ICT-ESI Services Catalogue

Change brings opportunities. We love to imagine how digital services will be in a world even more interconnected and interactive, or how smart products will be used in our daily life, and what new software technologies will make this possible. We are committed to creating excellent business opportunities for our clients with creativity and determination.

www.tecnalia.com
We imagine what the digital future will be like. A world that is interactive and interconnected, more efficient, more intelligent, kinder, safer and with better services. We contribute to this digital world by creating technological solutions that will have an impact on our clients' business. We imagine new services for the digital economy. We help to transform products and solutions into smart systems. We believe that innovation is the way to produce the best software systems more efficiently. **We are committed to creating excellent business opportunities for our clients.**
Beyond functionality, rich content and mobility, what really makes a difference and creates a link with the consumer is achieving a unique experience.
OUR OFFER TO SECTORS THAT DESIGN AND DEVELOP SOFTWARE SYSTEMS

In a digital world with an increasing number of smart services and solutions based on ICT, it is essential to make good software products, with secured deadlines and costs. Equipment is required to produce high quality IT systems competitively, with a code that is efficient, reliable, sturdy, fault-tolerant, certifiable and made in due time, according to standards and at the lowest cost.

We design methods and technological tools for the entire life cycle of software systems development (Key concepts: Productivity, Security and Quality).

OUR OFFER TO SECTORS THAT HANDLE LARGE DATA VOLUMES

Many everyday objects are becoming more and more sophisticated, as they are being built with the ability to interact, process, predict, make decisions and act, based on a large amount of data to improve their functionalities. These are smart devices that lead to wider concepts: smart products and systems.

With technology, we help to create outstanding products and solutions, by incorporating the ability to analyze information, make decisions or learn (Key concepts: Descriptive, predictive and prescriptive analytics).

OUR OFFER TO THE DIGITAL SERVICES SECTORS

The way people communicate, are entertained, informed, buy and experience services in general is changing exponentially with the possibilities opened up by the new communication networks and devices. With richer contents in any device, with more natural, multisensorial ways to interact, with ubiquitous, mobile, personalized access in a more participative social context.

We help those who offer all kinds of services via digital platforms to gain a larger number of more enthusiastic consumers, by providing them with a unique experience (Key concepts: Interactivity, Entertainment and Mobility).
We believe in a digital world that evolves to become more efficient, friendlier, safer and with better services; in other words, better for society.
In order to provide our services we draw on our expertise in the areas of knowledge and we use assets that we gain thanks to research and development.
## ...TO PROVIDE OUR SERVICES

### Our offer to sectors that DESIGN AND DEVELOP SOFTWARE SYSTEMS

- Software Reuse Strategy
- Electronic System Security in Critical Sectors
- Cloud Migration
- IT Process Optimization
- IT System Management Optimization
- Industrial Cybersecurity
- Training Services

### OUR OFFER TO SECTORS THAT HANDLE LARGE VOLUMES OF DATA

- Smart Mobility Tools
- Ad-hoc Multi-objective Optimization Tools

### OUR OFFER TO SECTORS PROVIDING DIGITAL SERVICES

- Second Screen Content Generation Platform
- Connected Television
- Operational Intelligence on Mobile Devices
- Educational Games
- Immersive Simulation
- User Experience Design
- Mobile Applications with Augmented Reality

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Inspiring Business

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Software Reuse Strategy

WHAT IS IT?
An initial assessment to identify the feasibility of software reuse, from a technical and financial perspective.
Defining the organization’s industrialization strategy. This strategy identifies both the organization’s processes and the tools connected with them to automate the construction of final solutions.

WHO FOR?
Companies that develop a large volume of software, both internally and for third parties - both in vertical sectors that depend largely on software in their end products, and ICT companies that develop software.

WHY?
• Improvement of software quality
• Less development time
• Fewer errors, which means lower maintenance costs
• Evolutionary control of products

HOW?
Model-based development technologies, automation of software manufacturing, or automation of product generation, as well as plug-ins based on eclipse.

