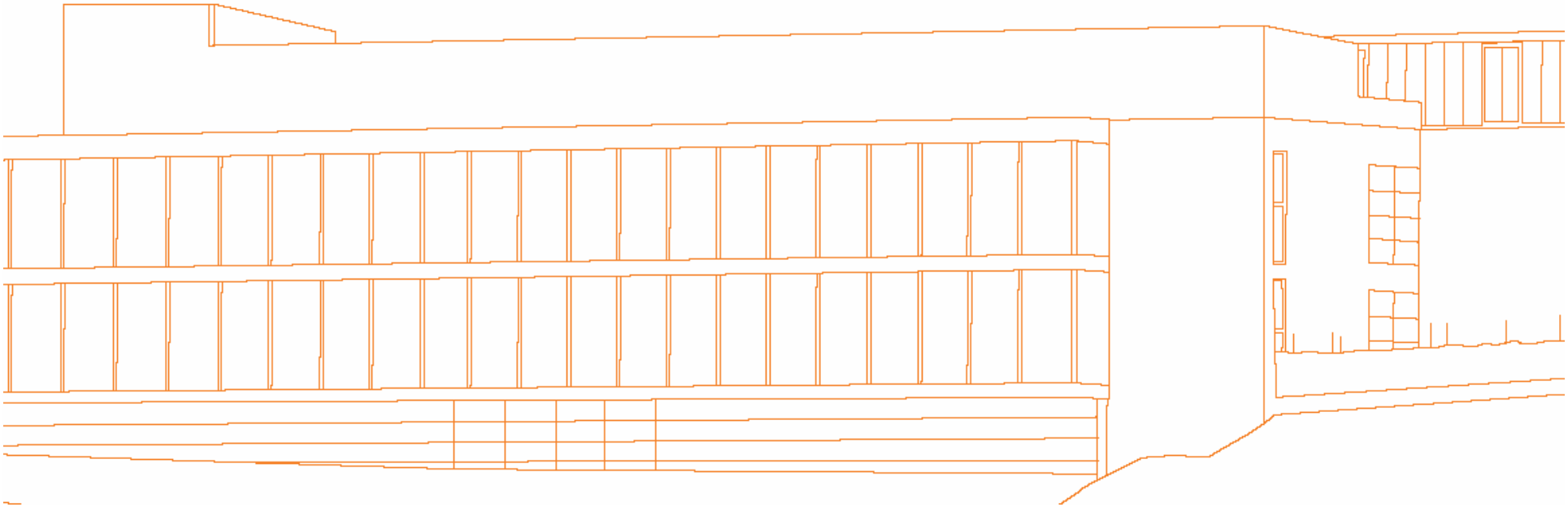
In Fatronik, we turn projects into reality

Transforming knowledge into competitive advantage

In Tech'Sophia

Thursday, April the 5th

INRIA – Sophia Antipolis



Fatronik, your technological partner for applied research in industry

FATRONIK

index

“Private Research Centre, with market orientation and a distinct aim: to achieve the major impact in economic terms, through the innovation and the technological development.

Under this premise, it contributes to the management and social development, transferring new technologies to companies, or promoting the creation of new management activities.”

Fatronik

our business units

“Industrial Systems

Technology for the company ”

Means of design, manufacturing, maintenance and end-of-life of products and services, for the improvement of companies’ competitiveness.

“Health

Solutions for the people ”

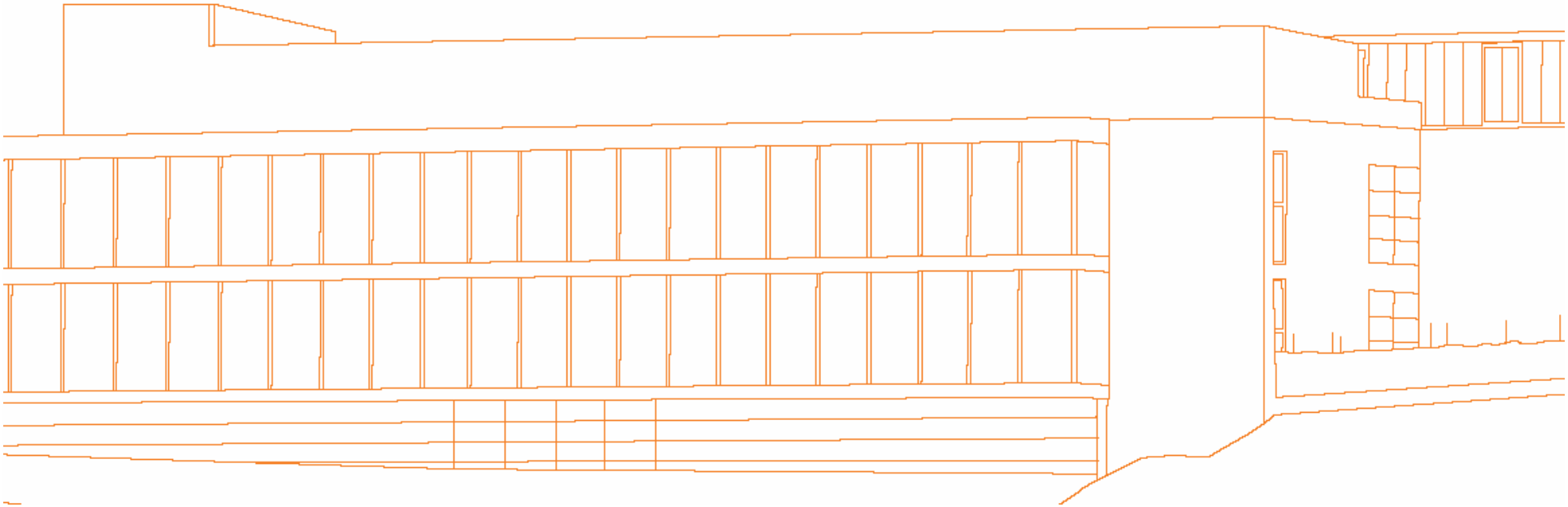
Development of new technologies in the socio-sanitary field at the service of individuals, particularly the elderly, or disabled people.

