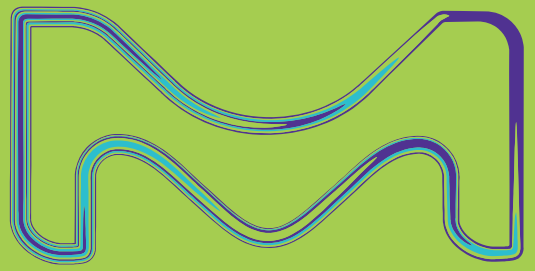
Data Analytics & Project Management

From Data to Insight

Miriam Schmid MBA, MSc
15-Nov-2022



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Data Analytics & Project Management

From Data to Insight

1 **Introduction**

2 **From Data to Insight to Impact**
Driving impactful decisions through collection, processing, deploying & scaled use of data

3 **Data Driven Decision Making in Project Management**
Framework and data foundations

4 **Use Case**
One example how to leverage data in project management

Introduction Miriam Schmid , MBA MSc

Career Journey

Since 2001 in Pharma R&D with intensive Project and Program Management experience

2021 - today **Global Head Project Planning & Insights Partnering**

Project Planning of all R&D programs and defining Project Management Methodology

2017 – 2021 **Team Leadership Study Planning**

2011 – 2017 **Program Leadership in TA Neurology**

Cross-functional leadership to development programs in Parkinson and Epilepsy

2001 - 2010 **Project Management in R&D**

Education Background

Executive MBA – RSM (Rotterdam School of Management) 2018

Master of Science in Life Science

Meet

Miriam Schmid

Head project planning & insights partnering

Data Analytics & Project Management

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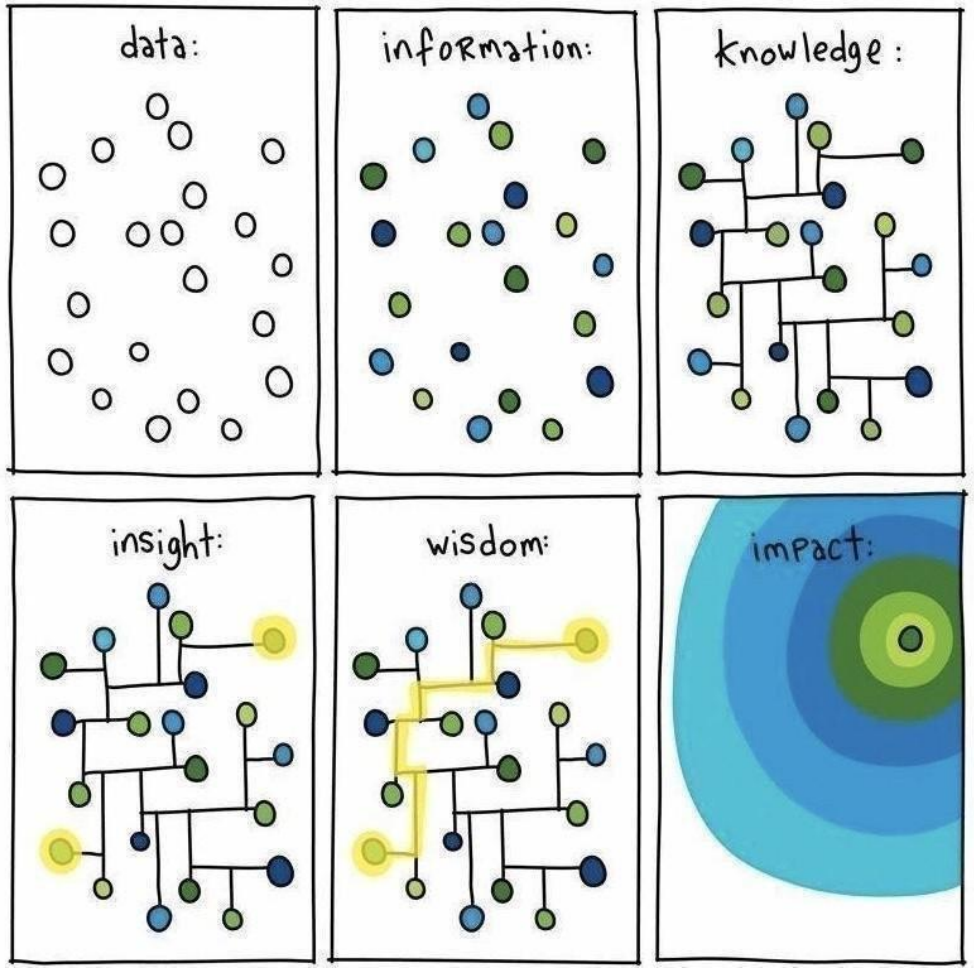
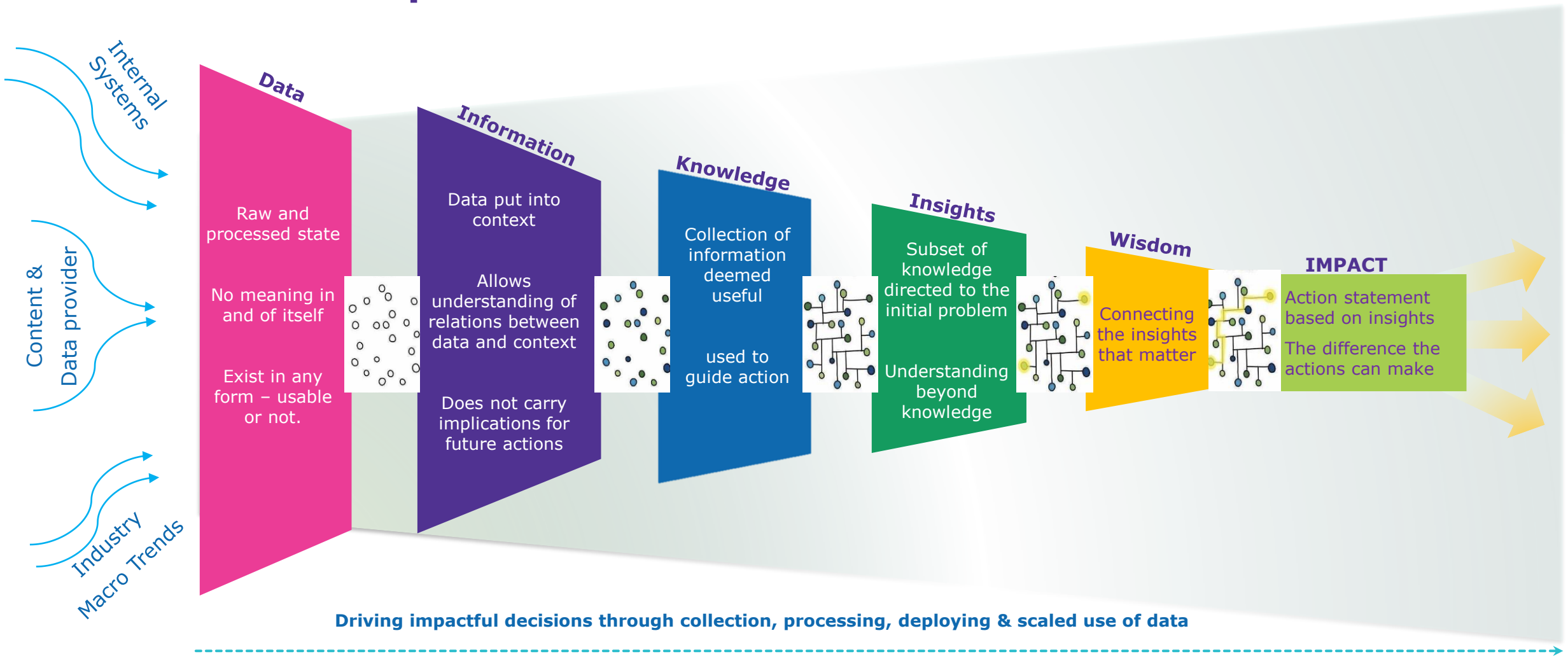
Data Analytics in Project Management
From Data to Insight to Impact



