West Pomeranian University of Technology in Szczecin
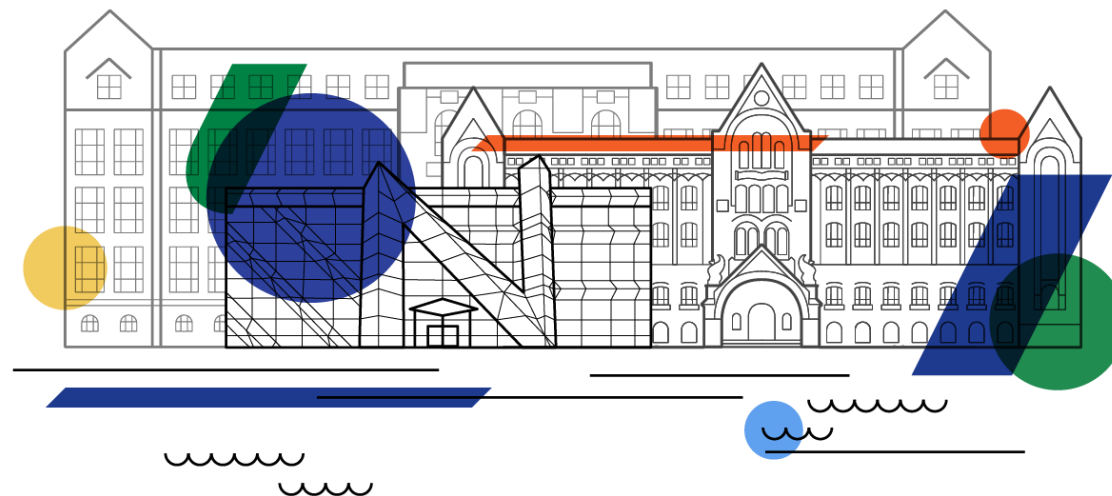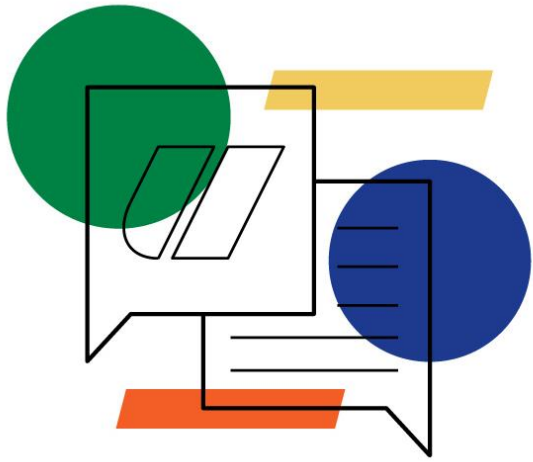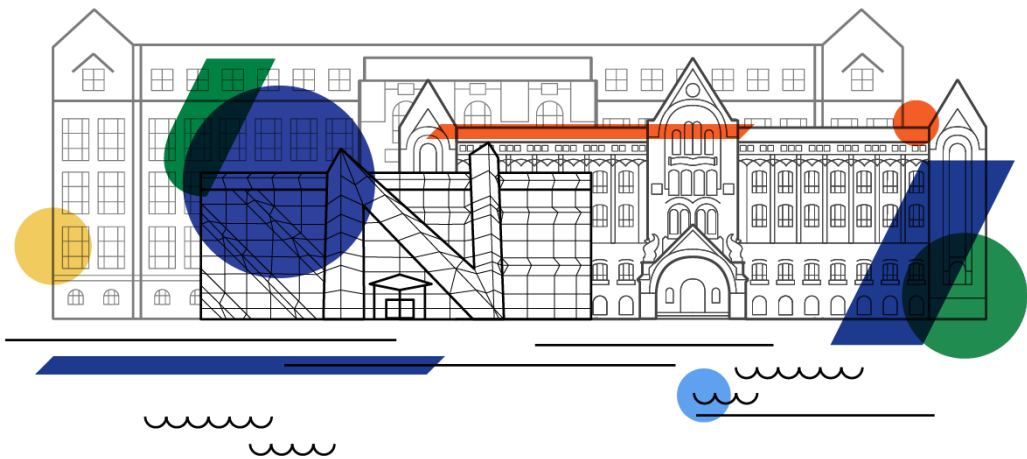
The Role of the University in Industry 4.0 Transformation
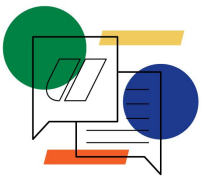
Krzysztof Pietrusewicz