FATRONIK

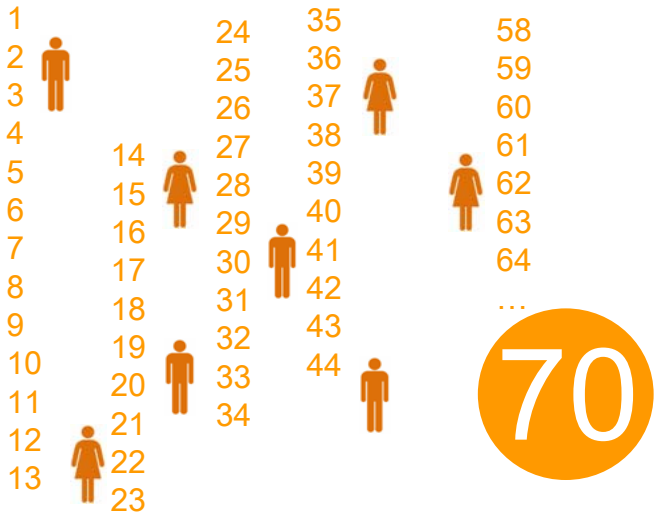
localization

Head Office. Donostia – San Sebastián
6000m2

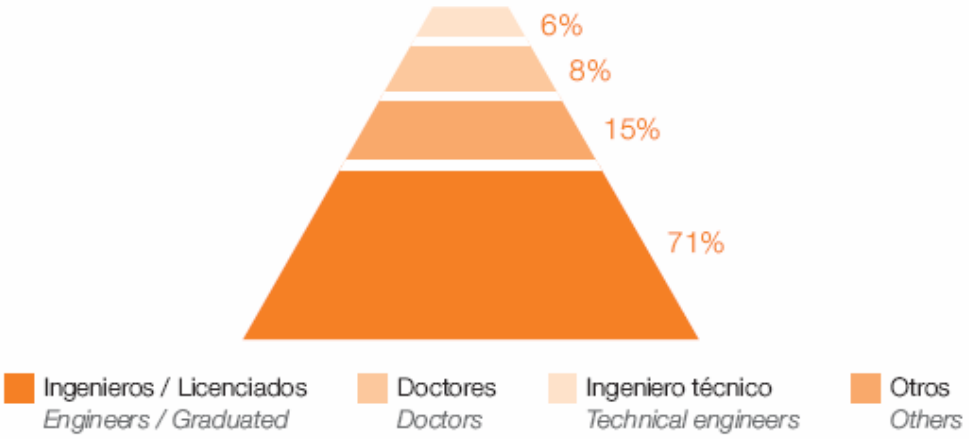
Delegation in France
(Montpellier)

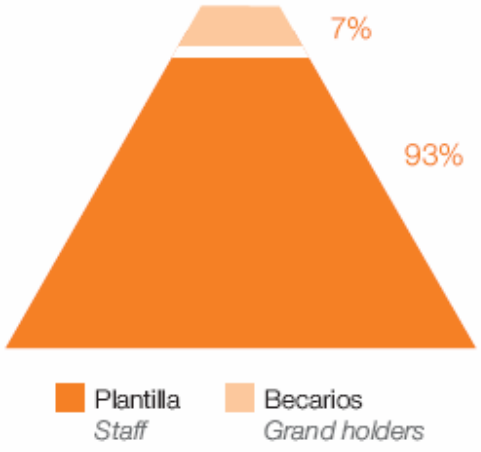


People



“ Human qualified team of 70 people ”





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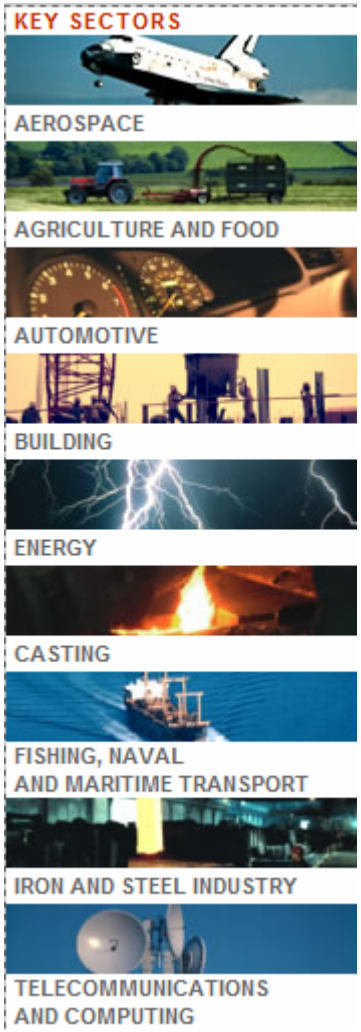
tecnalia

FATRONIK is in process of being member of TECNALIA, a Technology Corporation made up of the AZTI, EUROPEAN SOFTWARE INSTITUTE (ESI), INASMET, LABEIN, NEIKER and ROBOTIKER Technology Centres



TECNALIA EN DATOS (2006)

- More than **1.350** Workers in Research
- **125** Companies and Entities in Government Organisms
- **28** Offic es (120,000 m2)
- More than **3,500** Customer Companies per year
- **95 Mill. €** Turnover.
- **170** Programmes approved in the VI Framework Programme, with contracts amounting to nearly **40 Mill. €.**

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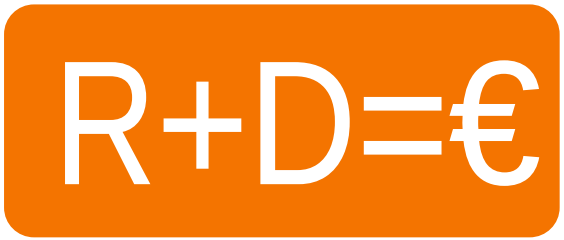
Fatronik:
oriented to the results.

oriented research to the economic value

“All our research activity is oriented to achieve impact in economic terms.”



We are making an important effort to find new common areas with companies, developing innovative business models.

