EMS: critical link in the value chain
- A component supplier's perspective on serving the emerging global contract manufacturing (EMS) market

Muriel Claassen
Global service program manager – EMS accounts

April 14, 2004, Shanghai, SCM conference: China at the crossroad of the Global supply chain
This presentation

Share with experts from industry

• Our recognition of the strategic and **growing importance** of contract manufacturing for the Semiconductor value chain

• Our recognition of the **leading role of China** in this

• Our assessment that **sourcing decisions** for global contract manufacturers are **dominated by** supplier **performance in service**

• The **strategic implications for component manufacturers**, supplying both key and standard components, such as Philips Semiconductors
Structure presentation

• Introduction
• Growing importance of EMS in the value chain
• Implications for component suppliers
Philips Semiconductors: A leading silicon solution company

Key components
• Strong products leading positions

Standard components
• Broad-based Multi Market Semiconductor supplier

CONSUMER

<table>
<thead>
<tr>
<th>Component</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>TV</td>
<td>#1</td>
</tr>
<tr>
<td>Media access</td>
<td>#1</td>
</tr>
<tr>
<td>DVD recording</td>
<td>#1</td>
</tr>
<tr>
<td>Digital audio</td>
<td>#2</td>
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COMMUNICATIONS

<table>
<thead>
<tr>
<th>Component</th>
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<tbody>
<tr>
<td>Cordless</td>
<td>#1</td>
</tr>
<tr>
<td>Bluetooth</td>
<td>#2</td>
</tr>
<tr>
<td>RF Identification</td>
<td>#1</td>
</tr>
<tr>
<td>Wireless connectivity</td>
<td>#2</td>
</tr>
<tr>
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COMPUTING

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<td>#2</td>
</tr>
<tr>
<td>PC Add-on cards</td>
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Source: Gartner / DisplaySearch & Philips 2003 and DataQuest, Philips 2002
Leading silicon solution company

- **Top-10 supplier** with revenues of 4.0 billion Euro in 2003 (excl. MDS)

- **Focus** on semiconductor solutions for **Connected Consumer** applications

- We serve the consumer, communications, automotive and computing markets

- 30,000 employees

- The addition of **Mobile Display Systems** and **Professional Speaker Systems** (MDS) adds 3,100 employees and 1.2 billion Euro revenues

- **Global** organization: Sales force delivering to 60 countries, 20 manufacturing sites including, MDS and assembly and test
### Strong products with leading positions

**Key components:** Customer and application specific

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<td>TV</td>
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</tr>
<tr>
<td>Media access (tuners/decoders)</td>
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</tr>
<tr>
<td>DVD recording</td>
<td>#1</td>
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<tr>
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<tr>
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<td>Display drivers (small panels)</td>
<td>#2</td>
</tr>
<tr>
<td>PC Add-on cards</td>
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</tbody>
</table>

Source: Gartner / DisplaySearch & Philips 2003
Leading global broad-based Multi Market Semiconductor supplier

**Standard products**

- **Power Disretes**: 27%
- **Small Signal Disretes**: 28%
- **Logic**: 21%
- **Microcontrollers**: 14%
- **Standard Analog**: 10%

**Driving advancements in MultiMarket product segments**

- **Introducing new low-voltage families & advanced packaging**
- **Leader in 80C51 8-bit architecture**: Leading industry in low pin count parts for continued miniaturization.
  Strategic focus on 32-bit: First in industry to introduce 32-bit MCU w/ 0.18 µm on-chip Flash.
- **Leadership in TrenchMOS technology (0.25 µm)**: for low voltage applications.
  Focus on integrated power management.
- **Focus on customized analog solutions with unique features (e.g. cap-free, motor controllers)**
- **Leading the industry in small footprint packages**

Source: DataQuest, Philips 2002
# Strong customer base

<table>
<thead>
<tr>
<th>Communications</th>
<th>Consumer</th>
<th>Computing Automotive</th>
<th>Distributors</th>
<th>EMS</th>
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<tbody>
<tr>
<td>NOKIA</td>
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<td>PHILIPS</td>
<td>WPI</td>
<td>Jabil Circuit</td>
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<td>SONY</td>
<td>SIEMENS VDO</td>
<td>AVNET</td>
<td>SOLECTRON</td>
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<td>flextronics</td>
<td>SCI Systems, Inc.</td>
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<td>Enjoyment Matters</td>
<td>WPI</td>
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<td>SHARP</td>
<td>Visteon</td>
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<td>SIEMENS mobile</td>
<td>CHANGHONG</td>
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<td>wavecom</td>
<td>KONKA</td>
<td>BOSCH</td>
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**Global contract manufacturers**

EMS: Electronic Manufacturing Services
Contract manufacturing: many different acronyms related to differences in focus

- **Contract Manufacturing**
  - **Electronic Manufacturing Services (EMS)**
    - Initial focus on PCB Manufacturing
  - **Contract Design Manufacturing (CDM)**
    - Initial focus on Product Design
  - **Original Design Manufacturing (ODM)**
    - Full focus on Product Design
  - **Design Houses**

EMS used as the common acronym in this presentation to indicate contract manufacturing.
Structure presentation

• Introduction
• Growing importance of EMS in the value chain
• Implications for component suppliers
Only **one value chain** to the end customer

*Many parties involved, all looking for ways to increase share of $ spend*

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**Component supplier**

**Component Manufacturing**

**Distribution**

**PCB Manufacturing**

**Product Manufacturing**

**Retail & Distribution**

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**EMS**

**OEM** (Original Equipment Manufacturer)

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**Retailer**

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**End Customer**

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**Semiconductors**

*PCB: Printed Circuit Board*
Contract manufacturing: an important evolution of traditional business model

