Research and Development at Siemens
Innovations have Kept Siemens Strong for 156 Years

Outstanding innovations and sales development by Siemens AG, 1847 – 2003

“A company like Siemens can only enjoy sustained success if it has technologically advanced products. We have to innovate on a permanent basis make sure we are ahead of the field”

Heinrich von Pierer, General Meeting of Shareholders, January 23, 2003

1853 first office St. Petersburg
Siemens: Global network of innovation in electrical engineering and electronics

The top ten companies in our business (in fiscal 2003)

Total sales (in billions of euros)
Sales in electrical capital goods (in billions of euros)

1 US$ = 0.91551 EUR
1 Yen = 0.00772 EUR
1 Won = 0.00077 EUR

Siemens’ Business Segments:
Sales in 2003 (in billions of euros, incl. internal sales)
# Corporate Structure  (January 1, 2004)

## Managing Board

### Operations

<table>
<thead>
<tr>
<th>Information and Communications</th>
<th>Automation and Control</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Mobile (ICM)</td>
<td>Automation and Drives (A&amp;D)</td>
<td>Power Generation (PG)</td>
</tr>
<tr>
<td>Information Networks (ICN)</td>
<td>Industrial Solutions and Services (I&amp;S)</td>
<td>Power Transmission and Distribution (PTD)</td>
</tr>
<tr>
<td>Siemens Business Services GmbH &amp; Co. OHG (SBS)</td>
<td>Siemens Dematic AG (SD)</td>
<td>Siemens Financial Services GmbH (SFS)</td>
</tr>
</tbody>
</table>

### Transportation

<table>
<thead>
<tr>
<th>Transportation Systems (TS)</th>
<th>Siemens Building Technologies AG (SBT)</th>
</tr>
</thead>
</table>

### Medical

<table>
<thead>
<tr>
<th>Medical Solutions (Med)</th>
<th>Siemens Real Estate (SRE)</th>
</tr>
</thead>
</table>

### Regional Units

Regional Offices, Regional Companies, Representativ Offices, Agencies

## Corporate Departments

- **Corporate Development (CD)**
- **Corporate Finance (CF)**
- **Corporate Personnel (CP)**
- **Corporate Technology (CT)**
- **Financing and Real Estate**

## Corporate Centers:

- Corporate Communications (CC)
- Corporate Information and Operations (CIO)
- Global Procurement and Logistics (GPL)
- Chief Economist / Corporate Relations (ECR)
- Management Consulting Personnel (MCP)

*Legally Separate Group*
R&D at Siemens (2003)

R&D employees: 50,000
(employees worldwide: 416,000)

Germany 52 %
International 48 %

Total R&D budget: € 5.1 billion
(6.8 % of sales)

About 95 % at Groups, Regional Units,
Subsidiaries and Associated Companies
for development of products, systems and
manufacturing processes

About 5 % at Corporate Technology
for research, technology development
and consulting
### R&D Expenditure of the Top Ten Electrical Engineering Companies

(Based on annual reports 2002/03 and corresponding exchange rates; only partially comparable, without external R&D orders and public funding)

<table>
<thead>
<tr>
<th>Company</th>
<th>Expenditure in percent of sales</th>
<th>Expenditure in billions of euros</th>
</tr>
</thead>
<tbody>
<tr>
<td>Siemens</td>
<td>6.8</td>
<td>5.1</td>
</tr>
<tr>
<td>IBM</td>
<td>5.9</td>
<td>4.3</td>
</tr>
<tr>
<td>Matsushita</td>
<td>7.4</td>
<td>4.3</td>
</tr>
<tr>
<td>HP</td>
<td>7.3</td>
<td>3.8</td>
</tr>
<tr>
<td>Sony</td>
<td>5.9</td>
<td>3.4</td>
</tr>
<tr>
<td>Hitachi</td>
<td>4.5</td>
<td>2.9</td>
</tr>
<tr>
<td>Toshiba</td>
<td>5.9</td>
<td>2.6</td>
</tr>
<tr>
<td>Samsung</td>
<td>5.7</td>
<td>2.3</td>
</tr>
<tr>
<td>NEC</td>
<td>6.3</td>
<td>2.3</td>
</tr>
<tr>
<td>GE 1)</td>
<td>3.0</td>
<td>2.0</td>
</tr>
</tbody>
</table>

