The (Re)new(ed) Ethics of Utilization

Using IAM to create value from academic research

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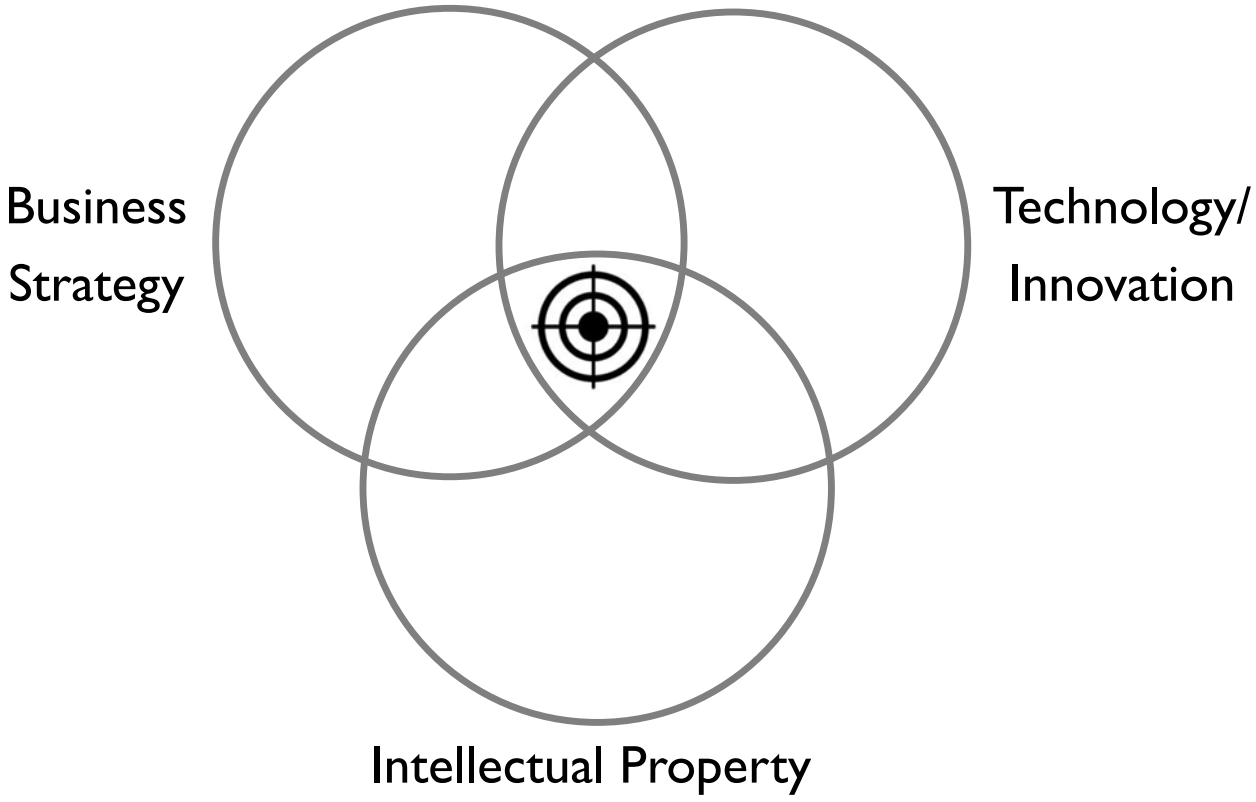
Mission: Transforming Knowledge into Wealth and Welfare

We believe that knowledge is the ultimate renewable resource from which to build sustainable wealth and welfare for the future. However, we acknowledge that the creation, control, and utilization of knowledge required to generate wealth and welfare is far from a simple task – this is why we created CIP.

Knowledge-Based Business Management



Re-Defining Intellectual Property
From blocking to building block

Blocking imitation
of physical products

Building innovations,
ventures, and markets

Background (or why I need therapy)

- Early-stage research
- Late-stage research (pre-venture)
- Start-ups/small growth firms
- Corporate spin-outs
- Healthcare system

The Ethics of Utilization
Strategic questions

- What is the goal of research/researchers?
- How much taxpayer's money should be spent on research?
- How should we measure the impact of research?
- Who should own the results of publicly funded research? Does it matter?

The Ethics of Utilization
Operational questions

- Is utilization more difficult than research?
- Is patenting more ethical than publishing?
- Who should take responsibility for university utilization?

1

Fundamental Challenges

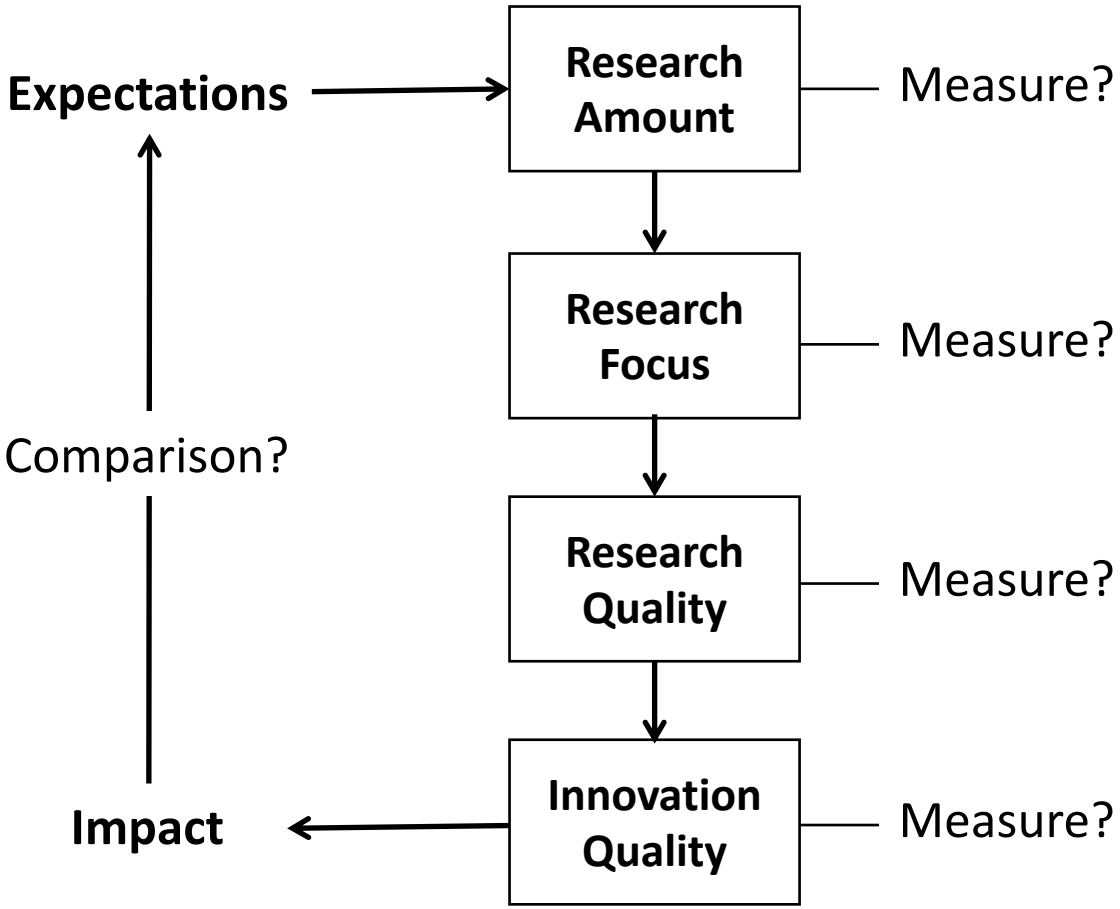
Is this success?

