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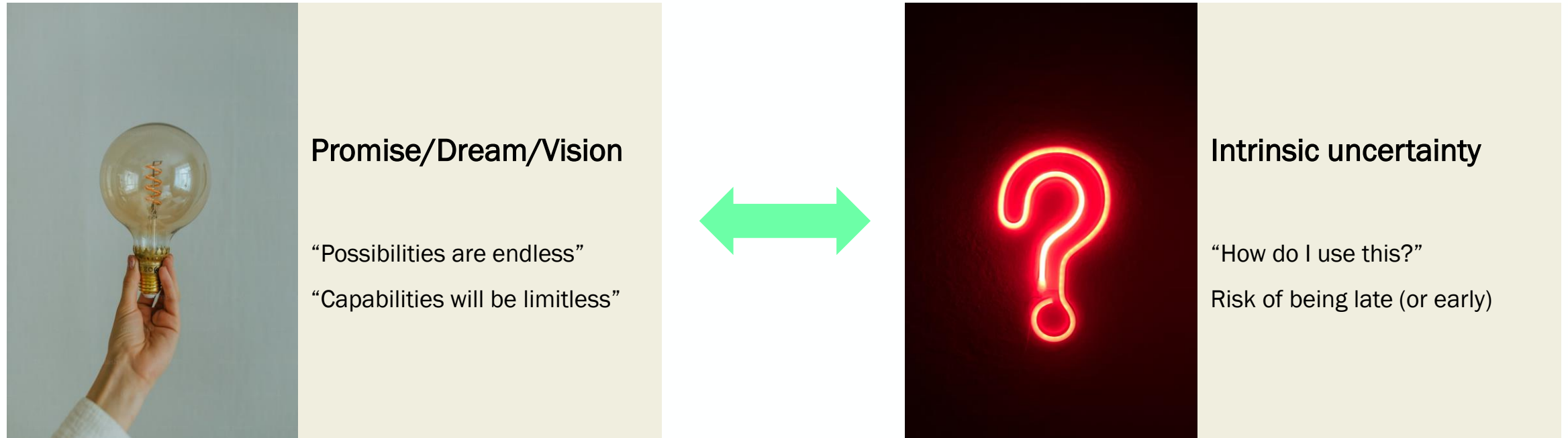ruben.vancaelenberg@addestino.be

Managing risk of using new tech in public & private sector

Health Data Sweden Seminar Series in Innovation Procurement   Date: 17/04/2024

Procurement of technology-driven innovation implies uncertainty

Promise/Dream/Vision

"Possibilities are endless"

"Capabilities will be limitless"

Intrinsic uncertainty

"How do I use this?"

Risk of being late (or early)

▶ Field of tension Addestino sees at all of its customers,
in public sector, large enterprises, SME's & start-ups/scale-ups

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Value–risk methodology is used to manage this uncertainty
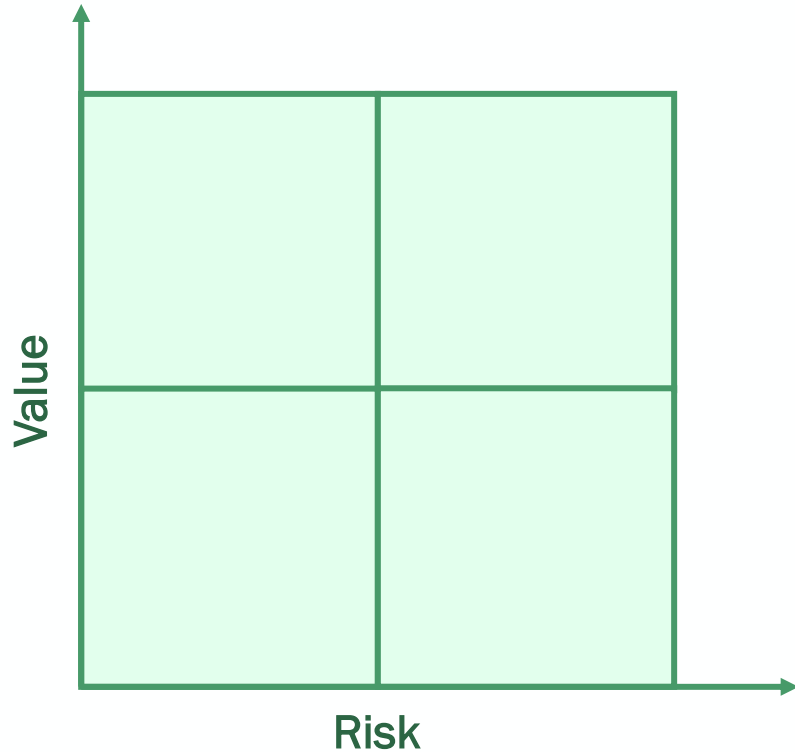
Value for the user:
How important is this functionality/product/… to me as a stakeholder/user?

