

India Semiconductor Association

Driving the Indian semiconductor business

May 2008



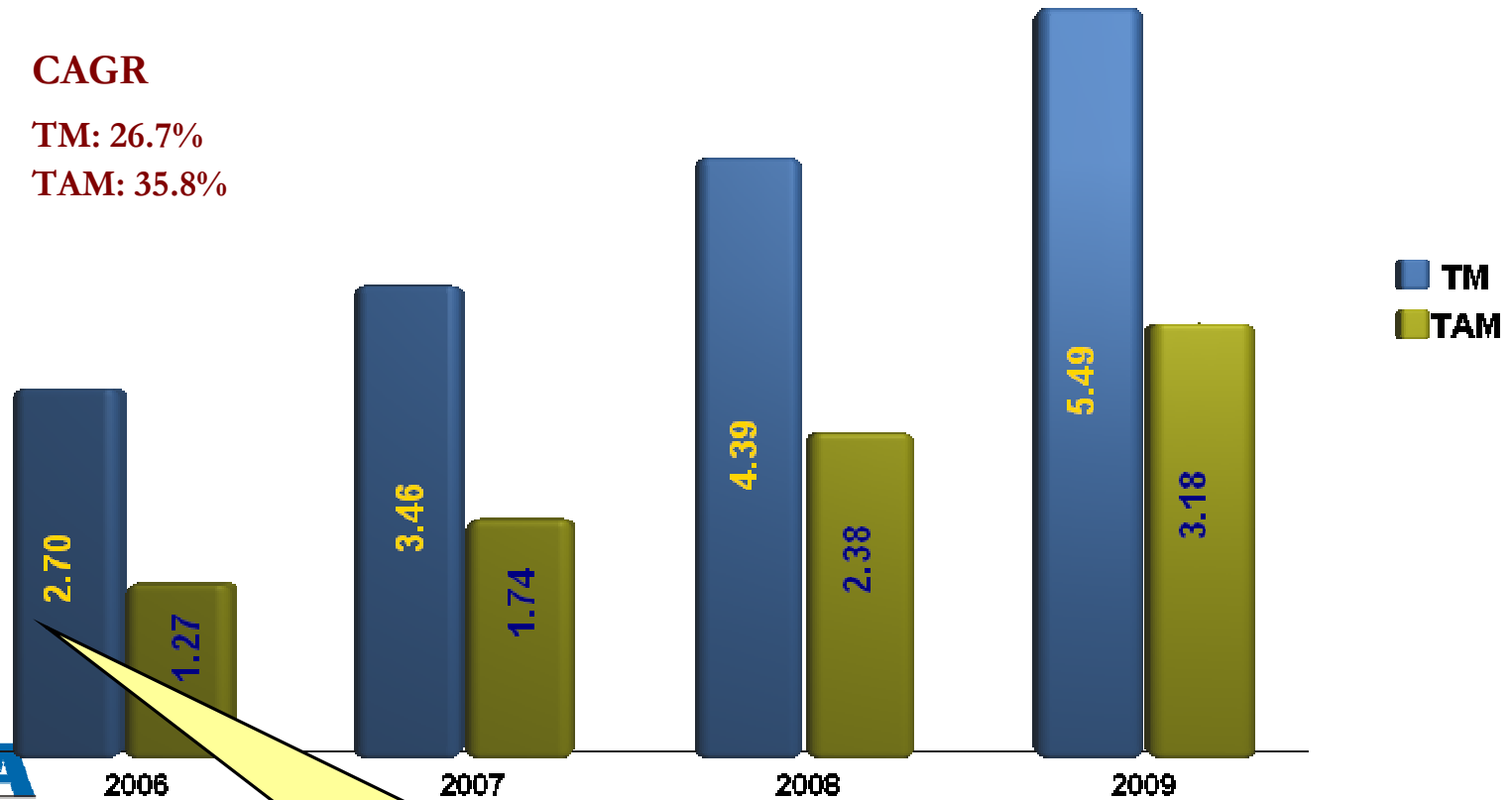
India semiconductor TM & TAM revenues forecast

India Semiconductor TAM revenues to grow by 2.5 times while TM to double revenues in 2009

