

IP MANAGEMENT AT PLANT BIOTECHNOLOGY RESEARCH ORGANIZATION

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The first step – IP Management

- What does the institution want from its IP?
- Who is responsible for achieving that?
- What level of responsibility do they have?
- How are they structured and supported?
- What processes are in place to identify and evaluate IP?
- What processes are in place to exploit it?
- Who decides how it is exploited?
- Using what criteria?
- What controls are on the process?



THE TECHNOLOGY TRANSFER PROCESS & KEY ACTORS

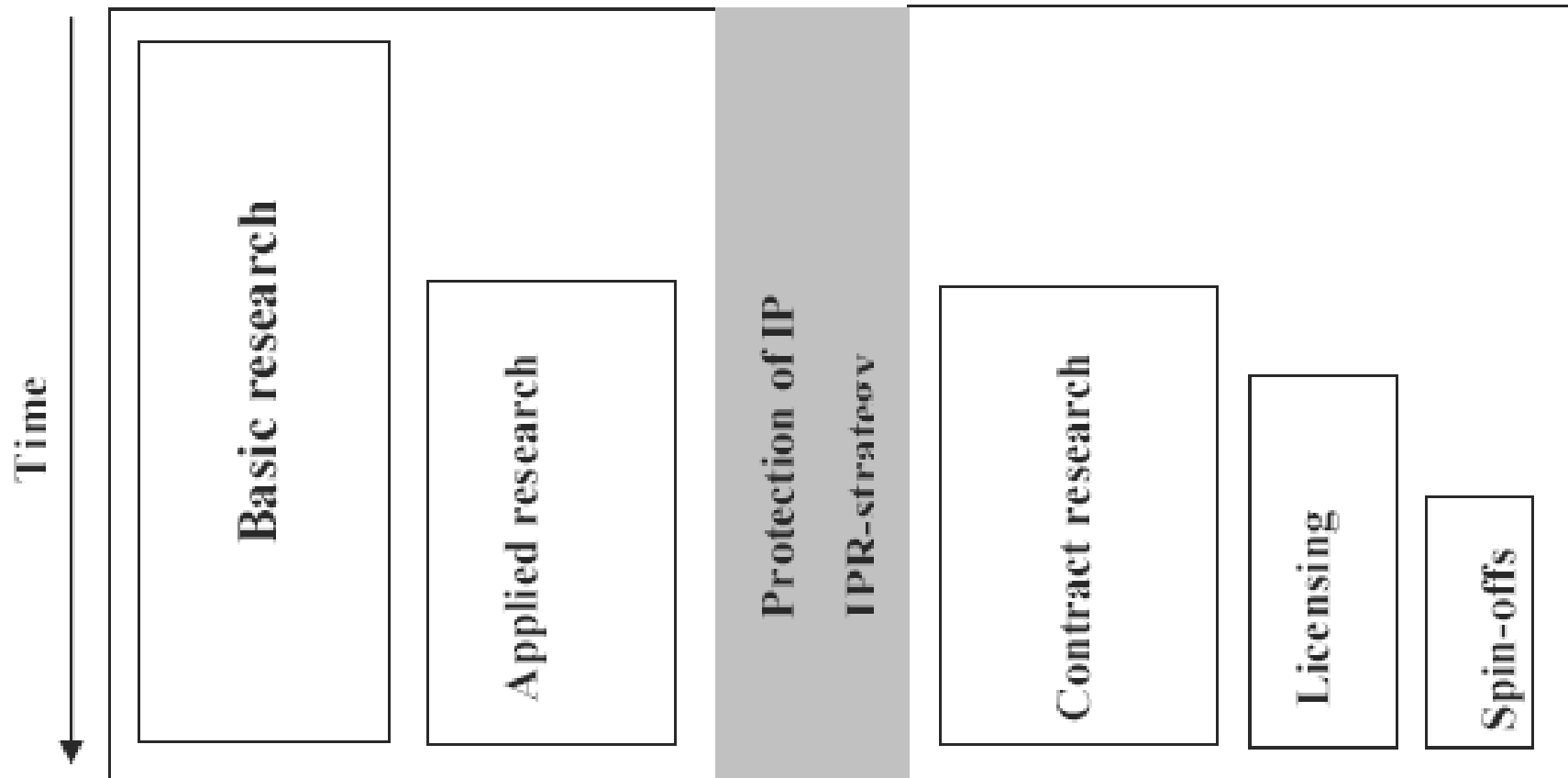
- Two components in the technology transfer process:
 - IP-creation
 - IP-exploitation.



