

T4E DIH: Technologies for Efficiency Digital Innovation Hub Extremadura

Researchers:

- Fundación Fundecyt Parque Científico y Tecnológico de Extremadura ([Fundecyt-PCTEx](#) [1]).
- [Diputación de Badajoz](#) [2].
- [Diputación de Cáceres](#) [3].
- Universidad de Extremadura ([UJEX](#) [4]).
- [CénitS](#) [5]-[COMPUTAEX](#) [6].
- Asociación Empresarial Extremeña de Tecnologías de la Información y la Comunicación, [AEXTIC](#) [7].
- [Cluster de la Energía de Extremadura](#) [8].
- [CICYTEX](#) [9].
- [FEVAL](#) [10].
- [Cámara de comercio de Cáceres](#) [11].
- [Cámara de comercio de Badajoz](#) [12].

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Description:

The Digital Innovation Hub Technologies for Efficiency (T4E DIH) is a physical and virtual space in which actions and services of the different agents of Extremadura are concentrated for the development and improvement of products and productive and business processes, through the use of technology.

T4E DIH is framed in the [Initiative for the Digitization of European Industry](#) [13].

Objectives:

The catalogue of services of T4E DIH responds to the following challenges: Efficiency concept is a key factor for competitiveness in the four areas that shape the technological orientation challenges for Extremadura's DIH: Energy, Ecology (environmental), Equality, Economy.

- **Energy Challenge** : energy efficiency, as the main source of cost reduction facing the industry, and which also represents an important contribution to reducing the carbon footprint of production and, thereby, reducing its impact on the environment. In the same way, the integration of productive systems with energy generation systems, following circular economy models, is key for the translation of productive projects to countries with low quality of energy supply.
- **Technological solutions**: new sources of energy, monitoring of energy expenditure, power electronics, energy storage, distributed energy models, are some examples of specific technical challenges that are included in this field. Internet of Things (e.g. connected devices, sensors and actuators networks). Robotics and autonomous systems. High Performance Computing (HPC)
- **Ecology Challenge (Environmental)**: the environment is considered by the current economists as the fourth factor of production. Consciousness of the limit in the use of resources supposes a restriction, more and more generalized, to industrial development and that changes the paradigm of productivity, typical of an oil-based economy, by a new paradigm, that of sustainability, owner of a new economic model that looks for renewable sources and that tries to optimize the biological and biotechnological processes for industrial uses. At present, the lack of productivity of biological resources and processes is the main challenge facing science and technology, leading to a progressive process of transition from an economy of fossil sources to a bio-economy. Traceability, the reduction of distribution chains and the reduction of transport needs and, above all, the hybridization between computer and electronic technologies with the life sciences, giving rise to so-called "omics" as enabling technologies Key (KETs, by its abbreviations in English, Key Enabling Technologies) that will probably provide the main disruptive innovations of the next years, are challenges and technological domains that must be present in the offer of services of the Hub.
- **Technological solutions**: Technologies for efficiency in agriculture (high precision farming, drones or UAVs, irrigation systems by telemetry, automatized meteorological stations); technologies for efficiency in livestock etc..
- **Equality Challenge** : the concept of equality, or equity, refers to the social dimension of economic activity, and is a gap that is becoming increasingly large between the North and the South, even within the developed societies, giving rise to some of the most pressing problems, such as migration processes, or demographic imbalances. The development of products for the Base of the Pyramid, that is, for that large percentage of the population that lives on less than two dollars a day, integrated solutions for the socio-economic development of the communities, or the use of technology with a source of rights, and services that improve the quality of life of the population, as well as the improvement of productive processes that facilitate the reconciliation of personal and professional life or skilled work from rural areas, are challenges to which digitization can contribute.
- **Technological solutions** : Platform for responsible production and consumption; technologies for distribution and sales; technologies to improve health; work flexibility, teleworking and e-learning; robotic assistance systems
- **Economy Challenge** : in the sense of "economy class" or "low cost" are tendencies that require efforts of efficiency in the use of resources, or in the redesign of processes so that competitiveness does not depend on the low cost of labour or environmentally unsustainable processes. European industry faces these market trends, and competition from countries with lower quality, environmental or labor standards; one option is to leave these market segments, but without them it will be difficult to converge with 20% of industrial GDP, the reindustrialization of Europe also means making companies that operate in traditional sectors where prices make a difference competitive, without the best alternative being the delocalisation of production and the focus on services, both design and development and

marketing, because these activities are also less inclusive in terms of employment than productive activities.

- Technological solutions Process reengineering, lean manufacturing, industry 4.0. applied to value chains, the reduction of intermediaries, the robotization of processes, the generation of large economies of scale through industrial symbiosis, competitive intelligence are some of the keys to improving efficiency in business processes that facilitate competitiveness in markets with reduced margins. Industrial robots; automatized warehouses and inventory management systems; digital manufacturing techniques, new manufacturing processes; lean manufacturing, energy saving systems in industry; energy storage systems; hybrid and electric vehicles; new materials; virtual and augmented reality

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Links

[1] <http://www.fundecyt-pctex.es> [2] <http://www.dip-badajoz.es/> [3] <http://www.dip-caceres.es/> [4] <http://www.unex.es/> [5] <https://www.cenits.es/cenits> [6] <https://www.cenits.es/fundacion> [7] <http://www.aextic.com> [8] <http://www.energiaextremadura.org/> [9] <http://cicytex.juntaex.es/es/> [10] <http://www.feval.com/> [11] <http://www.camaracaceres.com/> [12] <http://www.camarabadajoz.es/web/> [13] <https://ec.europa.eu/digital-single-market/en/news/communication-digitising-european-industry-reaping-full-benefits-digital-single-market>