CAGR

TM: 26.7%

TAM: 35.8%

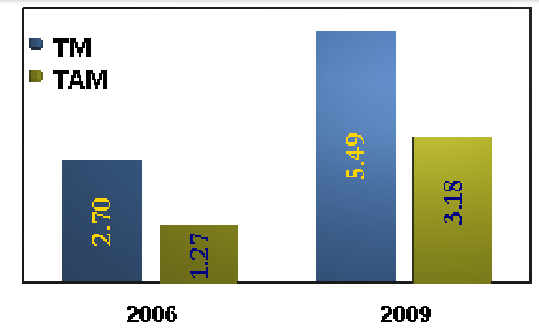
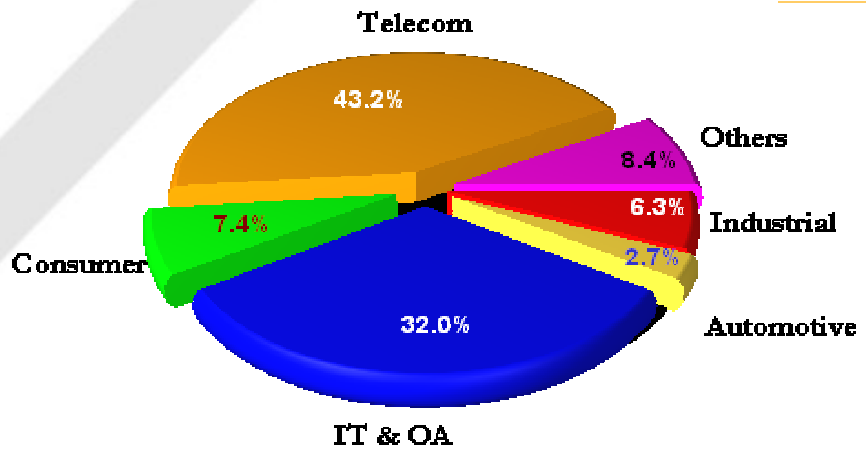


Values in \$ billions

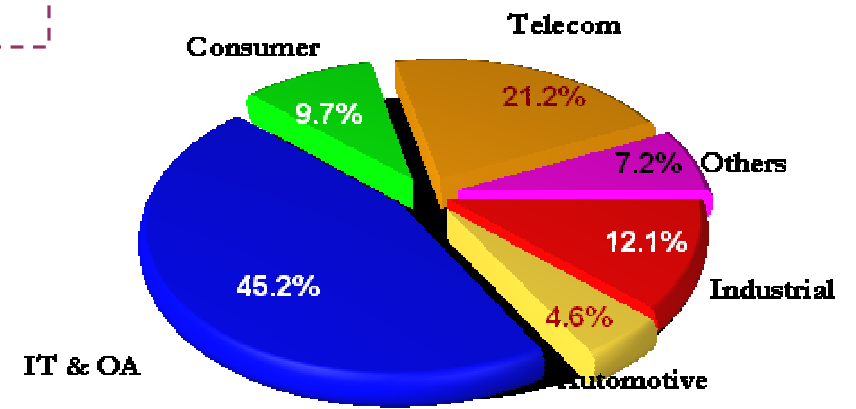
Semiconductor revenues are 0.06% of India's GDP

Share of application segments in TM and TAM revenues (2006)

TM



TAM



Major End Use Products

- Mobile Handsets
- BTS
- Desktops
- Notebooks
- CRT TVs
- DVD Players

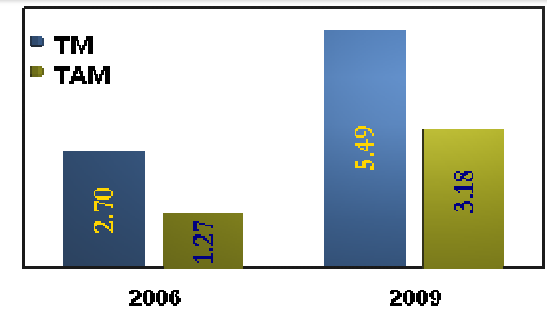
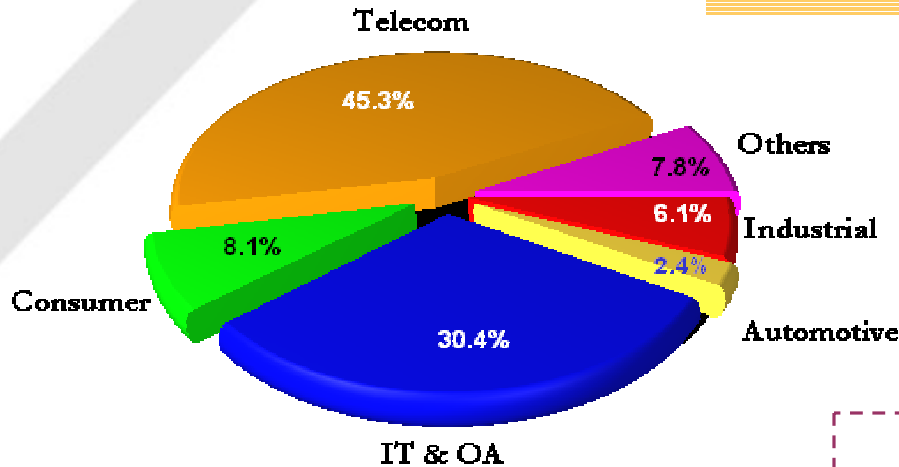
Major Semiconductors

