

- The Economic Impact of Nanotechnology in the EU and Japan

**“Commercialising NanoScience”  
- value creation for research organisations and regions.**

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Keidanren Hall, Tokyo



# 'Nanoscience' - a definition - and its Commercialisation:

**Nano** = simply  $\times 10^{-9}$  metres. So 'Nanoscience' is simply the understanding of and the manipulation of molecules/atoms that are  $\times 10^{-9}$  metres in size, or smaller.

1. Only \$0.9b of the total USA \$35b total science funding in 2004 was dedicated towards nanoscience i.e. **only 2.5% of total** *(source: Nanodot)*
2. The rest of world dedicated \$1.8b to nanoscience funding - within a significantly **higher concentration of focus than the U.S.** *(source: OECD.)* Approx **7% of total.**
3. EU and Japan enjoy a current lead in nanoscience research advancement.
4. **95% of all scientists in the world never within their career achieve an output that results in a patent, a licence deal or a new start-up technology company.**
5. **Of those that do, 85% of those achieve no commercial success. Only 0.75% do so.**
6. **The challenge - can EU and Japan commercialise on the nanoscience advantage?**

## **Use tried and tested IPR-commercialisation strategies:**

**'Commercialisation' i.e. attempting to make money from new knowledge or intellectual property owned - is widely practiced.**

**There are several strategic approaches. Including:**

- **concentration on maximizing local or national knowledge and technology transfer**