Data Driven Decision-Making

From Data to Impact



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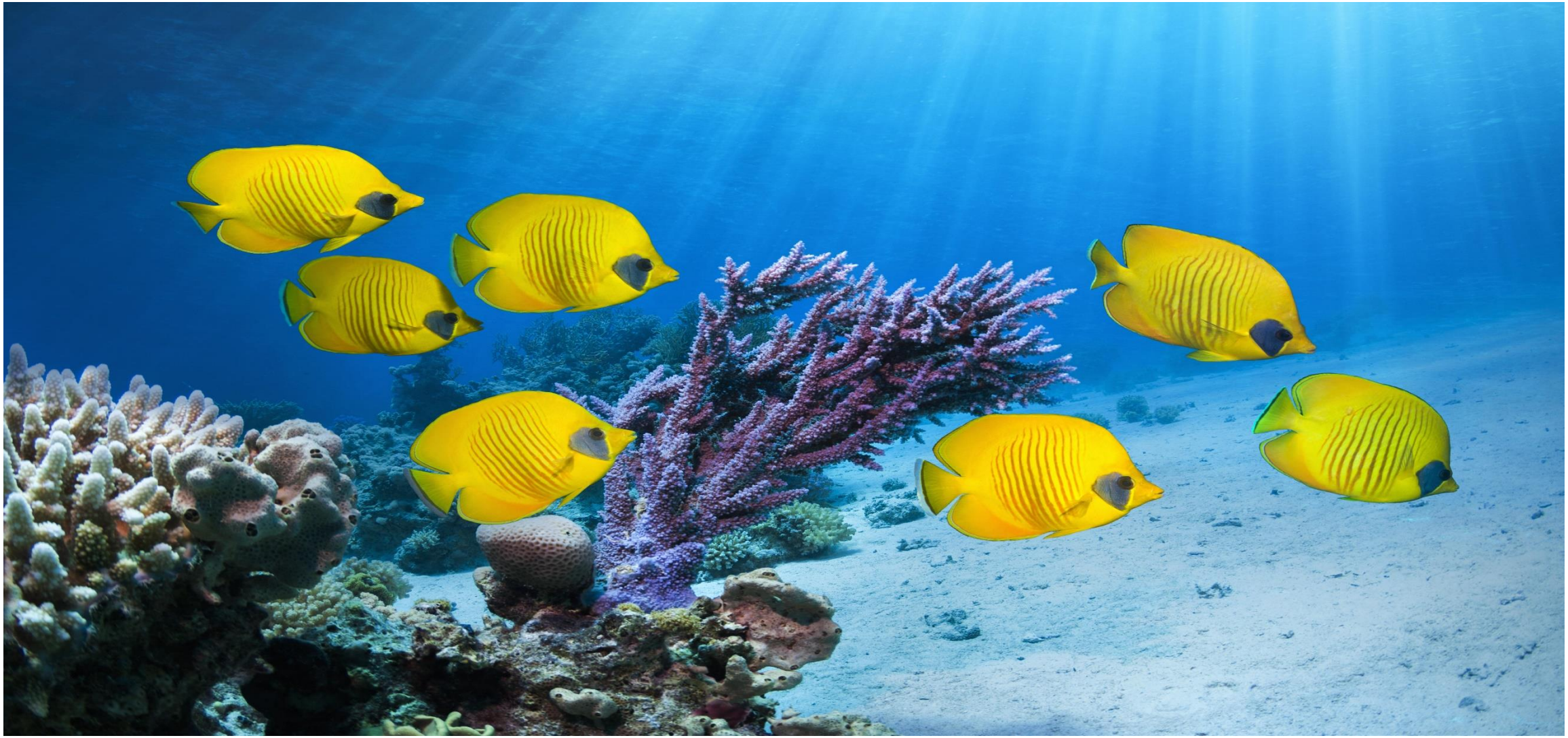
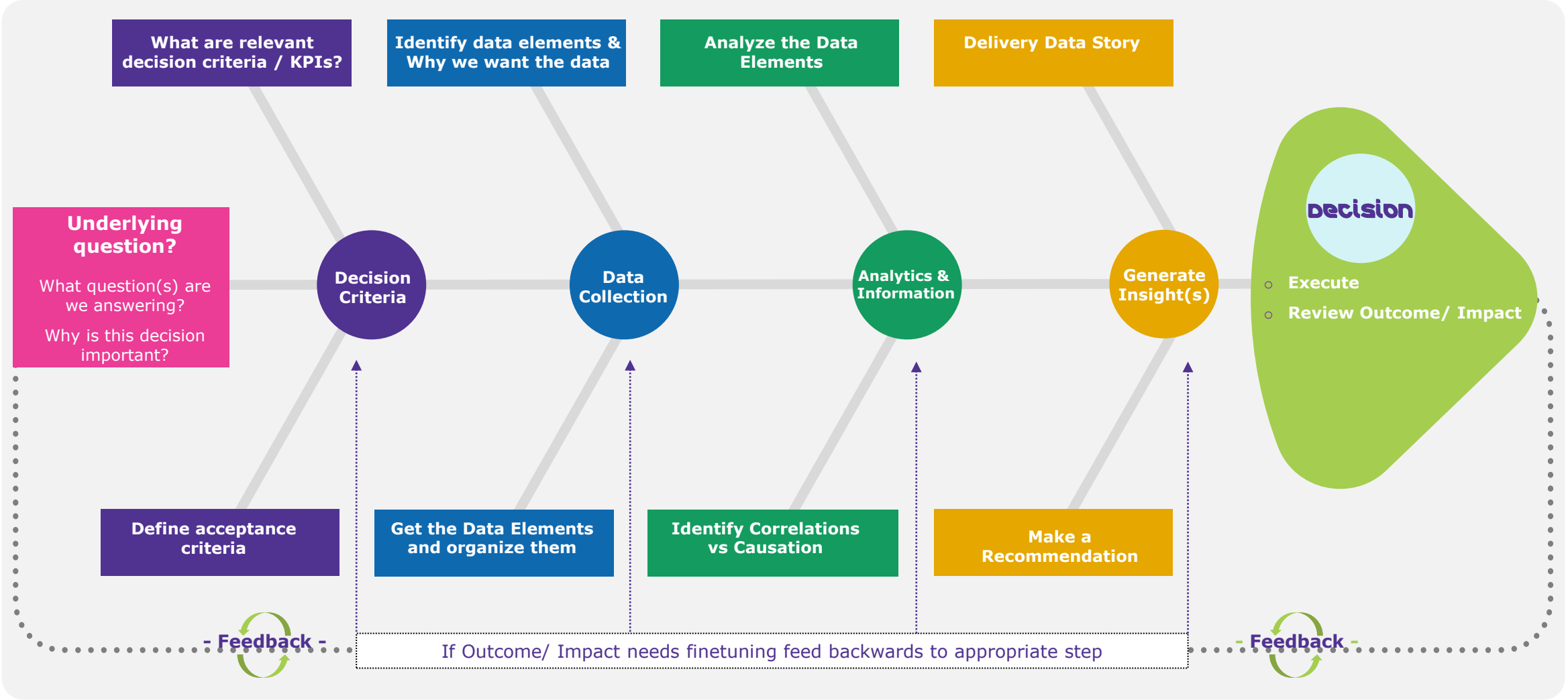
Data Driven Decision Making



