

25

urteaños



personas en movimiento

# LA EFICIENCIA ENERGÉTICA EN INSTALACIONES DEPORTIVAS

## UN MODELO DE GESTIÓN SOSTENIBLE, PROYECTO EUROPEO



Sporte<sup>2</sup>

Energy Efficiency for European Sport Facilities





## GRUPO EMTESPORT



**Emtesport:** Organización responsable en el desarrollo y ejecución en numerosos proyectos vinculados a la gestión de instalaciones deportivas.



**Argibide:** Organización dedicada a la consultoría y formación. Llevamos más de 20 años aportando soluciones para y por profesionales.



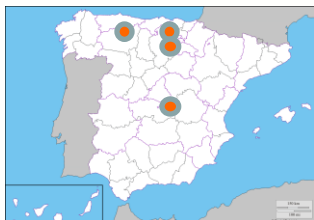
**Kirola eta Gaitasuna:** Organización creada para la gestión de proyectos relacionados con la Salud y Personas con diversidad Funcional. Empresa gestora del CENTRO DEPORTIVO HEGALAK.

## Nuestras principales actividades - Universos



# Dónde Estamos

Gestionamos  
**28**  
realidades



## ASTURIAS:

- Grado
- Langreo

## MADRID:

### -UAM

- Universidad Pontificia de Comillas

## BIZKAIA:

- |                    |             |
|--------------------|-------------|
| -Abadiño           | -Trapagaran |
| -Markina           | -Etxebarri  |
| -Leioa             | -Basauri    |
| -Portugalete       | -Ortuella   |
| -Sestao            | -Gordexola  |
| -AZ.Bilbao         | -Neguri     |
| -Gorliz            | -Loiu       |
| -Santurtzi         | -Sukarrieta |
| -Zaldibar          | -Izurtza    |
| -La Salle (Bilbao) | -Mañaria    |
|                    | -Barakaldo  |

## NAVARRA:

- Zizur Mayor



## GIPUZKOA:

- Hegalak

## ARABA:

- Arkaute



# Mantenimiento en I.D. y su evolución

**GASTO DEL  
MANTENIMIENTO  
Y SUMINISTROS E.**



**ESTADO DE LAS  
INSTALACIONES**



**ESTADO DE SISTEMAS DE  
ENERGÍAS RENOVABLES**



**EMTESPORT  
+ I+D**





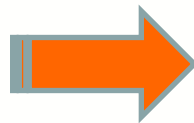
Proyecto de aprovechamiento de agua de piscinas

Instalación software de Control centralizado

Contacto con entidades con mismas inquietudes

Proyecto de aprovechamiento energético

Auditorías energéticas en I.D.



**Sporte<sup>2</sup>**  
Energy Efficiency for European Sport Facilities

tecnalia



**Sporte<sup>2</sup>**  
Energy Efficiency for European Sport Facilities

- Que es Sporte<sup>2</sup>?
- Principales ideas y motivación
- Concepto
- Trámites y requerimientos
- Consorcio
- Sporte2 en etxebarri
- Resultados



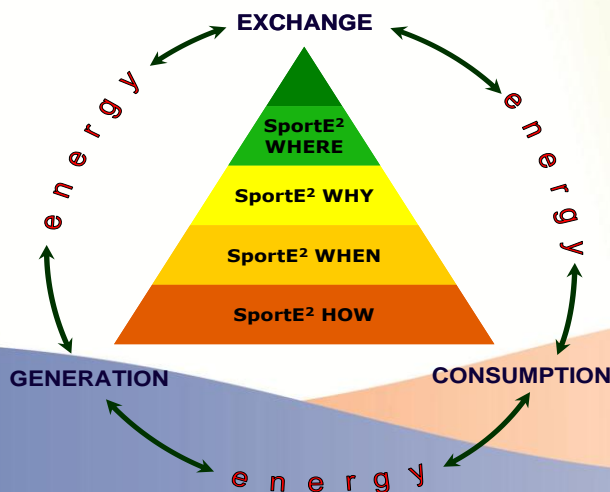
## Que es Sporte<sup>2</sup>?

