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Impact in H2020 Part 1 - Preparing Proposals

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Dr. Eugene Sweeney

- Technical and Commercial Background
- Over 35 years experience of commercialising IP/research and new technology
 - 1970's As a researcher in Engineering/CFD (first spin-out in 1978)
 - 1980's In computer industry (bringing new technologies to market)
 - 1990's Early stage technology/IP investment and commercialisation
 - 2000 - Consultant in IPR and research commercialisation
- Over 20 years experience with EC as proposal evaluator, rapporteur, project reviewer and consultant
- Member of International (ISO) and European (CEN) Standards Committees on Innovation Management
- Member of Licensing Executive Society

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Horizon 2020...

“The European Union Commissioner for Research, Science and Innovation, Máire Geoghegan-Quinn, emphasised Europe’s determination to link science and research and innovation to market ”

Brussels, 18th February 2010

Horizon 2020

- An impact orientated approach
- Delivering strategic technologies that can drive competitiveness and growth
- IPR, Impact and Innovation must be addressed in all sections of a proposal, not just the impact section
- IPR, Impact and Innovation must be managed in all stages of a project, not just during exploitation

Overview

Maximising Impact in H2020

- Part 1 – Proposal Preparation
 - Gathering the information
 - Preparing the proposal
 - Strategic intelligence from patent information
- Lunch break
- Part 2 – Implementation
 - Implementation
 - Exploitation and dissemination plan
 - Business models

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Vocabulary/Definitions

Vocabulary/Definitions

IP to Impact

- Intellectual Property (IP)
- Intellectual Property Right (IPR)
- Innovation
 - Innovation Potential
 - Innovation Capacity
 - Innovation Management
- Exploitation
- Dissemination
- Communication
- Impact

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Intellectual Property (IP)

- Products of the mind
- Products of research & experimentation
- Products of creativity

- Intellectual Property, like Physical Property can be a valuable asset.

- Like physical property, intellectual property is an asset which can be traded (sold, bought, leased, used as collateral, or given away!)

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Intellectual Property Rights (IPR)

The law provides legal “rights” to protect your Intellectual Property, known as Intellectual Property **Rights** (IPRs)


- Patents (technical inventions)
- Copyright (Software, Written works, Engineering drawings, Semiconductor Topologies, etc)
- Design Rights (appearance)
- Database Rights (creation and arrangement of data)
- Trade marks
- Plant Breeders Rights
- Utility Models/petty patents
- etc

- **NOT ONLY PATENTS**

- Confidentiality Agreements (Know-how)
- Secrets (Trade Secrets)

- National rights
- Regional variations in law
- Time limited rights

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Intellectual Property Rights (IPR)

WHY?

- To promote innovation by encouraging invention and creativity, and thereby benefitting society

HOW?

- The state grants a **limited monopoly** in return for **publishing** the invention
- The state benefits by avoiding secrecy, thus **stimulating further innovation**, and enriching society
- The creator benefits by being able to **prevent unauthorised use** by others,

.. unless they come to an agreement

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Why is IP important today?

- Pre-19th Century: economies were mainly “land based” and “agricultural”
- 20th Century: the primary economic commodities of the were physical - iron, steel, coal, oil, etc.
- 21st Century: the primary economic commodity is Intellectual property

What does this mean in practice?

- Today, physical and electronic communications mean I can now
 - source raw materials anywhere in the world
 - ship them to wherever is cheapest to manufacturer
 - market, sell and collect money worldwide
 - ship products directly to users or distributors worldwide
- It is not the owner of the raw materials, or the manufacturing capability, or the marketing channels who rules.
- It is the owner of the knowledge who is king!
- From “made in ...” to “created in ...”

Knowledge Based Economies

- Building a Knowledge Based Economy is now a key policy objective for governments worldwide
- Intellectual Property is the **core component**
- Like physical property, intellectual property (IP), and the legal rights in them (IPR), are assets which can be traded (sold, bought, leased, used as collateral, given away, etc.)

