

A detailed technical drawing of a mechanical part is shown, featuring a circular profile with various dimensions and annotations. A drafting compass and a pencil are positioned over the drawing, suggesting a process of precision engineering or design. The drawing includes labels such as 'R20', '40°', 'Ø85', 'Ø70', and '122 ± 0.5'.

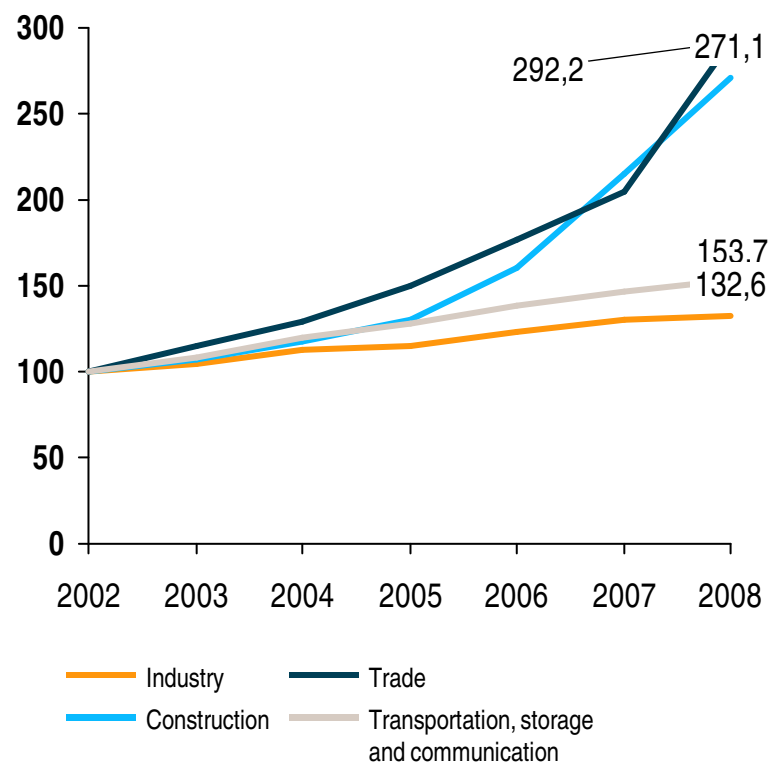
The next step for manufacturing in Romania – Competing on innovation instead of price

Roland Berger
Strategy Consultants

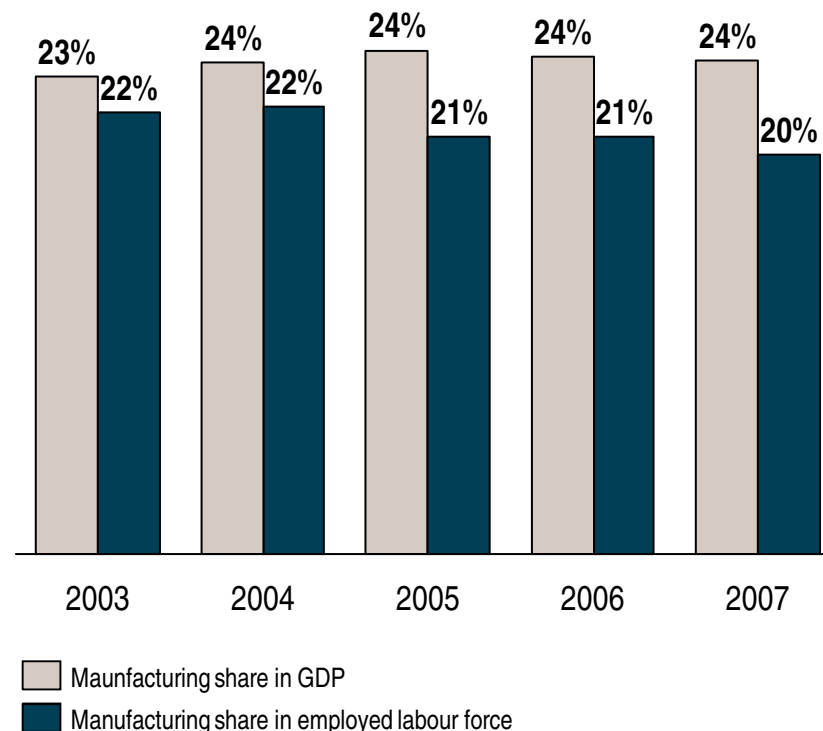
Bucharest
September 28, 2010

Unlike other sectors, **manufacturing** has not been able to increase its role in the Romanian economy in the past few years

