

# European Manufacturing Survey (EMS)

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# What is EMS?

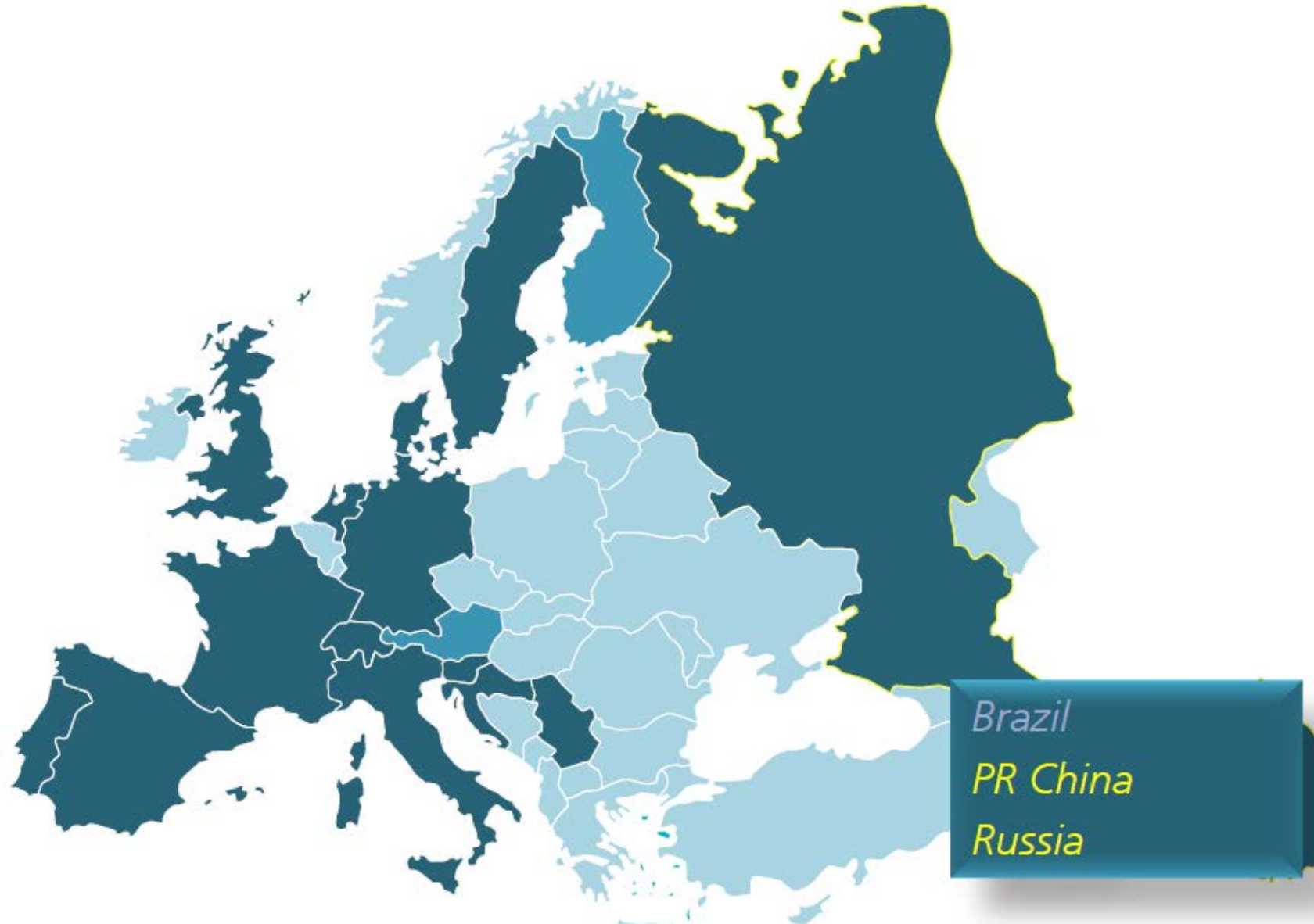
- European Manufacturing Survey (EMS) is the largest European research on manufacturing activities
- EMS is a research network
- EMS is a network of research institutions and universities

