

*Fostering **RE**search-based **E**ntrepreneurship and the development of spin-off companies in Central America*

Transferencia de Tecnología en la Universidad de Alicante.

Diagnósticos Tecnológicos.

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SGITT – OTRI

Universidad de Alicante

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Transferencia de Tecnología en UA

Las Universidades tienen 3 misiones:

- Investigación.
- Docencia / Formación.
- Transferencia Tecnológica.

Transferencia de Tecnología en UA

Quiénes son los responsables de la transferencia de conocimiento (a las empresas) en las Universidades?

- Investigadores / Docentes.
- Oficinas de Transferencia de Tecnología (OTTs).

SGITT-OTRI

Servicio de Gestión de la Investigación
y Transferencia de Tecnología



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Transferencia de Tecnología en UA

Datos UA

- 30.000 Estudiantes
- 200 Grupos de Investigación.
- 15 Institutos Universitarios.
- 262 Proyectos Investigación con entidades privadas.
- 462 Proyectos Investigación con entidades públicas.
- 62 Doctorados.
- 539 Artículos publicados.
- 100 Libros publicados.
- 15-20 patentes / año.
- 5-10 Registros PI / año.



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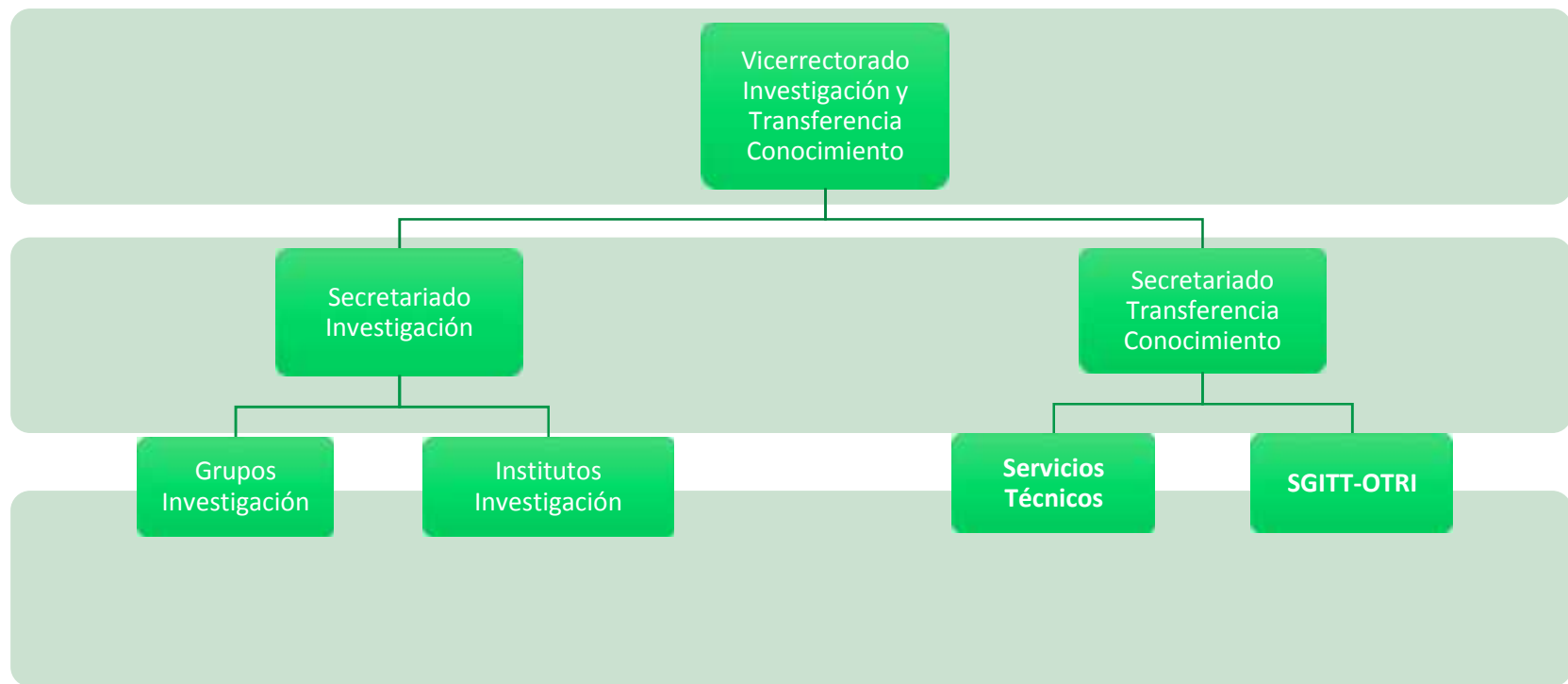
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Institutos universitarios de Investigación.

