



THE 21ST INTERNATIONAL
OPERATIONS & MAINTENANCE
CONFERENCE IN THE ARAB COUNTRIES

Reshaping Maintenance and Asset Management Skills Towards Digital Transformation in Portugal

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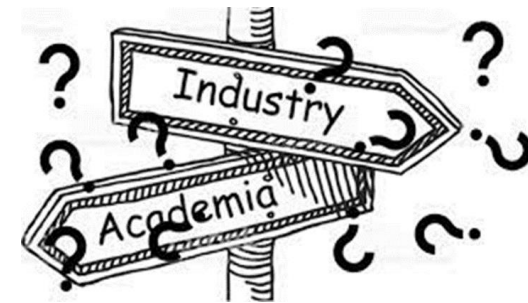
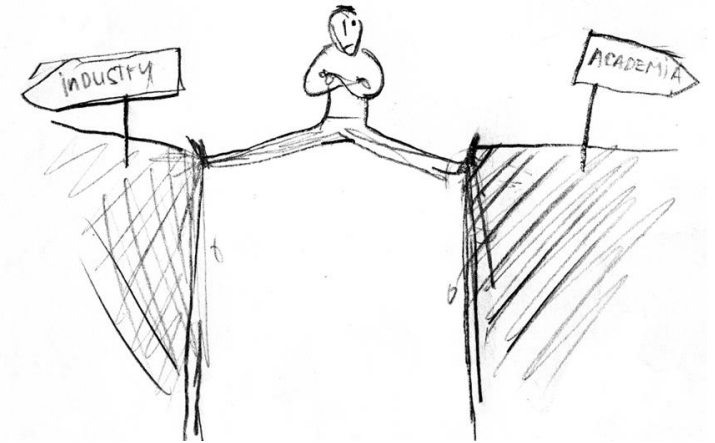


Contents

1. Introduction
2. Conceptual overview
3. Development of new approaches for maintenance and asset management education and training
4. Proposal for reshaping maintenance and asset management education and training:
Roadmap for Portugal needs
5. Conclusions

