

# SEMICONDUCTOR INDUSTRY

September 2009

## The focus of this presentation is to discuss...

- ❖ Overview of the semiconductor sector
- ❖ An upcoming sector
- ❖ Regulatory framework

## A sunrise sector ... (1/2)

- The Indian semiconductor sector comprises pre-fabrication, fabrication and post-fabrication verticals. Despite the current slowdown in global markets, the Indian semiconductor market has shown sustained growth over the years. In 2007, the Indian Semiconductor Association (ISA)-Frost and Sullivan estimated the Indian semiconductor market\* to be worth US\$ 4.56 billion. This figure was rose to US\$ 5.9 billion for 2008 at a compound annual growth rate (CAGR) of 13.4 per cent and, further on, to US\$ 7.59 billion for 2010.
- The total available market\*\* is expected to rise from US\$ 2.53 billion in 2008 to US\$ 3.24 billion in 2010 at a CAGR of 13.1 per cent.

\*The total market is considered as the total consumption of semiconductors in India in any form, whether through local purchase or through imports

\*\*The total available market is the consumption of semiconductors in India by virtue of manufacturing of end-user products in India along with consumption through local purchase in India

Sources: ISA-F&S, Livemint, Business Standard

## A sunrise sector ... (2/2)

- The growing demand for IT hardware, office automation products and consumer electronics products such as mobile phones and automotive products are driving the demand for semiconductors in India.
- The major semiconductor end-user segments have been identified as communications, IT and consumer electronics. The categories that are expected to drive the semiconductor market in India are microprocessors, analogue devices, memory chips, discrete circuits and application-specific integrated circuits (ASIC).
- Consumption of electronics equipment in India was 1.8 per cent of the global market for electronics consumption in 2005. This is expected to grow to 5.5 per cent in 2010 and 11 per cent in 2015 to reach US\$ 363 billion.
- Semiconductors are poised to impact modern life. They will open up new possibilities in nano-sciences, biotechnology, medical sciences, electro-mechanical devices, photonics, remote sensing, etc. While still in its nascent stages, the semiconductor sector in India possesses immense potential to emerge as a global hub.
- Convergence is the major technological trend in the semiconductor industry, which manifests other trends. Semiconductor technology is consistently scaling down to smaller sizes and geometries, hence a single chip is able to house more and more devices, implying more functionalities per chip. Therefore, a number of previously-used chips are now being merged onto a single chip. Highly-integrated solutions, such as platform solutions, are also increasingly becoming a trend.

## Share of Indian semiconductor sector in global semiconductor market expected to Increase to 1.6 per cent by 2009

- The semiconductor sector involves pre-fabrication, fabrication and post-fabrication verticals.
- The semiconductor segment can be divided into semiconductor designing, semiconductor manufacturing and semiconductor assembly testing mark pack (ATMP).
- According to an ISA 2007 report, the Indian semiconductor market has grown from approximately US\$ 2.1 billion to approximately US\$ 4.1 billion.



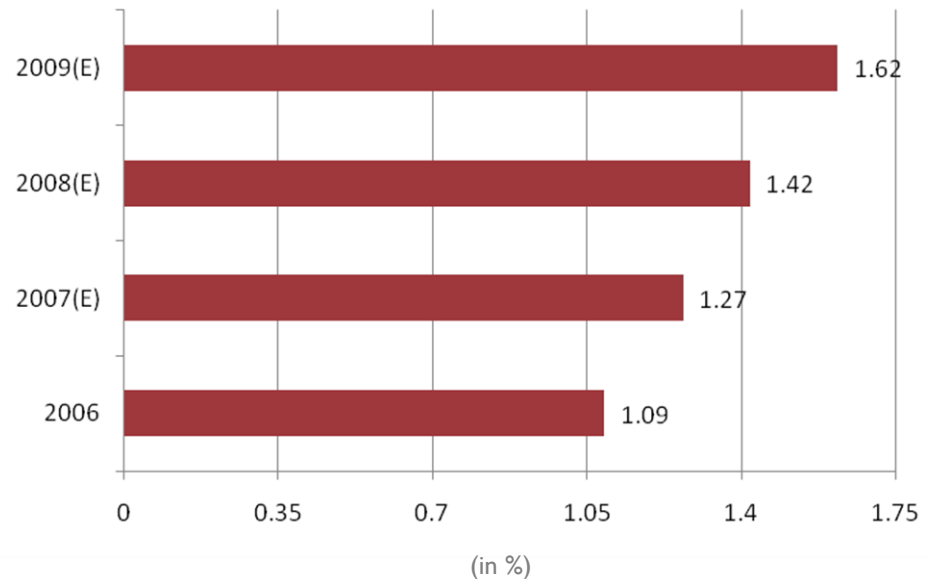
Source: ISA, F&S

## Share of Indian semiconductor sector in global semiconductor market expected to Increase to 1.6 per cent by 2009

- The semiconductor market is expected to grow from US\$ 2.7 billion in 2006 to US\$ 5.5 billion in 2009.
- The country accounted for 1.09 per cent of the global semiconductor revenue in 2006 and this share is expected to reach 1.62 per cent in 2009, which will represent a CAGR of 26.7 per cent.