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our business models

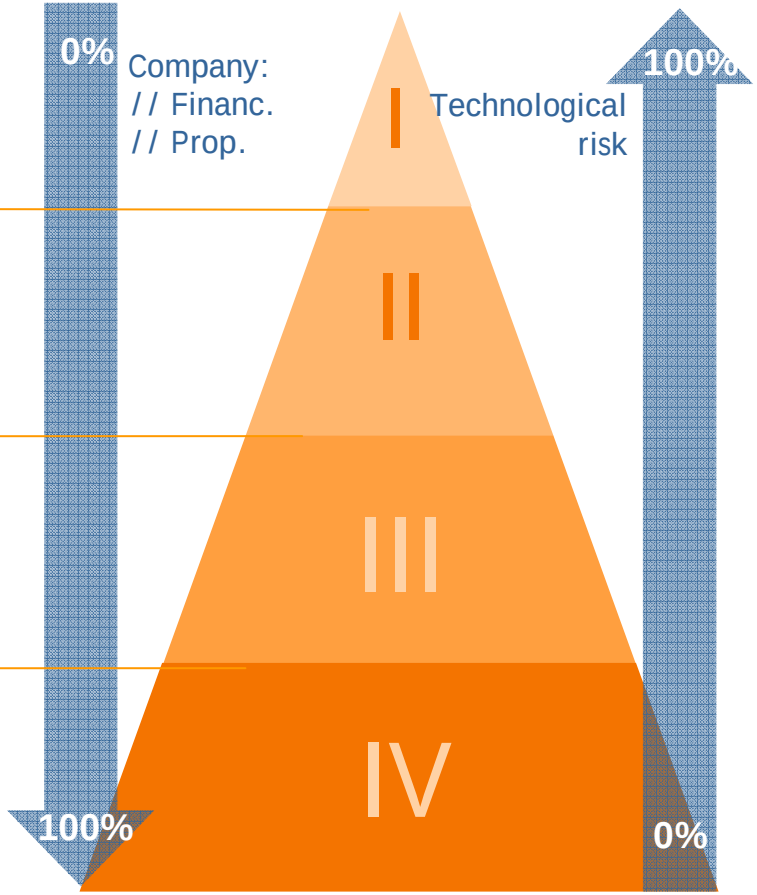
"A type of project adapted to each need."

Projects defined and financed by Fatronik without any demand or clear interest of the companies.

Projects defined jointly with a group of interested companies which show their interest by means of a minimum economic or personal support . SPONSOR.

Projects defined together with one or more interested companies which show their interest by means of a previous contract which fix the later exploitation of the results. PARTNER.

Projects financed and defined by the customer's company. CUSTOMER.



distributed organisation

"Opening the frontiers. Internationalization and globalization in R & D"

R&D
↓
R&C&D
(Research + Collaboration + Development)

Fatronik bets for a distributed organisation, with units in different places around the world, to accelerate the transference of the knowledge to the market.

Fatronik France (Montpellier), a centre of excellence in robotics, is now a reality.

Within a short-medium time: new international units.

our technological offer

knowledge areas

Product design and development

// Detailed design

// Prototyping and set-up

Systems kinematics and dynamics

// Synthesis and design of mechanism

// Experimental modal&dynamic analysis

// Actuators and feed drives design

Structures engineering

// Design and structural optimization

// Innovative materials

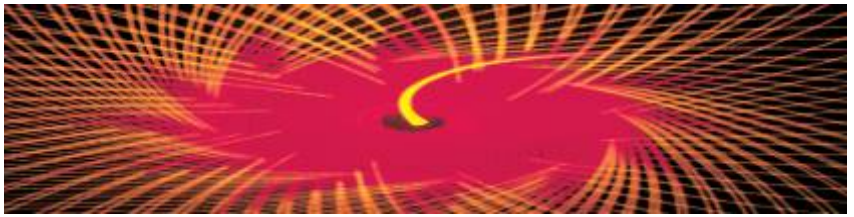
Advanced control

// Implementation of advanced motion control

// Design of advanced control strategies

// Development of customized controllers

Artificial intelligence



Fatronik ©

ICT Technologies

// Software design and development

// Communication systems integration

// Integration of sensorics

Manufacturing processes

// Process optimization (MAV)

// Development of new processes (FSW, ISF…)

Monitoring and quality control

// Process monitoring for control and faults detection

// Material characterisation with non-destructive techniques (NDT).

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action fields

1 Advanced manufacturing and automation means

// Improvement of productive processes.
// Design and development of new production means.

2 Robotics

Particularized solutions for manufacturing, assembly, operation, inspection, analysis, joint, accuracy
...

3 Maintenance and end-of-life

// Development of maintenance solutions
// Integration of new communication systems
// Development of monitoring solutions
// Advanced sensorics
// Demanufacturing and recycling

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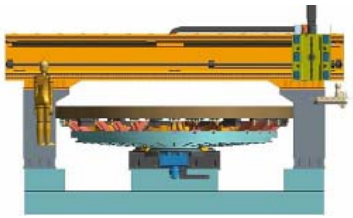
horizontal knowledge

“ Enough critical mass to reach the focalized specialization. ”



The same knowledge to different applications.