V-ce Rector Development and Organization of the University
Westpomeranian University of Technology in Szczecin

Agenda

1. Short info about university
2. Polish Future Industry Platform
3. Projects
4. Education
5. Cooperation
6. ADMA framework

About University:

West Pomeranian University of Technology in Szczecin (Zachodniopomorski Uniwersytet Technologiczny w Szczecinie) was founded in 2009 as a result of two public universities being merged the Szczecin University of Technology, (Politechnika Szczecińska), the oldest university of the City of Szczecin (founded in 1946), and the Agricultural University of Szczecin (founded in 1954).

Currently, the university has 11 faculties where nearly seven thousand students are studying at 40 different programmes. We have 7 programmes in English at 5 faculties.

The West Pomeranian University of Technology in Szczecin has been cooperating for years with various companies of the region, which assures to our graduates finding jobs after their graduation. The university also offers the students the development of their interest in numerous students' research centres, sports clubs and also acting in the Students' Self-Government Parliament.
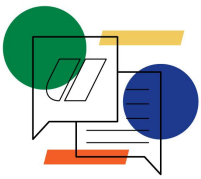
The Regional Centre for Innovation and Technology Transfer, hereafter referred to as RCIiTT, is one of unique units developed by ZUT. It provides advice and training for researchers, graduates, and businesses in seeking research support, partnership brokerage, and knowledge commercialisation.

The RCIiTT's objective is to foster the culture of innovation and entrepreneurship, to initiate and support collaboration between business and academia, and to assist with implementation of new technologies developed by ZUT.

ZUT constitutes a great and invaluable force which furnishes its students with appropriate resources to function on the labour market. The R&D potential of ZUT meets the current challenges and reaches forward into the future.

RCI ITT

Regionalne Centrum Innowacji i Transferu Technologii
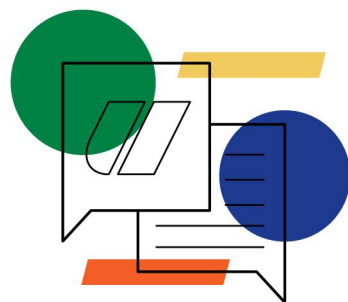
Faculties:

Faculty of Architecture

Faculty of Biotechnology and Animal Husbandry

Faculty of Civil and Environmental Engineering

Faculty of Economics

Faculty of Electrical Engineering

Faculty of Computer Science and Information Technology

Faculty of Mechanical Engineering and Mechatronics

Faculty of Environmental Management and Agriculture

Faculty of Food Sciences and Fisheries

Faculty of Maritime Technology and Transport

Faculty of Chemical Technology and Engineering

Interfaculty and university units:

Centre of Mathematics
Centre of Culture
Centre of Foreign Languages Practical Teaching
Centre of Physical Education and Sports
University Riding Centre
Experimental Plant in Lipnik and Ostoja
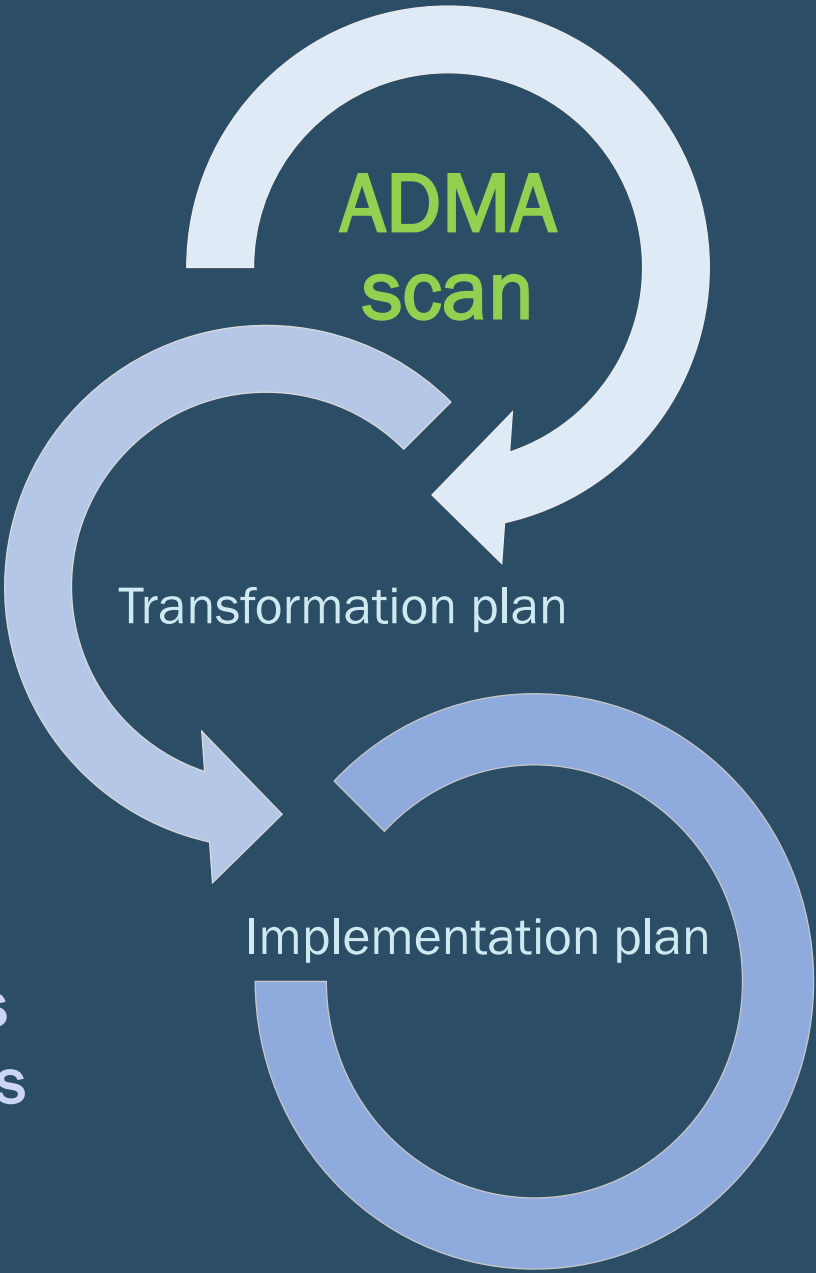
Transformation maturity levels

7 transformation areas…

1. Advanced Manufacturing Technologies
2. Digital Factory
3. ECO Factory
4. Integrated Engineering
5. Human Centred Organisation
6. Smart Manufacturing
7. Networked Factory

… with 5 maturity levels for every subtopic

Resource management	The company systematically reduces its dependency on non-renewable energy sources, raw and auxiliary materials as well as water.				
5	1	2	3	4	5
Materials usage *	The company reduces material consumption through product and manufacturing optimisation.				
	Several incremental material consumption improvement actions have been implemented.	Project-driven material usage improvements of the most relevant products and manufacturing processes have been implemented.	The company has set specific objectives and implements a methodological approach covering the transformation of materials consumption at machine, process and factory level.	The company draws upon the best available technologies to reduce the material usage of machines, processes, products and methods.	Systems capable of closing the material cycle in order to optimize the efficiency of raw material usage (also called Circular Economy principles) have been implemented through strategic and stable partnerships with customers, suppliers and other key experts.

