

Status of Technology & Innovation Management in India

What India can gain from developed countries?

Presented by M.V.R.Sekhar (India) on 12.10.2007 at

University of Applied Sciences Brandenburg, Germany

Status of TIM in India

Status of the Country

Change from Past to Present

Expected change from Present to Future

Status of the Indian Organisations

Technology Management

Innovation Management

Joint ventures with Organisations in developed countries

Role of Government

Providing assistance through basic research

Motivating through policies (Tax Cuts, Subsidies)

Role of Developed countries

Why developed countries (Germany, USA)

should look for India

Conclusions



Change from
Past to Present





Change from Past to Present

**Balance between
Industry & Agriculture**

Data Analysis / Storage Centers



Change from
Past to Present



Third largest no. of Mobile Phone users

Change from Past to Present





Change from
Past to Present

CNC Machines

DATA Process Centers



R & D Centers



Box-Carrier (DABBA WALLA) - Mumbai, India

1st Organisation in Asia (ex. Japan) to achieve 6- σ (Sigma)

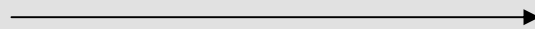
80% of employees are uneducated

200000 lunch boxes per day

1.0 defect in 1 Million











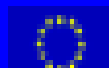


Reasons for Success

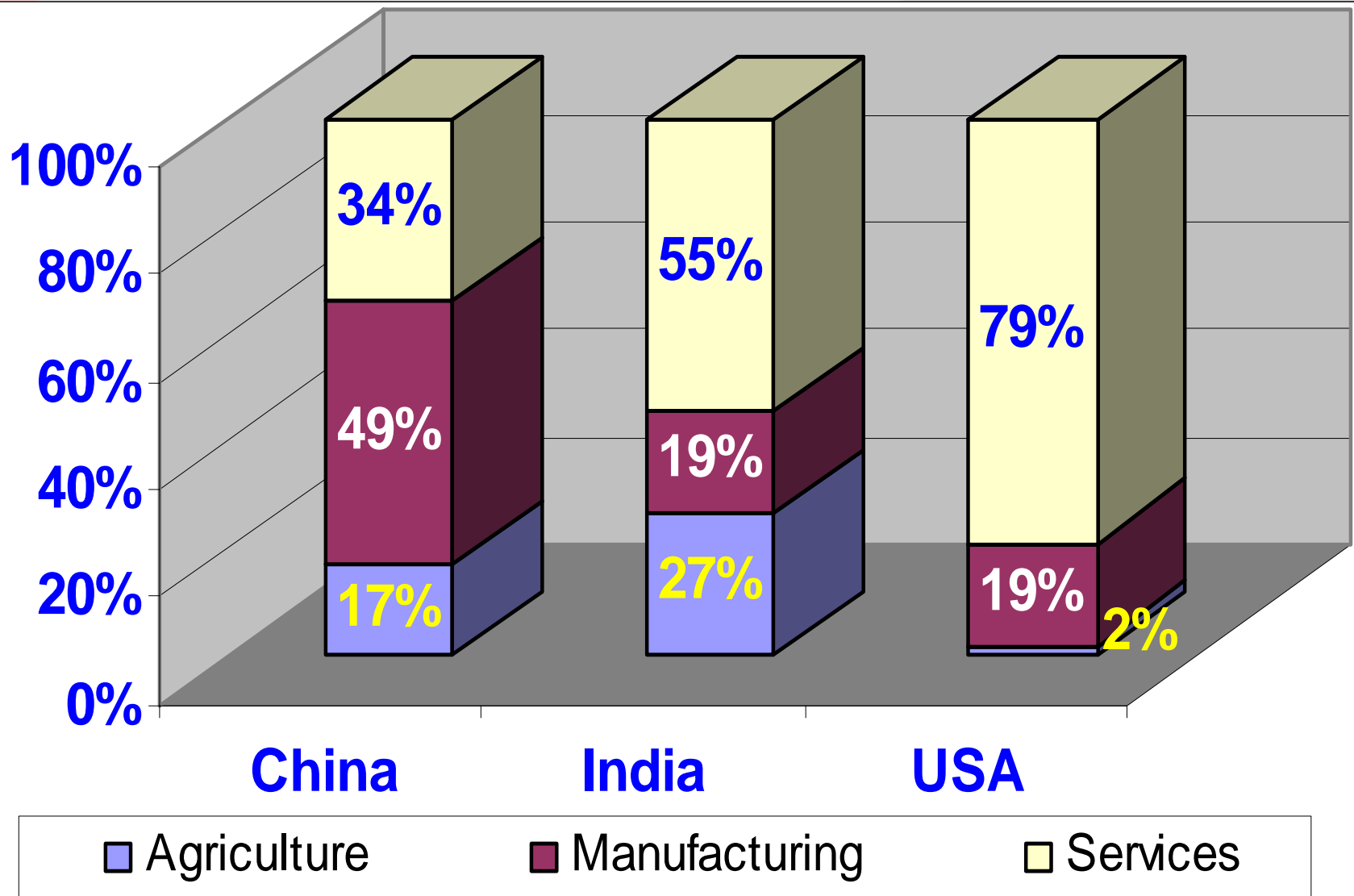


1. Simple
2. Innovative
3. Ease of communication
4. Clear Responsibility

Top 10 countries by GDP (Trillion-Euros)

2050 Rank	Country Name		2000 GDP	2010 GDP	2020 GDP	2030 GDP	2040 GDP	2050 GDP
1		China	0.75	2.10	4.95	10.02	18.51	31.12
2		United States	6.88	9.29	11.49	14.58	19.06	24.62
3		India	0.33	0.65	1.47	3.45	8.66	19.46
Rank --			9	7	6	4	3	3
4		Japan	2.92	3.22	3.65	4.07	4.23	4.67
5		Brazil	0.53	0.47	0.93	1.53	2.62	4.25
6		Russia	0.27	0.59	1.22	2.09	3.13	4.11
7		United Kingdom	1.01	1.31	1.60	1.85	2.24	2.65
8		Germany	1.31	1.55	1.77	1.89	2.20	2.52
9		France	0.92	1.14	1.35	1.59	1.87	2.20
10		Italy	0.75	0.94	1.09	1.17	1.25	1.44
*		European Union *	6.58	9.08	11.80	14.75	19.83	24.70

GDP Growth by Sector



How to Sustain this growth?

- **Focus on Technology**
- **Focus on Innovation**
- **Focus on Infrastructure**
- **Focus on Information Technology**
- **Focus of Society – Education, Medical, Welfare**