Technological/implementation risk:
How complex is it to build? What's the Technology Readiness? What's the expected cost?

▶ The challenge is that there are a lot of unknowns
Addestino solves this by combining the knowledge of a lot of people

Use cases are defined to ensure user needs are crystal clear

Why use cases?

Clearly define user needs & pain points in a structured way

Provides insight into what is important for whom
Enables prioritization & implementation

A fixed format is used

As an <actor>

A user/target group
that you can visualize

I can <take action>

A specific, unambiguous
& concrete action

so that <value is created>
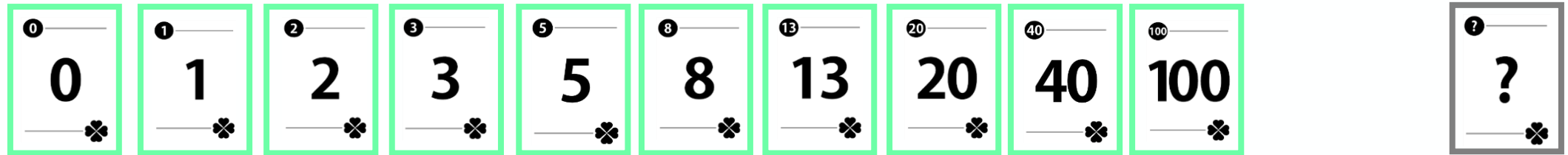
Answer to the question
Why is this action valuable?

Example

As a fireman I can follow the location of my colleague in 3D, accurate up to 3m, on a digital map
so that I can quickly come to help in case there's any problems

Planning poker moderation is used to estimate & understand value & risk

Scoring each use case one by one

| 0 | 1 | 2 | 3 | 5 | 8 | 13 | 20 | 40 | 100 | | ? |

Value

Useless   Nice to have   Interesting   Important   HOME RUN

Risk

Off-the-shelf   Known problem   Uncertainty success not guaranteed   Mission impossible

Time for some examples!