WHERE?
Banco Popular, Mondragón Sistemas de Información

Electronic System Security in Critical Sectors

WHAT IS IT?
Support for the management of knowledge of rules, regulations and interpretations (storage, recovery, classification, search, etc.) in the field of “Safety Assurance”.
Design and development of methodologies and infrastructure to manage auditable information on the issues related to security and certification elements.
Tools to support the management in these processes and knowledge of the main applicable standards, such as ISO26262 and DO178C.

WHO FOR?
Electronic systems development companies in the critical systems sector, especially transport (automotive and avionics).

WHY?
• Increases security in critical systems.
• Manages evidence throughout the entire specification, design and development process for critical systems.
• Reduces costs in certification processes for electronic systems, based on a resource reuse policy.

HOW?
PROSSURANCE is a model-based asset, developed with ECLIPSE technology, which includes tools to validate, verify, assure and certify based on different standards and regulations: IEC61508, ISO26262, DO178C, DO297, ARP4754, ARP4761.
Safety analysis techniques: HARA, FTA, FMEA.

WHERE?
Irizar, Jema, Gkn, Fagor Electrónica, Thales
Cloud Migration

WHAT IS IT?
A guided, semi-automatic and specific process for the migration of a software application to the cloud, taking into account technical, business and organizational process aspects. The stages that are covered are the following:
• Pre-migration: Technical and financial feasibility, and migration of the product.
• Migration: Tools and methodology for the semi-automatic migration of the product, for each specific migration project.
• Post-migration: Functional and non-functional validation of the migrated product.
Specific “Cloud Computing” training, and how to migrate.

WHO FOR?
Companies that currently offer their software as a product and with licensing, and want to offer it as a service via the internet with a pay-per-use business model.

WHY?
• Helps to see more clearly whether it is better to migrate or start all over again with the development.
• Reduces migration time and costs.

HOW?
Software engineering, model-oriented engineering and process improvement. Various technologies (Java, .NET) applied to the development of tools (e.g. Eclipse plug-ins) and process modelling.

WHERE?
Atos, Engineering, Spikes, Bilbomática, Deusto Sistemas, CGI

IT Process Optimization

WHAT IS IT?
Initial diagnosis, recommendations to improve and action plan. Introduction of improvement plans, including the possibility of applying process optimization techniques (Lean, Kanban, Six-Sigma), and monitor the implementation of action plans.
Preparation and training: Courses on Requirements Engineering and Verification & Validation, Official CMMI and ITIL courses, Techniques to Identify and Assess Problems.

WHO FOR?
Companies specialising in the provision of IT services, the development of applications and systems integrators. Software product manufacturers that are interested in offering products with “zero” defects. Companies or organizations that purchase IT services and products (large companies and public administrations).

WHY?
• Reduces costs and optimizes IT projects and services.
• Increases product quality.
• Promotes continuous improvement of the processes and of the organization.

HOW?
In-depth knowledge of models that improve processes in companies of the IT sector, by using various reference models and adapting them to clients’ business needs. SEI partner.

WHERE?
• IT sector: Indra, Everis, Insa, Atos, Engineering, IECISA
• Specialized SW Systems: Bosch, Thales, Fagor, ZIV, Ingeteam
• IT Departments: Alcampo, Orange, Santander, SEUR, Iberia
• Major IT buyers: DGT, EJIE, Lantik
IT System Management Optimization

WHAT IS IT?
An initial assessment that shows the current status of IT service management and possible areas of improvement.
Support in the definition and introduction of processes and tools to deal with the areas of improvement (ISO/IEC20000, CMMI-Services, ITIL).
Training and certification for these models.

WHO FOR?
Companies that produce, manage and use IT services and target external and/or internal clients.

WHY?
• Increases efficiency in IT service management.
• Reduces costs and optimizes IT projects.
• Increases the quality and productivity of the services.
• Promotes continual improvement in the processes.

HOW?
In-depth knowledge of models that improve processes in companies of the IT sector, by using various reference models and adapting them to clients’ business needs.

