



ADVANCING INNOVATION
AND KNOWLEDGE TRANSFER

FROM IDEA TO TECHNOLOGY TRANSFER

A PUBLIC PERSPECTIVE

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What is Technology Transfer?

An introduction





CONCEPTS TO SET THE SCENE

- **Technology Transfer**, from the seller side, is to sell to a purchaser the right to use a product or a process of its own, and the know-how associated.
- Generally, the exploitation for the purchaser is limited in time, perimeter volume
→ the right can be non-exclusive
- **Context in the public domain (involvement of public research laboratories)**
 - Technologies can result from short or long term researches
 - promoting the transfer for society's use and benefit
 - generating unrestricted income to support research and education



Innovation stakes for companies the ultimate goal

- to enhance the technological capacity to stimulate demand for new products (improved products, extended ranges)
- to develop new processes (processes cheaper, consuming less energy)
- to adapt to its environment (to prevent saturation of markets, environmental constraints, integration of new technologies)
- *The objective for a public technology transfer office*
 - move innovations out of universities in interaction with industries considering their needs.



An important point distinguish Invention from Innovation

- The invention is above all an idea, a new concept with few information considering its technical feasibility and its economic value
- Innovation is built for applications and the value recognized by the market (generally something protected).
- Technology Transfer is a process pretty much slow to turn an invention into a potential innovation



A typical example



The MIT flying car : do we expect a specific need in the future?

<http://terraflugia.com/index.html>



A number of conditions to keep in mind

- Social or sociological conditions (expectations and unexpressed needs, acceptance or rejection of a new product)
- Power of the marketing
- Regulatory conditions (REACH)
- Technical Requirements (Typically impact of the industry of semiconductors)



Mobile Phone Test 1924



Wiki : 1996 Wikipedia 2001



What are the key steps of an innovative project?





A few stages to take into account





How to identify an idea

- A number of tools in organizations
- Brainstorming: combining skills to build new solutions
- Suggestion boxes
- Sessions dedicated to the analysis of competing technologies or products (sometimes with customers, suppliers, partners).
- Feedback from missions and fairs
- A very good website : <http://www.destination-innovation.com/>

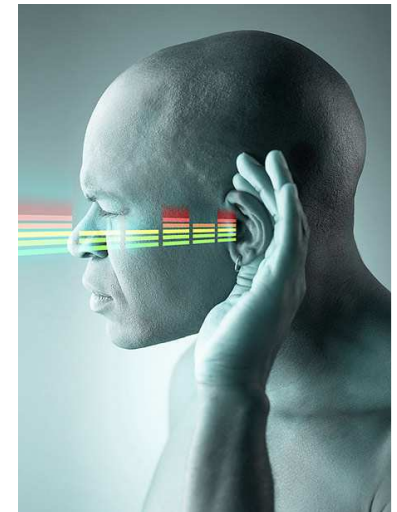




What kind of channels for information?

The environment holds the potential ideas for innovation

- Patents - Publications (basic patent esp@cenet).
- Symposiums – exhibitions.
- Technical papers.
- Financial magazines.
- Industry news.
- Review of intelligence.





Recherche rapide

Recherche avancée

Recherche par numéro

Dernière liste de résultats

Ma liste de brevets 0

Recherche dans la classification

Trouver de l'aide

Aide rapide

- » Que contient chaque base de données ?
- » Combien de termes peut-on entrer dans chaque champ de saisie ?
- » Peut-on faire une recherche sur une combinaison de mots ?
- » Peut-on utiliser la troncature ou les jokers ?
- » Qu'entend-on par numéro de publication, numéro de demande, numéro de priorité et numéro de référence LNB ?
- » Comment saisir un numéro

Recherche avancée

The European Patent Office

1. Sélectionnez la base de données

Choisissez la base de données brevets:

2. Entrez les critères de recherche

Entrez vos mots-clés en anglais

Mots-clés dans le titre:	<input type="text" value="plastic and bicycle"/>
Mots-clés dans le titre ou l'abrégé:	<input type="text" value="hair"/>
Numéro de publication:	<input type="text" value="WO03075629"/>
Numéro de demande:	<input type="text" value="DE19971031696"/>
Numéro de priorité:	<input type="text" value="WO1995US15925"/>
Date de publication:	<input type="text" value="yyyyymmdd"/>
Demandeur(s):	<input type="text" value="Institut Pasteur"/>