- Increased research funding is approved and distributed without an understanding of the amount research ongoing worldwide, the amount of patent positions already acquired, and potential for utilization by Swedish actors.
- Research that results in publication that is used by American researchers to develop a solution that is transferred to American companies
- Research results that are publishable but found not to be patentable as other actors have already produced the same results, filed patents, and started innovative work
- 100 MSEK of public research whose results are sold for 10 MSEK to a foreign actor
- Public research that results in a start-up that is further financed by public seed funding that is eventually funded by foreign VCs that capture a large portion of the shares and move the firm abroad
- Public research funding that results in a research capacity transferred out of the university into a private firm (i.e. transfer of research infrastructure)

What would produce more value?

- A focus on gathering the knowledge from around the world and utilizing it in Sweden
- A focus on utilizing the knowledge created by Swedish universities around the world

Where is the bottleneck?



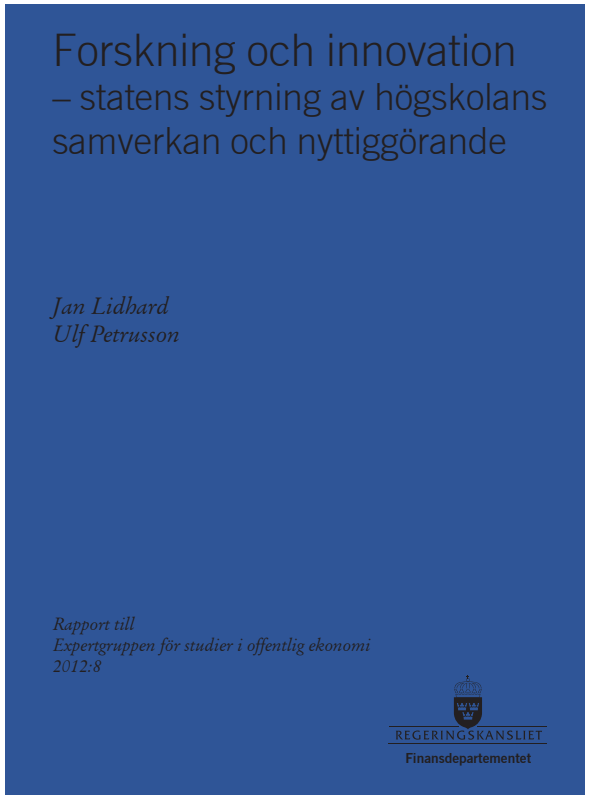
2

The University in the Knowledge Economy

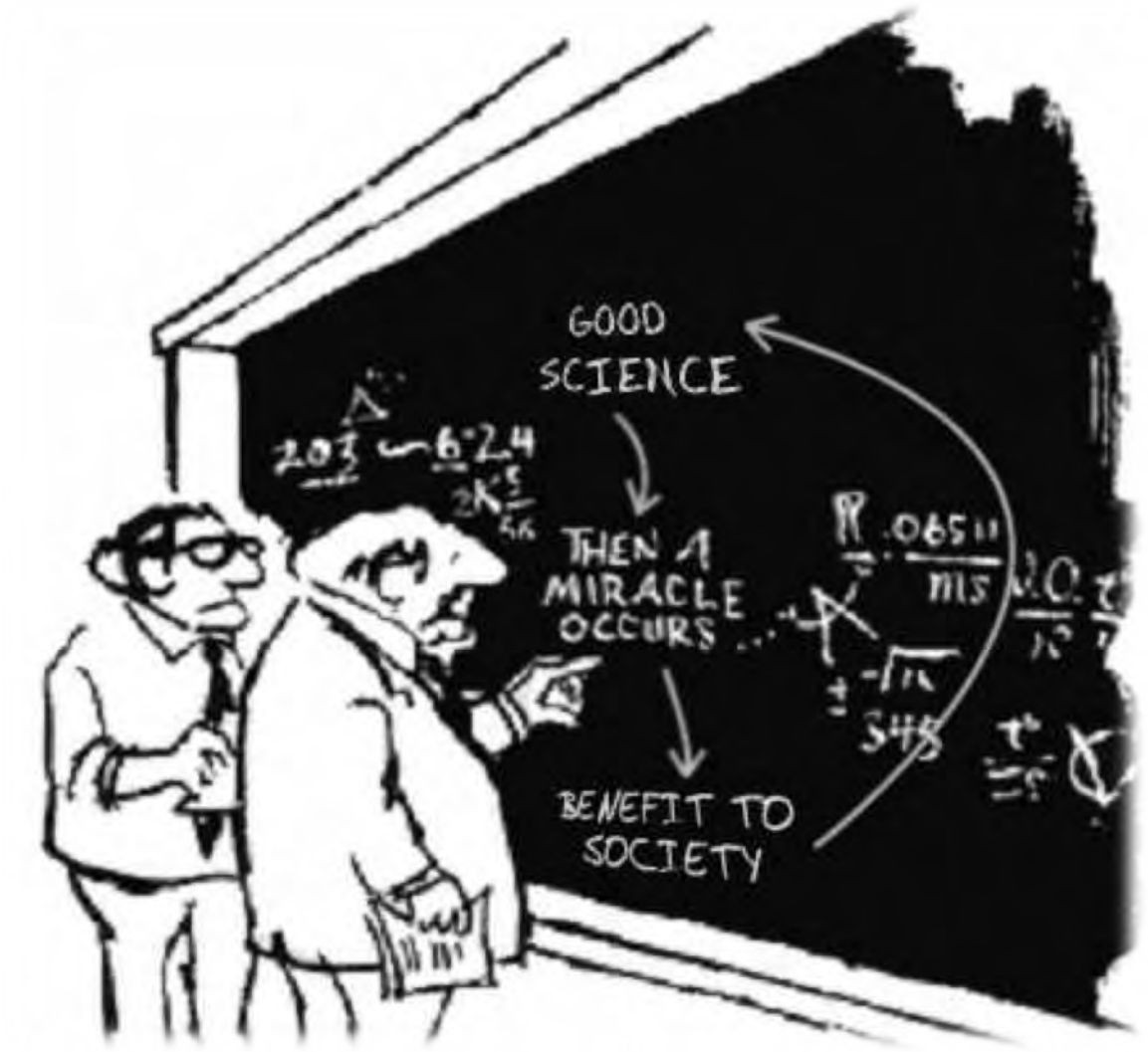
The University in the Knowledge Economy

In 2007, Prof. Ulf Petrusson published a book together with Vinnova, the Swedish Innovation Agency, entitled *The University in the Knowledge Economy* in relation to the governmental review to change legislation regarding ownership of research results originating from public funding.

