5th Hellenic Forum for Science, Technology and Innovation
Funding Schemes Opportunities in Research and Innovation
NCSR Demokritos

FUNDING TOOLS FOR THE TECHNOLOGY TRANSFER PROCESS

07/07/2017

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Topics

- Technology Transfer
  - Definitions
  - The Process
  - Best Practices
- Funding Tools
  - Types of Tools
  - The situation in Greece: The Equifund

Technology Transfer

Definitions

Definition I

- **Technology Transfer** is the process of transferring (disseminating) technology from the places and ingroups of its origination to wider distribution among more people and places. It occurs along various axes: among universities, from universities to businesses, from large businesses to smaller ones, from governments to businesses, across borders, both formally and informally, and both openly and surreptitiously. Often it occurs by concerted effort to share skills, knowledge, technologies, methods of manufacturing, samples of manufacturing, and facilities among governments or universities and other institutions to ensure that scientific and technological developments are accessible to a wider range of users who can then further develop and exploit the technology into new products, processes, applications, materials, or services.

  Wikipedia

Definition II (the view of a University)

☐ Technology transfer is the movement of knowledge and discoveries to the general public. It can occur through publications, educated students entering the workforce, exchanges at conferences, and relationships with industry. For the TLO, however, technology transfer refers to the formal licensing of technology to third parties, managed and administered by the TLO.