THE TECHNOLOGY TRANSFER PROCESS, BASIC COMPONENTS & EXPLOITATION ROUTES

IP-Creation

IP-exploitation



IP-CREATION

- **IP creation:** the creation of knowledge and the development of new technologies, products and processes.
- Researchers are the **key actors** in this phase.
- **The role of researchers shifts over time** from “doing research” to “managing research”.
- IP is mostly created **in collaboration with other parties** (university, research institutes, companies)



IP CREATION

- Very important to be aware that the **exploitation** of the research results will only be **possible when sufficient rights for commercialisation are available**;
- Before starting new research, one **has to study if a sufficient freedom-to-operate is available.**



IP CREATION

- HAS TO STUDY IN DETAIL which **protection strategy** is the most appropriate for the research group involved:
 - **patenting;**
 - **first to publish;**
 - keeping **confidential;**
 - **innovate.**
- Appropriateness is determined by **the resources available to pay the expensive patenting process.**



IP CREATION

- HAS TO STUDY IN DETAIL the **collaboration agreements** with other parties:
 - which rights do the other parties get on my IP;
 - which rights do the researchers maintain;
 - what rights do the researchers get on joint research results.



IP CREATION

- HAS TO STUDY IN DETAIL the **material transfer & licensing agreements** with other parties:
 - which rights do the other parties get when the research group uses the third parties materials/products/technologies to do research;
 - which return does the research group get when third parties use its materials/products/technologies;
 - what about joint developments.



IP-CREATION

- It is the task of the researchers involved with “managing research” to assure that the appropriate **IPR-strategy & procedures are established and followed** by all research group members.
- Technology transfer officers has to guide them in **determining and implementing** the appropriate strategy and which help them to negotiate & establish fair collaboration, material transfer and licensing agreements.”



IP-EXPLOITATION

- **IP-Exploitation:** generating a commercial return on the research results;
- There are **3 major routes** for exploitation: contract research, licensing and spin-off creation.



IP-EXPLOITATION

- **CONTRACT RESEARCH:** transferring institute know how & results to an existing company by setting-up a joint collaboration project.
- The financial return consists of **fees** the companies pay;
- A wide range of **activities** is possible:
 - short-term consultancy;
 - performing tests & feasibility studies;
 - prototype building and validation;
 - development projects;
 - research projects which can run over different years;
 - framework programs that extend over families of projects



IP-EXPLOITATION

- **CONTRACT RESEARCH** (continuation)
- The **financial return** consists of paying:
 - the **personnel**;
 - **institute overhead** and **equipment costs**;
 - **mark-up** to get a return on all the efforts delivered in the past;
- **Tasks of the technology transfer officers is:**
 - to support the researchers in negotiating a **fair deal** in which **pricing and the rights on background and foreground information are clearly determined**. This fair deal also contains a clause on “**fair return**” in case of successful commercialisation by the company.
 - As a result, the negotiated pricing will contain a fee for:
 - **direct costs**;
 - **overhead costs**;
 - **a mark-up** which is largely determined by the level of expertise & know-how and uniqueness offered
 - and an **extra return** in case of a successful commercialisation.



IP-EXPLOITATION

- **CONTRACT RESEARCH** (continuation)
- **Researchers play a key role in contract research:**
 - First, they are **responsible to establish good contacts with the business community;**
 - Second, **it is the responsibility of the researchers to bring the collaboration process to a good end.**



IP-EXPLOITATION

- **CONTRACT RESEARCH** (continuation)
- The most important role of the **technology transfer officers is to guarantee** that for the work performed by the researchers and in the project itself, **a fair return is established to the institute and sufficient rights on the IP are maintained.** The technology transfer officers support the researchers in the negotiation process and in establishing professional legal agreements:
 - the **workplan**;
 - **pricing & payment plan**;
 - **intellectual property rights**;
 - **publication procedure leading to the required degree of confidentiality** requested by the company.