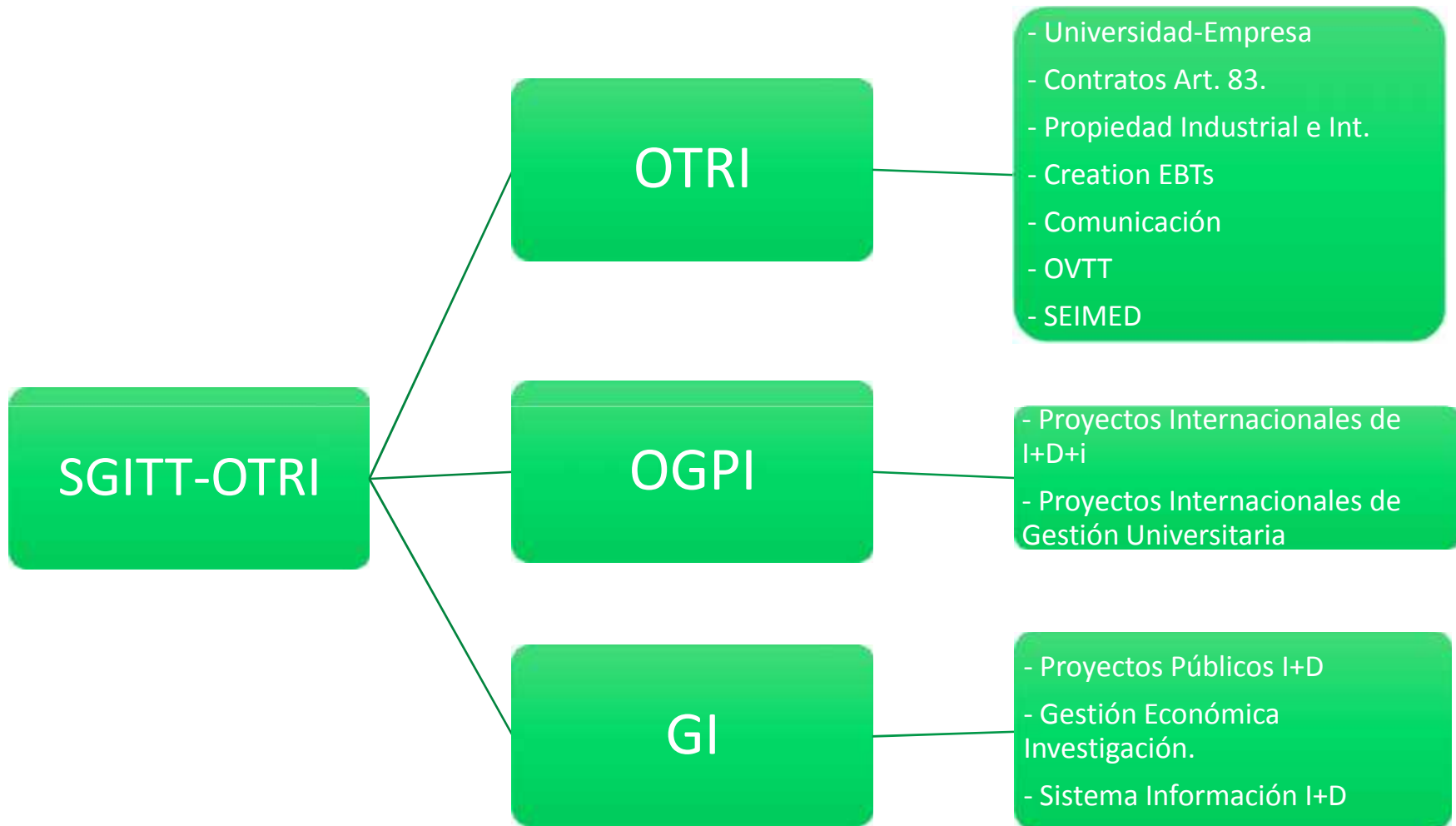
- IUACA – Instituto Universitario del Agua y Ciencias Ambientales. Environmental Sciences
- IUE - Instituto Universitario de Electroquímica.
- IUFACYT – Instituto Universitario de Física Aplicada a las Ciencias y la Tecnología.
- IUIPQ - Instituto Universitario de Ingeniería de los Procesos Químicos.
- IU CIBIO – Instituto Universitario Biodiversidad.
- IU II – Instituto Universitario Investigaciones Informáticas.
- IU IT – Instituto Universitario Investigaciones Turísticas.
- IUMA – Instituto Universitario de Materiales.
- IUSO – Instituto Universitario de Síntesis Orgánica
- IIPDS – Instituto Universitario de Paz y Desarrollo Social.
- IU EI – Instituto Universitario Economía Internacional.
- IUFV – Instituto Universitario Filología Valenciana.
- IUG – Instituto Universitario Geografía.
- IULMA – Instituto Universitario Lenguas Modernas y Aplicadas.
- IURM – Instituto Universitario Ramon Margalef – Estudios Mamb