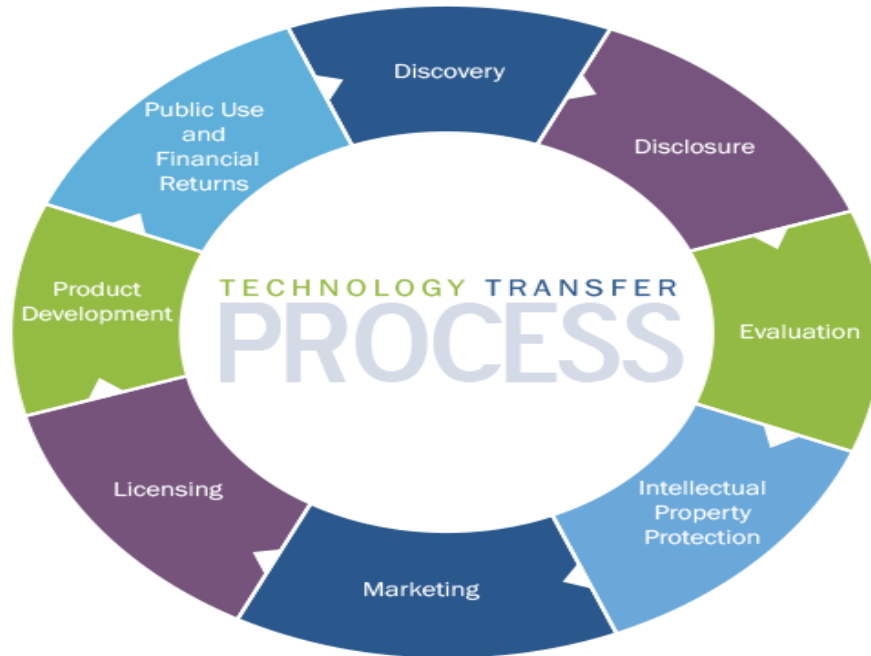MIT, Technology Licensing Office

Technology Transfer

The Process
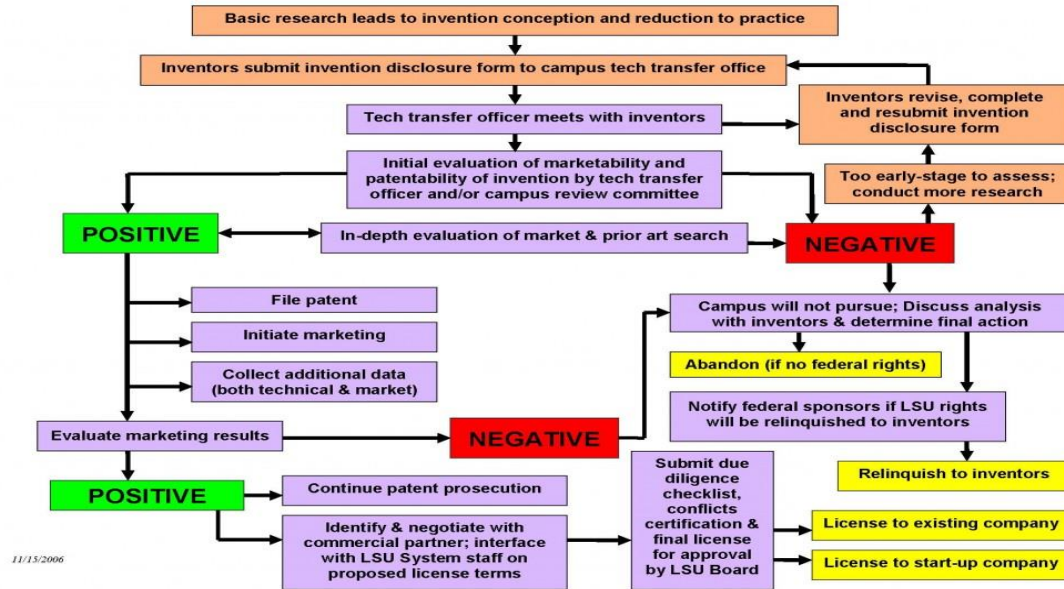
The Process (I)

The virtuous cycle of Technology Transfer

TECHNOLOGY TRANSFER PROCESS

- Discovery
- Disclosure
- Evaluation
- Intellectual Property Protection
- Marketing
- Licensing
- Product Development
- Public Use and Financial Returns

The Process (II)

The real process is nothing but linear…

Commercialization Process for Inventions in the LSU System

Basic research leads to invention conception and reduction to practice

Inventors submit invention disclosure form to campus tech transfer office

Inventors revise, complete and resubmit invention disclosure form

Tech transfer officer meets with inventors

Initial evaluation of marketability and patentability of invention by tech transfer officer and/or campus review committee

Too early-stage to assess; conduct more research

POSITIVE

In-depth evaluation of market & prior art search

NEGATIVE

File patent

Initiate marketing

Collect additional data (both technical & market)

Campus will not pursue; Discuss analysis with inventors & determine final action

Abandon (if no federal rights)

Notify federal sponsors if LSU rights will be relinquished to inventors

Evaluate marketing results

NEGATIVE

Relinquish to inventors

POSITIVE

Continue patent prosecution

Submit due diligence checklist, conflicts certification & final license for approval by LSU Board

License to existing company

Identify & negotiate with commercial partner; interface with LSU System staff on proposed license terms