IP-EXPLOITATION

- **LICENSING:** transfer to existing companies commercialisation rights on **existing** institute know-how & results, in other words the results of the IP-creation phase, by means of a legal agreement;
- Mostly, it concerns the rights on a **patent** developed and owned by the institute. Also other IP can be transferred such as **databases, biological or chemical materials** (in that case of material transfer agreements), **procedures & tests, copyrighted materials**, etc.;
- In theory a licensing agreement consists of transferring **existing results**, in other words no new IP is created. However, in practice licensing is often **combined with contract research**.



IP-EXPLOITATION

- **LICENSING (continuation)**
- **The researchers are again the key players in this process:** they have a wide network of industrial contacts; To turn the IP defined in the licensing agreement into commercial products and / or industrial processes, often the expertise and input of the researchers is required.
- **The technology transfer officers can support** the process of **finding customers** for the institute IP - to support the researcher in **negotiating a fair deal** in which pricing and the IPRs are clearly determined.
- Again this **fair deal** has to contain a mechanism to guarantee a “**fair return**” in case of successful commercialisation by the company. In case of licensing agreement:
 - **lumpsums**
 - **milestone payments**
 - **royalties**



IP-EXPLOITATION

- **SPIN-OFF CREATION**
- This mechanism consists of starting a **new** company, which commercialises **existing** institute know-how and research results. A future return to the institute is either generated:
 - by **acquiring shares for the IP transferred** to the spin-off;
 - or by **setting-up a licensing agreement** between the institute and the spin-off;
- Investors recommend **shareholder-model** as:
 - **the financial resources can be committed to business development;**
 - **the spin-off gets complete ownership and control over the transferred IP;**
 - **a strong and committed relationship is realised with the institute and the researchers, as they become shareholders.**



IP-EXPLOITATION

- **SPIN-OFF CREATION** (continuation)
- **Note that a transfer of existing IP at start-up does not imply that also newly generated IP will be transferred. A collaboration agreement is elaborated which states how the researchers staying at the institute will collaborate with the spin-off and how new research results will be transferred.**



IP-EXPLOITATION

- **SPIN-OFF CREATION** (continuation)
- Again **the researchers are key players in this process**. It is essential that the extensive knowledge of the researchers is transferred to the company. It is very important that the researchers and / or the external manager themselves develop a **business plan** about all key issues involved in building a sustainable business.
- The **role of the technology transfer officers** is to guide the founders in this process about:
 - how to translate their know how and results into concrete **products and services**;
 - the **competition**;
 - the **target markets & potential revenues**;
 - **technology & product roadmap**;
 - **IP position** of the spin-off.



IP-EXPLOITATION

- **SPIN-OFF CREATION** (continuation)
- During the business plan process, also a **financial plan** has to be developed including the **definition of an appropriate revenue model**. Researchers have no experience in this field. Technology transfer officers have to offer a lot of support on this.



IP-EXPLOITATION

- **SPIN-OFF CREATION** (continuation)
- After a fair deal has been negotiated between all the involved partners (note that the founders, the research group, the institute, and the financiers get shares), **the following legal documents have to be prepared for the real foundation:**
 - **bylaws**, especially important to define:
 - final shareholder structure and rights attributed to the different classes of shares
 - how shares can be transferred;
 - decision power of manager and board of directors;
 - voting majorities for important decisions.
 - **shareholders agreement** between the involved parties such as:
 - non-competition clause;
 - reporting procedures;
 - agreements upon capital increases, etc.
 - **collaboration agreement** to define future relationship between institute and spin-off and **IP transfer or licensing agreement**.



IP-EXPLOITATION

- **SPIN-OFF CREATION** (continuation)
- **Very important is to understand that the institute owns the IP transferred to the spin-off. This implies that as well the board of the institute as the head of the research group have to agree that the creation of a spin-off is the appropriate exploitation mechanism.**
Almost always, the head or manager of the research group maintains his original position within the institute. His role in the spin-off is to act as scientific mentor and promoter.