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Estructura I+D+i



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Sectores Industriales región

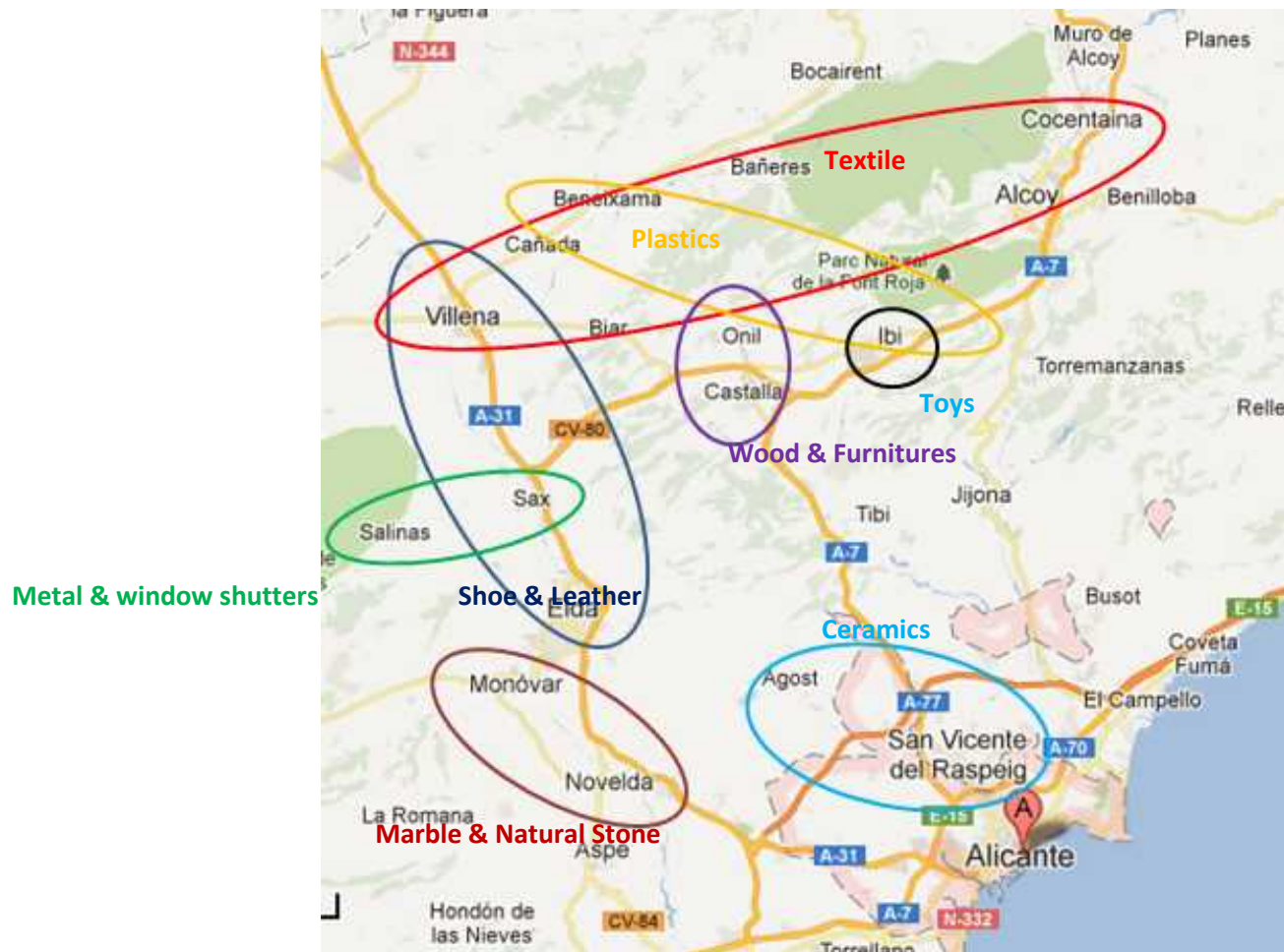
Calzado e industria auxiliar.	Mármol y Piedra Natural.	TI
Textil	Construcción y Arquitectura	Transporte y automoción
Química	Madera y Mueble	Metalurgia
Plastico	Alimentacion / Agricultura / Pesca	Biotecnología y Salud.
Juguete	Turrón	