License to start-up company

11/15/2006

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The main TT Activities

1. IP Protection

2. Licensing

3. Startup/ Spin off creation
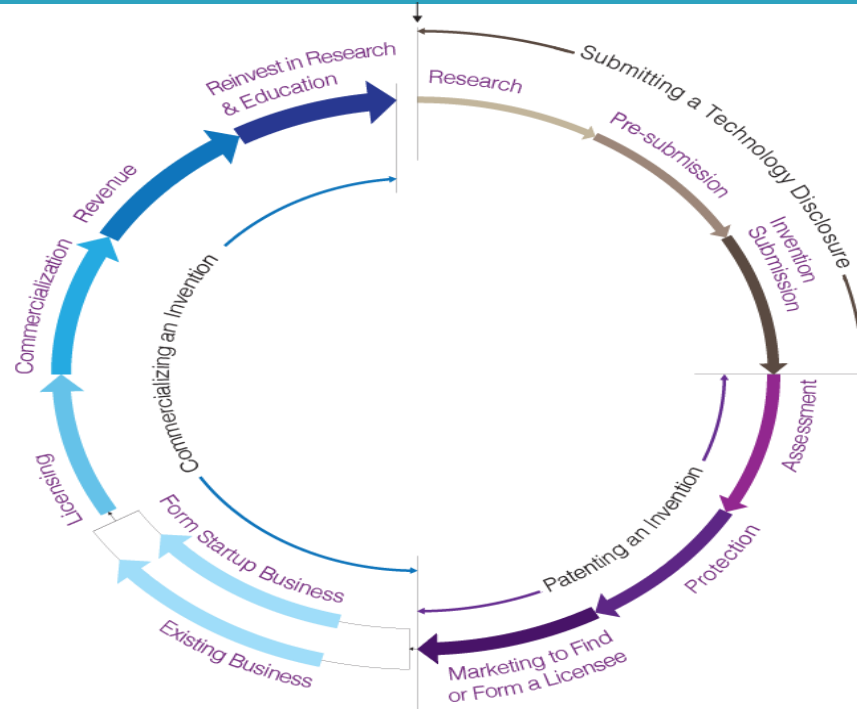
The people needed for TT

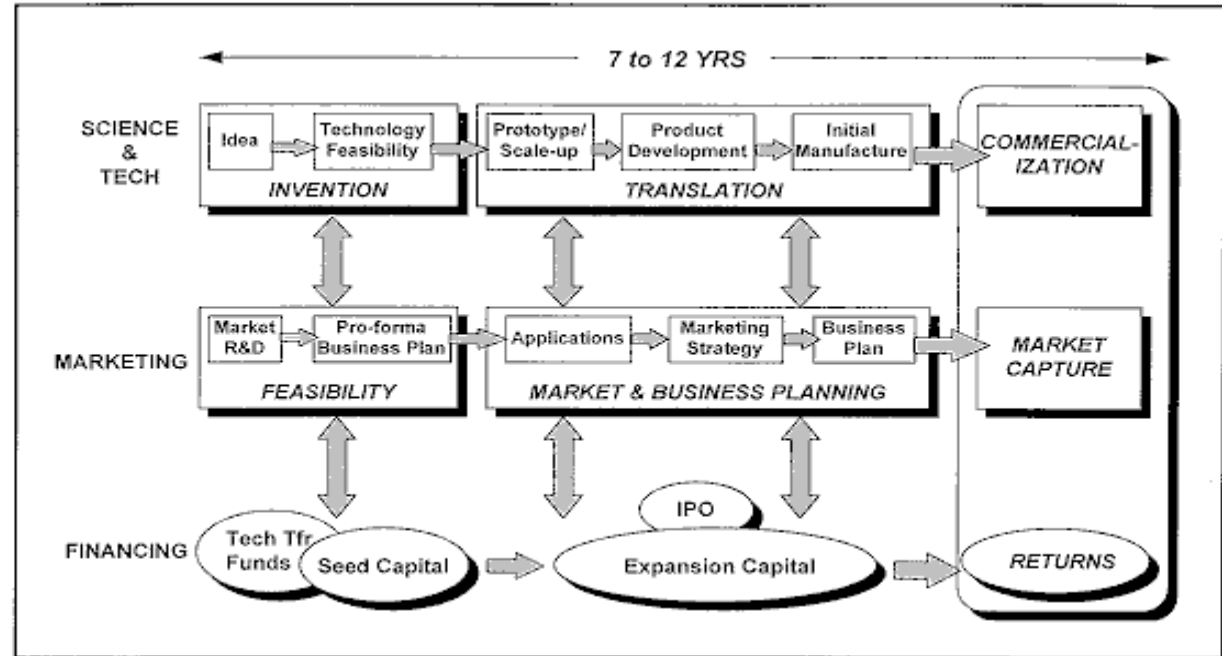Scientist/
Inventor

IP Expert

Business
Development
Expert

The Levels of Operation

The time element

The various tools needed

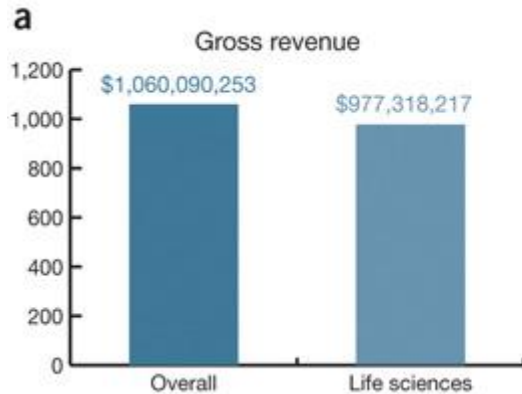# 12 Technology Transfer

Good Practices & Metrics
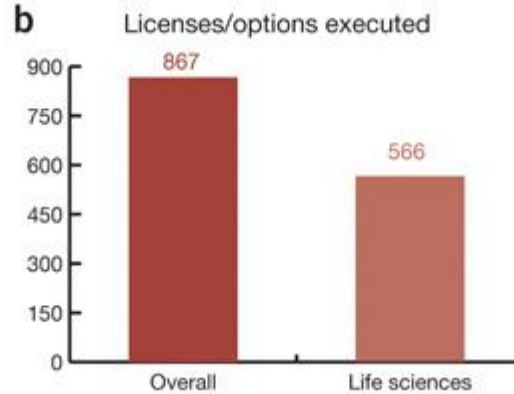
Metrics on Tech Transfer Activity

University	TTO revenue	Invent discl.	US patent filed.	US patents issued	PCR [%]*	Comm. licenses	Start-ups	OPM	R&D Revenue*
Northwestern	191.5	195	254	67	30.0	47	8	1.61	515[30]
Columbia	146.3	335	212	88	49.7	76	15	1.59	590[24]
UC Berkeley	92.8	171	82	44	68.8	45	5	0.89	652[17]
MIT	76.1	603	652	174	32.5	119	25	2.17	736[11]