Innovation Management

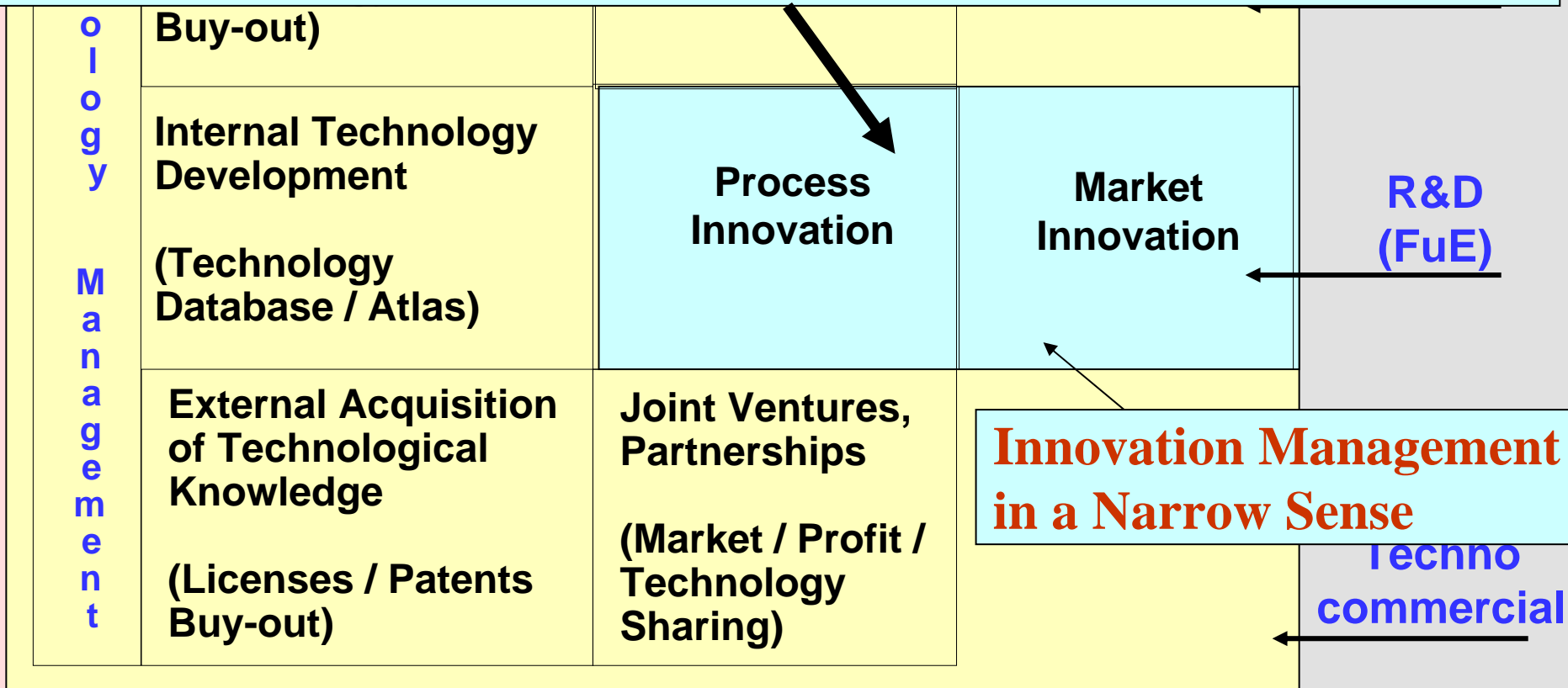
Type	Technology	Application / Use	Investment	Ease of entry to Competitors	Risk	Returns
Radical	New	New	High	Difficult	High	High
Technology oriented	New	Modified	Medium	Medium	Medium	Medium
Application oriented	Modified	New	Medium	Medium	Medium	Medium
Incremental	Modified	Modified	Low	Easy	Low	Low