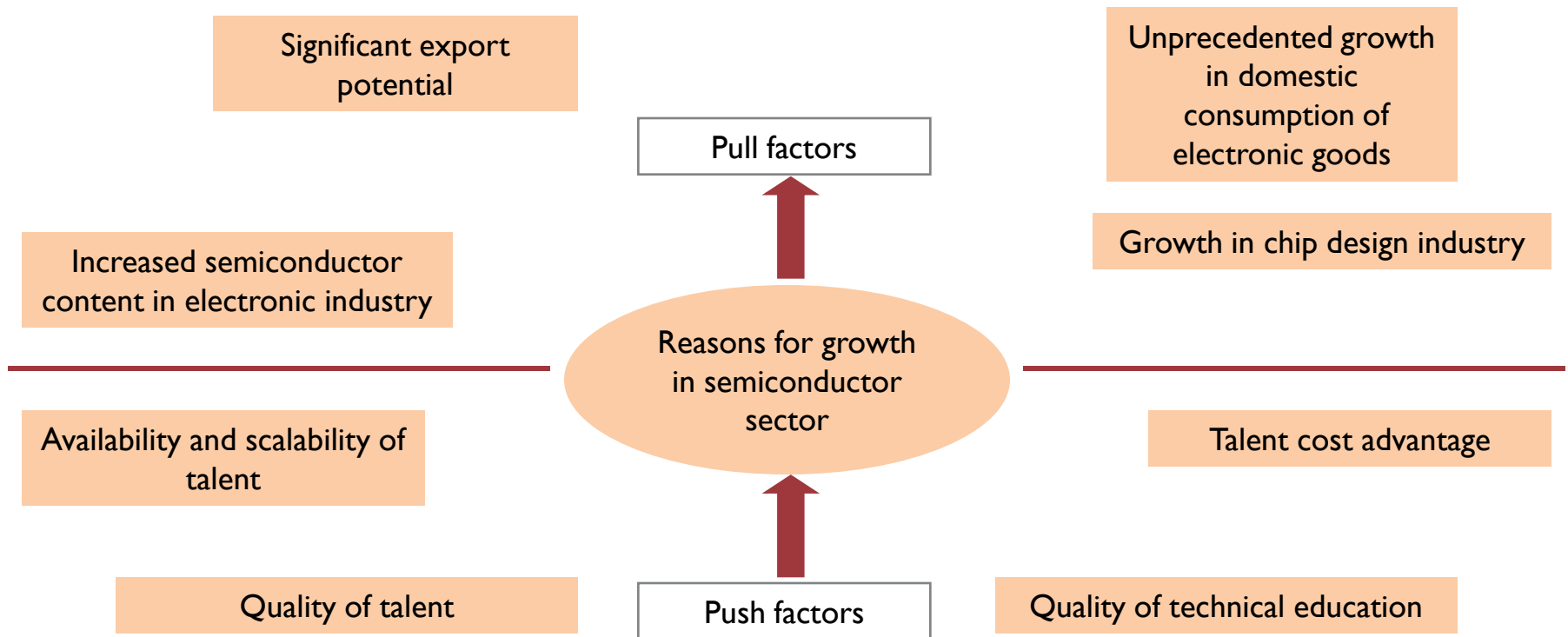
Source: ISA, F&S

Percentage share of the Indian semiconductor market in the global semiconductor market (2006–09)



## Reasons for growth in the semiconductor sector

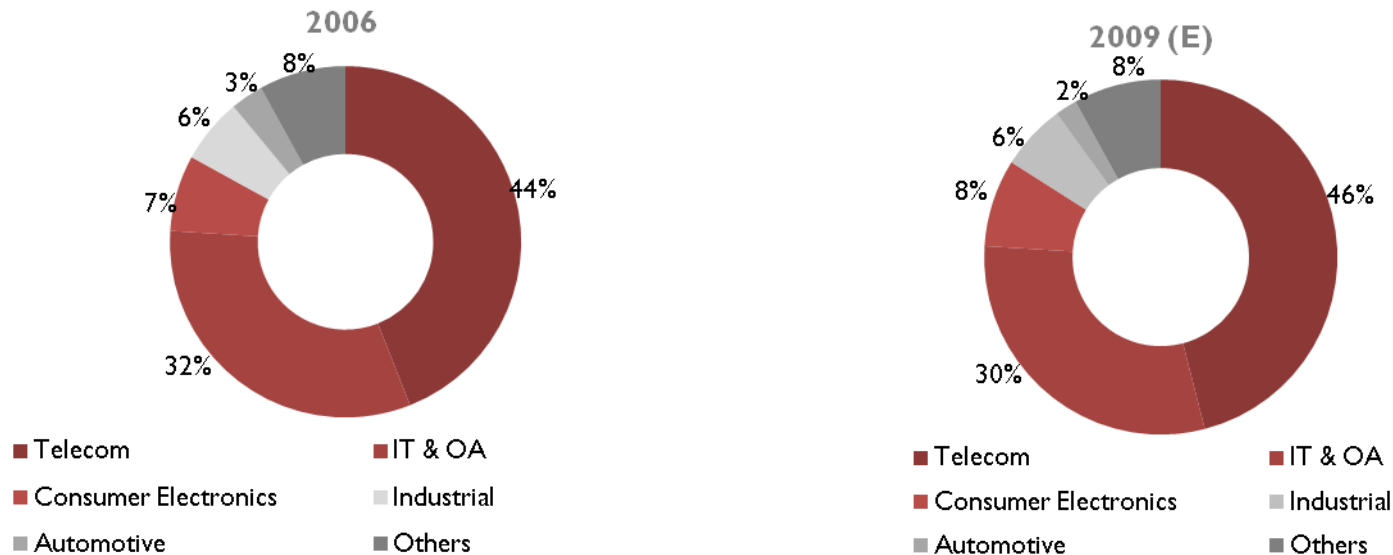
The semiconductor design requirements of verticals such as automotive, electronics, telecommunications, consumer electronics, IT hardware and office automation provide an opportunity to multinational companies to enter the Indian market.