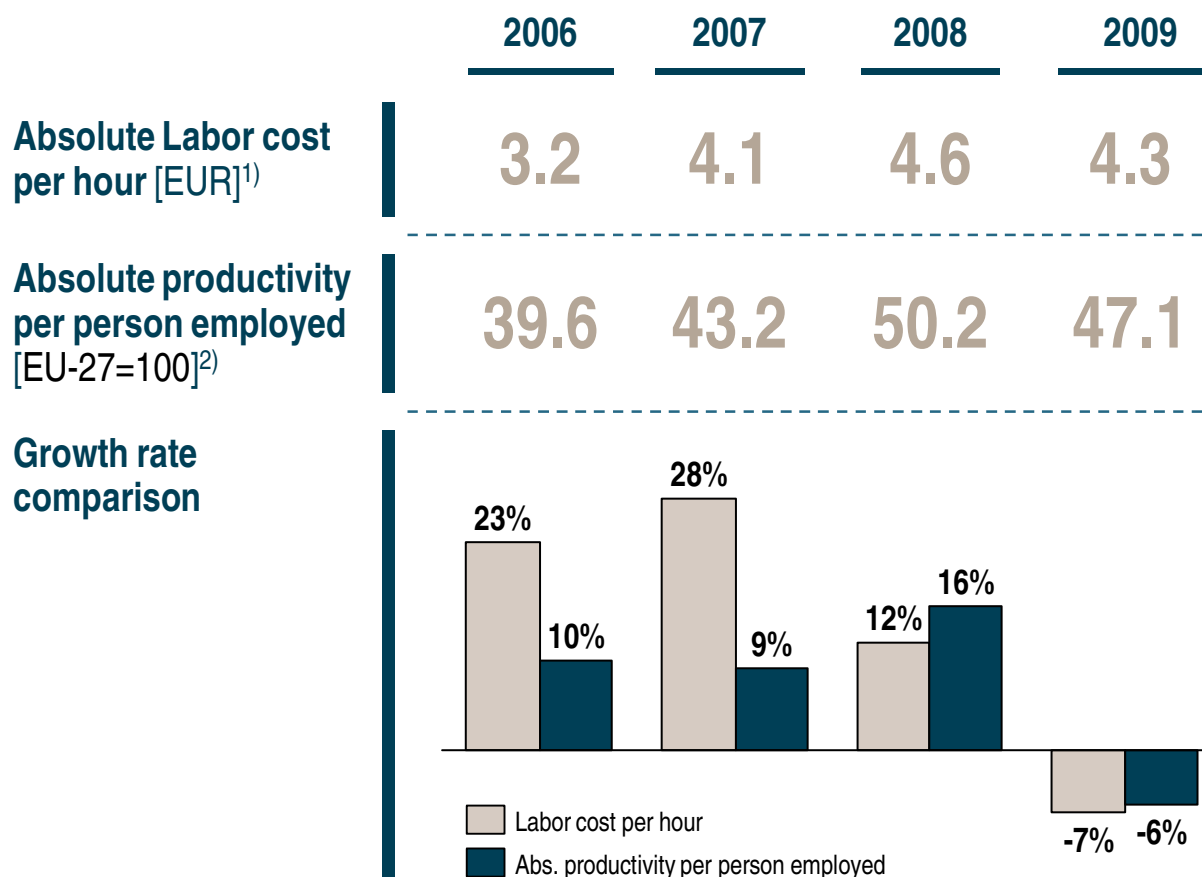
Growth of Value Added per Segments
[2002 = 100%]



Manufacturing share in GDP and in employed labor force, 2003-2007 [%]



Cost advantages will not drive growth much further – Labor cost increases have already surpassed productivity growth



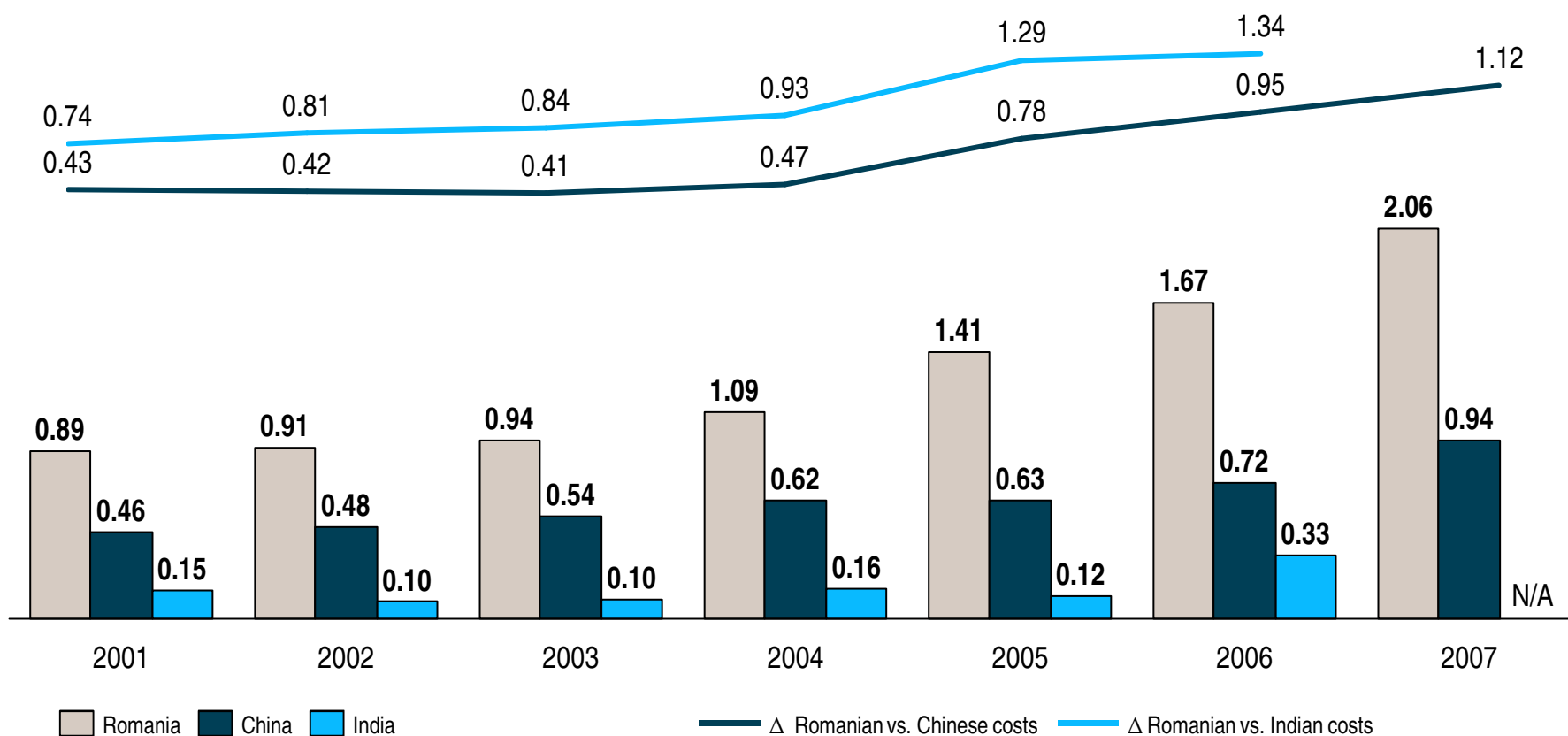
- > From 2005-2007 **cost competitiveness** has **decreased**, as wages grew stronger than relative productivity
- > Only slight correction of the trend throughout the crisis
- > Overall, **efficiency-driven growth increasingly becomes unsustainable**