DETECTION



Signets

- Bibliography
- Claims
- Drawings
- Description
- Abstract

(19) Canadian Intellectual Property Office
 Office de la Propriété Intellectuelle du Canada
 An Agency of Industry Canada / Un organisme d'industrie Canada

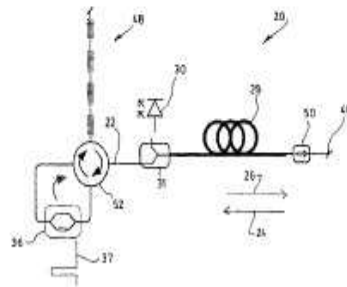
(11) CA 2 444 625 (13) A1
 (40) 24.10.2002
 (43) 24.10.2002

(12)
 (21) 2 444 625 (51) Int. Cl. : H04B 10/155, H04J 13/00
 (22) 18.04.2002 (85) 17.10.2003
 (86) PCT/CA02/00524
 (87) WO02/084905

(30) 60/284,194 US 18.04.2001 PUJOL, LIONEL (CA).
 BELLEMARE, ANTOINE (CA).
 BOULIANNE, LOUIS-PATRICK (CA).
 FATHALLAH, HABIB (CA).
 (71) ACCESSPHOTONIC NETWORKS INC.,
 1515 Saint-Jean Baptiste #187, QUEBEC, Q1 (CA).
 (74) ROBIC

(54) SOURCES OPTIQUES ET EMETTEURS POUR TELECOMMUNICATIONS OPTIQUES
 (54) OPTICAL SOURCES AND TRANSMITTERS FOR OPTICAL TELECOMMUNICATIONS

(57) Optical sources and transmitters for transmitting data in a spectro-temporally encoded light signal are provided. The optical source includes a pumped gain medium for generating ASE radiation. A wavelength dependent reflector is provided backward of the gain medium for reflecting wavebands adapted for spectro-temporal encoding. In one embodiment, a modulator and an encoder are provided outside of the source for embedding data into the generated signal spectro-temporally encoding this signal. In another embodiment, the wavelength dependent reflector acts as the encoder, and the modulator is provided inside the source.



Bibliographic information

Description of invention



Legal aspects to disclose for a Researcher

- Researchers are obliged to disclose all newly created or discovered invention
- An Invention Disclosure Form should be used to disclose any new invention. The form provides the information needed to start assessing the patentability and commercial opportunity for the invention.
- Technology transfer office involved : identify potential IP in the early stages of development to ensure that the research and development is fast-tracked and protected before public disclosure.

Laboratory notebook





Step 2 – Evaluation





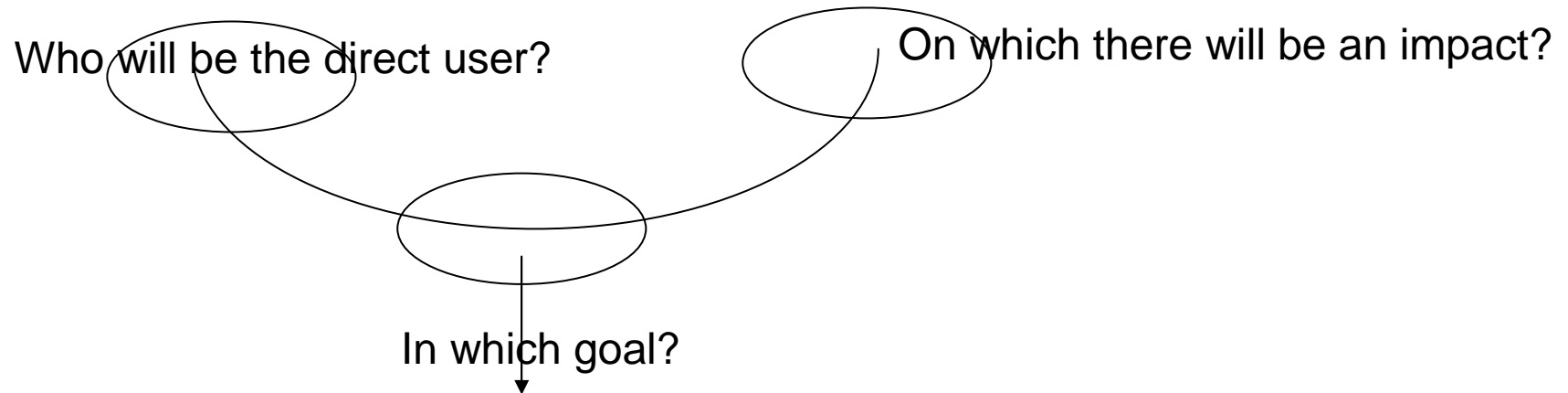
To start with Evaluation (office's job)

