



KTH INNOVATION & The KTH IRL Framework

Donnie SC Lygonis



KTH Innovation #itallstartshere

Donnie SC Lygonis

Innovation Strategist & Business Coach

Wallenberg Fellow Palo Alto



Skanna mig!

Early stage innovation support

For all KTH researchers, students and employees.

Free of charge

No equity





Turning ideas and results into innovations

We exist to enable as many
ideas as possible meet the
market and create positive
impact



Inspiration

Validation

Start-up/Tech Transfer

Expansion

KTH INNOVATION

INSPIRATION
EDUCATION
EMPOWERMENT
PROACTIVE SEARCH

VALIDATION

PRE-INCUBATION

COMMERCIALIZATION

FIRST FUNDING

INCUBATION / OWN OFFICE

STING
STOCKHOLM INNOVATION & GROWTH

<norrskan>

A WORKING LAB

SÖDERTÄLJE
SCIENCE
PARK

THINGS_{flow}



InnoEnergy



Urban Mobility



Digital



Health



RawMaterials



KTH HOLDING AB

INVESTMENT ♦ SELLING IP



Everything under one roof:
Tech Transfer / IP / Entrepreneurship center





KTH Innovation Collide

For everyone curious about innovation

Everyone is welcome!

December 10th

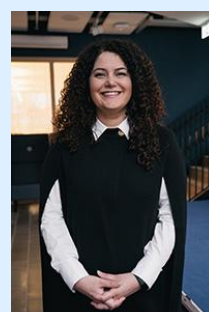




Legal, IP, patents



Business coaches in specific fields



Programs



Management, communications etc





20
employees

400+
new ideas per year

30%
deeptech (↑)

2000
Organizations using KTH IRL

80%
contribute to the SDGs (↑)

30+
companies per year*

40%
female co-founders (↑)

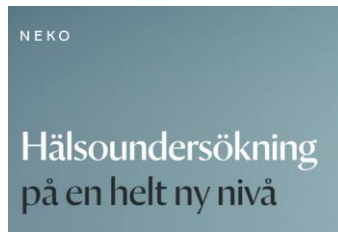
*about 1/3 are research spin-offs



#itallstartshere

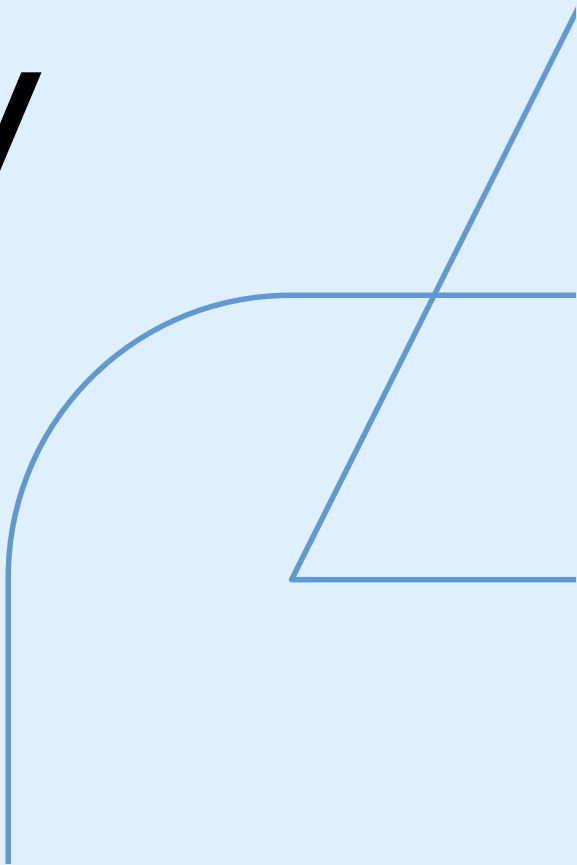


HACK
YOUR
CLOSET

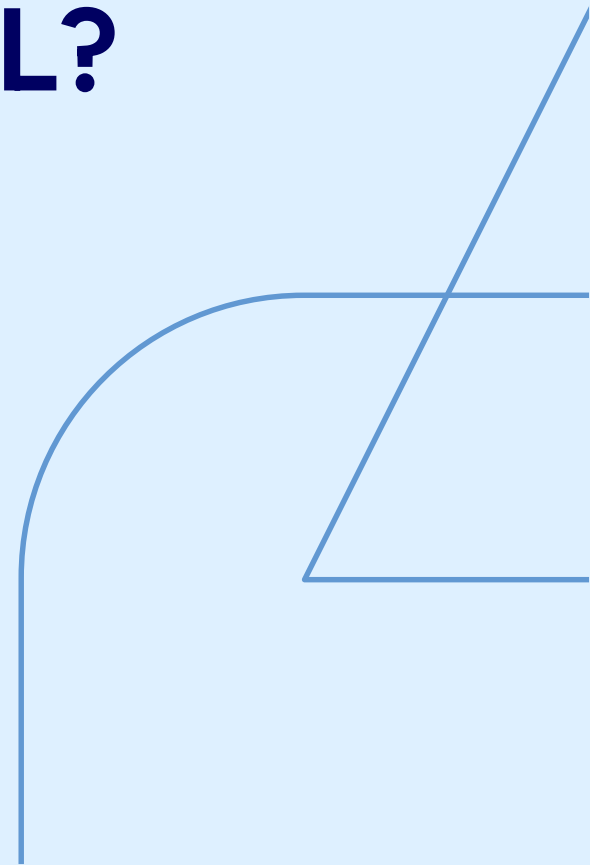


KARMA

Mindset is key

In the bottom right corner, there are several thin, light blue lines that form a stylized, abstract shape. These lines include a vertical segment, a horizontal segment, and a diagonal segment, with some curved transitions between them.

Why did we develop the KTH IRL?



