Exploitation of research results

INTRASOFT Intl S.A.
Research & Innovation Unit
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Topics covered

- INTRASOFT International S.A. at a glance
- Exploitation Strategy
- Steps to present an exploitation plan
- Approaches for the exploitation of research results
- Open Innovation Service Segmentation
- Intellectual property
- Actual activities regarding the Commercialisation of Research in the US
- Practical examples of how open Innovation is used
A leading European company in information technology services as of 1996.

Key player in E.U. Institutions and Agencies for more than 15 years.

Major multinational IT solutions integrator, serving governments, large public institutions and private enterprises in more than 70 countries around the globe.

Headquarters in Luxemburg, established in 12 countries.

About 1,500 professionals, 20 different nationalities.
WHAT WE DO

- Deliver seamless business systems, through **software development** and **IT systems integration**.
- Offer **vertical IT solutions** in specific business domains and industries.
- Offer a wide portfolio of **managed IT services**, infrastructure and application **outsourcing**.
- Provide highly-skilled professionals, through consulting and **IT capacity services**.
GEOGRAPHICAL FOOTPRINT IN EUROPE

- Office Location
  - Athens / Bucharest / Brussels / Luxembourg / Sofia / Copenhagen / Nicosia / Amman / Riyadh / Manila

- Activity
  - Alicante
  - Ankara
  - Apeldoom
  - Astana
  - Belgrade
  - Bern
  - Budapest
  - Dublin
  - Hague
  - Helsinki
  - Kiev
  - Kishinev
  - Lisbon
  - Ljubljana
  - London
  - Lulea
  - Malta
  - Minsk
  - Moscow
  - Nicosia
  - Oslo
  - Podgorica
  - Riga
  - Skopje
  - Tirana
  - Tbilisi
  - Vilnius
  - Warsaw
  - Zagreb
EU funded projects and exploitation

European Research projects generally perform well in:

- fostering intl. research collaboration
- developing new technologies

But they frequently do not fully use their potential and capacity to exploit.

- Most often great researchers love research but feel uncomfortable when having to consider or plan for exploitation
- Making dissemination / exploitation activities at the end of the project is too late
- Activities of dissemination plane are not always carried out
- Are not aware of approaches and Open Access routines for sharing results and foster the creation of innovation
Why exploit research results

- Without a proper exploitation (commercialisation/valorisation) strategy, good research may remain research work, never reaching its full potential and never creating impact to our society.
- Exploitation helps to **accelerate scientific progress**.
- Exploitation of research results may help to **support the economic development of the country and preserve its competitiveness**.
- Exploitation of research should “re-finance” future research activities.
The exploitation of research results helps to drive the emergence of a new way of funding research: the transfer of a technology into the socio-economic domain is based on a contract, which sets out terms and conditions for the financial returns deriving from commercial uses of the invention.

Exploitation can (should) generate additional income.
The EC is putting efforts and means to get knowledge AND create impact; only exploited research creates the impact.

- Exploitation is recognized as the key enabler for the success of a project

- All EU funded projects should describe their exploitation intentions through an Exploitation Plan

Note: The Exploitation Plan is often described together with the Dissemination Plan within the project proposal. Progress is followed up within the review meetings.
How? Steps to present an exploitation plan (1)

- **Exploitation Strategy** - analyse the strategic definition of the project,
  - Definition of the project results/assets (what will be exploited?)
  - Decision on the exploitation policy for each asset (how we are going to exploit it?)
  - Decision on the market schemas (where and in which promotion channels should we implement the exploitation policy of the specific asset?)
How? Steps to present an exploitation plan (2)

- Expected exploitable results and potential end users
- Exploitation action plan at consortium level
- Commercial Use
- Knowledge transfer use
- Technological enhancement use
- Individual exploitation plan (partner level)
How? Steps to present an exploitation plan (3)

**Dissemination:**

- **Dissemination Principles**
  - Target group of dissemination activities (stakeholders)

- **Dissemination Approach**
  - Presentations to target groups i.e at trade fairs, exhibitions, conferences
  - collaboration with clusters,
  - creation of a specific interest group,
  - liaisons with other FP-7 projects,
  - academic publications and conference papers,
  - project website
  - Contribution to standardisation
How? Steps to present an exploitation plan (4)

- Intellectual Property Right (IPR) Management
  - IPR Management during the project
    - Consortium Agreement
    - Access rights to Background and Foreground IP during the project
    - IP ownership within the consortium and “first users”
      - Letter of intent
      - Non-disclosure agreement
The exploitation plan is being prepared but which approach to use?