Present Status of Innovation in Indian Industries

Technology and Innovation Management

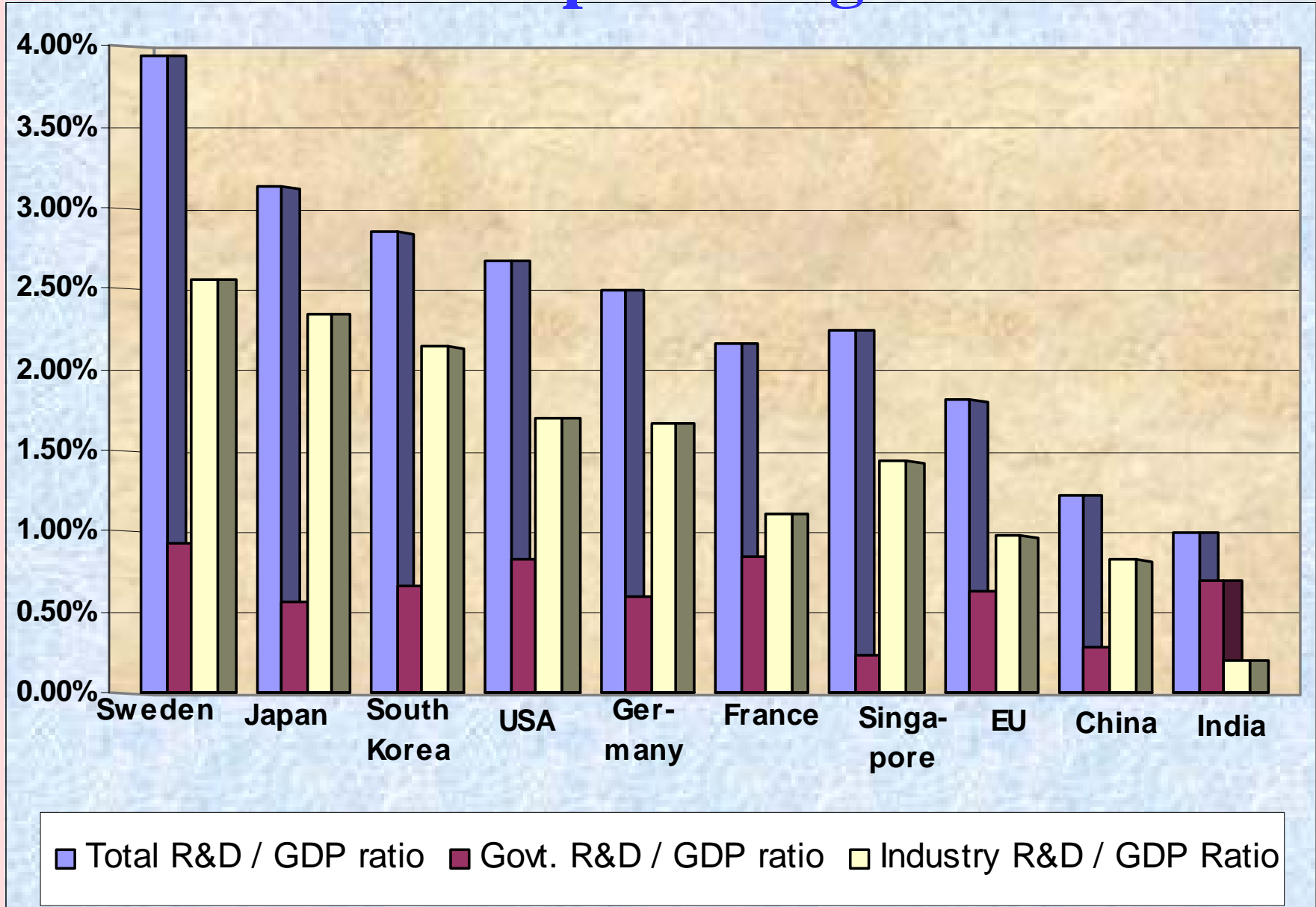
Innovation Management
in a Wider Sense

Present Status of Innovation in Indian Industries



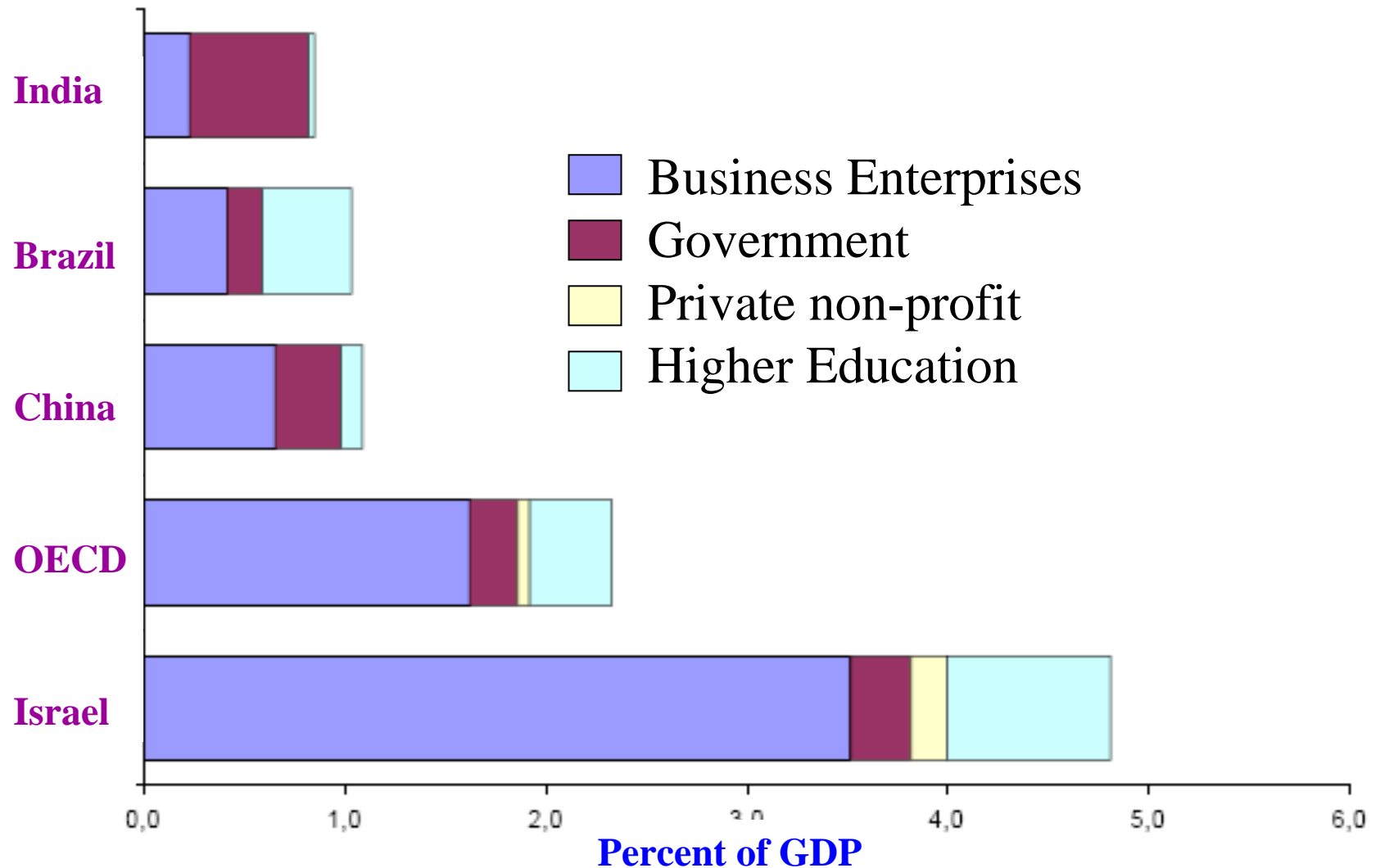
Technology and Innovation Management

R&D as a percentage of GDP



Technology and Innovation Management

R&D expenditure by sector and in relation to GDP



Innovation Management in India

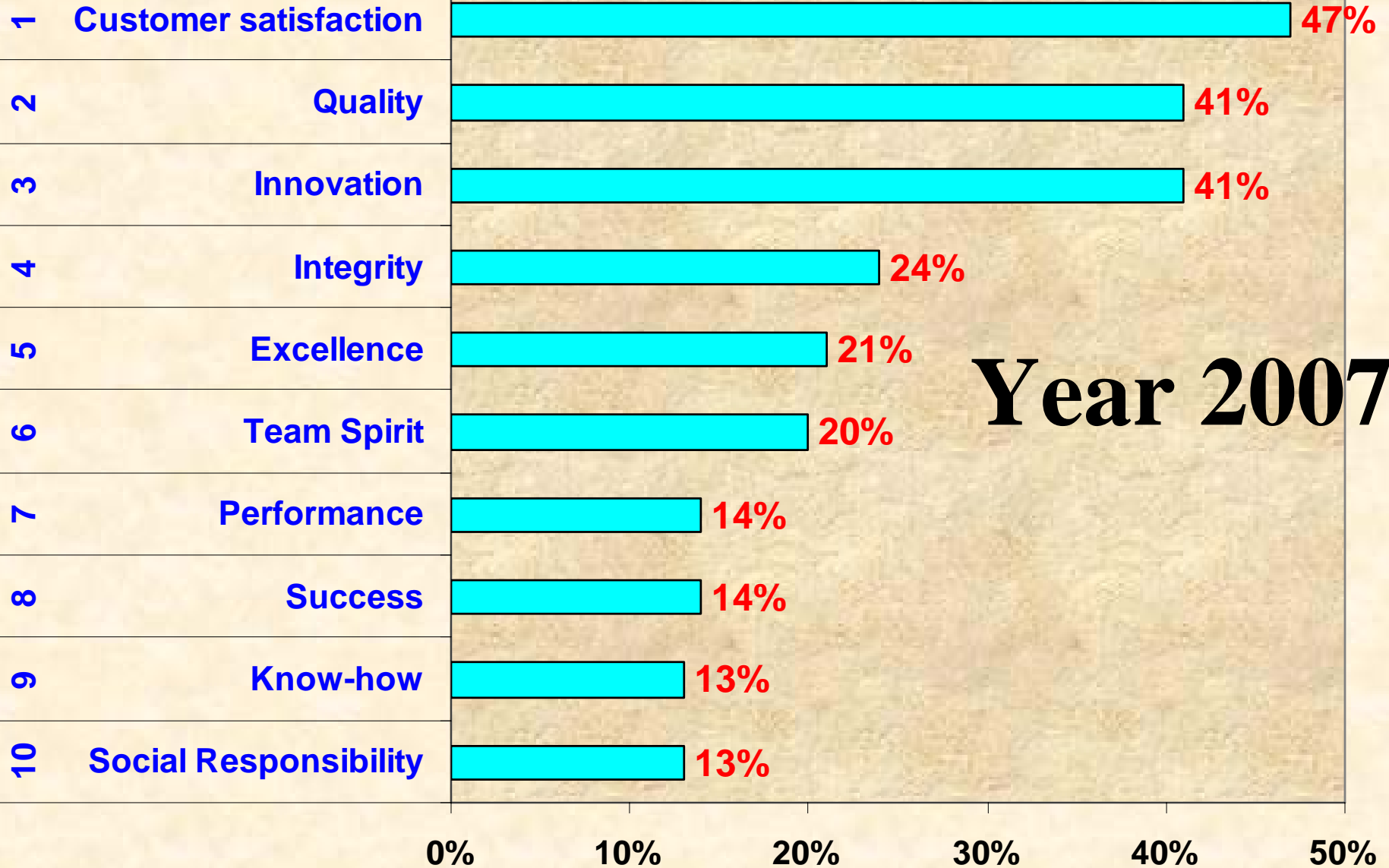
Present status

- TIM still thought in a narrow sense
- No breakthrough innovations (technology or product)
- Skilled manpower available for Research
- Less investment capabilities
- Companies are less competitive globally
- More developments in Software and Medical

Solutions

- Educating the Organisations
- Government's (Dept. of Science & Technology) efforts
- Joint Ventures with Multi National Companies