- **concentration on maximizing Licensing income**
- **concentration on maximizing Capital Gain income (company shares)**
- **attempting to balance both of these type of income**
- **concentration on maximizing Research Consultancy income**
- **concentration on maximizing international transactions**

**Each has its own strengths, weaknesses and implications - chose carefully**

**Whichever one chosen each Research Centres or IPR-owner must determine and then follow a clear IPR-commercialisation strategy. 'Adhoc' is the enemy.**

## **'RESOURCING' is the key:**

**Having determined an IPR-commercialisation strategy, execution of operation must followed**

**- MOST Research Centres in the world fail to do so.**

**The 7 key factors:**

- 1. make sure that skilled and experience people are leading.**
- 2. very seldom will researchers be the best people to do so - they have a different skill set, different mentality and are usually too busy on other activities in any case.**
- 3. there are only a tiny number of cases in the world where a creator of IPR has also successfully led on its commercialisation.**
- 4. researchers and Research Centres failing to accept this statistical reality are almost certain to ruin their own valuable IPR opportunities.**
- 5. hire or engage skilled and experience people to lead.**
- 6. ensure the provision of adequate funding to do the job.**
- 7. then (under accountability mechanisms) authorize them lead!**

# Efficient IPR-commercialisation - some metrics:

‘Outreach’



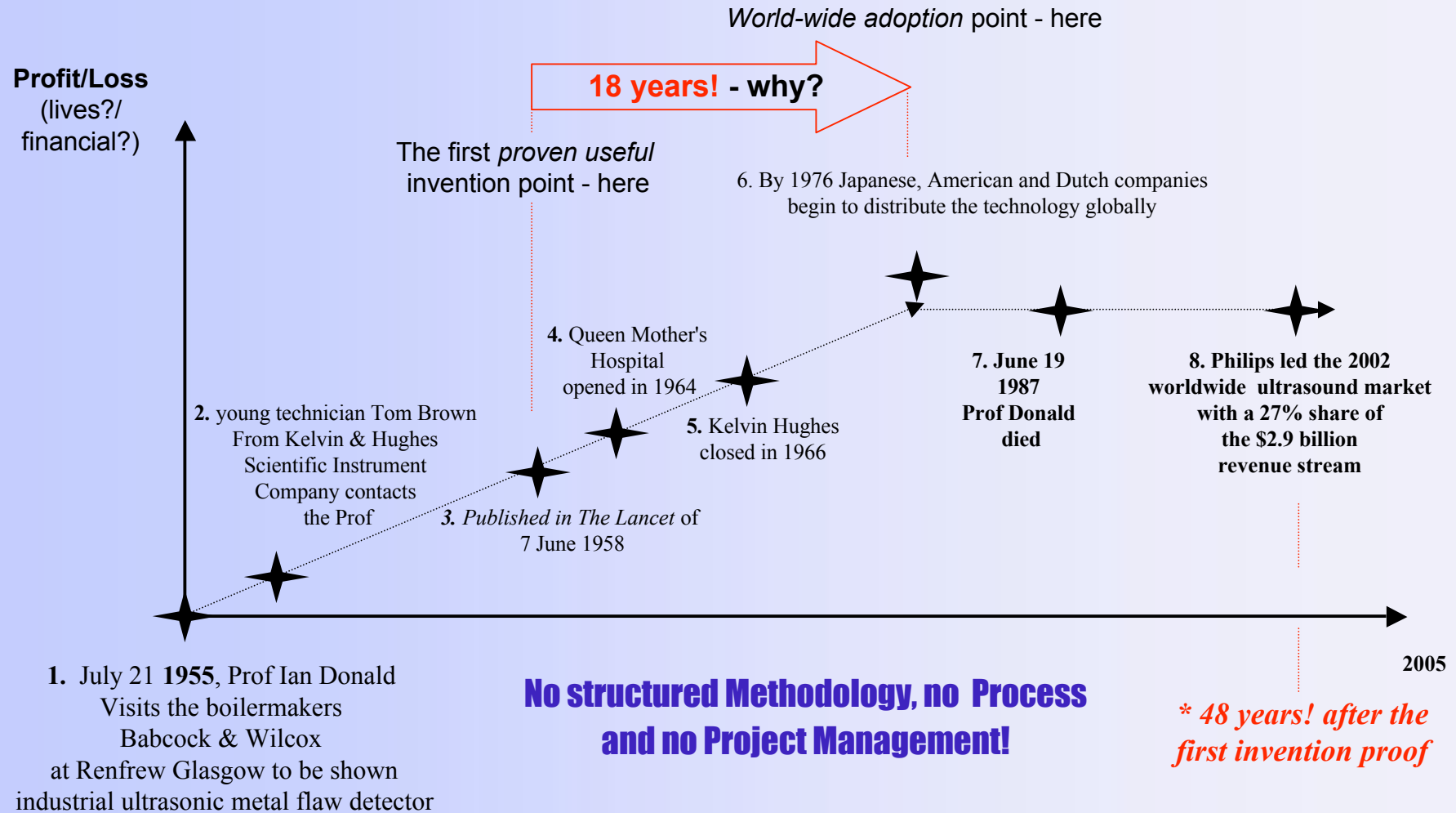
‘Outcome’