Principamente constituidos por Pymes y MicroPymes

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Modelos Transferencia Tecnología

Modelo de Ciencia Abierta: (*Know How – Servicios*)

- I+D Bajo contrato. (Por Encargo)


Modelo Innovación: (*Resultados*)

- I+D cooperativa
- Licencias
- Spin Off

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Legislación

- **Artículo 11 Ley Reforma Universitaria (LRU,1983)**
- **Artículo 83 de la Ley Orgánica de Universidades (LOU) aumentó el rango de actividades que se estableció en LRU.**
- **Artículo 83 de la nueva LOU (Abril 2007).**
Añadió las Empresas de Base Tecnológica creadas a partir de resultados de investigación generados en la Universidad: (Excedencias Temporales PDI, etc.)



Departamentos, Institutos Universitarios y profesores pueden firmar acuerdos con entidades públicas y/o privadas para llevar a cabo trabajos de carácter científico o técnico, así como el desarrollo de cursos de especialización.

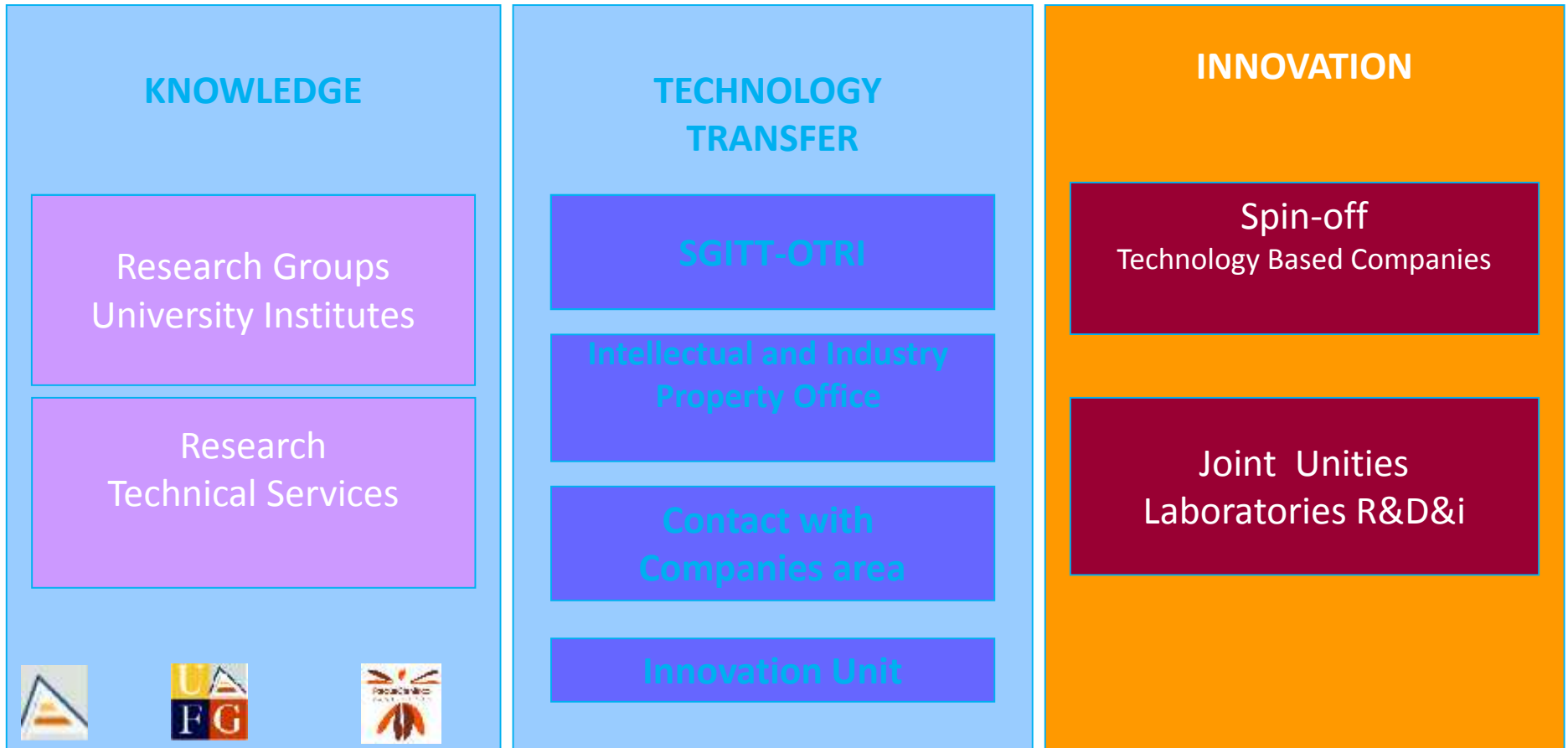
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Legislation