Sporte<sup>2</sup> desarrolla un enfoque, metodología, y tecnologías dedicadas al **ahorro energético en Instalaciones Deportivas**.

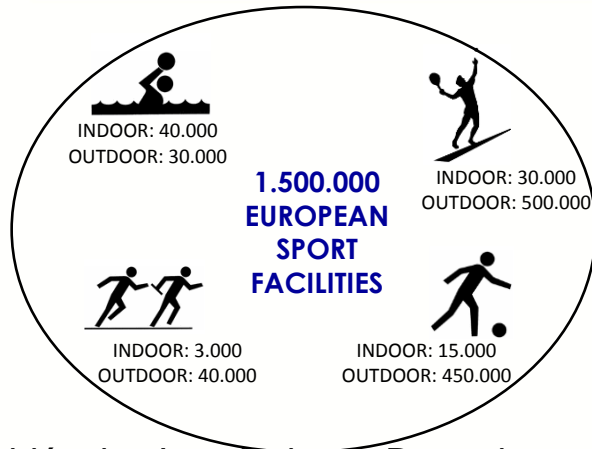
El principal resultado es un **sistema inteligente de gestión de edificios (BMS) modular y escalable** específico para ID. Tendrá un **ROI** de menos de **5 años** y como objetivo una **reducción del 30% de consumo energético** y emisiones de carbono.

Otros resultados son el conocimiento, buenas prácticas y directrices que podrán ser usadas por cualquiera.

Con el objetivo de desarrollar **un nuevo BMS escalable y modular basado en medición inteligente, control integrado, toma de decisión óptima, y gestión multi-instalación.**







Las Instalaciones Deportivas consumen grandes cantidades de Energía y hay muchas en Europa

Algunas de estas estructuras son formidables



También, las Instalaciones Deportivas son únicas:

- en sus perfiles de demanda (timing y picos)
- Patrones de uso (largos periodos de bajo consumo y cortos periodos de gran consumo durante un evento deportivo)
- Requerimientos de Confort y ventilación
- Peculiaridades de las instalaciones (ej; piscinas, canchas cubiertas, saunas..)
- En cuanto a la titularidad ( propiedad) de las mismas y sus modelos de gestión (público y privado)
- Pueden abarcar grandes espacios abiertos (edificios múltiples, complejos, áreas de parking, ..)



# Integración de 4 módulos

- HOW – Medición inteligente
- WHEN – Control Integrado
- WHY - Optimización
- WHERE – Gestión multi-instalación



## ANTES

- GRANT AGREEMENT
- PRESUPUESTO
- DOW

## DURANTE

- GANTT
- MEETINGS (CONSORTIUM, REVIEW)
- REPORTE DE GASTOS
- DIFUSIÓN



### WT1 List of work packages

Project Number <sup>1</sup>	260124	Project Acronym <sup>2</sup>	SPORTE2
-----------------------------	--------	------------------------------	---------

#### LIST OF WORK PACKAGES (WP)

WP Number <sup>63</sup>	WP Title	Type of activity <sup>64</sup>	Lead beneficiary number <sup>66</sup>	Person-months <sup>68</sup>	Start month <sup>67</sup>	End month <sup>68</sup>
WP 1	Sport Facilities Energy Assessment & System Architecture	RTD	1	51.30	1	25
WP 2	Smart Metering Network	RTD	5	69.90	5	41
WP 3	Integrated Control System	RTD	11	50.90	5	41
WP 4	Energy Optimization System	RTD	10	91.50	5	41
WP 5	Integration & Testing	RTD	8	64.00	13	42
WP 6	Pilots Implementation & Validation	DEM	1	190.30	10	42
WP 7	Market Analysis & Replication Plan	RTD	6	61.00	28	42
WP 8	Dissemination	OTHER	5	18.50	1	42
WP 9	Project Management	MGT	1	26.40	1	42
				<b>Total</b>	<b>623.80</b>	

### A3: Budget Breakdown

Project Number <sup>1</sup>	260124	Project Acronym <sup>2</sup>	SPORTE2
One Form per Project			

