
<th>Company Name (Chinese)</th>
<th>Company Name (English)</th>
<th>2010 Revenue ($M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>展讯通信（上海）有限公司</td>
<td>Spreadtrum</td>
<td>345</td>
</tr>
<tr>
<td>2</td>
<td>锐迪科微电子（上海）有限公司</td>
<td>RDA</td>
<td>210</td>
</tr>
<tr>
<td>3</td>
<td>比亚迪股份有限公司</td>
<td>BYD</td>
<td>150</td>
</tr>
<tr>
<td>4</td>
<td>上海泰景信息科技有限公司</td>
<td>telegent</td>
<td>140</td>
</tr>
<tr>
<td>5</td>
<td>格科微电子（上海）有限公司</td>
<td>Galaxycore</td>
<td>130</td>
</tr>
<tr>
<td>6</td>
<td>联芯科技有限公司</td>
<td>Leadcore</td>
<td>130</td>
</tr>
<tr>
<td>7</td>
<td>国民技术股份有限公司</td>
<td>Nationz</td>
<td>110</td>
</tr>
<tr>
<td>8</td>
<td>深圳市海思半导体技术有限公司</td>
<td>Hisilicon</td>
<td>100</td>
</tr>
<tr>
<td>9</td>
<td>深圳国微技术有限公司</td>
<td>SMiT</td>
<td>100</td>
</tr>
<tr>
<td>10</td>
<td>中星微电子有限公司</td>
<td>vimicro</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: MIIT, TRI 2011
2010 Foundry Breakdown of Total Chinese Fabless IC Market

Total IC Market Size (for China Fabless Companies)
USD 1,680M

- Grace: $86M
- GF: $40M
- IBM: $97M
- CSMC: $143M
- HHNEC: $217M
- TSMC: $325M
- SMIC: $396M

Others: $396M
Opportunities and Challenges for China’s IC Market

Opportunities

- China market recovery significantly quicker than global market; huge market development potential;
- Industry and investment environment will continue to improve;
- Rapid development of emerging markets, such as the “Internet of Things,” New Energy, Green Technology, Smart Grid, and Wireless Technology.
- “Growth Enterprise Market” financing made available to small/medium-sized domestic IC firms promotes development.

Challenges

- The instability of the global economy; need increased domestic demand.
- Barriers to entry and the “Matthew Effect”*: more difficult for SMEs and new vendors to enter the market.
- Core technology in emerging markets is monopolized, with many patent traps; hinders SME’s entry.

* “Matthew Effect”: the riches get richer
China’s IC Industry – Urgent Need to Accelerate Growth

China’s IC Industry: Bridging the Gap with International Companies

- **Business Model**: China lacks IDMs
- **Production Scale**: Need Increased Capacity Investment
- **Production Process**: Strengthen Design and Process Technology
- **Company Quality**: Need to reduce the income gap
China IC Industry Development Models

Policy

New Semiconductor Alliances

Development of New Industries

State Policy Support
Favorable Industry Environment
Improved Return on Investment
Equipment, Material
Design, Manufacturing
Packaging
Scientific/Research Institutes

“Internet of Things,” Smart Grid, Tri-Network Integration, Gold Card Program, Cloud Computing
China’s Semiconductor Industry – National Development Plan & Goals (Document 18 & 12/5 Plan)

To fully resolve severe chip shortages and correct the passive and lagging situation in the IC industry, by 2015.

For process and design technology to reach world standards at the 28/22nm level.

To construct an independently controllable, fully developed semiconductor industry supply chain.
Semiconductor unit growth continues at exponential rates for the next five years. Foundry/Fabless will outgrow the Industry.

New growth engines give rise to economic growth:
- Emerging markets
- Mobile connected devices – *Internet Everywhere*
- Increased applications drive demand

3G/smart phone, DTV ICs, Mobile Computing, LCD drivers continue to drive China 3C market. Internet of Things (IOT) and LED drivers will be specially emphasized in China.

China represents huge potential market. The China fabless companies are growing at a breakneck speed. A establishment of Chinese ecosystem would be essential in the near future.

Chinese Document 18 and the Twelfth Five Years plan place special emphasis on Chinese IC industry sector with a target CAGR of 12.7%
Thank You