

# How to organize a TTO – Learning's from Northern Europe

Maribor, October 25<sup>th</sup> 2011

## Workshop's purpose

- What are the key areas to cover to be successful in early commercialization – and how is it done?
- Choosing the proper commercial strategy, i.e. spin-out, licensing or collaboration.
- Examples on how to organize university TTO's;
  - Network-based model
  - Full-service model
- Which competencies are essential to possess internally at the TTO and which can be outsourced to third parties? Areas such as the following will be discussed;
  - Legal
  - IPR
  - Commercial strategy
  - Partnering
  - Negotiation
  - Scouting

## Agenda

**12:15-12:35**

### **Introduction to workshop**

- Learning's from Northern Europe in TT

**12:35-14:35**

**Including 1h lunch break**

### **What are the key areas to cover to be successful in early commercialization – and how is it done?**

- Suggested process and frameworks for executing commercialisation of university inventions

**14:35-14:50**

### **Choosing the proper strategy;**

- Spin-out
- Licensing
- Collaborative research

**15:00-15:45**

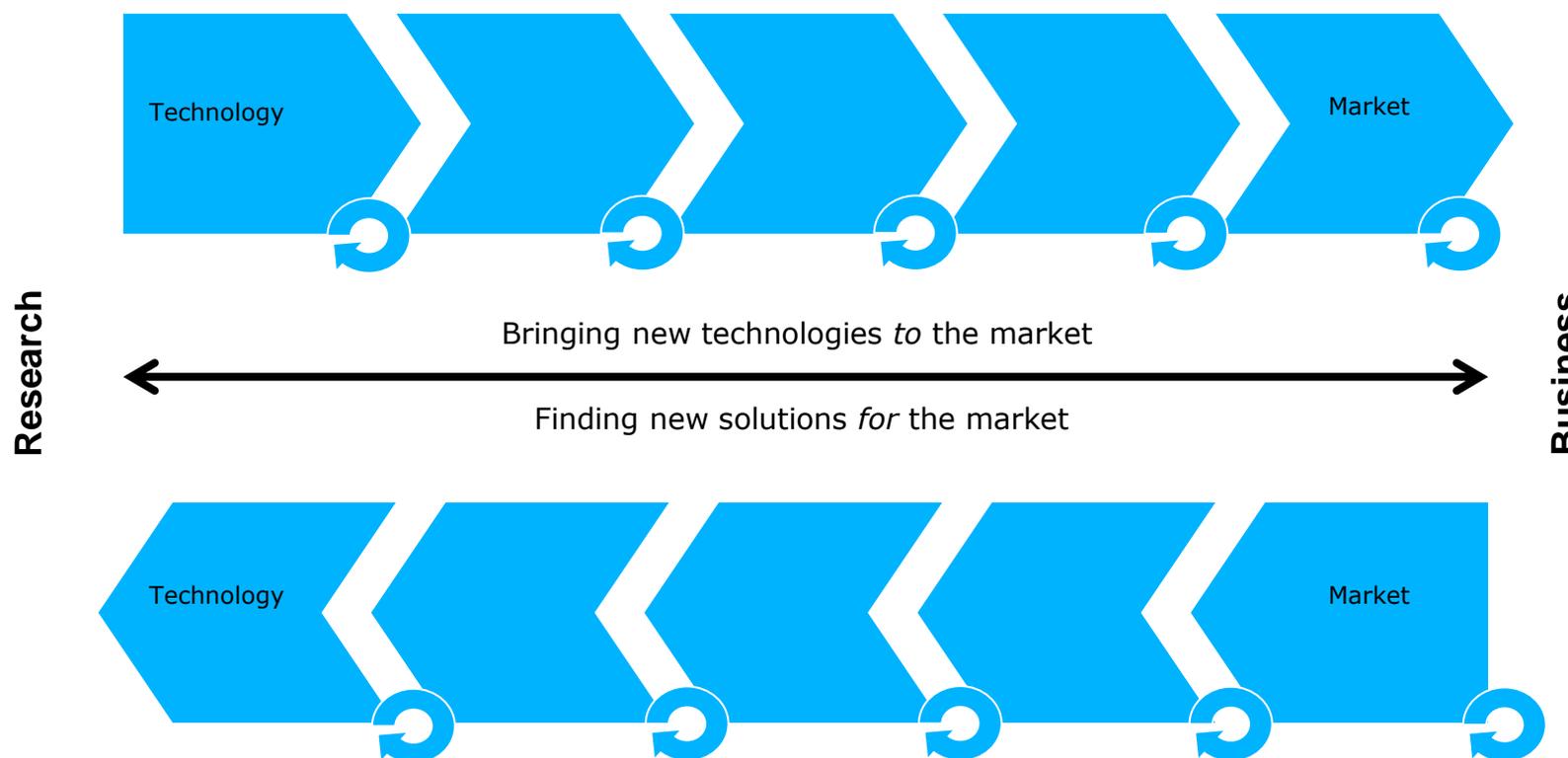
### **Competencies relevant for a university TTO**

- Examples on how to organize university TTO's
- Pro's and con's of internal competence build-up

**15:45-16:00**

### **Summary & Questions**

TTO A/S, a catalyst for making money on new technology



## Christian Schmock, TTO A/S and Aarhus University, DK

### **TTO A/S**

- Consultancy within technology transfer for app. 20 European universities.
- Emphasis on evaluation, strategy making, partnering, and fund-raising of university inventions. Furthermore, portfolio management and organisation of TTO's.
- Consultants for technology based companies and investors on sourcing of innovation and due diligences.
- Areas of expertise: Life-science, Clean-tech and IT.