## Telecom segment is expected to be main growth driver of semiconductor application market

- The IT and office automation segment, along with the telecom segment, dominate the demand for semiconductor products in India. These two segments account for more than 75 per cent of the total semiconductor requirement in the country.
- The telecom segment is the largest application segment contributing to the semiconductor market. According to the ISA, it registered a market share of approximately 44 per cent in 2006 and is expected to grow to 46 per cent in 2009.

Total semiconductor product market (in %)



Source: ISA, F&S

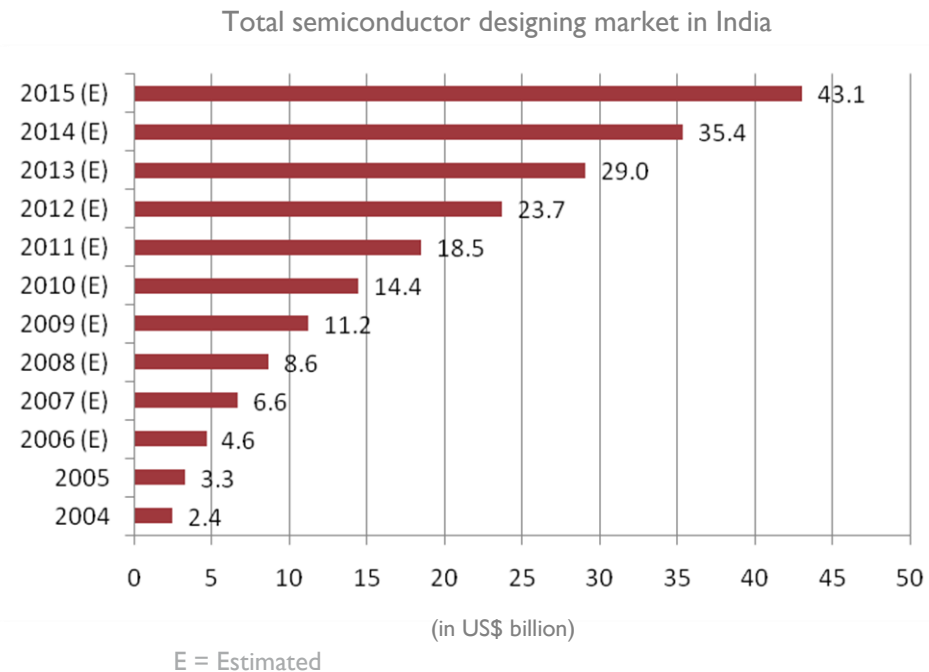
E = Estimated



## Semiconductor design revenues expected to witness CAGR of 29.5 per cent ... (1/2)

- India is on the world map in chip designing; the growing production and consumption of electronics across various sectors is further driving the growth of semiconductor designing in the country.
- The semiconductor designing segment generated revenues worth US\$ 6 billion in 2007 and is expected to reach approximately US\$ 14.4 billion and US\$ 43.1 billion by 2010 and 2015, respectively.
- During the period 2005 to 2015, it is expected to register growth at a CAGR of approximately 29.5 per cent.