- Which approaches could be used to exploit (commercialise/valorise) research results?
  - Ideas from the audience?
Approaches for the exploitation of research results (1)

- There are different approaches to the valorisation/exploitation of research results

- **Open science model**: exploitation is primarily effected through education and the publication of research results.

- **Technology transfer models**:
  - (Internal management and use of intellectual property rights): Closed Innovation
  - (External AND Internal management and use of intellectual property rights): Open Innovation
Creation of new activities (spin-offs) in the past often based on the results produced by universities and other research centres.

Nowadays also, as a result of an open innovation approach, inside-out spin-off from a company
Open science model: (1)

- Open science is used by analogy to "open source" software and refers to the approach of sharing insights through publications.

- Dissemination of research results supports the advancement of science very effectively. All researchers are free to use the research results published by other researchers, provided they cite their sources.

- Simple approach of exploiting research results used by many scientists.

- All areas of research, including human and social sciences, can apply this model.
Potential exploitation of discoveries published in scientific journals by industry is usually indirect, without involvement of the organisations where these discoveries are made.

In this model, industry derives no competitive advantages from the information, because published results automatically fall into the public domain and are therefore accessible to all.
Technology Transfer also called Technology Commercialisation, is the process of transferring

- Skills
- (Knowledge)
- Technologies
- Methods of manufacturing

among research centers/universities but also private organisations to ensure that scientific and technological developments are accessible to a wider range of users. These can then further develop and exploit the technology into new products, processes, applications, materials or services.
Model is based on the linear innovation paradigm: research generates discoveries; based on these new insights, applications are subsequently conceived and protected by intellectual property rights (patents). The eventual development is licensed to industry.

The technology transfer model involves protection via IPR in order to establish an exploitation monopoly for a particular area and timeframe. The granting of a patent suggests an economic improvement compared to the state of the art.

Many research organisations and universities are increasingly establishing "Tech Transfer Offices"
Various tools are available to facilitate technology transfer.

- the Enterprise Europe Network (EEN)

  - In Bulgaria > [http://enterprise-europe-network.bg/](http://enterprise-europe-network.bg/)

- the Technology Innovation International (TII) network for technology transfer and innovation professionals. TII is a network of intermediaries and TT professionals.

The Enterprise Europe Network (EEN) approach can be summarised as having 4 steps

- Step 1: Evaluating the innovation capacity / Marketing and contact
- Step 2: Documenting the technology requirements / Identifying technology profiles
  - Technology offers
  - Technology requests
- Step 3: Searching for suitable partners
- Step 4: Concluding a partnership agreement / Offering support
Open Innovation; breaching company boundaries

Source: University of Cambridge, Institute for Manufacturing, 2009
Open Innovation is an APPROACH for Innovation Management\(^1\) that

- allows organization to acquire, integrate and process external information more efficiently and effectively.
- supports organizations to overcome their local search bias, acquire precise information needs and therefore innovate more successful and cost efficiently.
- creates new forms of interacting and collaborating with the external environment of a company including various potential actors (beyond suppliers, customers, universities etc).

\(^1\)The Market for Open Innovation, F. Piller, K. Diener, 2010
Open Innovation: Why? (2)

- Large Businesses can no longer afford to invest in generic technologies, as they will not be able to exploit the various applications of such technologies themselves. Larger private research centres have almost disappeared. Public research organisations can only take over in this capacity if it is of high quality and easily accessible.

- Direct collaboration with companies is probably the most efficient form of exploitation. The research and development competences are complementary, and the interaction between the two approaches is, in itself, a catalyst for innovation.