ADMA framework for defining role of the universities for Industry 4.0
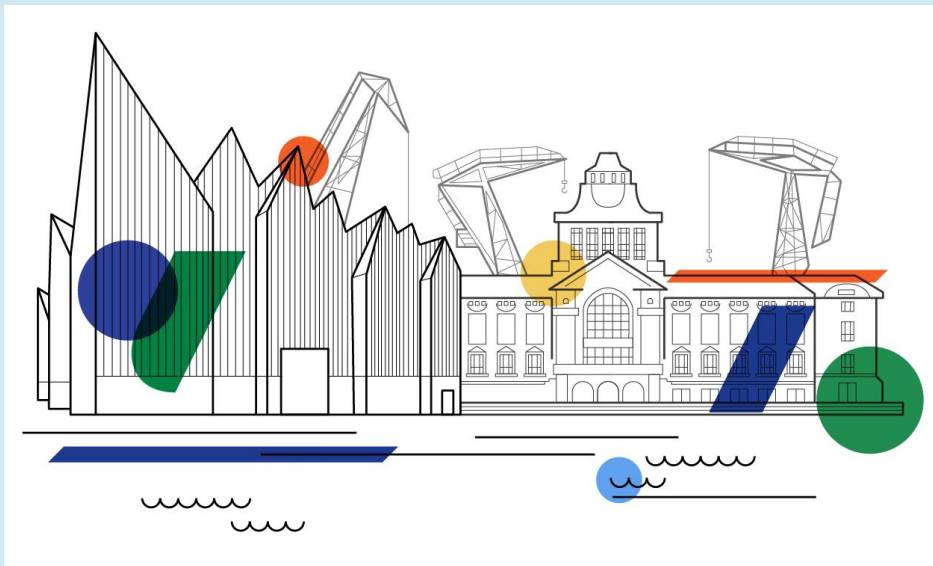
Transformation T1 (3,40)	Category	Sub-category	No		Maturity				
					1	2	3	4	5
Advanced Manufacturing Technologies	Vision	Strategy	1					4	5
		Awareness	2			2	3	4	5
	Level of capabilities	Technology	3					4	5
		Integration	4					4	5
		Quality	5			2	3	4	5
		Employees	6		1	2	3	4	5
	Level of implementation	Maintenance	7				3	4	5
		Tools	8						5
	Stakeholder focessed	Manufacturing area	9					4	5
		Health & safety	10						5

Transformation T2 (2,71)	Category	Sub-category	No		Maturity				
					1	2	3	4	5
Digital Factory	Enabling infrastructure	Connected shop floor	11					4	5
		A digitally supported production network	12			2	3	4	5
		Secure digital infrastructure	13			2	3	4	5
	Digital capabilities	Transparent view on shop floor status	14			2	3	4	5
		Digital operator support	15					4	5
		Application and data integration	16				3	4	5
		Mastering the digital transformation	17			2	3	4	5

Transformation T3 (2,43)	Category	Sub-category	No		Maturity				
					1	2	3	4	5
ECOfactory	Resource management	Materials usage	18			2	3	4	5
		Energy consumption	19				3	4	5
		Waste flows management	20					4	5
	Compliance & Innovation	Rules, regulation and standards	21			2	3	4	5
		KPIs and targets	22			2	3	4	5
		Business process	23			2	3	4	5
		Innovative approach	24			2	3	4	5

Transformation T4 (3,00)	Category	Sub-category	No	Maturity			
End-to-End Customer Focussed Engineering	Customer focus & value proposition	Customer integration	25	2	3	4	5
		Customisation	26		3	4	5
		Servitisation	27		3	4	5
	Robust engineering processes	Interdepartmental co-creation & stakeholder involvement	28			4	5
		Standards, tools & approaches	29		3	4	5
		Managing quality & robustness	30		3	4	5
		Continuous improvement	31		3	4	5

Transformation T5 (3,20)	Category	Sub-category	No	Maturity			
Human Centred Organization	Individual employee	Talent- & competence development	32		3	4	5
		Experience and knowledge accumulation	33	2	3	4	5
		Wellbeing and work quality	34			4	5
	Team	Planning and work organisation	35			4	5
		Objectives and KPI's	36		3	4	5
		Autonomy	37		3	4	5
	Leadership	Vision and strategy	38			4	5
		Horizontal & vertical direction	39			4	5
	Organization	Professional growth path development	40	2	3	4	5
		Open dialogue	41		3	4	5

Transformation T6 (3,80)	Category	Sub-category	No	Maturity			
Flexibele/Smart Manufacturing	Human-machine interaction	From rigid automation to flexible manufacturing	42		3	4	5
		Shop floor tasks	43			4	5
	Manufacturing Planning & Control Processes	Flexible & quick response	44			4	5
		First Time Right	45		3	4	5
		KPI visualisation & management	46				5