Let's map 4 AI use cases on value – risk

Use Large Language Models (e.g. ChatGPT) to support the writing of policies, procedures, manuals & offer texts
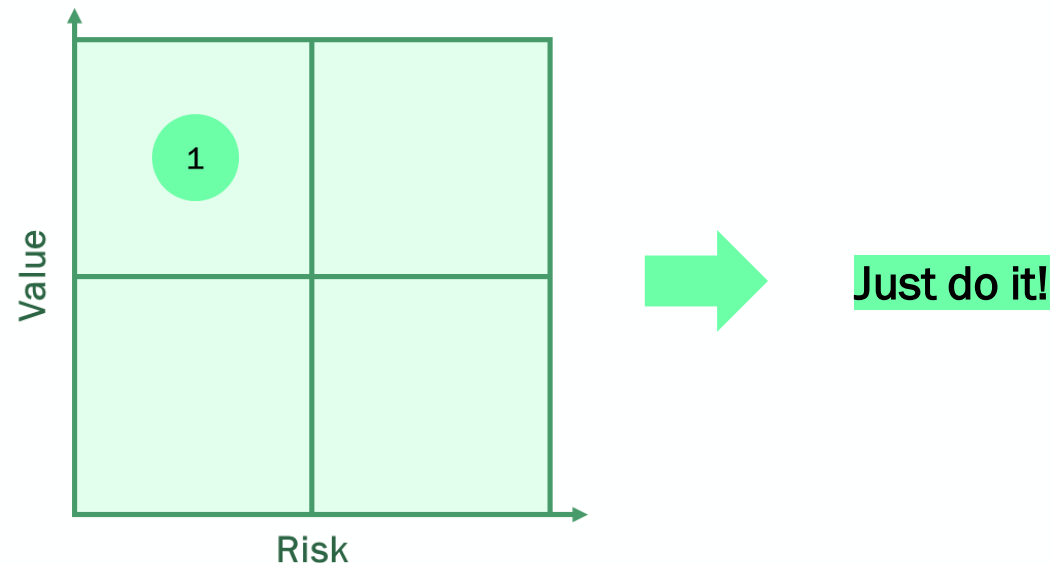
▶ How would you score the value for you / your organization?

| 0 | 1 | 2 | 3 | 5 | 8 | 13 | 20 | 40 | 100 |

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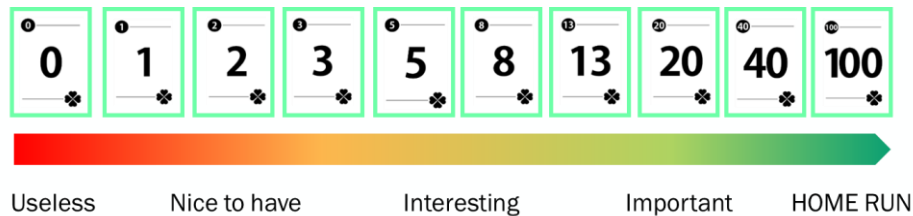
▶ How would you score the risk to get this up and running?

| 0 | 1 | 2 | 3 | 5 | 8 | 13 | 20 | 40 | 100 |

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Let's map 4 AI use cases on value – risk

Use Large Language Models (e.g. ChatGPT) to support the writing of policies, procedures, manuals & offer texts

1

Value

Risk

Just do it!

Let's map 4 AI use cases on value – risk

Train a Large Language Model <u>yourself</u> to generate pictures
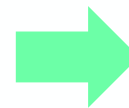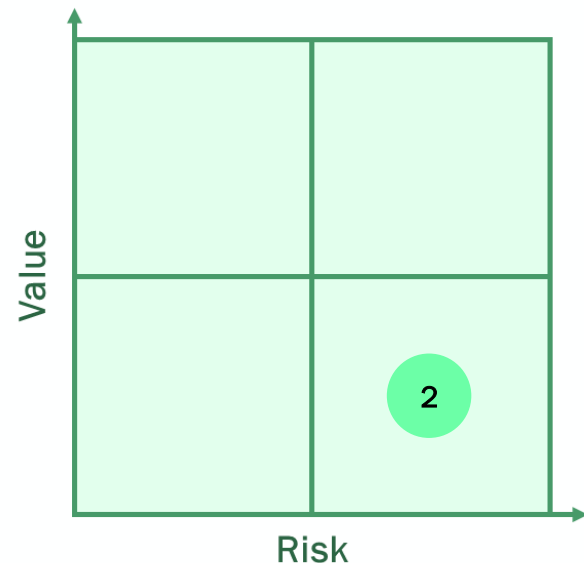for the corporate website of people that were not present at the "photo day"

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Useless   Nice to have   Interesting   Important   HOME RUN

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Let's map 4 AI use cases on value – risk