### **Myself**

2011-: Senior Advisor (interim position) Aarhus University

2010-: Co-owner TTO A/S

2008: Head of Life Science TTO A/S

2005: Project Manager TTO A/S

2004: Academic Employee Copenhagen Business School

- RTTP, Registered Technology Transfer Professional
- MSc, Management of Innovation and Business Development
- BSc, Biology
- BSc, Business Administration & Philosophy



## Where the learning comes from

20+ university clients in various countries:

- A, CH, D, DK, N, S

Ownership structures on university inventions

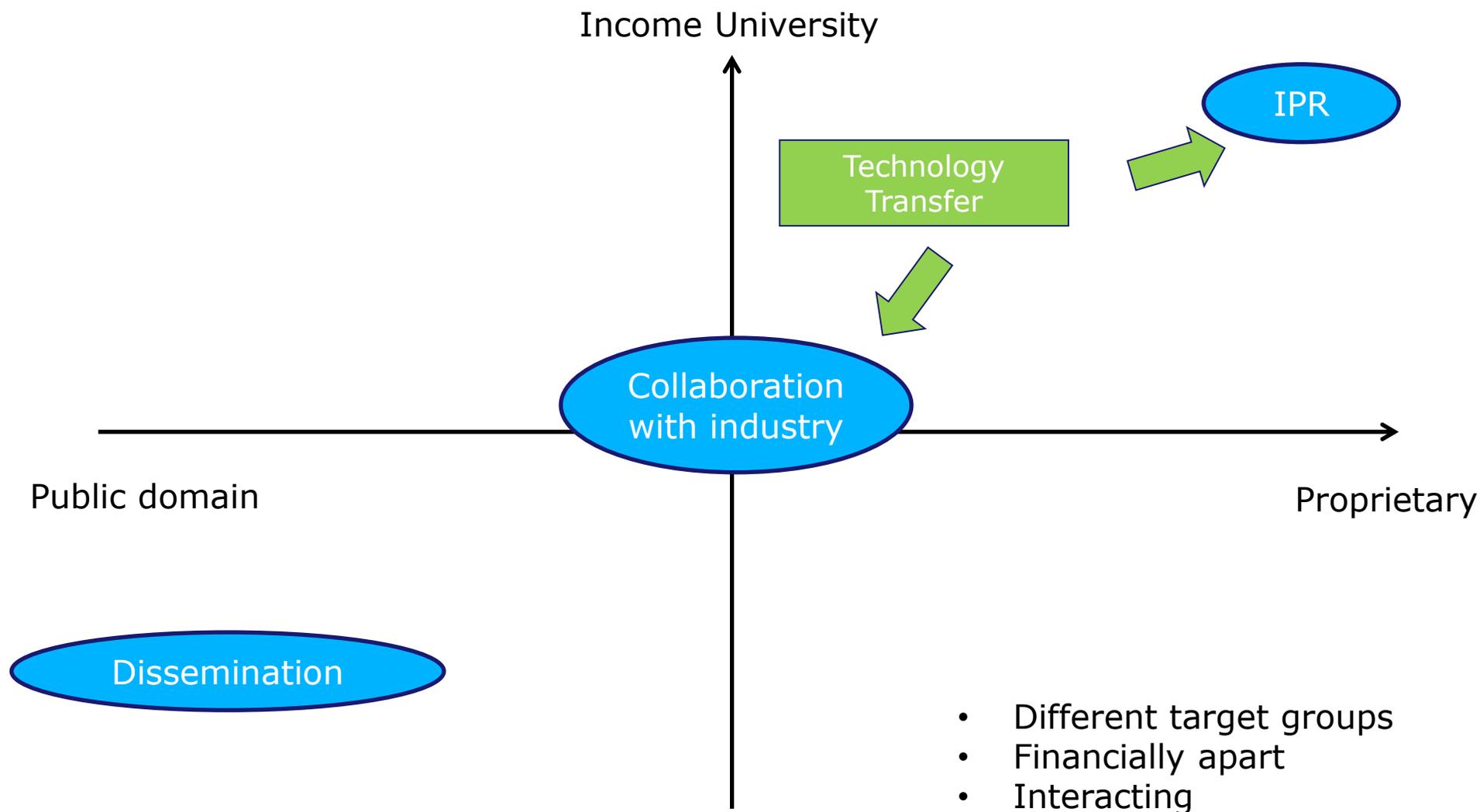
- Professor's Privilege: Sweden
- Organisational Ownership: Austria, Denmark, Germany, Norway, Switzerland

Organisational set-up for promoting technology transfer

- Administrative functions who outsource assignments to external consultants
- Full-service TTO's