Participant number in this project <sup>11</sup>	Participant short name	Fund. % <sup>12</sup>	Ind. costs <sup>13</sup>	Estimated eligible costs (whole duration of the project)					Requested EU contribution
				RTD / Innovation (A)	Demonstration (B)	Management (C)	Other (D)	Total A+B+C+D	
1	DAPP	50.0	A	653,864.00	213,018.00	109,405.00	41,038.00	1,017,325.00	583,884.00
2 (TERMINATED)	SEAE	50.0	S	120,798.00	21,616.00	7,295.00	0.00	149,709.00	78,502.00
3	ISA	50.0	F	202,800.00	162,678.00	9,600.00	4,800.00	379,878.00	197,139.00
4	STARING	75.0	T	135,200.00	57,280.00	7,968.00	26,288.00	226,736.00	164,296.00
5	UNIVPM	75.0	T	384,960.00	46,400.00	15,360.00	26,240.00	472,960.00	353,520.00
6	SELF	50.0	F	234,398.00	267,020.00	6,062.00	6,062.00	513,542.00	262,833.00
7	FIDIA	75.0	T	57,600.00	107,200.00	6,400.00	4,800.00	176,000.00	108,000.00
8	TECNALIA	75.0	A	364,968.00	117,322.00	11,360.00	23,360.00	517,010.00	367,107.00
9	EMTE	75.0	T	89,840.00	270,240.00	12,320.00	12,320.00	384,720.00	227,140.00
10	CU	75.0	T	281,600.00	128,000.00	13,600.00	13,600.00	436,800.00	302,400.00
11	SE	50.0	A	267,241.00	234,760.00	14,090.00	10,060.00	526,151.00	275,150.00
12 (TERMINATED)	SELF	75.0	F	56,415.00	0.00	2,041.00	1,677.00	60,133.00	46,029.00
Total				2,849,684.00	1,625,534.00	215,501.00	170,245.00	4,860,964.00	2,966,000.00

Note that the budget mentioned in this table is the total budget requested by the Beneficiary and associated Third Parties.



**THEME [EeB-ICT-2010.10.2]**  
**[ICT for energy-efficient buildings and spaces of public use]**

Grant agreement for: Collaborative project

**Annex I - "Description of Work"**

Project acronym: SPORTE2

Project full title: " Intelligent Management System to integrate and control energy generation, consumption and exchange for European Sport and Recreation Buildings "

Grant agreement no: 260124

Version date: 2012-08-28

## A1: Project summary

Project Number <sup>1</sup>	260124	Project Acronym <sup>2</sup>	SPORTE2
<b>One form per project</b>			
<b>General information</b>			
Project title <sup>3</sup>	Intelligent Management System to integrate and control energy generation, consumption and exchange for European Sport and Recreation Buildings		
Starting date <sup>4</sup>	01/09/2010		
Duration in months <sup>5</sup>	42		
Call (part) identifier <sup>6</sup>	FP7-2010-NMP-ENV-ENERGY-ICT-EeB		
Activity code(s) most relevant to your topic <sup>7</sup>	EeB-ICT-2010.10.2: ICT for energy-efficient buildings and spaces of public use		
<b>Abstract <sup>8</sup></b>			
<p>The European Sport and Recreation Building Stock accounts for approximately 1,5 Million buildings or 8% of the overall building stock. These facilities are unique by their physical nature, their energy consumption profiles, the usage patterns of people inside, ownership, and comfort requirements. SPORTE2 aims to manage and optimize the triple dimensions of energy flows (generation, grid exchange, and consumption) in Sport and Recreation Buildings by developing a new scalable and modular BMS based on smart metering, integrated control, optimal decision making, and multi-facility management. This tool will enable a new relationship and business model structure between facility managers and power providers. The SPORTE2 modules will be applicable to both new and existing structures and answer the fundamental questions of how, where, when and why energy is produced, used and grid exchanged. The approach will target a reduction of energy consumption by up 30%, with commensurate CO2 reductions and cost savings. The project will make use of a full scale building laboratory environment (Kubik) for system integration and testing. The project will then implement the SPORTE2 modules in three full-scale pilots representative of the sector (e.g. swimming pools, indoor and outdoor courts, gyms, etc) and able to implement the smart grid concept through the availability of RET and cogeneration devices. Strong linkages to sport associations and green building design are present in the consortium to enable exploitation of project results.</p>			