Train a Large Language Model <u>yourself</u> to generate pictures
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Value

Risk

2

→ Don't, unless you're a research org.
(typical PhD topics)

Let's map 4 AI use cases on value – risk

Use Large Language Models to create a "chat-based calculator"
to replace your pocket calculator/phone

Let's map 4 AI use cases on value – risk

Use Large Language Models to create a "chat-based calculator"
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Value

Risk

3
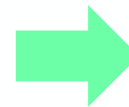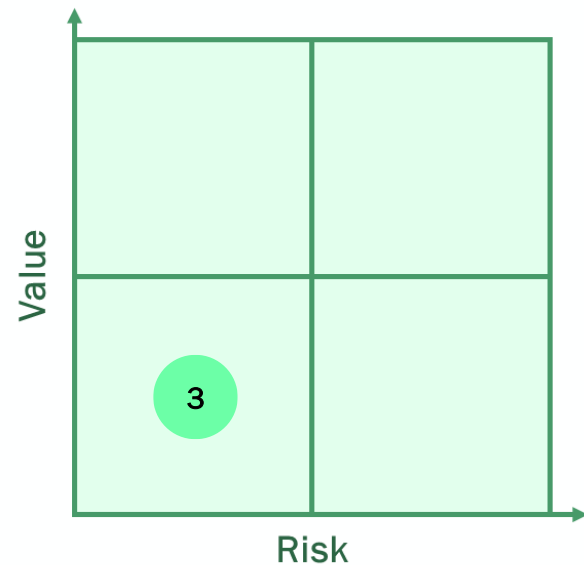
→ Don't, it's already solved

Let's map 4 AI use cases on value – risk

Use Large Language Models to continuously monitor €Bn's
in cost reimbursements for projects receiving European subsidies,
as opposed to using selective sampling

Let's map 4 AI use cases on value – risk

Use Large Language Models to continuously monitor €Bn's
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Value

Risk

4
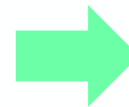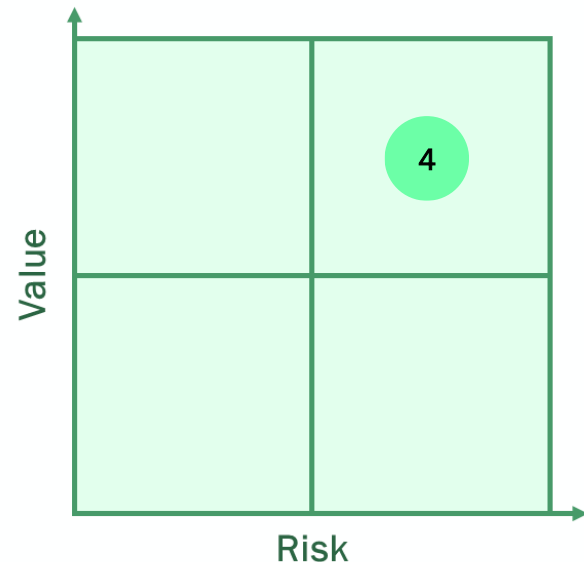
Typical project for innovative procurement (PCP)

Project CATE: Continuous Auditing based on Techn(olog)ical Evolution and Data Mining

CATE Pre-Commercial Procurement
# leveraged all of the methodologies discussed earlier

Context

- €Bn's in European subsidies are funneled to 100's of projects each year, which declare costs for reimbursement

- The responsible auditing body envisioned to use AI to automate monitoring of project cost declarations,

  instead of the current sample-based approach

- Checks done range from straightforward ("Does the invoice amount match the declaration?")

  to complex ("Should the public procurement law be respected for this purchase?")