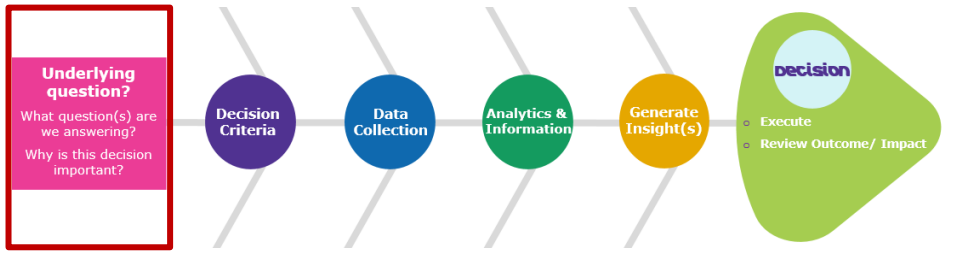
Data Driven Decision-Making

Framework



Data Driven Decision-Making

Identifying problems, question & assumptions



The WHAT and WHY!

1. All stakeholders work together to identify the issues, core questions or root problems, how to address them, and how to measure progress AND reach consensus about them.
2. Develop assumptions regarding how programs, organizations, systems will work.

To be tested and refined as part of ongoing data analysis and evaluation.

Situation analysis

1. Articulate the nature and extent of the problem / questions (statement)
2. Identify causes and contributing factors, and consider the direct and indirect consequences of the problem

Nature and Extent of the Problem

- What is the problem or issue?
- Which decision do we inform?
- For whom does this problem exist?
- What is the history of this problem?
- What projections are there about its future?

Causes and Contributing Factors

- Why does this problem exist?
- What are its causes?
- Are some causes more important or influential than others?
- What is known about what has and has not been effective in addressing the problem?

Consequences

- Why should this be considered a problem?
- What are the consequences of this problem for those who are affected by it (directly and indirectly)?

Scope definition

- Identify and define 'in scope' and 'out of scope'

Pathways

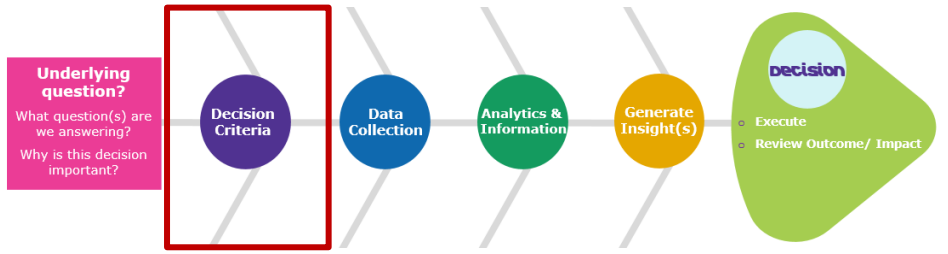
- Confirm assumptions
- Identify potential gaps

Expected output / outcome

- Short, mid and long term

Data Driven Decision-Making

Define decision and acceptance criteria



Define and/or select appropriate measures / indicators

The usefulness of data for decision making largely depends on:

1. **validity** of the data and
2. **degree** to which they accurately reflect the outputs and outcomes they are **meant to represent**

Questions to ask

- What is the appropriate output or outcome to measure?
- How can the output or outcome be measured?
- Who should or could provide the relevant information?
- Who is the decision maker at the end?
- On which parameters / criteria will the decision be made?
- When and at what interval should the output or outcome be measured?

Requirements on measures / KPIs

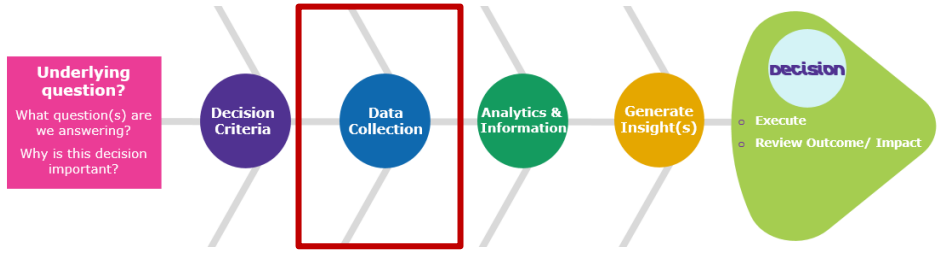
- Measures must be clear and standardized – enabling comparison over time and within and outside the organization / company.

Requirements on target values

- Realistic, based on industry benchmark, own history…
- Can also be set also later once baseline data are available.

Data Driven Decision-Making

Data collection



Data quality is key!

- Right information (**accurate**) at the right time (**timely**) in the most useful (**actionable**) and trustworthy (**complete**) form.

Identify

- Identify relevant data based on decision criteria

Sources

Determine all potential sources for desired data / information sources:

- Qualitative and quantitative
- Primary and secondary
- Internal & External
- Structure and unstructured…

Collect

- Collect and investigate data / information using multiple acquisition methods, legally and ethically

Archive

Store data / information in ordered form

- From Excel spreadsheet to complex multi-dimensional data warehouses
- Create indexes for better search
- Create a data model (describe data relationship)
- Document sources for final presentation