## ANTES

- GRANT AGREEMENT
- PRESUPUESTO
- DOW

## DURANTE

- GANTT
- MEETINGS (CONSORTIUM, REVIEW)
- REPORTE DE GASTOS
- DIFUSIÓN







## Minutes of the Meeting

### Final Meeting

#### S.TA MARIA DE LAMAS (PORTO), 28<sup>TH</sup> AND 29<sup>TH</sup> OCTOBER 2014

Venue:

Rua do Colégio,  
4536-904  
Santa Maria de Lamas  
(Oporto)



Contact: Donato Zangani

E-mail:

[donato.zangani@dappolonia.it](mailto:donato.zangani@dappolonia.it)

M: +39 340-2951502

T: +39 010 3648128

#### 1. AGENDA


#### TUESDAY, 28<sup>TH</sup> OCTOBER 2014

Time	Topic	Who
17:00	1 <sup>st</sup> Day Meeting - Welcome	ALL
17:00 – 17:45	WP6 Discussion ➢ Visit to the project pilot Santa Maria de Lamas	ALL
17:45 – 18:00	WP6 Discussion ➢ Shift in Hotel San Joao de Madeira	ALL
18:00 – 20:30	WP6 Discussion ➢ WP6 Overview ➢ WP6 Achievements ➢ WP6 EC Questions	DAPP
20:30	End of the First day	ALL




## Trámites y requerimientos: Reparto de gastos

FP7 - Grant Agreement - Annex VI - Collaborative Project					
Form C - Financial Statement (to be filled in by each beneficiary )					
Project nr.	260124	Funding scheme	Collaborative project		
Project Acronym	SPORTE2				
Period from	01/09/2010	Is this an adjustment to a previous statement ?	No		
To	31/08/2011	Participant type	SME participant		
Legal Name	Empresa técnica de gestion deportiva	Participant Identity Code	986860056		
Organisation short Name	EMTE	Beneficiary nr.	9		
Funding % for RTD activities (A)	75%	If flat rate for indirect costs, specify %	60%		
<b>1- Declaration of eligible costs/lump sum/flate-rate/scale of unit (in €)</b>					
	Type of Activity				TOTAL (A+B+C+D)
	RTD (A)	Demonstration (B)	Management (C)	Other (D)	
Personnel costs					0,00
Subcontracting					0,00
Other direct costs					0,00
Indirect costs					0,00
Lump sums/flat-rate/scale of unit declared		0,00	0,00	0,00	0,00
<b>Total</b>	0,00	0,00	0,00	0,00	0,00
Maximum EC contribution	0,00	0,00	0,00	0,00	0,00
Requested EC contribution					0,00




Issue 1, February 2013  
**Sporte<sup>2</sup> Newsletter**  
www.sporte2.eu




**Inside this issue:**

- Welcome from the Coordinator
- Toward Sport Energy Efficiency
- Our Pilot Cases
- Prototypes
- Project Info



**Welcome from the Coordinator**


Sporte<sup>2</sup> is entering Phase 2 of the project where activities are focused on the integration and testing of the various ICT solutions developed for sport facilities. We have successfully demonstrated the integration of the **HOW**, **WHEN** and **WHY** modules at the KUBIK laboratory building of our partner Tecnalia in Bilbao, Spain, and now a great effort is being produced in order to validate the SportE<sup>2</sup> modules in our three pilots in Italy, Portugal and Spain. Our objective is to demonstrate the benefits achievable by the implementation of the SportE<sup>2</sup> approach in sport facilities that can drastically reduce energy consumption and CO<sub>2</sub> emissions.



**Sporte<sup>2</sup>**

**Toward Sport Energy Efficiency**

Sport is a culture and a way of life. It inspires us. Millions of spectators follow sports and just as many conduct sport activities of their own in facilities across Europe. If we can embed energy efficient thinking into this culture, it will make a difference.