Low entry threshold, not yes/no situation

~400

~300

15%

1-2 mon

6-12 mon

1-2 yrs

First meeting
on idea

Possible
business idea

Defined idea
Initiated verification

Verified
key areas

Deal/Start-up
Next step

Initial
contact

Idea

Validation

Project

Identify

Describe

Verify

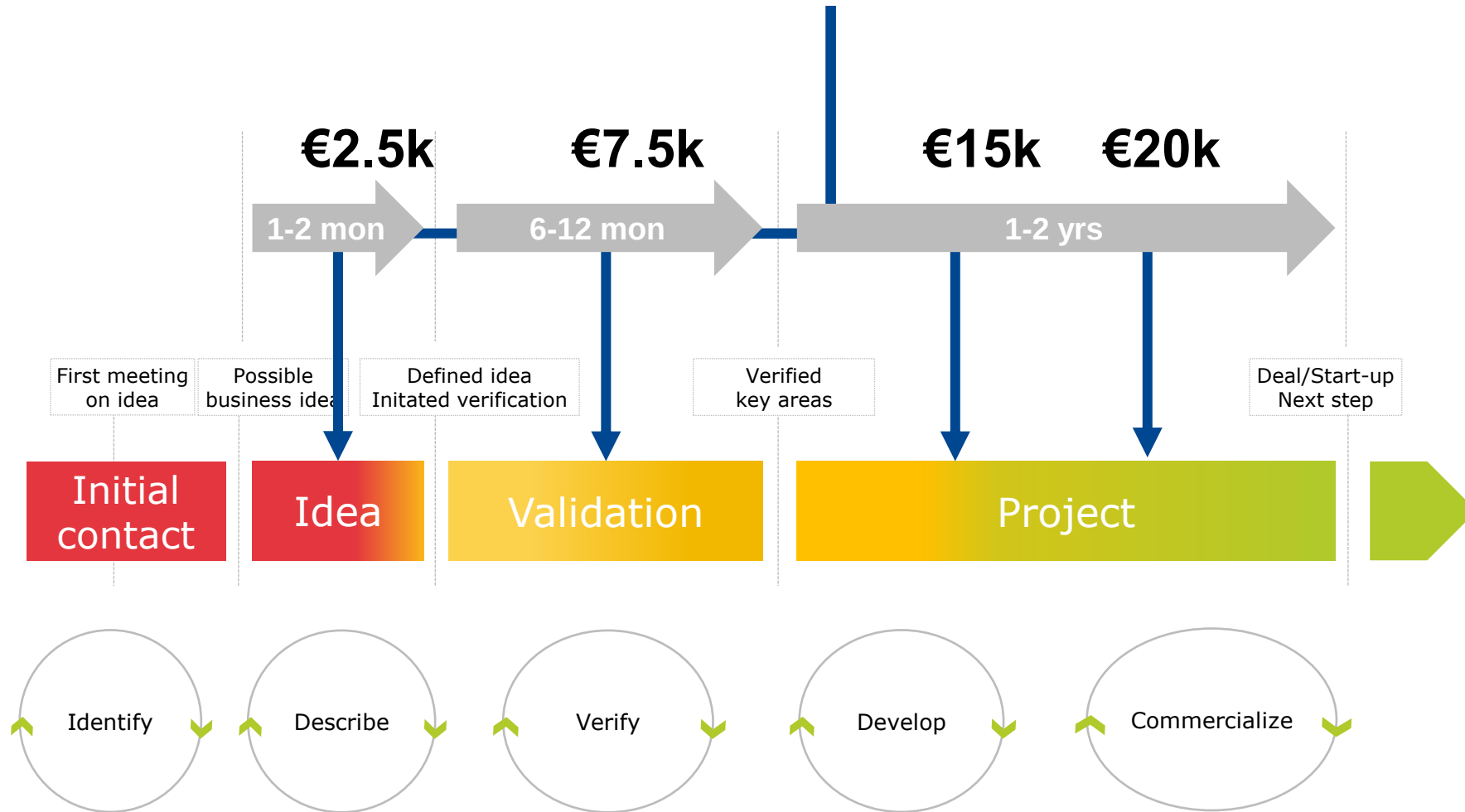
Develop

Commercialize

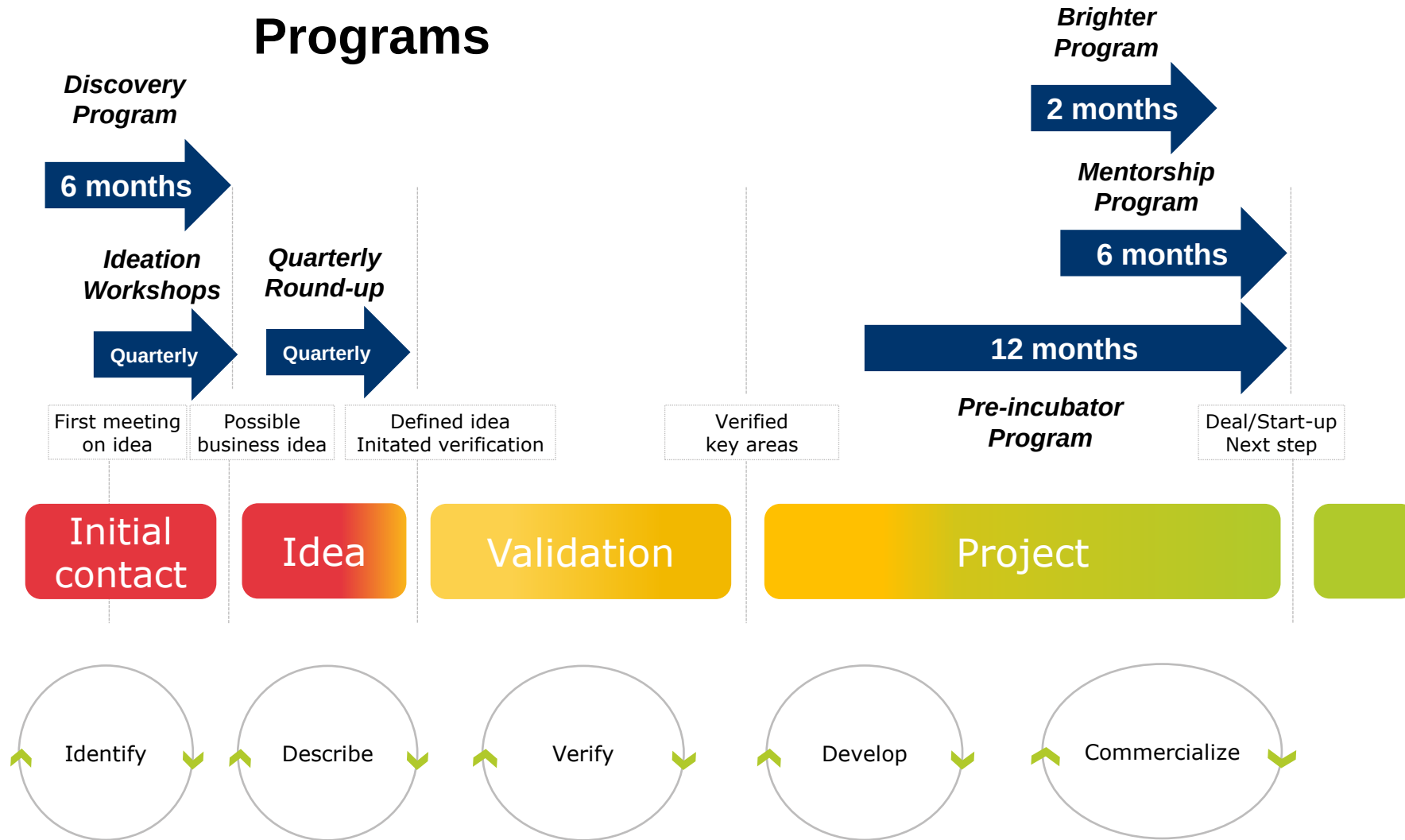
9 coaches = 30-50 each



50+ Prototyping & Market validation projects / year



Programs



In the head of the entrepreneur (especially the first-timer...)



In the head of the entrepreneur (especially the first-timer...)



A lot of data points...

- Where are they in the process? (timing support efficiently)'
- Who gets money to achieve what? (Value creation)
- Who has come far enough to apply for a program? (maturity + selection)
- Where do we want them to be when they exit a program? (Programming)
- How far do the incubators after us want us to take them? (Interface refinement)
- How can we help them lay the foundation for not only starting something (**easy!**) but also surviving and scaling?



Bedömningsområde	Grön	Gul	Röd
<i>Status vs. handlingsplan/mål</i>	Enligt plan på de flesta aktiviteterna/målen	Enligt plan på del av aktiviteter/mål	Ingen plan finns <u>eller</u> plan obsolet <u>eller</u> långt efter på de flesta aktiviteterna/målen
<i>Marknadsorientering/kundkontakter</i>	Flera aktiva/pågående kundkontakter	En aktiv/pågående kundkontakt	Ingen aktiv kundkontakt
<i>Hastighet i projektet</i>	Snabbt framåt	Rullar på OK	Långsamt/står stilla
<i>Engagemang i teamet</i>	Högt	Medel	Lågt
Summaberäkning	- <i>Minst 2 gröna</i> - <i>Ingen röd</i>	- <i>Max 2 röda</i>	- <i>Minst 2 röda</i> - <i>Ingen grön</i>

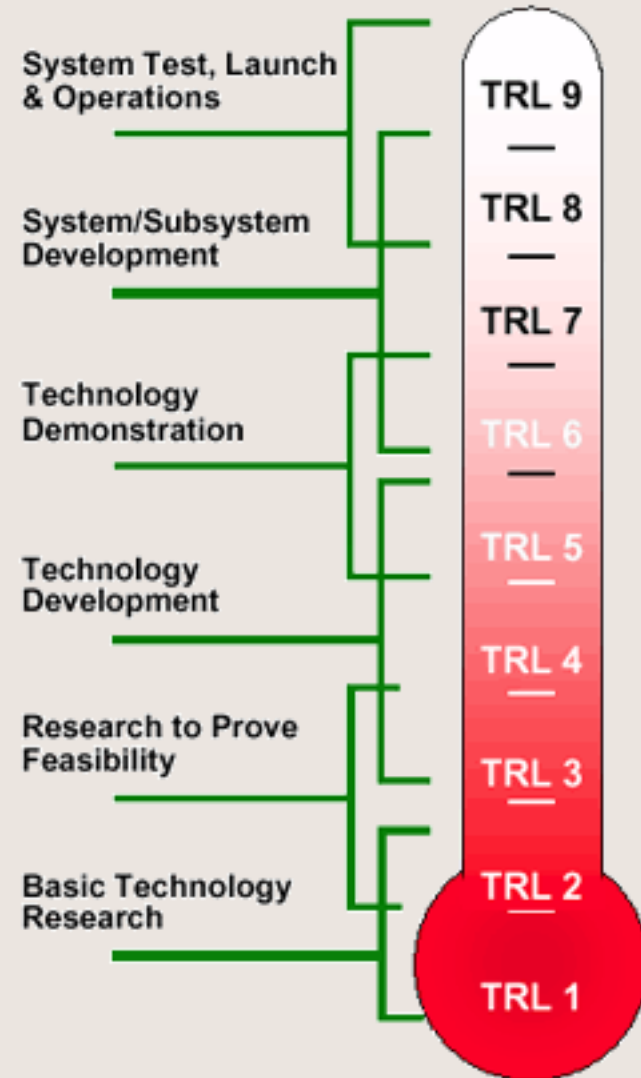
(Fallet 2 röda+2 gula→rött)

	A	B	C	D	E	F	G	H	I	J
	AP	Namn	Kontaktperson	Ansvarig KTHI	Summa	Status vs. plan/må	Kundkontakter	Hastighet	Engagemang	Skapad
1	Klart för avslut	Antikroppsimmärkning VINN Ex ProNo		Daniel Carlsson						2010-04-
2	TB vill avvakta STING, fokus på demo klär, drar dock ut	Appli		Gustav Notander						2008-04-
3	Avtal Synthes, licensstrategi?	Blöim		Daniel Carlsson						2007-08-
4	app/webb?, ALMI lån? EM kund?	Carbonopoly		Donnie Lygonis						2009-07-
5	Uppköp dröjer, avtal på gång?	Cellulosa behandling		Daniel Carlsson						2009-02-
6		CENose		Gustav Notander						2011-02-
7		Imagine		Gustav Notander						2011-03-
8	Avtal 2P samt mot andra dröjer, negativ ISR	Clay Nanopager (VINN Ex BiMax)		Daniel Carlsson						2009-11-
9	Uppföljning. Jobbar med Vinn Ver. Ansökan	Detektion av biofluorescence		Gustav Notander						2007-02-
10	Fas 2 på gång. Bolag IP ? (klart till sommar)	DME Controller		Gustav Notander						2009-05-
11	Kontakter övriga kunder, paketering, StoraEnso	Ecohell- hemcellulosa fallin		Daniel Carlsson						2010-01-
12	Nästa steg? Stärka upp PCT aug 11 mer försök, tillverka	EcoPeo - Absorptionsmaterialer för blöja		Gustav Notander						2011-03-
13	Detektionsgräns ner lite till. Inno resultat?	Endotestanalys		Gustav Notander						2009-04-
14	Klart för avslut, Signat avtal m Saso	Fischer Troppsch Katalysator		Daniel Carlsson						2009-11-
15	Tester Siemens på G2 Team?, Inno ta GE kontakt?	Fotondetektor med stort linjförtningsområde		Gustav Notander						2008-02-
16	Ansökan VTI, nyhetsgranskning, affärsplan VC, PR	FundFriends		Håkan Borg						2011-02-
17		Green Ski		Gustav Notander						2009-12-
18	Genomica intresserat, pre agreement/avtal på G2 Andra	HPV-test		Gustav Notander						2010-04-
19	Patent, möten Scientia	Spin-Y		Daniel Carlsson						2011-01-
20	STING avvakta nog till Q3 11? Mot avslut för KTHI?	IM AFM		Gustav Notander						2008-12-
21	Selecta?	Värma - nya alkoholdryck		Donnie Lygonis						2010-09-
22	Uppföljningsmöte	IR detektor i SiGeC		Gustav Notander						2008-04-
23	Ägande/IP koll, första produkt ut, vilken? Paketering be	Moduler emellan - operatörsöls peer-to		Donnie Lygonis						2008-05-
24	UK investment broker, måste ta in 10-20 MSEK, Quinn	MIRAM		Gustav Notander						2008-02-
25	Ta kontakter i mål, GE mfl presentationer, mer teknisk p	NIBE		Daniel Carlsson						2008-04-
26	Royaltavtal signat, avsluta? Patent?	Radiatorkoncept		Daniel Carlsson						2009-02-
27	Patenterat, värdekedjan? KAMI ansökan klar	SIMPLE - märksystem för stöckar		Gustav Notander						2010-09-
28	VINN VER plan, prototyp, kundkontakt 2011	Epilux - tillverkning av optoelektronisk		Håkan Borg						2008-02-
29	EIT? Kunduppt, status DL?	Trafikmobilen		Donnie Lygonis						2010-08-
30	Upptrampning "6 mån. Fasa ut oss?	Värmeväxlare - ytbeläggning		Gustav Notander						2008-02-
31	Exklusiv licens till Sweetree? TP intresse, bundla nytt p	Xyloglukan från Tamarind (VinnEx BiMax)		Daniel Carlsson						2010-04-
32		Xyloglukan för barriär (VinnEx BiMax)		Daniel Carlsson						2011-03-
33	På in patent, finansiera upp, kundtester	EOR-Oljeutvinning		Daniel Carlsson						2010-09-
34	Skapa samstämmighet internt, signa avtal	SEST-sundokals produktion av vdrölar		Håkan Borg						2010-09-
35	Finansierar PCT hur? VFT ansökan, fart?	Pigavinschjällen		Daniel Carlsson						

TRL NASA 1974 - 1989

"the rocket is on the way to the moon"

"I have an idea for a new rocket"



**However, “Innovation” is
more than just “technology”**

Successful **innovation** addresses a **customer/market need** in a **profitable** and **sustainable** way, developed by **diverse teams** that have the necessary **resources** at hand to commercialize their **ideas and results**.