From

Machine Tool

To

Aeronautics

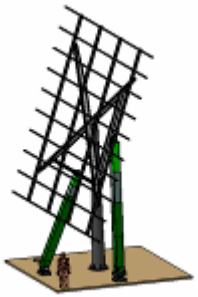
Renewable Energies

Automation in the agro- alimentary sector

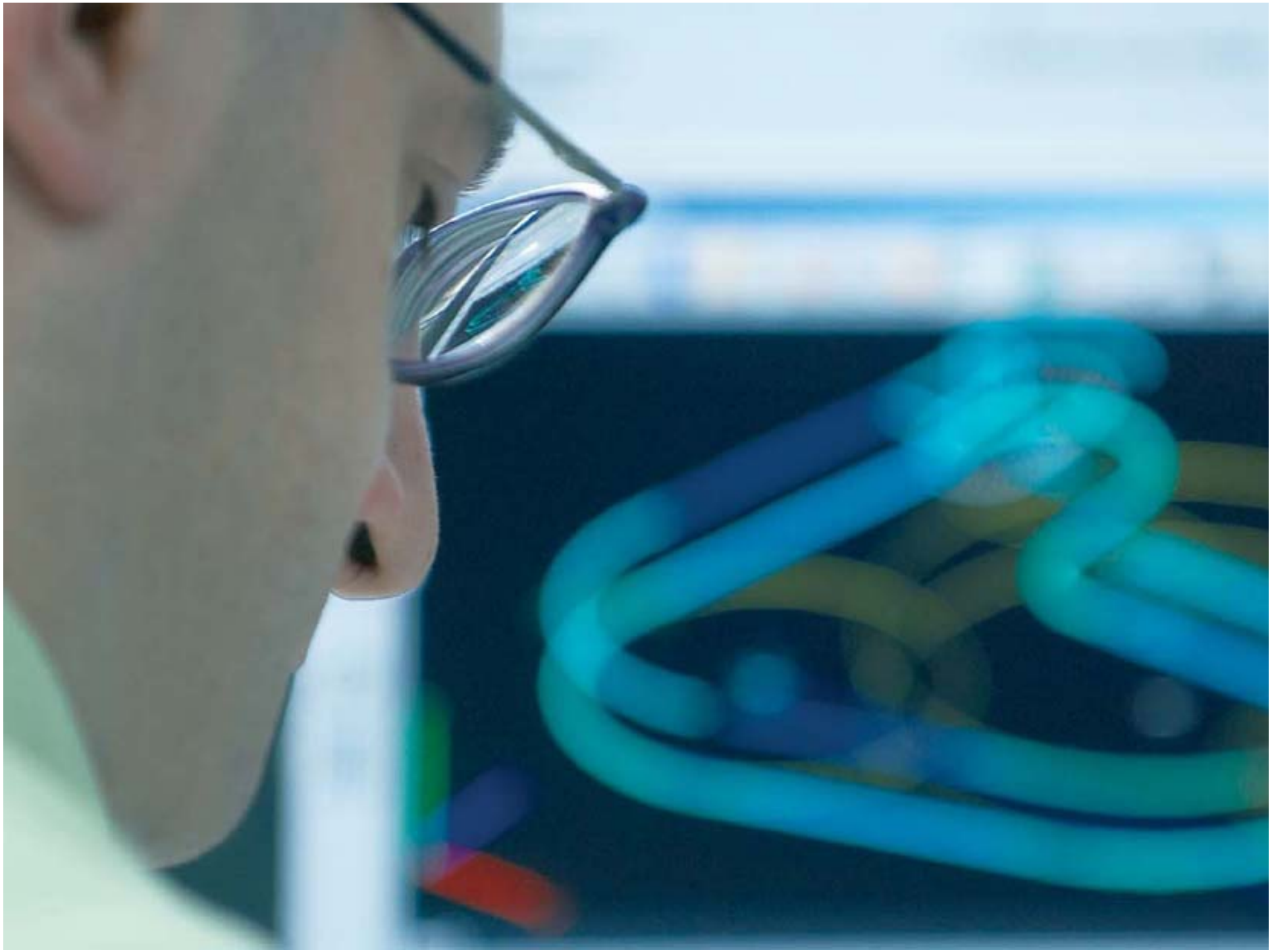
Health

Mechatronics






industrial systems
business unit



industrial systems

“Technology for the company”

In the industrial field, we have more than 20 years experience incrementing the competitivity of companies which focus on manufacturing and of those which design their own product.

Achieve satisfactory results to our customers, which allow them to increase their business, is our main objective.

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strategic sectors

Machine-Tool | Aeronautic | Capital goods | Renewable energies

Fatronik keep a clear orientation to solve problems, and combines its knowledge on different ways to satisfy the technological needs of different industrial sectors.

However, we centre our work mainly in the following sectors, considered strategic sectors for Fatronik, deeply known for us and with a wider experience on them.

Machine-Tool | Aeronautic | Capital goods | Renewable energies

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Fatronik at the 6th European Framework Programme

Participation in 20 projects **Coordinating 5 projects**

// projects related to production in the NMP area: 9 (next, i*proms, sculptor, ecofit, inlife, eumecha-pro, affix, pisa, leadership, Eurotooling21)
// projects related to nanotechnologies and materials in the NMP area: 2 (hymm, foremost)
// projects in the area of research for SMEs (CRAFT): 2 (hebe, maffix)
// projects in the collective research area: 1 (e-mold)
// projects in the joint NMP-IST area: 2 (inmas, inami)
// projects in the aerospace area: 1 (coins)
// projects in the robotics-ist area: 2 (iward, robotswarm)

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Fatronik at the European Technology Platforms

Participating at the definition of future EU R&D

MANUFUTURE Member of the High Level Group and Support Group and coordinating the spanish platform