Addestino's approach

1. Develop Use Cases together with the users (auditing body)

2. Use Planning Poker to map these use cases based on Value – Risk

3. Organize a Market Consultation, bringing together industry experts, to assess and understand the risks

Resulting in a 5-year development & implementation roadmap

Market Consultation brought together local AI & audit experts
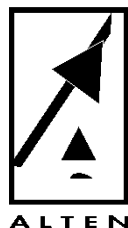
In the next phase, Addestino used Set-Based Design & Proof of Concepts to define & de-risk the model architecture

Set-Based Design

Many ways lead to Rome,

explore different options to define the best one

Proof of Concept

Implement # of high-risk use cases

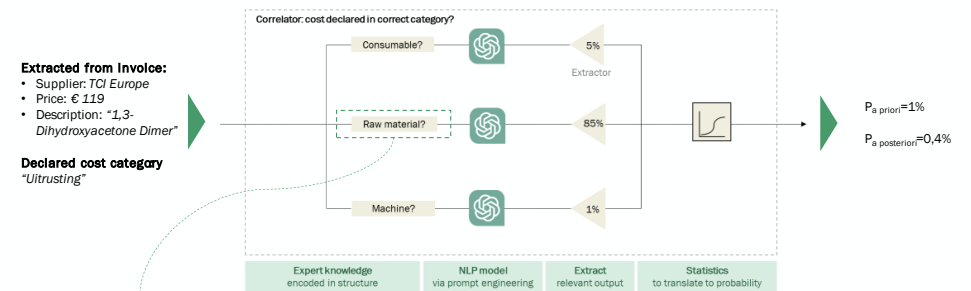to prove the architecture & model works

Generate options

Monolithic setup

Modular setup

Evaluate

Merge

Extracted from Invoice:
- Supplier: *TCI Europe*
- Price: *€ 119*
- Description: *"1,3-Dihydroxyacetone Dimer"*

Declared cost category
"Uitrusting"

Correlator: cost declared in correct category?

Consumable? — 5%
Extractor

Raw material? — 85%

Machine? — 1%

$P_{a\ priori}=1\%$

$P_{a\ posteriori}=0,4\%$

Expert knowledge
encoded in structure

NLP model
via prompt engineering

Extract
relevant output

Statistics
to translate to probability

|

Addestino has also applied these methodologies in healthcare

1	Incontinence Care 2.0
2	Mobile stroke unit
3	Toolkit to measure air pollution exposure

|

Smart diapers as cornerstone of an improved incontinence policy

Context

- More than 80% of residents in residential elderly care suffer from incontinence, with checks during nightly rounds having a detrimental effect on residents' quality of life

- An (non-profit) operator of residential care homes wanted to evaluate whether technology can play a supporting role in an incontinence policy where the dignity of the care recipient is of utmost importance

- A market consultation was organized to assess how "real" smart diaper solutions are: can they fulfill the user needs?

Illustration of Value - Risk
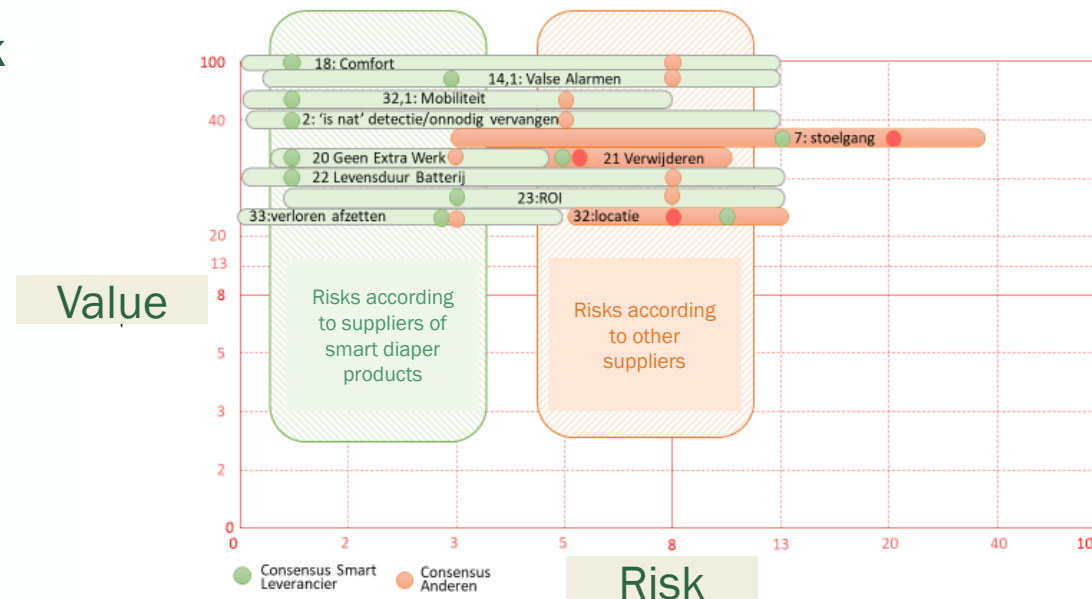
Market Consultation brought together local & international experts