Transformation T7 (2,80)	Category	Sub-category	No		Maturity			
Value Chain Oriented Open Factory	Cooperation and Partnerships	Internal innovation network	47			3	4	5
		Partnership-driven innovation	48		2	3	4	5
		Supply chain governance	49			3	4	5
	External Expertise and Knowledge Management	Beyond customer and supplier needs	50			3	4	5
		External knowledge management	51			3	4	5

Need of university assistance

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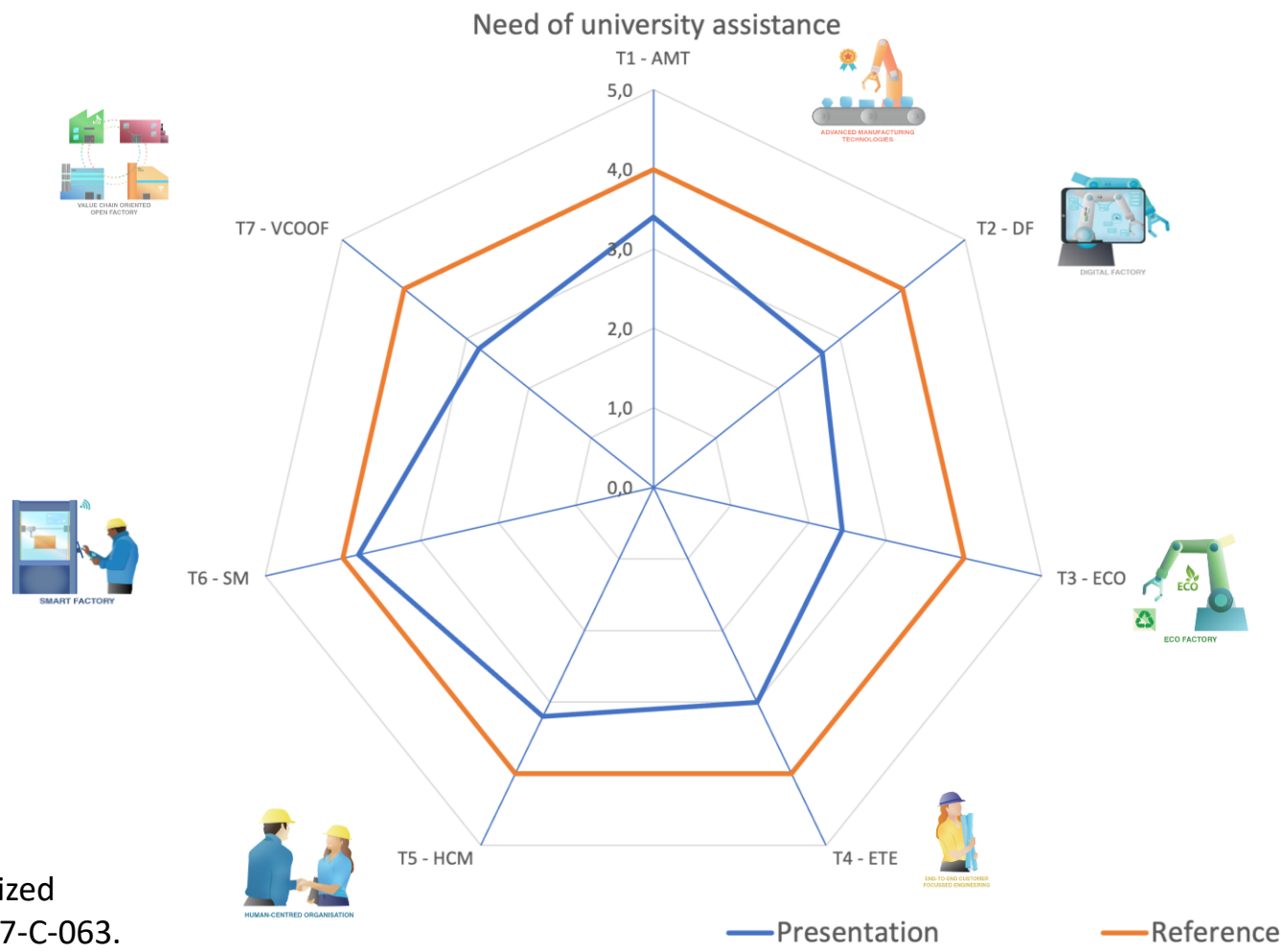
Thank You for Your attention

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