EUROP Member of the robotics platform

CONSTRUCTION and STEEL platforms: working at spanish level

Other ICT platforms: working at spanish level

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examples of projects

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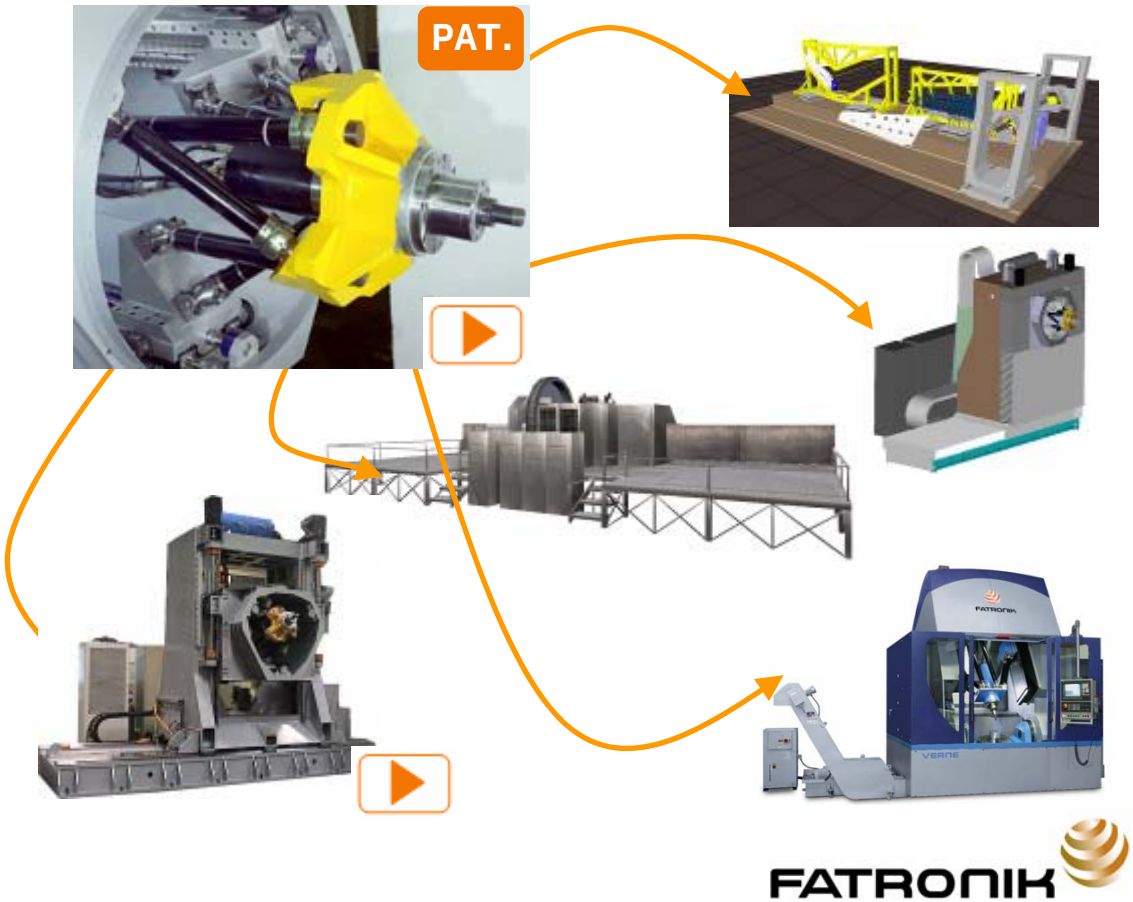
hermes

Conception and development of a 3 DOF parallel kinematics module.



// High rigidity and weight capacity

// Integration in different 5 DOF machines developed by Fatronik.

verne

Conception and development of a high speed 5 axis vertical mechanizing centre (parallel kinematics)

Worldwide novelty due to its kinematics solution:

Parallel kinematics module with 3 DOF (2 translations and 1 rotation) and a double angle **tilting table** (tilt and rotation)

Application in:

// Aeronautics. Medium size parts.

// Moulds

// Research / Education...

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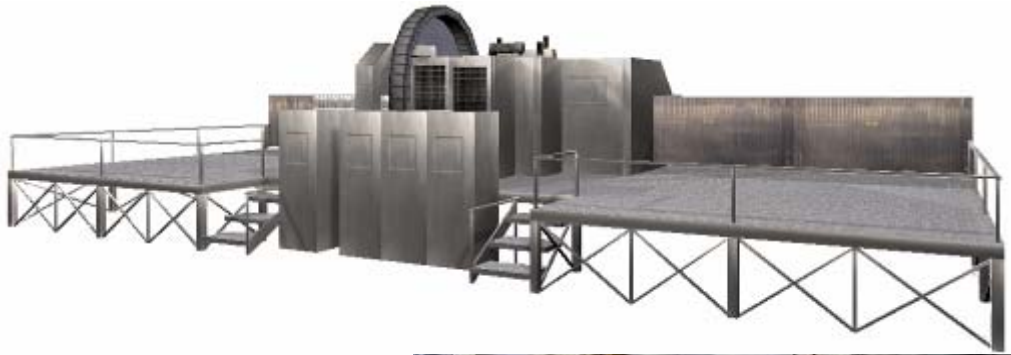
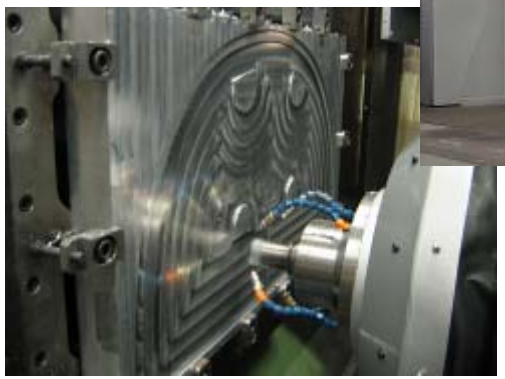
space

Conception and development of milling machine for aeronautical parts production with hybrid kinematics





// Combines serial and parallel kinematics structures to develop a high performance machine for aeronautical structural elements machining.

// Improve key characteristics for aeronautical manufacturing: kinematics, stiffness, payload

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crawling portable robot

Conception and development of a crawling portable robot for work automation on large parts.

PAT.

// Easy to handle.

// Vision system integrated.

// Autonomous translation system to new working areas.

// Different **applications** of the same technology: aeronautical production (manufacturing and assembly), naval manufacturing, maintenance, cleaning…

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quickplacer

Design and development of a high-speed pick and place robot: 4 DOF parallel robot capable of moving a mobile platform at a high speed and acceleration and positioning it with high rigidity and precision.

PAT.

// Homogeneous behavior in the whole volume of work in any way

// Max payload: 2kg

// Max acceleration (2kg): 15G

// Productivity rise. ADEPT cycle time: 0,28 seg -> 215 ppm

// Control

- // Implementation on Control Cerebellum SMi6
- // Motion Control: paths and special curves implementation
- // Artificial Vision based Control
- // Dynamic Control implementation

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MiReLa

Guiding robot based on a B21 commercial platform

MiReLa is able to:

// Guide people inside buildings (hospitals, offices…)

* Navigate autonomously to a certain point inside a building, avoiding obstacles dynamically.

* Communicate with:

  - Users: remotely using a web-page, or locally through a 'musical language'

  - Other devices: using DTMF sounds

Additionally:

// MiReLa can be guided remotely (using a joystick)

// MiReLa can show information through its incorporated display

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mugiro

Conception and development of a multipurpose mobile platform

// **Modular Design**. Platform built from the integration of different modules, such as the electronically synchronized wheel modules.

// **Innovation:**

* "Smart wheel" conception
* Advanced control (behaviour based)
* Autonomous guide system (sensor based control)
* Autonomous path learning through the use of advanced vision systems

// **Advantages**:

* Modular system, adaptable to new projects
* Easy maintenance
* Applicable to a wide range or products: from robots to cranes.