- FP7 encourages such direct cooperation, which is also explicitly permitted by the new EU rules on state aid. Two forms of collaboration co-exist: contract research and collaborative (competitive) research which is more recent and is tying in with the open innovation concept.
Open Innovation: What?

- Open Innovation is:
  - a strategic tool to explore new growth opportunities at a lower risk\(^1\)
  - one of the managerial answers to globalisation\(^2\)
  - more about increasing R&D options than about replacing existing ones. The external technological collaboration is complementary to internal R&D investments\(^1\)
  - Open technology sourcing offers companies higher flexibility and responsiveness without necessarily incurring huge costs\(^1\)
  - Most companies use a mix of approaches to innovation: technologies may be purchased from other companies, acquired through licenses, partnerships and alliances, developed internally\(^1\)
  - Large companies are four times more likely to collaborate on innovation activities than SMEs\(^1\!\)
  - P&G is developing 50% of innovations with external partners\(^3\)

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\(^1\)Open Innovation in Global Networks, OECD 2008
\(^2\)Living Labs and Open Innovation, E. Almirall, eJOV-Volume 10
\(^3\)OpenInnovation.de/523-Procter-Gamble-P-G
Managing uncertainty is a core practice of successful innovation management

Reduction of uncertainties by accessing and transferring different types of information:

• Customer and market needs (need information\(^1\))
  Information need builds on an in-depth understanding of customers’ requirements, operations and systems.

• Technological solutions (solution information\(^1\))
  Solution information addresses the efficiency of the innovation process and enables product developers to engage in more directed problem-solving activities in the innovation process.

\(^1\)The Market for Open Innovation, F. Piller, K. Diener, 2010
Lead User Method
- Identification of innovative users
- Users are actively integrated via Innovation Workshops/Clusters
- Living Labs supporting user driven innovation and national systems of innovation

Toolkits for Open Innovation
- Internet based instruments supporting companies / organisations via transferring information needs into new product concepts

* L. Mortara et al, 2011
Innovation Contests*

Generation of input for all stages of innovation process. Competition between users and customers aim at encouraging innovative ideas at the frontend of the innovation process or at later stage. Usually done via searches for innovative approaches to a technical problem within a wide range of problem solvers.

Nowadays done via CROWDSOURCING

* L. Mortara et al, 2011
Open Innovation: How? (4)

- **Lead User Method**
  - ENoLL [www.openlivinglabs.eu](http://www.openlivinglabs.eu)
  - Regional and National Clusters
  - Industry Associations
  - Big Idea Group (Rapid Reviews) [www.bigideagroup.net](http://www.bigideagroup.net)

- **Toolkits for Open Innovation**
  - EEN (Enterprise Europe Network)
  - Yet2.com [www.yet2.com](http://www.yet2.com)

- **Innovation Contests**
  - NineSigma [www.ninesigma.com](http://www.ninesigma.com)
  - InnoCentive (Eli Lilly spin-out) [www.innocentive.com](http://www.innocentive.com)
  - I-Prize (CISCO Systems, two rounds, 2000 ideas collected, price 250k$)
Open Innovation Services

1 - Innovation Management
2 - Market Intelligence
3 - Landscape Analysis
4 - Technology Scouting
5 - IP Licensing
6 - Partnership Development

“7” – Technology Fusion Services?

Source: University of Cambridge, Institute for Manufacturing, 2009
Toolkits for Open Innovation

1 - Innovation Management
2 - Market Intelligence
3 - Landscape Analysis
4 - Technology Scouting
5 - IP Licensing
6 - Partnership Development

Innovation Contests

Lead User Method

Source: University of Cambridge, Institute for Manufacturing, 2009
The driving force to innovate...

...is the same for large and small enterprises, but SMEs can participate sooner, move faster and adapt more readily to opportunities from the periphery of a market, relative to large firms\(^1\).

Increased R&D activities of SMEs make SME attractive as technology receiver and solution provider.