Mobile stroke diagnosis & treatment to save valuable time

Context

- Patients suffering from a stroke are treated only once they arrive at the hospital,

  as the initial clinical diagnosis cannot distinguish between an ischemic or hemorrhagic cerebrovascular incident

- A CT-scan is required to make this distinction, but during transport to the hospital valuable time is lost

- A Belgian university hospital wanted to make diagnosis & treatment of strokes possible in the ambulance

- This not only requires technological innovation, but also training of personnel (e.g. radiology)

Illustration of Value - Risk
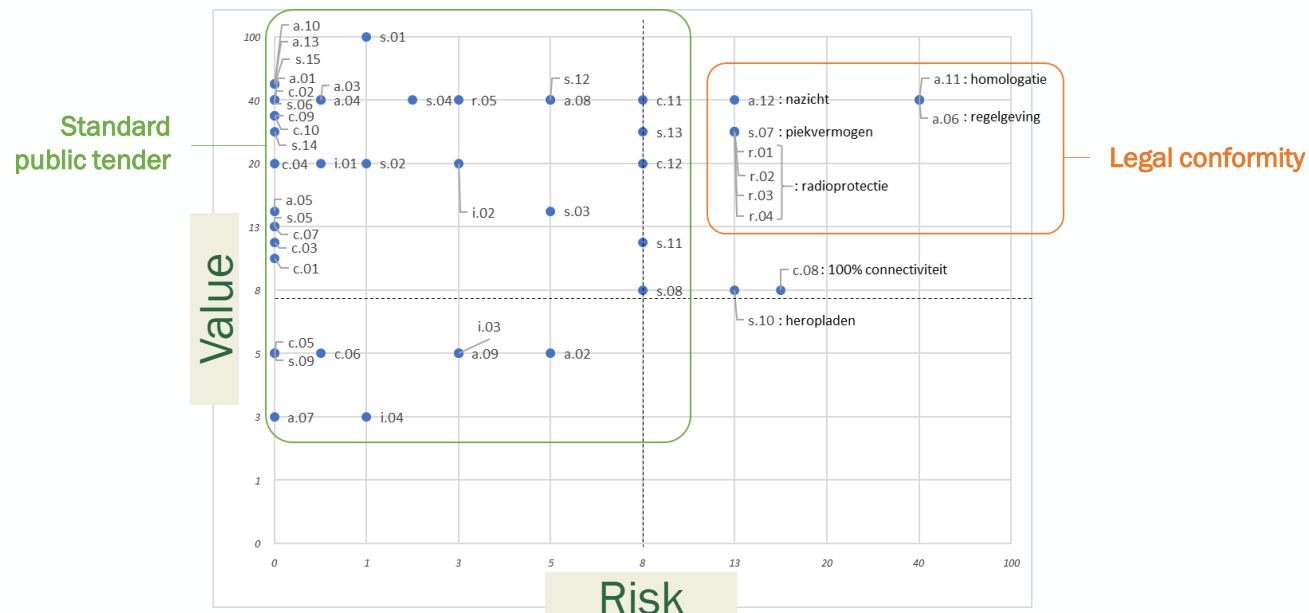
Mobile toolset to gather dynamic air pollution exposure data