	Outreach Activities	Research & Technology Dev, Contract Research	Licensing	Venturing
Activity	No. of: <ul style="list-style-type: none"> <li>• SMEs worked with</li> <li>• Student placements</li> <li>• Companies created</li> <li>• Networking events</li> </ul>	No. of: <ul style="list-style-type: none"> <li>• Research Awards</li> <li>• Consultancy</li> <li>• CPD</li> <li>• Proof of Concept</li> </ul>	No. of: <ul style="list-style-type: none"> <li>• Disclosures</li> <li>• Patent Applications</li> <li>• Patents Granted</li> <li>• Options Granted</li> </ul>	No. of: <ul style="list-style-type: none"> <li>• Business Plans</li> <li>• Joint Ventures</li> <li>• Companies leveraging of external investments</li> </ul>
Quality	Income in support of activities and feedback	Income: <ul style="list-style-type: none"> <li>• Research (Public)</li> <li>• Consultancy (Priv)</li> <li>• Etc.</li> </ul>	Income from licensing, cash or equity value upon realisation	Value of equity realisation
Impact	Longitudinal and difficult to track	No. of jobs created in Higher Education Ins	Export income, no. of jobs created	No of jobs created, turnover and realisation of equity

**Only what gets measured gets done!**



# Efficient IPR-commercialisation ? - Paediatric ultrasound:

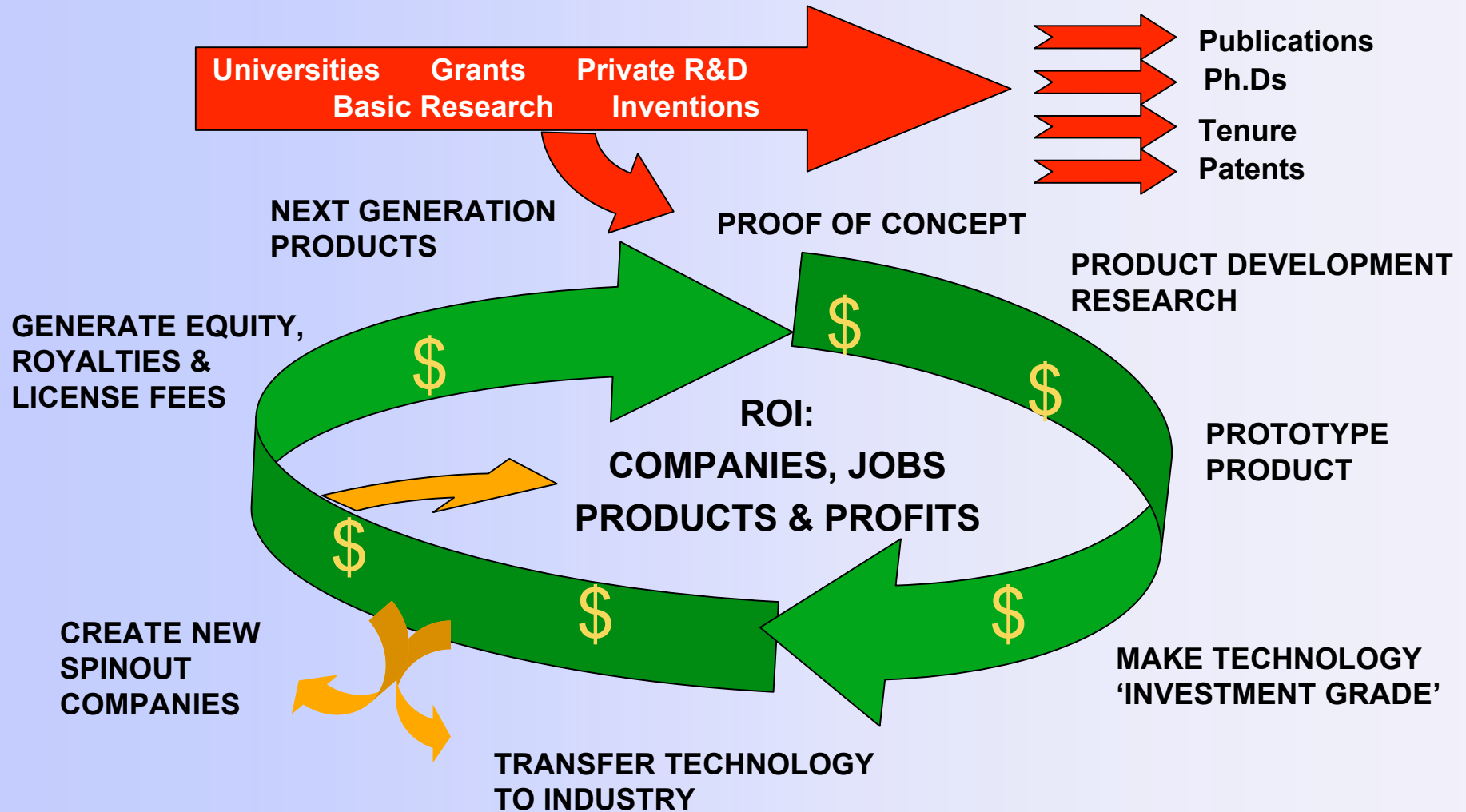


# Efficient IPR-commercialisation - a pillar of economic growth

The **benefits** of proactively commercialising science and technology are an accepted reality:

- **Translating basic research discoveries into products for the public good.**
- **Generating additional revenue for education and research missions (e.g. buildings & equipment.)**
- **Recruiting, retaining and rewarding faculty, staff and students.**
- **Stimulating private sector collaborations.**
- **Promoting regional and national economic growth.**
- **Good IPR-commercialisation unlocks opportunities across sectors.**  
- example 'FHD' in both **data-communications** and **biotechnology** applications.

