Survey: Valuation of Early Stage Technologies

“European Technology Transfer Office Circle” - Second Plenary Event

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Topics

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Introduction

- Survey was a follow up to the discussion on “pricing” early stage technology, during the first meeting of the “Circle”.
- JRC developed the Survey, and did a preliminary analyze.
- Responses were received from 14 research institutions.
- European Space Agency (ESA) sent two responses, as their IP valuation differ depending on the source and ownership of the technology. Thus, the responses were for two cases:
  - If the technology is the ownership of ESA;
  - If the technology is developed for industry partner and thus is the ownership of the company.
- In total analyze of the survey took into consideration 15 different practices.
- Comments are my personal views, and not of WIPO.
PART I - RESOURCES

1. In a given year, how often on average do you perform valuation of early stage technologies?

2. Do you perform valuation of early stage technology internally or do you use external consultants?

2a. Can you please give an estimate of the internal human resources used for performing valuation of early technologies on average on a yearly basis?

2b. Can you please list the tools (e.g. software, databases, models…) you are using to perform the valuation of early stage technologies?

2c. Can you please give an estimate of the budget dedicated to the use of external consultants for the valuation of early stage technologies?

2d. What criteria do you base your decision on to choose between internal or external valuation?
In a given year, how often on average do you perform valuation of early stage technologies?

Group I – Performing Valuation 1 – 20 times per year
Group II - Performing Valuation 40 – 50 times per year
Group III – Performing Valuation more than 100 times per year
In a given year, how often on average do you perform valuation of early stage technologies?

- Two organizations did not provide answers.
- One organization is performing only qualitative valuation.
- 69% of the responding institutions are performing IP valuation from 1 to 20 times (38.5% from above figure are valuating technology 1 to 10 times per year and 10 – 20 times – 30.5% institutions).
- 23% of institutions are performing 40 to 50 times.
- Only one institution is performing more than 100 valuations.
2. Do you perform valuation of early stage technology internally or do you use external consultants?

Group I – Only Internal Resources
Group II – Combination of Internal Resources and Consultancy
Group III – Only Consultancy
2. Do you perform valuation of early stage technology internally or do you use external consultants?

- 14 + 1 (ESA for company ownership) institutions responded;
- 53.3% perform valuation by using **only internal resources**;
- 33.3% are **combining internal resources and consultancy***, depending on the internally developed criteria;
- 13.3% are only outsourcing IP valuation services.

* Consultancy can also be delivered by internally developed company – as is the case of the CNR – “Consiglio Nazionale delle Ricerche” and its company “Rete Ventures”.
2a. Can you please give an estimate of the internal human resources used for performing valuation of early technologies on average on a yearly basis?

Group I - 0.25 to 1 man/month/year  
Group II - 1 – 25 man/month/year  
Group III - 30 to 100 man/month/year
2a. Can you please give an estimate of the internal human resources used for performing valuation of early technologies on average on a yearly basis?

- 13 responses
- 38.5% are using between 0.25 to 1 man/month/year.
- 46.15% are using from 1 – 25 man/month/year
- Only 1 institution is using from 30 to 100 man/month/year, where the valuation is performed only by internal human resources.
- Predominant profile of the valuator is “scientific/technical” and “business” on the “senior” level.
- 46.15% of the responding institutions are using only professional estimation of the internal senior staff.
2b. Can you please list the tools (e.g. software, databases, models...) you are using to perform the valuation of early stage technologies?

- Different tools are used for determining different aspects of the value of the technology under consideration.
- Nature of the tools vary:
  - Informal scientific networking;
  - Consultation of professional technical literature - scientific journals (INSPEC, web of science; etc);
  - Internal “pricing” lists;
  - Access to free or rather expensive databases and acquiring professional services in order to determine:
    - Potential market value – marketssearch.com; reportlinker.com; Business insight 2012; Thomson Innovation, Diane, One Source, etc;
    - IP value (level of novelty, patentability, freedom of operation) – Orbit, Esp@cenet, Delphion, Google, Derwent World Patent Index, Chemical abstracts, Qpat, etc;
    - Royalty rates – Royalty Rate for Technology (IPRA), Royalty Source, EDGAR, etc.
2c. Can you please give an estimate of the budget dedicated to the use of external consultants for the valuation of early stage technologies?

Group I – 500 – 20 000 Euros
Group II – 50 000 – 200 000 Euros
Group III – 800 000 – 1 000000 Euros
2c. Can you please give an estimate of the budget dedicated to the use of external consultants for the valuation of early stage technologies?

- 10 responses
- 30% - are investing between 500 to 20,000 Euros
- 50% - from 50,000 to 120,000 Euros
- 20% - from 800,000 to 1 million (for 14 months), but IP valuation is one of the IP services provided by the consultant/company.
2d. What criteria do you base your decision on to choose between internal or external valuation?

- Existence of internal expertise;
- Availability of time and resources;
- Cost of external consultant;
- Patent search report – on the state of the art of the technology;
- Market potential of the technology – preliminary market report;
- In the case of spin off setting, many institutions look for external expertise.
Part II : PURPOSES
3. For which purpose do you perform valuation of technologies?