Importance of Innovation in Indian Companies

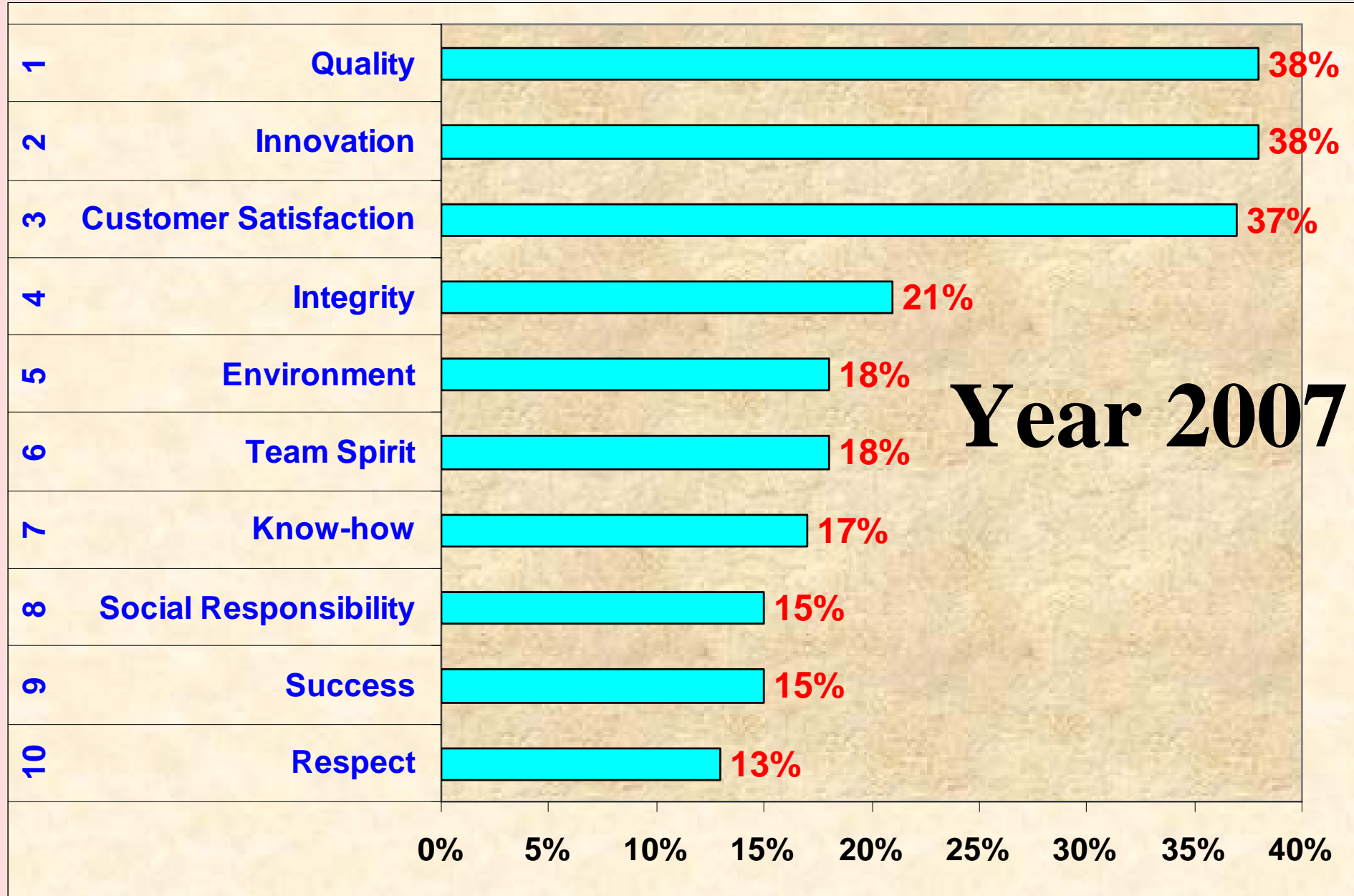


Year 2007

Importance of Innovation in Indian Companies



Importance of Innovation in World Companies



Technology Management

- 1. Understanding Technology Foresight Process**
- 2. Establishing Technology Management Team**
- 3. Changing organisational structures**
- 4. Establishing Technology Strategy**
 - a). Technology Partnerships**
 - b). Internal Technology Developments**
 - c). Technology Buy-Outs**

Technology Foresight as a Process

**Identifying
need for
information**

**Selection of
information
sources**

**Data
collection**

**Data
Analysis**

Details

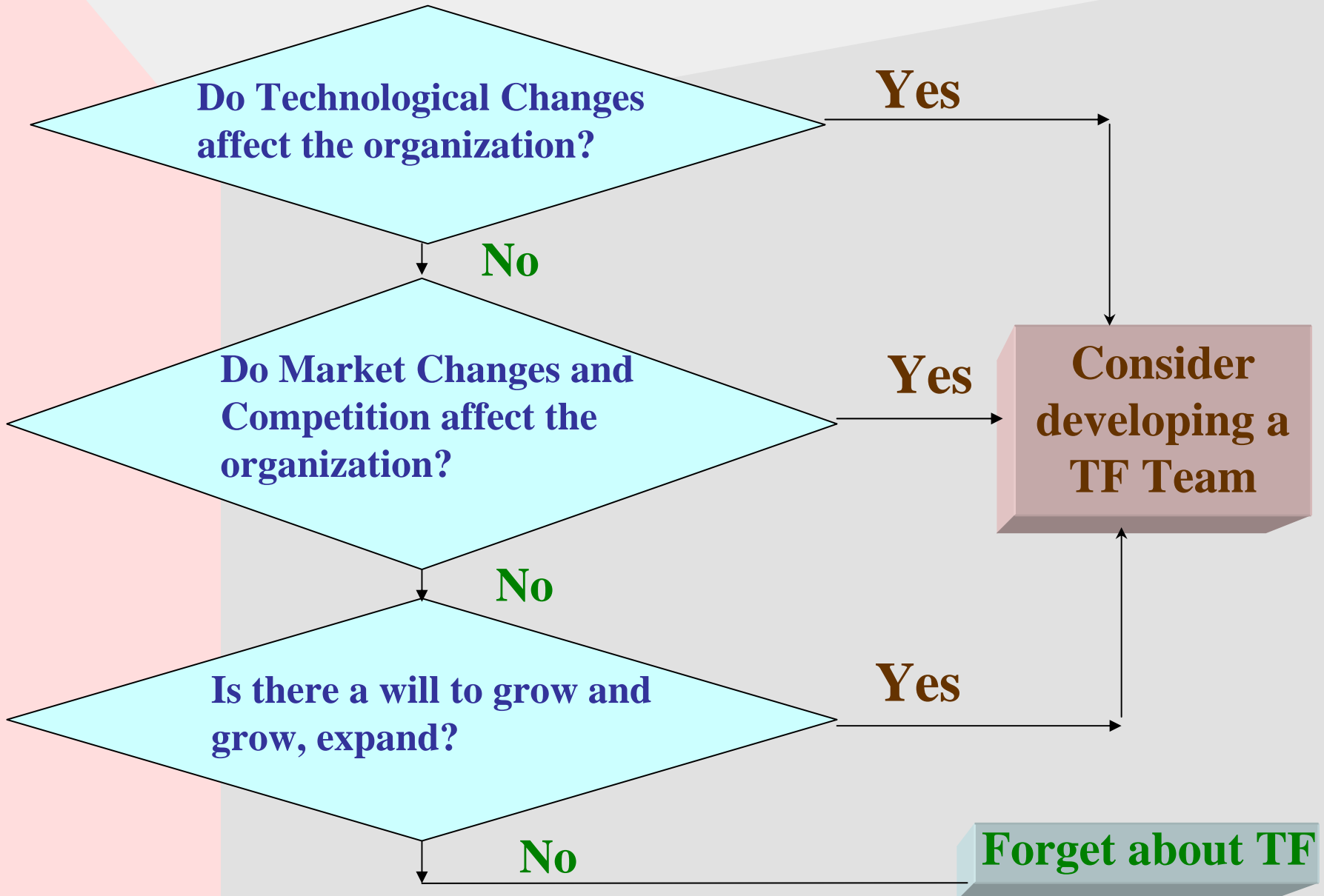


**New Projects, new business areas,
new products, new markets**

**Communi-
cation**

**Applying results
for decision
making**

Guidelines for TF in India. 1st Step- Decision making

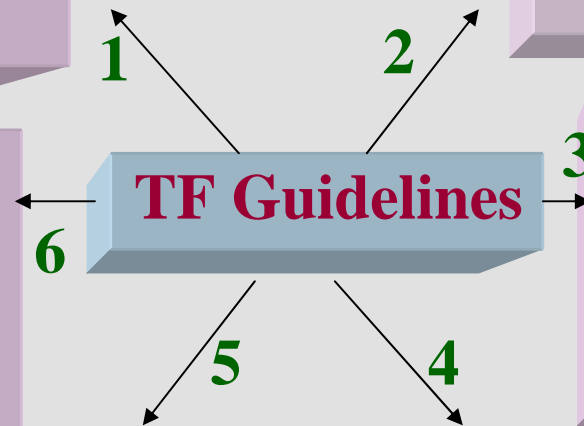


Guidelines for TF in India. 2nd Step- Formation

• Objectives for TF (influencing strategic decisions or just to know about future)?