So we need scales to handle things like:

Customers (the ones that actually pay for it)

Business (so it can actually make money)

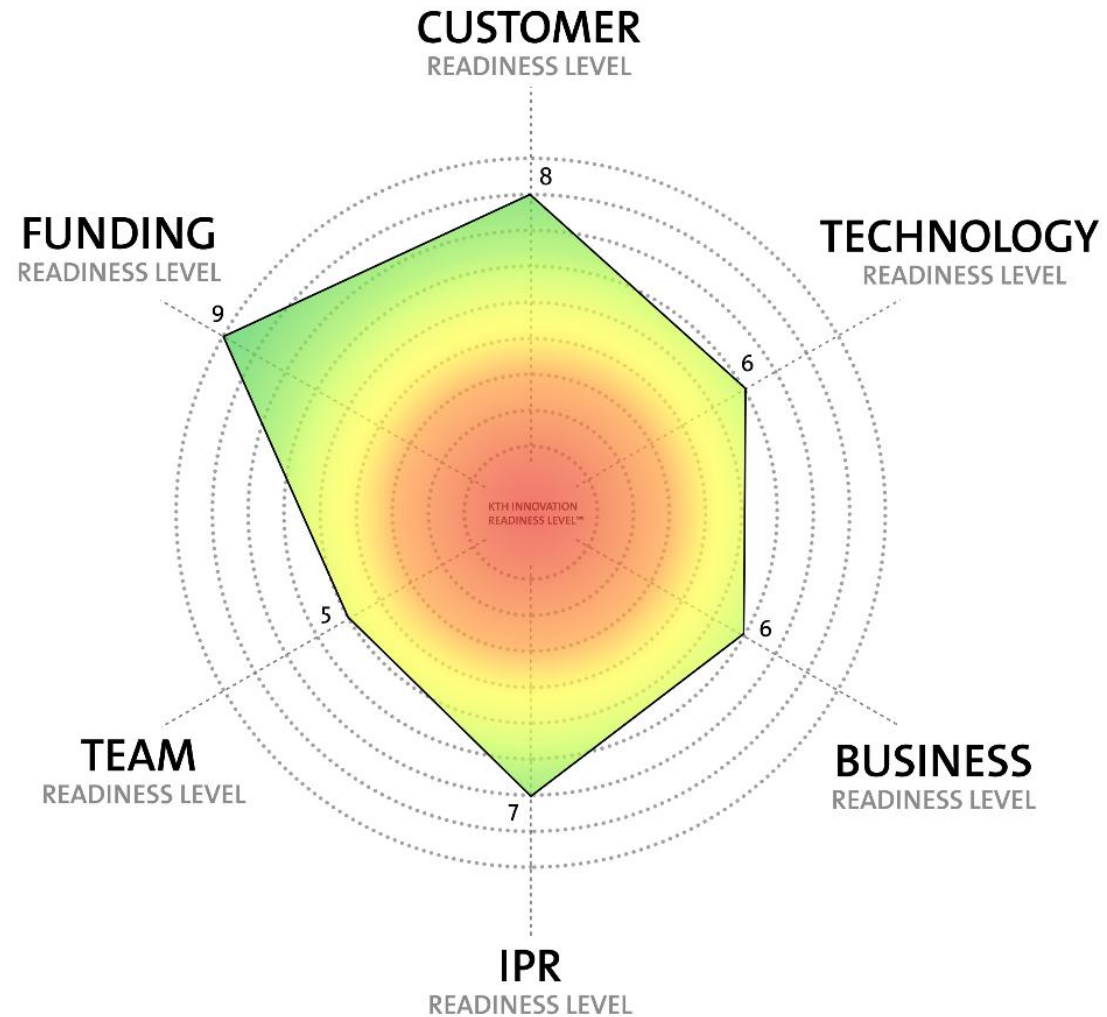
Team (the ones that actually make it happen)

Funding (so they can make it happen)

IPR (so they can protect what happens)

TRL (the product or service)

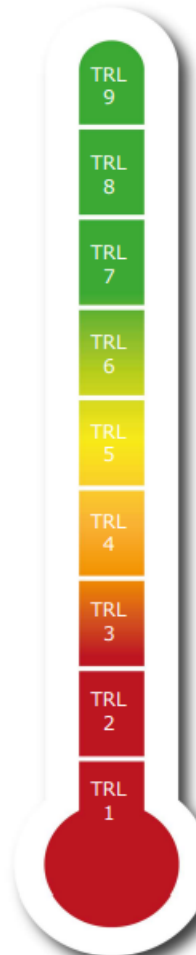
KTH Innovation Readiness Level™



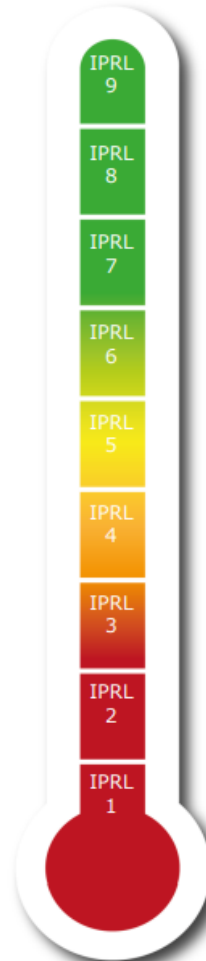
Customer Readiness Level – CRL



Technology Readiness Level – TRL



IPR Readiness



Strong IPR support
IPR protection secured

IPR strategy and
Filed formal application

Filed formal application
countries/region

First complete IPR
Positive response

Draft of IPR strategy
Filed first formal application

Confirmed that IPR
Decided why to file

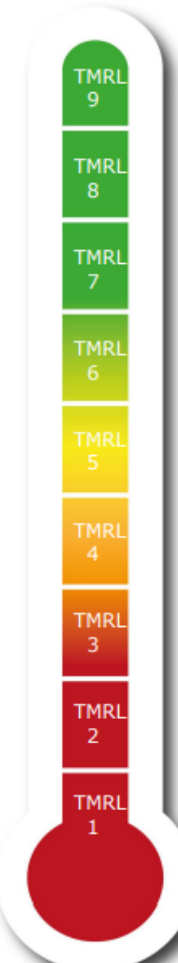
Description of possible IPR
Initial evaluation

Identified different IPR
Ownership is clear

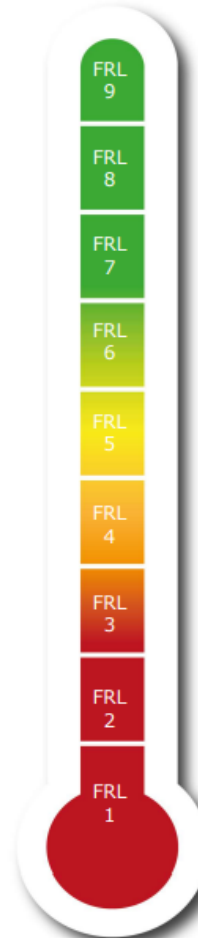
Hypothesizing on your possible IPR.

IPR = Intellectual Property Rights = Patents, trademarks, copyright, database rights, trade secrets, digital registrations (domain names, account names, etc.), company name, etc. (see examples in the tool "IPR list")

Team Readiness Level – TMRL



Funding Readiness Level – FRL



Business Model Readiness Level – BRL



Sustainable business model proven to meet internal and external expectations on profit, scalability and impact over time.

Sales and metrics show that sustainable business model is viable.

Viability of sustainable business model (pricing, revenue model, etc.) validated by initial commercial sales.

Full sustainable business model tested on customers, partners, suppliers (e.g. by test sales), calculations show economic viability.

Key assumptions in sustainable business model tested on market.

First calculations indicating economically viable business model. First assessment indicating environmental and social sustainability.

Description of sustainable business model and target market(s), including competition.

First hypothesis of possible business concept (in any format) and identified overall market potential and competition.

No or unclear hypothesis of possible business idea, market potential, and competition.

Sustainable business model = Revenue $\geq$ Cost (over time) AND Positive contribution to the environment and society $>$ Negative contribution to the environment and society (over time)

How the levels progress

CRL: Understanding your customer -> Getting the sales in (Need -> Solution -> Sales)

TLR: Balancing Tech + Environment + Delivery (heavily dependent on BRL and CRL)

BRL: Describing -> Simulating -> Testing, from theory to practice

TMRL: Building a team to validate -> building a team to run the business

FRL: Validation -> Development -> Operations + Economic Governance

IPRL: Understand what you can/should protect -> how to protect it -> protect it

KTH IRL defines the **what**, not the **how**

KTH IRL measures **progress**, nothing else

We complement the framework with all commonly used tools in the startup ecosystem

CRL: Customer Journey Mapping, SPIN sales model, Competition matrix etc

TRL: Tech roadmaps, mockup tools

BRL: Lean Canvas, BMC, Partnership Canvas, TAM-SAM-SOM, SDG Matrix

TMRL: Feedback model, Team Performance Model, Vision Mission Goals workshop

IPRL: IP overview, IP strategy

FRL: INSWIN pitch model, Kawasaki pitch deck, budget templates

The main purposes of the KTH IRL

Communicate better



Create roadmaps



Balance development



Coach & Mentor





Uses for different groups

Team:

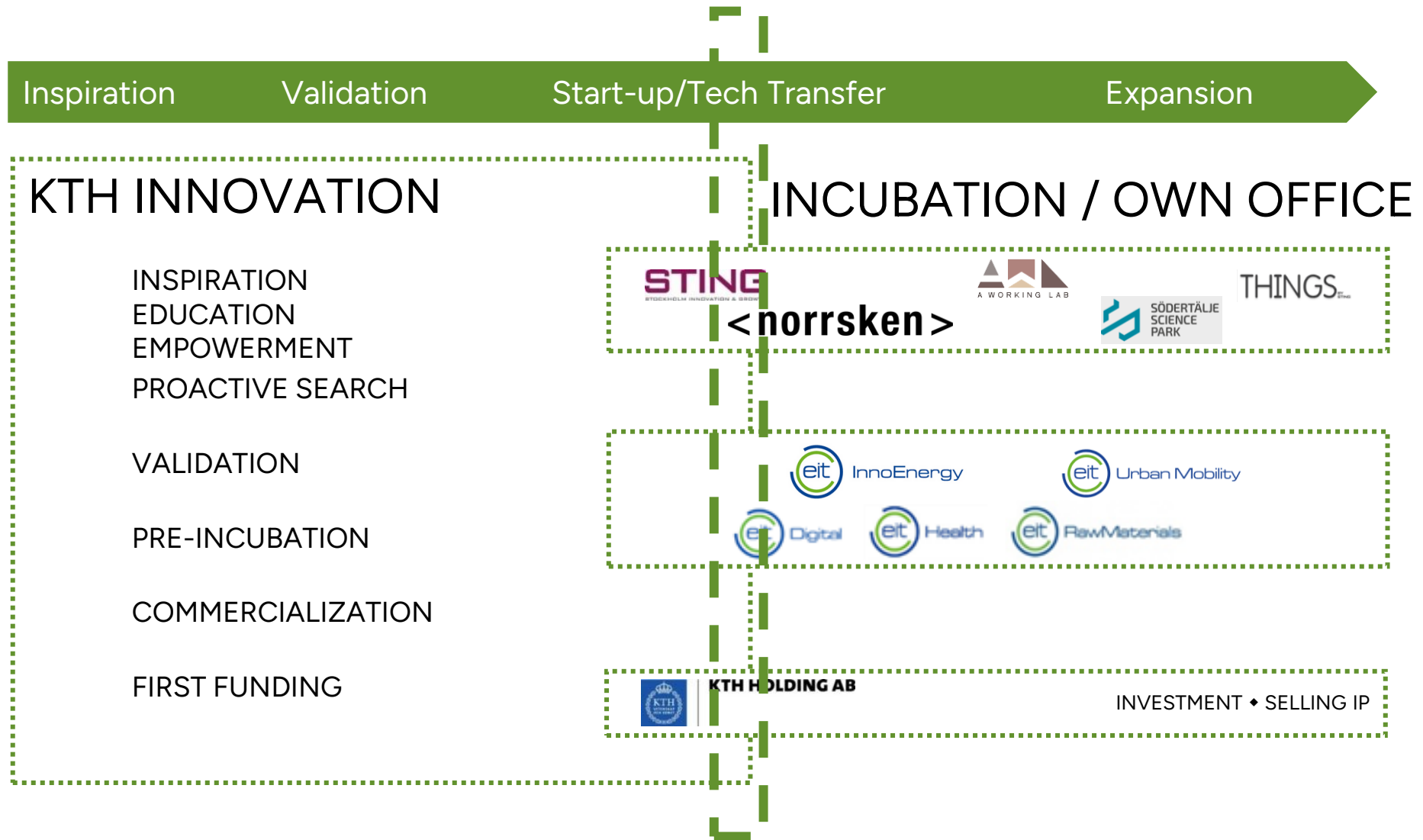
Alignment
Roadmapping
Plan – Do - Evaluate
Balance development

Coach/Mentor:

Quality assurance
Concrete talking points
Keep momentum going
Portfolio overview

Ecosystem:

“Feed in / Feed out”
Define & refine interfaces
Grant assessments
Procurement





The biggest win?