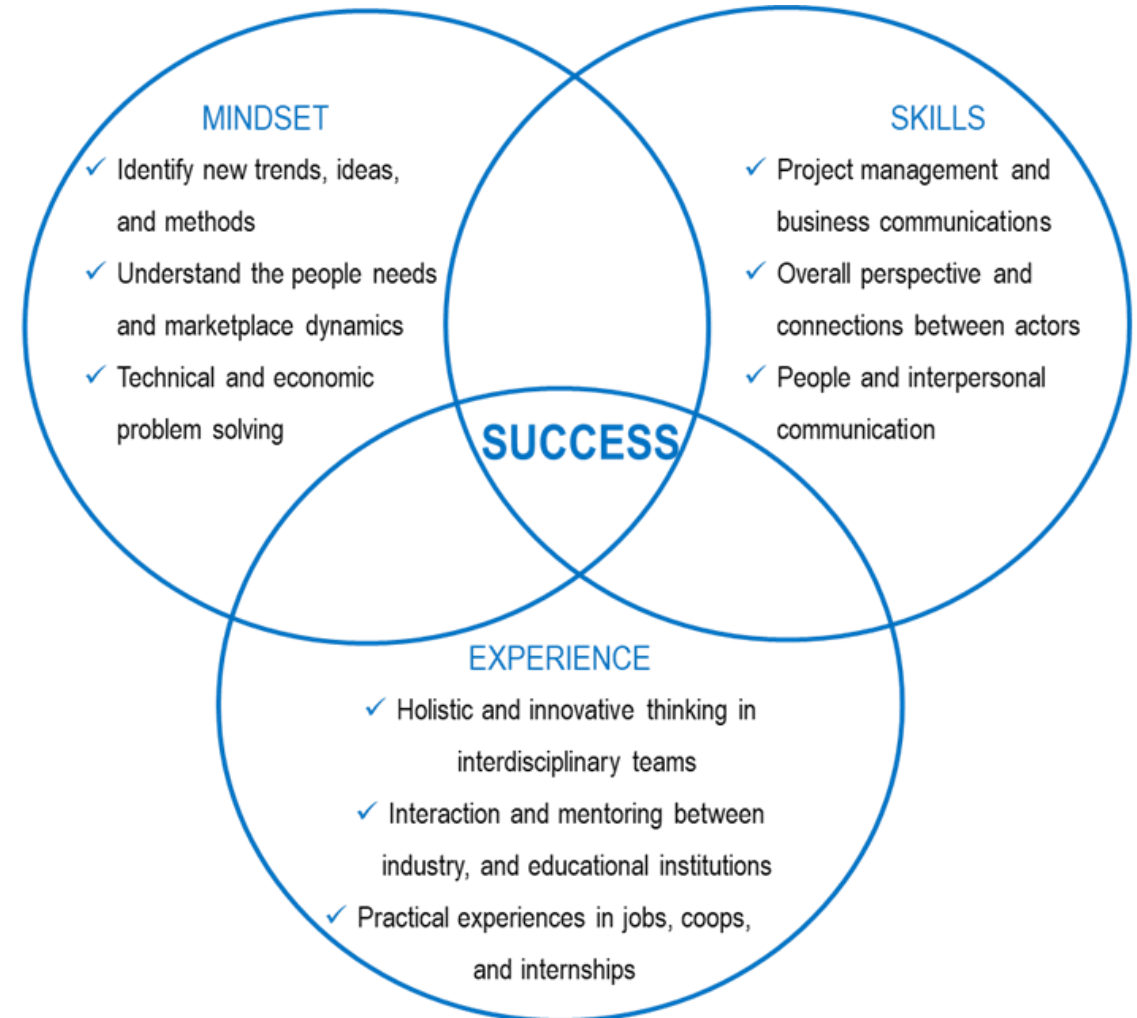
1. Introduction

- Civil engineering faces challenges in societal roles, infrastructure integrity, and environmental impact due to technology and market demands
- Solutions require increased investment in research, education, and technology application.
- Industry and universities must collaborate to address skills deficits, aligning education with industry needs
- Universities should employ industry professionals to enhance practical learning.
- LNEC researchers in Lisbon drive innovation, organizing conferences to foster collaboration among stakeholders in maintenance and asset management.



2. Conceptual overview

- Civil engineering faces societal, infrastructure, and environmental challenges due to trends.
- Warning: Lack of infrastructure maintenance affects public health, safety
- Technology shifts tasks, reducing innovation demand, impacting civil engineers
- Concerns: Maintaining knowledge of international best practices becomes essential.
- Solution: Invest in research, education and technology for future success





2. Conceptual overview

- Industry and universities tackle civil engineering skills deficit collaboratively.
- Postgraduate programs in industry offer varied, specific skills development.
- Universities bear responsibility, bridging theoretical learning with industry needs.
- Proposed improvements: integrate industry needs, technology in education, hire industry-experienced professors.
- Gap exists between university-taught skills and industry's digital demands.





2. Conceptual overview

- LNEC: Public institute focused on civil engineering and technology.



- Employs 560, 140 researchers; aims for industry support.

- Global reach with 40+ country studies and 300+ agreements.

- Research strategy targets societal needs in heritage, innovation.

- Active in recycling tech, international conferences on asset management..



3. Development of new approaches for maintenance and asset management education and training

- Universities must provide theoretical foundations for engineers entering industry.
- Industry suggestions: Collaborate for relevant programs, software, and skills.
- Industry's role: Offer practical experience, transition support, job opportunities.
- Government influence: Drive digital tech adoption through policies, funding initiatives.
- LNEC's role: Bridging academy with industry through conferences and training.





4. Reshaping maintenance and asset management education and training: Roadmap for Portugal

- Portuguese maintenance and asset management aim for improved impact.
- Expected benefits: Enhanced productivity, organization, information structuring.
- Challenges include demand shortage, entrenched practices, and resource scarcity.
- Proposed strategies: Public sector imposition, showcasing success, skill development.
- Goal: Widespread adoption of maintenance and asset management practices in Portugal..





4. Reshaping maintenance and asset management education and training: Roadmap for Portugal

- Proposal: Modernize maintenance and asset management strategies in Portugal.
- Strategies: IT Center, collaborative work, success story dissemination.
- Goals: Transparency, benefits, awareness among AECO sector stakeholders.
- Tackle entrenched practices: Contact with authorities, large companies, software firms.
- Future focus: Training fund, university collaboration, research, internships, industry protocols.



4. Reshaping maintenance and asset management education and training: Roadmap for Portugal

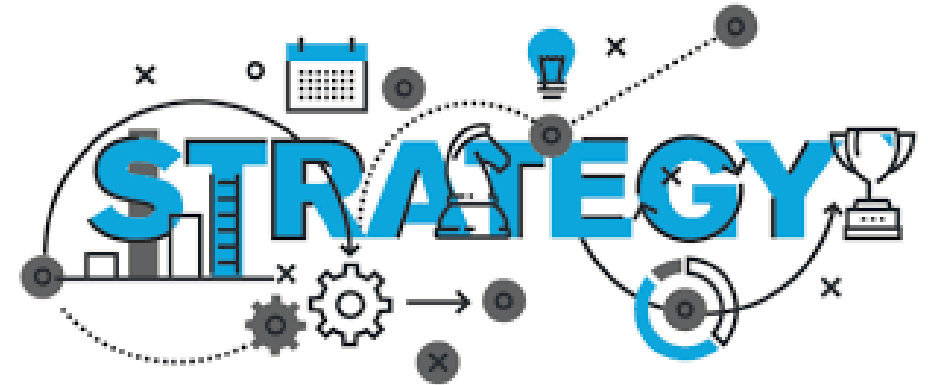
CHALLENGES	STRATEGIES	ACTIONS
Lack of demand	<ul style="list-style-type: none"> Imposition by the public sector Publicize and promote successful cases 	<ul style="list-style-type: none"> IT Centre Colaborative work Make mandatory implementation
Entrenched practices	Reduce impediments	<ul style="list-style-type: none"> Disclosure of strategies and results obtained in Portugal and other countries Competitions
More qualified resources	Develop transversal skills	<ul style="list-style-type: none"> Community Growth actions Promote Leadership Creating a Training & Productivity Fund
		<ul style="list-style-type: none"> Equipping future generations