- **Legal Issues** – importance to correctly identify contributors, inventors.
- **Sponsor related directives** – most works result from national sponsored program involving restrictions in terms of commercialisation
- **Patentability** – identify prior art and to determine with researchers the potential of the patent in terms of:
 - Ownership (number of potential owners for the new technology)
 - Freedom to exploit the new technology
 - Potential licences (companies patenting in the same technology field)
 - Strength (number of potential revendications)



EVALUATION

The value analysis of the technology



To find answers considering potential of commercialisation and ease to transfer the technology



A list of typical questions

- What is unique or new about the invention?
- What are the possible applications for the invention?
- Who would purchase and use the invention? Who would benefit from the invention?
- What are the principal and secondary functions of the invention?
- How is the invention better, cheaper, faster, etc. than other existing methods/technologies?
- Is this invention compatible with existing techniques, or does it require practitioners to radically rethink how they approach a process or problem?
- How easy is the invention to learn? Does the invention require a significant transfer of know-how before the invention can be put into practice?



- **Stage of development** – How far along is the technology? The TRL tool (NASA)
- **TRL 1** Basic principles observed and reported
- **TRL 2** Technology concept and/or application formulated
- **TRL 3** Analytical and experimental critical function and/or characteristic proof-of-concept → concept
- **TRL 4** Component and/or breadboard validation in laboratory environment
- **TRL 5** Component and/or breadboard validation in relevant environment
- **TRL 6** System/subsystem or prototype demonstration in a relevant environment (ground or space) → component
- **TRL 7** System prototype demonstration in a space environment
- **TRL 8** Actual system completed and “flight qualified” through test and demonstration
- **TRL 9** Actual system “flight proven” through successful mission operations → completion



EVALUATION

Synthesis of evaluation

INVENTION

Inventivity
Applications
limitations

RESOURCES

Available equipments
Investissement
Internal skills
Technologies to acquire
Partnerships?