Sport facilities present an excellent sector for energy savings. There are many sport facilities and arenas around Europe and they consume an enormous amount of energy. We will help its reduction through the development of four scalable modules:

- 1) **How**: smart metering system
- 2) **When**: integrated control systems
- 3) **Why**: intelligent and optimal decision making
- 4) **Where**: multi-facility management portal

A documentary focused on our project is going to be produced and broadcasted by the Euro-news satellite channel, also soon available at the address:  
<http://www.euronews.com/programs/futuris/>

Visit the address in the coming weeks and enjoy the video!

**Highlights:**

- Indoor & Outdoor
- Large Buildings
- Mix of Energy Resources
- Grid Exchange

**Our Pilot Cases**



Three pilots have been identified that are mix of indoor and outdoor facilities. They have different RES (Renewable Energy Sources) installed and in two cases are prepared to exchange energy with the grid. These pilots will be used to evaluate the SportE<sup>2</sup> modules and to build a database of energy statistics for sport facilities in general. The pilot undergo at least 12 months of monitoring with the control and optimisation measures in place.

*The complexity of our pilots will simplify the replication to other cases and make SportE<sup>2</sup> Modules ready to fit needs of typical sport facilities for energy saving*



www.complexo.santamariadelamas.com



**PORTUGAL**

Complexo Desportivo Santa MARIA De Lamas  
Porto

Yearly Energy Cost: 194'210 €

The Complexo Desportivo Santa Maria De Lamas is a large building provided of two swimming pools and two gyms. The local generation of energy is provided by two natural gas boilers, one Co-Generation natural gas plant and 32m<sup>2</sup> of Solar Thermal Panels. This facility exchanges electrical energy with the grid.



www.glichsabbarri.com



**SPAIN**

Extebarri Bilbao

Yearly Energy Cost: 114'631 €

The Extebarri pilot is provided of two swimming pool and a multisport indoor court. The local generation of energy is provided by 45m<sup>2</sup> solar photovoltaic panels and 300m<sup>2</sup> solar thermal panels.



www.alfidia.it




**ITALY**

Fidia Sport Rome

Yearly Energy Cost: 51'180 €

The Fidia facility is provided of two swimming pool, one volleyball indoor court, one gym and two outdoor multi-purpose courts. The local generation of energy is provided by one Co-Generation Biomass plant and 40m<sup>2</sup> of solar thermal panels.

Follow us and sign up to the project mailing list and you will receive next issue with results from the pilot application!



**sporte<sup>2</sup>**  
Energy Efficiency for European Sport Facilities



Italy: Engineering Consulti



Italy: Green Design / Architecture



Portugal: Smart Metering

Italy: Building Management Systems



Spain: Research Centre / Tech Group

Italy: University (Mechanical, Thermal Measurements, Testing)

Italy: Sport Facility Owner



Portugal: ESCO



Spain: Sports Facility Manager (17 facilities)