Research and Innovation



In 2012, Prof. Ulf Petrusson published a book together with the Swedish Finance Ministry entitled *Research and Innovation – state governance of collaboration and utilization activities in higher education* in relation to the change in legislation mandating that universities take on the formal responsibility to manage utilization activities.



”I think you should be more explicit here in step two”

3

Intellectual Asset Management

Research and Utilization

In 2015, Prof. Ulf Petrusson published a book together with Vinnova and the UGOT Institute of Innovation and Social Change entitled *Research and Utlization* that operationally describes how a university can manage research activities to maximize social value creation

Overview of IAM framework

CAPTURE Which concrete research results do we have to utilize?	**UTILIZE** What concrete societal responsibility should we take on?
POSITION How are we positioned in the external environment?	**ORGANIZE** How shall we develop our operational capabilities?

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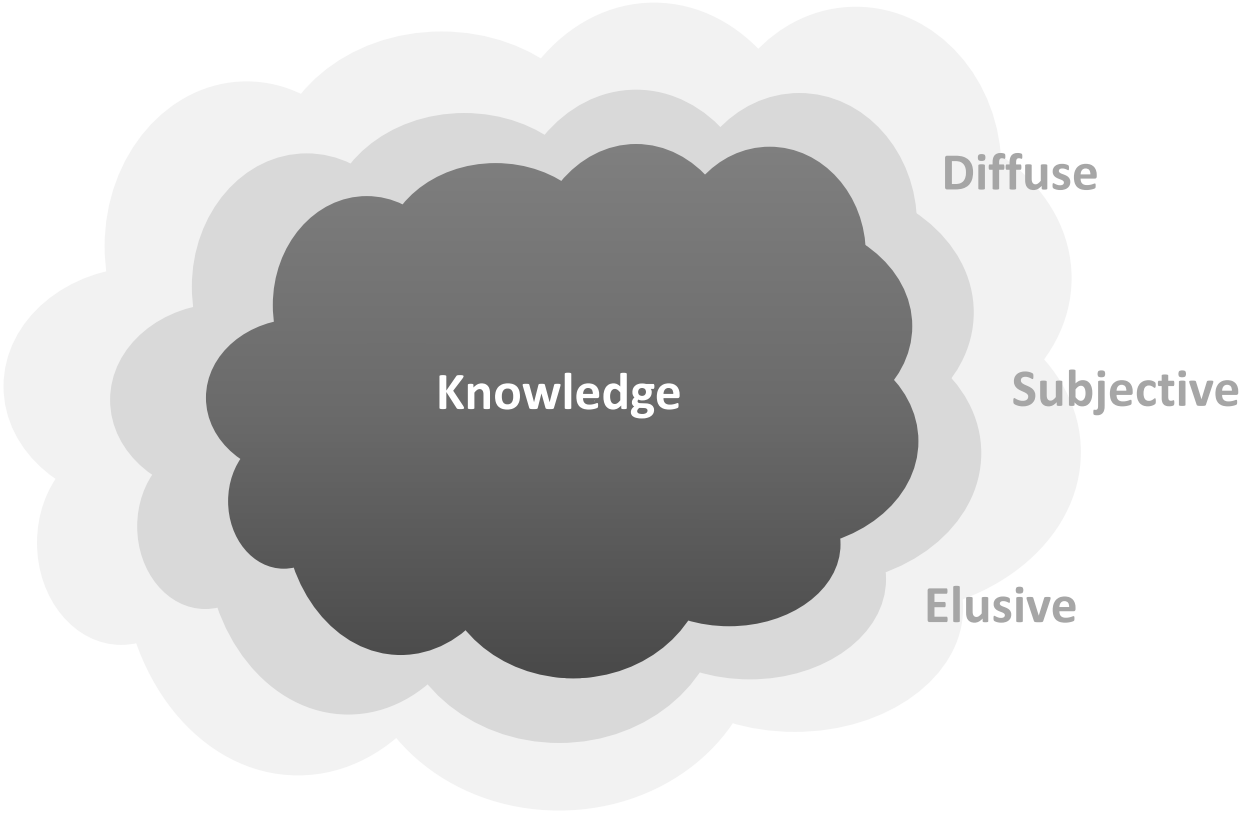
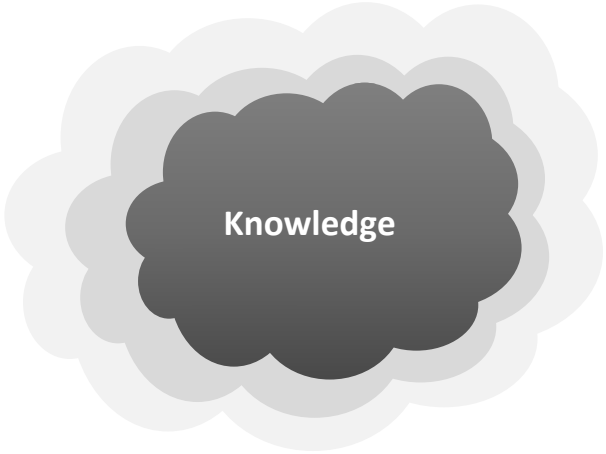
Know-how is inherently difficult to manage efficiently