Washington	67.4	356	151	70	56.0	196	9	1.43	778[8]
Wisconsin	57.7	357	114	156	143.1	62	4	1.08	952[3]
Wake Forest	45.7	70	36	15	37.5	24	3	0.42	201[92]
Rochester	41.8	128	57	27	58.7	33	2	0.51	395[45]
Utah	37.1	237	125	47	52.2	81	19	0.84	331[60]
UCLA	16.2	299	179	56	36.6	46	19	0.78	890[5]
Michigan	15.6	322	122	87	56.9	101	11	0.89	1,007[2]
Johns Hopkins	15.3	409	577	58	12.9	159	11	1.54	1,856[1]
UC San Diego	14.0	388	155	88	54.3	46	13	0.85	879[6]
Harvard	13.8	351	213	60	39.0	85	9	0.93	462[33]
Minnesota	10.1	250	89	41	52.3	113	9	0.74	741[10]
Cornell	8.5	367	174	82	57.7	162	10	1.10	671[16]
Wash. Uni.	5.4	136	83	26	34.2	60	2	0.43	628[21]
Pittsburgh	3.9	257	87	37	53.6	102	5	0.67	623[22]
Colorado	3.8	250	262	37	17.9	50	11	0.72	648[18]
Arizona State	1.1	170	93	18	18.2	72	10	0.49	282[71]
Mean	43.2	283	186	64	48.1	84	10	0.98	713
Stand. Dev.	49.8	119	156	40	26.5	45	6	0.45	321