- Microprocessors
- Memory
- Analog
- Discrete
- ASIC

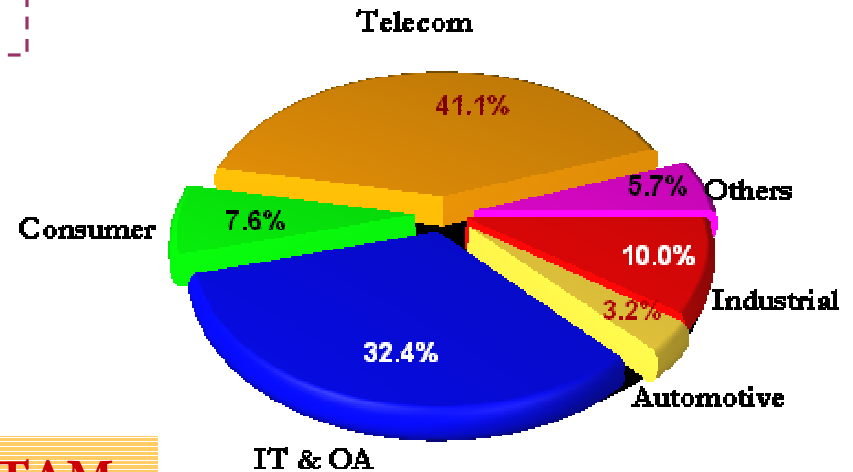


Share of application segments in TM and TAM revenues (2009)

TM



TAM



Major End Use Products

Mobile Handsets
 BTS
 WiMAX
 Desktops
 Notebooks
 STBs
 CRT TVs
 DVD Players

Major Semiconductor

Microprocessors
 Analog
 Memory
 Discrete
 ASIC

ISA
 INDIA SEMICONDUCTOR ASSOCIATION
 Inspired, Integrated Initiative
 Aerospace & Defence
 Smart Cards

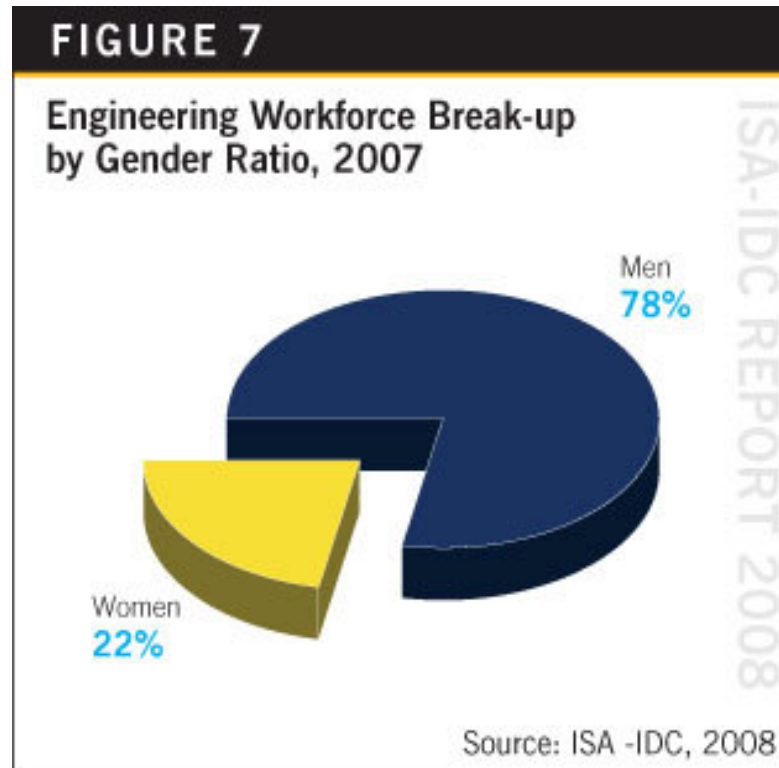
Revenues: 2007/09

Total design market	Share of overall revenues (%) 2007	Share of overall revenues (%) 2009
VLSI	USD 0.77 bill (13%)	USD 1.13 bill (13%)
Hardware/board	USD 0.38 bill (6%)	USD 0.56 bill (6%)
Embedded software	USD 4.93 bill (81%)	USD 7.29 bill (81%)
Total	USD 6.08 bill (100%)	USD 8.97 bill (100%)