• Required resources (human and monetary)?
• Available resources?

• Administration of TF
• Communication?
• Facilities like Intranet and DBMS?



• Geographical area of monitoring? (worldwide/inland/selected countries)

• Dynamic nature of technological changes?
• Time horizon (2 years/3years /5years or 10 years)?

• TF, be an activity of R&D or existing technology department?
• Independent team?
• Help of external experts/ universities/research institutes? (how to select them?)

Guidelines for TF in India. 3rd Step- Action Plan

Prioritizing technology fields/ markets

Technology Foresight tools / instruments

Monitoring markets /environment/ competitors

Identifying critical developments

Identifying critical market needs

- Are the competitors ahead in race?
- Do technologies provide a competitive advantage?

- Does market need new solutions?
- Do regulations demand new technologies?

Do technologies meet Market Needs?

Matching developments and market needs

Do regulations permit new technologies?

Do they fit into organization?

Checking organizational fit

Do they demand any organizational changes?

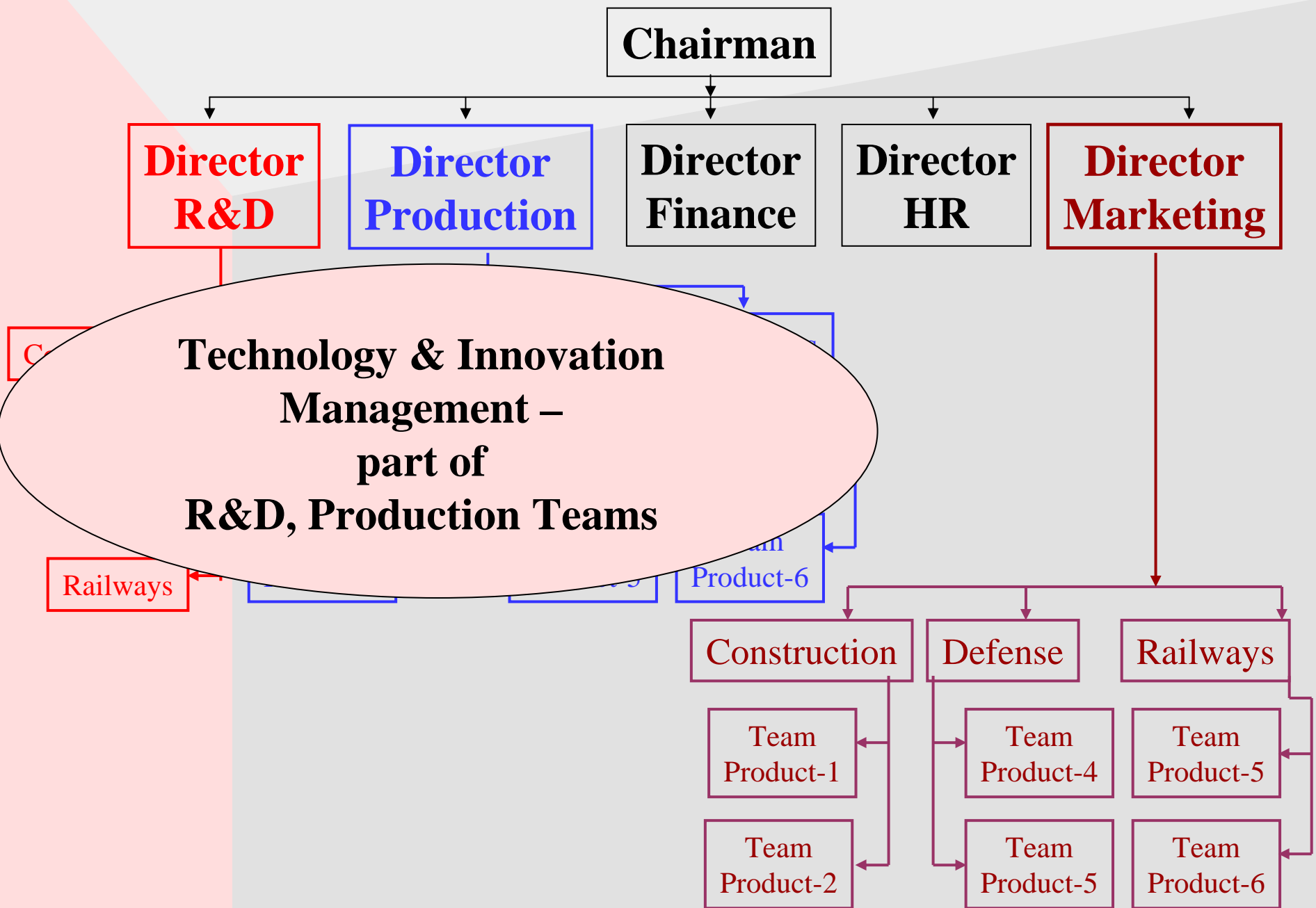
- Should new projects be started?
- Should projects be modified?