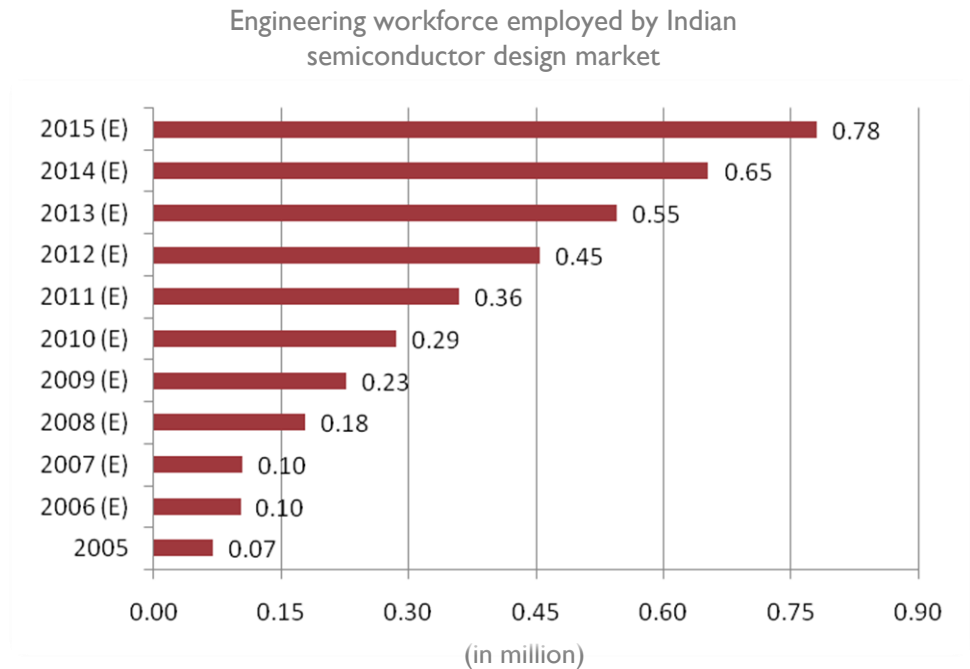
Sources: ISA, F&S



## Semiconductor design revenues expected to witness CAGR of 29.5 per cent ... (2/2)

- The growth of the Indian semiconductor design market is expected to lead to an increase in the number of engineering personnel employed by this segment.
- According to the ISA, it employed an estimated 0.13 million engineers in 2007; the employment figure is likely to grow to 0.29 million by 2010 and 0.78 million by 2015, growing at a CAGR of approximately 27 per cent during the period.

Sources: ISA, F&S

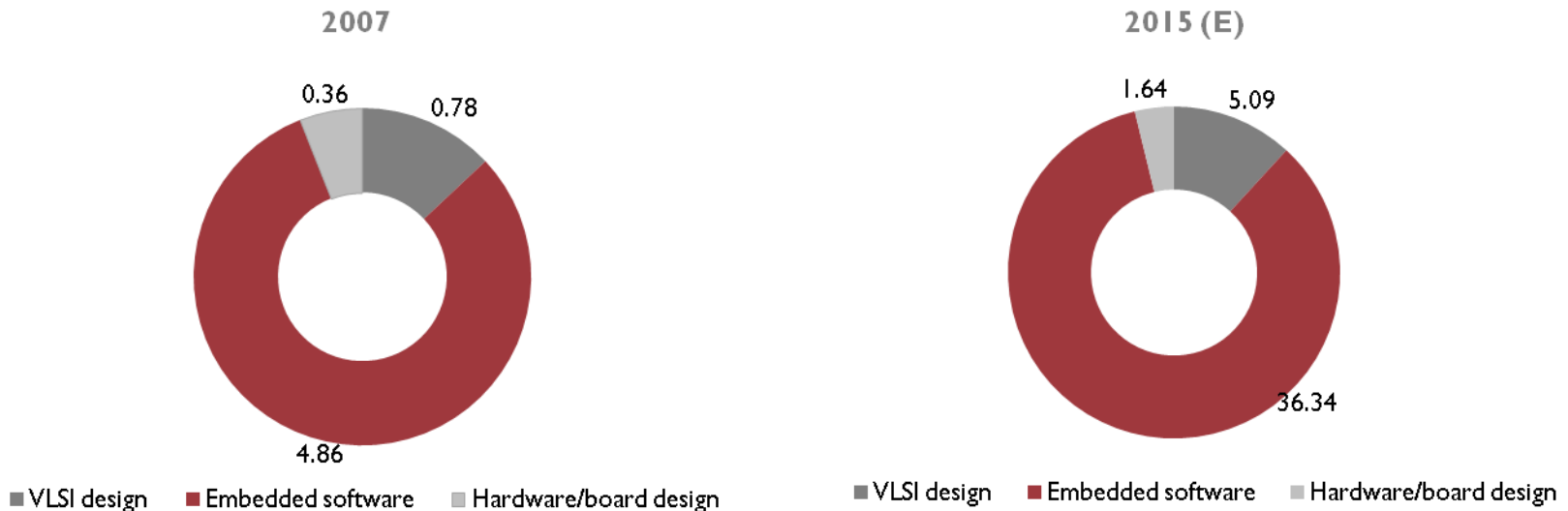


E = Estimated

## Embedded software is a leading segment in semiconductor designing

- The ISA-Frost & Sullivan ‘2007/2008 Indian Semiconductor Market Update’ on the Indian semiconductor sector estimates that the number of chip designs executed in India will increase at a CAGR of 13 per cent from 320 in 2005 to 1,075 in 2015.
- Revenues earned by sub-segments — embedded software, VLSI design and hardware/board design — are expected to register a CAGR of approximately 30 per cent, 24 per cent and 27 per cent, respectively, from 2005 to 2015.