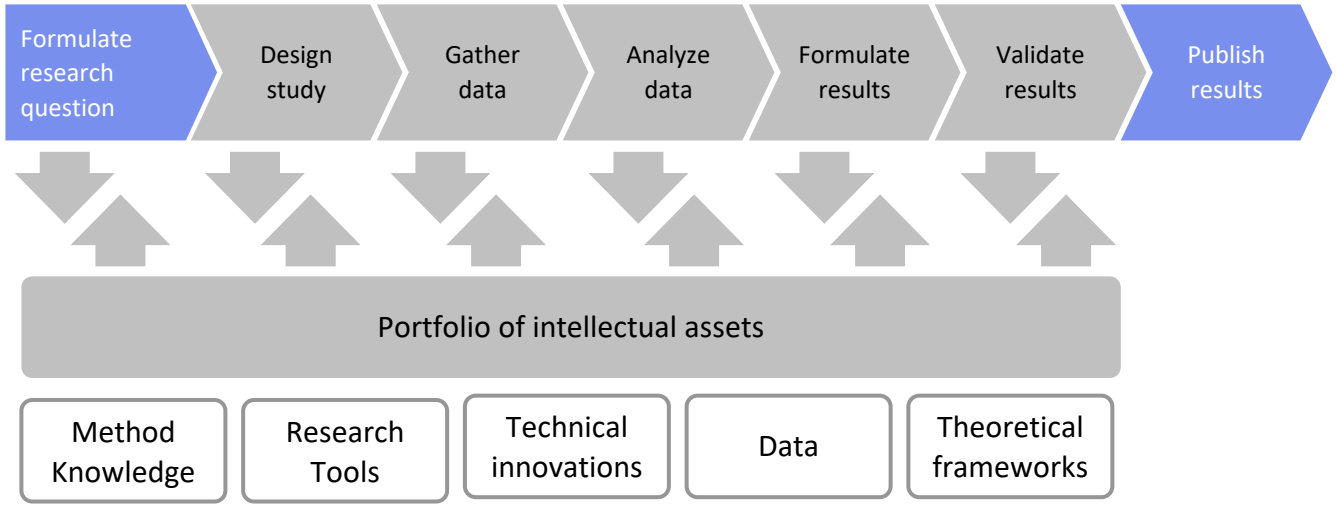


…with impact on competitiveness, value creation and risk



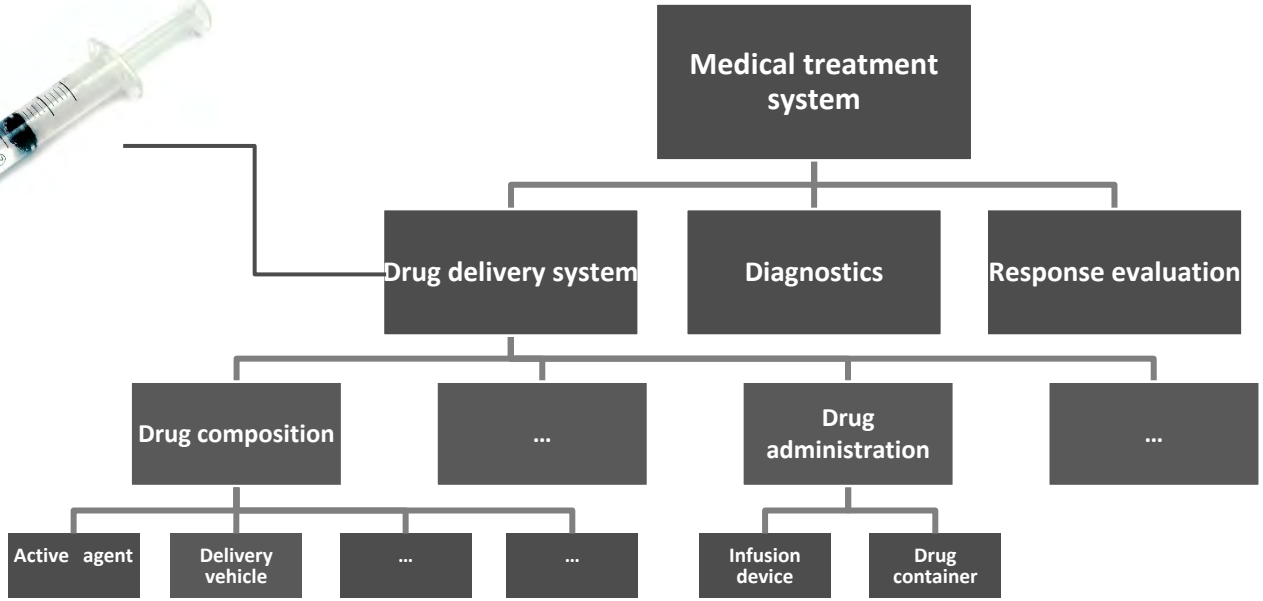
- Lack of both resource overview and detail
- Suboptimal control
- Loss of value creation potential
- Difficulties to communicate
- …

Assessing the research process to identify knowledge assets

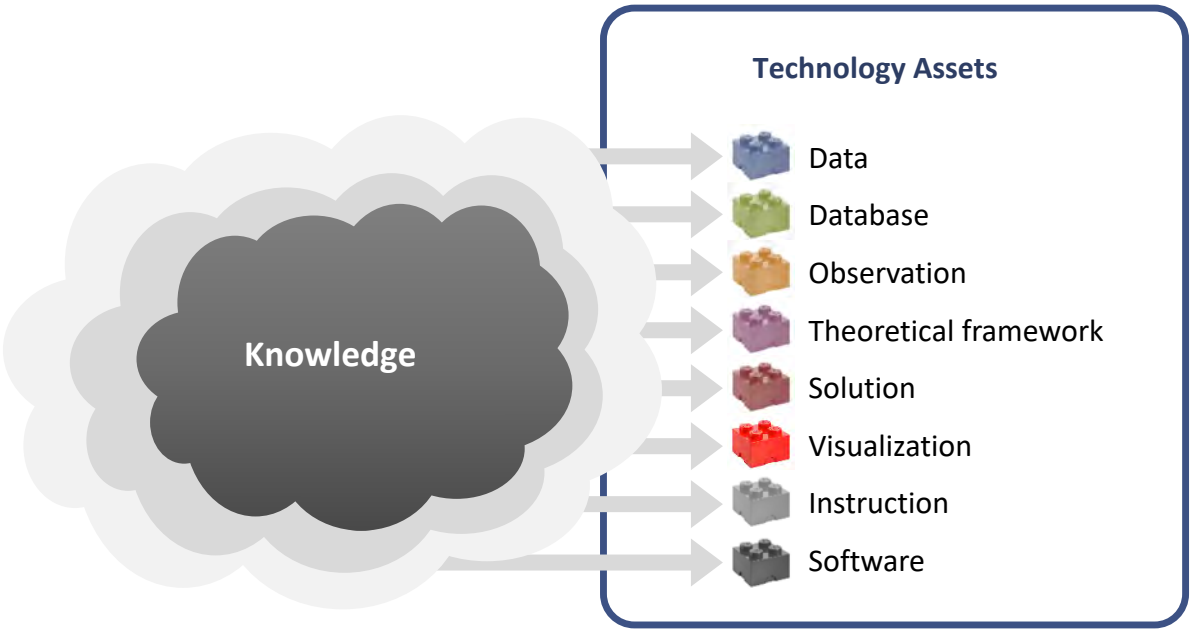


Our starting point is to create a comprehensive and structured overview of the area by creating a technology tree…