1) Definition: Average cost of labour hour per hour (pay & non-pay costs)

2) GDP in Purchasing Power Standards (PPS) per person employed relative to EU-27 (EU-27 = 100)

The average labor cost per hour in manufacturing has grown rapidly in Romania, further increasing the gap versus India and China

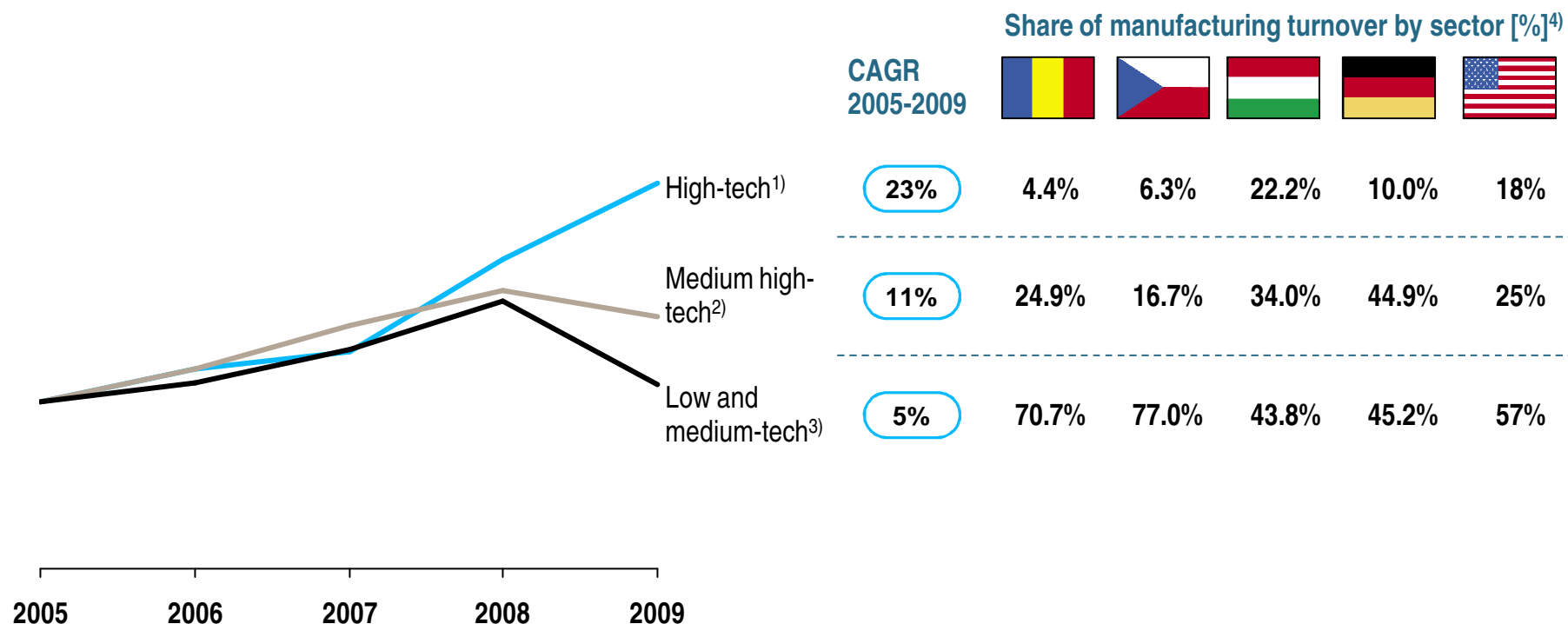
Benchmarking of average labor cost per hour in manufacturing¹⁾, 2001-2007 [EUR/ h]



1) Excluding non-pay costs

High-tech industry is growing more strongly – Innovation can be driver for growth for the entire sector

Turnover growth by sector in Romanian industry [2005=100]



1) Computers, office machinery, pharmaceuticals (no data for electronics)
 2) Electrical machinery, motor vehicles, chemicals, transport equipment
 3) All others (e.g. fuels, metals, wood, paper, etc.)
 4) Eurostat-data on turnover shares for 2007 (except CZ = 2006); OECD-data on share of value added 2007 for USA

Nevertheless, Romania has registered **low competitiveness** in the field of **innovation** so far

Type of competitive factor	> Basic requirements (key for factor-driven economy) ¹⁾	> Efficiency enhancers (key for efficiency-driven economy) ²⁾	> Innovation/sophistication (key for innovation-driven economy) ³⁾
Rank in Global Competitiveness Index	77	54	91
Indicators with top 3 ranks	<ul style="list-style-type: none"> > Malaria incidence/impact (1) > HIV prevalence (22) > Business cost of terrorism (27) 	<ul style="list-style-type: none"> > Trade tariffs (4) > Redundancy cost (15) > Internet bandwidth (16) 	<ul style="list-style-type: none"> > Availability of scientists and engineers (55) > Patents per m population (62) > Capacity for innovation (72)
Indicators with lowest ranks	<ul style="list-style-type: none"> > Quality of roads (134) > Quality of overall infrastructure (136) > Transparency of government policy-making (137) 	<ul style="list-style-type: none"> > Cooperation in labor-employer relations (128) > Agricultural policy cost (130) > Extent and effect of taxation (131) 	<ul style="list-style-type: none"> > University-industry collaboration in R&D (103) > Gov procurement of hi-tech products (105) > Value chain breadth (110) > State of cluster development (113)

