Invention and Innovation in H2020
Exploitation strategies, business models and case studies

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Get your ticket to innovation.

Exploitation..

- Assessing project outputs and opportunities
- Exploitation strategies and plans
- Business models
- Case studies
Capturing” the IP is only the start!

How do you pick the winners?

(or..how do you then exploit the project results to maximise impact?)

How do you predict the future?

The challenge of assessing future markets for new technologies is to:-

determine the demand for products that don’t yet exist

from customers who don’t yet know about them
“Prediction is difficult, especially when it’s about the future”

Niels Bohr
(Nobel Prize winner)

The Benefits of Hindsight

“Significant emerging technologies are easily seen after the fact, and companies are then congratulated or castigated for their decisions to pursue them or ignore them. But rarely are the winners clear at the outset”

Doering and Parayre, 2000
Who should you ask?

- Inventor
- Licensing Professional
- Patent Attorney
- Corporate Accountant
- Corporate R&D
- Market Research
- The user

Market Research

Identify the opportunities

- Biomaterials: $18bn
  “.....will double in the next 10 years.....”
  Key areas: orthopaedics, advanced woundcare, tissue engineering

- Drug delivery: $11bn
  “.....CAGR 16-20% over next 5-10 years.....”
  Key areas: site specific targeting and distribution

- Minimally invasive surgery: $4bn
  “.....10-16% annual growth.....”
  Key areas: non-procedure specific, improvements to accuracy, reductions in surgical duration
Ask the Expert?

Computing

- "I think there is a world market for about five computers"
  
  *Tom Watson, IBM, 1943*

- "...computers in the future may have only 1,000 vacuum tubes and weigh only 1.5 tons."
  
  *Popular Mechanics, 1949*

- "There is no reason for any individual to have a computer in their home"
  
  *Ken Olson, DEC, 1977*

*Everyone makes mistakes...*

Ask the Expert?

Communications

- "I have travelled the length and breadth of this country and talked with the best people, and I can assure you that data processing is a fad that won't last out the year."
  
  *The editor in charge of business books for Prentice Hall, 1957*

- "This 'telephone' has too many shortcomings to be seriously considered as a means of communication. The device is inherently of no value to us."
  
  *Western Union internal memo, 1876.*

- "The Americans may have need of the telephone, but we do not. We have plenty of messenger boys."
  
  *Sir William Preece, chief engineer of the British Post Office, 1876.*
Ask the users?
The Sony experience

Akio Morita on market research:

"Our plan is to lead the public with new products rather than ask them what products they want. The public does not know what is possible, but we do."

How do investors decide?

- Ask everyone!
- Try to reduce risk
- Different inputs are needed to assess IP and plan exploitation
What should be assessed?

- IP and IPR
- Technology
- Markets (sectors, competition, etc.)
- Opportunities (where are the unmet needs?)
- The ease of transfer?
- Pre and post deal support?
- All must be considered together
- A structured approach and due diligence can reduce risks

The strength of the IP and IPR

<table>
<thead>
<tr>
<th>Nature of Invention</th>
<th>Fundamental</th>
<th>or</th>
<th>Incremental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Strength of Rights</td>
<td>Strong</td>
<td>or</td>
<td>Weak</td>
</tr>
<tr>
<td>Possibility of ties or conflicts (Freedom to use)</td>
<td>None</td>
<td>or</td>
<td>Much Prior Art</td>
</tr>
<tr>
<td>“Bundle of Rights”. Is the invention covered by a range of rights or just one</td>
<td>Strong Collection of IP/IPR</td>
<td>or</td>
<td>Single IP/IPR</td>
</tr>
<tr>
<td>Potential to strengthen IP through partnering</td>
<td>Strong</td>
<td>or</td>
<td>Weak</td>
</tr>
<tr>
<td>Potential to strengthen IP through further development</td>
<td>Strong</td>
<td>or</td>
<td>Weak</td>
</tr>
<tr>
<td>How easy to monitor and deal infringers</td>
<td>Easy</td>
<td>or</td>
<td>Difficult</td>
</tr>
</tbody>
</table>
## Technology

<table>
<thead>
<tr>
<th></th>
<th>No Alternative</th>
<th>or</th>
<th>Better Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative technologies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completeness of technology</td>
<td>TRL 8/9</td>
<td>or</td>
<td>TRL ½</td>
</tr>
<tr>
<td>Newness of technology area</td>
<td>Fundamentals are well established</td>
<td>or</td>
<td>New technology area</td>
</tr>
<tr>
<td>Standards related</td>
<td>Yes</td>
<td>or</td>
<td>No</td>
</tr>
<tr>
<td>Regulatory hurdles</td>
<td>Yes</td>
<td>or</td>
<td>No</td>
</tr>
</tbody>
</table>