WHERE?
Thales, Isotrol, Foton, Hiberus, Atos

Industrial Cybersecurity

WHAT IS IT?
Assessment of Industrial Cybersecurity and Services to adapt to the regulations in the industry (ISA 99, ISO 27001, BS 25999, NIST SP 800-82, etc).
Consultancy in the development of a model that brings together physical and logical security from a technological and organizational point of view.
Legal analysis of new scenarios in industrial systems and in the areas of privacy and IoT.
Monitoring of security in transformation centres and substations in order to detect faults in the electrical grid, fire warnings, doors opening, etc.

WHO FOR?
Industrial companies with supervisory control and data acquisition systems (SCADA).
Companies in the area of physical and/or logical security.

WHY?
• Reduces risks by identifying possible security holes and processes that must be defined/changed in order to achieve more integration between departments.
• Monitors and traces the security status of the installation and the implications that the CIP law has for a certain infrastructure.
• Reduces security costs.
• Reduces the risks of the industrial operation because of a security fault.

HOW?
Technologies for the securitization of elements, communications and attack and fraud detection.
A laboratory that is unique in Spain in terms of cybersecurity in Smart Grids and IoT (Internet of Things).

WHERE?
Ikusi, Panda, Prosegur, Consorcio de Aguas, Metro Bilbao, e.on, Iberdrola, Euskotren
Training services

WHAT IS IT?
Specialized high-level training, including practical cases, in the following areas:
- Safety & Security: Rules, regulations and interpretations (storage, recovery, classification, search, etc.) in the field of “Safety Assurance” for the automotive industry.
- Cybersecurity in Smart Grids.
- Software Productivity: Reuse Technologies, Migration to Software as a Service (Cloud), HTML5.
- Software Quality: Requirements Engineering, CMMI for Services, Quantitative Management of Processes.

WHO FOR?
Companies who need training in any of the abovementioned areas.
- Safety & Security: Engineering and TIER2 suppliers of automotive components.
- Cybersecurity in Smart Grids: electric operators; manufacturers of smart devices and RTUs; companies specializing in IT security that want to enter the industrial world; CIP law consultants; Associations from the electric or security sectors.
- Software Productivity and Software Quality: Software-intensive organizations that develop and/or subcontract applications to support their business. Systems developers

WHY?
- Possibility of developing advanced and innovative products and services, following new technological trends.
- To share knowledge and experiences with other professionals.

HOW?
Specialists from each area who are able to give a cutting-edge and completely practical view of the technologies offered.

WHERE?
Ikusi, Ormazabal, Gmv, Everis, Nextel, Baitic, Atos, Hsbc, Isdefe, Insa, Gfi, IECISA, Capgemini, among others.

Smart Mobility Tools

WHAT IS IT?
Design, development and validation of advanced mobility data prediction and analysis tools to optimize solutions for the ITS market. Service supported by a unique tool or platform: Smart Mobility Lab.

WHO FOR?
- ITS solution integrators.
- Mobility operators.
- Public administrations that are competent in terms of mobility.
- Services companies in which the optical management of mobile resources is a critical parameter of their business: e.g. urban solid waste collection.

WHY?
- Integration and merging of various data sources.
- Higher level of intelligence and predictive abilities.
- Flexibility and personalization of ITS solutions for each client.
- Testing and validation environment.

HOW?
Mobility data analysis techniques, advanced algorithms, artificial intelligence, databases, traffic simulation and software architecture.
SMART MOBILITY LAB: Our own rapid prototyping and validation environment.

WHERE?
Telvent Schneider-Electric, Ikusi, ETRA I+D, Abertis, Fagor Electrónica, Bidegi, Sice, Emt, Madrid City Council
Ad-hoc Multi-objective Optimization Tools

WHAT IS IT?
Design and development of Ad-hoc Business Intelligence tools (non-general) to support business decision-making with multi-objective optimization (optimal solutions that maximize opposing parameters, such as cost-saving and service quality). Training and advice on optimization techniques to facilitate knowledge transfer to the client, and so the client is not tied to one single supplier.

