

A - Caracterização do LA	Laboratório Associado	1. Nome/Designação do LA	Sistemas de Produção Avançada Inteligentes
		2. Acrónimo do LA	ARISE
		3. Referência FCT	LA/P/0112/2020
		4. Coordenador do LA	Fernando Manuel Ferreira Lobo Pereira fip@fe.up.pt, (+351) 225 081 857, (+351) 931 613 865
		5. Data da atribuição do estatuto de LA	2021
		6. Webpage	https://arise-la.pt
		7. Classificação FCT	Excelente
		8. Financiamento Complementar FCT Total	999357.50
	Unidade de I&D Principal (SYSTEC)	1. Nome/Designação da Unidade de I&D	Centro de Sistemas e Tecnologias
		2. Acrónimo	SYSTEC
		3. Personalidade jurídica	Outra/Unidade orgânica de Fundação
		4. Coordenador	Fernando Manuel Ferreira Lobo Pereira fip@fe.up.pt, (+351) 225 081 857, (+351) 931 613 865
		5. Contactos gerais	FEUP - Faculdade de Engenharia da Universidade do Porto Rua Dr. Roberto Frias, I217, 4200-465 Porto Email: systec@fe.up.pt Telefone: (+351) 220 413 211
		6. Webpage	https://systec.fe.up.pt
		7. Classificação FCT	Muito Bom
		8. Financiamento Base FCT Total	480000.00
	Outras Unidades de I&D (CDRSP)	9. Financiamento Programático FCT Total	185000.00
		1. Nome/Designação da Unidade de I&D	Centro para o Desenvolvimento Rápido e Sustentado do Produto
		2. Acrónimo	CDRSP
		3. Personalidade jurídica	Outra/Unidade Orgânica de Investigação em Entidade Pública
4. Coordenador da Unidade		Nuno Manuel Fernandes Alves nuno.alves@ipleiria.pt, (+351) 244 569 441	
5. Contactos gerais da Unidade		Edifício IPEleiria Rua de Portugal – Zona Industrial, 2430-028 – Marinha Grande Email: cdrsp@ipleiria.pt Telefone: (+351) 244 569 441	
6. Webpage		https://cdrsp.ipleiria.pt	
7. Classificação FCT		Excelente	
Outras Unidades de I&D (CEMMPRE)	8. Financiamento Base FCT Total	291000.00	
	9. Financiamento Programático FCT Total	561000.00	
	1. Nome/Designação da Unidade de I&D	Centro de Engenharia Mecânica, Materiais e Processos	
	2. Acrónimo	CEMMPRE	
	3. Personalidade jurídica	Pública (Universidade de Coimbra)	
	4. Coordenador da Unidade	Albano Augusto Cavaleiro Rodrigues de Carvalho albano.cavaleiro@dem.uc.pt, (+351) 239 790 794	
	5. Contactos gerais da Unidade	Universidade de Coimbra Departamento de Engenharia Mecânica Pinhal de Marrocos, 3030-788 Coimbra E-mail: cemmpre@uc.pt Telefone: (+351) 239 790700 / 45	
	6. Webpage	https://www.uc.pt/en/CEMMPRE	
Outras Unidades de I&D (ISISE)	7. Classificação FCT	Excelente	
	8. Financiamento Base FCT Total	1110000.00	
	9. Financiamento Programático FCT Total	475000.00	
	1. Nome/Designação da Unidade de I&D	Instituto para a Sustentabilidade e Inovação em Estruturas de Engenharia	
	2. Acrónimo	ISISE	
	3. Personalidade jurídica	UMinho (Fundação pública com regime de direito privado) ou UCoimbra (Pública), de forma rotativa	
	4. Coordenador da Unidade	Paulo José Brandão Barbosa Lourenço, Diretor (UMinho) pbl@civil.uminho.pt, (+351) 253 510 209 Luís Alberto Prouença Simões da Silva, Co-Diretor (UCoimbra) luiss@dec.uc.pt, (+351) 239 797 216	
	5. Contactos gerais da Unidade	Universidade do Minho ISISE, Campus de Azurém, 4800-058 Guimarães Email: gestao.isise@civil.uminho.pt Telefone: (+351) 253 510 200 / 217	
Outras Unidades de I&D (ISR)	6. Webpage	https://isise.net	
	7. Classificação FCT	Excelente	
	8. Financiamento Base FCT Total	834000.00	
	9. Financiamento Programático FCT Total	1799000.00	
	1. Nome/Designação da Unidade de I&D	Instituto de Sistemas e Robótica	
	2. Acrónimo	ISR-UC	
	3. Personalidade jurídica	Associação Privada Sem Fins Lucrativos, Instituição de Utilidade Pública	
	4. Coordenador da Unidade	Anibal Traça de Almeida adealmeida@isr.uc.pt, (+351) 239 796 218	
5. Contactos gerais da Unidade	Instituto de Sistemas e Robótica Departamento de Engenharia Electrotécnica e de Computadores Universidade de Coimbra Rua Silvío Lima- Polo II, 3030-290 Coimbra Email: marinad@isr.uc.pt, lara@isr.uc.pt Telefone: (+351) 239 796 201		
Unidade de Gestão Principal	6. Webpage	https://www.isr.uc.pt	
	7. Classificação FCT	Excelente	
	8. Financiamento Base FCT Total	719000.00	
	9. Financiamento Programático FCT Total	1044000.00	
	1. Nome/Designação	Faculdade de Engenharia da Universidade do Porto	
	2. Personalidade jurídica	Unidade orgânica de Fundação	
	1. Nome/Designação	Instituto de Sistemas e Robótica	
	2. Personalidade jurídica	Associação Privada Sem Fins Lucrativos, Instituição de Utilidade Pública	
Unidades de Gestão Participantes	1. Nome/Designação	Instituto Politécnico de Leiria	
	2. Personalidade jurídica	Pública	
Unidades de Gestão Participantes	1. Nome/Designação	Universidade de Coimbra	
	2. Personalidade jurídica	Pública	
Unidades de Gestão Participantes	1. Nome/Designação	Universidade do Minho	
	2. Personalidade jurídica	Pública	
B - Constituição da equipa de investigação do LA	N.º de investigadores integrados com PhD	284	Em Outubro de 2021
	N.º de ETIs integrados	200	Assumindo 100% não docentes e 50% docentes
	N.º de técnicos	28	
	N.º de doutorandos	264	Em Dezembro de 2020
	N.º de outros colaboradores com PhD	68	