Indian semiconductor design market revenue break up



Sources: ISA, F&S, The Economic Times

E = Estimated

## Competitive landscape in semiconductor designing ... (1/2)

At present, the top 10 global fabless design companies and 19 of the top 25 semiconductor companies have operations in India.

Foreign and domestic companies operating in semiconductor design segment

VLSI design companies in India	
Foreign companies	Domestic companies
Freescalse Semiconductor, Inc	TATA Consultancy Services Ltd
Intel Corporation	Wipro Tecnologies Ltd
National Semiconductor Corporation	Tata Elxsi Ltd
Texas Instruments, Inc	Sasken Communication Technologies Ltd
NXP Semiconductors	MindTree Consulting Ltd
Cisco Systems, Inc	HCL Technologies Ltd
Tessolve, Inc	Hexaware Technologies Ltd
C-Sam Inc	Aftek Ltd
Conexant Systems Inc	Tejas Networks India Ltd
Sun Microsystems	Analog Devices India Pvt Ltd
Broadcom Corporation	Cosmic Circuits Pvt Ltd

## Competitive landscape in semiconductor designing ... (2/2)

There are 125 integrated chips (IC) design companies operating in India; nearly 50 per cent of the semiconductor design work in the country is carried out in the areas of wireless and wired communications.

Embedded software companies in India	
Foreign companies	Domestic companies
Alcatel-Lucent	HCL Technologies Ltd
Cisco Systems, Inc	Ittiam Systems
NXP Semiconductors	Satyam Computer Services Ltd
Intel Corporation	Wipro Technologies Ltd
Flextronics International Ltd	TATA Consultancy Services Ltd
D-Link Corporation	MindTree Consulting Ltd
Embedded Communications Computing Group	Tata Elxsi Ltd

Hardware/board design companies in India	
Foreign companies	Domestic companies
Cisco Systems, Inc	Wipro Technologies Ltd
NXP Semiconductors	Sasken Communication Technologies Ltd
Advance Micronic Devices Ltd	MindTree Consulting Ltd
Intel Corporation	HCL Technologies Ltd
Flextronics International Ltd	Ittiam Systems

## Trends in semiconductor designing ... (1/2)

Chip design companies see immense potential not only in India-designed chips but also in India-focussed chips as these companies are looking at the country as a key product market. This confidence is based upon the sharp growth witnessed in the country's mobile and consumer electronics sectors.

### Emerging trends in semiconductor designing

#### Venture capital

A large number of venture capital (VC) firms are keen on investing in the Indian semiconductor design segment. The country is a favourite destination of VC firms due to factors such as availability of skilled labour, a strong local market and a flexible regulatory framework.

#### Technology convergence

Semiconductor consuming sectors such as digital media, consumer electronics, auto and wireless are demanding devices with multiple features on a single platform. Further, the growth of mobile applications is encouraging the combined usage of digital signal processors and microprocessors, thus taking advantage of both technologies.

#### Semiconductor product development

Trends related to product development companies are emerging in India. The future trend is suggestive of electronic products manufacturers entering the sector, leading to an increase in the number of semiconductor product manufacturing companies. The products are most likely to be high-complexity and medium-volume with strong software architecture.

#### Emergence of design start-ups

Many domestic and foreign start-ups are expanding operations in the country. Currently, it is not difficult to set up a start-up unit as financing schemes for such start ups are available in the country. This trend will firmly embed India on the global map in the field of semiconductor designing.

#### Intellectual property

Third-party design services companies are looking to move up the value chain by increased focus on intellectual property (IP) development. Growth can be increased by the localisation of product design and manufacturing in India, leading to high investments by product and design services companies.

Source: [COIL](#)

## Trends in semiconductor designing ... (2/2)

Emerging trends in semiconductor designing	
Offshoring to Indian vendors	Small form-factor designs
<p>Semiconductor majors are looking to outsource to mid-sized or large Indian design service providers rather than setting up or scaling up their own captive units. This reduces the time, effort and costs involved for these semiconductor majors while setting up their operations. The return on investments is also higher with outsourcing rather than scaling up, hence making outsourcing the preferred option.</p>	<p>The emergence of multi-core embedded systems enable multi-tasking at higher speeds as compared to single-core systems. Digital security and surveillance, along with medical imaging, have greatly benefitted from this concept. The shift towards small form-factor designs has led to significant growth for in-vehicle infotainment, Including global positioning system (GPS) navigation systems, location-based services, digital radio, DVD video and MP3-based entertainment systems.</p>

Source: [COIL](#)

## Expansion plans of semiconductor design companies in India ... (1/5)

### **Magma**

Magma Design Automation has 200 employees spread across three centres in India. Its Bengaluru operations have moved to a new 40,000 sq ft facility, which will enable Magma to expand in the region and provide prompt support to its growing customer base in India. The company is also focussed on expanding its product portfolio and building its expertise in IC implementation.

### **Management Dynamics, Inc**

Management Dynamics, Inc has expanded its operations in the Asia-Pacific region to meet the demands of its growing Asian customer base.