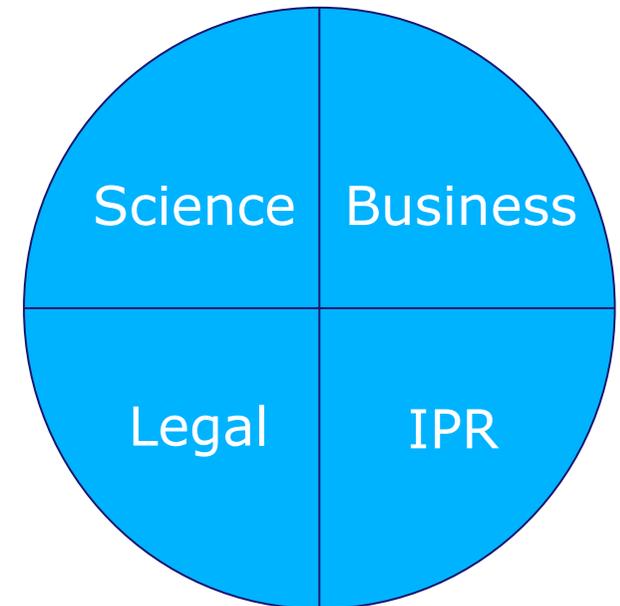


Maneuvering among the three legs of university mission is complex



## What we see among our clients

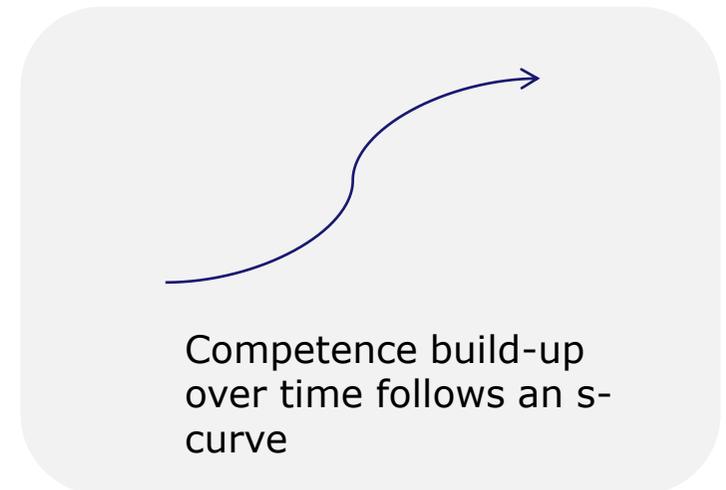
- They have 3 to 10 years experience
- Often smaller entities with ~5 employees, mainly focused on Legal and Scientific competencies
  - A tendency to grow over time with emphasis on business development competencies
- They facilitate a combination of scientific (U-I) collaboration and commercialisation of research (mostly licensing)
  - More emphasis on knowledge transfer than revenue generation
  - U-I collaborations are often the real cash-cows
  - Spin-out'ing is difficult for many in the current market



Prerequisites for successful technology transfer

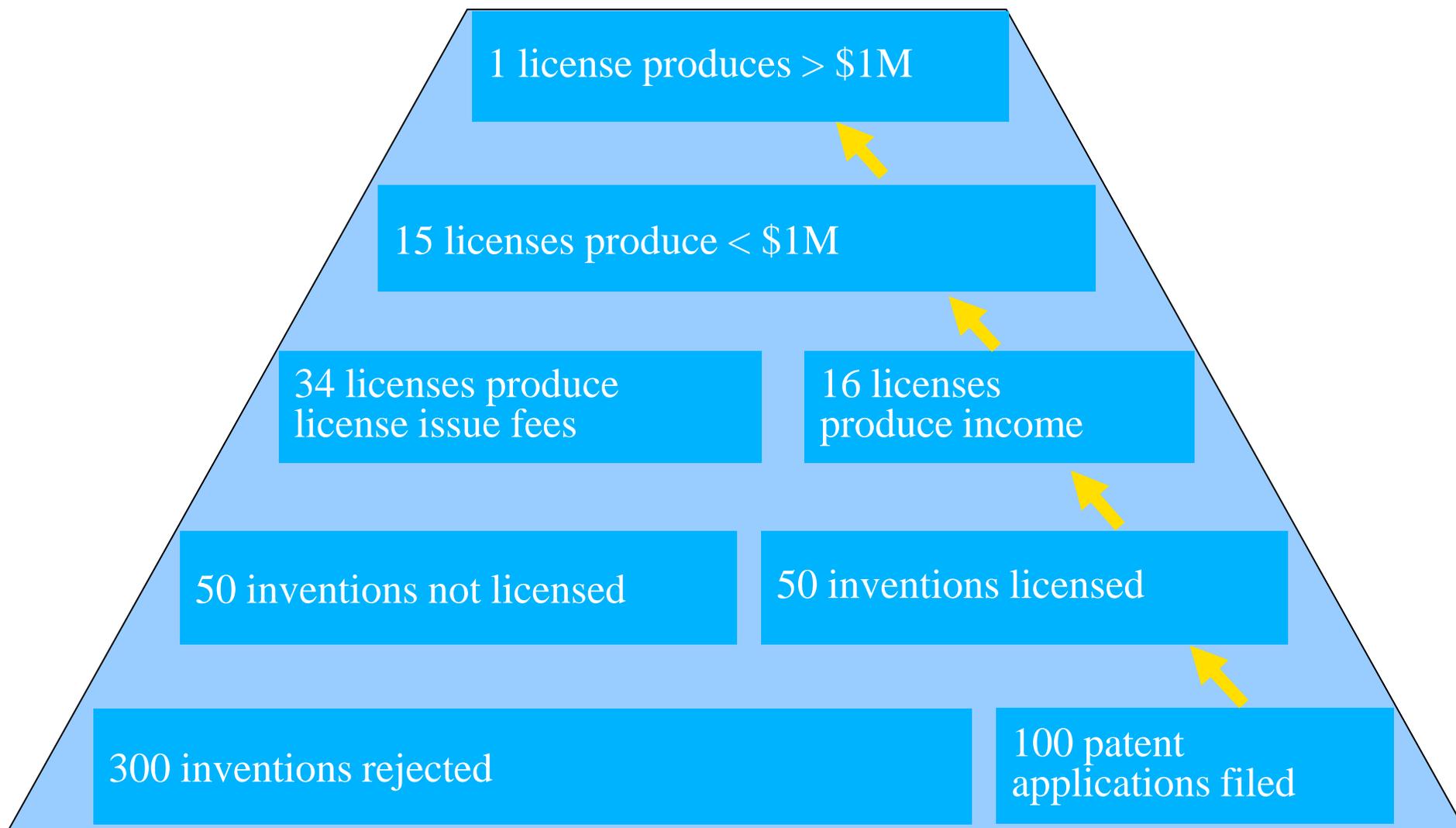
## What we have learnt from working with our clients

- It takes 5+(+) years before you reach take-off
  - You should have a clear mission for technology transfer and it should be reflected in how employees work
  - You have to attract the right employees and manage to keep them - and assure that experience is shared among staff
  - You need standardised and transparent work processes to leverage take-off
    - Project- and team-based
    - Spend your time and money on the projects that show progress - close down the other
    - Portfolio management is the ultimate goal
  - For a university to make money on technology transfer, it requires deal-flow, luck and experience



And it is a challenge...