Different understanding of the notion “purpose”.

Understanding “purpose” as objective – “To make money for further R&D and transfer valuable technology to industry – technology for a better society”.

92% of the responding institutions (one did not respond on the question) are applying one of the valuation methods in the phase of the commercialization of the research results and inventions.

The purpose is to decide on the following issues:

- To sell or to license?
- To set up spin-off?
- Further development of the technology – proof of concept?
- Internal manufacturing or direct sale?
- Who will be the commercial partner?
- What is the value of the licensed/assigned technology?
- Terms of the licensing contracts?
- Royalty rates and other financial issues?
- Business plan for the spin off company.
3. For which purpose do you perform valuation of technologies?

- Only 35.6% of the interviewed institutions were reporting on the use of the valuation methods before commercialization phase mainly in order to decide about the IP related concerns such as:

  - To decide whether or not to protect the invention “costs and effort (in terms of investment of the staff time) are high so we need to be certain”;
  - Patent strategy – alternative means of protection, potential licensing/sale of the technology before protection, territorial extension of the patent, maintains of the patents, etc.

- Other purposes:
  - To find new sources of revenues;
  - To prove an economic impact of the research policies etc.
Group I – **Do use** different approaches depending on the purpose of the valuation
Group II – **Do not** use different approaches in relation with the propos
4. Do you use different approaches to valuation of early stage technologies depending on the purpose of the valuation?

- 42.85% of the respondents **do not** differ methods depending on the purpose of the valuation.
- 57.15% **do use** different methods – depending not only on the purpose but also on the:
  - Scientific background of the technology;
  - Different markets;
  - Lack of available data for applying particular approach.
Can you please give the reason(s) for choosing different valuation approaches:

- Different categories of reasons:
  - Business strategy – “some technologies are more promising than others and therefore they need more attention and more detailed valuation”;
  - Internally developed practices, methodologies and protocols, such as:
    - Three step procedure for patent application – 1. determination of the industrial applicability; 2. prior art search and 3. market projection;
    - Territorial extension of the patent – 1. analyze of the Search Report (solidity of the patent); 2. quantitative analyze of the potential market and 3. identification of the licensing or other commercial partners in the extended territory;
  - Early stage technology – cost plus income method;
  - Development on demand and program set up – only cost method is used as proxy;
  - Determination of the financial value – always quantitative approach and for discriminating among technologies – quantitative methods;
  - As a check up methodology and because of the lack of data for certain approaches, always use the combination of different approaches.
Part III : METHODOLOGY
5. Do you use quantitative methods and/or qualitative methods to valuate early stage technologies?

- Two institutions did not specify.
- 42% of the responding organizations indicated qualitative method for the valuation of the early stage technologies.
- 58% are using both - qualitative and quantitative approaches.
- None of the respondents mentioned quantitative methods as the only valuation tool in the case of early technology.
Group I – Using “combination” of the methods for valuation of the early stage technology
Group II – Using only Qualitative method

Group I: 58; 58%
Group II: 42; 42%
5a. Can you please indicate which quantitative method(s) you use to valuate technologies (e.g. market approach, income based)?

- One third of the participating institutions did not give concrete response.
- “Finger in the air” - we still do not use quantitative valuation methods!”
- “Informal one, without rigorous framework” – or
- Defined “pricing policy” for services, trainings etc.
- Majority of the respondents are using a combination of few different tools.
- The most frequently used method is Income Method – 77% of the responses indicated IM.
- Income method is used in a variety of its approaches – mostly Discounted Cash Flow (NPV), 25% (one organization) and Monte Carlo approach in combination with other methods (one organization).
- Market / Comparable Method – 44.5%.
- Cost Method – in combination with other data – patent based and know how based – two organizations.
- Industry standards – one organization.
- Scoring based on quantitative information – one organization.
5b. Can you please indicate which qualitative method(s) you use to valuate technologies (e.g. rating, ranking, scoring methods)?

- Focus of the **qualitative** approach is the analyze of the **quality of the technology** from different standpoints:
  - Technical – development status (early stage, proof of concept, pilot..);
  - IP point of view (solidity of the patent, degree of novelty, freedom of operation);
  - Market point of view – existence of similar technologies and their geographical distribution, potential partners;
  - Financial.

- **Internally developed ranking criteria, such as “8 leading factors”:**
  - Suitability for Suggested Application
  - Cost
  - Development Status
  - Exploitation Rights
  - Degree of Novelty
  - Marketing Interest of Partner
  - Quality of Technology Information
  - Sociability of Technology Provider

- Or
  - Patentability
  - Patent Strength
  - Status of Invention
  - Market Situation
  - Inventor’s History – Supportive or not in the process of transfer?
  - Additional Services for the Partner (potential for continuation of collaboration)
  - To whom shall invention be licensed

- In addition some institutions are using **“competence “ criteria** – scientific and management skills of the team.
5b. Can you please indicate which qualitative method(s) you use to valuate technologies (e.g. rating, ranking, scoring methods)?