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1) without GECS (GE Capital Services)

Source: Siemens AG, CD S 8 - 11.03
Aspects for the Internationalization of R&D

- Close to the customer
- Close to the production
- Networking to the scientific community
- Costs
- Recruiting
- Corporate Citizenship
- Cultural diversity

R&D goes where the businesses and the markets are growing
# Corporate Technology

## Technology Divisions
- Materials & Microsystems
- Production Processes
- Power and & Systems
- Software & Engineering
- Information & Communications

## Corporate Intellectual Property
- Intellectual Property Services
- Regional Intellectual Property Units
- Intellectual Property Support
- Company Name & Trademark Law

## Corporate Functions
- Standardization & Regulation
- Information Research Center
- Environmental Affairs & Technical Safety

## Business Administration and Controlling

## Human Resources

## Chief Information Officer / Chief Knowledge Officer

* Functional reporting to Corporate Technology

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* Siemens AG, CT, 2004
Corporate Technology – worldwide 2,400 employees at 24 sites (20% outside Germany)

CT Technology Divisions
9 sites, thereof 4 main sites with more than 100 employees

CT Intellectual Property
20 sites worldwide, thereof 7 in Germany

R&D - Activities
main sites: underlined – more than 100 employees

- Technology Office
- Technology Scouts
- CT IP Main Sites
- CT IP others

Further CT IP sites
Karlsruhe
Konstanz
Düsseldorf
Frankfurt / Main

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Business Model of Corporate Technology

Goal: Creation of Economic Value Added for the Company

- Pictures of the Future
  - Markets
  - Trends
  - Technology
  - Business Opportunities
- Technology Screening & Analysis

Cross Business Group/Segment Technology Strategies for the Company
- Projects for the Business Group (Contract R&D)
- Projects to build up new competences

Network of Competences - Partner for Innovation

New Business opportunities by external commercialization of technologies and IPRs
- Spin off’s (STA, TTB*)
- IP marketing
- External marketing of technological services

* Partnership with A&D, arising also for Spin-in’s
Technology Divisions and Core Technologies: Network of Competences – Partner for Innovations

*) subsidiary to Siemens Corporate Research
Materials & Microsystems

- Ultrafast Ceramics for Computed Tomography
- Polymerelectronic
- Functional Materials for Optoelectronics
- Multichip Module for Radar Evaluation
- Joining of Plastic Materials
- Joining Technologies
- Electronics
- Micromechanics & Coatings
- Packaging & Assembly
- Design to Prototype (D2P)
- Project: Environmentally Compatible Products
- Ceramics
- Functional Polymers
- Analytics
- Eco-Design of Products
- Materials Analysis by Ion Bombardment
- Electronic Assembly
- Parallel Optical Link
- Electronic Assembly
The Time Horizons of the R&D Activities of the Business Groups and of Corporate Technology are Different

A seamless transition from R&D in Corporate Technology to the Business Groups is crucial for our success.

R&D Expenses

Today

One product generation in the future

Two product generations in the future

Time to market

(The absolute time scale depends on business)
Pictures of the Future: Detailed Description of All Relevant Trends of Our Business Segments

- **Socio-economic trends**
  - society
  - life of work

- **Market trends**
  - size / growth
  - structure
  - geographical

- **Customer / business trends**
  - value chains / networks
  - company’s structure
  - processes

- **Technological trends**
  - strategic importance
  - multiple impact
  - disruptive
Pictures of the Future: Main Technological Trends

- New materials
- Miniaturization
- Software substitutes hardware
- Increasing complexity
- Modularization
- Decentralization of intelligence
- Standardization
- Individualization
- Virtualization
- Sustainability
- Service technologies
- Knowledge management

... and primarily: IT-penetration of all businesses
“The best way of predicting the future is to invent and to shape it yourself”

Heinrich v. Pierer
CEO and President of Siemens AG