Team communication

Team alignment

Team progress



How we use it at KTH Innovation

Quick assessment
of status in first
meeting

Status follow-up in
meetings with cases

Workshop with cases
to identify key next
steps

Create content for
programs

Goal setting and
evaluation in the
programs

Applying for validation
grants

Criteria for advancing
in our process

Criteria for transition
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As a business coach

First meeting:

“Hello and welcome to KTH Innovation.

Let’s talk about your idea and your current status by walking through the Innovation Readiness Levels and see where you currently are and where you want to take this.

And what would a 9 look like to you? This will give you an outline of your development roadmaps going forward.

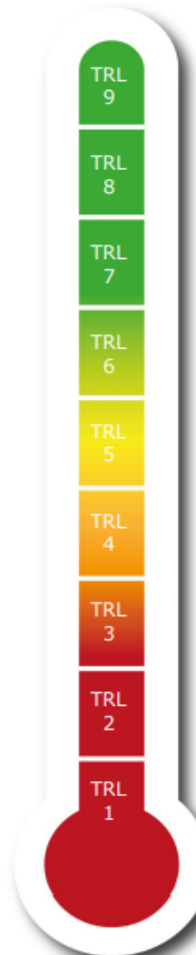
Coach meetings:

“What key activities should you focus on to reach the next level?”

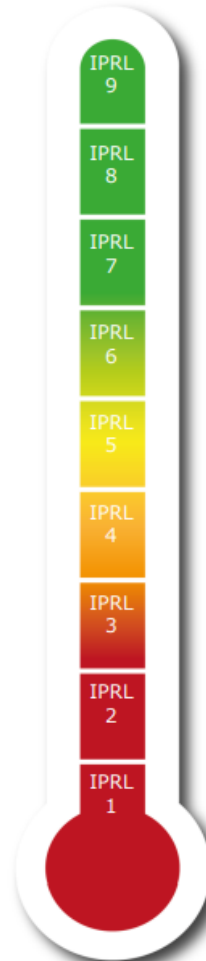
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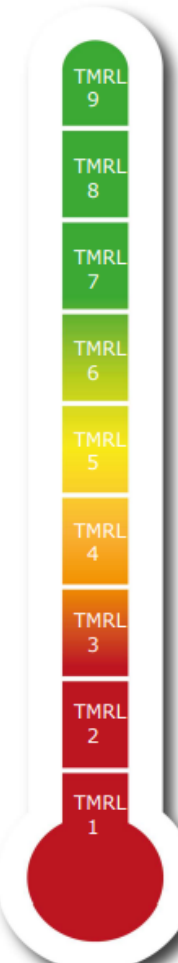
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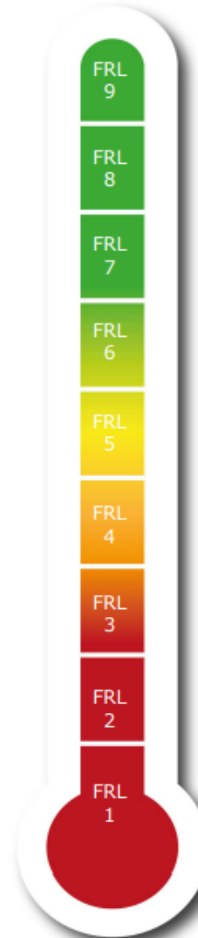
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Send

From

▼

To

Cc

Subject

donnie@kth.se

Donnie Sc Lygonis

October 2024 update!

UPDATE AND PLANNING FOR [INSERT MONTH] 2024

Dear Teams! Short Update:

We are already in October, and as usual Needed help:

Take some time to stop and reflect on Team changes:
could ask for help with? Has anything

Signed deals:
So, with that, please help me help you

- Incorporated:
1. Sit down as a team and go through
 2. Decide where you are on the K Level Compiled E .pdf
 3. Decide what RL you are aiming for
 4. Decide on key actions per reach
 5. Think about if you need help from
 6. Also add if you have added / removed (you should know the drill by now).
 7. Book a meeting with me to go through

Regards

Donnie

Short Update:

Needed help:

Team changes:

Signed deals:

Incorporated:

Current CRL:

Planned CRL:

Actions:

Current TRL:

Current BRL:

Planned BRL:

Actions:

Current TMRL:

Planned TMLR:

Actions:

Current IPRL:

Planned IPRI :



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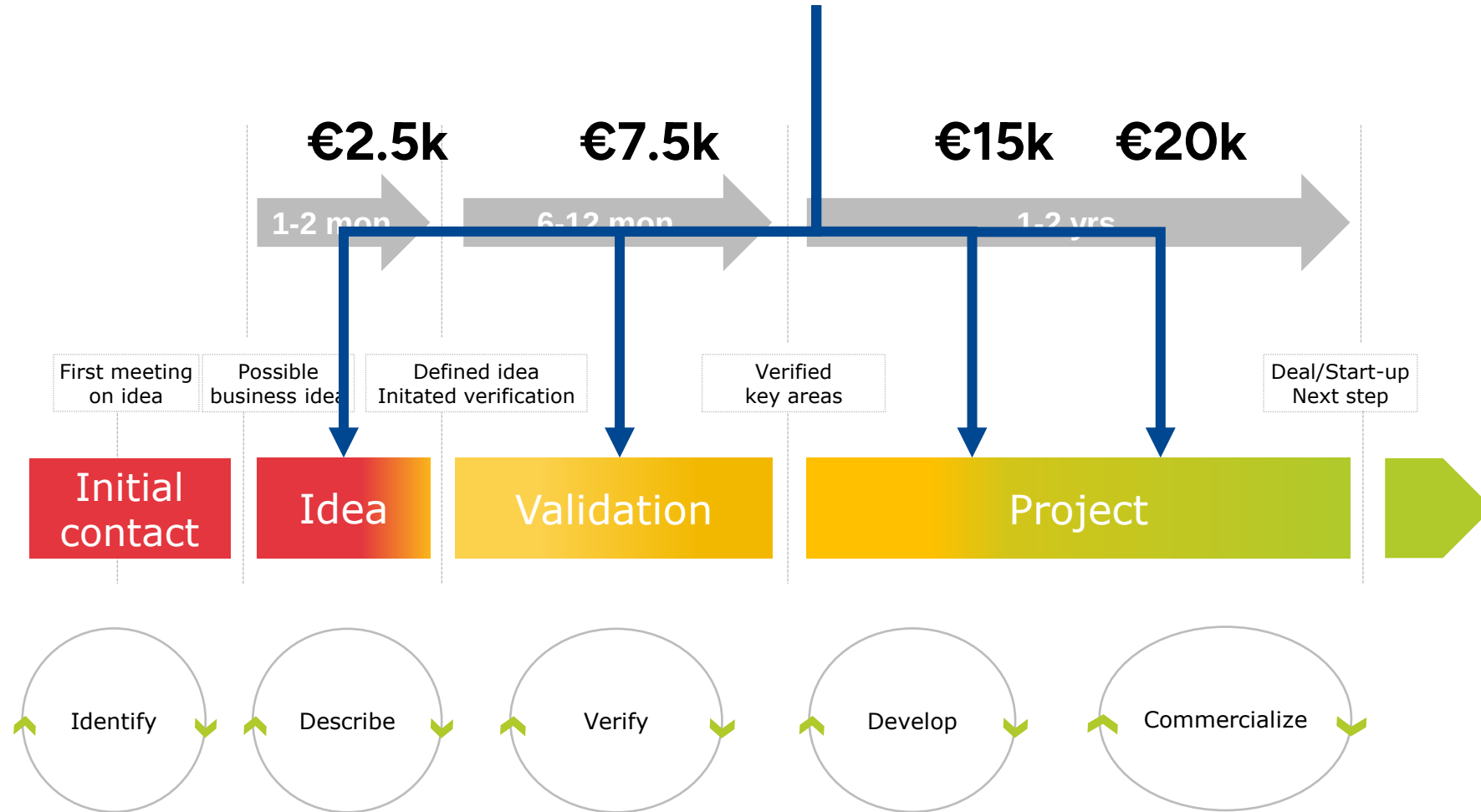
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Funding for Prototyping & Market validation



Customer Read

CRL
9

CRL
8

CRL
7

CRL
6

CRL
5

CRL
4

CRL
3

CRL
2

CRL
1

Widesp

Level	Description
9	- Widespread product deployment, sales to several customers in a repeatable and scalable way. - Customer creation- company focuses on execution with growth of sales and efforts to build user/customer demand etc.
8	- Customer qualifications are complete and initial products are sold to a few customers. - Payment willingness confirmed from sufficient % of customers (product-market fit validated). - The real buyers/economic decision makers are identified.

- Defined who the target customers/ segments are to be focused on as end

4

- Contacts and feedback are established with several possible customers/users typically limited but depend on B2B/B2C and market structure (e.g. 5-10 concentrated 2-5 market leading customers, in B2C higher e.g. 10-20).
- The problem and need (and its importance) is confirmed from multiple customers
- Customer segmentation in place, knowledge of customers/users has increased
- A primary product hypothesis is defined, possibly based on feedback.

3

- Initiated customer discovery with feedback from primary market research from a few possible users/customers or persons with industry/market knowledge
- A more developed understanding of possible customers and possible customer problems
- A more clear problem hypotheses

2

- Some market research is performed, typically derived from secondary sources
- Brief familiarity with the market, possible customers and their problems/needs
- There is a more clear and more specific problem/need description
- Product/solution ideas may exist, but are not clear and typically speculative



KTH IRL in the validation grant application



Verifieringsplan (Plan for verification)

Huvudverifieringsfråga utifrån KTH Innovation Readiness Level® (Key question to verify – based on KTH Innovation Readiness Level®)

Beskrivning av viktigaste frågan/hypotesen som ska besvaras i detta projekt för att verifiera/utveckla projektet. Koppla frågan/hypotesen till hur projektet ska öka sin mognad inom något av nyckelområdena enligt KTH INNOVATION READINESS LEVEL® (som kan ses på [denna länk](#))

Description of the most important question/hypothesis to answer during this project to verify/develop the project. Connect the question/hypothesis to how the project can increase its readiness in any key area according to KTH INNOVATION READINESS LEVEL® (which can be found [on this link](#).)