## Transfer and support

<table>
<thead>
<tr>
<th></th>
<th>None</th>
<th>or</th>
<th>Very Major</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount of development needed by licensee</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical Support needed at time of transfer</td>
<td>None</td>
<td>or</td>
<td>Lots</td>
</tr>
<tr>
<td>Technical support needed after transfer</td>
<td>None</td>
<td>or</td>
<td>Lots</td>
</tr>
<tr>
<td>Support readily available</td>
<td>Yes</td>
<td>or</td>
<td>No</td>
</tr>
</tbody>
</table>
### Commercial and Market Opportunity

<table>
<thead>
<tr>
<th>Market need</th>
<th>Clear or Not clear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location of Opportunity</td>
<td>Global or Local</td>
</tr>
<tr>
<td>Market size and potential</td>
<td>Large or Small</td>
</tr>
<tr>
<td>Nature of Market</td>
<td>Hot, emerging or Established</td>
</tr>
<tr>
<td>Sector/Technology</td>
<td></td>
</tr>
<tr>
<td>Market Growth</td>
<td>High or Low</td>
</tr>
<tr>
<td>Market Structure</td>
<td>Developing or Mature</td>
</tr>
<tr>
<td>Market Profile</td>
<td>Easy to define and reach or Hard to define, difficult to reach</td>
</tr>
<tr>
<td>Market Inertia</td>
<td>Quick to accept or Slow to accept</td>
</tr>
<tr>
<td>Competitors</td>
<td>None or few or Dominant players</td>
</tr>
</tbody>
</table>

### Assessment Summary

- Assessing new technologies and markets is **always** difficult.
- **Risks cannot be avoided - but they can be managed**
**Impact**

*Extract from proposal template*

- 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**.

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**Exploitation strategies and Plans**

1) **What and Why?**
- Analysis of the market (market/competition/barriers/key targets, etc)
- Targeted exploitation opportunities and impacts – based on expected project results - with justification and positioning

2) **How to get there?**
- Exploitation Strategy (e.g. further development, open platform, by region, by field of use, exclusivity, standards, regulatory, etc., etc.)
- Commercialisation vehicle(s) (e.g. licensing, spin-out, JV, etc)
- Funding/Investment required? When and how? (Proof of concept, pre-seed, seed, etc..)
- Draft financial projections
Extracting Value from IP (i.e. the project outputs)

- IP is a valuable asset which, like physical property, can be traded – bought, sold or leased, used in JV’s, or as collateral

- But, unlike physical property there are many more ways of extracting value...

Exploitation Management

Some practicalities to address

- How far down "TRL" road should I go?
- Do I need to licence in 3rd party components, etc?
- Is more development/funding needed before I can convince an investor/partner?
  - what for (development, proof of scale-up, market validation, etc)?
  - how much?
  - where can I get it from?
- How do I reach my target prospects (end-users, investors, commercialisation partners, research partners, etc)
The Draft Exploitation Plan
Choosing the best exploitation strategy and business model

What exploitation route?

- Licence to an existing company?
- Start a new company?
- Further research?
**Licensing?**

**Granting the right to use your property under certain agreed terms and conditions, such as**

- Territory
- Field of use
- For a limited time
- For evaluation only
- Provided you do a good job with it!
- Etc

**NB: Can the SME Partner(s) reach all market sectors and territories?**

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**Open Source**

- Just another type of licence!
- Choose **only if appropriate** for the business model
- Usually requires source to be made available (sometimes only on request)
- Needs management
- Many different variations
- Beware “viral” clauses which may affect commercialisation
License or Start-up?

- **Licensing - licensee has expertise and resource**
  - Takes advantage of the expertise, resources and market know-how of companies already operating in the field.
  - Can address different fields of use and geographical areas

- **Start-up - must acquire expertise and resource**
  - A critical mass of expertise (management, financial, sales, marketing, manufacturing, technical, administrative), and an committed and enthusiastic team
  - Resources for developing, manufacturing and marketing can be very large, particularly if worldwide

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**Licence or Start-up?**

**Market & Technology**

<table>
<thead>
<tr>
<th>Licence</th>
<th>Start-up/Spin-out</th>
</tr>
</thead>
<tbody>
<tr>
<td>Established markets and suppliers</td>
<td>vs New market for new suppliers</td>
</tr>
<tr>
<td>Evolutionary/incremental technology</td>
<td>vs Revolutionary or platform technology</td>
</tr>
<tr>
<td>The IP fits a gap in someone else’s portfolio</td>
<td>vs The IP can deliver a unique, independent business advantage</td>
</tr>
<tr>
<td>The IP is a one-off stand-alone invention</td>
<td>vs There is a pipeline of potential products</td>
</tr>
</tbody>
</table>
**Licence or Start-up?**

**Finance and return on investment**

<table>
<thead>
<tr>
<th>Licence</th>
<th>Start-up/Spin-out</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low financial commitment</td>
<td>More capital more risk</td>
</tr>
<tr>
<td>Can have early returns</td>
<td>Returns take longer (via IPO or trade sale)</td>
</tr>
<tr>
<td>Licensee might fund further</td>
<td>Company will need to finance further R&amp;D</td>
</tr>
<tr>
<td>R&amp;D with inventors</td>
<td></td>
</tr>
<tr>
<td>The inventors have no</td>
<td>The inventors are interested in a commercial role</td>
</tr>
<tr>
<td>interest in a commercial role</td>
<td></td>
</tr>
</tbody>
</table>

**License or Start-up?**

- **Same commercial objectives** – different routes.
- Who is in the best position to “productise” and to bring the technology to market?
  - Further development?
  - Trials?
  - Regulatory approvals?
Commercialising research

A long term commitment to work together for mutual benefit

- It is important to work with companies who have the will, the ability, and the resources to develop the research results and bring them to market.