Example for illustrative purposes: Medical treatment



…and then capture the intellectual assets in the project



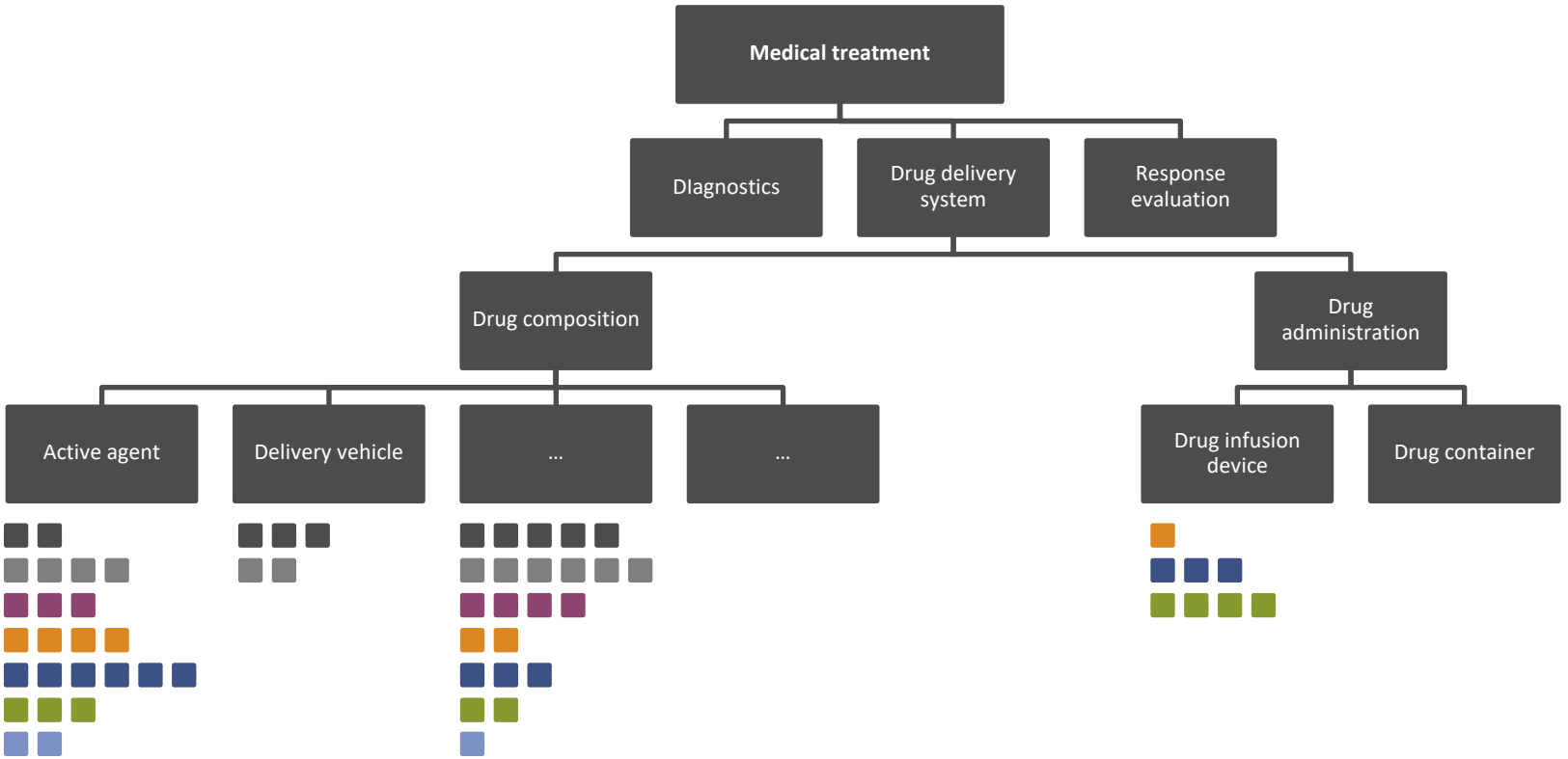
Objectifiable

Valuable

Unique

Controllable

Example: Tagging IAs to technology areas



Intellectual assets are ’tagged’ with relevant metadata to further increase manageability

Intellectual Assets

- Data
- Databases
- Data correlations
- Theoretical frameworks
- Technical solutions
- Instructions
- Software

- **TAGS**
  - **Creators**
  - **Owners**
  - **Carriers**
  - **Patents/IPRs**
  - **Technology areas**
  - **Market offers**
  - **Projects**
  - **Agreements**
  - **…**

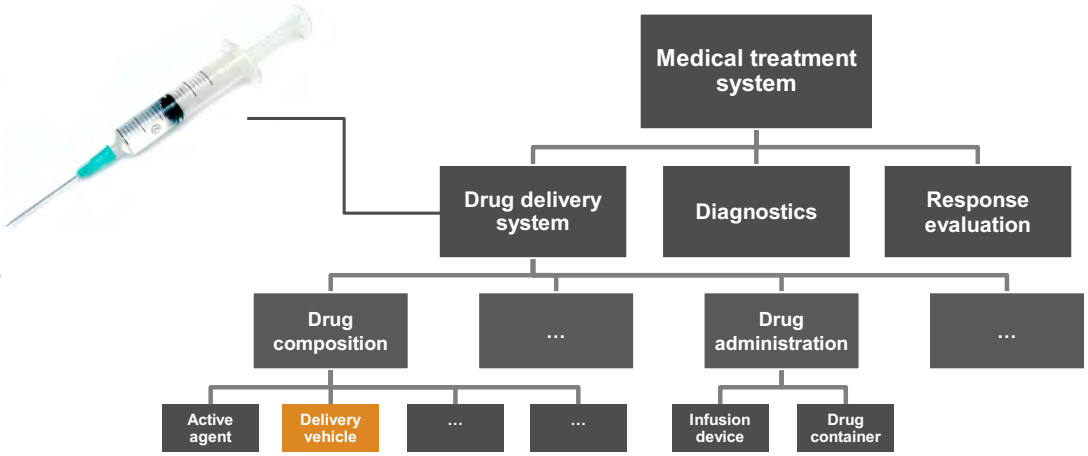
The technology tree is a foundation for analysis and strategies development in relation to each of its' underlying fields