Strategic decision making

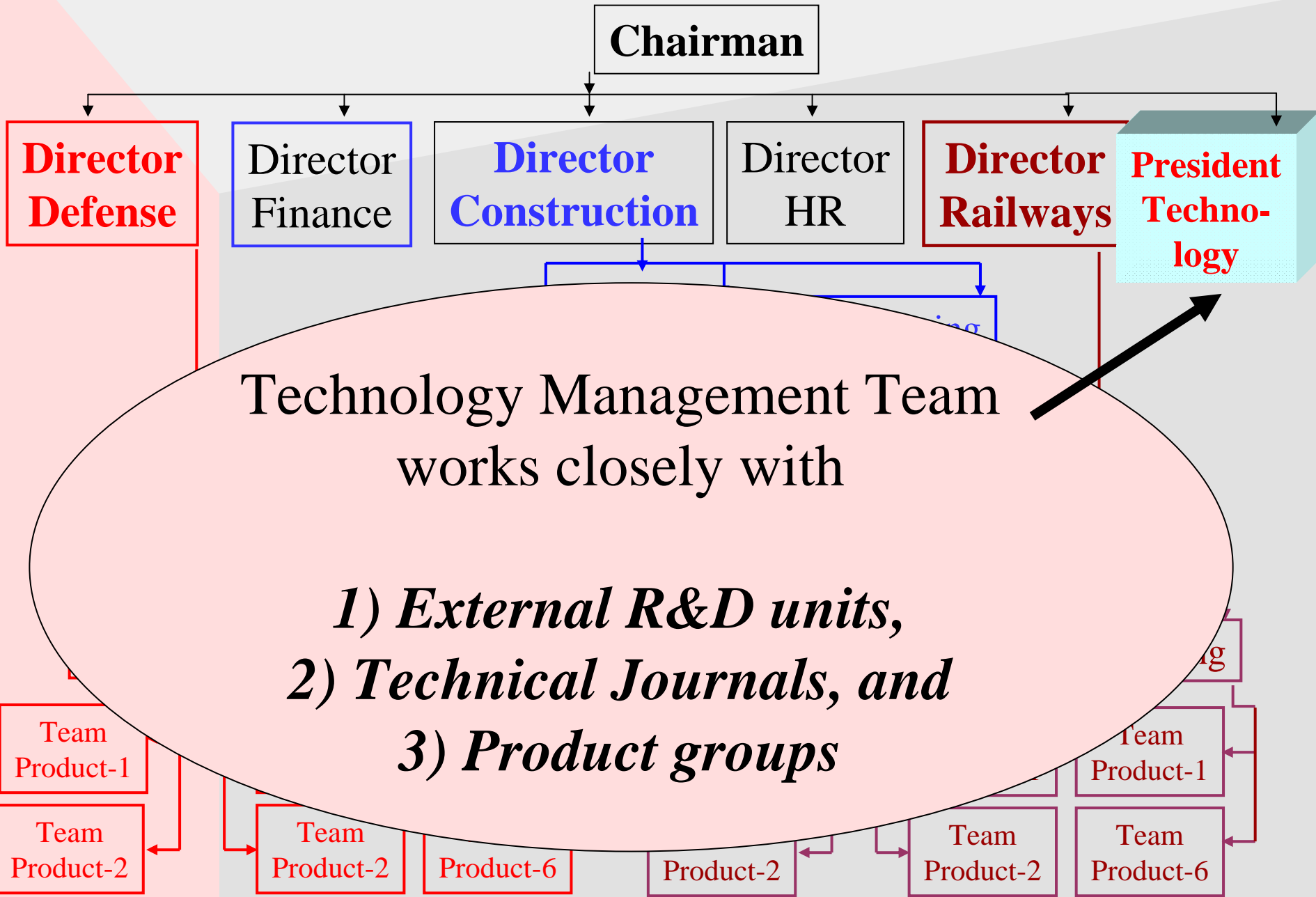
- Should more resources be allocated to projects?
- Is more intensive monitoring required?

Feedback

Organisational Structural Changes –BEML, India-Till 2005



Organisational Structural Changes –BEML, India After-2005



Task Force on Technology Foresight for India (2020)

Economic Social
Ends
Consumer Trends

Derive Broad
Areas of Advtg.

Compare World
indices (Yield &
Productivity)