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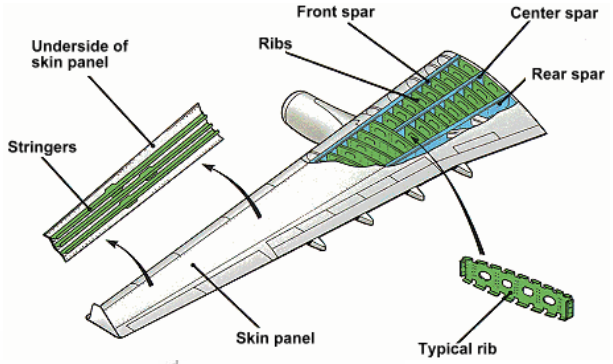
Confidential current projects

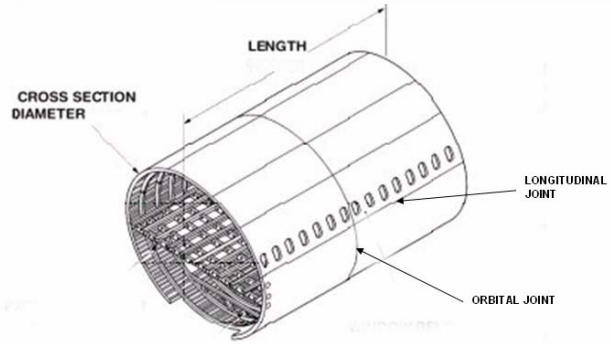
Industrial projects under development with confidential content

Several confidential projects in the aeronautical sector are currently under developpement at Fatronik, with clients such as Airbus Spain, Airbus France, Concurrent Technologies Corporation (USA), etc…

These developments are on the following main topics:

- automated assembly by robotics
- PKM machines
- processes improvements
- automated maintenance by roboti
- etc…





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barlovento

Analysis, development and construction of energy generation solution with hybrid systems.

// Development of a low power wind-generator prototype

// Design of an autonomous hybrid system with optimum efficiency:

WIND POWER + PHOTOVOLTAIC

// Tuning with the environmental policies.

// Optimization of the efficiency of the wind-powered generators isolated from the electric system : new materials and control strategies.

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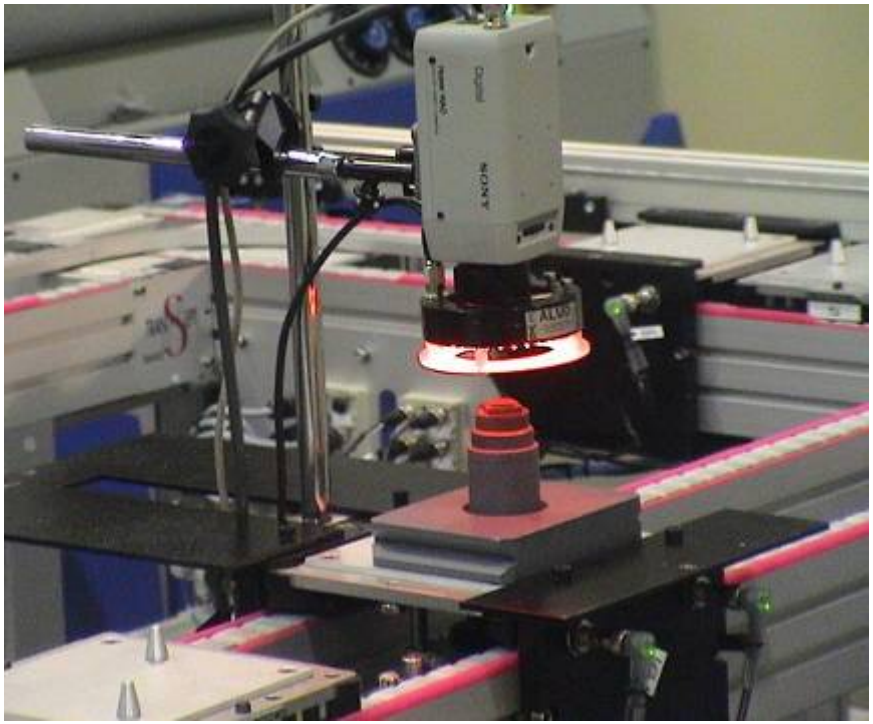
flexible manufacturing cells

Development of flexible manufacturing cells



// **Software development to control and manage modular flexible manufacturing cells:**

MECHANIZING CENTRE / LATHE / INDUSTRIAL ROBOT / CONVEYOR BELT / VERTICAL MAGAZINE / CIRCULAR MAGAZINE / ASSEMBLY STATION / QUALITY INSPECTION STATION

// **Integration of industrial concepts in a low cost didactic solution :**

ROBOTICS / CNC HANDLING / MECHANIZING / PRODUCTION MANAGAMENT / ARTIFICIAL VISION

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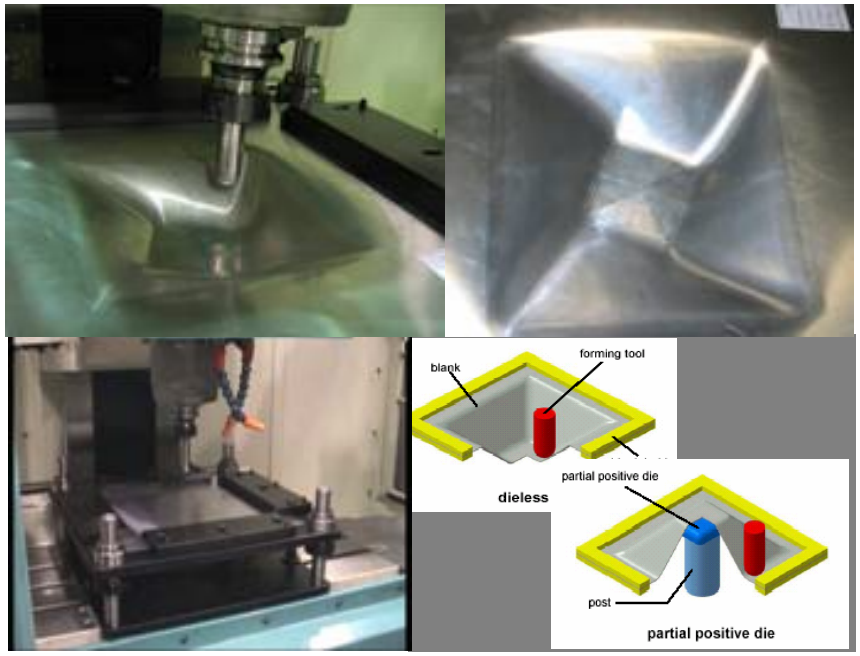
sculptor

Innovation in the sheet metal forming sector in Europe by ensuring an optimization of a flexible and secure forming technology based on incremental sheet forming or Dieless forming.