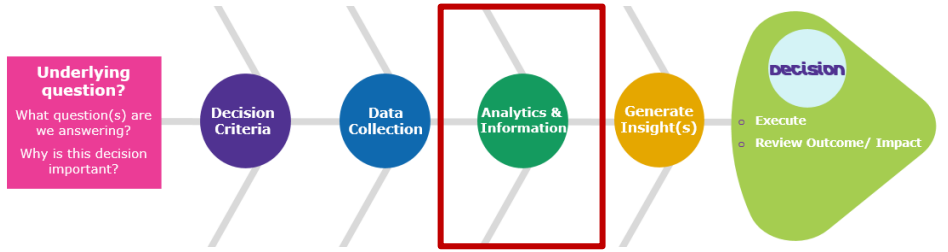
Gap analysis

Identify data gaps

- Relevant information for which no data is available
- Document gaps for decision making

Data Driven Decision-Making

Data analytics / information



Data cleaning

1. Identify and address missing data, duplication, errors and outliers
2. Model missing data

Quantitative analysis (QA)

- Mathematical and statistical modelling, measurement to understand
- Using tools to examine and analyze past, current and anticipated future events.
- Presents reality in terms of numeric value

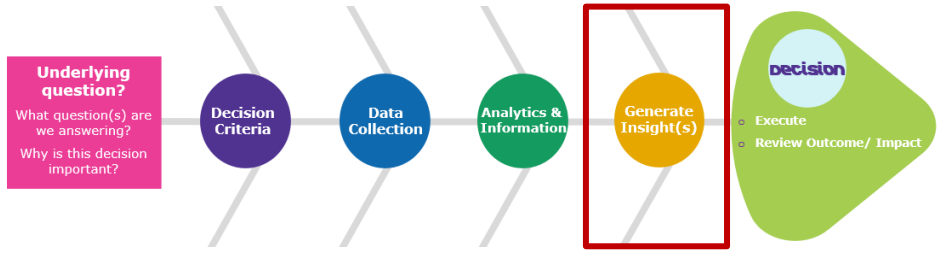
Qualitative data analysis

- Involves the identification, examination, and interpretation of patterns and themes in textual data and determines how these patterns and themes help answer the research questions at hand

Identify causations in the data to generate insights (versus correlations)

Data Driven Decision-Making

Generate Insights



Identify the audience

1. This determines how to interpret, communicate, and present the results / recommendations.
2. Who are the stakeholders (managers, funders who have to make decisions based the information you present). Create a stakeholder mapping table.
3. Who might also have an interest in the results if sharing beyond major stakeholders is permitted.

Build your data story

Make a **recommendation** or provide different **options**

Recommendation:

- Show data to explain recommendation versus alternatives

Different options:

- Show data for the same set of criteria per option, and make an assessment among different options based on data

Presenting results (final)

- Clearly, accurately, and objectively as possible
- Frame findings in terms of their strengths (evidence) and importance (significance)
- Include specific recommendations
- clearly supported by data analysis and results incl. potential timeline.
- Multiple options incl. their risks and benefits.
- Focus on actions that stakeholders have the power and resources to implement

Frequent & Optimal Communication

- Regular progress reports

Formats:

- Periodic updates / progress reports (in meetings, monthly status mail, newsletter…)
- Data Dashboards

Critical for success: Convey results in an understandable and useable way!

Data Driven Decision Making (D³M) - workstream

Multiple benefits can be created with D³M

What is Data driven decision making?

A decision strategy that uses data to inform business decisions (come to a decision or to identify options).

Data is positioned at the core of every decision to be made.