Examples of internal questions

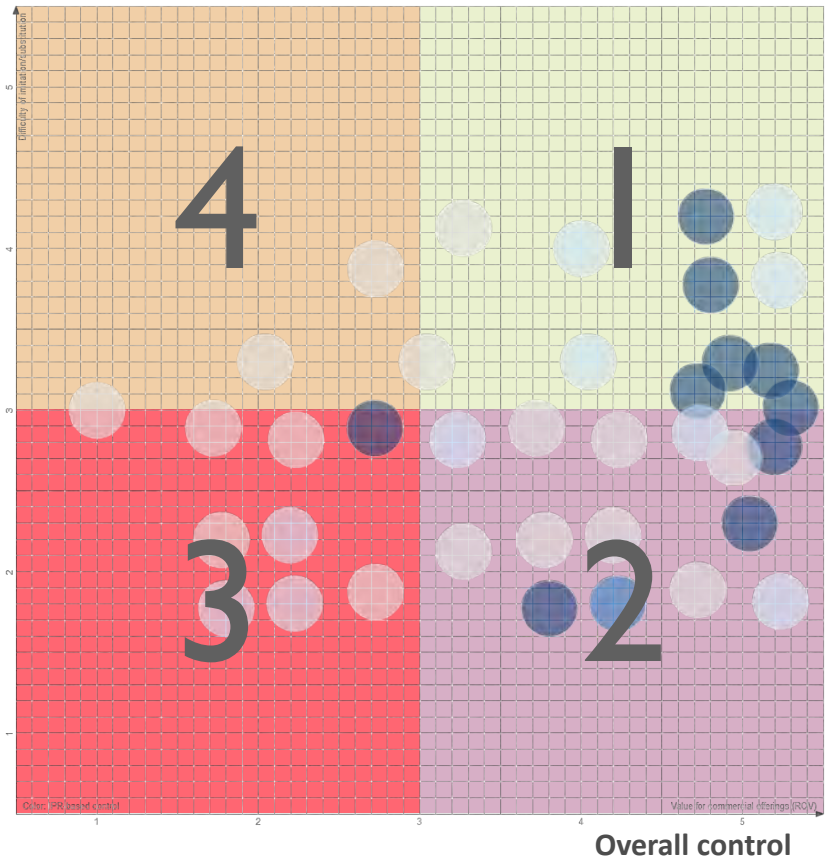
- Where do we have our current IAs and capabilities?
- Where should we have our future control efforts?
- Where should we focus our research projects and resources?

Examples of external questions

- Where do our competitors, customer and other stakeholders have research, commercial and IP positions?
- Are there other players active in the technology field that we could collaborate with?
- How is technology controlled and used in each field?



… to enable powerful analyses using data visualization



1 **IA stars – assets which are likely key**
- Govern and maintain

2 **Highly controlled, low value IA**
- Explore ways of increasing value – further development
- Consider cutting costs associated with control
- More valuable for others?

3 **Limited control, low value IA**
- Deprioritize

4 **Limited control, high value IA**
- Explore ways to strengthen control
- Manage carefully

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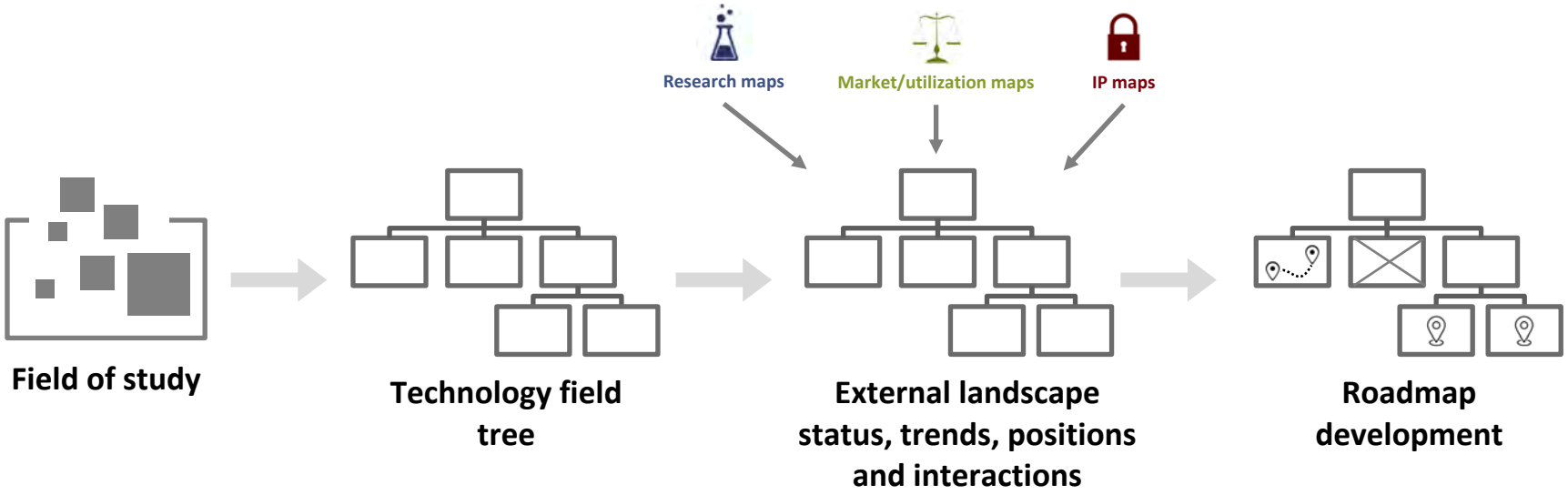
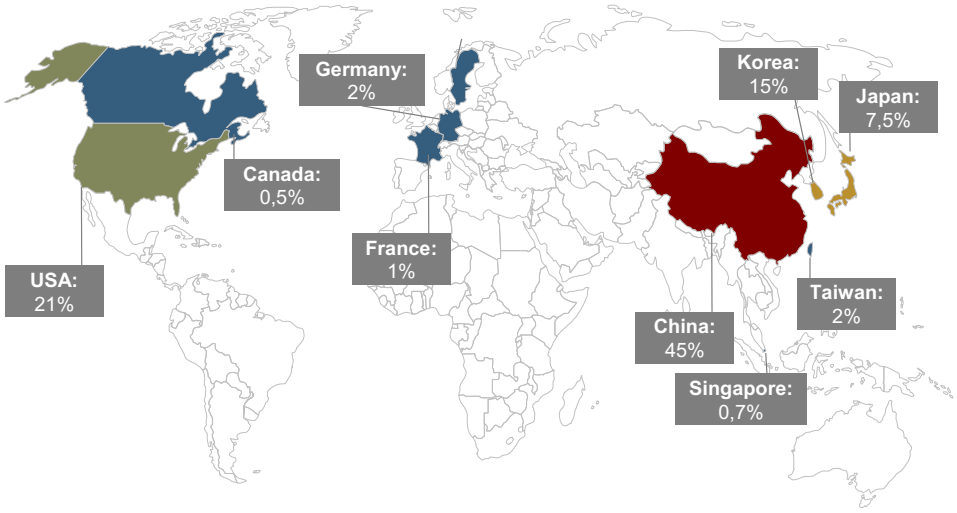
Technology market positioning clarifies trends/positions in the external environment as a basis for making roadmaps