The Pyramid of Disappointment  
Bill Tucker, Univ. California

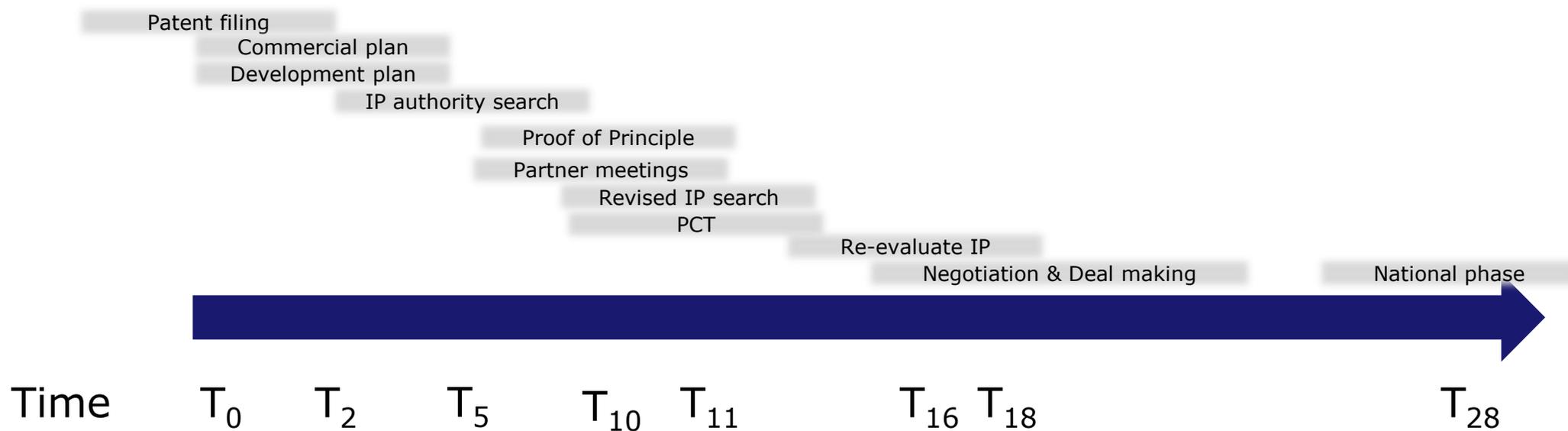


**What are the key areas to cover to be successful in early commercialization – and how is it done?**

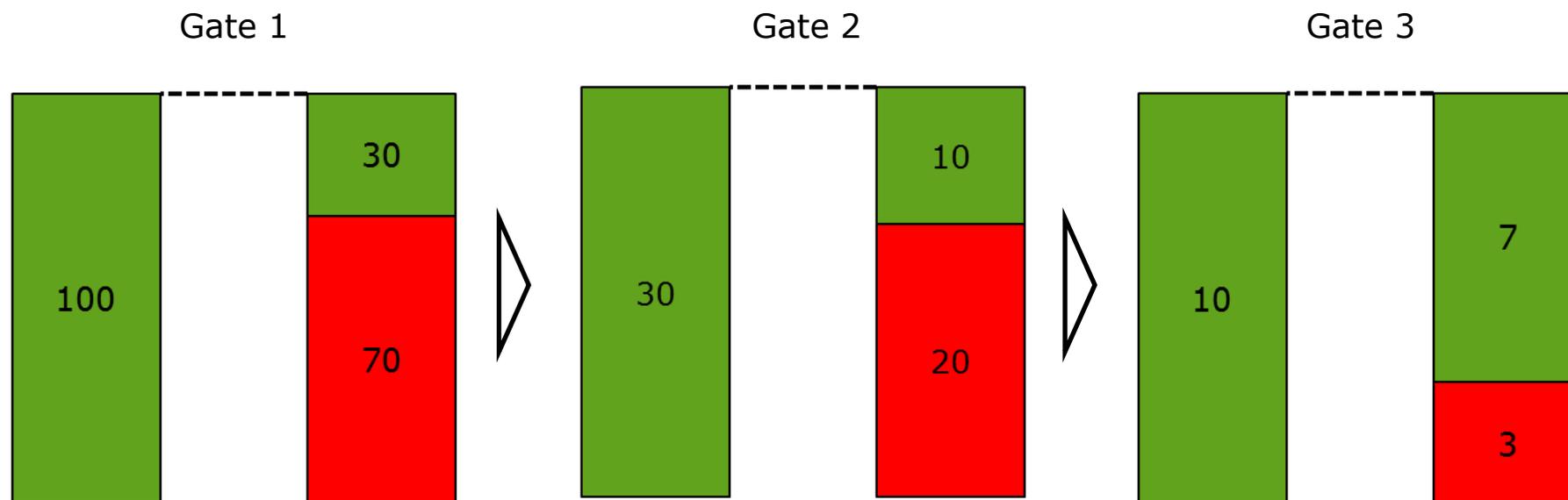
# **A PROCESS FOR COMMERCIALISATION**

The process is pressurized by legal constraints and accelerating (patent) costs

Patent costs accelerate (First Filing, PCT, National)

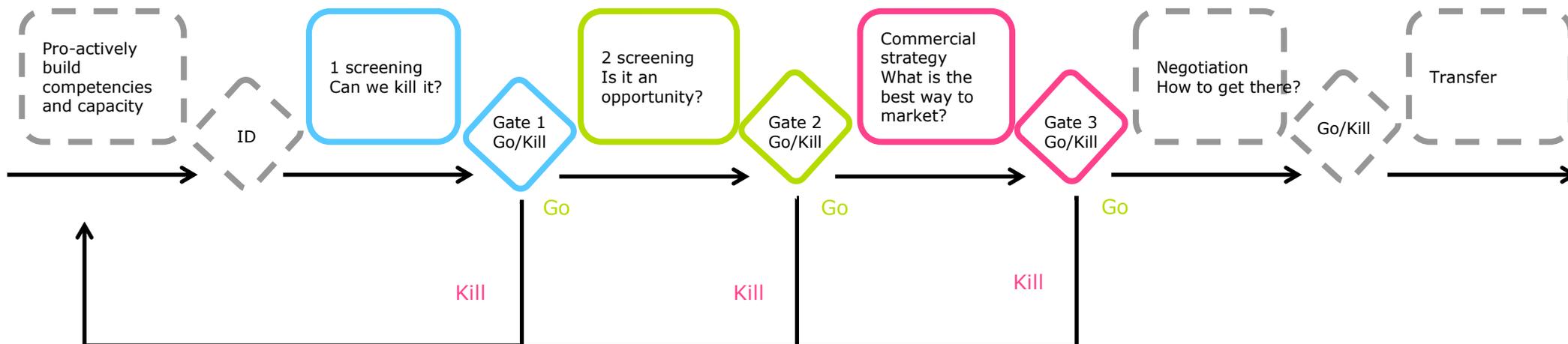


The process is a funnel: Many in; few make it to the end



Many cases coming in – very little information in the beginning  
Very few cases make it to the market – then we have spent large resources

## TTO A/S promote a stage-gate based project model



## Stage-gate project management in brief

A stage gate consists of a number of:

- **Stages**

Where the process is sub-divided into a number of periods where work is performed - preferably by multidisciplinary teams.