Without die

With die

INCREMENTAL SHEET FORMING (DIELESS): Rapid Prototyping method for shaping metallic sheets without using moulds with the final part geometry:

// Highly flexible method

// Costs reduction up to 95% in comparison to the printing

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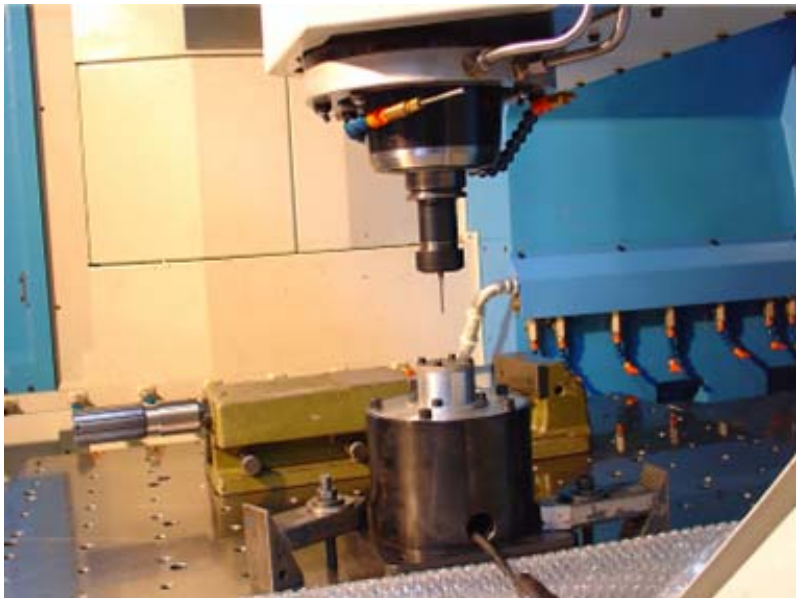
ultrasounds

Use of ultrasonic frequencies' vibrations for the development of manufacturing processes which allow obtaining high quality components working with non-easy working materials with other conventional methods



// Machine non-machining materials with the conventional techniques (hard super-alloys and brittle plastics...)

// 30-50% cutting load decrease

// Improve the surface quality, chip evacuating and tool life.

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health
business unit

health

“ Solutions for the people ”

We work on the development of products at the service of the people, in two areas:

// Ageing. “Gerontotechnology” (merging together technology and ageing). Application of technology to favour the quality of life of the elderly.

// Disability. “Biomedical Engineering”. Assessment, rehabilitation and compensation of locomotive system disability and neurorehabilitation.

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action lines

Life at home.

Development of solutions for autonomy, safety, independence and quality of life at home.

Active ageing and prevention of situations of dependency.

Development of technological solutions for prevention of physical and cognitive deterioration and promotion of social life.

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action lines

Rehabilitation and compensation of physical disability.

Development of technological solutions for motor rehabilitation with and without neurological affectation.

Rehabilitation and compensation of cognitive disability.

Development of technological solutions for cognitive rehabilitation.

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Fall detection

Remote fall detection and monitoring system for elderly people living alone.

Two main modules:

// WORN MODULE: Autonomous and portable module.

* AUTOMATIC FALL DETECTION
* LOCALIZATION OF THE USER
* DAY TO DAY ACTIVITY MONITORING.

// CALL CENTRE: Communication with the worn module and continuous analysis of the received data.

IN CASE OF EMERGENCY:

* Direct contact with the user
* Coordinates the emergency
* Sends adapted assistance in case of necessity.

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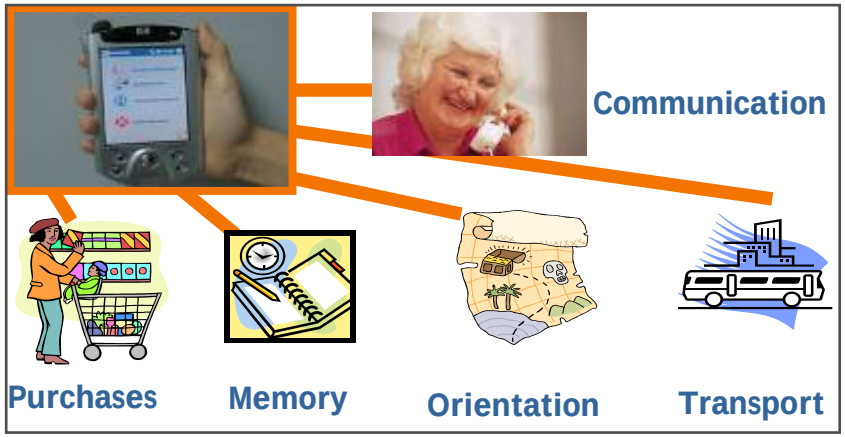
adimen

Modular assistance service for the elderly and disabled people that makes them easier carry out the daily activities, promoting their level of autonomy and independence.



// Specific software applications based on a **PDA mobile platform.**

// **New way of understanding the assistance service:** remote assistance call center that provides the user several services by means of the updating, adaptation and programming of their PDAs

// **With a modular conception:**

* Memory assistance: appointments…
* e-health: telemedicine, medication management … (first module developed: diabetes mellitus)
* Localization and orientation (GPS and GSM)

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exos

Development of an exoeskeleton for compensating the lack of force and power of lower extremities in people with reduced mobility

EMG

Walking

// For people with reduced mobility in lower extremities

// Receives the muscular activity by means of **EMG signs** and compensates the lack of force.