WHO FOR?
Niche Business Intelligence (BI) solution developers who use off-the-shelf algorithm packages, whether they are owners or not, and who think that the performance of their solutions could be improved, but lack abilities or resources to develop complex algorithms.

WHY?
Niche Business Intelligence solutions are usually closed, monolithic, large and owned. And although there are free software packages that enable the implementation of complex algorithm techniques, organizations lack the resources and knowledge required to adapt and develop them. We help organizations to develop their own BI solutions.

Advantages: Higher intelligence level and more analytical, descriptive, predictive and prescriptive abilities (DSS). Flexibility and personalization. We make multi-objective optimization tools. We create optimization algorithms tailored to each problem; we do not just integrate third-party solutions.

HOW?
Data analysis, advanced algorithm, artificial intelligence, databases, simulation and multi-objective optimization, and semantic technologies. It includes:
• Smart mobility lab (ITS) prototyping, development and rapid validation of smart mobility solutions.
• Proload Load Forecast (ICT4Energy) prediction of the load curve of a consumption point.
• SG Dr smart grid management based on the analysis of the load curve.
• Keeper (FoF) optimization of discrete production processes taking into account energy efficiency.
• ACK management of the organization’s knowledge.

WHERE?
Telvent Schneider-Electric, Ikusi, Intel, Nissan Motor Ibérica, Iberdrola, etc.

Second Screen Content Generation Platform

WHAT IS IT?
An intuitive tool to create second screen contents for mobile devices and web applications.

WHO FOR?
Sectors that manage or generate audiovisual content. Television, Content producers, Live event broadcasters, video streaming, Learning, Commerce, Advertising agencies.

WHY?
The consumption of TV and audiovisual content has become more interactive in general and involves more viewer participation, thanks to new technologies. Second screen applications are now another source of return on investment - they complement and enrich traditional audiovisual content, so much so that they are essential nowadays.

HOW?
Content management techniques in different formats that include mobile application development technology.

WHERE?
EiTB, Abertis, Euskaltel, Triano Media, Expressive
Connected Television

WHAT IS IT?
New functions for connected TV that add value for users (security, shopping, additional information, etc.), with three branches:
• Technological developments and applications for manufacturers of SmartTVs or Set Top Boxes and consortia working in different standards (e.g. AllianceTV).
• Technological developments connected with content broadcast by stations via standards such as HbbTV, e.g. additional content services during live events such as sports, galas, series, etc.
• Second screen developments, which promote both additional contents and also interactivity with the end user.

WHO FOR?
Agents involved in television: TV set manufacturers, Signal carriers, Content producers, TV channels, Media and Advertising agents.

WHY?
The aim of connected TV is to give viewers new services. These extra services should be adapted to each viewer. It is therefore necessary to know their profiles, tastes and needs, so that we give viewers new experiences by means of interactivity.

HOW?
Content management solutions for different standards such as HbbTV, in different formats, complemented by the use of mobile application development technologies.

WHERE?
EiTB, HbbTV, Euskaltel, Expressive

Operational Intelligence on Mobile Devices

WHAT IS IT?
Make mobile devices able to carry out operations that were traditionally carried out with other media.
Define and develop the migration strategy from traditional physical media to mobile devices, such as identification and payment - credit and debit cards, ticketing, loyalty schemes, business identification and access control, personalized communication, etc.

WHO FOR?
Companies and service suppliers whose users (clients or employees) are identified, and that want to provide a service with a higher added value, that is easier to use and more convenient. Can be used in commerce, industry and tourism.

WHY?
The greatest benefit for the user is that all the operations are carried out on one single and personal medium. This enhances user experience, and increases satisfaction with the service.
Companies gain a new direct communication channel. As for commerce, it could result in innovative business strategies, marketing campaigns and client loyalty; and as for industry, it could optimize resources and reduce operating costs.