Example:

- *We currently have limited knowledge on who possible users and customers are. We also need to get feedback from possible customers to confirm key questions such as what problems they are facing within the area of XX. So the main goal with this project is related to increase of Customer Readiness Level (CRL)- we want to get to a planned level of 4 by identifying and talking to possible users/customers and confirming their problems and need for our technology.*

Mål 1 Goal 1

Vilket/vilka mål ska uppnås för att utvärdera/besvara viktigaste frågan (tänk SMARTa mål (Specifikt, Mätbart, Accepterat, Realistiskt, Tidsbundet)
What is the goal(s) to be achieved to be able to answer the most important question/hypothesis above (think SMART goals (Specific, Measurable, Achievable, Realistic, Time-set)

Example:

- *Identify possible customers and establish feedback from at least 10 before june 2021.*



KTH IRL in the validation grant application

Verifieringsplan (Plan for verification)
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KTH IRL in the validation grant application

+
Verifieringsplan (Plan for verification)
Huvudverifieringsfråga utifrån KTH Innovation Readiness Level [®] (Key question to verify – based on KTH Innovation Readiness Level [®])

Example:

- We currently have limited knowledge on who possible users and customers are. We also need to get feedback from possible customers to confirm key questions such as what problems they are facing within the area of XX. **So the main goal with this project is related to increase of Customer Readiness Level (CRL)- we want to get to a planned level of 4 by identifying and talking to possible users/customers and confirming their problems and need for our technology.**

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to identify key next
steps

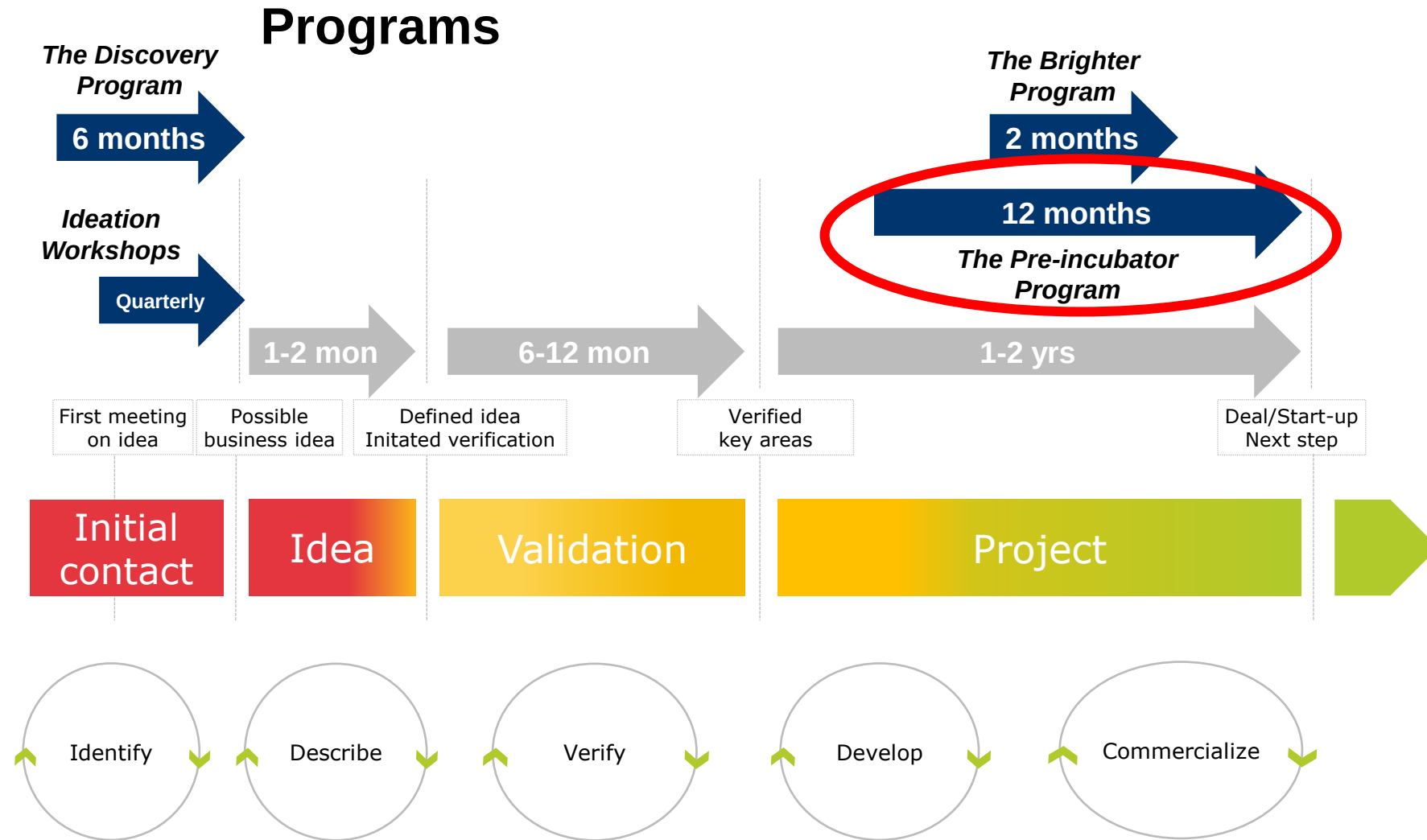
Create content for
programs

Goal setting and
evaluation in the
programs

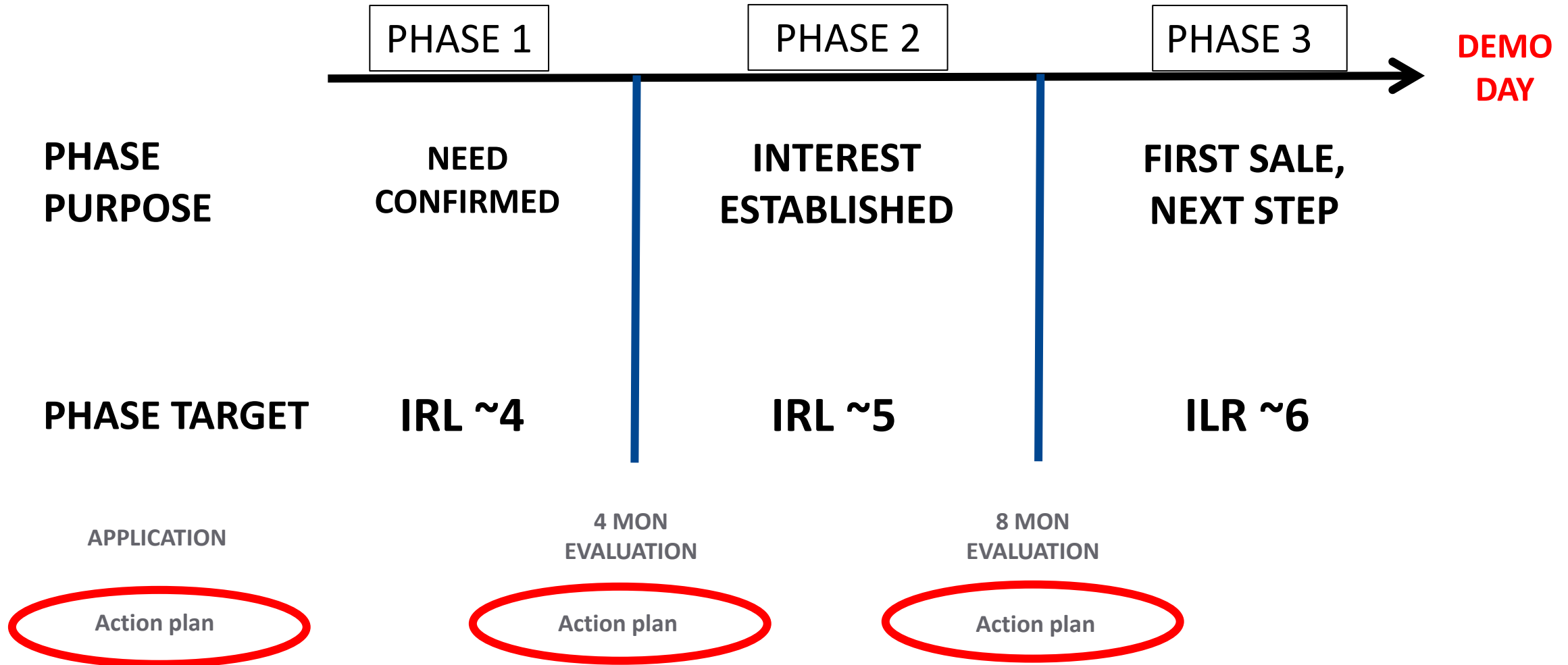
Applying for validation
grants

Criteria for advancing
in our process

Criteria for transition
to incubators



KTH IRL in the Pre-Incubator



The Action Plan – the only IRL tool you need

KTH INNOVATION READINESS LEVEL ACTION PLAN

Goals for the period: _____	Describe your goals as clearly and measurable as possible! Think SMART goals (Specific, Measurable, Accepted, Realistic, Time set)	
Customer Readiness Level CRL	Current readiness level: <i>for example 4</i>	Planned readiness level: <i>for example 5</i>
	The most important goal(s) related to customer development (CRL) <i>Example:</i> - <i>Get 5 interested customers onboard for prototype testing</i> - <i>Establish at least one pilot customer by july 2024 (signed agreement)</i>	
Technology Readiness Level TRL	Current readiness level:	Planned readiness level:
	The most important goal(s) related to product/technology development (TRL) - <i>Develop a beta-prototype and test this on X users by dec 2024.</i>	
Business Readiness Level BRL	Current readiness level:	Planned readiness level:
	The most important goal(s) related to development of your business model (BRL) <i>Example:</i> - <i>Draft a complete business model canvas with clear revenue model</i>	

www.kthirl.com



KTH Innovation Readiness Level™

A method, visual tool, and resource library guiding the development from early stage idea to innovation on the market

[Home](#) [About](#) [Take a tour](#) [Get access](#) [KTH IRL Tool Kit](#)



CUSTOMER

TEAM

BUSINESS

IPR

FUNDING

TECHNOLOG

COMMUNIC

Clear and define model is a great to get through to with idea owner individual meeti process.



Who are using it today?

2000 organizations and counting

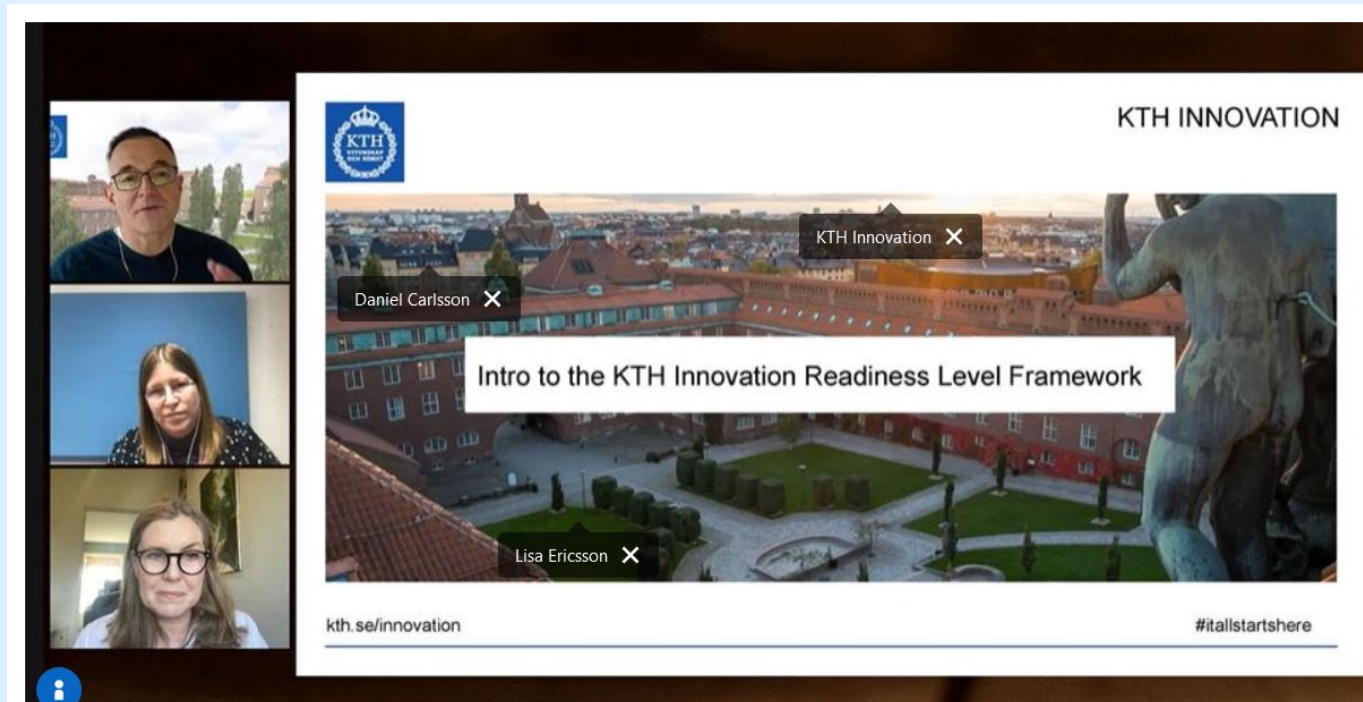
Innovation Offices & Incubators

Gov't agencies

Corporate Innovation Hubs

Case Study on LinkedIn – Imperial College London

- Small team / External mentors
- Creating curriculum for courses



Case Study on LinkedIn – DTU Denmark

- Mapping out the ecosystem / connecting actors
- Assessment for programs

LIVE 14:04



DTU

Innovation eco-system at DTU



STUDENT INNOVATION	RESEARCH COLLABORATION	START-UPS	TECH TRANSFER
Competences and mindset	From research to public and private innovation	Bringing breakthrough technology to market	From invention to market