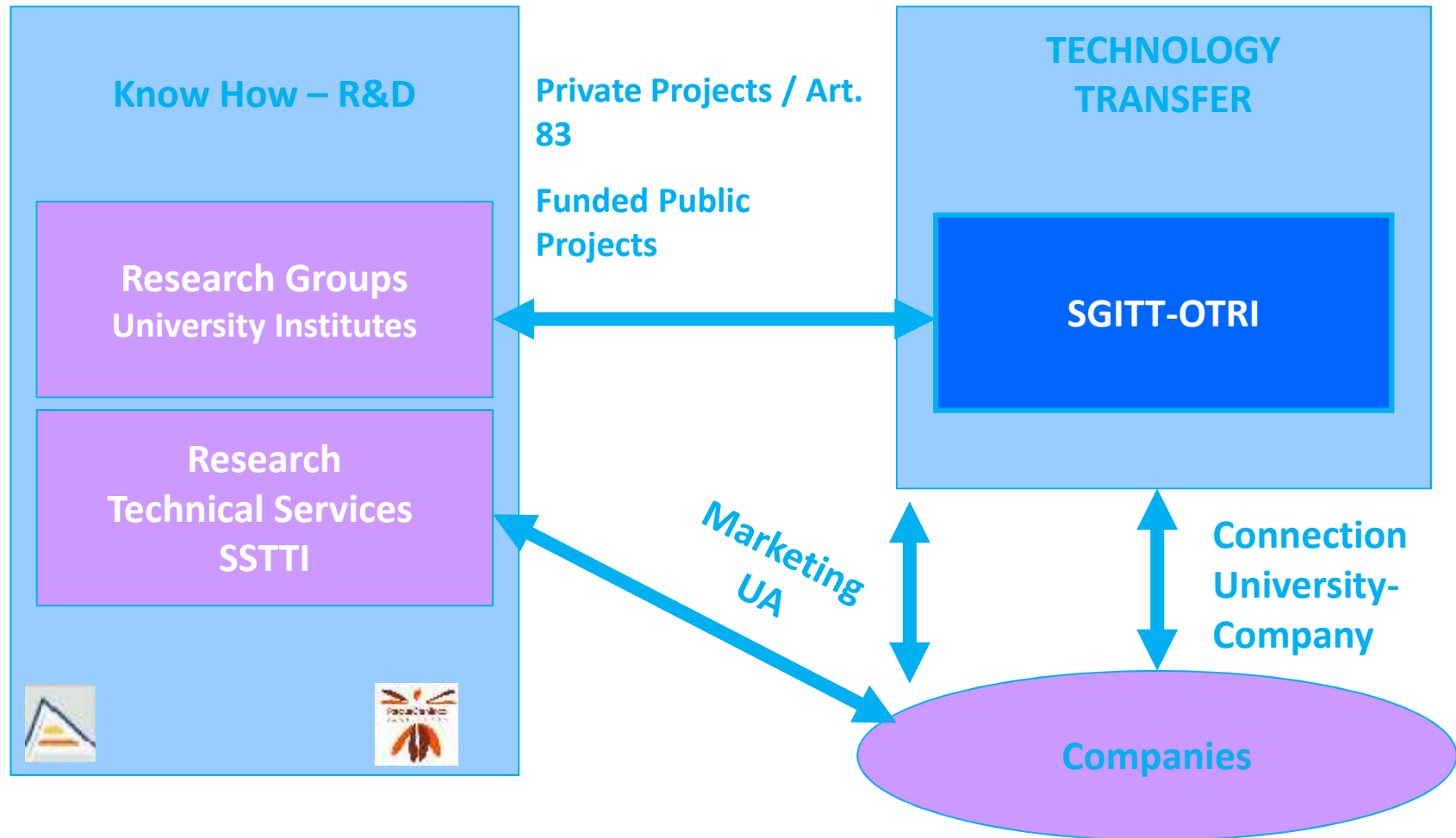
- **Ley 14/2011, 1 Junio, sobre Ciencia, Tecnología e Innovación.**
- **Ley de Economía Sostenible**
- **Normativa UA sobre Propiedad Industrial e Intelectual.**
- **Normativa UA sobre Contratos.**
- **Normativa UA sobre la creación de Empresas de Base Tecnológica.**

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Technology Transfer Model



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Objetivos:

- **Investigación Cooperativa:** (Puede conducir a una patente)
- **Licencias**
- **Spin Off** (Incluye la licencia a una nueva empresa)

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PLAN DE ACCION EN TRANSFERENCIA

- Mapa Tecnológico / Oferta Tec. (Ppt. Sr.Juanjo Montesinos)
- Plan Promoción Tecnológica. (Ppt. Sr.Juanjo Montesinos)
- Diagnósticos Tecnológicos.
- Asesoramiento en Financiación Pública – Apoyo Gestión Proyectos.