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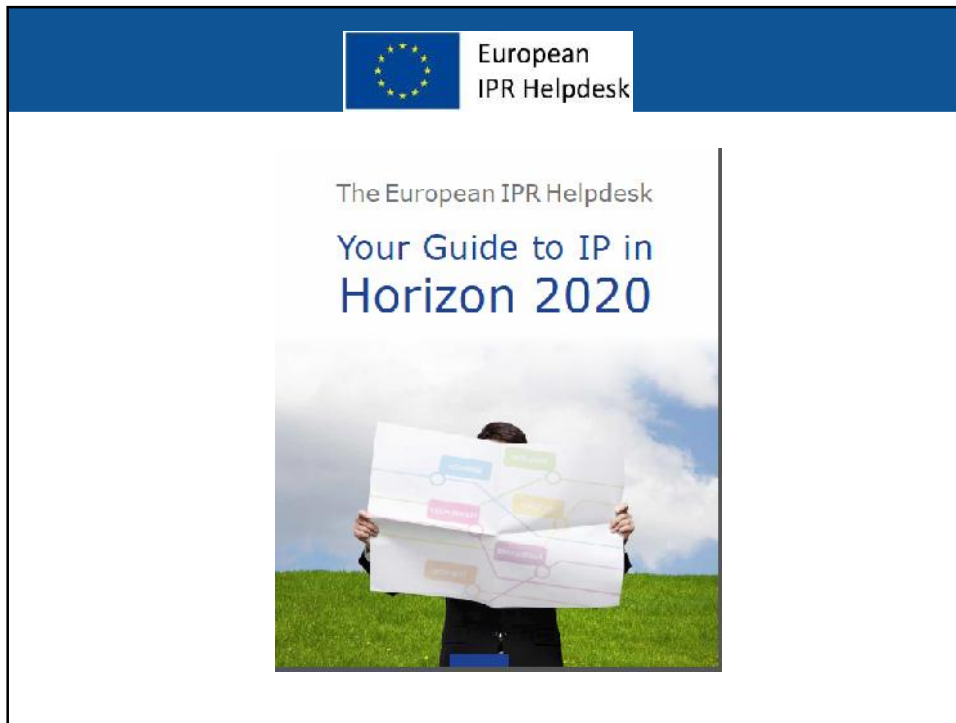
European
IPR Helpdesk


European IPR Helpdesk

<https://www.iprhelpdesk.eu/>

- Official IP service initiative of the European Commission
- Front-line support on intellectual property (IP) and intellectual property rights (IPR) (email or tel: +352 25 22 33 333)
- Understandable for non-legal experts and business oriented
- User-friendly service provided in English
- Personalised answers to individual questions within three working days
- Wide range of IP topics: IP protection, IP management and exploitation, revision of agreements, etc.

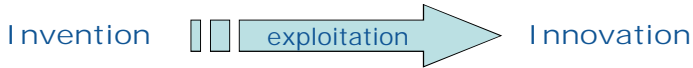




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Innovation

The successful exploitation of new creations, which when used produce tangible benefits, satisfying needs and wants.

Invention  Innovation

Invention IS NOT Innovation

Impact

The extent of the benefits derived from the innovation

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The diagram illustrates the relationship between Invention and Innovation. It shows 'Invention' on the left, followed by a light blue arrow pointing right with the word 'exploitation' written inside it, leading to 'Innovation' on the right. Below this diagram, the text 'Invention IS NOT Innovation' is written in red, underlined.

Any type of benefit and impact

- Benefit (hence impact) does not have to be financial
- Innovations can be based on new products, services, organisational or business methods, improved networks or collaborations, advisory reports, etc, etc
- The impact of the innovation can be societal, environmental, technical, commercial, educational, or anything that delivers a benefit to someone or addresses a need

Innovation Potential

- How much benefit (innovation) can the project results potentially deliver?

Innovation Capacity

- Do the project results have the capacity to stimulate further innovations, and/or increase the amount of benefits delivered?
- Does it have the potential to be used in other areas (beyond the project objectives)?

Dissemination, Communication & Exploitation

- Dissemination (telling) stimulates use for further research, commercial development, education, informing policy, etc.
- Communication measures (how you tell)
- Exploitation (using) can be commercial, research, policy guidance, educational, etc.

Communication?

- Internal Communication (e.g. collaboration platforms, etc)
- Communication of the project (e.g. web page)
- Communication of project results (e.g. dissemination)
- Communication measures (e.g. publications, events, etc)