US Top 15 Universities in 2013

a — Gross revenue: Overall $1,060,090,253; Life sciences $977,318,217 — 92,2%

b — Licenses/options executed: Overall 867; Life sciences 566 — 65,3%
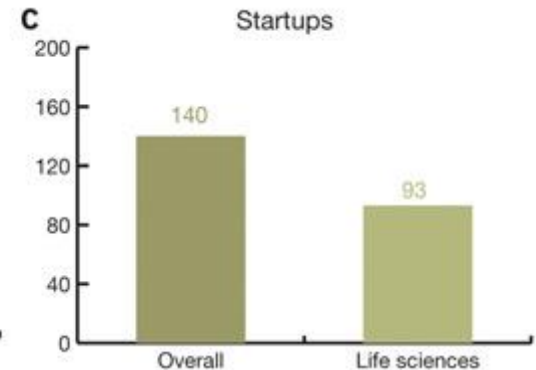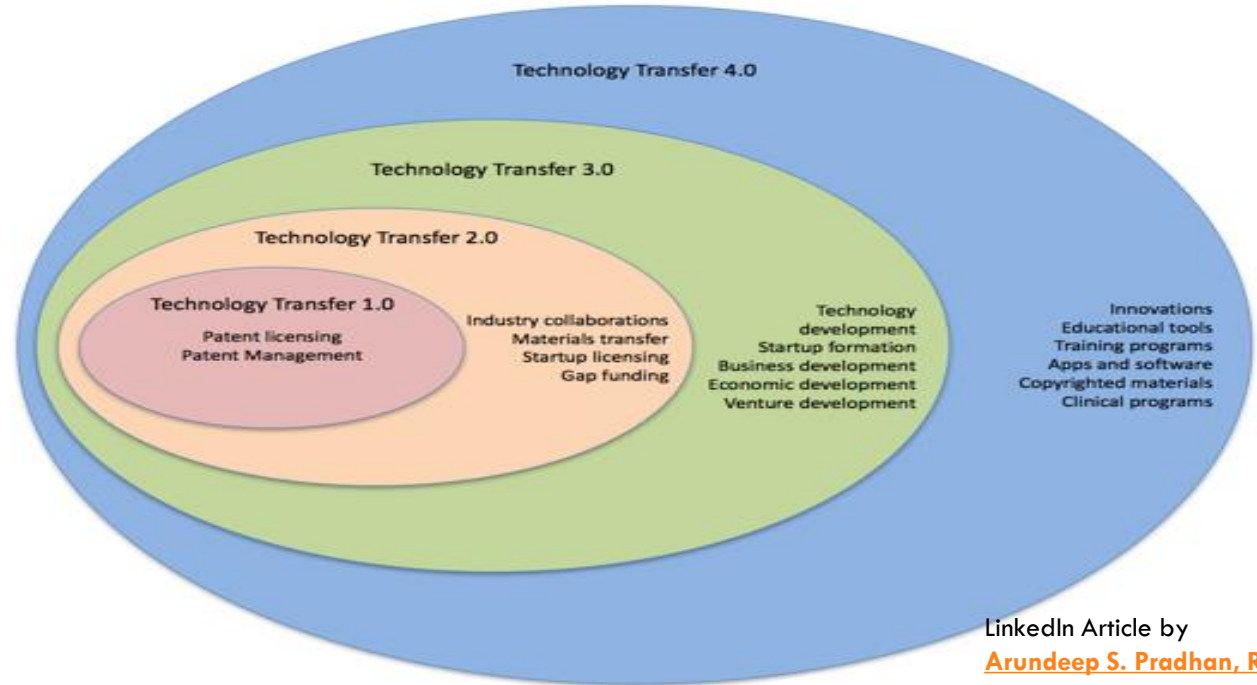
c — Startups: Overall 140; Life sciences 93 — 66,4%

From the Bioentrepreneur Feature (Dec 2014): "Reinventing Tech Transfer"

The evolution of Tech Transfer

How the profession has evolved in the US

They are about to enter the 5.0 era

Technology Transfer 4.0

Technology Transfer 3.0

Technology Transfer 2.0

Technology Transfer 1.0

Patent licensing
Patent Management

Industry collaborations
Materials transfer
Startup licensing
Gap funding

Technology development
Startup formation
Business development
Economic development
Venture development

Innovations
Educational tools
Training programs
Apps and software
Copyrighted materials
Clinical programs