	N.º de outros colaboradores sem PhD	75	
C - Missão do LA	1. Mission Statement/Objetivos principais	<p>The Advanced Production and Intelligent Systems Associated Laboratory (ARISE AL) is an association of the R&D Units</p> <ul style="list-style-type: none"> • CDRSP – Centre for Rapid and Sustainable Product Development of the Polytechnic Institute of Leiria, • CEMMPRE – Centre for Mechanical Engineering, Materials and Processes, of University of Coimbra, ISISE – Institute for Sustainability and Innovation in Structural Engineering of University of Minho and University of Coimbra, • ISR-UC – Institute of Systems and Robotic of University of Coimbra, and • SYSTEC – Research Center for Systems and Technologies of Porto University. <p>to undertake scientific, and technical research of excellence, and innovation activities targeting the areas of Advanced Production Systems, Construction, Robotics, Materials, Energy, Management, and Information Technologies, built on solid scientific foundations, in order to support the renovation and the reindustrialization of national production system, within a decarbonization framework to ensure the environmental, and socio-economic sustainability.</p> <p>Clearly, the ARISE AL brings together 270 PhD researchers organized in the Thematic Lines an unique interdisciplinary framework that articulates fundamental and applied sciences and technologies from Computation, Material, Management and Information Technologies Sciences, with key very diverse branches of Engineering - Civil, Electrotechnical, and Mechanical – yielding the proper synergetic context essential to address most of the challenges arising in the core objectives of the AL.</p> <p>Thus, the ARISE AL is in a unique position to respond and contribute to the enhancement of a wide variety of key public policies of the diverse ENI 2014-20 strategic axis that transverses a wide swath of the national economy, notably, Production Technologies, Materials, Energy, Mobility, Information and Communication Technologies, with, also a significant relevance on Habitat, Economy of the Sea, Health, Agriculture, and Forestry. Moreover, the ARISE LA will push pushing the boundaries of advanced and comprehensive Reindustrialization and Decarbonization of Production Systems in accordance with the EU Horizon strategies, and the United Nations imperative for the World Sustainable Development, while strengthening of the pertinent Research Infra-structures of the National Roadmap.</p>	
D - Áreas Científicas	1. Área Científica 1	Indústria e Manufatura/Industry and Manufacturing	
	2. Área Científica 2	Sistemas Ciber-físicos e Formas Avançadas de Computação e Comunicação/ Cyber-physical Systems and Advanced forms of Computation and Communication	
	3. Área Científica 3	Ciência e Tecnologia de Materiais/Science and Technology of Materials	
	4. Área Científica 4	Segurança e Manutenção de Construções/Safety and Maintenance of Constructions	

	5. Área científica 5	Sistemas Sustentáveis de Energia/Sustainable Energy Systems
E - Palavras-chave	1. Palavra-chave 1	Sistemas de Produção e de Energia Sustentáveis / Sustainable Production and Energy Systems
	2. Palavra-chave 2	Eco-sistemas Digitais, Sustentabilidade e Gestão / Digital Ecosystems, Sustainability, & Management
	3. Palavra-chave 3	Sistemas Inteligentes e Robóticos / Robotic and Intelligent Systems
	4. Palavra-chave 4	Novos Materiais e Componentes / New Materials and Components
	5. Palavra-chave 5	Inovação e Transferência de Tecnologia / Innovation and Technology Transfer

F - Linhas Temáticas	1. Linha Temática 1	1. Designação da LT	New Materials and Components
		2. Coordenador da LT	Albano Augusto Cavaleiro Rodrigues Carvalho
		3. Contactos do Coordenador	albano.cavaleiro@dem.uc.pt, (+351) 239 790 794
		4. Descrição da LT	New Materials and Components - is divided into 5 sublines (particles, films, bulk, liquids, inks and gels, and materials and component characterization) and deals with materials and components research, covering the entire value chain, from the development of new materials to the enhancement of the existing ones, the characterization of materials properties and the evaluation of their response when employed in components and systems. This Line's expertise concerns the development and production of various types of materials (bio-based, metal-based, ceramic-based, polymer-based, timber-based, masonry-based, smart, meta and multimaterials) and shapes (particles, films, liquid, inks and bulk) for various applications such as Fabrication Technologies, Additive Manufacturing, Energy & Environment, Mobility, Construction, Safety, and Smart Sensing for Robotics, Automation, Advanced Manufacturing and Health. It interacts directly with the other Lines of the Associate Laboratory in the way that there are no Advanced Production and Robotic Systems, Smart Energy Systems, Intelligent Systems and Robotics or even Sustainability, Risk or Management without advanced/ new materials.