Extract from proposal template

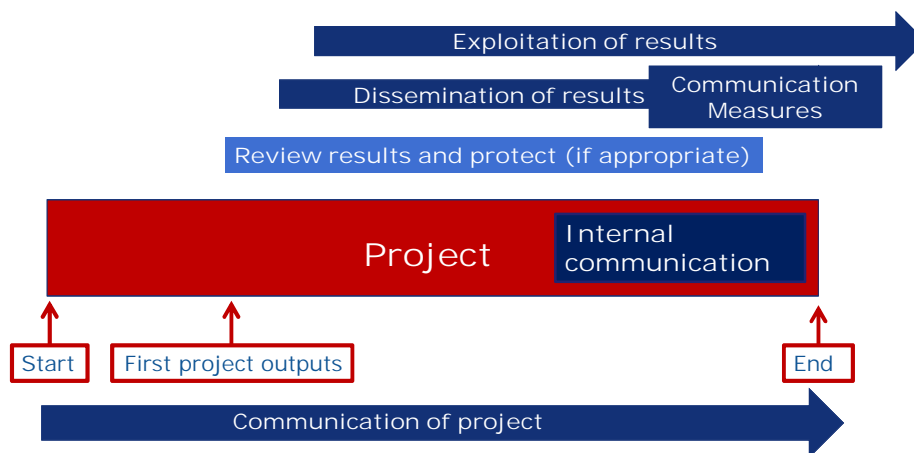
2.2 Measures to maximise impact

- a) Dissemination and exploitation of results
- b) Communication activities


“Describe the proposed **communication measures** for promoting **the project and its findings** during the period of the grant. Measures should be proportionate to the scale of the project, with clear objectives. They should be **tailored to the needs of various audiences**, including groups beyond the project’s own community. Where relevant, include measures for public/societal engagement on issues related to the project.”

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Communication, Dissemination and Exploitation



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Addressing IP, Impact and Innovation in H2020 proposals

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Proposals for all Actions (RIA, IA, CSA, SME, FTI, etc)

- Demonstrate an understanding of the technology and market environment, to select and justify the project objectives
- Presenting a credible and viable methodology to achieve the project objectives...
- ...and to deliver innovations with impact.
- Demonstrate the ability and capability to deliver, including work plan, governance, policies, systems, structures, operational processes and risk management.

Excellence – Impact - Implementation


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Innovation, SME Actions, FTI

- Focus on the business opportunity
- Include the concept for commercialisation
- Ensure good level of innovation, i.e. develop something new
- Analyse competing solutions and explain why you will succeed and not your competitor

Understand the (Potential) Impact

- Innovation is about satisfying needs & delivering benefits
- What needs will be addressed (relevant to the **call topic**)?
- What benefits delivered?
 - to whom?
 - and how much benefit (contribution to the expected **impact of the call**)?
- Select the project objectives (i.e. outputs/results/IP) to maximise impact (the extent of the innovation) expected by the **call topic**.

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The Work Programme

Clearly describes the challenges and expected impacts

e.g. LCE 10 – 2014: Next generation technologies for energy storage


Specific Challenge: There is a need to develop new or improved storage technologies with higher performance, availability, durability, performance, safety and lower costs. These new and enhanced storage technologies

Scope: Activities should focus on developing the next generation of storage technologies by bringing them from TRL 2 or above towards TRL 5. They cover storage technologies of all sizes relevant to energy applications and all types of locations.....

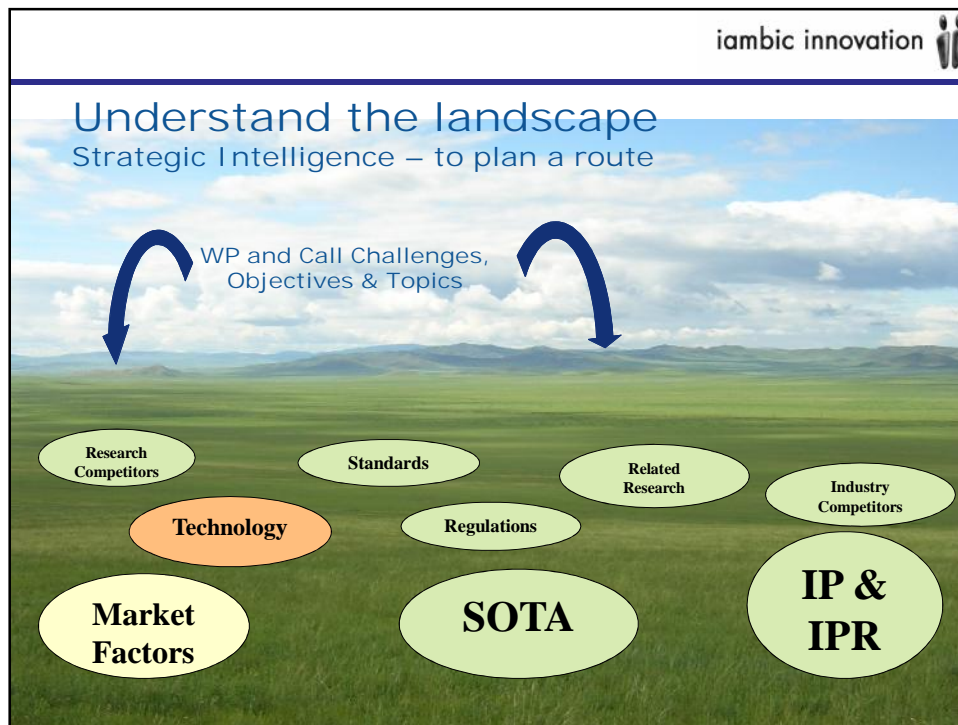
Expected impacts:


- Enlarging the portfolio of effective storage technologies ...
- Lowering the cost, increasing the efficiency and durability.....
- Contributing to solutions for high penetration rates of distributed energy resources and intermittent renewable energy....
- Integrate storage into the management.....

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Gathering the information to
prepare the proposal




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Strategic Intelligence

What benefits and impacts?

- State of the Art - how will you go beyond it, what new IP will be produced?
- Market: size, segmentation, distribution, growth, "needs & wants" - what needs will you address, what benefits will you deliver, who will you target?
- Competitor Intelligence: market share, technologies, current and future plans - what will be your key USPs or differentiators, why will people use your solutions, rather than your competitors?
- Technologies: other solutions which can address the objectives; their status, strengths and weaknesses - Why will your solution be better than the alternatives, in which areas, by how much?

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Strategic Intelligence

What external influences might affect impact?

- Potential Barriers/Obstacles: IPRs (freedom to use), statutory requirements, industry standards, health & safety requirements
 - Statutes
 - Standards
 - Patents and other registered IP
- Standards: prescriptive, advisory, best practice (barriers or opportunity)
 - www.iso.org
 - www.cen.eu
 - www.etsi.org

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Strategic Intelligence

Standards

- Standardization is identified in Horizon 2020 as one of the measures that will support market take-up of research results and innovation.
- Help on addressing standardization in Horizon 2020 projects is available from CEN-CENELEC.
- For more information see:
<http://www.cenelec.eu/research/tools/horizon2020/>
- Download guide from:
http://www.cenelec.eu/research/news/publications/Publications/Standards_Horizon2020.pdf



The image shows the cover of a guide from CEN-CENELEC. The top part is orange with the CEN-CENELEC logo and the text 'INTEGRATING STANDARDS IN YOUR HORIZON 2020 PROJECT'. Below this is a row of four small images: a satellite, a blue globe, a sunset, and a green leaf. The bottom part is white with the text 'Linking Innovation and Standardization: a pocket guide for project proposers' and a photograph of two men in business attire talking on mobile phones.

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Information Sources

- Academic publications, conference proceedings
- Market reports
- Industry partners
- Company websites, annual reports (incl. financial)
- Technical reports
- Industry/sector publications
- Industry events, conferences and exhibitions
- Standards bodies (CEN/CENELEC, ISO, ETSI, National Bodies)
- Patents and other registered IP

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Strategic Intelligence from Patents for proposal preparation and exploitation

- State of the Art
- Freedom to use
- Potential new technology areas
- Key players – now and who is looking for the future!
- Market Intelligence
- Competitor Intelligence
- Technology Intelligence
- Finding research and/or commercialisation partners

More later....

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Strategic Intelligence to Action Plans

1. Gather information to understand the landscape (market, technical, IPR, SOTA, Competitors, etc) ✓
2. Analyse the information to obtain strategic intelligence... to allow you to: -
3. **Justify** the project objectives considering consortium expertise, capabilities and proposed resources .. and to: -
4. Plan to deliver – develop strategies and plans to maximise impact and exploitation:
 - Strategy and plan to deliver the project results
 - Draft plan for dissemination and exploitation of research results

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Pulling it together to develop the Proposal

1. Excellence
2. Impact
3. Implementation

Excellence

Extract from proposal template

- Objectives should be consistent with the expected exploitation and impact of the project
- Describe the positioning of the project
- Describe research and innovation activities which will be linked with the project
- Describe the advance your proposal would provide beyond the state-of-the-art
- Describe the innovation potential
- Refer to the results of any patent search carried out

Evaluation Criteria - Excellence

- Clarity and pertinence of the objectives
- Soundness of the concept, including trans-disciplinary considerations, where relevant
- Extent that proposed work is ambitious, has innovation potential, and is beyond the state of the art (e.g. ground-breaking objectives, novel concepts and approaches)
- Credibility of the proposed approach

Impact

Extract from proposal template (1 of 2)

- Describe how your project will contribute to:
 - the expected impacts set out in the work programme, under the relevant topic;
 - improving innovation capacity
 - strengthening the competitiveness and growth of companies

- Describe any barriers/obstacles that may determine whether and to what extent the expected impacts will be achieved.