MARKETS

First evaluation
Segmentation
Competitors

PREVISIONAL COSTS

Previsional
Internal
External



Step 3 – PROTECTION

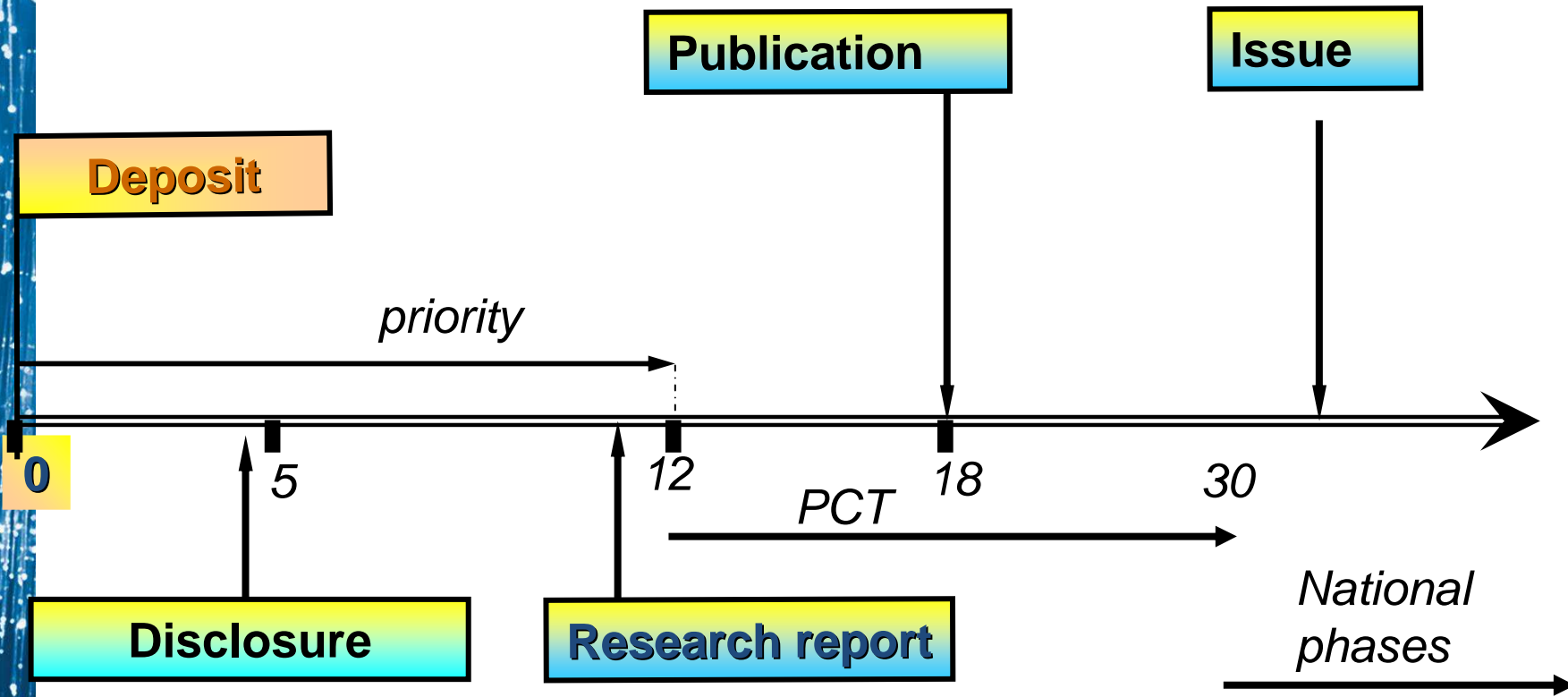
PROTECTION



- ✓ A stage that validates technico-economical evaluation
- ✓ General way : **writing a patent that describes the invention taking into account freedom of operation**
- ✓ Direct exchange between :
 - inventors
 - an appointed Intellectual Property counsel
 - a technology transfer officer
 - a Key point: building a relationship of trust with a professional who will challenge the invention
- ✓ A stage that validates percentage of revenues to inventors (in France, 50% after taking away cost for protection)
- ✓ A cost engagement (average cost for the first 3 years)
 - A French patent : 5 000 €
 - United States : 7 000 €
 - Japan : 7 500 €



A simplified procedure for universities





Step 4 – MARKET ANALYSIS





MARKET



- ✓ Understanding in deeper details the market environment of the invention
- ✓ A phase that prepares the final projet positioning
- ✓ The final goal : finding the right company (creditworthy)

MARKET



- Picking out information through internet and free databases
- Commission a market study (between 20 and 50 k€) to validate potential of applications
- Non Disclosure Agreement preparation to encounter industry representatives to determine market interest (competitiveness clusters, opinion leaders, sometimes directly companies)
- Finding deep information about financial health of targeted companies
- Getting information about typical business models in the industrial sector of the innovation.



Step 5 – STRATEGY





Three typical channels

Sell a license to an established company

- The need has been identified, a company will take the risk to develop a product and a market with the technology.
- Less costly way to transfer the technology

Sell a license to a new venture

- Sometimes, faculty staff may have an interest to develop a new activity in creating a start-up company around their technology.
- Risky
- Technology Transfer Office must mitigate any conflict of interest
- Technology Transfer Office must regularise researcher status (Art.25.1,2,3 in France)

« *Maturing the technology* » : for high potential technologies, finding resources to build functional prototypes



Step 6 – Negotiation



NEGOCIATION

- ✓ Analysis of economic value through financial analysis techniques to prepare the negotiation (NPV, replacement cost, theory of scenarios).
- ✓ Discussion on the use of technology by businesses (extent of rights, application type, duration of contract).
 - Discussion about licensing fees, terms for renewal, involvement of the university in the technology improvement
- ✓ Option for a license to test the invention.
- ✓ Finding the best deal for both parties



NEGOCIATION



THANKS FOR YOUR ATTENTION