UK: Energy Optimisation

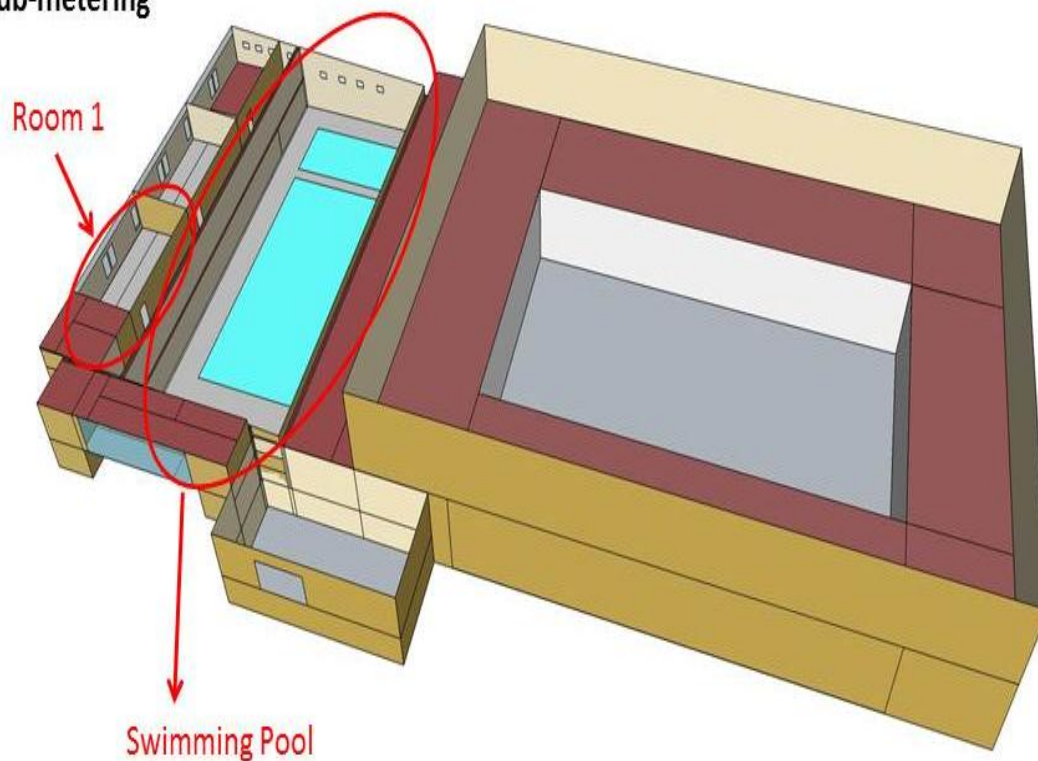


El plan de monitorización sigue el siguiente enfoque :

- Consumo y generación total de energía (eléctrica, gas, sistema solar térmico, agua, energía térmica)
- Sub-medición por área funcional (consumo térmico y eléctrico por cada área identificada)
- Monitorización del confort por cada área funcional
- Ocupación
- Sensores para la optimización

## Sporte<sup>2</sup> en Etxebarri – Plan de monitorización

Grouped areas for electrical  
sub-metering



## EMTE Energy and CO<sub>2</sub> Saving for Fitness Room during the winter and spring seasons

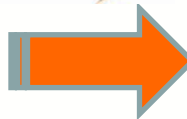
Assessment of the Energy and CO <sub>2</sub> savings						
Period	Winter			Spring		
	Electricity	Thermal	CO <sub>2</sub>	Electricity	Thermal	CO <sub>2</sub>
Saving	60,5%	34,4%	37,7%	32,8%	-	32,8%
Normalized saving	64,5%	33,6%	37,8%	31,2%	--	31,5%

## EMTE Energy Savings and solar thermal system performance generated by the optimized use of solar thermal panels during summer season

Assessment of the Energy Savings	
Period	Summer
Gas consumption	-49,2%
Thermal Energy saving	49,3%
Share of solar energy	+74,4%
CO <sub>2</sub> Saving	49,3%