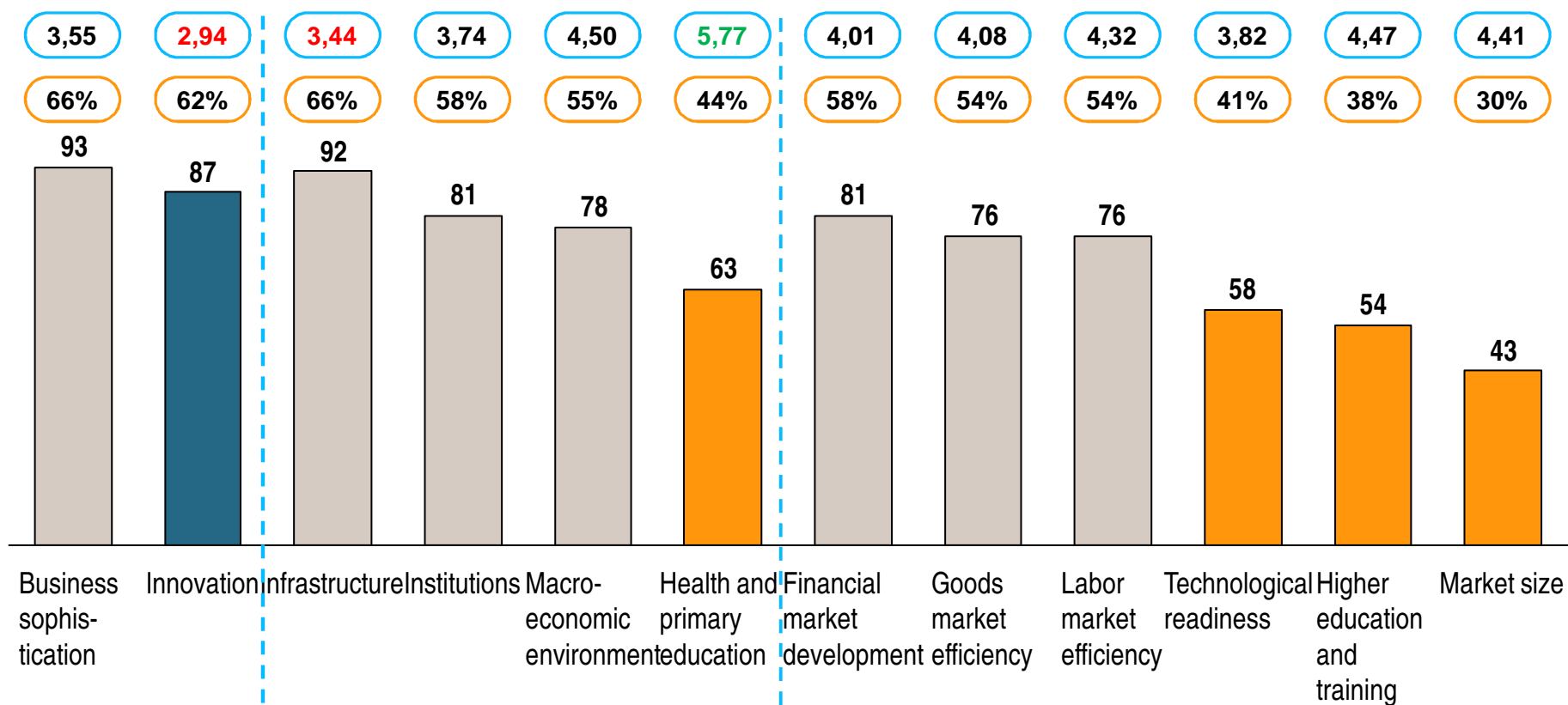
1) Institutions, Infrastructure, Macroeconomic environment, Health and primary education

2) Higher education and training, Goods market efficiency, Labor market efficiency, Financial market development, Technological readiness, Market size


3) Business sophistication, Innovation

Romania has the lowest score in Innovation; ranked 87th in the world, third lowest rank after Bs sophistication and Infrastructure

Rank in Global Competitiveness Index (No. , out of 139 countries analyzed)



4,41 Score (from 1 to 7) **30%** % of total countries ahead of Romania



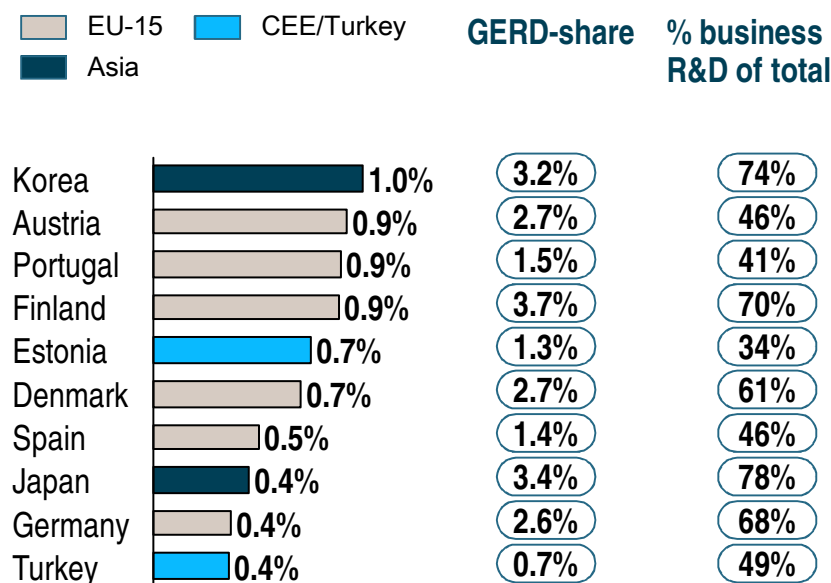
Transforming the economy – The government perspective on innovation

Roland Berger
Strategy Consultants

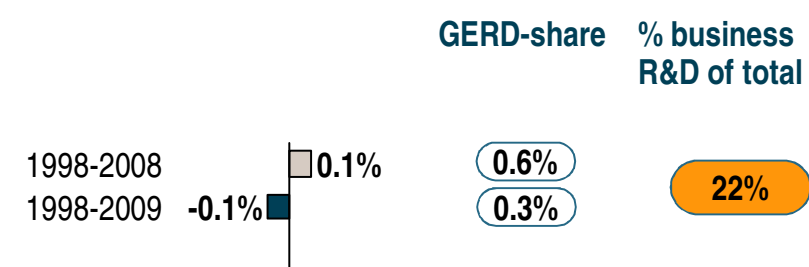
Investment in R&D from government is low and not constant, which has contributed to low levels of R&D from business

The long-term investors in R&D, TOP 10¹⁾

[Change of GERD²⁾-share of GDP 1998-2008³⁾, %-points]