# Successful IPR-commercialization Model (AUTM)

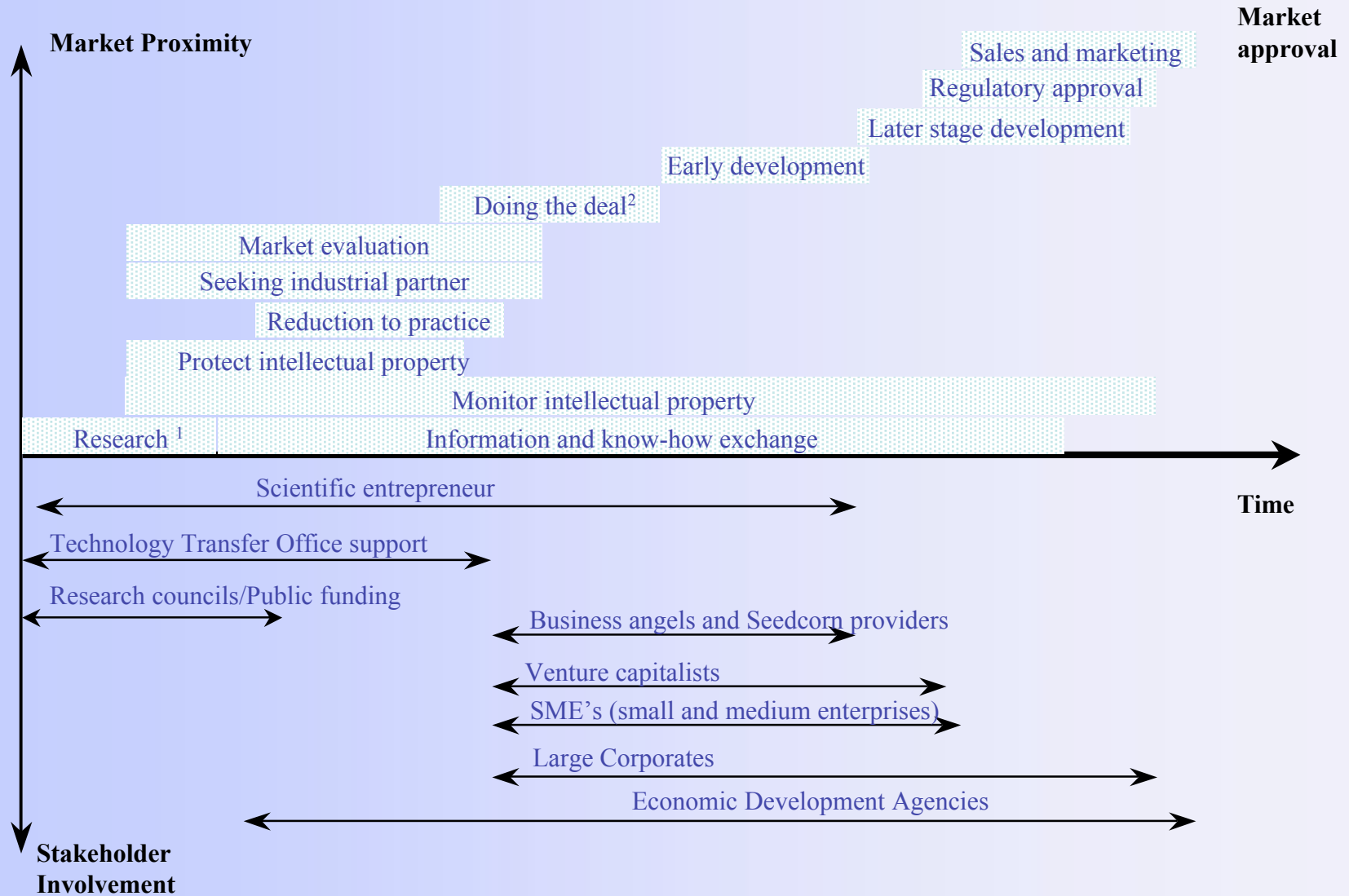




# Technology Commercialization Life Cycle:



# Inseparable activities - where all the players have a role:



# **Efficient IPR commercialisation - how it should be:**

**The integrated and professional Project Management of IPR, with clear processes of:**

- **IPR development**
- **Market development**
- **Technology development**

**Having;**

- 1. Clear business objectives**
- 2. Clear plan of exploitation**
- 3. Financial resources to achieve all of the above**

## **Efficient IPR commercialisation - the Value:**

- **Reducing the Cost and Risk at early stages in the development of new technologies.**
- **Proving the Market value of technologies and their applications.**
- **Strengthening the initial Technology application - across industry sectors**
- **Validating the Commercial potential of Intellectual Property Rights**
- **Expanding the IP portfolio, with well planned IP management strategies**

# One approach -the SV Model, Methodology, Process and EIPAM™ :

**A clear well-defined IPR-commercialisation process;**



Projected Outcome EIPAM Admin | Top | Divisions | Projects | Project Details

### LaserCom - Project detail

New Messages	Activity status	'Laser Com' - Overview of Project Progress
2	Live	IPR: Identification, Protection and Broadening of position 60%
1	Live	Technology Demonstrator and Product Development 55%
3	On Hold	Market: Evaluation and Development 40%
0	Awaiting	Licence and/or Business Plan creation 0%
1	Live	Incorporation and engagement of Company's Management Team and Investors 10%

Project Coordinator	Claus Hergesheimer	Reports	Progress Vs Plan	On Schedule	Reports
Reporting to:	Siohhan O'Flordan	Reports	Weeks elapsed	15	Reports
Key Client	Global Tech Inc	Reports	End-point (date)	12th Jan 2005	Reports
Total spend to date	£82,450	Reports	R.O.I	None to date	Reports
Budget	£200,000	Reports	IRR	None to date	Reports

100% completed project Target outcome(s)

Active User - Claus Hergesheimer

**to advance the commercial outcomes e.g.**

- **Licences deals.**
- **New-start companies.**
- **Joint Ventures.**



## Summary of key comments and recommendations:

- **Set the IPR-commercialisation strategy for the Research Centre.**
- **Set the Metrics and the Target outcomes.**
- **Fully Integrate the Research and IPR-commercialisation activities.**
- **Ensure that IPR-commercialisation is professionally handled.**
- **Authorize and support those leading it to actually lead it.**
- **Resource the IPR-commercialisation operation adequately.**
- **Use a structured Methodology, Process and Project Management.**
- **Be determined and apply sustained effort - 'execution' and 'delivery' are key.**

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