- **Gates**

Milestones consisting of a set of specified deliverables and criteria that are placed as quality control checkpoints between each of the gates.

- **Go / Kill**

A progress review in the form of a gate has as output a decision (go forward, kill the project, put the project on hold or redo the current stage) and a clear path forward for the next stage.

Key takeaways:

- **Resource commitment**

As a project moves through its process towards market launch, each concurrent phase will require more resources from the organization.

- **Risk will decrease**

But because the insight in the risks becomes greater with the passing of each stage, the risk of the product innovation project as a whole is reduced.

- **Portfolio thinking**

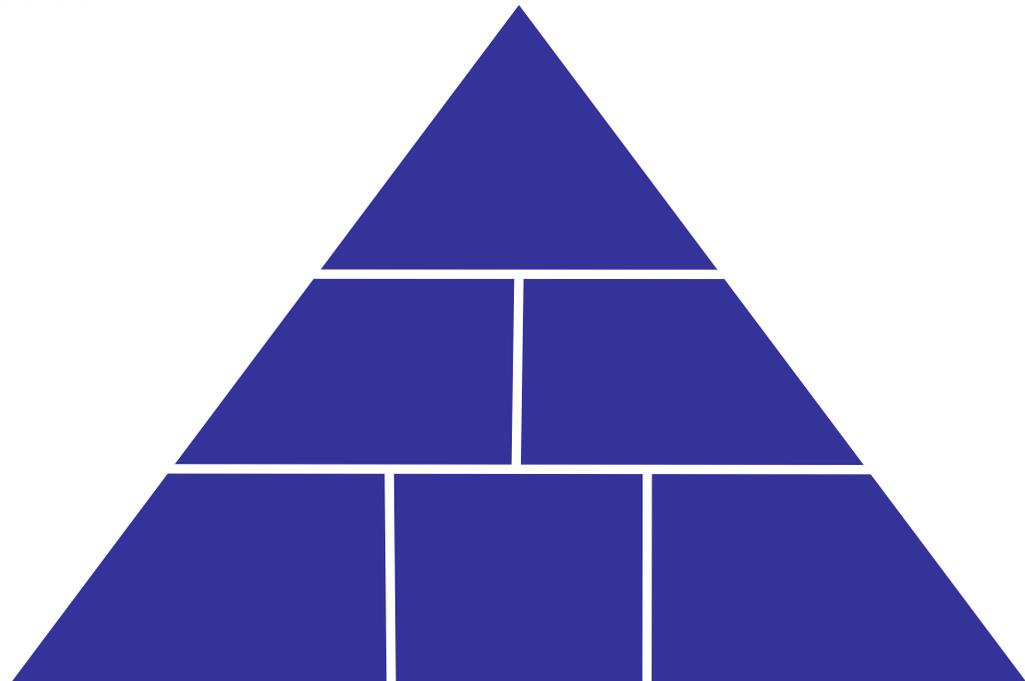
When multiple innovation projects run concurrently, portfolio planning can be applied. High risk projects can still be chosen if they just slightly increase the risk of the entire portfolio.

**What are the key areas to cover to be successful in early commercialization – and how is it done?**

# **FRAMEWORKS FOR COMMERCIALISATION**

The first challenge is to understand the potential and formulate a value proposition

- The TTO triangle concept for the analysis
  - Our own method developed for technology transfer
- The NABC model for the value proposition
  - SRI's model

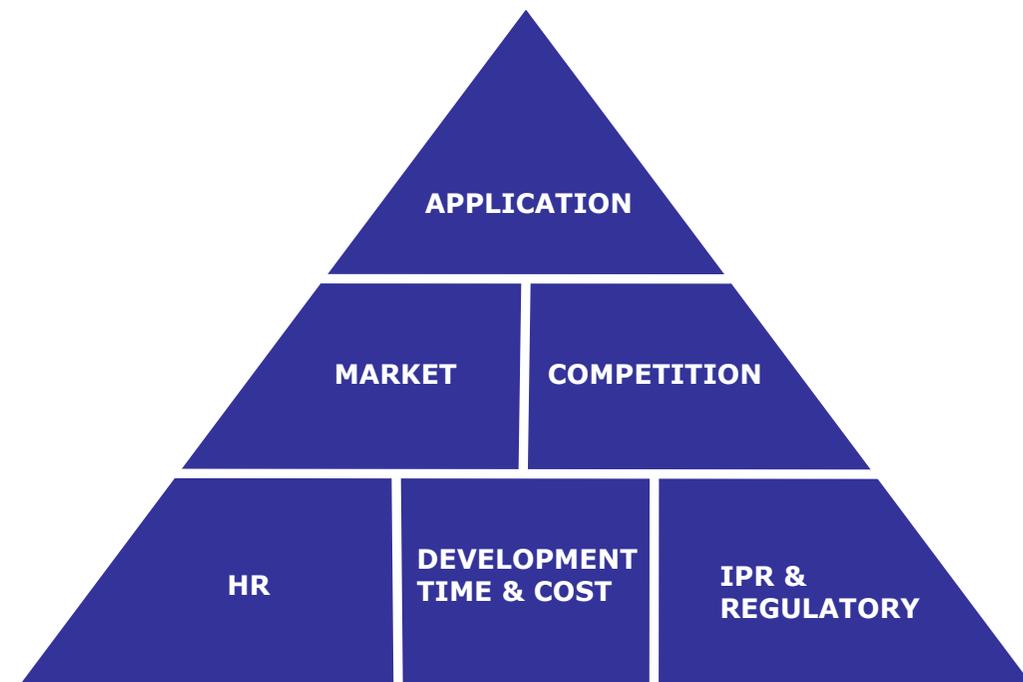


## The TTO triangle

The TTO commercialization triangle contains the factors that we regard as important for the successful commercialization of new technology.