19. oktober 2023 Danmarks Tekniske Universitet

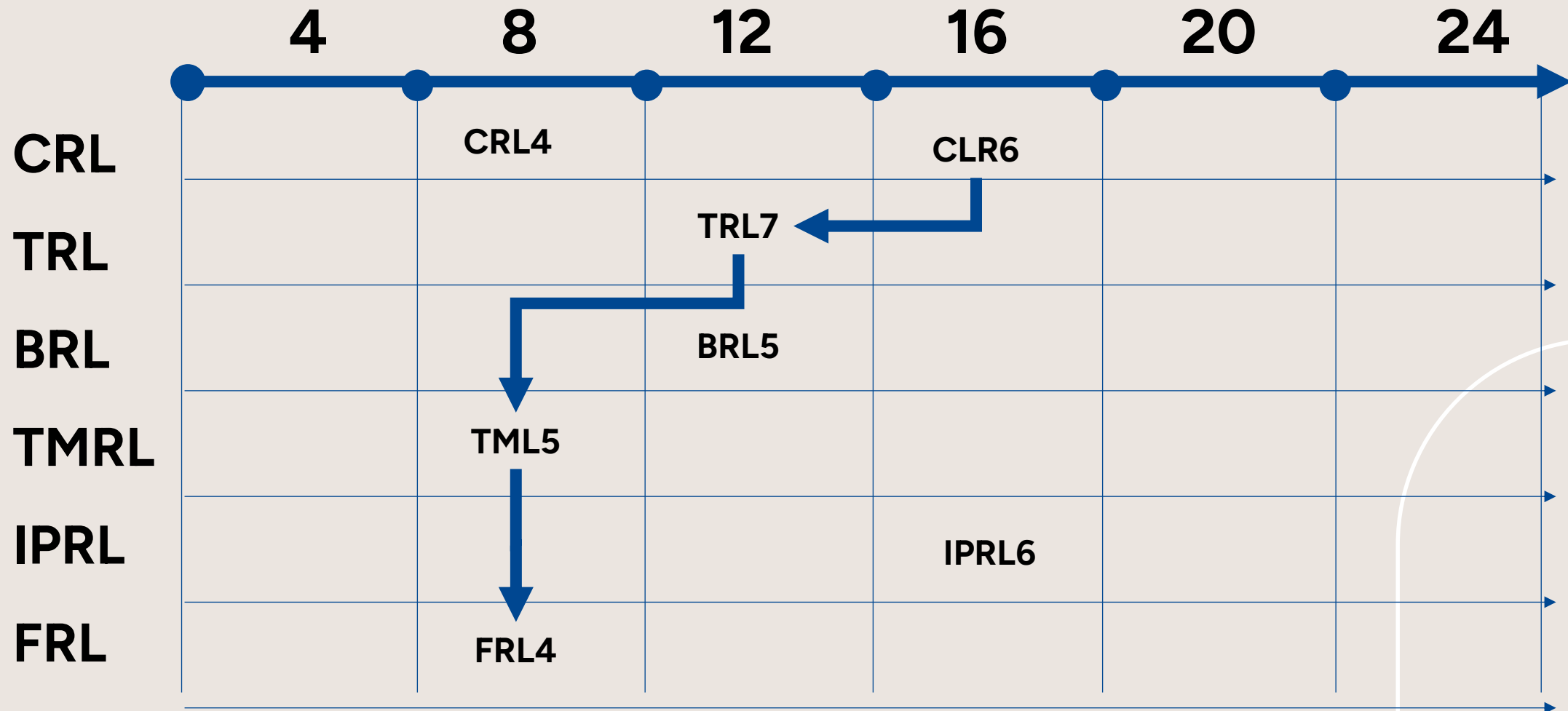
Additional Tips

**All levels are interconnected
and will affect each other**

**You can move both up and
down, it is a living organism
that exists in the context of
the real world**

***“If you’re standing in the forest
with a map in your hand, and they
don’t align – Trust the forest.”***

Adding (the magic dimension of) time to the IRL



Sustainability strategy – different levels

Can be harmful

HARM

Significant part of activities can cause harm.

No special efforts to reduce potential harm are made OR there are no feasible ways to avoid harm.

Avoids harm

RESPONSIBLE

Avoid negative effects SDG effects of the business by abiding to laws, regulations, ethical and other industry standards.

No other action to create positive effects are taken.

Positive shift

SUSTAINABLE

Acts to create a positive movement regarding one or more of the SDGs that are affected by the business.

Solving problems

IMPACT

Acts to solve, in a measurable way, one or more well-defined and quantified problems related to the sustainability goals.

Sustainability Strategy Matrix with IRLs



IRL	HARM	RESPONSIBILITY	SUSTAINABILITY	IMPACT
CRL				
TRL				
BRL				
TMRL				
IPRL				
FRL				



KTH Innovation Readiness Level Summit!

27-28 June in Stockholm

So why do we think everyone should use it?

- Common language
- Easier and better hand-offs between stakeholders (interface)
- Easier to set system common KPIs
- Increased efficiency in the whole system
- Faster and better screening
- Better spent (grant) money
- BETTER ENTREPRENEURS (learning experience)

What's in the plan?

- 2024 update -> BRL & FRL
- 2025 update -> TMRL
- Adding increased level of detail (Key aspects)
- KTH IRL Toolbox
- Online presence revamped
 - Online discussion forum
 - Idea hub
 - Easier sharing of community created tools
- Updated design
- Digital, digital, digital...

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CUSTOMER

TEAM

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Clear and define model is a great to get through to with idea owner individual meeti process.



How to get started with the KTH IRL – Organization

- 1. Start by mapping out your process / timeline / programs or similar**
- 2. Try to find natural points to measure, track, assess or evaluate**
- 3. Start using the IRL as a measure to compare projects, decide on levels for entry or exit or similar**
- 4. As you evolve, you can start integrating it deeper or even designing programs and content after it.**

How to get started with the KTH IRL – Team

1. What does Quick self assessment – where are you now – an overview.

- Don't worry about the details, fast and fuzzy is better than slow and perfect
- A level needs to be fully filled before progressing, there is no "0.5"
- Better stay on a lower and aim upwards, than place yourself too high

2. Choose time frame / sprint length (Action plan)

3. Decide on which level you think you will reach in that time frame.

4. Set S.M.A.R.T. goals, broken down into quantified, measurable actions.

5. Execute – follow up – evaluate – reiterate

Key questions when starting

- **What does 9 mean to me / us?**
- **What do the different levels of the different scales mean to us?**
- **Where are we now? Explained and translated to each other**
- **Why am I here? Why am I doing this? Short term / long term**
- **What can I contribute with to this project? Short term / long term**

Key concepts of the CRL

- **NEED** validation -> **SOLUTION** Validation -> **SALES** Validation
- Maintaining a **clear customer focus** throughout the whole development.
- “**Get out of the office**”, cultivate customer contacts -> **minimize commercial risk**.
- Understanding **WHO** your customer is and the complexity of **customer tiers**.

So who is actually your “customer”? Now and over time?

1. Define what the following key concepts mean in this specific project:

(Not all terms are relevant/ applicable in all projects, in that case make a comment with a brief explanation)

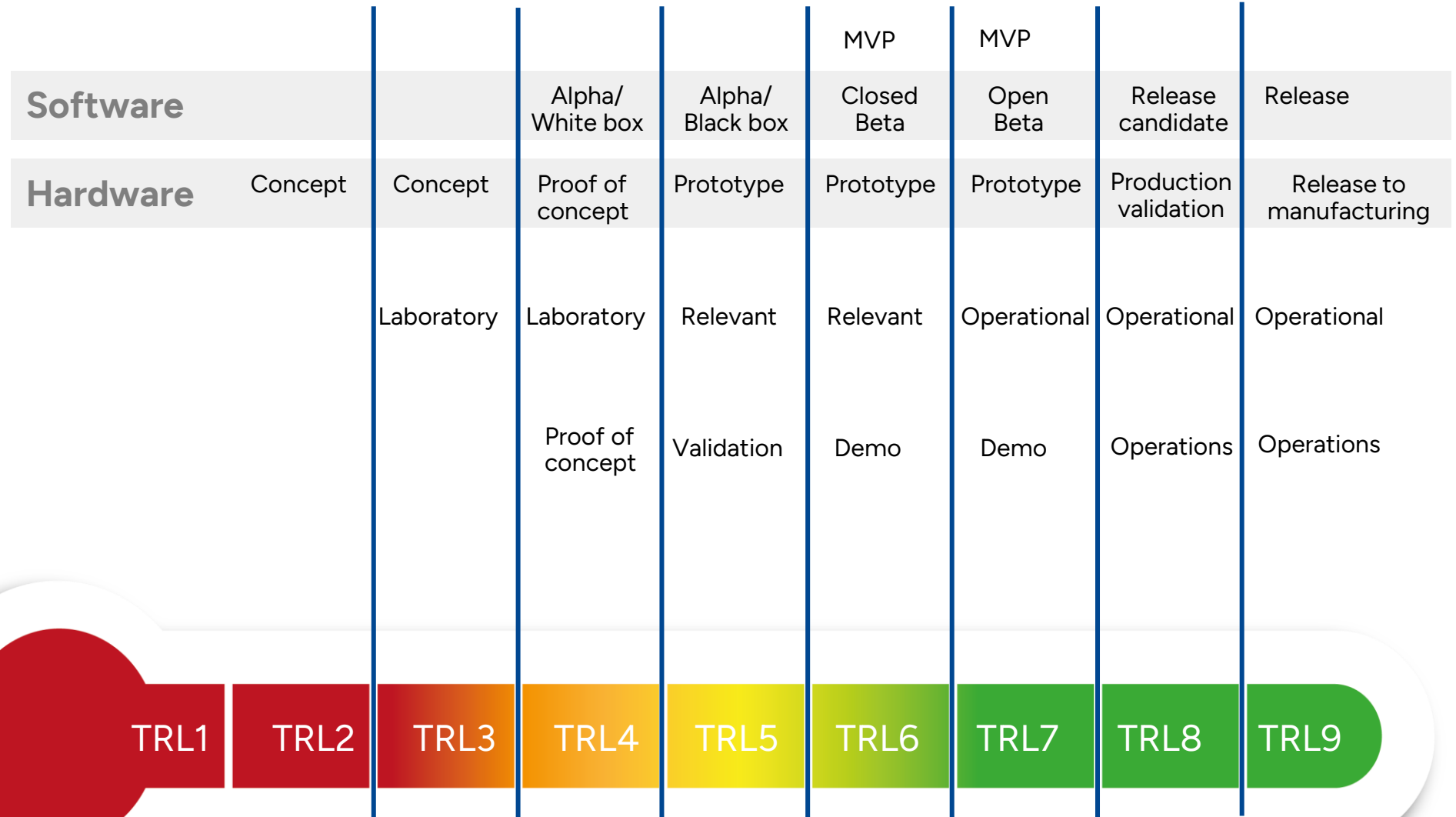
Term	General definition	Project specific definition
Customer	The person/organization that buys your product/service, i.e. pays for it	
User	The person(s) that actually uses your product/service	
Decision maker	The person(s) that make the decision which product/service to buy	
Influencer	The person(s)/organization(s) that strongly influence the decision of which product/service to buy	

Key concepts of the TRL

- The **technology** (Concept, Prototype/Alfa, MVP, EVT/DVT, Beta, PVT/RC, RTM/R)
- The **environment** (Lab, Relevant environment, Operational environment)
- The **delivery** (POC, Validation, EVT/DVT, Demonstration, PVT, RTM, Operations)

Definitions – what do they mean to YOUR project?