// **Two applications fields:**

* Rehabilitation. New alternative that aims to improve the rehabilitation process.
* Compensatory technical help. For people with permanent disability.

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universal interface for disabled people

Interface for interaction with devices for people with limited mobility in superior extremities (Tetraplegia, amputated, cerebral paralysis and neurodegenerative diseases)

// Use of head movements to control 2D devices: control of the computer mouse, control of wheelchairs movement, navigation in the television, adaptation of a job for disabled people or any other application 2D.

// Universal Interface in order to be able to be connected with most of the existing 2D systems.

// Small and discreet trustworthy system, that will be possible to sell at a very competitive price by the use of technologies of low cost.

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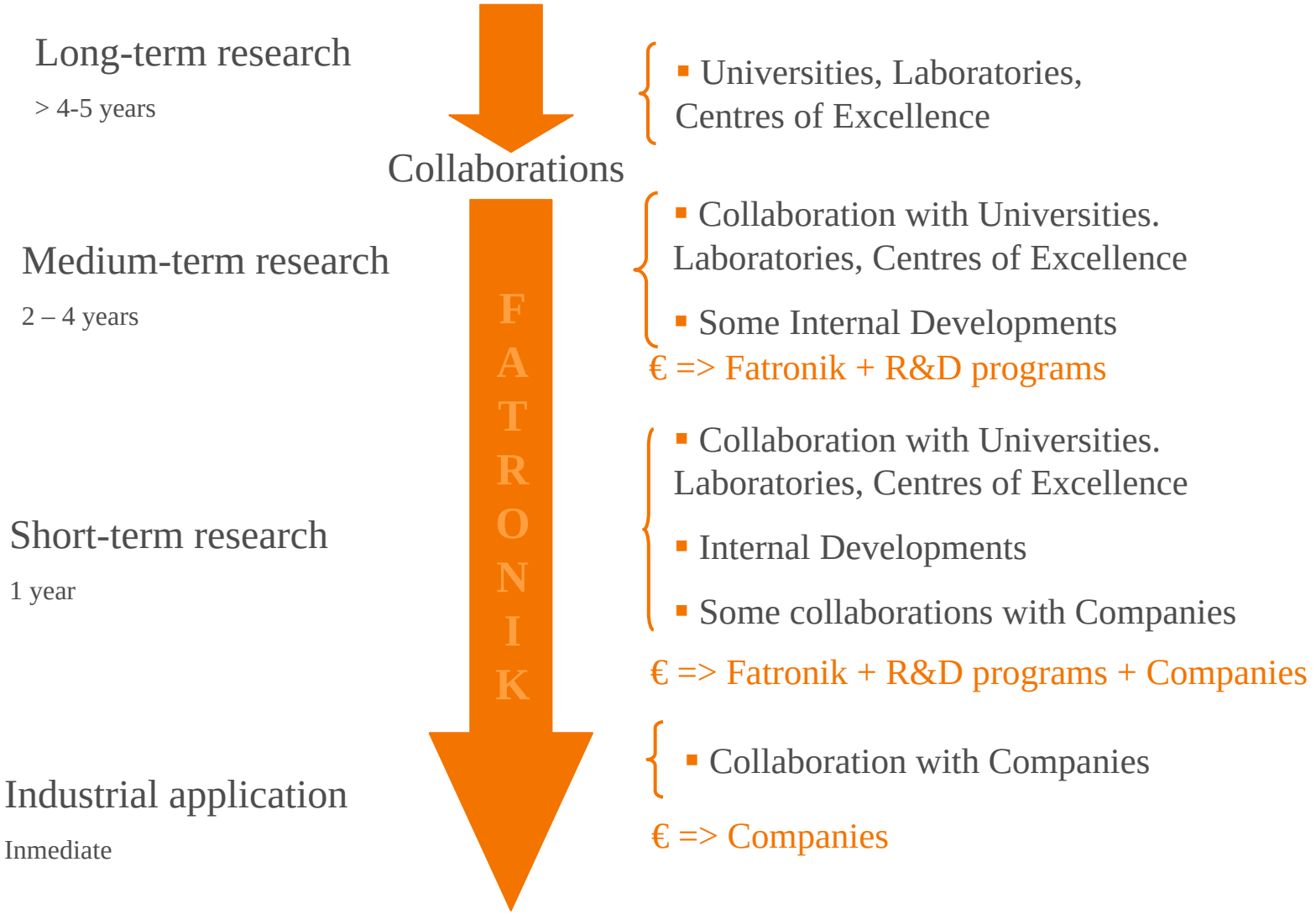
Win to Win relationship
Technological Transfer
Fatronik France

Technological Transfer by Fatronik



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Win to Win relationship with Labs and Universities

Labs and Universities:

- Increase your research possibilities without cost: personal (thesis, engineers), material, prototypes….
- Multiply your scientific results with contributions from Fatronik: publications, patents, conferences
- Share Fatronik's results at no cost
- Fatronik is assimilated to an Industrial Partner for your R&D consortiums
- Access to industrial interests, partners, research lines
- Industrialisation of your results, and share exploitation results

Fatronik:

- Collaborations with Centers of Excellence to increase Fatronik's scientific capacity and possibilities looking for complementarities
- Industrialisation of the results, share exploitation results

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An Example with Fatronik France

- Created in 2006
- 3 persons full time, expected 5 or 6 at the end of 2007
- Activities in Industrial Systems and Health
- Main Missions:
  - Develop collaborations with centres of excellence of interest for Fatronik
  - Develop R&D projects with universities, labs, companies in France
  - Develop Fatronik's activities in France and give support to our clients

We want to work with you!

A success story:

Laboratoire d'Informatique de Robotique et de Microélectronique de Montpellier
LIRMM

- Collaboration with the Lirmm, centre of Excellence in Robotics. The Lirmm collaborated in Fatronik France launching, and the two organisations have developped strong collaboration relations.
- Activities in robotics: pick and place, mobile platforms, industrial robotics
- Scientific results: thesis, publications, congresses, etc…
- Results exploitation: succesful experience with the Quattro

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