IP-EXPLOITATION

- **INTERACTION BETWEEN AND COMPLEMENTARITY OF BASIC EXPLOITATION ROUTES**
- THE THREE EXPLOITATION ROUTES MUST NOT BE CONSIDERED AS ISOLATED PROCESSES
- **The contract research and licensing activities bring researchers into contact with industry:**
 - this give an indication of the market demand for new expertise and technologies thereby **indicating opportunities for further contract research & licensing and spin-off creation.**
 - when research groups are confronted with a repeated and increased demand for specific expertise, solutions or services, **the creation of a spin-off has to be considered. This enables the research group to restore a healthy balance between basic and applied research.**
- At the other hand, **the spin-off becomes a new partner for contract research & licensing.**



IP-EXPLOITATION

- **INTERACTION BETWEEN AND COMPLEMENTARITY OF BASIC EXPLOITATION ROUTES** (continuation)
- It is important to consider in more detail how the appropriate exploitation route is selected during the different phases in IP creation. As indicated in the previous slide, exploitation mostly starts with **contract research**. Patents evolve out of basic and applied research. In that case, exploitation could also start by **licensing** or **starting a spin-off**.
- However, at the moment the patent has been filed the time-to-market is mostly very long and the perspective for successful commercialisation very unclear. As a result, even when patents have been taken, contract research is initially the most appropriate exploitation mechanism.
- This gives rise to the **next decision point: WHEN to select exploitation via technology transfer to an existing company by contract research or licensing or a combination of both AND WHEN to set-up a spin-off company?**



IP-EXPLOITATION

- **INTERACTION BETWEEN AND COMPLEMENTARITY OF BASIC EXPLOITATION ROUTES** (continuation)
- **WHEN to select exploitation via technology transfer to an existing company by contract research or licensing or a combination of both AND WHEN to set-up a spin-off company?**
- HAVING A REPEATED DEMAND FOR YOUR KNOW HOW AND IP, is a positive but not sufficient condition for a spin-off.
- The key requirement is that THE RESEARCHERS ARE REALLY COMMITTED TO SET-UP A SPIN-OFF
- Also THE DEGREE OF SCIENTIFIC EXCELLENCE is an important criterion
- Another important factor to select a specific exploitation route is THE FINANCIAL CONSEQUENCE.
 - **Contract research** generates an almost immediate cash flow and is almost without risk;
 - **Licensing** is more risky than contract research, as the major part of the revenues depends on further successful technological and market developments. However, as licensing is done by big companies, the market risk is sufficiently lower than when starting a spin-off.
 - Nevertheless, when a committed team and world-class know how & IP are available, **spin-offs** are appropriate;
- A LAST IMPORTANT CONSIDERATION IS THAT CHOOSING FOR A SPECIFIC EXPLOITATION ROUTE HAS AN IMPACT ON THE FUTURE IMPLEMENTATION OF OTHER EXPLOITATION ROUTES.



IP-EXPLOITATION

- **INTERACTION BETWEEN AND COMPLEMENTARITY OF BASIC EXPLOITATION ROUTES** (continuation)
- As a result, the head or managers have to think about their exploitation strategy and **to assure that no conflicting situations and internal competition arise**
- As a **conclusion**, it is very important that the head and managers of the research groups develop an overall exploitation plan, which pinpoints for each set of related IP the most appropriate exploitation route taking into account the interdependency of the different mechanisms.



ANALYSIS OF THE CURRENT SITUATION

- **Organisational structure of the technology transfer office**
- AgroBioInstitute intend to implement a support office for technology transfer. Initially the focus will be on contract research. Corresponding to the technology transfer process analysis in the previous slides, this implies that the main service offered to the researchers will be **legal advice** and **negotiation support**. More specifically, the TTO staff shall establish close contacts with the heads of the research groups to promote technology transfer as a new institute core task. On a sporadic basis, patents are expected to be taken and spin-offs created. To guide these exploitation routes, external consultants will be involved on a case by case basis.



ANALYSIS OF THE CURRENT SITUATION

- **Organisational structure of the technology transfer office (continuation)**
- The current director of the institute is taking the initiative to enlarge the change management process and to promote spin-off creation as a new dimension in academic entrepreneurship. He **communicates the vision** and **empower researchers** to take part in the new challenges on technology transfer while respecting institute context & culture.