<table>
<thead>
<tr>
<th></th>
<th>1981</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;25000 employees</td>
<td>&lt; 1000 employees</td>
<td>&gt;25000 employees</td>
</tr>
<tr>
<td>&lt; 1000 employees</td>
<td>&gt;25000 employees</td>
<td>&lt; 1000 employees</td>
</tr>
<tr>
<td>Industrial R&amp;D spending</td>
<td>21,168 Million $</td>
<td>1,317 Million $</td>
</tr>
</tbody>
</table>

\(^1\)H. Chesbrough, 2010
Spin-offs are **new companies** created on the basis of technologies or know-how developed by a research organisation.

The human dimension is very important: the transfer of a technology is often reflected in the transfer of researchers, and entrepreneurs are needed to manage the new businesses.

Spin-offs are another way of producing the proof of principle of inventions and to valorise the results of research.

Spin-offs can be “hosted” by Business Incubators offering infrastructure and services.
Technologies which can be exploited by existing businesses without changing their operating model do not call for the creation of spin-offs.

More relevant approach when deemed
- to establish proof of principle for a new technology, if this requires substantial means;
- to explore a new exploitation model, which existing companies might hesitate to implement without proof of feasibility.
IP is no longer regarded merely as a protective shield for inventors, but also as a strategic tool for value generation\(^1\).

IP that is not capitalised has to be seen as a cost within an organisation.

IP may generate income for an organisation through the licensing, sale or commercialisation of IP protected services or products.

Various IP protection tools are available based on the nature of products/services/processes that need to be protected.

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\(^1\) “The value of knowledge European firms and the intellectual property challenge” An Economist Intelligence Unit white paper, 2007
Intellectual Property protection (1)

- **Industrial property**
  - **Patents** and **utility models**: inventions
  - **Industrial designs**: innovative designs
  - **Trademarks**: brands

- **Copyright**
  - Does not protect the ideas themselves but only the form of expression of ideas

- **Soft-IP**
  - This may be know-how, trade secrets, confidential information

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1 “The value of knowledge European firms and the intellectual property challenge”
An Economist Intelligence Unit white paper, 2007
Intellectual Property protection (2)

Methods of formal protection

- Patent
- Industrial design
- Trademark
- Copyright

Protection based on agreements

Agreements
Ownership and right to use

Methods of informal protection

- Protection of databases
- Technical protection
- Publications
- Documentation
- Restricted access to data
- Confidentiality
- Customer relations

1 Adapted from MET3 slides
Examples of actual activities in the US regarding the Commercialisation of Research

Have you used concepts of open innovation in your exploitation activities?

Are you interested to see some examples of how open innovation is used to exploit results?

1 Trends in Technology-Based Economic Development: Local, State and Federal Action in 2012, SSTI
Actual activities regarding the Commercialisation of Research in the US (1)

- Efforts to encourage more economic activity from university research has been increasing in activity in recent years
- States and universities attempt to build off the research assets.
- Approaches being taken are university/industry partnerships, proof-of-concept funds and joint ventures.
  - Colorado: Partnership between the Innovation Center of the Rockies and Colorado State University Ventures to accelerate technology commercialization based on faculty research (especially bioscience, cleantech, engineering, aerospace and IT/software technologies).
  - Kansas: Proof-of-concept fund supported by the University of Kansas will provide funding to mature research projects in all areas of technology, helping to attract industry investment and bring products to market.

1 Trends in Technology-Based Economic Development: Local, State and Federal Action in 2012, SSTI
Minnesota: University of Minnesota plans to launch 2 new funds in 2013 to support novel ideas coming out of the university. One will be a $20 million seed fund limited to university startups, and the other will be a $50 million national venture fund that will seek additional private capital and be open to entrepreneurs from across the country.

Ohio: The UC Technology Commercialization Accelerator formed under a partnership agreement between the University of Cincinnati (UC) and the Midwest EB5 Regional Center to help transition technologies out of the university into the marketplace.

Washington: Funding from foundations, investors and the state, a $20 million early stage venture fund was launched at the University of Washington (UW) for investing in promising startups spun out of UW and other research institutions across the state.

1 Trends in Technology-Based Economic Development: Local, State and Federal Action in 2012, SSTI
Idea Competition (IC) is a possibility for SMEs to source and exploit technologies.

Mainly large companies have the capacity to organise ICs independently, whereas SMEs more often use ICs via Intermediaries like (EEN, NineSigma, InnoCentive, yet2.com...).