Position knowledge assets – Illustrative examples

Publication intensity across geographies

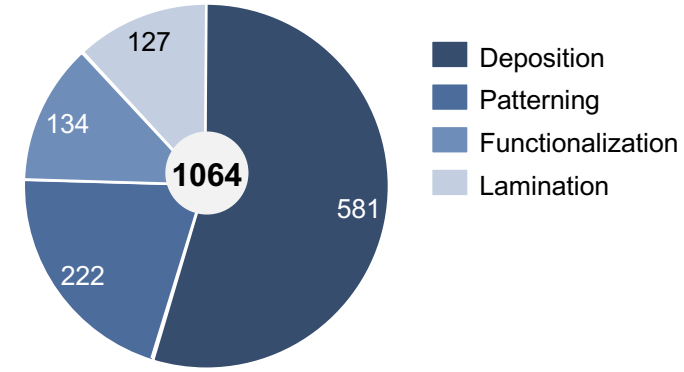


% share of assignees

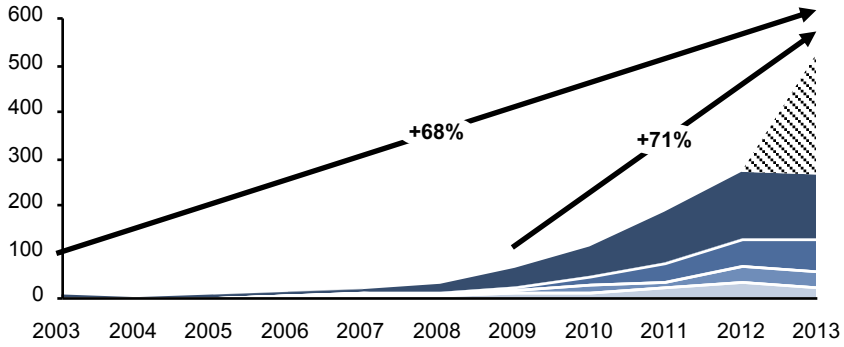
- Blue: 0.5% < x < 5%
- Gold: 5% < x < 15%
- Green: 15% < x < 25%
- Red: x > 25%

Position knowledge assets – Illustrative examples

Total # of patent families (per sub-field)

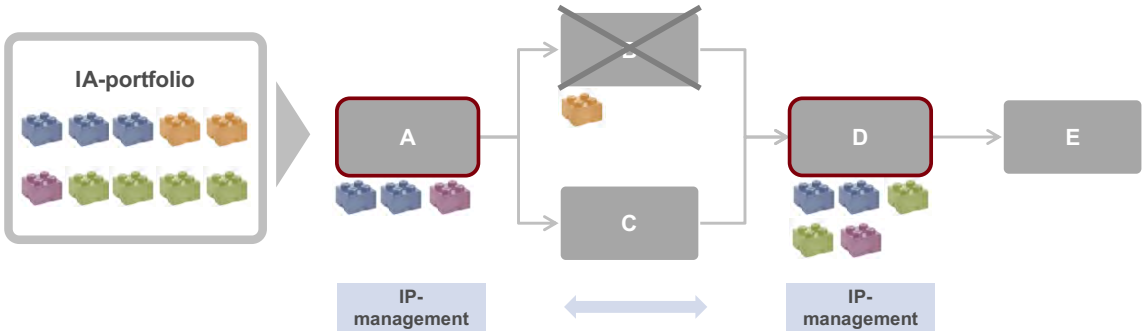


Filings over time (per sub-field)



Position knowledge assets – Illustrative examples

Examples of utilization and collaboration possibilities



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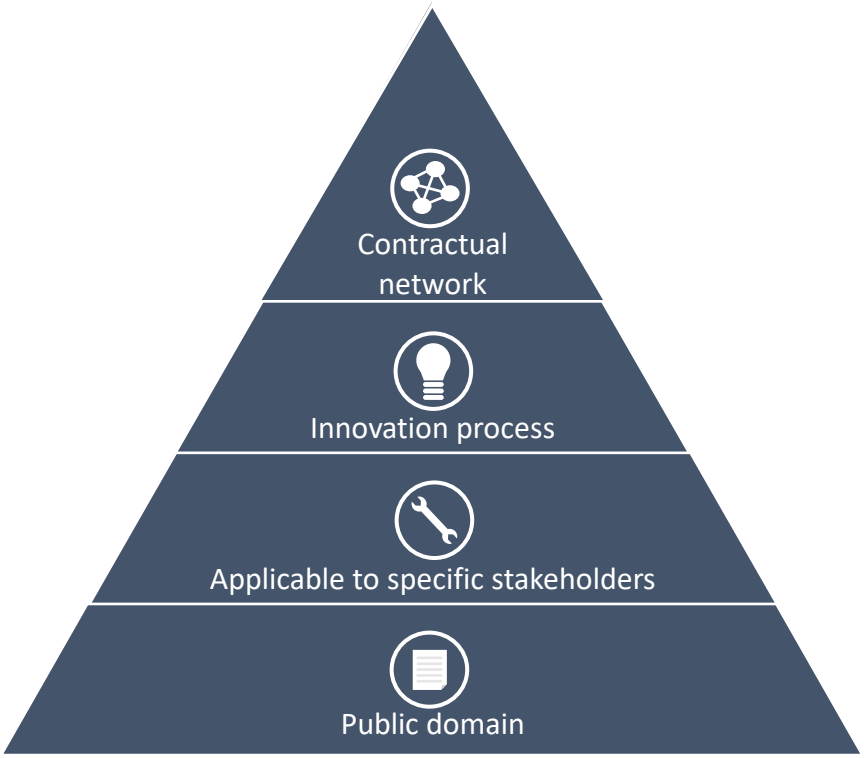
Utilization according to four different logics



Utilization considerations for managing IA portfolio

The academic environment acts to make knowledge available in open contractual structures/networks

Assets are managed as portfolios of background and foreground research results in contract-based platforms

The academic environment acts to make knowledge available as products and knowledge organizations

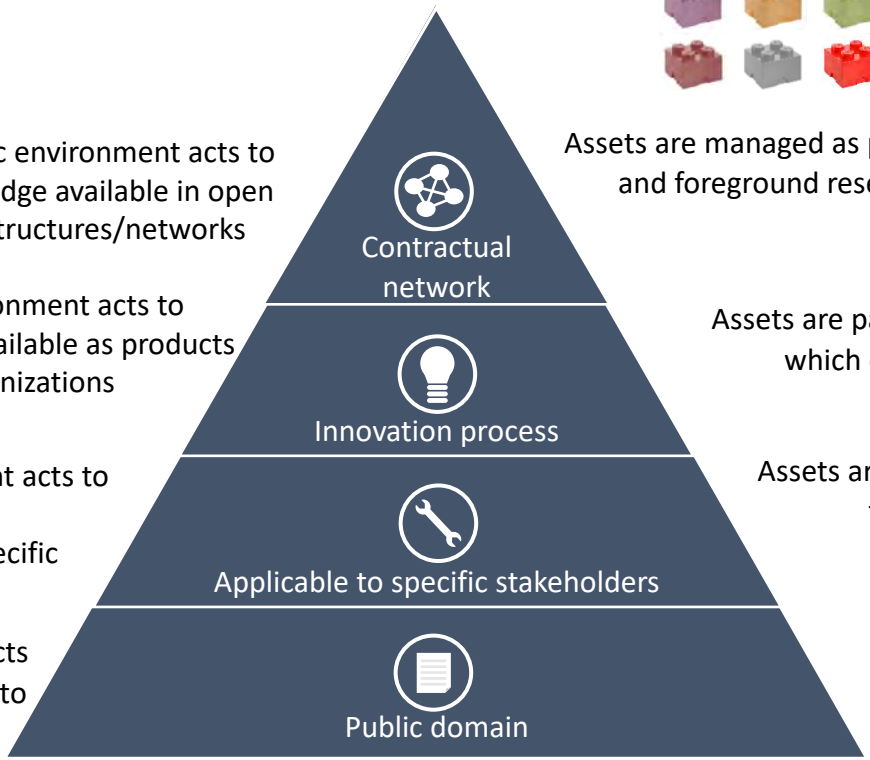
Assets are packaged as controlled ideas, which can be further developed as innovations