# What is the main aim of EMS?

**Our main aim is a joint research on current value creations processes and innovation (technological and organizational) in manufacturing.**

**Performing research on current technological and organisational modernization trends in the European manufacturing industry.**

# EMS consortium



# EMS coordinator

**Fraunhofer-Institut für System- und Innovationsforschung (ISI)**

**Fraunhofer Institute for Systems and Innovation Research (ISI)**

**Karlsruhe, Germany**

**Business Unit Industrial Innovation Strategies**

**<http://www.isi.fraunhofer.de/isi-en/index.php>**

# EMS partners

- Austria: Austrian Institute of Technology (AIT), Foresight & Policy Development Department, Vienna
- PR China: Institute of Policy and Management (IPM), Division of S&T Policy, Beijing
- **Croatia: University of Zagreb, Economic Faculty, University of Split, Technology Faculty**
- Denmark: University of Southern Denmark, Mads Clausen Institute and Institute for Marketing & Management, Sønderborg and Odense

# EMS partners

- Finland: VTT Technical Research Centre of Finland
- France: University of Lyon, IAE Lyon, France
- Great Britain: Leeds University Business School, University of Leeds
- Italy: Institute of Industrial Technologies and Automation (ITIA-CNR), Milan
- Portugal: UNIDEMI - Research Unit in Mechanical and Industrial Engineering, Faculty of Sciences and Technology, Universidade Nova de Lisboa

# EMS partners

- Russia: State University - Higher School of Economics, Institute for Statistical Studies and Economics of Knowledge (ISEK), Moscow
- **Serbia: University of Novi Sad, Faculty of Technical Sciences**
- **Slovenia: Maribor University, Faculty of Mechanical Engineering**
- Spain: University of Girona, Polytechnics School, Department of Business Administration and Product Design
- Sweden: University of Gävle, Jönköping University, Chalmers and Luleå University
- Switzerland: Hochschule Luzern – Wirtschaft, Institut für Betriebs- und Regionalökonomie (IBR)



# EMS consortium over time

2001	2003	2006	2009	2012	2015
Germany	Germany	Germany	Germany	Germany	Germany
Switzerland	Switzerland	Switzerland	Switzerland	Switzerland	Switzerland
	Austria	Austria	Austria	Austria	Austria
	Croatia	Croatia	Croatia	Croatia	Croatia
	France	France	France	Slovenia	Slovenia
	Italy	Italy	Slovenia	Spain	Spain
	Slovenia	Slovenia	Turkey	The Netherlands	The Netherlands
	Turkey	Turkey	United Kingdom	Denmark	Denmark
	United Kingdom	United Kingdom	Spain	Finland	Finland
		Spain	The Netherlands	PR China	PR China
		The Netherlands	Denmark	Russia	Russia
		Greece	Finland	Italy	Italy
			PR China	France	France
			Russia	United Kingdom	United Kingdom
				Czech Republic	Czech Republic
				Portugal	Portugal
				Sweden	Sweden
				Brazil	Serbia

Partner from previous round

Changed partner

New partner in new country

# EMS consortium – mentoring system



EMS 2015

Partner from previous round  
Status of partner not known

New partner in new country

# EMS characteristics

- **Collecting firm-level data** of European manufacturing industry.
- **Survey** among manufacturing firms conducted nationally and simultaneously.
- **Applying a commonly agreed framework:**
  - on the methodological approach (survey method, population, sampling),
  - on the focus of the survey (content, core, national),
  - on the time perspective (repeated surveys, long term engagement).

# EMS questionnaire

- 8 pages long;
  - Paper or/and e-questionnaire;
  - Core questions and national specific questions.
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- Target establishments: at least 20 employees;
  - NACE rev. 2, Section C: 10-33;
  - Respondents: CEO (SME) or Production Manager (large company).