ICs are need driven! They are much more successful than any PUSH approach.

ICs are not new, known and used since 18th century¹

Most OI services available nowadays are based on crowdsourcing principle enabled by the Internet.

¹von Sippel, 1988, 2005
us-eu-match - Technology Matching

Supply

University, Federal lab, SMEs, Research Centers

Technology Push

“Technology Offers”

Demand

Large Corporations

Market Pull

“Technology Requests”

Partnerships

US-EU-MATCH SERVICES

Business support services

- How to set up a business in the US
- Commercial partners searches
- Trade missions organization

Technology Partnerships

- Technology Scouting
- Technology brokerage

Horizontal Services

- Web Site
- Collaborative research projects
- Prior Art
## us-eu-match - a couple of cases

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution &amp; Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cleaning sponge to USA</strong>&lt;br&gt;- New product introduction&lt;br&gt;- Environmental focus&lt;br&gt;- Reusability versus simplicity</td>
<td><strong>Sponge on a roll found in Europe</strong>&lt;br&gt;- Consumer samples found with two companies&lt;br&gt;- Go to market time reduced</td>
</tr>
<tr>
<td><strong>US Exporter of Dairy Products</strong>&lt;br&gt;- EDTA for cleaning Production process&lt;br&gt;- Possible replacement because EDTA in Europe&lt;br&gt;- Research Project</td>
<td><strong>Clarified that EDTA is not banned in Europe</strong>&lt;br&gt;- Identified replacements for EDTA&lt;br&gt;- Avoided project and saved money and HR costs</td>
</tr>
</tbody>
</table>

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INTRASOFT International is ISO 9001 2000, ISO 9001, ISO 14001 and EN 15038 certified
Win-win deal EEN and EU-US-MATCH

EEN

• Average Success Rate 9% (~1000 agreements per ~11,000 Technological, Business, and Research profiles)

EU-US-MATCH

• Average Success Rate 14% (32 agreements per ~230 profiles)

NINESIGMA (EU-US-MATCH partner)

• Average Success Rate 50%
IC’s: Six industry examples

- Five large enterprise (17k-287k employees) Idea Contests and one open innovation agency have been analysed.
- USA, UK and France covering ICT, Telecomm, Consumer Goods and Conglomerate.
- Three examples in-house three by external Intermediaries, ALL cases were addressing SMEs as participant targets beside start-ups and students.
- Each IC attracted between 700 to 72,000 participants, getting between 72 to 3,844 ideas submitted, at the end between 0 to 12 technologies have been acquired in three cases after the second round.
- IC organisers list as main target: Technologies acquired, Market Intelligence, Technology Intelligence, Competitor Intelligence, Publicity (PR), access to people and testing opportunity!

* L. Mortara et al, 2011, Idea Competition under scrutiny as a mechanism for acquisition
Some IC study results

<table>
<thead>
<tr>
<th>#</th>
<th>Primary object of acquisition</th>
<th>Secondary object for the IC</th>
<th>Primary outcome</th>
<th>Secondary outcome</th>
<th>Deals</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>New technology</td>
<td>MI, CI, TI PR, Test new partners/staff</td>
<td>SU funded through venture arm</td>
<td>Intelligence PR</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>New technology, Business Idea</td>
<td>NA</td>
<td>Internal Corporate Entrepreneur</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>New technology, Business Idea</td>
<td>MI, CI, TI PR, Test new partners/staff</td>
<td>New business unit</td>
<td>Relationship with prospective partner intelligence</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>New technology, Business Idea</td>
<td>NA</td>
<td>NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>New technology, Business Idea</td>
<td>Revenue</td>
<td>Partnership with winner</td>
<td>Innovation</td>
<td>1</td>
</tr>
<tr>
<td>E</td>
<td>New technology</td>
<td>Revenue, Experience of IC</td>
<td>Not achieved</td>
<td>PR Experience of IC</td>
<td>0</td>
</tr>
<tr>
<td>F</td>
<td>New technology, Business Idea</td>
<td>Accelerate achievement of innovation, Quicker access/ building of competences, Ecosystem of partners</td>
<td>Partnership with winner</td>
<td>Accelerate achievement of innovation, Quicker access/ building of competences, Ecosystem of partners</td>
<td>5</td>
</tr>
</tbody>
</table>