The triangle has been developed and tested on a basis of more than 100 projects and has proven to be a robust framework.

TTO combines a deep understanding of both technology and markets to apply relevant parameters that suit the individual technology.



## Application is about the end-users perspective

Is there more than one application of the technology (platform)?

Can we define the end-user need in terms of specific characteristics of the solution?

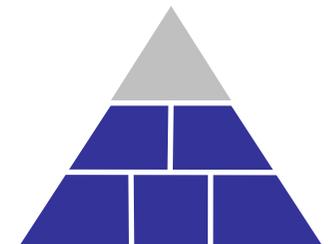
What is the end user need situation:

- I. Clear need, poor solution today
- II. Clear need, no solution today
- III. Possible need, but end-user unclear/uncertain

What is the end user willing to pay?

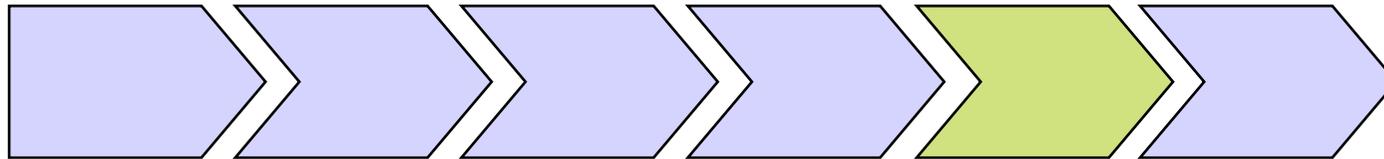
A poor solution on the market is often better than no solution

- Customers are conscious about their needs
- The value chain is already in place
- Other 1<sup>st</sup> movers have paved the way for you



## Market analysis is qualitative and focused on value chain

How would the technology fit the existing value chain?

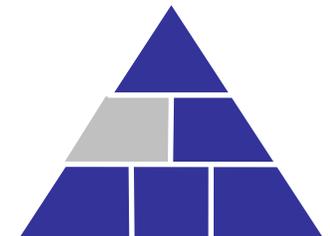


### Buyer of technology

- Who "owns" these customers today?
- Are they interested?
- What market size are we looking into (roughly)?

### Drivers & entry barriers

- What is driving this market in our favor?
- Which threats do we see? Will the market vanish due to known circumstances?
- What are the main obstacles to overcome to enter the market and is it doable for us?



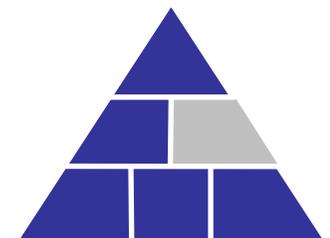
## Which competition are we looking into – once we hit the market

### Present solutions

Ideally, present solutions are poor and hold little potential for improvement.

### Future solutions

- We have reasons to believe no other solution is underway.
  - A good position for getting funding.
- We have reasons to believe that we are looking at fierce competition, but the specific end-user needs will be better served with our solution.
  - A good position for a license – but should it be to the market leader?
- We have no special capabilities.
  - A poor negotiation position if money is the objective.



## HR & IPR/regulatory

### Human resources

Ideally, the researchers have unique skills, have experience with tech transfer, and are enthusiastic about following the project through. Otherwise, the TTO needs to take the handles and steer the project through.

### IPR

Can the technology be protected and in what form?

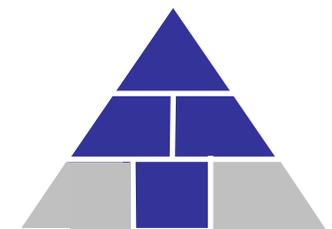
Is IPR relevant within the given industry?

Is it enforceable?

### Regulatory

The regulatory system should have taken the necessary steps to open the market.

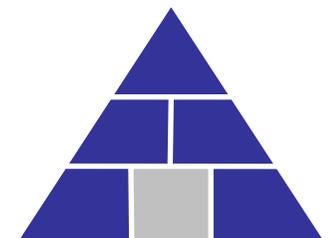
If regulatory aspects are essential to get a competitive position – consider partnering.



## Development time and costs

### Required development

- The required development before the buyer will invest is limited and the funds are available (from partner or other sources like Proof of Concept funding if available)
- The time scale is shorter or comparable to the time horizon for competing methods
- Note: For many investors, the costs associated with taking a product to market should be considerably lower than the size of the annual market



## The value proposition model

Developed at SRI International, [www.sri.com](http://www.sri.com)

Simple framework that analyze 4 parameters and summarize them in a value proposition;

- Need
- Approach
- Benefit
- Competition

In tto's opinion it is a good way of summarizing the results from the evaluation

Furthermore, it is useful in presenting the invention to outsiders as well as introducing the invention to team members