Context

- Air pollution accounts for 1 out of 8 deaths worldwide & causes ~10.000 premature deaths each year in Belgium

- The Flemish Environmental Agency wishes to assess dynamic exposure to air pollution,

  taking place when people are on the move, in addition to static exposure (e.g. at your home address)

- Doing this requires both development of mobile measurement tools to be used by citizens

  & the validation whether existing air pollution models can cope with dynamic measurements

Illustration of Persona

Used to define target audiences, ensuring you can "visualize" them

Value – Risk & Set-Based Design help manage risk & uncertainty in any innovation & transformation project

Public Sector

CERN — Hybrid Cloud PCP
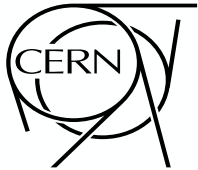
European Commission / smart@fire PCP / ENPROTEX Association — Smart Personal Protective System for firefighters

Private Sector

Imaging Technology — Product innovation: AR in Operating Rooms

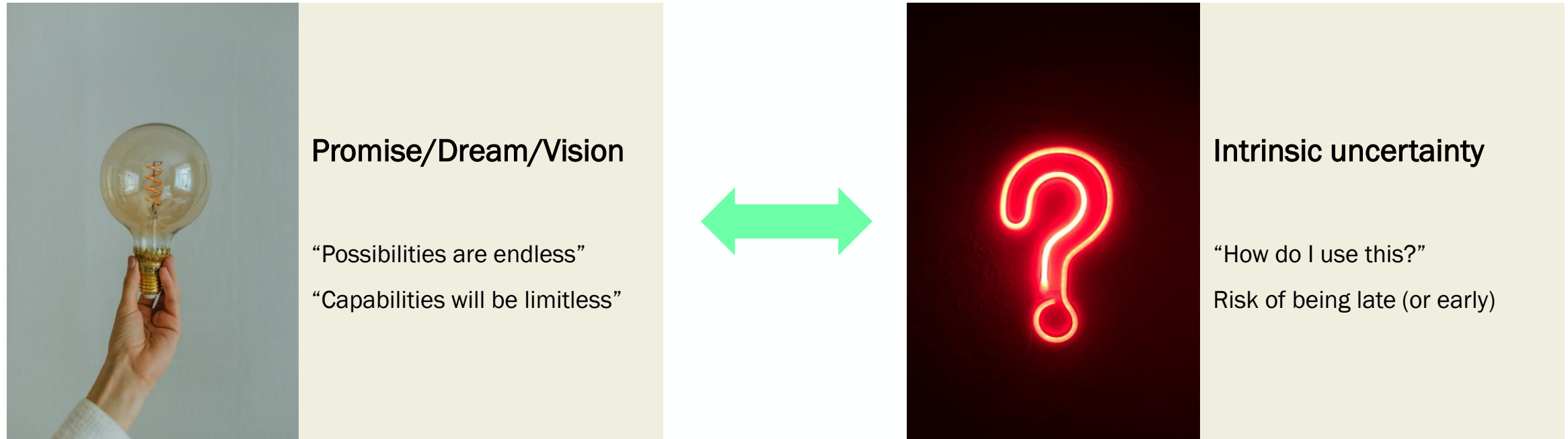Food Retailer — DWH transformation

Steel industry — Sustainability reporting: Defining CSRD-compliant setup

▶ New, upcoming technology, e.g. AI, brings both opportunities as well as threats
With the right methodologies, you can stay in control & leverage this tech in your organization, without lagging behind or having to take unnecessary risks

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