Impact

Extract from proposal template (2 of 2)

- Provide a draft 'plan for the dissemination and exploitation of the project's results'
 - The approach to innovation should be as comprehensive as possible, and must be tailored to the specific technical, market and organisational issues to be addressed.

- Include a business plan where relevant.

- You will need a consortium agreement to manage the ownership and access to key knowledge (IPR, data etc.).

- Outline the strategy for knowledge management and protection.

Evaluation Criteria - Impact

- The expected impacts listed in the work program under the relevant topic
- Enhancing innovation capacity and integration of new knowledge
- Strengthening the competitiveness and growth of companies by developing innovations meeting the needs of European and global markets; and, where relevant, by delivering such innovations to the markets
- Any other environmental and socially important impacts (not already covered above)
- Effectiveness of the proposed measures to exploit and disseminate the project results (including management of IPR), to communicate the project, and to manage research data where relevant

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Implementation

Extract from proposal template

- Give visibility in the work plan to 'dissemination and exploitation'
- Describe how effective innovation management will be addressed in the management structure and work plan.
- Describe the industrial/commercial involvement in the project to ensure exploitation of the results

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Implementation

Management structures and procedures to:

1. Create, capture and manage the research results (IP)
 - The management framework (who is responsible)
 - The management procedures (how it will be done)
 - Establish good foundations and guiding principles/policies
 - IP management and protection strategies and procedures

2. Disseminate and Exploit the research results (IP)
 - Assess the opportunities
 - Exploitation strategies and plans
 - Exploit/Extract value from research outputs
 - Dissemination and communication of research outputs

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Strategic Intelligence from patent information

Strategic Intelligence from Patents

- State of the Art
- Freedom to use
- Potential new technology areas
- Key players – now and who is looking for the future!
- Market Intelligence
- Competitor Intelligence
- Technology Intelligence
- Finding research and/or commercialisation partners

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Why Patents

- The **largest** freely available technical publication resource
- Patents are often the **only** publication on a subject
- Patents are usually the **first** publication
- **Large** resource : 80+ million documents
- **Growing** Rapidly : 2 applications every minute

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Patents

Not just IPR/legal information

- Bibliographic Information (who, where, when – companies and individuals)
- Technical Information (state of the art, background, research areas)
- Legal Status Information (freedom to use, regions protected in)
- Commercial Information (future markets and territories)

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Patents

Highly structured and classified

- Technical classification
 - 60,000 IPC (International) classes
 - 120,000 ECLA (European) classes
 - 250,000 CPC (Cooperative – EPO and US) classes
- Time and region classification
 - reveal trends over time
 - geographical activity – past, present and future!

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Free patent searching

- European Patent Office – Espacenet
 - www.espacenet.com
- World Intellectual Property Organisation – Patentscope
 - patentscope.wipo.int
- Google patent
 - www.google.com/patents
- National patent offices

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Searching for Prior Art

- Don't reinvent the wheel
- Check for freedom to use
- Build on the work of others

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IPC	CPC	IPC	Publication info	Priority date
A61B5/145	A61B5/14532 A61B5/14533 A61B5/14534 (+3)	A61B5/145	US2014018646 (A1)	2007-11-21
A61B5/00	A61B5/14500 A61B5/14532 A61B5/14533 (+10)	A61B5/00	US2011075711 (A1)	2009-12-17
A61B5/00	A61B5/0002 A61B5/14503 A61B5/14532 (+2)	A61B5/14 G06F19/00	US2010280499 (A1)	2007-12-26
A61B5/00	A61B5/00 A61B5/1405 A61B5/1422 (+6)	A61B5/00	US2010186625 (A1)	2006-04-12


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The screenshot shows the Espacenet patent search results page. At the top right is the 'iambic innovation' logo. The main header includes the Espacenet logo and 'Patent search' in multiple languages (Deutsch, English, Français). Below the header, there are navigation tabs: 'About Espacenet', 'Other EPO online services', 'Search', 'Result list', 'My patents list (0)', 'Query history', 'Settings', and 'Help'. The 'Result list' tab is active, showing a search for '(txt = glycemic and txt = control) and txt = sensor using Smart search'. The results are sorted by 'Upload date' in 'Descending' order. The first result is '1. USE OF AN EQUILIBRIUM INTRAVASCULAR SENSORS TO ACHIEVE TIGHT GLYCEMIC CONTROL' by Markle William H and Markle David R. A blue circle highlights the 'Download covers' button in the top right of the result list. Another blue circle highlights a 'Download covers' button next to the first result entry. The copyright notice at the bottom reads '© Copyright 2015 Iambic Innovation Ltd'.