...and how Romania compares



- > Romania's total **R&D expenditure** from public and private sources has stayed **almost constant as share of GDP** over the last 10 years – No constant build-up of more innovation-driving funding
- > The **contribution of business R&D is lower** than in all countries that have constantly increased the share of GDP – Stable public investment is contributing factor for the evolvement of business R&D

1) Comparing Europe, USA, Japan, China, Korea 2) Gross expenditure on research and development (from public, business and abroad); Lisbon goal = 3% 3) Or latest available

We have 7 recommendations to government to improve innovation performance – Focus on one for today's discussion

1 Actively foster an **innovative start-up culture** to benefit from the higher innovativeness of new companies - SME focus

2 Follow an **industrial cluster approach** to link industrial development and targeted investment in innovation

3 Encourage companies to make **investments in R&D and higher value added production** in Romania

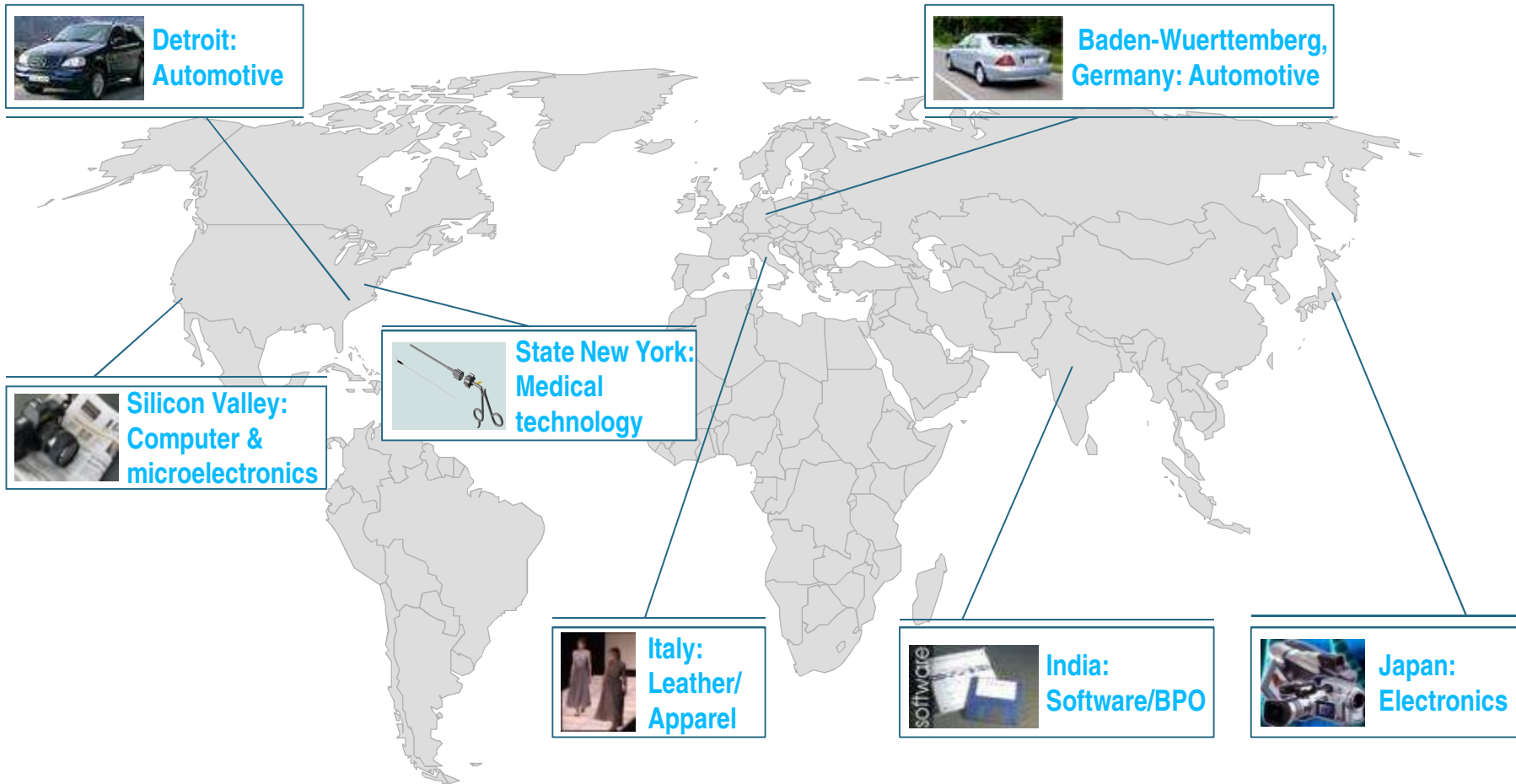
4 Increase **available funding** for research and education both by increased own investment and further improvement of **utilization of EU funds**