The academic environment acts to make knowledge available/applicable to specific stakeholders

Assets are managed as back-ground and foreground– which may require patentability or other control

The academic environment acts to make knowledge available to the public

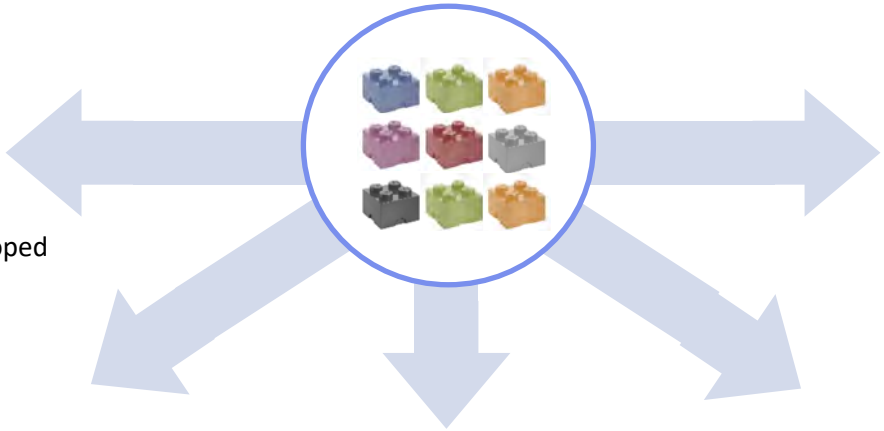
Assets are transferred to the public domain without any IPR restrictions



A number of strategic decisions are facilitated by analyzing intellectual assets

Further R&D

- What technology is lacking?
- What are key development opportunities?
- What should be further developed in-house?



Venture creation

- What rights are needed to exploit the technology?
- What people and organizational activities are needed?

Control position

- What should be patented?
- What other governance mechanisms are needed to protect the results?
- What should be done regarding others' IPRs?

Collaboration

- Where are partnerships needed?
- Who to collaborate with?
- What of the things brought to the table are valuable?
- What can be discussed freely and what is secret?

Utilization opportunities

- What unique with the research results what utilities does it create?
- Is there a need for it? Who has it?
- What could be offered to others?
- How could it be packaged?

IAM enables better utilization

UTILIZATION

OPPORTUNITY IDENTIFICATION

- Higher clarity regarding what exists and can be utilized
- Ability to pro-actively identify utilization opportunities even when the researchers don't

OPPORTUNITY EVALUATION

- Improved ability for non-researchers to spot opportunities
- Better ability to assess multiple utilization opportunities
- Improved ability to inform but not disclose to external parties

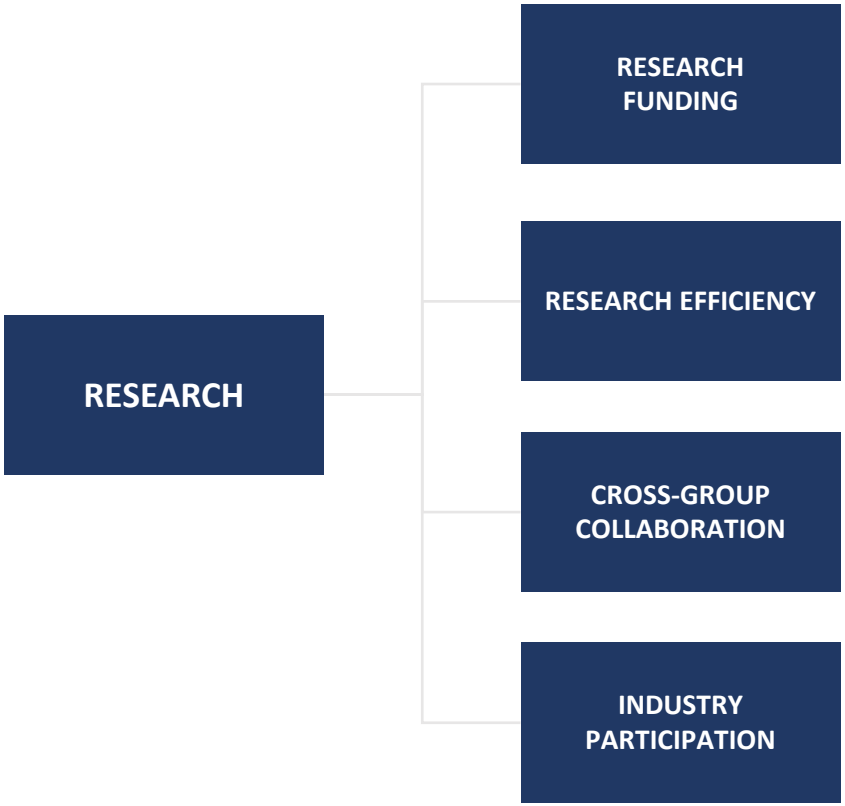
IP PROTECTION

- Ability to pro-actively assess control measures depending on opportunities for utilization (not limited to patents)
- Better input to patent drafting and filing
- Better control over non-patentable knowledge

OPPORTUNITY REALIZATION

- Better ability to identify potential licensees, partners or buyers
- Improved ability to market and transfer knowledge from the researcher(s) to new ventures, partners, licensees, …
- More to offer and and better control over valuable knowledge

IAM enables better research



- Improved applications with higher clarity regarding what exists, what is expected, and potential ways of utilization
- Better progress monitoring and reporting

- Improved communication within the research group including more focused discussions and knowledge transfer
- Better ability for pro-active knowledge transfer before and when researchers leave

- Improved knowledge transfer and research idea generation between groups
- Higher clarity regarding what each collaborator brings to the table in a project, and what is generated during collaboration

- Improved ability to attract industry collaborations due to higher clarity of what exists, what is being developed, and what is considered valuable from an industry perspective
- Improved ability to transfer knowledge from industry

The Ethics of Utilization

- What is the goal of research/researchers?
- How much taxpayer's money should be spent on research?
- How should we measure the impact of research?
- Who should own the results of publicly funded research? Does it matter?
- Is making money the goal of utilization?
- Is utlization more difficult than research?
- Is patenting more ethical than publishing?
- Who should take responsibility for university utilization?

In the knowledge economy, we are all developing countries