ANALYSIS OF THE CURRENT SITUATION

- **Organisational structure of the technology transfer office (continuation)**
- The organisational structure is planned to consist of the following services:
 - the IPR & licensing service
 - the contract research service
 - the spin-off creation service
- It is clear that these activities are not completely separated.



ANALYSIS OF THE CURRENT SITUATION

- **Support activities of the technology transfer office**
- **IPR & licensing service:**
 - Awareness creation & knowledge transfer
 - Determination if the submitted invention indeed can be patented
 - Determination of the market potential of the invention
 - Determination of the appropriate patenting strategy
 - Follow-up patent procedures & costs
 - Support to find industrial partners
 - Negotiation & legal support
 - Support for other IPR-issues
 -  IP-scouting & freedom to operate

ANALYSIS OF THE CURRENT SITUATION

- **Support activities of the technology transfer office**
- **Contract Research service:**
 - Awareness creation & knowledge transfer
 - Support to find industrial partners & financing
 - Negotiation & legal support
 - Freedom-to-operate



ANALYSIS OF THE CURRENT SITUATION

- **Support activities of the technology transfer office**
- **Spin-off creation & regional development service:**
 - Awareness creation & knowledge transfer
 - Support in business plan development
 - Support in finding investors & valuation
 - IP-check (freedom to operate) and creation of patent portfolio
 - Legal support foundation
 - Support growth
 - Infrastructure support



ANALYSIS OF THE CURRENT SITUATION. SURVEY

- **Support activities of the technology transfer office**
- **Spin-off creation & regional development service:**

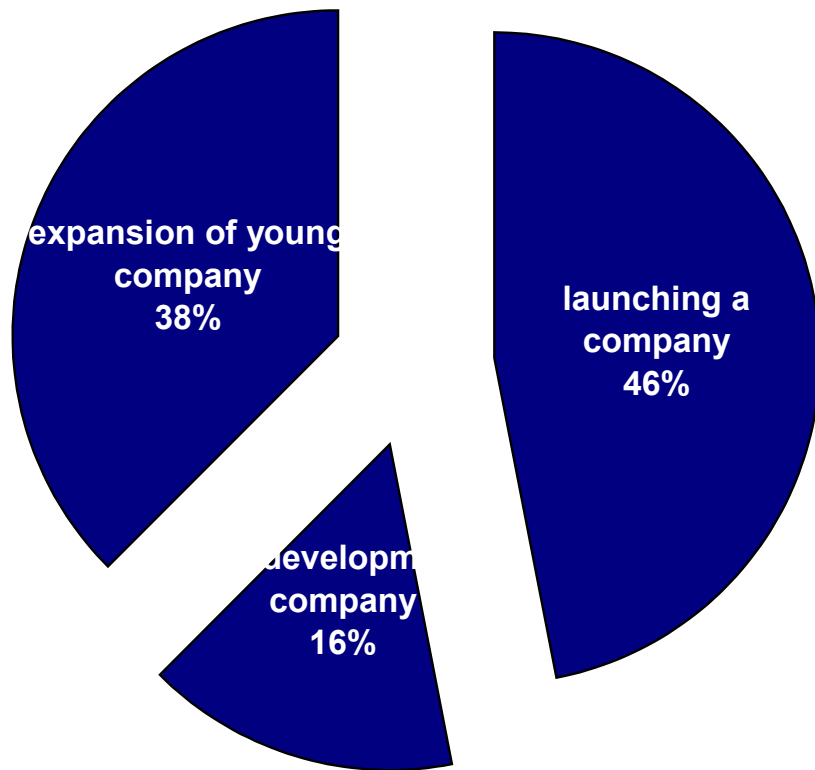
SURVEY WAS DONE. SOME OF THE QUESTIONS & RESULTS

- **I. EVALUATING RESPONDENT'S NEEDS AS ENTREPRENEURS OR POTENTIAL ENTREPRENEURS IN RELATION TO LAUNCHING, EARLY DEVELOPMENT OR EXPANSION OF SMALL INNOVATIVE COMPANIES**
- Participants in the survey were asked:
 - **whether they are planning to launch a company and** need capital for research, assessment and development of an initial concept of the company
 - or their company is in the process of setting up or is in the business for a short time, but has not sold its product commercially and **there is a need for capital for product development and initial marketing.**
 - **or they are planning to grow and expand their company** and funds are needed to increase production capacity, market or product development and/or to provide additional working capital.