Qualitative valuation is usually based on the information obtained through:

- Discussion with scientists and internal experts;
- Sectorial Market Studies;
- Analyses and synthesis of information collected from external experts – telephone interviews, direct discussions or work with the focus group;
- Search of different databases and IP related service providers:
  - IP databases – Esp@cenet, Questel.
  - Business and Marketing – Frost&Sullivan, Diane, Profound, One Source.
- Internal database of the previous deals and contracts.
5c. Do you sometimes derive a quantitative value for a technology from its qualitative assessment?

- 57% do not derive quantitative value from qualitative assessment.
- 14% make direct correlation between qualitative and quantitative valuation.
- 29% did not respond explicitly.
5d. What criteria do you base your decision on to choose between a quantitative or a qualitative method for the valuation early stage technologies?

- Number of institutions answer that they are applying both approaches simultaneously.
- Only qualitative method is applied by two institutions.
- Availability of data will determine the tool for valuation.
- Maturity and commercial potential of the technology.
- Specific criteria developed by institution:
  - For licensing purposes institution is always using quantitative approach and for decision on IP protection and funding of further development of the technology – qualitative one.
6. Does your approach to valuation of early stage technologies differ in the case of valuation of a bundle of technologies/patents?

- 72% do not apply different approach for valuation of a bundle of technologies.
- One organization indicated that in the case of spin-off synergic effect between patents can be used as argument for increased value of the company and its exclusive position. Contrary, licensing fees for the use of the background IP in the large collaboration programs are decreased because of the volume reduction.
- Two organization responded that they do not have real experience with a bundled technologies/patents.
7. Does your approach to valuation of early stage technologies differ when the valuation is related to the creation of spin-off companies?

- 28.5% did not respond.
- 43% differ their approaches in the case of the spin-off companies.
- 28.5% apply the same approach in the both cases.
7b. Can you please give the reason(s) for choosing a different approach in the case of early stage technologies valuation related to the creation of spin-off companies:

- Creation of the spin-off involves two aspects:
  - Valuation of the technology
    - Mixed methods;
    - Higher risk rate;
    - Shorter period of projection – up to 5 years;
    - Equities;
    - Evaluation of the additional elements such as competence of the team.
  - “Stronger” file to be defended in relation with potential investors and VC.

- Licensing Conditions and Pricing
  - “Make the start up fly!!!”
  - Lower upfront payments;
  - Running Royalty Rates instead lump sum or upfront payments;
  - Delayed starting point of payments.
8. In the case of licensing, how do you transform the value of a particular technology to obtain its "price" to be paid by the licensee?

- Pragmatic approach and bottom line – “price” has to cover cost of:
  - Development of the technology;
  - IP protection;
  - Incentives for the researchers.
- Negotiation approach – valuation supports negotiation strategy, but the real “price” depends on what the partner is ready to pay – how “hungry” for technology he is!!
- Price is in some institutions always determined by the experienced staff of the institution.

- Some institutions have particular rules:
  - Royalty rate is always 10% of the net sales price.
  - The total income should be 25% of the NPV.
  - Market comparision of the royalty rates of the product.
Conclusions and Comments

- It is difficult to identify particular practice as generally applicable.
- Institutions have different nature, background, policies and practices (public, international, semi private, with larger IP commercialization practices, established services, collaborations etc.) and thus different frameworks for setting up their deals.
- Each specificity imposes customized response and practice – so there is no “model that fits all”.
- Exchange of information on practices helps determining our “own model”.
- Survey gave us some guidelines about tendencies, but not absolute answers about best practices.
Conclusions and Comments

Tendencies:
I. Most of the interviewed institutions are performing any valuation activities from 1 to 10 times per year.
II. For the purpose of valuation institutions are mainly using internal human resources, 1 to 25 men/month/year, on the senior staff level.
III. Approximate cost of valuation activities is from 50 000 to 200 000 Euros.
IV. Commercialization is the phase when most of the organizations are doing valuation. Only 37% are performing IP valuation in the IP protection phase.
V. In valuating early stage technology institutions are using combination of qualitative and quantitative approaches, or only qualitative method.
VI. Qualitative approach focus on the quality of the technology – technical, IP, market.
Conclusions and Comments

VII. Most frequently used qualitative method is Income Method for commercialization and Cost Method for pricing.

VIII. The interrelation between qualitative and quantitative method is indirect, implicite – most of the institutions do not derive the “price” from the qualitative approach, but get an orientation of the value.

XI. Bundling of patents and technology is not generally applied practice, thus the valuation is in 72% of the cases the same as for individual technology.

X. Valuation and spin off – valuation approach in this case is stricter, more elements taken into consideration – but negotiations and pricing is favorable for spin off.

XI. Valuation and pricing are not always related and surely not identical. Valuation is used as a guidelines and reasoning during the negotiations, and pricing is guided by the need to cover the costs, special rules and most of all – “hunger of the other party” for that particular technology.
Thank you!

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