Global
Technology
Trends

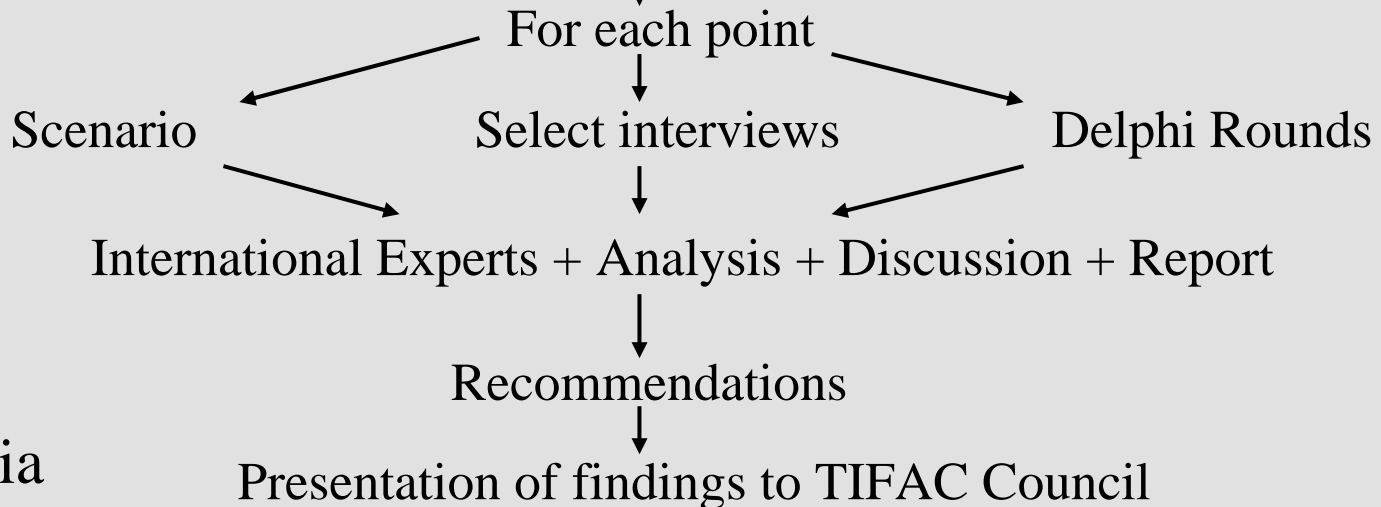
Technology Vision 2020
Areas

Driving Forces
Impedences

Some Standard
Questions

Guidelines

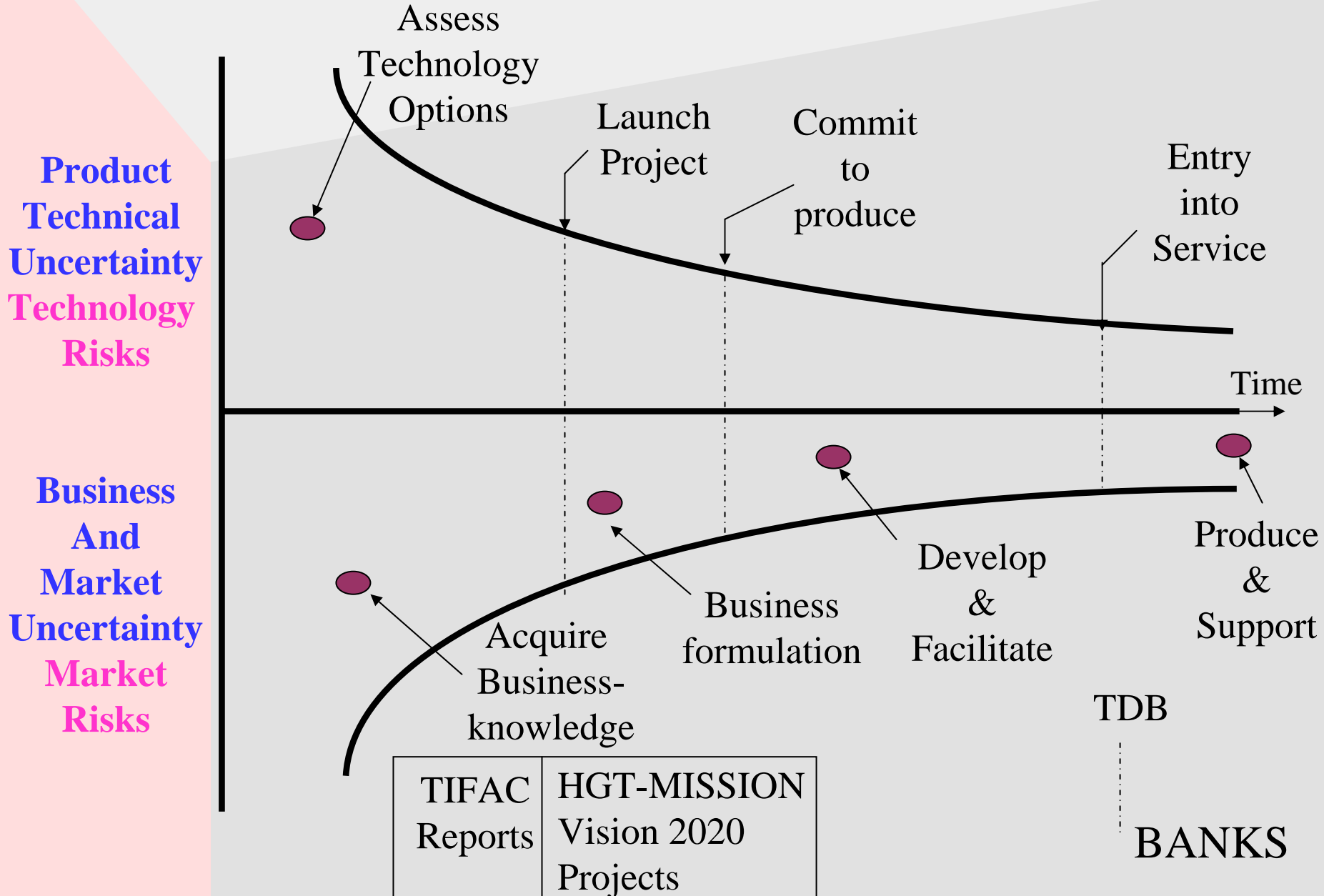
Use of Technology
Status reports



By

TIFAC, India

Management of Uncertainty from Forecasting Assessment upto Project Realisation



Technology & Innovation Management in India

Technical Collaborations

Joint Ventures

Partnerships

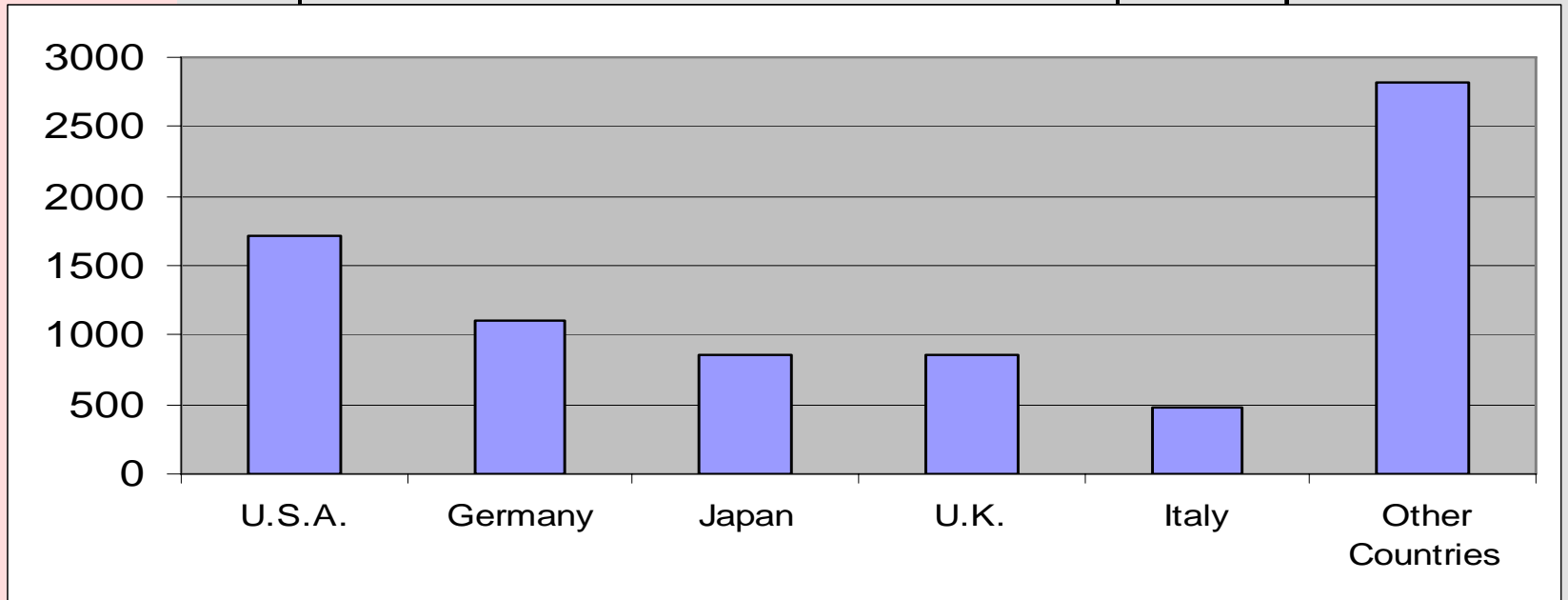
R&D Centers of Multi Nationals (with Indian manpower)

Technology Collaborations

Number of Cumulative FTC approvals	7815
Number of FTC approvals in 2007	91
Number of FTC approvals in 2006	81
Number of FTC approvals in 2005	61

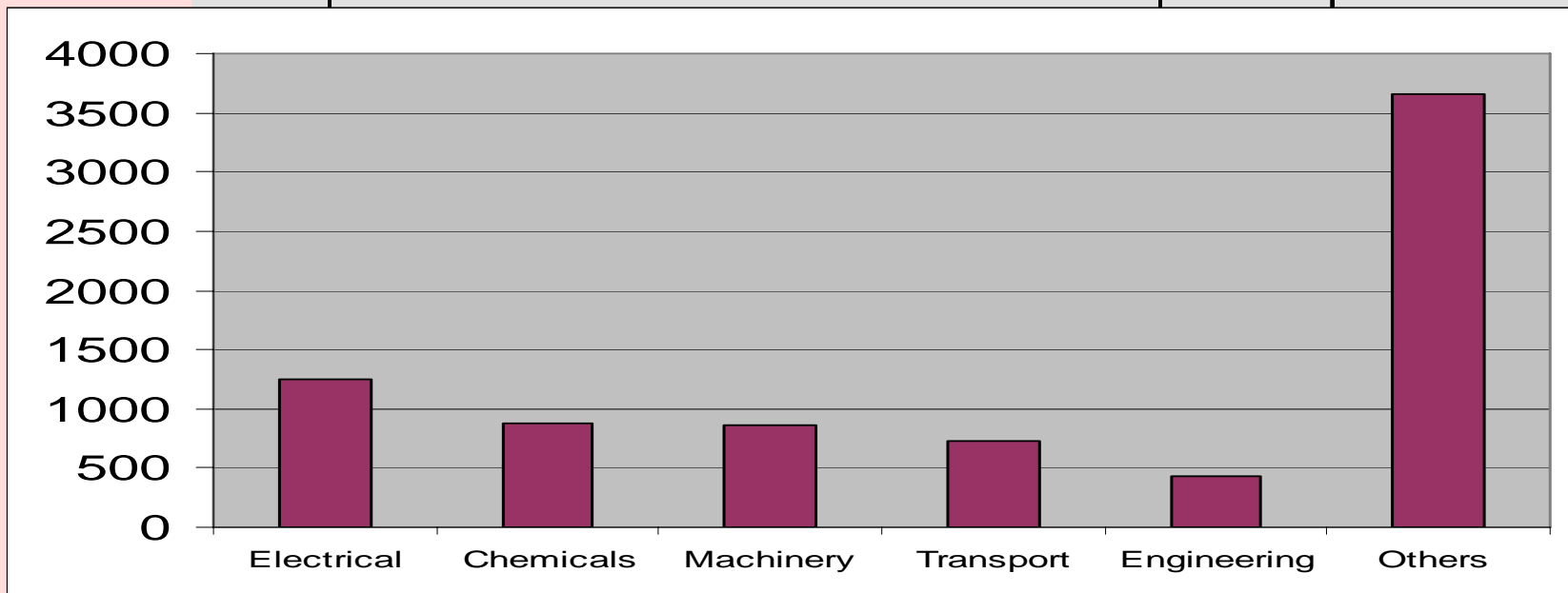
Country-wise Technology Transfer Approvals