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Y si encontramos un socio...



Asesoramiento en Gestión Proyectos

- **Propuestas de proyecto para resolución necesidades tecnológicas.**
- **Análisis Fuentes Financiación para posibles proyectos.**
- **Asesoramientos en Gestión Proyectos I+D para empresas (Punto PIDI, memorias, etc.)**



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Diagnósticos Tecnológicos.

- **Special Visits to Companies. Objective: Finding needs / technological requests.**
- **Carried out by members of the Enterprise-University Relations Area**
- **Sometimes with Researchers.**
- **In cooperation with entities like Chamber of Commerce, City Councils, Devolment Agencies, etc.**



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Diagnósticos Tecnológicos.

What is a Technological Diagnosis?

*A **Technological Diagnosis** of a company, is a **joint reflection** carried out by the employer, the executive team and **experts alien** to the company, following an **established methodology** to meet the **needs** and the **technological potential of the company** to undertake innovation projects*



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Diagnósticos Tecnológicos.

Objectives

*“Detect **R&D&I projects** that can be **financed with public funds** and that can help the company improving its competitive position **through the innovation**”*

*‘**Include** in the project, as far as possible, **Research Groups** of the University of Alicante’*



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Diagnósticos Tecnológicos.

- **What is a technology audit?**
- **Why do a technology audit?**
- **How to implement a technology audit**



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¿Qué es un Diagnósticos Tecnológico?

Difficult to define too precisely because there is no set model or approach

What is a financial audit?

- A way of checking a company status & procedures against “good accounting principles”

Outcome = issue recommendations on how to improve the financial performance

¿Qué es un Diagnósticos Tecnológico?

What is a quality audit?

- A way of checking a company procedures and methods against their own defined quality rules and ISO standards

Outcome = recommendations on how to better follow ISO standards

What is an environmental audit?

- A way of checking a company procedures and methods against environmental best practices and legislation

Outcome = recommendations on how to improve environmental performance



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¿Qué es un Diagnósticos Tecnológico?

A way of checking a company's technological status against some **technological criteria** & issuing some sort of **recommendations**

What Technological Criteria?

Depending on the TA performer but it clearly should be the company's capability for Innovation and Technology Transfer, the ability to:

- Use innovative technology
- Developing or adapting innovative technology

¿Qué es un Diagnósticos Tecnológico?

What recommendations?

The recommendations should focus on how to improve the company resources, procedures and strategies so that it can better profit from Innovation and Technology Transfer (TT).

So a Technology Audit can be defined as:

“a way of checking a company’s capability for Innovate and TT and recommending services that can assist it either to absorb or transfer innovative technologies”

Diagnóstico Tecnológico.

Definition of a technology audit

- The technological status of a company
- Its technology strengths and weaknesses

Generally an audit is used to

- Identify innovative technologies, processes and expertise
- Pinpoint areas of need, where innovative solutions are required

¿Por qué un Diagnósticos Tecnológico?

Benefit for the Company

- it will provide an action plan
- Generally leading to improved performance

Benefit to the TA Provider

- A method for identifying innovative companies
- That can be good customers
- More likely to achieve targets

Technology audit does not mean success, it simply provides the structure within which a company is more likely to improve or fulfil its potential.

Estructura Diagnóstico Tecnológico.

STEP	OBJECTIVES	TIME
Appointment	<ul style="list-style-type: none"> •Finding the company and the right person to contact. •Contact and appointment. 	1 day - weeks
Preparation	<ul style="list-style-type: none"> •Forward information to the company •Self assessment and research 	1 – 3 days
Auditing	<ul style="list-style-type: none"> •Interview with key people and visit facilities 	0.5 – 1 day
Follow up	<ul style="list-style-type: none"> •Reporting to the company. •Receiving interest from the company •Set a real action plan •Keep a long term relationship 	2 – 4 days 1 – 2 weeks Long term

Conseguir una “cita”...