- Without this, the potential of the technology is unlikely to be realised – and there will be no benefit to anyone (and hence no impact!)

Get to know your partner

- Do they want your technology to "put it on the shelf" and so protect their own IP/patent position?
- Are they financially secure?
- Do they know the market?
- Do they have the necessary technical skills and resources to develop and manufacture the technology?

- ..and also help them get to know you, and convince them to invest time and resources!
Risk vs Reward
Who should you convince?

High investment risk

Low investment risk

Early stage
TRL 1-3

Market ready
TRL 7-9

Investment/funding depends on the availability of cash, and motives of investor/funder

Financing
3 main stages

- Financing early stage technologies to “make ready” for licence or sale
- Financing a start-up
- Financing a company for growth and “exit” by investors
## Financing Innovation
### Pre-seed and Seed Funding

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market research</td>
<td>Own funds</td>
</tr>
<tr>
<td>Make investment ready</td>
<td>Friends &amp; Family</td>
</tr>
<tr>
<td>Strengthen for licensing</td>
<td>Loans</td>
</tr>
<tr>
<td>Proof of Concept</td>
<td>Business Angels</td>
</tr>
<tr>
<td>Prototypes</td>
<td>Institution seed funds</td>
</tr>
<tr>
<td></td>
<td><strong>EC SME Instruments</strong></td>
</tr>
</tbody>
</table>

## Financing Innovation
### Start-up Funding

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set up company systems</td>
<td>Business Angels</td>
</tr>
<tr>
<td>Early product development (making ready for market)</td>
<td>Institution seed funds</td>
</tr>
<tr>
<td>PR, marketing and sales</td>
<td>Early stage venture funds</td>
</tr>
</tbody>
</table>
What’s special about project results?

- Project outputs are often early stage (and not fully market ready)
- Many research groups are working on the same challenges (no one has a monopoly on invention!)
- Often new approaches are outside the “norm” or standard (so do not seamlessly integrate)
## Building the best “offer”

- What is the best “technology transfer package”?
- Can you improve it through partnering or acquisition?

Working with others can enhance value and “unlock” the opportunity – i.e. to meet the need with a larger impact.

## More than just a patent!

- **Technical IP (Patentable)**
  - Process, Product, Manufacturing Apparatus
- **IP protected by copyright**
  - Software
  - Reports
  - Engineering drawings
  - Manufacturing and user guides
- **Trademarks/brands**
- **Designs (design rights)**
  - Functional
  - Eye-appeal
- **Know how** (e.g. best way to implement)
- **Secrets** (e.g. secret formulas)
Patented Method for Joining bamboo

But the “package” is much more than just a patent..

The exploitable IP includes:

- Patent in method of joining bamboo
- Design rights in the product, and some component parts
- Copyright in engineering drawings and manufacturing manuals
- Know-How (manufacturing techniques)
- Marks (trademarks, etc)
- Trade secrets
- And “the transfer” training
Creating market acceptance
Cultural differences
Use of standards

Bamboo Bike
Cultural Differences

Market acceptance

- The perception in Europe is that Bamboo was not strong enough for bikes – but OK for tomatoes

- In the Far East, the strength of bamboo as strong structural material is recognised

- How to change market perception? Theoretical and Practical Proof was needed (in Europe)

Standards made the difference!
640km, 21000m of climbing & descent

Product licensed and launched!

Lesson: The market sometimes needs to be convinced
Summary

Exploitation strategies

1) Understand the landscapes (market, technology, IP, etc)
2) Know where you want to get to (TRL Level)
3) Understand what further work/investment/funding will be needed to reach your objectives
4) Build the most attractive “offer” by:
   - building a portfolio of IP (i.e. not just patents!)
   - working with others
   - adding value through development
   - changing market perceptions
5) Choose the most appropriate exploitation route (licensing, start-up, JV, etc)

Final Summary

People do not buy technology...

They buy goods and services that satisfy their needs and wants

It is about People not Technology
Thank you. Questions?

For further questions and general IP advice, please contact our Helpline team:

service@iprhelpdesk.eu

Phone +352 25 22 33-333 (Helpline)
Fax + 352 25 22 33-334 (Helpline)

www.iprhelpdesk.eu

For questions related to our training activities, please send us an email at:

training@iprhelpdesk.eu