tecnalia



PROYECTO  
**E3P**

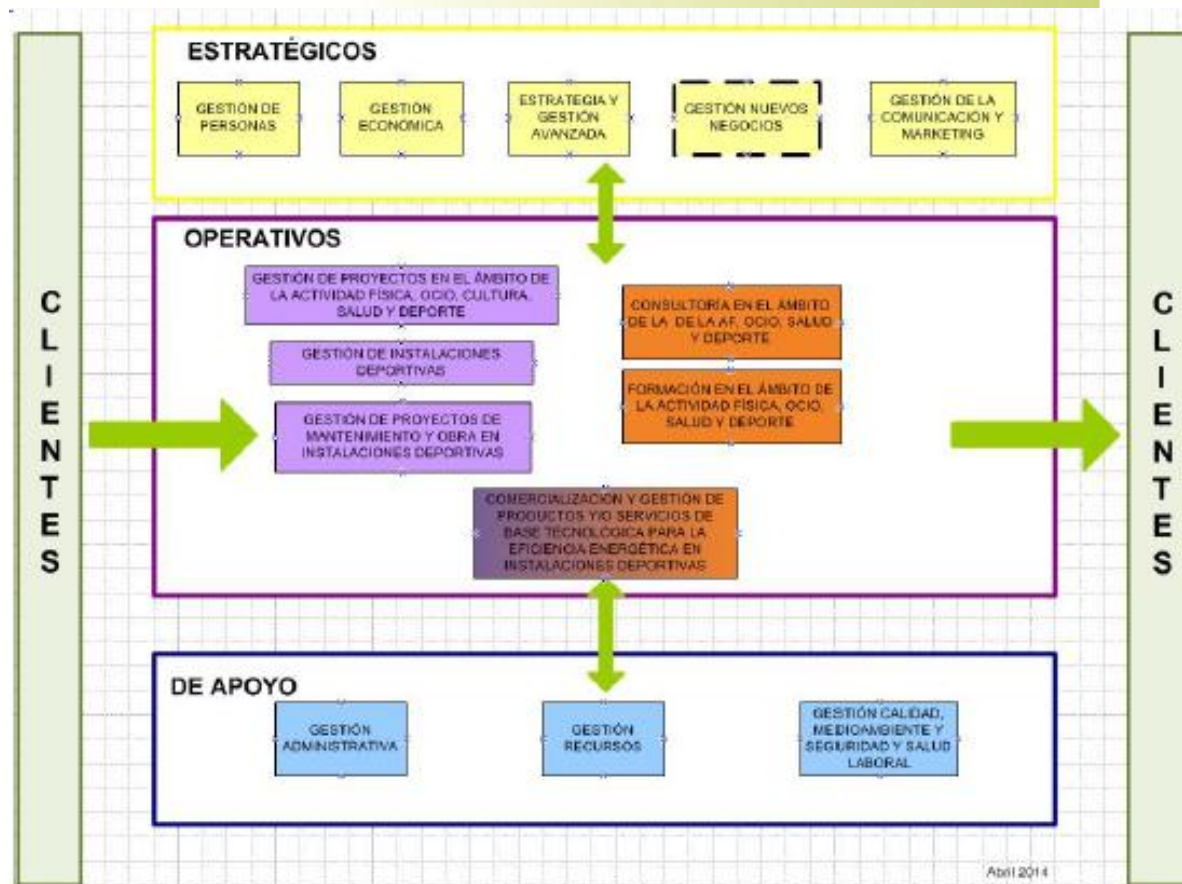
*Seguimos pensando y proyectamos  
nuevos productos*

PLATAFORMA INTELIGENTE PARA  
LA GESTIÓN EFICIENTE DE LAS  
ENERGÍAS RENOVABLES EN  
INSTALACIONES DEPORTIVAS

**Polideportivo ZERO**

**DeustoTech**





### **Durante:**

- Plan de negocio sin definir
- Cambios internos dentro del consorcio

### **Después:**

- Gestión del equipamiento instalado

### PRESUPUESTO SERVICIO POLIDEPORTIVO ZERO. CENTRO HEGALAK

### OPTIMIZACIÓN CRITERIOS OPERACIÓN CENTRO DEPORTIVO HEGALAK (MODALIDAD DE SERVICIO BASE)



Potencial de ahorro estimado (sin inversión): 10% consumos energéticos (160.000 €/año)

Sin contar el agua

## POLIDEPORTIVO ZERO – GESTIONES ENERGETICAS

- Control de la demanda energética optimizada
- Impacto de las inversiones – criterio coste/ahorro
- Negociación contrato de gestión energética
  - Abadiño
  - Markina
  - Etxebarri

## Gran nivel de las Instalaciones Deportivas públicas en Euskadi



*La situación económica actual nos ha dejado escasos de recursos económicos,  
pero nos queda nuestra IMAGINACIÓN,  
nuestra PROFESIONALIDAD,  
y la certeza de que con un espíritu EMPRENDEDOR  
TODO ES POSIBLE*

**ESKERRIK ASKO!!**

[www.emtesport.com](http://www.emtesport.com)

[www.sporte2.eu](http://www.sporte2.eu)