- The **technology**
- The **environment**
- The **delivery**





What is...

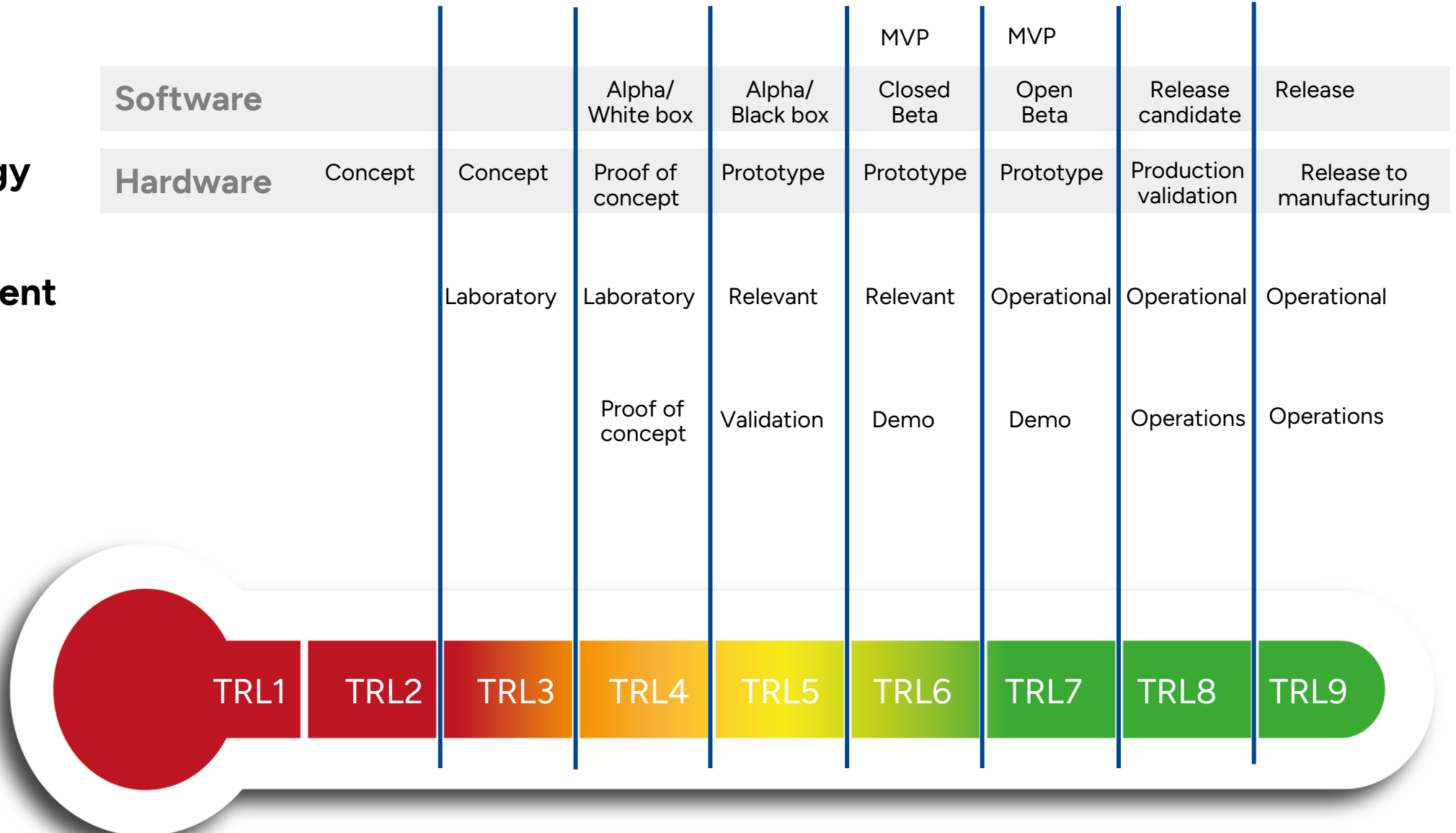
Proof of concept

MVP / Prototype / Relevant Environment

Open Beta / Operational Environment

Can you shorten dev time by limiting the scope?

- The **technology**
- The **environment**
- The **delivery**



Key concepts of the BRL

- **Business Potential** (“a viable, realistic and sustainable business idea”)
- **Market Structure & Value Chain** (landscape, dynamics, competition etc)
- **Sustainability** (Social, Economic, Environmental)

The N.A.B.C value proposition

- **NEED**

- Which problem(s) or unmet need(s) are you addressing?
- Who is the customer? (i.e. has this problem/need and is willing to pay for resolving it)
- How important is this problem or need for your customer? Why?
- Can you somehow quantify the market such as overall size, prices, growth trends, profits?

- **APPROACH**

- What is your approach (concept, product, business model etc.) for addressing the need?
- What are the unique and/or most important aspects of your approach?

- **BENEFITS**

- What are the benefits for the customer by using your approach? (money/time/convenience/improved quality etc.)
- How large are the benefits in relation to the cost of your approach?

- **COMPETITION**

- Which are the competing approaches (and competitor companies)?
- What are the alternatives (other ways of addressing the need)?
- Why is your approach and benefits better than the competition and the alternatives?

Embrace the RAT (Riskiest Assumptions Test)

Sustainability strategy – different levels

Can be harmful

HARM

Significant part of activities can cause harm.

No special efforts to reduce potential harm are made OR there there are no feasible ways to avoid harm.

Avoids harm

RESPONSIBLE

Avoid negative effects SDG effects of the business by abiding to laws, regulations, ethical and other industry standards.

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Positive shift

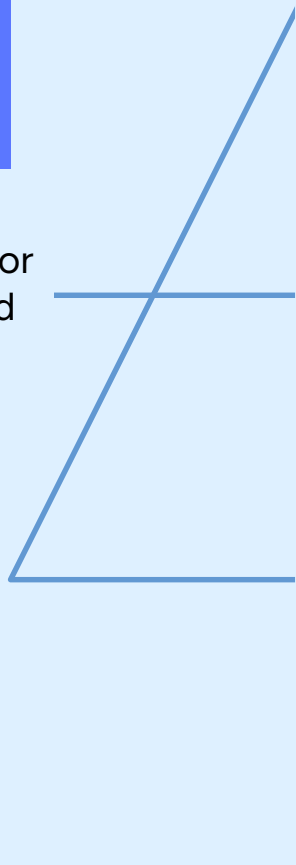
SUSTAINABLE

Acts to create a positive movement regarding one or more of the SDGs that are affected by the business.

Solving problems

IMPACT

Acts to solve, in a measurable way, one or more well-defined and quantified problems related to the sustainability goals.



Sustainability Strategy Matrix with IRLs



IRL	HARM	RESPONSIBILITY	SUSTAINABILITY	IMPACT
CRL				
TRL				
BRL				
TMRL				
IPRL				
FRL				

Key concepts of the TMRL

- Having the right **Competence** (knowledge, skills, experience) at the right times.
- Getting to and maintaining **Team Alignment** (agree on roles, commitment, vision etc)
- Agreeing on and signing all the **Paperwork** needed.

What skills do you need? And when?

[illegible]

The Team Canvas Basic

Version 1.0 | English | theteamcanvas.com

Most important things to talk about in the team to make sure your work as a group is productive, happy and stress-free

TEAM NAME _____ DATE _____

PEOPLE & ROLES

What are our names and the roles we have in the team?

VALUES

What do we stand for? What are guiding principles? What are our common values that we want to be at the core of our team?

PURPOSE

Why are we doing what we are doing in the first place?

GOALS

What we want to achieve as a group? What are our key goals that are feasible, measurable and time-bounded?

RULES & ACTION POINTS

What are the rules we want to introduce after doing this session?
How do we communicate and keep everyone up to date?
How do we make decisions? How do we execute and evaluate what we do?

Why do you work?

- Purpose
- Values
- Goals
- Upskilling
- Team building

How do you work?

- Meetings
 - Frequency
 - Agenda
 - Participants
 - (shorter -> better)
- Means of Communication
- Organisation
- Decisions

Key concepts of the IPRL

- Understanding **what kinds of IPR** you will be generating in your business.
- Understanding which of those IPRs you can / should protect out of a **business, legal or impact** creation perspective.
- Deciding on **what, why** and **how** to protect those rights,
- Moving to protect them

Your IP, over time

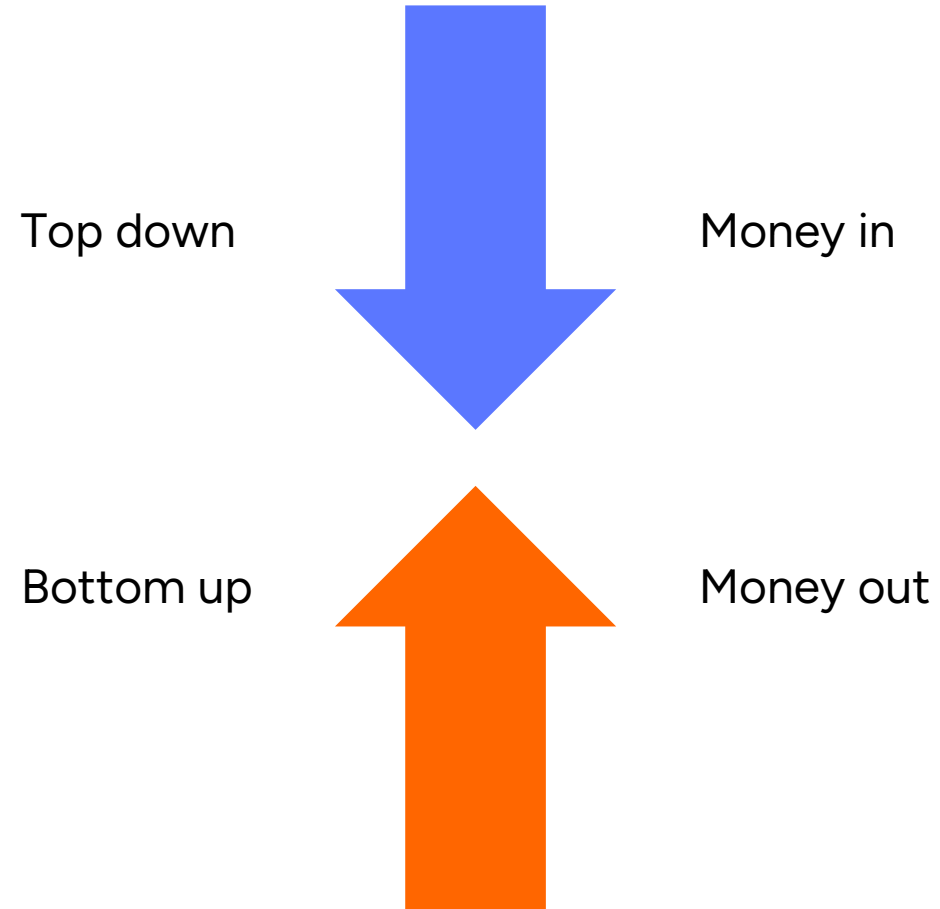
List all the IP that you have or will create/aggregate.