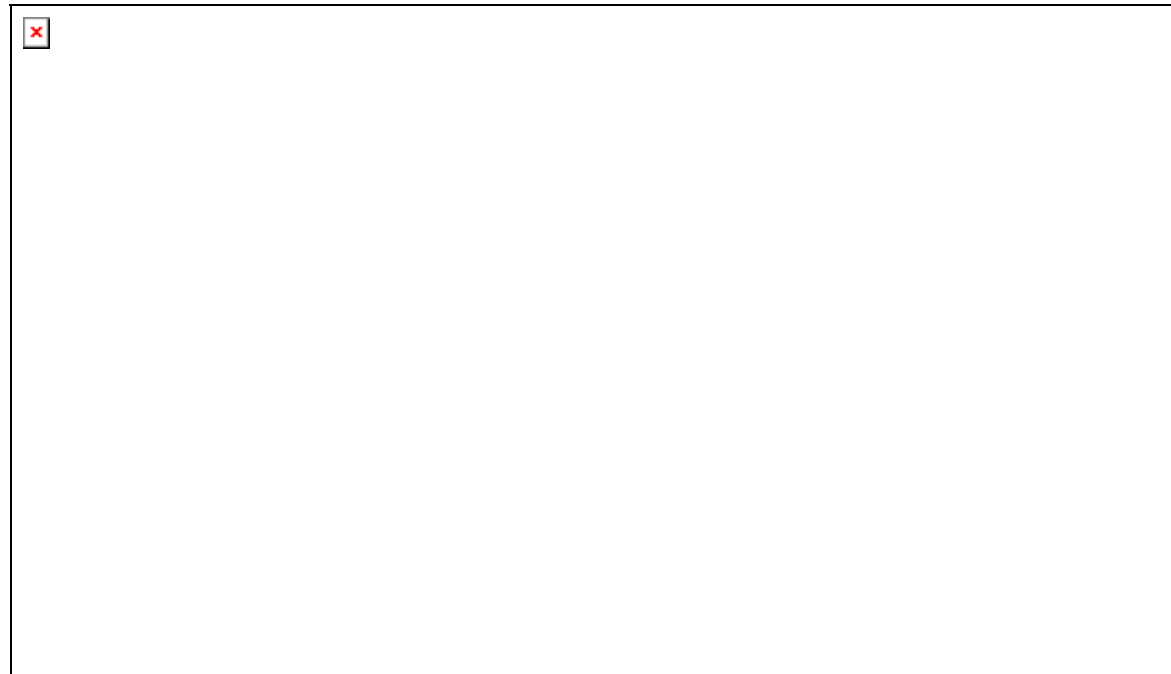
Workforce: 2007/09

Total design market	Share of overall workforce (%) 2007	Share of overall workforce (%) 2009
VLSI	13996 (11%)	19637 (11%)
Hardware/board	9421 (7%)	12923 (7%)
Embedded software	106579 (82%)	149978 (82%)
Total	129996 (100%)	182538 (100%)

Gender ratio



Comparative talent cost



Key Findings: Status of semiconductor-driven research in Indian universities, ISA 2008

- The top seven institutes account for approximately 70–75 % of the total research in academic institutes of the country.
- The fields in which semiconductor research-related activities are being performed are Chip design and testing, Embedded systems, Electronic Design and Automation (EDA), and, Process-related research.
- Class A institutes, like the IITs, IISc and BITS, account for around 61 % of research papers published in the field of semiconductors.
- Approximately 85–90 % of the total funds for research are provided by the Government of India and the rest comes from the industry.
- The Government of India collaborates with technical institutes in providing funds for semiconductor research. The industry provides monetary and knowledge support, latest technologies and tools and equipment to institutes.

Status of semiconductor-driven research in Indian universities, ISA 2008 (contd.)

Major Challenges:

- Shortage of research scholars and faculty
- Limited industry support
- Lack of research infrastructure
- Low remuneration offered to faculty and research scholars

Key Recommendations:

- Facilitate a Public Private Partnership (PPP) model to encourage applied semiconductor research.
- Promote setting up of Technology Business Incubators (TBI) which will help convert a potential research idea to its commercial success.
- Develop dedicated research centers, by enhancing the standard of semiconductor laboratories and by setting up semiconductor-related research in R&D SEZs.
- Improve the status of research scholars and faculty by providing performance based incentives to faculty and research scholars, facilitating involvement of industry executives in academics and by creating awareness about job avenues among PhD holders.

Types of ISA member companies