	2. Linha Temática 2	1. Designação da LT	Advanced production systems and processes
		2. Coordenador da LT	Nuno Manuel Fernandes Alves
		3. Contactos do Coordenador	nuno.alves@ipleiria.pt, (+351) 244 569 441
		4. Descrição da LT	Resilience and the twin climate and digital transitions are driving an exceptional transformation process, and production systems are both drivers and subject of this paradigm shift. The size and the complexity of the associated challenges – such as the use of industrial data, the introduction of robotics, the de-carbonization, the transformation into a circular economy and the need for agility and responsiveness – demands novel approaches and requires steep changes in existing production systems. And although Europe's industry is a world-wide technology leader in most manufacturing market segments, this position is constantly being challenged and, smaller countries like Portugal where "deindustrialization" was particularly deep, urgently need to reverse this process to be competitive, contribute to the European Green Deal and to social development. The current health challenge (e.g. COVID-19) highlighted the vulnerability of industries and showcased the importance of possessing flexible and reconfigurable production lines within a country or region. This crisis also demonstrated the dependence of European industry on global sourcing. The increasing number of interconnected devices through networks transformed several sectors, from agriculture to industry, but is crossing to other sectors like energy, healthcare and social care. IoT is the enabler for several other advances, such as data analytics, process digitalization/transformation, or data monitoring, increasing productivity and transparency. In this context, Portuguese industry needs to find strategies for implementing cutting-edge technologies in different pivotal areas, namely advanced and conventional manufacturing systems and their digital counterparts, smart machinery and cyber-physical production systems, advanced robotics for manufacturing, advanced logistics and transportation systems for suitable production, and novel processes and personalised products for well-being to reply to demanding challenges.
	3. Linha Temática 3	1. Designação da LT	Sustainable Energy Systems
		2. Coordenador da LT	Anibal Traça de Almeida
		3. Contactos do Coordenador	adealmeida@isr.uc.pt, (+351) 239 796 218
		4. Descrição da LT	The energy sector which plays a key role in the competitiveness of the economy is undergoing deep changes to address climate change, decarbonisation in all sectors, and a transition to renewable energies. The research line plans to work out four activities fully aligned with the NECP and European Union Green Deal, to decarbonise the economy strongly pushing for an urgent energy transition: Renewable Production, Energy-Efficiency in Industry and Buildings, Storage Systems, and Electric Mobility.
	4. Linha Temática 4	1. Designação da LT	Intelligent Systems and Robotics
		2. Coordenador da LT	António Pedro Rodrigues de Aguiar
		3. Contactos do Coordenador	apra@fe.up.pt, (+351) 220 413 282
		4. Descrição da LT	The Strategic Plan for this thematic line is to consider an integrated Sustainable development involving Infrastructures and facilities and Cultural heritage, adopting the current trends for a Fully Digital Ecosystem, by addressing relevant challenges related to Risk assessment and management, resilience and robustness, Failure, Reliability, Maintenance and Resilience and using Advanced logistics and management to contribute to a robust and resilient society. Application areas are related to the built environment, including construction, industry and cultural heritage. A strong connection to the other thematic lines is required, and integration of technologies and knowledge from those lines (1 to 4) is necessary to fulfill the main objectives of this plan.
	5. Linha Temática 5	1. Designação da LT	Digital Ecosystem, Sustainability, Risk and Management
		2. Coordenador da LT	Paulo José Brandão Barbosa Lourenço
		3. Contactos do Coordenador	pbl@civil.uminho.pt, (+351) 253 510 209
		4. Descrição da LT	The Strategic Plan for this thematic line is to consider an integrated Sustainable development involving Infrastructures and facilities and Cultural heritage, adopting the current trends for a Fully Digital Ecosystem, by addressing relevant challenges related to Risk assessment and management, resilience and robustness, Failure, Reliability, Maintenance and Resilience and using Advanced logistics and management to contribute to a robust and resilient society. Application areas are related to the built environment, including construction, industry and cultural heritage. A strong connection to the other thematic lines is required, and integration of technologies and knowledge from those lines (1 to 4) is necessary to fulfill the main objectives of this plan.