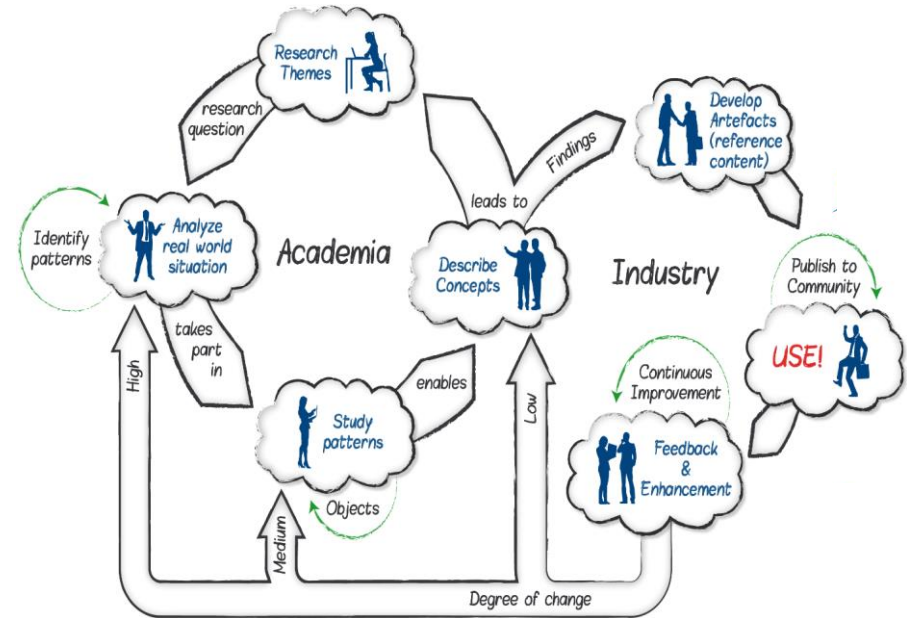
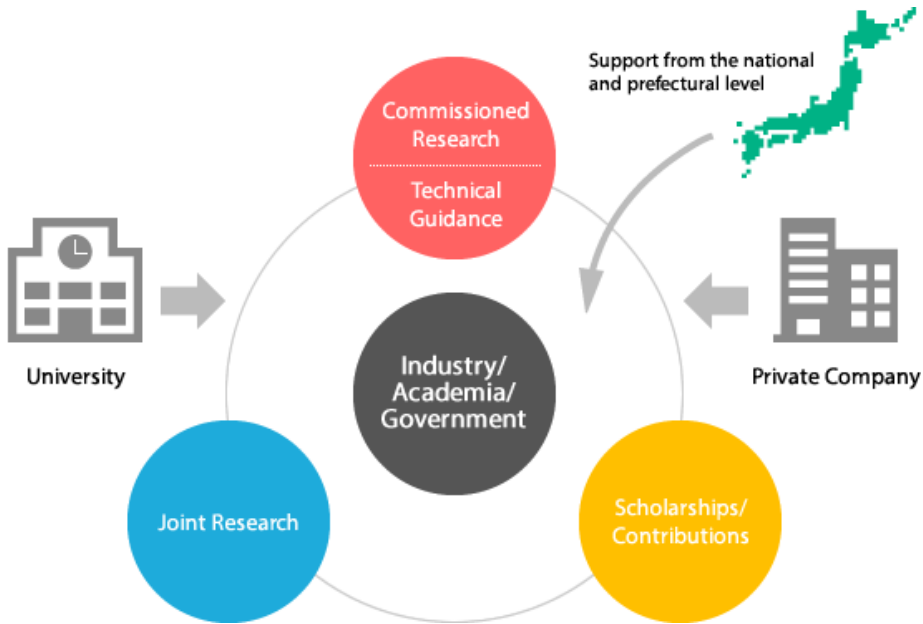
4. Reshaping maintenance and asset management education and training: Roadmap for Portugal

- National plan integrates Maintenance and Asset Management strategically.
- Emphasizing collaborative work within Portuguese Construction Technological Platform (PTPC).
- Dissemination via international conferences, courses, and ongoing research projects.



4. Reshaping maintenance and asset management education and training: Roadmap for Portugal

- Recognition at international level despite lacking structured national competitions.



- Growth: increased scientific publications, industry digital transition, educational initiatives.

5. Conclusions

- Overview: Construction trends, skills needed for future civil engineers.
- Importance of digital skills in industry and for future professionals.
- Current digital technologies, gaps, and necessary improvements in skills.



5. Conclusions

- Proposal: Reshaping maintenance and asset management education and training.
- Vision: Advanced construction sector with highly skilled workforce.





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