### **Freescale Semiconductor**

Freescale Semiconductor is expanding its Indian operations with the development of a 300,000-sq ft campus in Noida, Uttar Pradesh. The company plans to increase its headcount in India to 1,500 engineers over the next four years to support its global R&D efforts.

Source: [Euroasia semiconductor](#)



## Expansion plans of semiconductor design companies in India ... (2/5)

### Honeywell

India's chip manufacturing industry has laid substantial emphasis on captive centres for defence and aerospace. Honeywell has opened a new research facility at an estimated cost of US\$ 50 million at Bengaluru, its second R&D centre in the city.

### Alliance Semiconductor Corp.

Alliance Semiconductor Corp., a leading worldwide provider of analogue and mixed-signal products, systems solutions and high performance memory products announced in 2004 that it would invest approximately US\$ 50 million in its India design centre over the following five years.

### Conexant Systems, Inc

Conexant Systems, Inc, a leader in fabless semiconductor solutions for broadband communications and digital home, is investing approximately US\$ 250 million in India over the next few years.

Source: [Euroasia semiconductor](#)

## Expansion plans of semiconductor design companies in India ... (3/5)

### Fairchild Semiconductor

Fairchild Semiconductor has opened a new R&D centre in Pune to design and develop the company's new power MOSFETs and IGBT technology for supporting solar inverters, uninterruptible power supply (UPS) devices, automotive, lighting and ballast applications.

### Alereon, Inc

Alereon, Inc announced the opening of Alereon Semiconductors Pvt, the company's new product-oriented R&D facility in Pune, Maharashtra. The R&D centre will focus on developing the company's patented UWB chipsets for next-generation products.

### PV Technologies India Ltd (PVTIL)

PVTIL, a subsidiary of Moser Baer India Ltd, has signed a memorandum of understanding (MoU) with an equipment supplier to provide essential equipment for a phased expansion of its thin-film photovoltaic modules manufacturing capacity. The current project capacity of 40 MW, in addition to the proposed 565 MW expansion, will take the company's manufacturing capacity to over 600 MW by 2010.

Source: [Euroasia semiconductor](#)

# Expansion plans of semiconductor design companies in India ... (4/5)

## Japanese ventures in the Indian market

Japanese companies find it increasingly difficult to obtain required design resources in Japan, leading to Japanese semiconductor manufacturers utilising Indian design capabilities in two ways: either by establishing their own design centres in India or by tying up with Indian design services. Some of the Japanese companies in the Indian semiconductor industry include:

### Elpida Memory Inc

- Elpida Memory of Japan, in partnership with Singapore-based FTD Technology, set up Edison Semiconductor Pvt Ltd at Bengaluru in April 2006 to operate as an offshore development centre (ODC) for Elpida Memory.

### Toshiba Corp.

- Toshiba Corporation is switching from a tie up to establishing its own design centres in India. In this process, it acquired SoCrates Software Pvt Ltd in December 2004.

Source: [Nikkei Electronics Asia](#)

## Expansion plans of semiconductor design companies in India ... (5/5)

### **Kawasaki Microelectronics Inc**

- In March 2006, Kawasaki Microelectronics Inc became the first Japanese organisation to directly enter India by setting up a branch at Bengaluru that undertakes circuit design and electronic design automation (EDA).

### **Renesas Technology Corp.**

- In October 2006, Renesas Technology Corp. tied-up with KPIT Cummins Infosystems Ltd, a design service firm, to set up an in-house ODC.

Source: [Nikkei Electronics Asia](#)

## Semiconductor manufacturing in India

- The Increasing spend on electronics products in India offers a large opportunity to global semiconductor companies to set up manufacturing plants in the country. The Indian government has set up Fab City in Hyderabad, which houses 10 manufacturing plants and is expected to create 1.4 million jobs by 2016 in over 200 ancillary industries.
- It is estimated that approximately seven to eight solar photovoltaic (SPV) units will be set up in India at an investment of US\$ 5 billion to US\$ 6 billion. The number of solar chip fabrication units in India is expected to surpass the number of semiconductor chip fabrication units in the next few years.
- Currently, there are no operational wafer fabrication units in the country and semiconductor manufacturing is limited to three government companies (Bharat Electronics Ltd, Society for Integrated Circuit Technology and Applied Research, and Semi-Conductor Laboratory).

## Factors fuelling semiconductor manufacturing growth

The Indian government offers several Incentives to global semiconductor companies to set up chip manufacturing plants in the country.

### Factors Fuelling Growth

- Chip manufacturing is receiving a fillip as various electronics manufacturing services (EMS) providers and mobile phone equipment manufacturers, such as Samsung, Motorola and Nokia, are setting up their plants in India. For example, according to a Gartner report, by 2011, 10 per cent to 20 per cent of mobile phone production in India is likely to be for the export market. There is potential for chip manufacturing companies to partner with EMS players and leverage this opportunity.
- The government has announced various tax Incentives for companies that are starting chip manufacturing operations in the country.
- The government has set up Fab City at Hyderabad in Andhra Pradesh; the city is expected to attract investments worth US\$ 15.77 billion.