ANALYSIS OF THE CURRENT SITUATION. SURVEY

Stage of development of company

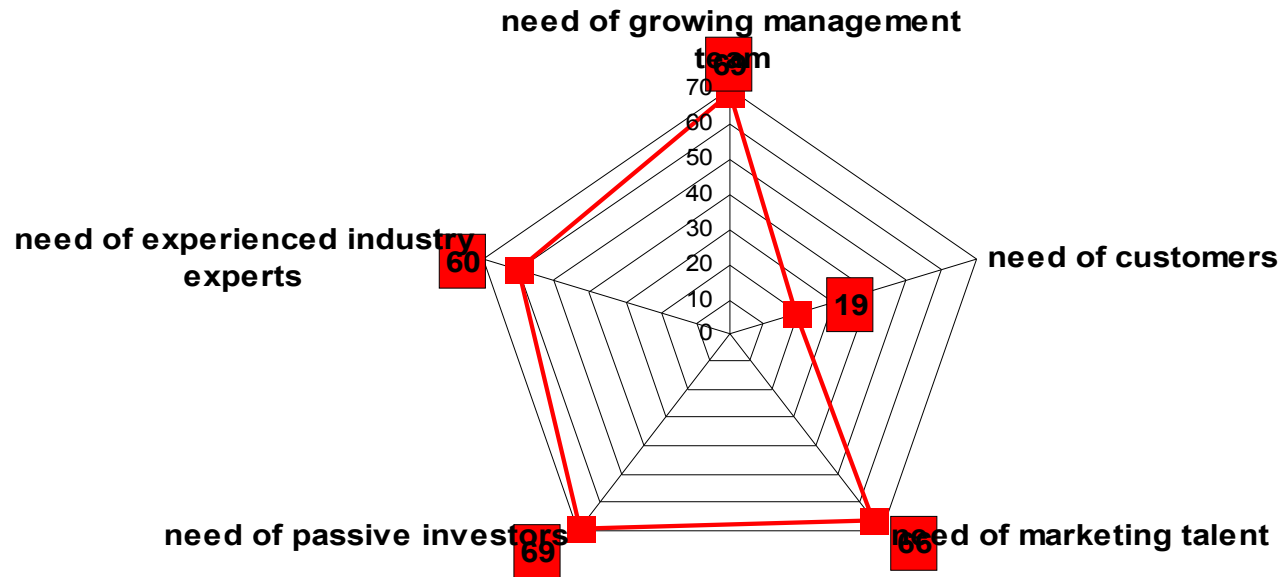


- The largest proportion of entrepreneurs are looking for financing to create a new company (46%), 16% of companies are in a stage of product development and marketing, and 38% are in an expansion stage.
- A large sample of approached potential entrepreneurs, senior scientists and management staff in research organizations have replied that their professional life is far from business life and they consider themselves as irrelevant participants in the survey