- CONTEXT:

- The TA will be related to the strategy of the TA performer
 - University
 - Chamber of Commerce
 - Business Consulting
 - Technological Institute

- RESULTS of the Audit: Global VS Specific

- The TA Performer shall define what will do with the results, if he cannot perform the possible project, is he redirecting the company to other institutions?
- Depending on that, the TA performer will define the TA in a Global way or in a Specific way.

Preparación Diagnóstico Tecnológico.

- Sending Information to the company before the TA

INFORMATION	DESCRIPTION
Relating the TA visit	Objectives and Benefits
	Agenda
	Questionnaire
	Confidentiality Agreement
Relating the TA Performer	Presentation of the institution
	Portfolio of standard activities

Preparación Diagnóstico Tecnológico.

- Documentation to prepare and to find:
 - Relating the sector: Try to compare with competitors and other companies
 - Activities
 - Business lines and units
 - Products and Services
 - Technology used
 - Trends
 - Data (History and news from the company, evolution, etc.)
 - Relating potential opportunities in R&D&i:
 - Technologies available, patents, R&D Teams
 - Innovations and funding available



Aspectos a tener en cuenta...

- How the company is organised
- Existing products & markets
- Level of technology
- Market position & competitors
- Product development
- R&D
- Innovation capabilities
- Quality control
- Transnational cooperation
- Participation in R&D Programmes

La Visita.

- **CONTENT:**
 - **Objective:** Propose appropriate solutions or actions to the company
 - How to:
 - Initial Interview with the key people in their office.
 - Visiting the facilities (workflow if possible)
 - Closing the TA with a final interview in the office again.
 - **Initial Interview:**
 - Introduction
 - Presentation (Who we are, services, clients, promo material...)
 - Presentation of the TA and the Objectives of the TA.
 - Review of the agenda
 - Take into account: Confidentiality and asking for permission to take notes

La Visita.

- CONTENT:
 - Initial Interview:
 - Body of the Interview
 - Conversation following a guided questionnaire
 - Objective: Gathering information, finding opportunities and analysing the company as far as possible.



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La Visita.

- **CONTENT:**

- Visiting the facilities:

- The visit of the facilities shall complete the information gathered in the interview and review all the areas of the company where they create value.
 - The questionnaire should have questions regarding the value chain of the company
 - If the company has any concern in any of the areas of the chain value, they probably have already said in the previous interview. This visit is useful for defining these needs / concerns.
 - In service companies, the heart of the value chain are, usually, the design, engineering ,development or customer attention departments.
 - If the person performing the TA knows the business, much better.



La Visita.

- **CONTENT:**

- Closing the visit:
 - Usually in the office
 - Review of the opportunities and needs detected.
 - Try to validate all the detected items and to order them by a priority criterium
 - Usually lots of possibilities are considered but only a few are really interesting for the company
 - More ideas usually come after the visit. Don't worry!!
 - Explanation of the actions to be taken after the visit.



La Visita.

- CONTENT:

- Questionnaire for the visit:

- For finding innovation opportunities is very useful to follow a defined questionnaire.
 - There are no standard questionnaires and should be defined for the kind of TA visit that we are performing
 - Just request the information we need, not requesting as much information as possible.
 - Parts of the questionnaire:
 - Questions about the company
 - Questions to find needs or opportunities
 - Tools for gathering information and defining the strategy and/or priorities

La Visita – Cuestionarios / Datos.

- CONTENT:
 - Questionnaire for the visit:

AREA	CONTENT	EXAMPLE
About the company	Basic information, data, activities. (Fill it in advance if possible)	ID info, activities, R&D experience, projects, partners, etc.
Identifying needs	Questions for detecting needs, tech opportunities, R&D problems, interests	Plans, Ideas of new products/ services R&D Needs Tech Needs Etc.
Tools	Tables and tools to fill with data	SWOT, Porter, Analysis matrixes, Checklists...

La Visita – Cuestionarios / Datos.

- TOOLS: Examples:
 - BUSINESS MODEL ANALYSIS
 - State competitive advantage issues (CAI) from your business model

VALUE	CLIENT
ORGANISATION	MARKETING

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La Visita – Cuestionarios / Datos.

- TOOLS: Examples:
 - BUSINESS MODEL ANALYSIS
 - State competitive advantage issues (CAI) but the innovative ones

PRODUCT INNOVATION	PROCESS INNOVATION
ORGANISATION INNOVATION	MARKETING INNOVATION

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La Visita – Cuestionarios / Datos.

- TOOLS: Examples:
 - BUSINESS MODEL ANALYSIS
 - Propose innovations for the competitive advantage issues (CAI)

INNOVATION FOR VALUE	INNOVATION FOR CLIENT
INNOVATION FOR ORGANISATION AND OPERATIONS	INNOVATION FOR MARKETING AND DISTRIB.