IP asset	Description/Definition (Describe what you have)	Comments
Company name/Product names		<i>What is your strategy for company name? How is that strategy vs. trademarks and product names?</i>
Trademark		<i>Do you have potential trademarks? Are they word marks, figurative? Have you searched others? Plans for registration? How can you make a structured use of names?</i>
Domains/domain names		<i>What domains do you have or need? Fit with company name and strategy for product names?</i>
Patents/patentable inventions		<i>Are/will there be technical solutions to patent? What are they? How are new ideas captured and evaluated?</i>
Copyright		<i>Do you have material that could be copyright protected such as software, text content, pictures etc?</i>
Manuals/instructions/processes		<i>Have you documented know-how, routines, guidelines, etc, that are important?</i>
Trade secrets		<i>What is crucial to your business or technology? Source code, manufacturing methods etc? What can be kept secret? How?</i>
Know-how (e.g. manufacturing or R&D competence)		<i>What competencies/knowledge/information are core to the company and really important to be successful?</i>
Data/Databases		<i>Do you compile/generate data? Use others data? Do you have structured data in databases?</i>
Customer/User registers		<i>Do you gather important information on users/customers? What information?</i>
Designs		<i>Do you have designs that are important and unique?</i>
Agreements		<i>What agreements have you signed? How do agreement regulate IP? Who owns it?</i>

Key concepts of the FRL

- Planning and securing funds for **Validation** -> **Development** -> **Operations**
- Financial governance of the organization
- "How much money do we need to make money?"
- Where do we find it?

Understanding the basic calculations



Funding roadmap - generic

 REVENUE							
 BANK, DEBT-FINANCING							
 SOFT FUNDING							
EQUITY							
 BIGGER INVESTMENT FUNDS							
 SMALL VC FUNDS							
 CORPORATE VENTURE CAPITAL							
 FAMILY OFFICES							
 ACCELERATORS							
 BUSINESS ANGELS							
 CROWDFUNDING							
 PERSONAL NETWORK							
 FRIENDS & FAMILY							
 FOUNDERS' CASH & CREDIT CARDS							
	Market Need	Concept, Service, Product	MVP	Launch	Scale Up	Strong Market Position	Profit engine

Workshop Steg 0 – vad är 9 för dig/er?

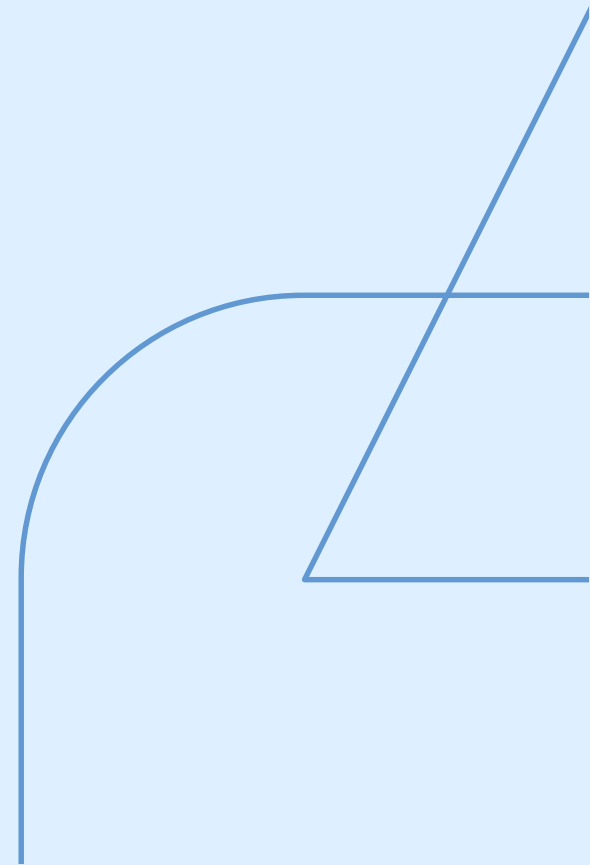
Hur ser det ut när raketten är på väg till månen?

Hur ser raketten ut? Hur drivs den?

Vem är med på raketten?

Vilken måne är den på väg mot?

När den kommit fram, vad händer då?



Workshop Steg 1 – var är ni idag?

1. Snabb första egen uppskattning.

Oroa dig inte för detaljerna, snabbt och luddigt är bättre än långsamt och perfekt

Tänk på att en nivå måste vara helt klar innan du går vidare, det finns inga "0,5"

Det är bättre att stanna på en lägre nivå och sikta uppåt än att placera sig för högt och tvingas backa tillbaka

2. Börja individuellt, fem minuter

3. Gå igenom i grupp och kom överens om en gemensamma uppskattning

Workshop Steg 2 Action Plan

- 1. Försök att uppskatta/bestämma dig för var du vill vara/behöver vara/hoppas vara till Midsommar 2025.**
- 2. Beskriv vad det innebär för varje RL (tänk på ev beroenden!)**
- 3. Börja individuellt 5 minuter**
- 4. Synka i grupp**

Workshop Step 3 – Den kommande sprinten

- Baserat på era mål, gå igenom varje skala och bestäm tillsammans vilka actions som ska göras på varje skala till den 30 januari.

Använd S.M.A.R.T.a-mål, se till att de är kvantifierade och mätbara.

Specifikt
Mätbart
Accepterat
Realistiskt
Tidsatt

- Prioritera dem och tilldela (VEM) och tid och datum för slutförande (slut på sprinten eller)
- Gå igenom er kommande sprint och se till att gruppen är överens om både rimlighet och ansvaret för alla mål.

Applications of TRL

Development stage summary



TRL 9	Technology system in its final form and in full commercial deployment
TRL 8	Technology system in its final form
TRL 7	Prototype near or at planned operational system . Represents a major step up from TRL 6
TRL 6	Representative model or prototype system , which is well beyond that of TRL 5. Represents a major step up in a technology's demonstrated readiness
TRL 5	Basic technological components are integrated with reasonably realistic supporting elements so they can be tested in a controlled relevant environment
TRL 4	Basic technological components are integrated to establish that they will work together . This is relatively "low fidelity" compared with the eventual system
TRL 3	Analytical studies to predict the performance of separate elements of the technology in appropriate context - Laboratory-based studies to physically validate that the analytical predictions are correct
TRL 2	Practical concepts or applications are formulated
TRL 1	Scientific research begins to be translated into applied research and development

Complex systems



TRL 8-9 - System	All technical elements that comprise the project operating as a single system to deliver a defined capacity .
TRL 6-7 - Prototype TRL 6 – Model	A physical or virtual model used to evaluate the technical or manufacturing feasibility or utility of a particular technology or process, concept, end item, or system . A functional form of a system, generally reduced in scale, near or at operational specification . Models will be sufficiently hardened to allow demonstration of the technical and operational capabilities required of the final system.
TRL 4-5 - Breadboard	Integrated components that provide a representation of a system/subsystem and that can be used to determine concept feasibility and to develop technical data. Typically configured for laboratory use to demonstrate the technical principles of immediate interest. May resemble final system/subsystem in function only .
TRL 3-4 - Component	A single element of technology . The lowest sub-system that provides sufficient granularity to identify technical risks and opportunities.

TRL vs Software development



TRL 9	v1.x, v2.x, etc. – continuous development and improvement
TRL 8	v1.0 - Final stable release to the end-users
TRL 7	Open beta testing - open for anyone who signs up (“Black-box”)
TRL 6	Beta testing for invited end-users (“Black-box”)
TRL 5	“Black-box” alpha testing for selected external end-users or in-house users/testers not associated with the development
TRL 4	Alpha testing of the software by one or a few in-house developers or testers (“White-box”)
TRL 1-3	Concept/pre-alpha: script is more of an abstract idea than an actual working program. Through this stage the coding starts and changes to functions are being made until a working draft is created

Alpha: working script, probably lots of bugs, might not have all features, but the core of the program is running and can be tested extensively

Beta: program near completion, all features working, may be some bugs that may not have shown up in alpha testing

White-box: tests internal structures or workings of a program, as opposed to the functionality exposed to the end-user

Black-box: examining functionality without any knowledge of internal implementation. The tester is only aware of what the software is supposed to do, not how it does it.

Pharmaceutical development



TRL 9	Post marketing studies and surveillance
TRL 8	Phase 3 clinical trial is completed. FDA (CDER) approves New Drug Application (NDA)
TRL 7	Phase 2 clinical trial is completed. Phase 3 clinical trial plan is approved by FDA (CDER)
TRL 6	Phase 1 clinical trials support proceeding to phase 2 clinical trials. Investigational New Drug (IND) application submitted to and reviewed by FDA (CDER)
TRL 5	Pre-clinical studies, including GLP animal safety & toxicity, sufficient to support IND application
TRL 4	PoC and safety of candidate drug formulation is demonstrated in a defined laboratory or animal model
TRL 3	Hypothesis testing and initial proof of concept (PoC) is demonstrated in a limited number of <i>in vitro</i> & <i>in vitro</i> models
TRL 2	Research ideas and protocols are developed

Source: US Army Medical Department

Medical device development



TRL 9	Post marketing studies and surveillance
TRL 8	FDA (CDRH) approves the Premarket Approval (PMA) for medical device or applicable 510(K) for devices
TRL 7	Final product design is validated and final prototypes are produced and tested.
TRL 6	Class III device safety is demonstrated. 510(K) data demonstrates substantial equivalency to predicate device.
TRL 5	MD-CDRH review of Investigational Device Exemption (IDE) results is sufficient to begin investigation
TRL 4	PoC and safety of candidate device or system is demonstrated in a defined laboratory or animal model
TRL 3	Hypothesis testing and initial proof of concept (PoC) is demonstrated in a limited number of <i>in vitro</i> & <i>in vitro</i> models
TRL 2	Research ideas and protocols are developed

Source: US Army Medical Department

Environment descriptions



TRL 8-9 – Actual operations	Implementation of the final system by the end-user as they seem fit in their day-to-day operations
TRL 7 – Operational environment	Environment that addresses all the operational requirements and specifications required of the final system
TRL 6 – Simulated operational environment	Either (1) a real environment that can simulate all the operational requirements and specifications required of the final system or (2) a simulated environment that allows for testing of a virtual prototype
TRL 5-6 – Relevant environment	Testing environment in a lab or other controlled environment that simulates both the most important and most stressing aspects of the operational environment.
TRL 3-4 – Laboratory	The normal environment where the technology or product is developed, usually not related to the environment where it will be used
TRL 1-2 – Desk/Lab	

Automatic hospital bed

TRL 7	System prototype demonstration in an operational environment	Could be the same prototype as TRL 6 below but tested in an actual hospital environment for an extended period of time.
TRL 6	Technology demonstration in a relevant environment	Prototype that resembles final product in both function and form
TRL 5	Technology validation in a relevant environment	Heavy, clumsy, full scale prototype that proves that the concept will work technically. Not made to resemble a final product in other aspects than function.





THANK YOU!

donnie@kth.se

www.kth.se/innovation

www.kthirl.com