ANALYSIS OF THE CURRENT SITUATION. SURVEY

Evaluation entrepreneur's needs



—■— Evaluation entrepreneur's needs



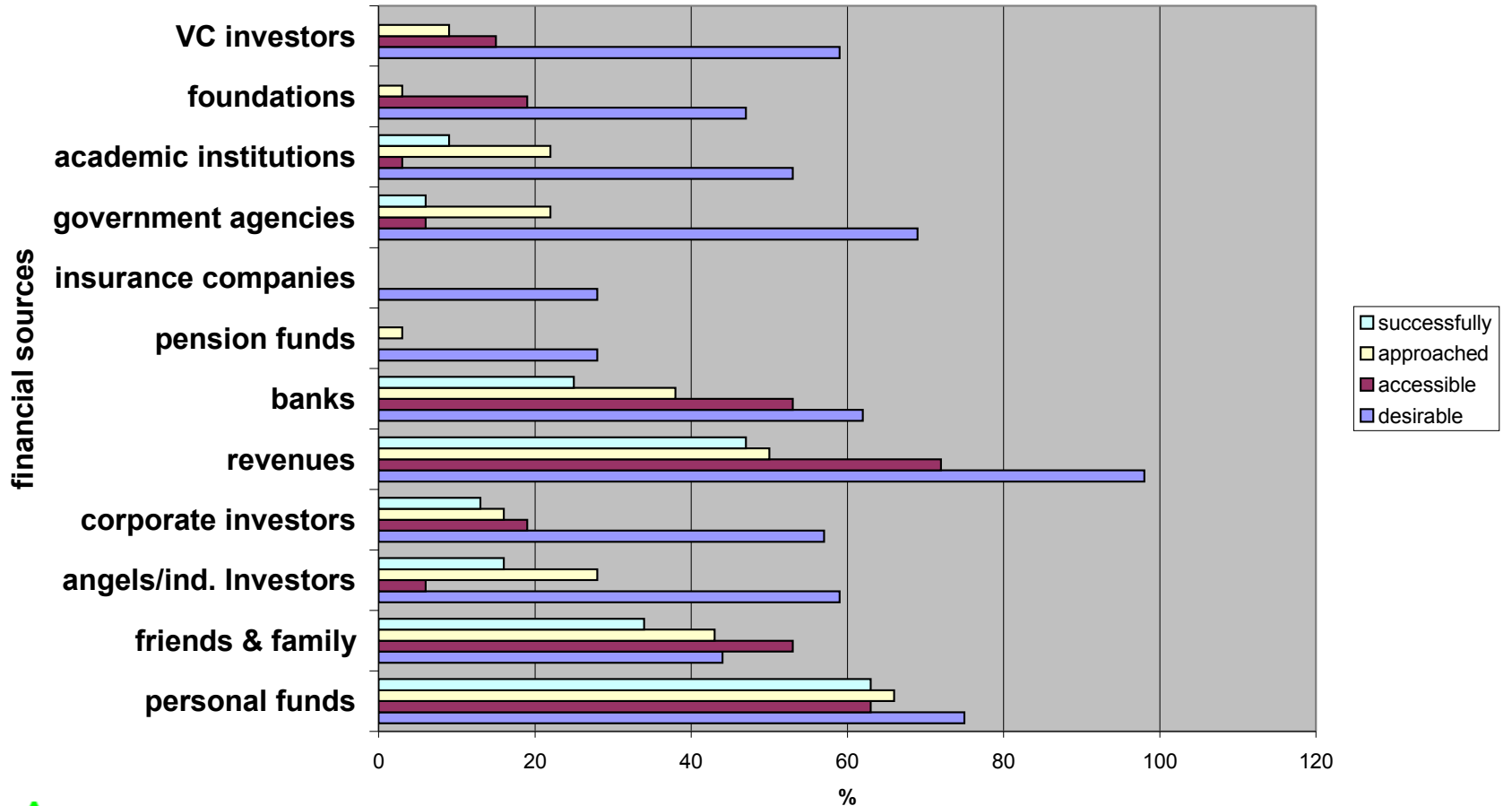
ANALYSIS OF THE CURRENT SITUATION. SURVEY

- **II. FUNDING OF CREATION, EARLY DEVELOPMENT AND EXPANSION OF YOUNG COMPANIES**
- **Question: Do you think there is a financial gap for launching, early development or expansion of young companies?**
- **Question: Ranking financial sources like personal funds, friends and family, individual and corporate investors, revenues, banks, pension funds, insurance companies, government agencies, academic institutions, endowment and foundations, formal venture capital investors in term of their ACCESSIBILITY for launch, early development or expansion of young companies.**
- **Question: Ranking financial sources in term of their DESIRABILITY**
- **Question: Frequency of APPROACHING financial sources**



ANALYSIS OF THE CURRENT SITUATION. SURVEY

Desirability/accessibility/frequency of attempts/successfulness



ANALYSIS OF THE CURRENT SITUATION. SURVEY

- **Question: Entrepreneurs were asked to rank a list of obstacles encountered in raising finance from traditional financial sources; considering them as not an obstacle, insignificant, an obstacle, a big and a very big constraint.**



ANALYSIS OF THE CURRENT SITUATION. SURVEY

Problems encountered in raising finance