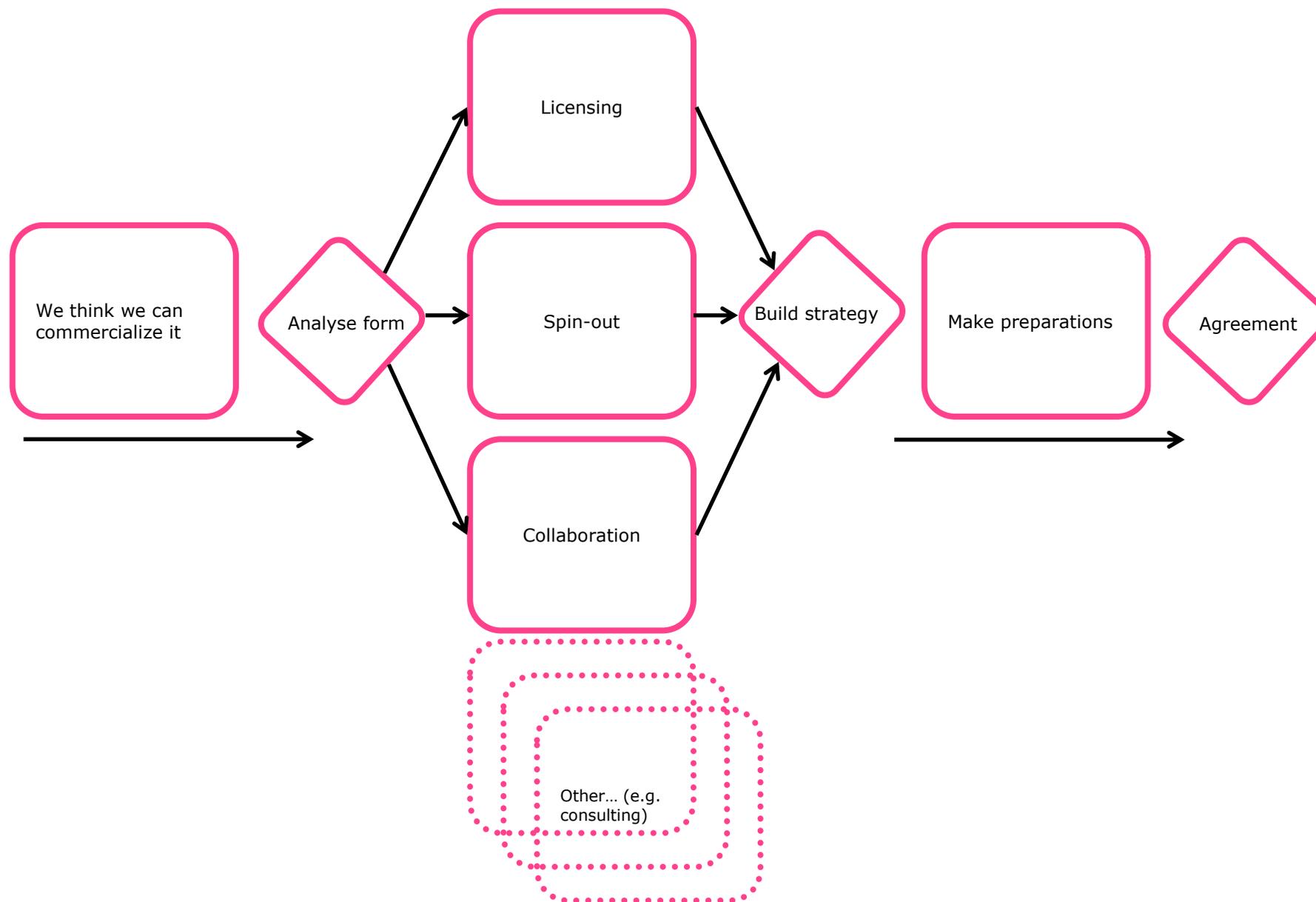
## Value proposition

Describing the value proposition needs input in relation to four areas (sri.com);

- Need
  - Identify the marketplace **N**eed for your product or service
- Approach
  - Define the “golden nugget” or the unique advantage of your **A**pproach
- Benefit
  - Outline the **B**enefits to the customer, partners in the market ecosystem
- Competition
  - Pinpoint the **C**ompetition and systematically compare your approach to competitive products or services

## **Choosing the proper strategy**

## Multiple strategies for knowledge transfer of university research



## Choosing the strategy

### **Licensing may be appropriate if:**

- You have an invention!
- There are significant barriers to a new company entering the market
- The marketplace comprises a small number of large companies
- It is a niche technology
- There is a single patent
- The technology is near market and requires little further development and investment
- A company is linked with the research either as a sponsor or interested observer
- The technology fits an existing company's IPR/product portfolio
- A trade sale could be considered a simple form of licensing...

### Competence requirements to optimize university position:

- Legal, IPR, science, business development & strategy, partnering, negotiation

## Choosing the strategy

### **A spin-out company may be appropriate if:**

- You have an invention!
- Entry to the market by a new company is relatively easy with few significant barriers
- The marketplace is fragmented with a lot of small companies
- The technology has many applications
- There is a portfolio of patents
- Further investment required either in the technology and/or associated infrastructure in order to reach the market
- There is a group of founders motivated to start a company
- It is likely that investment funds can be raised for a company
- There is a financial exit route for investors, including the university

### Competence requirements to optimize university position:

- Legal, IPR, science, business development & strategy, partnering, negotiation

## Choosing the strategy

### **Collaborative research (with industry) may be appropriate if:**

- It is an early endeavor and the invention is out of sight
- The main goal is knowledge creation
- There is a gap between the capabilities of the research group and what is needed to achieve their goal;
  - Competencies
  - Research tools
  - Financial
- Remember to;
  - Handle IPR issues in advance
  - Assure fair publication rights for the research group (especially PhD's)

### Competence requirements to optimize university position:

- Legal, partnering (unless researchers have the network), negotiation

## License versus start-up

- how the partners often think

### **Licensees (can) have:**

- NIH (not invented here) syndrome
- Difficulties handling too disruptive technologies
- Preference for risk sharing
- Exclusive access to market – “owning” the customer
- Ability to bring it to market

### **Investors think about:**

- Disruptive technologies (but less can do at the moment)
- 1 B\$ markets
- Sales price > 5-10 x costs (do)
- Market > 100 x investment