HOW?
BaaS (Backend as a Service) made up of more than 20 basic services (user management, notifications, social integration, etc.), which reduces development time and maintenance costs.

WHERE?
Palladium, Kutxabank, Telvent, Euskaltel
**Educational Games**

**WHAT IS IT?**
Development of multi-player games with the aim of entertaining and learning by recreating virtual 3D environments.

**WHO FOR?**
Any company that wishes to train employees or clients with user-friendly interfaces, in order to improve results.

**WHY?**
Games increase motivation for training, and knowledge on the subject is better assimilated while they play. User experience and satisfaction is higher than with traditional activities. Its usage can record actions and assessment to see the students’ progress. All training activities can be in one place.

**HOW?**
Virtual and augmented reality, advanced video game development environments, motion capture systems.

**WHERE?**
Disney, FHW (Foundation of the Hellenic World), La Almendra Medieval.

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**Immersive Simulation**

**WHAT IS IT?**
The design of simulated environments using immersive technologies for training and maintenance in different sectors.

**WHO FOR?**
It is aimed especially at companies that offer training in environments that are hard to access or that are far away (mountains, mines, sea, etc.), or that use tools that involve a physical risk (occupational risk prevention, heavy machinery training).

**WHY?**
These complementary solutions enable the simulation of extreme situations (fire, handling of cranes, stressful situations, etc.) in an environment that is safe for students. To enable training anywhere without having to be in a specific place physically. The use of devices allows more people to receive training at the same time. All this saves on the cost of materials and travel, and prevents accidents and incorrect usage of machines.

**HOW?**
Virtual and augmented reality. Mobile devices (tablets, smartphones), Kinect, immersive devices such as Oculus, and other gadgets.

**WHERE?**
Eugamed, Gaiker, Ascamm, SELEX Galileo.
**User Experience Design**

**WHAT IS IT?**
A user-centered design for new digital services and smart products. It includes:
- General consultancy on UX user experience
- Usability assessments WITH and WITHOUT users
- Interaction design consultancy
- Prototyping services
- Consultancy/Training in UX research
- Context of use studies

**WHO FOR?**
Situations in which there is interaction between a person or persons and machines: Machine-tool, Industrial design, Transport and automotive, Arcade machines, Vending machines, Electrical appliance manufacturers, Healthcare, Home automation, Software.

**WHY?**
TECNALIA integrates knowledge from various fields in order to enhance user experience, and therefore, their satisfaction, the consumption of services and return on investment.

**HOW?**
Technologies connected with digital content, user experience design and mobility services, to make the services as attractive as possible, and to ensure their success.

UX-Lab specially equipped to support working sessions with clients.

**WHERE?**
Ikusi, Lantik

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**Mobile Applications with Augmented Reality**

**WHAT IS IT?**
The creation of mobile applications and services, from the management and selection of content to its viewing and experimenting by the end user. Apps with dynamic content, which can be easily modified, and with augmented reality capabilities, to enhance user experience.

**WHO FOR?**
Especially aimed at agents in the leisure-tourism-culture sector (tourist promotion departments, museums, interpretation centres, art exhibitions and events, theme parks and archaeological sites).

**WHY?**
The use of smart mobile devices enhances experiences at a tourist destination. The applications are developed in a personalized way and tailored to the requirements of clients and potential users. The content is rigorously cultural and historical.

**HOW?**
Augmented Reality technology to place multimedia information (text, photos, videos, symbols, 3D objects, etc.) over a real image captured by the camera.

Technology to identify objects and points of interest via GPS, compass, speedometer, gyroscope, or by recognising natural patterns or markers.

3D historical recreations and gamification strategies can be included, and games can be part of the visit.

**WHERE?**
University of Deusto, Álava Regional Government, Vitoria-Gasteiz Tourist Office
TECNALIA is the first private applied research and technology development centre in Spain and one of the most important in Europe. A combination of technology, tenacity, efficiency, courage and imagination.

As we are aware that the world evolves rapidly, we get ahead of future challenges by turning technology-based business opportunities into competitive advantages.

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