Source: [Euroasia semiconductor](#)

## Assembly Testing Mark Pack (ATMP)

ATMP is the post-fabrication stage, where the chip reaches the testing lab and undergoes various tests. At this stage, faulty chips are identified and the rest are taped out for shipment. This post-fabrication stage completes the overall value chain of the semiconductor sector.

### ATMP in India

#### Market

- The number of ATMP units in India is very small but various firms, both domestic and foreign testing and packaging companies, are foraying into IC testing. For India to emerge as a complete semiconductor solution provider, it has to develop as an ATMP hub.
- The global ATMP market valued at approximately US\$ 20 billion.

#### Exemptions

- ATMP units are entitled to tax exemptions under Software Technology Parks of India (STPI) norms. Some of these exemptions are:
- Custom duty exemption
  - Excise duty exemption
  - Central sales tax reimbursement
  - Corporate tax exemption on 90 per cent export turnover
  - Sales in domestic tariff area (DTA) up to 50 per cent of the 'free on board' (FOB) value of exports permissible

## Growth prospects for ATMP

- Cost-competitive manpower is the deciding factor for ATMP units, a resource that India has in plenty.
- The second factor that makes India a good location for ATMP units is the presence of a growing domestic electronics market.

### **Growing domestic electronics market**

The growing domestic electronics market —MP3 players, PCs, digital cameras and mobile handsets — offers a great opportunity for mix-signal testing, flash testing and packaging memory devices.

### **Growth prospects for ATMP units in India**

### **Cost-competitive advantage**

ATMP units are located predominantly in cost-competitive countries. India, with its abundance of skilled, low-cost and competitive workforce, offers tremendous opportunity for the setting up of ATMP units.

### **Upcoming fabrication units and manufacturing facilities**

Upcoming semiconductor fabrication units in India would require in-house operations to assemble and test ICs in order to ensure full control over manufactured ICs. At the same time, the plans of consumer electronics majors such as Samsung, Nokia, LG and Dell to set up manufacturing plants in India render it favourable for these companies to assemble, test and package their chips and final products in India.



## Investment plans in ATMP

### Intel

Intel plans to invest US\$ 400 million to establish a testing and assembly facility in India near Bengaluru or Chennai.

### Tessolve

Tessolve had announced an investment of US\$ 215.2 million in 2006 for setting up a testing, assembling, packaging and prototyping (TAPP) facility in Chennai.

### SPEL

SPEL, India's only commercial semiconductor chip assembly and testing company, plans to invest US\$ 286 million in a special economic zone (SEZ) near its existing facility in Chennai.

### Reliance Industries Ltd (RIL)

RIL plans to establish a semiconductor wafer lab and an ATMP facility for which an investment estimated at US\$ 4.64 billion will be made over 10 years. It is proposed to be set up at the Fab City, Hyderabad, Andhra Pradesh. In addition, Reliance plans to manufacture polysilicon, solar-grade wafers and SPV modules of 1 GW capacity. It will spend an estimated US\$ 2.91 billion on this activity over 10 years.

Source: [Euroasia semiconductor](#)

## Current Trends in ATMP

### VCs targeting ATMP segment

The Indian semiconductor ATMP segment is attracting the attention of global VC firms. For example, Sandalwood Capital Partners, an India-focused venture fund, has invested US\$ 30 million in phase-I of SemIndia's proposed test and assembly facility at Hyderabad. In 2007, Sandalwood increased its corpus in India from US\$ 120 million to US\$ 500 million.

### Outsourcing of assembly and testing services

Outsourcing of assembly and testing services is expected to provide a fillip to the revenue of ATMP units in India. Foreign companies are expected to outsource their work to these ATMP units in India and, at the same time, captive design centres of semiconductor companies such as Intel, TI and AMD are also expected to outsource their work to these ATMP units. This trend is further supported by the fact that the market for outsourced assembly and testing services has grown from 30 per cent to 40 per cent in the last five years.

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## Semiconductor sector: Advantage India ... (1/5)

### Strong growth in related verticals

The Indian semiconductor sector is likely to witness a strong growth rate as a result of the expected vibrant performance of some of the related sectors such as automotive, consumer electronics and durables, IT hardware and office automation, and telecommunications.

Market for semiconductors across different industry verticals (in US\$ million)					
Year	Automobiles	Electronics and durables	IT hardware and office automation	Telecommunications	Commercial electronics
2004	76.3	202.9	660.0	828.6	121.6
2005	100.0	297.9	780.0	1,281.5	153.4
2006	121.9	378.4	1,000.0	1,884.3	186.9
2007	145.9	471.4	1,280.0	3,010.0	245.4
2010 (E)	240.2	791.1	2,610.0	7,980.8	484.7
2015 (E)	459.5	1,529.5	6,960.0	24,297.2	1,647.6

E = Estimated

Source: ISA 2007 Report

## Semiconductor sector: Advantage India ... (2/5)

### Strong academia

The semiconductor sector is a knowledge-intensive sector and, thus, requires a large pool of engineering talent. Here, India has an edge over other countries owing to its large engineering skill pool.