The document is titled 'Espacenet search results on 30-04-2014 13:39'. It features the Espacenet logo at the top left. The main text states: '7 results found in the Worldwide database for: (txt = glycemic and txt = control) and txt = sensor using Smart search. Displaying selected publications'. Below this is a table with the following data:


Publication	Title	Page
US2014018646 (A1)	USE OF AN EQUILIBRIUM INTRAVASCULAR S...	2
WO2011075711 (A1)	SYSTEM AND METHOD FOR MAINTAINING GLY...	3
US2010280499 (A1)	SYSTEM AND METHOD FOR GLYCEMIC CONTROL	4
US2010160535 (A1)	METHODS AND APPARATUSES RELATED TO BL...	5
US7727147 (B1)	Method and system for implantable glu...	6
US2009048503 (A1)	GLYCEMIC CONTROL MONITORING USING IMP...	7
US2003028089 (A1)	DIABETES MANAGEMENT SYSTEM	8

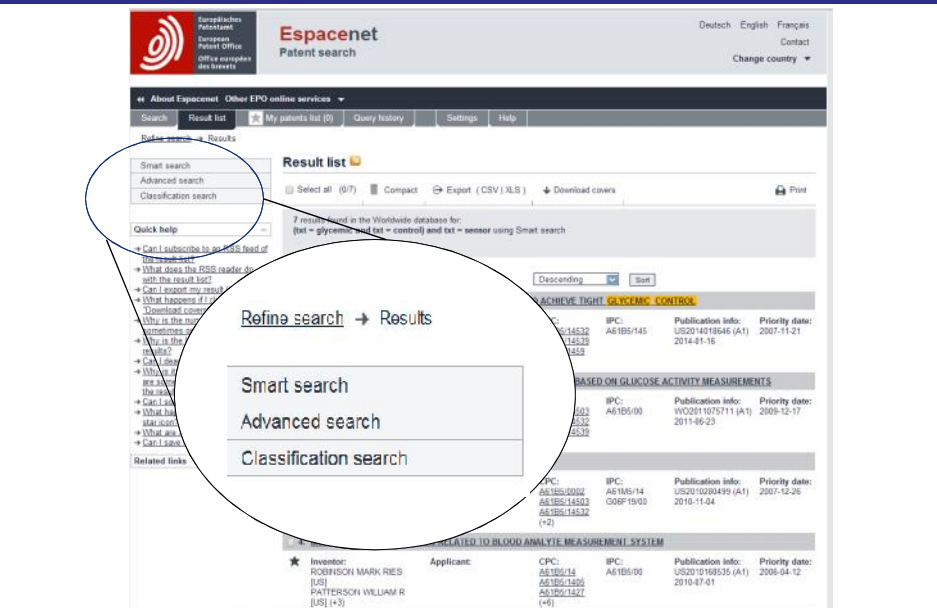
The copyright notice at the bottom reads '© Copyright 2015 Iambic Innovation Ltd'.

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Strategic Intelligence

- Who is doing what?
- What are key challenges?

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The screenshot shows the Espacenet Patent search interface. A search query has been entered, resulting in a list of patent entries. A callout box highlights the search options: Smart search, Advanced search, and Classification search. Another callout box points to the 'Refine search → Results' link. The search results table includes columns for IPC, Publication info, and Priority date.