* L. Mortara et al, 2011
Idea Competition Conclusions

- Idea Competition (IC) is a great tool for SMEs, if the possible advantages and disadvantages are known from the beginning.
- IC sources technologies, ideas at several level of maturity to be used for current and new business.
- The efficiency of the new inputs compared to the number of ideas posted is sometimes questionable.
- The engagement of intermediaries helps SMEs to outsource work to experienced players, but selected cases are maybe limited by the imagination of the intermediary!
- ICs have the advantage of improving the pace and smoothness of the acquisition process significantly and reduce part of the acquisition risk like lawsuits.
- Keep open innovation momentum going, rapidly proving value through quick (i.e. 6 months) trials/pilots is absolutely essential.
- The role beyond acquisition is often forgotten and especially very successfully used by large companies.
- Costs benefit calculation cannot be easily given, as often secondary outcomes can outnumber original targets.
What will the future bring?

Google ‘Solve for X’ meetings target tech 'moonshots'

Solutions to the “world’s greatest problems”, ideas dubbed “technology moonshots”, are the focus of Google’s latest attention-grabbing venture.

“Solve for X” meetings bring together “entrepreneurs, innovators and scientists” to crack global problems.

Executive chairman Eric Schmidt has already hosted one “Solve for X” event. Google plans to hold others “a few times a year”.

The plan has been compared with the annual TED and Ted Global conferences.

In a blog post written by Astro Teller and Megan Smith, the search firm says “Moonshots live in the grey area between audacious projects and pure science fiction. They are 10x improvement, not 10%.” That’s...
THANK YOU FOR YOUR ATTENTION
BACKUP SLIDES
InnoCentive supports **Challenge Driven Innovation** that bridges the gap between great ideas and solutions to drive measurable results.

- Total Registered Solvers: ~250,000 from nearly 200 countries (stable since 2010)
- Total Solver Reach: More than 12 million
- Total ChallengesPosted to InnoCentive.com: More than 1,420
- Project Rooms Opened to Date: 409,000
- Total Solution Submissions: 30,000 (4.7% made it to award)
- Total Award Dollars Posted: $35+ million
- Range of awards: $500 to $1 million based on the complexity of the problem
- Total Awards Given: 1,140+
- Average Success Rate (for seekers): 50%+

(Data: InnoCentive, April 2012)
Facilitators: NineSigma

NineSigma is the leading innovation partner to organizations worldwide, helping companies across industry sectors engage with the global innovation community to find knowledge and solutions that accelerate time to market.

- 500+ clients on projects including knowledge searches, technology landscaping and enterprise-wide open innovation programs.
- More than 2,200 open innovation projects since its inception in 2000.
- Distributed innovation requests to more than 2 million solution providers globally.
- Received 35,000+ innovation proposals from solution providers in 135 countries.
- 90% identifying viable solutions
  (Data: NineSigma, May 2012)
Exploitation Strategy and EU funded projects

- Funding
- Market
- Research
- Innovation
- Knowledge


- **Contract research** has existed for a long time and is the more frequent form.
  - It involves one company sub-contracting a clearly defined research or development project to a research organisation selected for its research competences and/or equipment. The company usually claims ownership of the results, and the research organisation does not retain any intellectual property beyond the possible enhancement of its know-how.

- **Collaborative (competitive) research** is a more recent phenomenon tying in with the open innovation concept.
  - Research organisations and companies jointly select a research area and agree on a division of tasks that reflects their respective competences. Individual partners retain ownership of the results they have generated, and all partners jointly decide how to manage any exploitation rights. The advantages of this approach lie in the fact that it opens access to complementary competences and that it enables third parties to benefit from the potential applications which the partners may not have chosen to exploit. However, this type of cooperation is far more complex, particularly with regard to intellectual property.
Assuming that knowledge transfer includes, and covers more than, technology transfer.

1 Commercialising Intellectual Property: Joint Ventures IPR Helpdesk Factsheet January 2013