LinkedIn Article by
Arundeep S. Pradhan, RTTP

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Some insights from Europe

Less data available than in the US given the market fragmentation

- TT Policies and Strategies matter
- The key role of the intermediary structure (TTO)
- Characteristics of the Research Institution
  - Number of Researchers
  - Disciplines
- Clusters, proximity and openness
- Licensing vs Spin off focus
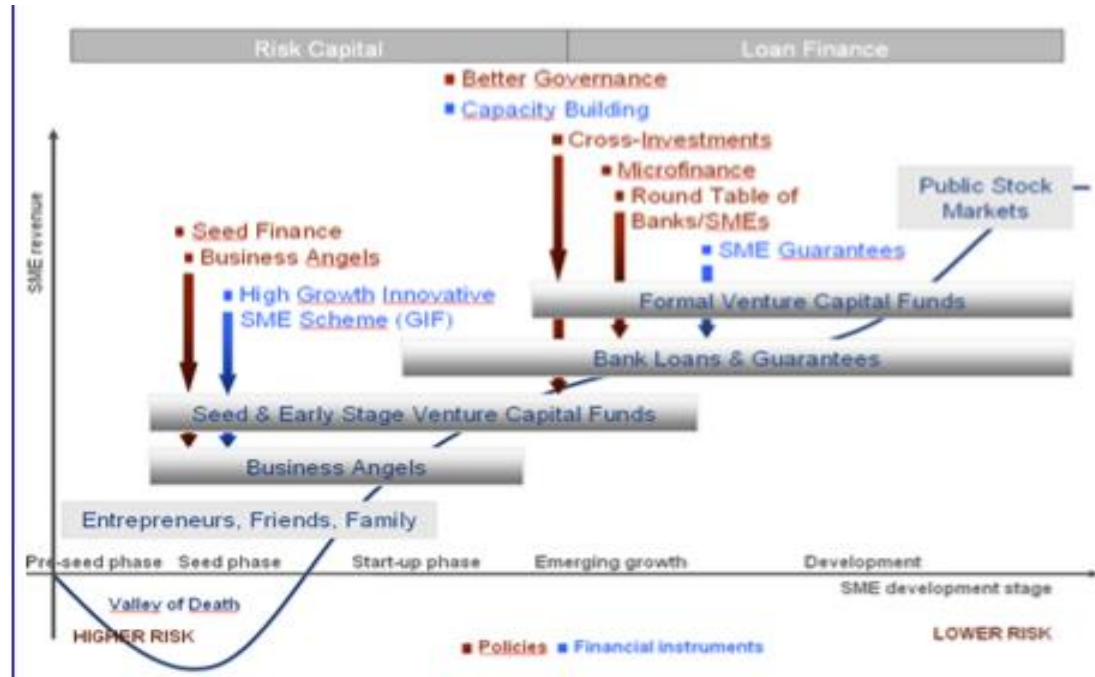
17 Funding Tools