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La Visita – Cuestionarios / Datos.

- TOOLS: Examples:
 - ANALYSIS OF PORTFOLIO OF PRODUCTS AND SERVICES

BUSINESS UNIT	PROD / SERV	CLIENT OBJECTIVE	% AMONG THE TOTAL OF THE PRODUCTS	GEOGRAPHIC ENVIRONMENT

La Visita – Cuestionarios / Datos.

- TOOLS: Examples:
 - SWOT ANALYSIS

WEAKNESS	STRENGTH
THREATS	OPPORTUNITIES

Ejemplo DAFO

STRENGTHS

- Range of new products
- Work force highly trained
- R&D department strong

WEAKNESSES

- Focus in just 1 sector
- High defect rate in production
- No customer feedback

OPPORTUNITIES

- New biotech research
- New legislation
- European call

THREATS

- Highly competitive market
- Economic slow down
- Competitor costs lower

La Visita – Recorrido...

- TOOLS: Examples:
 - VALUE CHAIN ANALYSIS (Porter)



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La Visita – Cuestionarios / Datos.

- TOOLS: Examples:
 - CHECKLISTS

QUESTIONS ABOUT TRENDS, TECH, PROJECTS	COMPANY ANSWERS

Seguimiento.

- **REPORTING**

- After the TA Visit is important to show results by written as well as by an interview.
- **REPORT OBJECTIVES:**
 - Translate gathered information into opportunities and projects
 - Communicate them to the company
 - Have a report document stating all the aspects of the TA Visit.

Seguimiento.

- REPORTING

- REPORT DRAFTING

- Depending on the purpose, the result should be an action plan, a list of possible projects in R&D&i, diagnosis of the company position, etc.

- SENDING THE REPORT. FOLLOW UP.

- Once the report is sent you should contact the company to appoint a new interview to comment the results.
 - Planning of future actions with the company.



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Seguimiento.

- REPORTING
 - TYPES OF R&D&I OPPORTUNITIES:
 - TECHNOLOGY NEEDS:
 - Patents
 - Scientific Knowledge and Know-how → **R&D Contracting!!!!**
 - Consultancy, Technical assistance, Services
 - Existing technology and IT.
 - INNOVATION OPPORTUNITIES
 - Innovation in the 4 fields:
 - Products
 - Process
 - Organisation
 - Marketing



Seguimiento.

Example: Elements of the action plan

- The vision
- The Road Plan
- Overview of company / activities
- Overview of sectors / markets
- Identification of Strengths / weaknesses / opportunities / threats
- Solutions for solving problems
- Suggestions for exploiting strengths & opportunities

Plan de Acción.

The action plan should have a

- A time frame
- Clear milestones
- An estimated budget
- List of expected deliverables
- Identification of potential problem solvers

¿Quién realiza el Diagnóstico?

A Generalist with audit experience

- **Advantages**

- Knows the innovation process and Tech Transfer
- Knows the services
- Knows the SME market
- Work with a range of sectors
- Cheap

- **Disadvantages**

- Lack of sector specific experience
- Lack credibility with SMEs?
- Not provide the depth required?



¿Quién realiza el Diagnóstico?

An External Generalist

Advantages

- Detailed knowledge of audit process
- Work with a range of sectors
- Gain confidence of companies

Disadvantages

- More expensive
- Maybe not familiar with environment
- Not provide the depth required?
 - Not familiar with processes, markets etc.



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¿Quién realiza el Diagnóstico?

An External Specialist

Advantages

- Knows the sector
 - In depth quality report
 - Ask the right questions
 - Company confidence

Disadvantages

- Expensive
- Maybe not familiar with environment
- Work with only 1 sector

Costes de un Diagnóstico Tecnológico.

Variables

- Time
- Who's doing the audit
- Experience from projects carried out:

7 days work by internal staff

10 days work by external specialist

Resultados Diagnóstico Tecnológico.

Important Outcomes

- Inward Innovation & Technology Transfer Opportunities
- Outward Innovation & Technology Transfer Opportunities

Other outcomes

- Structured plan for sustainable growth
- Action plan. Strategy plan. Innovation plan.
- Assessment of a company's (technology) portfolio and plan to exploit this potential resource.
- An identification of possible sources of funding



Oficina de Gestión de Proyectos Internacionales de
la Universidad de Alicante.

Gracias por vuestra atención!!

Iván Rodríguez Roselló

SGITT-OTRI- Oficina de Transferencia de Tecnología

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