### **Collaboration partners think that:**

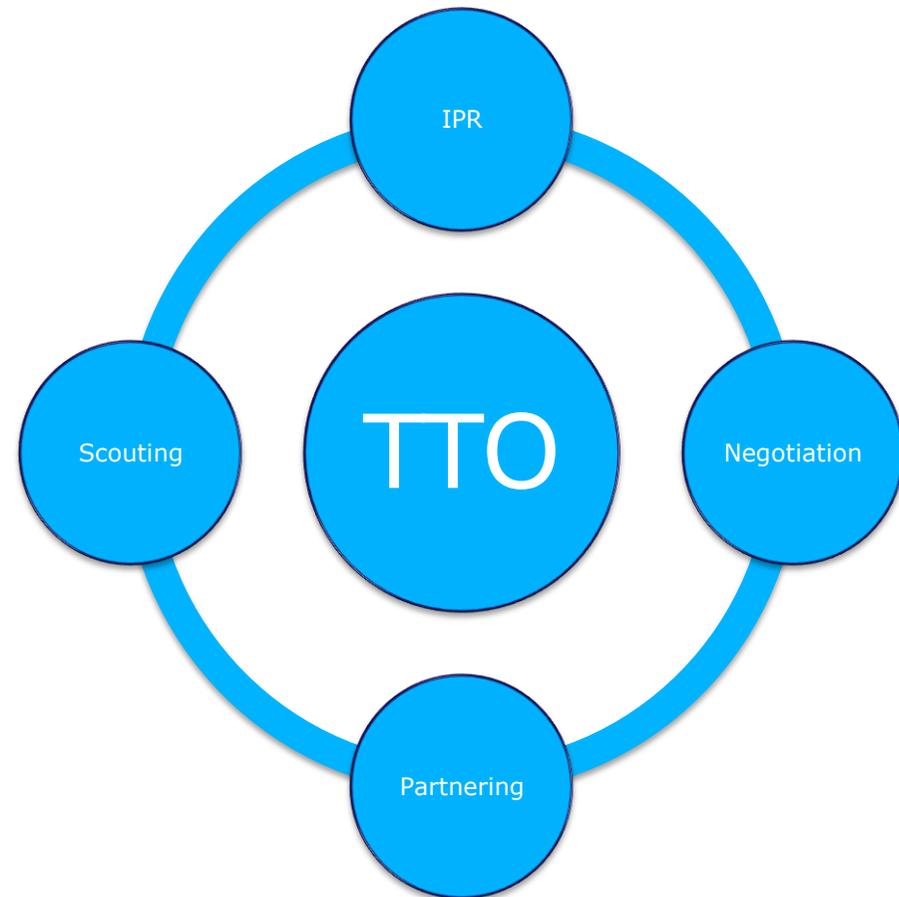
- Companies produce financial return and universities produce knowledge
- Time is not of the essence in research collaboration

**Competencies relevant for a university TTO**

# **EXAMPLES ON HOW TO ORGANIZE UNIVERSITY TTO'S**

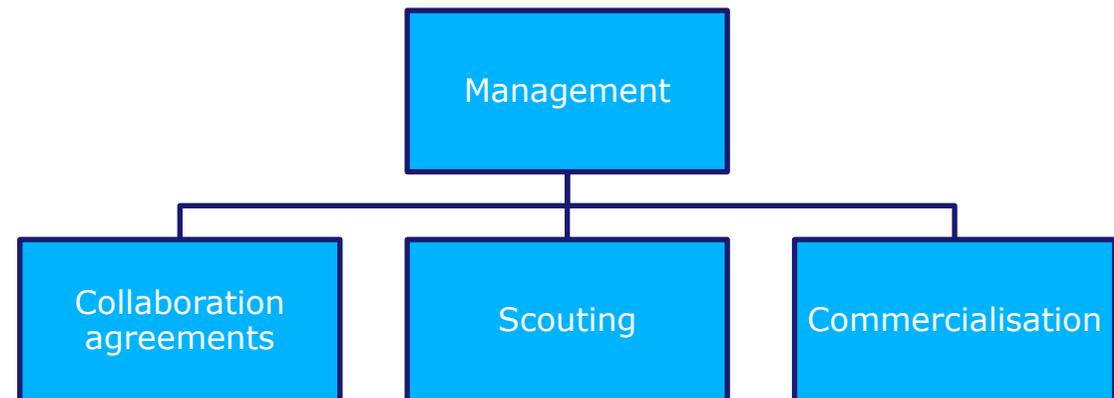
## The network-based organisation

- A central project management function
- Often consisting of few legal (and scientific) employees
- Extensive network of trusted partners
- U-I collaborations often only speciality
- Pre-requisites:
  - Excellent project management skills
  - Very formalised work processes to handle partners



## The full-service organisation

- Large organisation
- Diverse competencies among staff
- Small network of trusted partners for highly specialised functions
  - Often IPR
  - Industry specific assistance on high profile projects
- Pre-requisites:
  - Experienced management and staff
  - Frequent sparring among staff
  - Portfolio management thinking



Competencies relevant for a university TTO

# **PRO'S AND CON'S OF INTERNAL COMPETENCE BUILD-UP**

What is your opinion on the two organisational types?

## **Network model**

Pro's

Con's

## **Full-service model**

Pro's

Con's

## TTO A/S' thoughts on the two organisational types

### **Network model**

#### Pro's:

- Flexible model
  - Scientific fields
  - Types of assignments
  - Budget

#### Con's

- Difficult to manage partners
- Prone towards knowledge dilution
- Might require more tt-experience than one would think

### **Full-service model**

#### Pro's

- Speedy organisation
- Excellent for knowledge build-up
- Can create synergies between assignments

#### Con's

- Inflexible
- Requires years of experience among key employees
- Mission has to be crystal clear
- Requires backing from university management

## Organisation of university TTO's

They represent two extremes

Seems to be a trend going from the network-based organisation towards the full-service organisation

1. U-I collaborations
2. Licensing
3. Spin-out's
4. Scouting
5. Problem driven innovation

Overall budget does not seem to decide organisational type but rather overall emphasis on technology transfer

Note: We see early trends of consolidation, e.g.

- Joint processes among institutions
- Merging of TTO's

## Essential competencies for the TTO – according to you...

- Pro's and Con's of securing in-house competencies related to;
  - Legal services
  - IPR services
  - Commercialisation services
    - Commercial strategy
    - Partnering
    - Negotiation
  - Scouting

Essential competencies for the TTO – according to our clients...

- **Yes**
  - **Legal services** – can not be outsourced, except for tough license negotiations
  - **Commercialisation services**
    - **Commercial strategy** – at least in core scientific fields
    - **Partnering** – as above
    - **Negotiation** – because it is fun!
- **No**
  - IPR services – reasonably specialised and easy to outsource
  - Scouting – often a goal but somehow attracts less priority

tto

Questions?

Thank you for your time!

**Christian Schmock**

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