Rank	Country	Technical Collaborations approved	%
1	U.S.A.	1715	22%
2	Germany	1101	14%
3	Japan	852	11%
4	U.K.	852	11%
5	Italy	481	6%
6	Other Countries	2814	36%
		7815	100%



Sector-wise Technology Transfer Approvals

Rank	Sector	Technical Collaborations approved	%
1	Electrical	1252	16%
2	Chemicals	881	11%
3	Machinery	869	11%
4	Transport	723	9%
5	Engineering	438	6%
6	Others	3652	47%
		7815	100%





www.theodora.com/flags

Germany in India



German Companies invest in India because of

1. High Growth rate
2. Technical & Scientific Manpower
3. Design & Engineering capabilities
4. Language advantage

Strategy is to have a local partner, long term plan

Between Germany and India

1600 Technical Collaborations

600 Joint Ventures

164 German companies sell products to India

33 Large German companies present in India



Germany in India



33 German Companies in India

Abicor Binzel

Allianz

Bayer

Braun Medical

Carl Zeiss

DMG

Henkel

Lahmeyer International

Schuler

Suspa Pneumatics

Zwick Roell

Adidas Marketing

Basf

Beiersdorf

Burgmann

Daimler Chrysler

Durr

Kluber Lubrication

Lapp

Steag Encotec

Wurth

Deutsche Bank

Baerlocher Additives

Baumuller

Bosch Group

Carl Bechem

DHL Express

Fichtner

Knorr Bremse

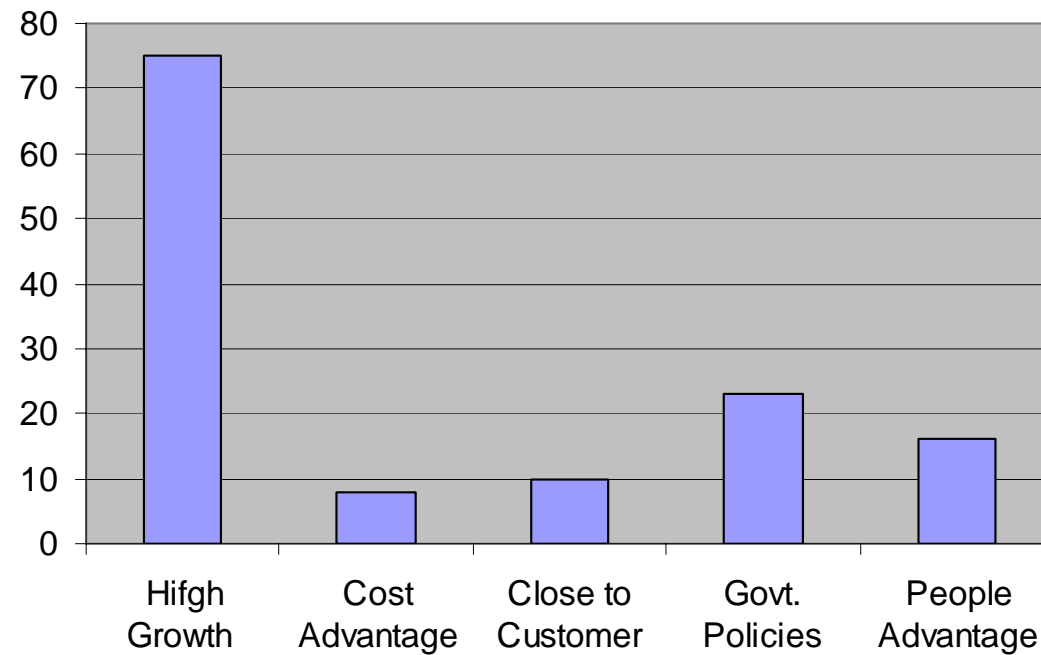
Pharmaplan

Stollberg

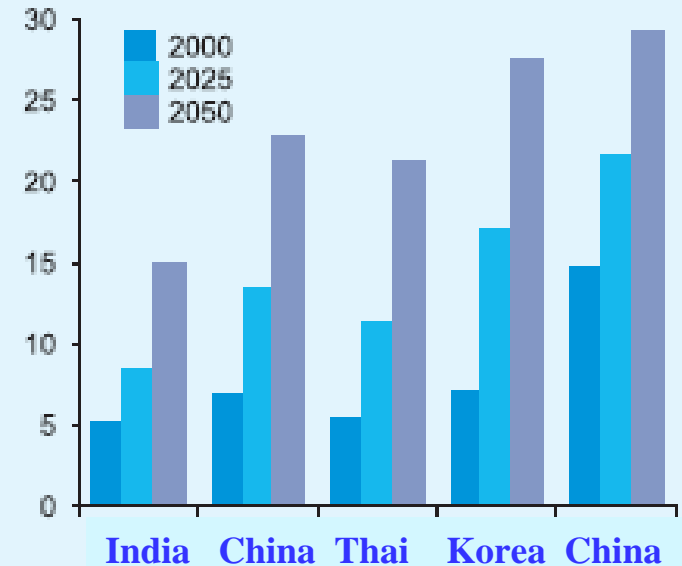
Zeppelin Mobile Systems

Siemens

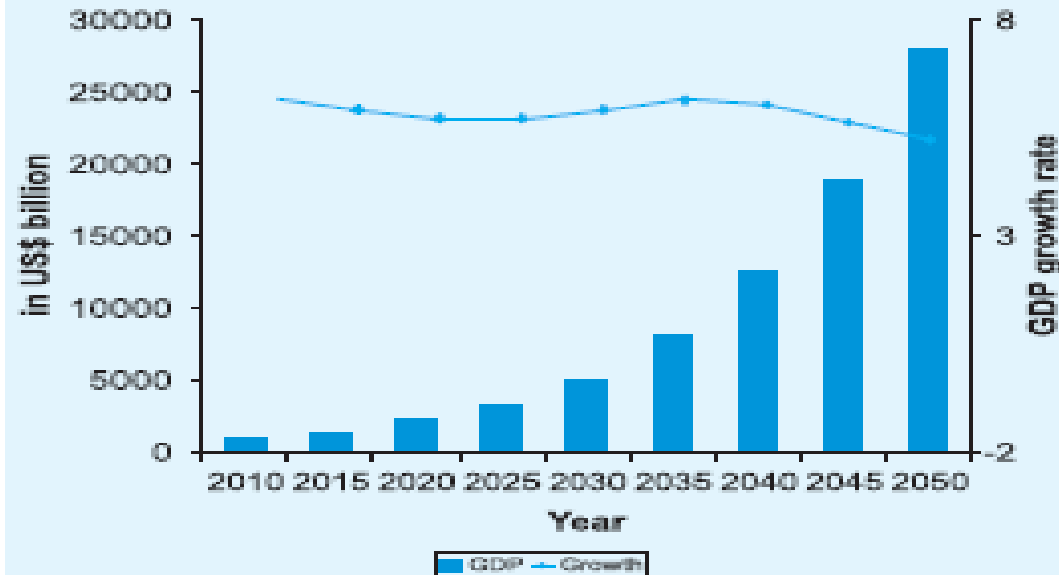
Key Consideration for entering India



Percentage of population 65 and older



Projected GDP and real GDP growth



Conclusions

Solutions

- **R&D Budget as a part of GDP to be increased**
- **More stringent laws for intellectual property rights are required**
- **Government should offer tax subsidies for R&D activities**
- **Much stronger international cooperation**
- **Government and Industries should work together to keep the workforce up to date**

An aerial photograph of the Taj Mahal in Agra, India, taken during the golden hour of sunset. The white marble mausoleum is perfectly reflected in the calm waters of the Yamuna River. The sky is a mix of orange, yellow, and blue. In the background, the lush green Agra Fort is visible. The overall scene is serene and majestic.

**Thank you
for your hearing**

Presented by
Sekhar Malyala Venkata