5 Encourage pragmatic **public-industry associations in running R&D projects**

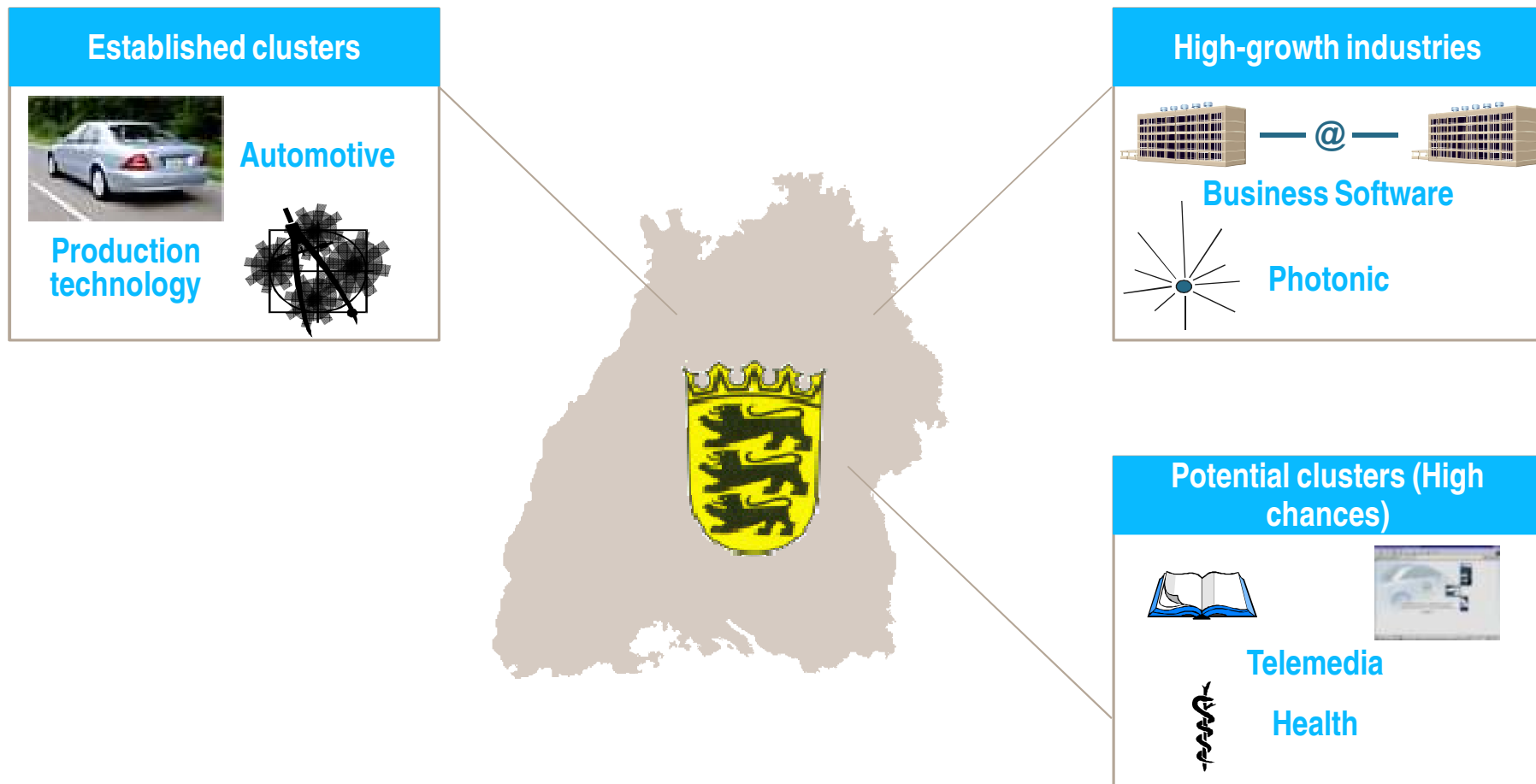
6 Foster **competition** in research and education through global budgeting and increasing **incentive for research also at universities**

7 **Simplify the administrative burdens** imposed on businesses in Romania – simple and clear procedures, higher predictability in introducing changes

The highest benchmark for cluster strategy – Can it reach an internationally leading position like...



Baden-Wuerttemberg based its cluster strategy¹⁾ on this high standard – Where can the region become one of the world leaders?



1) Developed by Roland Berger

An industrial cluster approach should build on the established clusters and link them more strongly to innovation

INDUSTRIAL HISTORY IN ROMANIA

- > In the communist system **factories** were **spread around the country** to provide employment opportunities in all regions
- > **Privatization** has led to strong FDI-inflows, but **geographical structure** has been **kept** (only little greenfield investment)
- > **Suppliers** have **increasingly invested in proximity** to large production facilities creating geographical clusters
- > Research policy **has not been geared towards industrial clusters** in the past

SAMPLE INDUSTRIAL CLUSTERS

- > **Automotive industry around Timisoara** with links to the local university and own research centers (Continental, Ford, etc.)
- > **IT/software industry in/around Bucharest** with links to Politehnica Bucuresti
- > **Shipbuilding industry** with links to University of Constanta

MOVE TO INNOVATION CLUSTERS

- > Choose **strategic growth industries**
- > Systematically **support research and production networks** and cooperation along the value chain
- > Support relevant **faculties** and **research institutions**
- > **Increase local content**

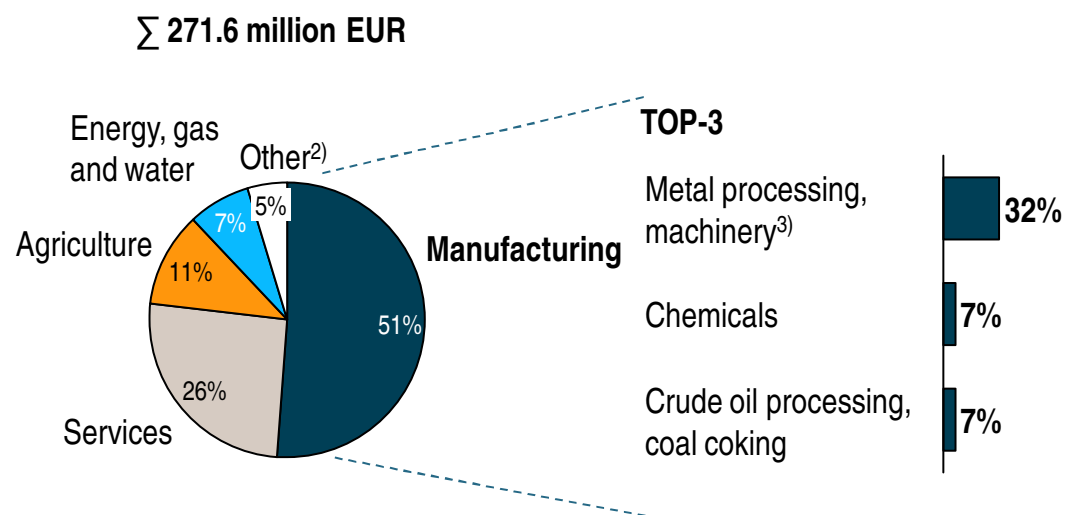


Creating innovation in your business – Focus on company perspective

Roland Berger
Strategy Consultants

Albeit on low level, manufacturing has in the past contributed the most to R&D in Romania