IPC	Publication info	Priority date
A61B5/145	US2014018646 (A1)	2007-11-21
A61B5/145	2014-01-16	
A61B5/00	WO2011075711 (A1)	2009-12-17
A61B5/00	2011-06-23	
A61B5/002	US2011084499 (A1)	2007-12-26
A61B5/14503	2010-11-04	
A61B5/14532	2010-07-01	

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Espacenet Patent search

Deutsch English Français Contact Change country

Advanced search

Search for a keyword or a classification symbol

View section **Index** A B C D E F G H I Y

Symbol Classification and description

<input type="checkbox"/>	A	HUMAN NECESSITIES	
<input type="checkbox"/>	B	PERFORMING OPERATIONS; TRANSPORTING	I
<input type="checkbox"/>	C	CHEMISTRY; METALLURGY	I
<input type="checkbox"/>	D	TEXTILES; PAPER	
<input type="checkbox"/>	E	FIXED CONSTRUCTIONS	
<input type="checkbox"/>	F	MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING ENGINES OR PUMPS	I
<input type="checkbox"/>	G	PHYSICS	I
<input type="checkbox"/>	H	ELECTRICITY	I
<input type="checkbox"/>	Y	GENERAL TAGGING OF NEW TECHNOLOGICAL DEVELOPMENTS; GENERAL TAGGING OF CROSS-SECTIONAL TECHNOLOGIES SPANNING OVER SEVERAL SECTIONS OF THE IPC; TECHNICAL SUBJECTS COVERED BY FORMER USPC CROSS-REFERENCE ART COLLECTIONS [XRACS] AND DIGESTS	I

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Espacenet Patent search

Deutsch English Français Contact Change country

Cooperative Patent Classification

Search for a keyword or a classification symbol

View section **Index** A B C D E F G H I Y


Symbol Classification and description

<input type="checkbox"/>	A	HUMAN NECESSITIES	
<input type="checkbox"/>	B	PERFORMING OPERATIONS; TRANSPORTING	I
<input type="checkbox"/>	C	CHEMISTRY; METALLURGY	I
<input type="checkbox"/>	D	TEXTILES; PAPER	
<input type="checkbox"/>	E	FIXED CONSTRUCTIONS	
<input type="checkbox"/>	F	MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING ENGINES OR PUMPS	I
<input type="checkbox"/>	G	PHYSICS	I
<input type="checkbox"/>	H	ELECTRICITY	I
<input type="checkbox"/>	Y	GENERAL TAGGING OF NEW TECHNOLOGICAL DEVELOPMENTS; GENERAL TAGGING OF CROSS-SECTIONAL TECHNOLOGIES SPANNING OVER SEVERAL SECTIONS OF THE IPC; TECHNICAL SUBJECTS COVERED BY FORMER USPC CROSS-REFERENCE ART COLLECTIONS [XRACS] AND DIGESTS	I


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The screenshot shows the Espacenet Patent search interface. At the top right, the 'iambic innovation' logo is visible. The main header includes the Espacenet logo and navigation options in German, English, and French. Below the header, there are navigation tabs for 'Search', 'Result list', 'My patents list (0)', 'Query history', 'Settings', and 'Help'. The main content area is titled 'Cooperative Patent Classification' and features a search bar with the text 'a keyword or a classification symbol'. A 'View section' dropdown is set to 'Index', with letters A through Y. Below this, a table lists classification symbols and descriptions. The 'Chemistry' section is expanded, showing 'C01 INORGANIC CHEMISTRY' with a circled description: '(processing powders of inorganic compounds preparatory to the manufacturing of ceramic products C04B 35/00; fermentation or enzyme-using processes for the separation of elements or inorganic compounds except carbon dioxide C12P 3/00; obtaining metal compounds from mixtures, e.g. ores, which are intermediate compounds in a metallurgical process for obtaining a free metal C21B C22B; production of non-metallic elements or inorganic compounds by electrolysis or electrophoresis C26B)'. Other classes listed include C02 (TREATMENT OF WATER, WASTE WATER, SEWAGE, OR SLUDGE), C03 (GLASS, MINERAL OR SLAG WOOL), C04 (CEMENTS, CONCRETE, ARTIFICIAL STONE, CERAMICS; REFRACTORIES), C05 (FERTILISERS; MANUFACTURE THEREOF), and C06 (EXPLOSIVES; MATCHES). A 'Selected classifications' box at the bottom left shows 'C' selected.