The Start-up Financing Cycle

Startup Financing Cycle
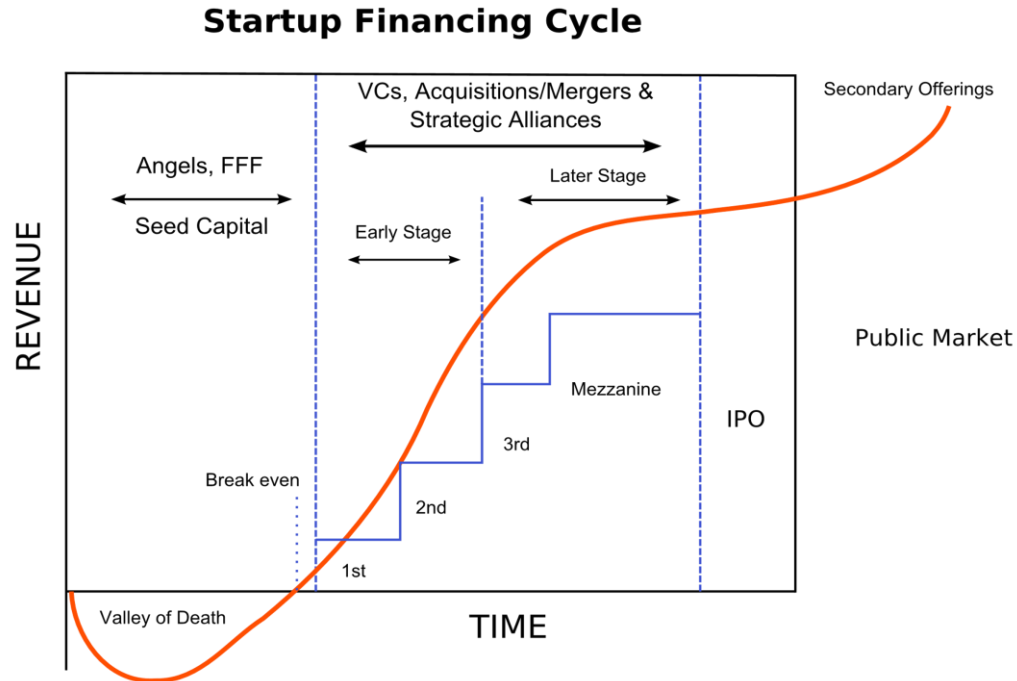
Wikipedia

The Financing Cycle

The 2009 EIF's view of the Financing Cycle

Funding Tools

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Types of Tools

Funding Tools

Non-dilutive Funding

- any type of capital enrichment for a business that does not shrink the initial equity
  - Grants
  - Loans
  - Donations
  - Competition Awards

Dilutive Funding

- any type of capital received by a company that diminishes the initial ownership
  - Angel Investors
  - VC funding
  - IPOs or other forms of selling shares

Early stage Types of Funding

☐ IP Funds

☐ Proof of Concept Funds

☐ Seed Funding

☐ Technology Transfer Funds

☐ VC Funds

Venture Capital Funds

- They are <u>investment funds</u> that manage the money of investors who seek <u>private equity</u> stakes in <u>startup</u> and small- to medium-sized enterprises with strong growth potential.
- They differentiate from
  - Mutual Funds
  - Hedge Funds

- Investments are:
  - High growth potential
  - Risky
  - Long investment horizon
- Fund takes a more active role in the company
- They can be
  - Seed Funds
  - Early Stage
  - Expansion

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Technology Transfer Funds

- ☐ Funds used to finance the TT business development process
- ☐ They can be set up as
  - ◻ IP funds
  - ◻ PoC funds
  - ◻ Seed funds
- ☐ The EIF in Europe is a major investor in this field managing funds on behalf of
  - ◻ EIB
  - ◻ EC
  - ◻ National or regional sources

Seed Funding

- a form of <u>securities offering</u> in which an investor invests capital in exchange for an equity stake in the company.

- When the company is first established and has no revenues

- Characteristics
  - More risk
  - Less formal structure
  - Higher stake for the same money

- Sources of Seed Funding
  - Friends & Family
  - Angel Investors
  - Crowdfunding

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Proof of Concept (PoC) Funding

- PoC is the realization of a method or idea in order to prove its feasibility
  - Technical mostly
- The most common TT funding scheme

- It comes in all forms
  - Grants
    - ERC PoC grant
  - Subsidized loans
    - Netherland's enterprise Agency
  - Equity

IP Funds

- or…
  - Patent Funds
  - Patent Value Funds
- Set up in order to facilitate and enhance IP activities

- Strategies
  - Buy portfolio of unused patents at a discount
  - Group individual patents into patent families increasing value
  - Selectively acquiring clusters of patents and build project teams around them
- Examples
  - Intellectual Ventures
  - Ocean Tomo
  - IP Group

Funding Tools

The Situation in Greece

The **Equifund** Fund of Funds

What has happened in the past

- TT activity has been funded 3 times in the past 3 decades
  - Short term funding (3-4 years)
  - Was not supported by complementary policy measures
  - Outdated IP law
- Seed funds established only for ICT

The situation today

□ Many institutions don't have a TTO

□ Those that exist are seriously understaffed

□ There are very few experienced IP professionals (patent attorneys are still not a recognized profession)