R&D spending of companies, 2007¹⁾ [% of total]



Focus of R&D in low/medium-tech fields

- > **Manufacturing sector with highest R&D expenditures overall**
- > **Metal processing and machinery companies account for 1/3 of total Romanian R&D spending from private sector**

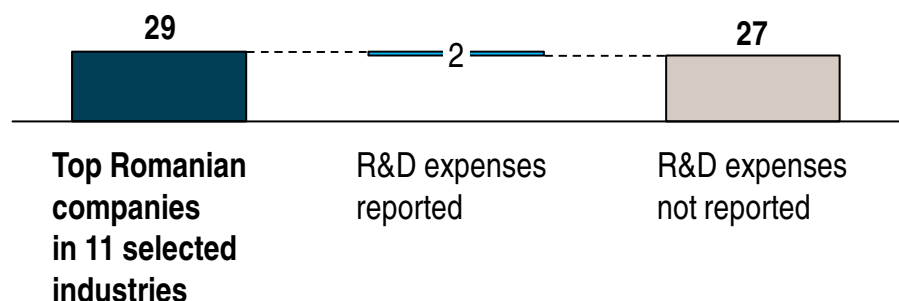
1) Latest available statistical data

2) Construction, mining

3) e.g. car industry, shipbuilding

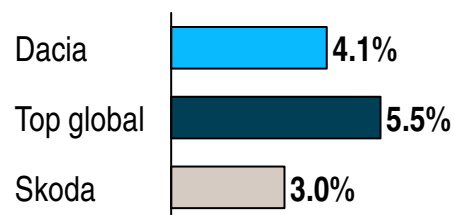
Most companies do not report R&D expenses – Dacia as positive example in terms of share of R&D

R&D expenses rarely reported¹⁾

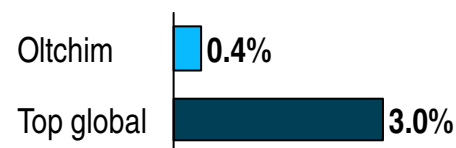


Global benchmarks ahead [R&D/Turnover, 2009]²⁾

Automotive



Chemicals



Comment







- > Romanian companies **typically do not report the R&D expenses**
- > The **level of patents** lies clearly below **international benchmarks**
- > Dacia is a notable example of innovativeness – **Share of R&D expense already above CEE benchmark company Skoda**

1) Administrative reports at ministry of finance, published annual reports, websites

2) R&D expense of Dacia based on expenses for Renault research centers; Top global automotive = GM, Toyota, VW; Top global chemicals = BASF, DOW

This is reflected in the investments in local research centers – Example automotive

**EXAMPLES
R&D
CENTERS
AUTOMOTIVE**

Company	Location	Description
 Renault Technologie Romania (RTR)	Bucuresti, Pitesti, Titu	<ul style="list-style-type: none"> > Focused on Dacia vehicles > Founded in 2006
 Renault Design Central Europe (RDCE)	Pitesti	<ul style="list-style-type: none"> > Focused on design of Dacia (Logan) > Set-up in 2007
 Autoliv Engineering Center	Timisoara	<ul style="list-style-type: none"> > R&D on safety systems
 Automotive R&D Centers	Timisoara, Sibiu, Iasi	<ul style="list-style-type: none"> > Powertrain, interior chassis & safety and electronic controls research
 Design Center	Timisoara	<ul style="list-style-type: none"> > Research site for RCD EXCEPT > Set-up in 2007
 Research providers	Craiova	<ul style="list-style-type: none"> > Providing specialized engineering services to automotive clients

Innovation occurs on different levels – Product innovation only one dimension

EXAMPLES

PRODUCTS AND SERVICES

● Blue-ray replaces DVDs (like DVDs have replaced videos), MP3 players have replaced walkmans

BUSINESS MODEL

● Software as a service replaces traditional software installed on a server or desktop

PROCESSES

● RFID technology has made logistics processes faster and more efficient

SUPPLY CHAIN

● Just in Sequence (JiT + components arrive at production line in the sequence they will be used) allows companies to further eliminate inventory

CUSTOMER CARE

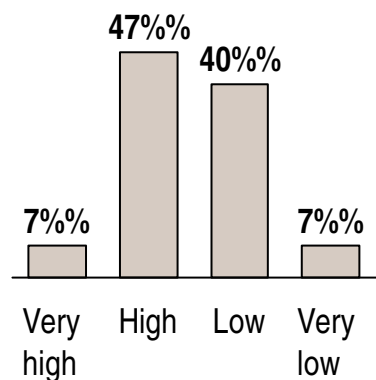
● With CRM, customer care is no longer limited to the purchasing process

An ongoing RB survey shows that Romanian CEOs see high importance of innovation in their industries, but low performance

Share of respondents¹⁾ [%]

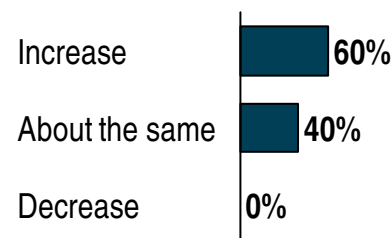
High importance

Q: What is the current importance of innovation in your industry?



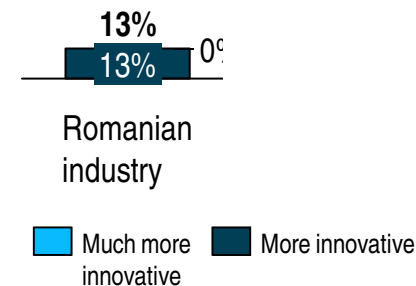
Expected increase in importance of innovation

Q: How will the importance of innovation change in the next 10 years?