This screenshot provides a detailed view of the 'C04B 35/00' classification. The header shows 'Symbol' and 'Classification and description'. The main entry is 'C04B 35/00 Shaped ceramic products characterised by their composition ({ porous ceramic products C04B 38/00; ceramic articles characterised by particular shape, see the relevant classes, e.g. linings for casting ladles, funnels, cups or the like B22D 41/02; ceramic substrates for microelectronic semi-conductors H01L 23/15 }) ; Ceramics compositions containing free metal bonded to carbides, diamond, oxides, borides, nitrides, silicides, e.g. cermets, or other metal compounds, e.g. oxynitrides or sulfides other than as macroscopic reinforcing agents C22C; (shaping of ceramics B28B) ; Processing powders of inorganic compounds preparatory to the manufacturing of ceramic products ({ Chemical preparation of powders of inorganic compounds C01; infiltration of sintered ceramic preforms with molten metal C04B 41/61 })'. Below this, a list of sub-classifications is shown, including 'C04B 35/01 based on oxide ceramics', 'C04B 35/013 containing carbon', 'C04B 35/016 based on manganese', 'C04B 35/03 based on magnesium oxide, calcium oxide or oxide mixtures derived from dolomite', 'C04B 35/04 based on magnesium oxide', 'C04B 35/043 Refractones from grain sized mixtures', 'C04B 35/0435 containing refractory metal compounds other than chromium oxide or chrome ore', 'C04B 35/047 containing chromium oxide or chrome ore', 'C04B 35/0476 obtained from fused grains', 'C04B 35/0476 obtained from prereacted sintered grains (("simultaneous sinter"))', and 'C04B 35/06 Refractones by fusion casting'. The 'C04B 35/016' entry is circled in red.

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Result list

Select all (0/20) Compact Export (.CSV) (.XLS) Download covers 

Approximately **738** results found in the Worldwide database for: **C04B35/016** as the Cooperative Patent Classification. Only the first **600** results are displayed. 1 >

Results are sorted by date of upload in database

1. PROCESS FOR PREPARING ADVANCED CERAMIC POWDER USING ONIUM DICARBOXYLATES						
★ Inventor: WILSON WILFRID WAYNE	Applicant: SACI FM INC [US]	CPC: C01D13/10 C01G23/002 C01G23/006 (+40)	IPC: C01D C01G C01D	Publication info: UK156593 (A1) 2014.08.15	Priority date: 2006.04.03	
2. METHOD OF FABRICATING AN LTM PEROVSKITE PRODUCT						
★ Inventor: MARIN SAMUEL [FR] LEVY CAROLINE [FR]	Applicant: SAINT-GERAN CT RECHERCHES [FR]	CPC: C01G45/1264 C01B20/234 C01B22/03200 (+22)	IPC: H01M4/50	Publication info: US2014237632 (A1) 2014.08.14	Priority date: 2006.10.24	
3. COMPOSITE OXYGEN TRANSPORT MEMBRANE						
★ Inventor:	Applicant:	CPC: B01D22/25402 B01D22/25407 B01D22/25502 (+6)	IPC: B01D53/22 B01D9/00 B01D89/02 (+6)	Publication info: CN103087651 (A) 2014-08-13	Priority date: 2011-12-16	

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Claims

Mosaics

Original document

Cited documents

Citing documents

INPADCO legal status

INPADCO patent family

Quick help

- [What happens if I click on "In my patents list"?](#)
- [What happens if I click on the "Register" button?](#)
- [What happens if I click on the red "patent translate" button?](#)
- [Why is the description sometimes in French or German or another language altogether?](#)
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Enhanced identification system

Description of US6661336 (B1)

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[0002] This is a continuation of PCT/US98/01388 filed May 14, 1998

FIELD OF THE INVENTION

[0003] This invention relates to a method of identifying a plurality of transponders, each of which transmits identification data to a receiver, and to themselves. The invention further relates to method and apparatus for improving the identification systems of US 5,853,132 A.

BACKGROUND OF THE INVENTION

[0004] Identification systems are known in which a plurality of transmitters, typically transponders, are active ("interrogation signals") and then transmit reply signals, usually containing identification data, to a receiver, with an interrogator. The signals may be transmitted in many ways, including electromagnetic energy, e.g. radio frequency, coherent light, and sound, e.g. ultrasound. For example, the transmission may be achieved by actual emission or by the modulation of the reflectivity of an antenna of the transponder, resulting in varying amounts of RF energy reflected or back-scattered from the transponder antenna.

[0005] GB 2,118,806 A discloses an identification system in which the individual transponders are programmed in random manner. Timing signals for the transponders in this identification system are derived from a crystal transponder expensive to manufacture.

[0006] EP 467,036 A describes another identification system which uses a pseudo-random delay between transmission of a reply signal and the time the identification address is received by the transponder to maximize as possible.

[0007] EP 1,617,99 A discloses an interrogator/transponder system in which an interrogator broadcasts an identification field. Each transponder transmits a reply signal consisting of a unique

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