Component supplier
- Traditional role of component design and industrial marketing

Contract manufacturer
- Started with printed circuit board manufacturing
- Expanding capabilities in SCM and design

OEM
- Brand management
- Focus increasingly on design and new product introductions
- Limit operations to complex, high-end products

Semiconductors
EMS Semiconductor spend increases at expense of OEM spend

*iSupply, Q1 2004*
High volume EMS in low cost countries, China is the main growth market

Lehman brothers – January 2004

New Product Introduction (NPI)
- Remains near OEM design centers
- Majority W-Europe / N-America

'02 43% ➔ '03 33%

'02 22% ➔ '03 23%

'02 33% ➔ '03 43%

China is the main growth market
- Global EMS moves production
- Rise of local manufacturers
Local AP manufacturers can penetrate global EMS list very quickly

Lehman brothers – January 2004

![Chart showing revenue growth of various electronics manufacturing service providers from 1998 to 2005, with forecasts for 2005E. The chart compares actual vs. forecast revenues for companies like Flextronics, Solectron, SCI-Sanmina, Celestica, Jabil, and Foxconn.]
Drive for service improvement in the value chain comes from global EMS

- Local manufacturers can offer same product at far lower cost
- Margin erosion on PCB manufacturing for global EMS
- Global EMS expands to more added value activities

**Competitive Differentiator**

- **Global contract manufacturers**
- **Local contract manufacturers** *China / Taiwan based*

**Evolution**

- **Service**
- **Quality**
- **Price**
- **Product**
Philips customer loyalty interviews confirm industry reports

**Major challenges:**

- New business model
- Cost down
- Competitive pricing
- Supplier relationship
- Savings/efficiency
- Logistics programs
- Secure/flex supply
- New product design
- New markets
- Increased demand
- Quality
- Expand knowledge
- Market position
- Profit

**Relative importance**

New business model: expansion in design and service area

Supply chain management / service related aspects dominate major challenges for EMS

*Source: Philips yearly customer loyalty interviews with top global EMS*
Structure presentation

- Introduction
- Growing importance of EMS in the value chain
- Implications for component suppliers
For component suppliers business process interfaces are changing

**Component supplier processes**

- **Design-in** (High-end key IC’s)
- Product marketing
- AVL penetration
- Quotation management
- Sample management
- Order handling
- Product delivery
- Customer logistics programs
- Complaint handling

**Business processes**

- Branding & Marketing
- Product design
- PCB Design
- Prototyping
- Material Management
- PCB Manufacturing
- Product Manufacturing
- Sales and Distribution

AVL: Approved Vendor List
Addressing business drivers for EMS and OEM key to success of Comp.

- Early design involvement
- Asset optimization
- Customer intimacy

Customer & supplier intimacy
Reliable & flexible fulfillment
Cost competitiveness

Time to market
Product design
Brand management
Intellectual Property (IP)
Separate bilateral relations are fundamentally different

Comp. ↔ OEM
- Long term strategic relation based on technology roadmaps
- Primary focus on time to market for new products and key components

OEM ↔ EMS
- Reliable & flexible fulfillment and cost competitiveness critical in OEM outsourcing decisions

EMS ↔ Comp.
- Comp. support in addressing OEM business drivers critical in EMS sourcing decisions
Comp. and OEM: Long term strategic relation based on technology roadmaps

- Primary focus on time to market for new products
- Key focus area’s for OEM on IP generation, Brand mgt, Sales & Distribution
- Supplier needs to anticipate that responsibilities will shift to EMS companies when product become more mature
OEM and EMS: Reliability, flexibility, cost competitiveness focus for OEM

- For key components a 1:1 relation between OEM and Comp. continues to exist

- OEM may subcontract manufacturing to one or more EMS

- Supplier needs to balance carefully interests of different EMS and OEM in the same value chain
  - Multiple EMS serving the same OEM and need the same product, who to serve?
EMS and Comp.: Support in addressing OEM business drivers critical for EMS

- Reliable and flexible fulfillment and cost competitiveness basic OEM requirements
- If key component fulfillment performance is poor, EMS will source standard products with competition!
- Comp. needs to be prepared for supporting increasing responsibilities with EMS
  - PCB design, Prototyping
  - Product manufacturing
Product life cycle management for key components: shared core for all parties

- **Shared objective**
  - Maximize the output of the value chain
  - Minimize the integral risk of obsolescence

- **Collaboration on supply chain planning between all three parties key to success**
  - Transparency of downstream demand vs. upstream supply capabilities
  - Globally aggregate consumer demand at OEM best possible forecast
Purchasing power shifts from OEM to EMS during product life cycle

Product life cycle management

Time to market

Time to volume

Cost down

End of Life

EMS dominated

OEM dominated

Product (re-)design
Interdependency between standard and key components w.r.t service

Key components
- 1:1 relation between Comp. and OEM
- Sourcing decision with OEM

Standard products
- Multiple suppliers and multiple customers
- Sourcing decision with EMS

If service performance is poor for key components, EMS will source standard components with competition!
Conclusion

- EMS is strategic and of growing importance for the Semiconductor value chain
  - China plays a leading role in this
  - Purchasing power increases over Product life cycle
  - Sourcing decisions dominated by supplier service performance

- Component suppliers have to realign their marketing and business strategy to address this development
  - Performance excellence on key components needs to be in place to grow standard business
Manage the dynamics!

Those component suppliers that are able to manage the dynamics

- between EMS and OEM
- between Key and Standard components
- over the Product life cycle

Are the ones that will prosper in the next stage of the evolution
Thank You!

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E-mail: muriel.claassen@philips.com
## List of relevant acronyms

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