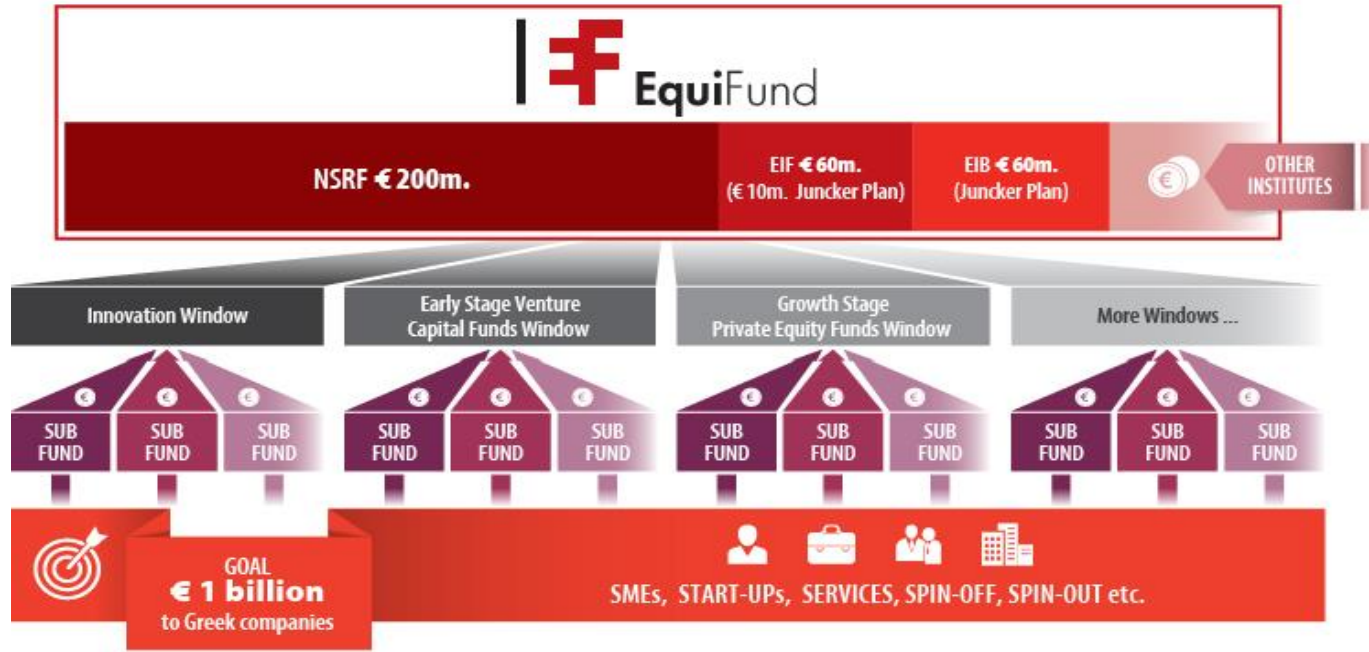□ The Jeremie Seed Funds have closed their investment period

The Future of Greek TT

☐ New Funds will be established under the Equifund Fund of Funds that will address the TT funding gap

☐ The Ministry of Education plans to refinance TT structures

The new Fund of Funds

The Innovation Window

Technology Transfer Funds

- Projects and/or companies (SMEs) coming out from Research Centers, Clusters, and/or any research linked organisations

Acceleration Funds

- Projects/start-ups linked to incubator spaces, co-working spaces, accelerators, universities

Investment Focus details of TT Funds

- Partnership with research organizations / higher education institutions
  - Securing Access to Deal Flow
  - Arms length relationship in order for commercialization decisions to be made independently
- Protection of IP & policies and procedures
  - IP should be adequately protected
  - Sound and proven policies in relation to the protection of IP

Fund Operational Details

- Investment Period: 5 years from 1st closing

- Investment Period: 10+1+1 years

- Type of financing: Equity or Quasi Equity

- Follow on Investments:

  - Up to 20% of total commitments

  - Until end of 2027

Funding Ranges

- Pre-seed: 20.000 to 150.000 €

  - Usually projects

  - Agreement to convert the value into equity

- Seed: 100.000 to 700.000 €

- Round A: 250.000 to 1.500.000 €

Thank you for your attention!!!!

If I didn't manage to answer all your questions
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