Low level of innovativeness

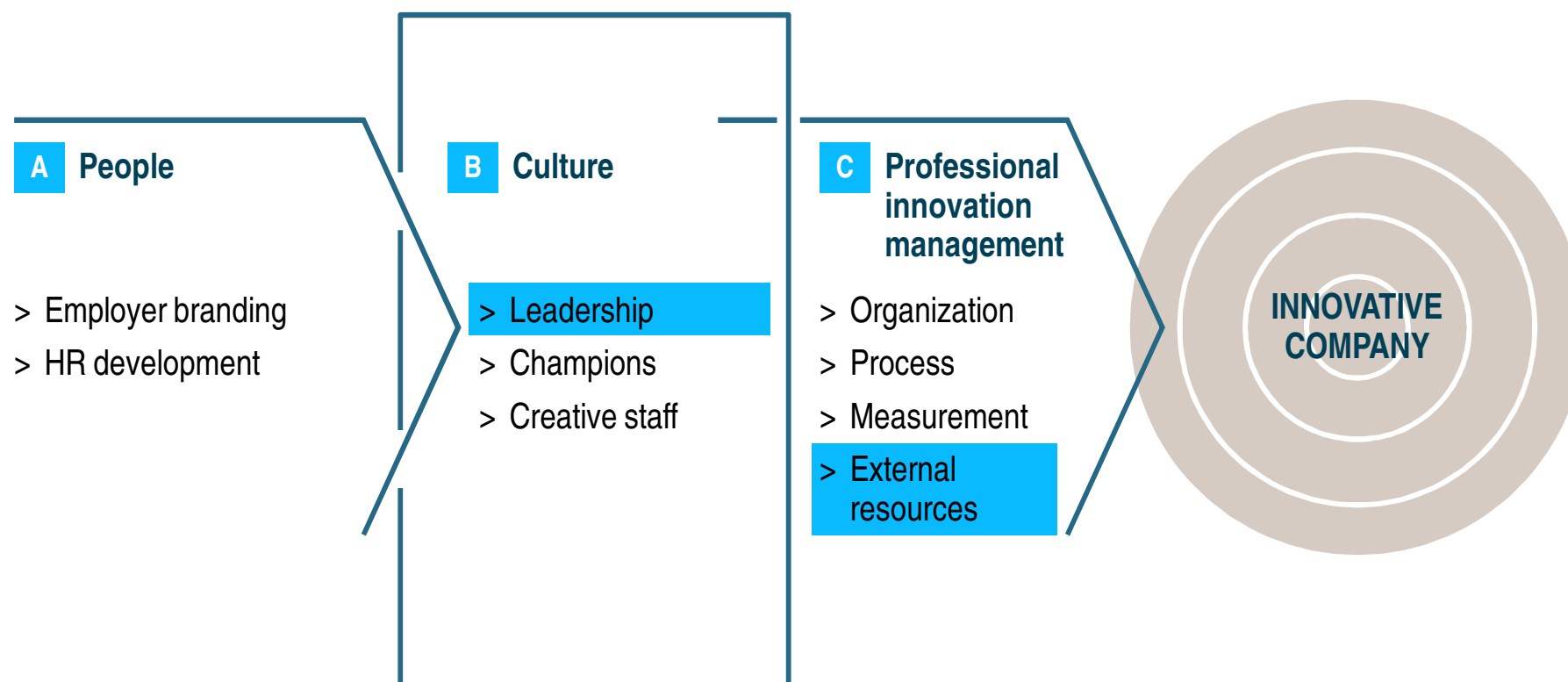
Q: How innovative are local companies compared to global industry leaders?



Mismatch between importance and performance

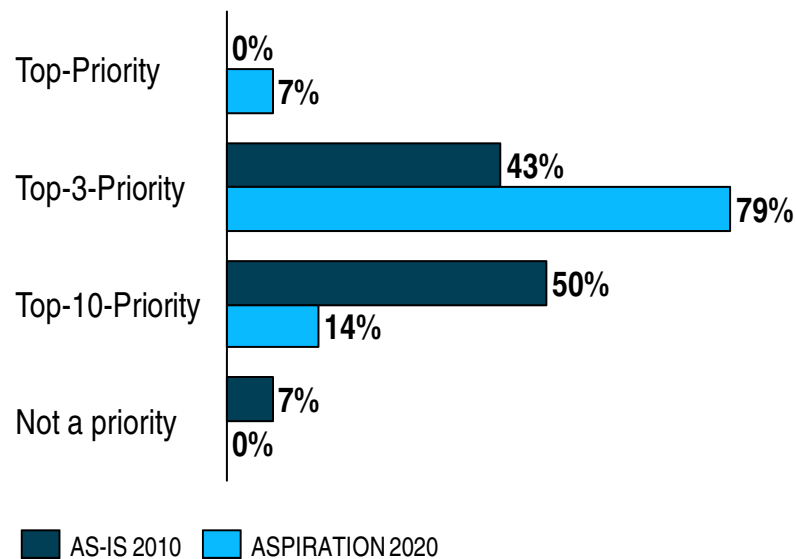
1) Romanian company leaders; board level

3 levers to more innovation need to be addressed: people, culture and innovation management – Today we focus on 2 aspects only



Culture – Romanian managers need to make innovation a priority and give the necessary drive from the top

Current priority of innovation for Romanian company leadership¹⁾ [% of respondents]



1) Board level

Elements of innovation leadership

- > Include **innovation objectives** in the company strategy
- > Commit an **explicit budget** to innovation
- > **Reward innovation** across all levels of the organization
- > Foster **disagreement/ discussion** and reduce hierarchical leadership style

Innovation management – A few companies are already leading the trend to utilize external resources

Examples of research cooperations in Romania

Universities



Schlumberger

- > Research funding for university of Ploiesti¹⁾ on exploitation of oil reserves
- > Scholarships/ internships



- > Partnership research with university of Timisoara on Green IT
- > Training for university staff



- > Research programs with the technical universities in Iasi and Bucuresti
- > Opportunity for thesis research in company for selected students

Competitors/ Suppliers



- > Active in supply-chain of thermo-insulating windows
- > Joint development of new products



- > R&D strategic cooperation agreement
- > Product development for automotive industry



- > Joint new product development, e.g. e-government solutions combining Siveco's e-public sector solutions and Oracle's platform

1) University of Ploiesti cooperates with a number of other companies on single research projects (e.g. Oltchim, Petrom)



It's character that creates
impact!

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