Engineering workforce employed by different design sector verticals in India				
Year	Total design Market	Embedded software development market	VLSI design market	Hardware/board design market
2005	74,850	60,220	11,300	3,330
2006 (E)	102,120	83,500	14,200	4,420
2007 (E)	140,235	116,305	18,060	5,870
2008 (E)	178,675	148,790	22,300	7,584
2009 (E)	227,265	190,030	27,455	9,780
2010 (E)	286,220	241,000	33,135	12,085
2011 (E)	360,440	305,665	39,850	14,925
2012 (E)	454,010	387,665	47,910	18,436
2013 (E)	545,665	465,196	57,700	22,770
2014 (E)	653,365	558,236	67,000	28,130
2015 (E)	781,780	669,885	77,150	34,745

Source: ISA 2007 Report

## Semiconductor sector: Advantage India ... (3/5)

### Cost savings

India offers a large pool of a technically and scientifically-skilled English-speaking workforce. At the same time, the country has ample semiconductor design talent at competitive costs. For example, an employee in engineering services costs US\$ 25 an hour in India, approximately one-third of the cost incurred on a similar employee of comparable skill and experience in the US. Approximately 20 per cent of the Fortune 500 companies have their R&D operations in India and recruit managerial and engineering staff locally for their Indian operations.

### Government and industrial support

The initiatives taken by the government and the industry are providing new business opportunities to existing companies to move up the value chain. The government is working towards establishing a favourable FDI environment, reducing taxation rates, and offering fiscal and financial benefits to the semiconductor sector.

## Semiconductor sector: Advantage India ... (4/5)

### Outsourcing

Integrated device manufacturers (IDMs) have either set up captive centres or opted for outsourcing to third-party design houses in India over the last seven years. This trend, started by Texas Instruments, has led to most manufacturers setting up base in India or outsourcing to third parties such as Wipro, HCL and MindTree.

### Software strength

The Increasing complexity and intelligence levels of electronic design systems have led to an Incremental complexity in the software that is used for such systems. Software plays a crucial role in complex computing, communication devices, consumer appliances and control systems. India's strength in application software has extended into embedded software, which makes it a better investment option.

### Intellectual property

India is considered a safe environment for the development of IP, which plays a critical role in the protection of an innovation for the electronic design industry. The procedure for addressing the market begins with an idea followed by design and IP protection. IP protection is crucial for MNCs to source their designs from their captive centres or through third-party design houses. The fact that there have been no major breaches of IP over the last decade is a direct consequence of the Indian legal system and the country's IP policy.

## Semiconductor sector: Advantage India ... (5/5)

### Returning Indians

The Indian community has carved a niche for itself with the appointment of Indians as CEOs of global companies in the semiconductor market. Moreover, a large number of Indians, who had moved abroad, have gained exposure to the global electronics and semiconductor market. With growing opportunities in India, they are now returning, which is leading to the country's industry being led by the best-known people in their field

### Increasing market size

The growing middle-class population, reduced trade barriers and global exposure of Indians with a high GDP growth have resulted in an increased market for electronics consumption. Therefore, increasing affordability, along with options catering to the lower segment, has aided the growth of this market.

### Industry-academia collaboration

India produces over 500,000 engineers every year and about 50 per cent of them are in the field of electronics or software. Keeping this in view, several public-private initiatives have been launched to enhance the level of research and talent in academic institutions. The launch of the Special Manpower Development Programme (SMDP) by the Indian government, along with the establishment of research labs and Centres of Excellence (CoE) by various MNCs in collaboration with institutions, are positive steps in this regard.



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## Regulatory policy and Incentives offered in the semiconductor sector ... (1/2)

To become self-reliant in chip manufacturing and encourage global semiconductor companies to set up manufacturing plants in the country, the Indian government announced the National Semiconductor Policy (NSP) or 'Fab Policy' in 2007. Under this policy, the government has proposed a special Incentive plan to encourage companies to come to India for semiconductor and related ancillary manufacturing.

### Regulation of NSP

The investment threshold for a semiconductor manufacturing (wafer fabrication) plant is approximately US\$ 575 million, while it is US\$ 220 million for other ancillary units (storage devices, organic LED, micro- or nanotechnology products).

# Regulatory policy and Incentives offered in the semiconductor sector ... (2/2)

## Incentives offered by the government

### Incentives under NSP

The policy covers LCDs, storage devices, plasmas, photo-voltaic, solar cells and nanotechnology products, and also Includes assembly and testing of these products.

State governments can provide additional Incentives to semiconductor manufacturers.

20 per cent of the capital expenditure of a semiconductor manufacturing unit located inside an SEZ will be borne by the government for the first 10 years.

Assuming a 1:1 debt to equity ratio for the project, government restricts its participation to 26 per cent of the equity capital.

In case of units located outside the SEZ, countervailing duties (CVD) on capital goods will be exempted.

In case of units located outside the SEZ, government will bear 25 per cent of the capital expenditure for the stated time period.

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