# EMS specific topics

- New product development;
- Product complexity;
- New product-related service development;
- Investments in R&D activities;
- Production type;
- Cooperation with other organisations (area, location, motives etc.);
- Sources of ideas for products, processes and technologies;
- Energy efficiency;
- Production off-shoring and back sourcing (location & motives)

# EMS specific topics – organisational concepts

- Organization of work;
- Organization of production;
- Production management/ -controlling;
- Energy and environmental controlling;
- Human resource management.

3 Which of the following organizational concepts are currently used in your factory?

Use planned until 2018	no	Organizational concepts	yes	First used (year) <sup>1</sup>	Extent of used potential <sup>2</sup> (l=low; m=medium; h=high)
<b>Organization of work</b>					
<input type="checkbox"/>	← <input type="checkbox"/>	Detailed regulations on the arrangement and setting of the work equipment and storage of intermediary products (e.g. Method of 5S)	<input type="checkbox"/> →	19/20	<input type="checkbox"/> l <input type="checkbox"/> m <input type="checkbox"/> h
<input type="checkbox"/>	← <input type="checkbox"/>	Standardized and detailed working instruction ("standard work")	<input type="checkbox"/> →	19/20	<input type="checkbox"/> l <input type="checkbox"/> m <input type="checkbox"/> h
<input type="checkbox"/>	← <input type="checkbox"/>	Integration of tasks (planning, operating or controlling functions with the machine operator)	<input type="checkbox"/> →	19/20	<input type="checkbox"/> l <input type="checkbox"/> m <input type="checkbox"/> h

# EMS specific topics – technologies

- Automation and robotics;
- Energy and resource efficiency;
- Processing techniques for new materials;
- Additive manufacturing technologies;
- Digital factory.

8.1 Which of the following technologies are currently used in your factory?

Use planned until 2018	no	Technologies	yes	First used (year) <sup>1</sup>	Follow-on investment since 2012		Extent of used potential <sup>2</sup> (l=low; m=medium; h=high)
					no	yes	
<b>Automation and robotics</b>							
<input type="checkbox"/>	<input type="checkbox"/>	Industrial robots for manufacturing processes (e.g. welding, painting, cutting)	<input type="checkbox"/>	19/20	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> l <input type="checkbox"/> m <input type="checkbox"/> h
<input type="checkbox"/>	<input type="checkbox"/>	Industrial robots for handling processes (e.g. depositing, assembling, sorting, packing processes)	<input type="checkbox"/>	19/20	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> l <input type="checkbox"/> m <input type="checkbox"/> h

# EMS topics – general information

- Industry / main product / OEM-supplier;
- Value creating stages;
- Competitive criteria;
- Personnel – number, qualification level and company areas;
- Manufacturing lead times, meeting delivery dates, rework rates;
- Annual turnover;
- Cost structure;
- Return on sales.



# EMS consortium – how do we work?

- Collaboration build on trust and mutual commitment, not on formal contracts.
- Each partner with intrinsic motivation and interest in research on manufacturing industry.
- Organised by the EMS consortium with annually EMS meetings, informally distributed responsibilities and a shared communication platform.

# EMS consortium – how do we work?

- Rules on joint research projects.
- Rules on sharing data for scientific purposes.
- **In the calculation of a research contract project** a monetary compensation for the national data sets that are used is provided.
- Shared communication platform – cloud based solution hosted by Microsoft Cloud.

# EMS financing

- Each partner funds the national research.
- Selling data for specific contractual research projects.
- Consortium applies for funding (DG, COST scheme).

# EMS publications

- Scientific papers in journals International Journal of Operations & Production Management, Research Policy, Technovation, Journal of Cleaner Production, Journal of Service Management, Journal of Mechanical Engineering etc.;
- Scientific monographs;
- Scientific papers for conferences (EurOMA);
- Professional papers;
  
- EMS bulletins.

# EMS benefits

- Providing an excellent and relevant database on aspects of manufacturing firms being not surveyed so far.
- An excellent and relevant **database** for national as well as cross-nationally comparative studies.
- Highly recognized by the scientific community.
- Joint acquisition of research projects.

# Do you want to join EMS?

- Looking for new partner countries.
- Looking for new partners within „existing“ partner countries.
- Some partner countries looking for cooperating institutions within the country.

# Contact info

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