High impact decisions

- Create **competitive advantage**
- **Increase profits**
- **Reduce Costs**

Data Driven

- **Help** overcome biases

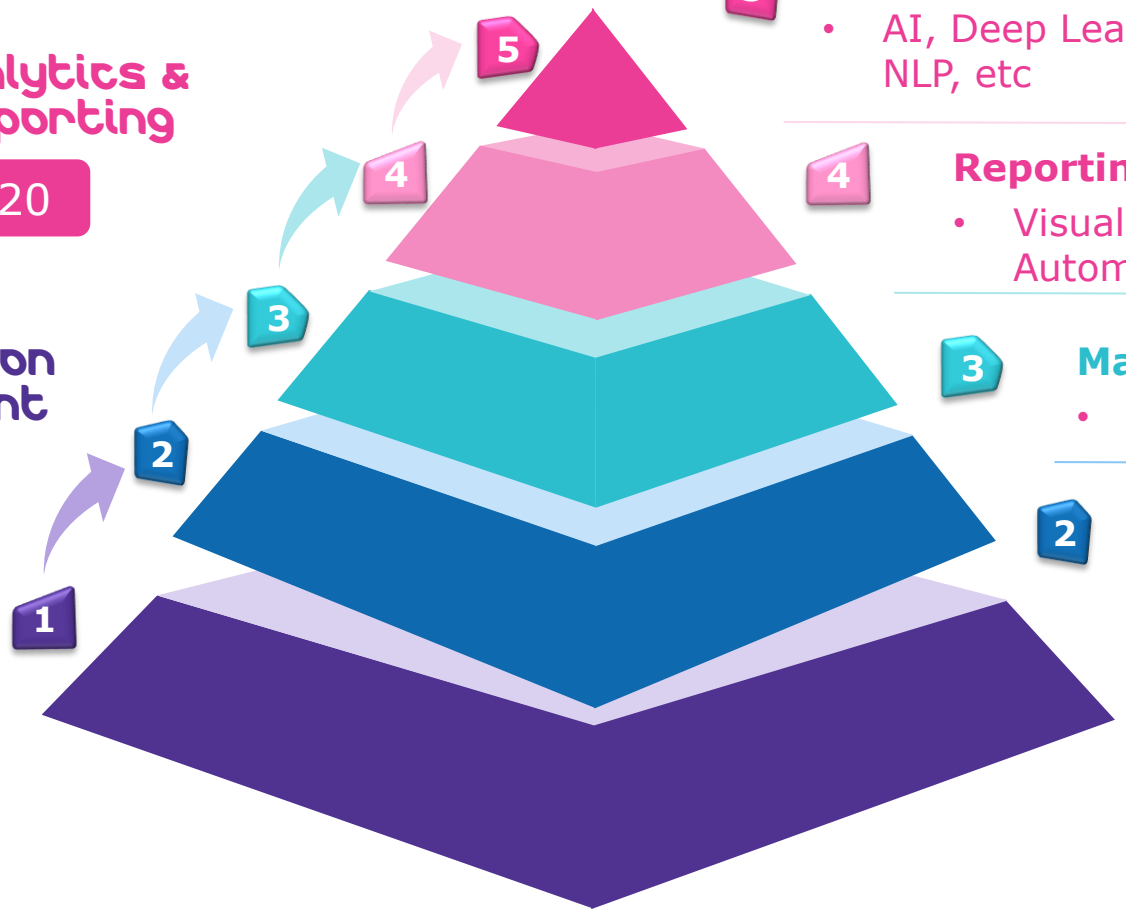
  Confirmation bias, asymmetric dominance, framing effect, congruence bias, cognitive dissonance…
- **Reduce** Risks
- **Faster** information processing
- **Train** gut-feeling with data
- **Better prediction** of the future
- **High impact** decisions

How we translate data into insights
Data as Foundation of any Analytics

Analytics & Reporting

80 to 20

Data Foundation & Management



5 Data Science
- AI, Deep Learning, Machine Learning, Statistical Modelling, NLP, etc

4 Reporting & Business Intelligence
- Visualization, Advanced Analytics, KPIs, Workflow Automation, etc

3 Master Data Management & Governance
- Stewardship, Data Quality, Cleansing, etc

2 Data Engineering
- Pipelines, ETL, EDW, EDL, ESB, etc

1 Data Acquisition
- IoT, Social Media, ERP, Legacy Data Stores, Operational Systems, etc.

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what if…

… data from past projects can tell about the progress and the demand needed of a new project?

Rapid Decision Tool
Problem Statement

Problem Statement

Inability to estimate drug development program duration and costs with limited information while quick decisions are needed, during high ambiguity.

Solution

- Building a tool to predict costs and duration based on historic pattern
- Predictive model with limited co-efficencies
- Linear regression model
- Fit for purpose accuracy
- Tool giving immediate information

Rapid Decision Tool

How was the tool build?

Data Foundation & Management

Actual, internal data used

- Actuals, and observed values on actual costs and actual duration since 2014
- Data from roughly 31 different projects

↳ **Data leveraged from a PPMS** set-up on a standardized methodology

- Data captured under standard project management methodology, standard master data
- Data governance and high data quality standards

↳ **Data cleaning & missing data** handling

↳ **Mapping data** to input variables

↳ **Identify co-efficiency variables**

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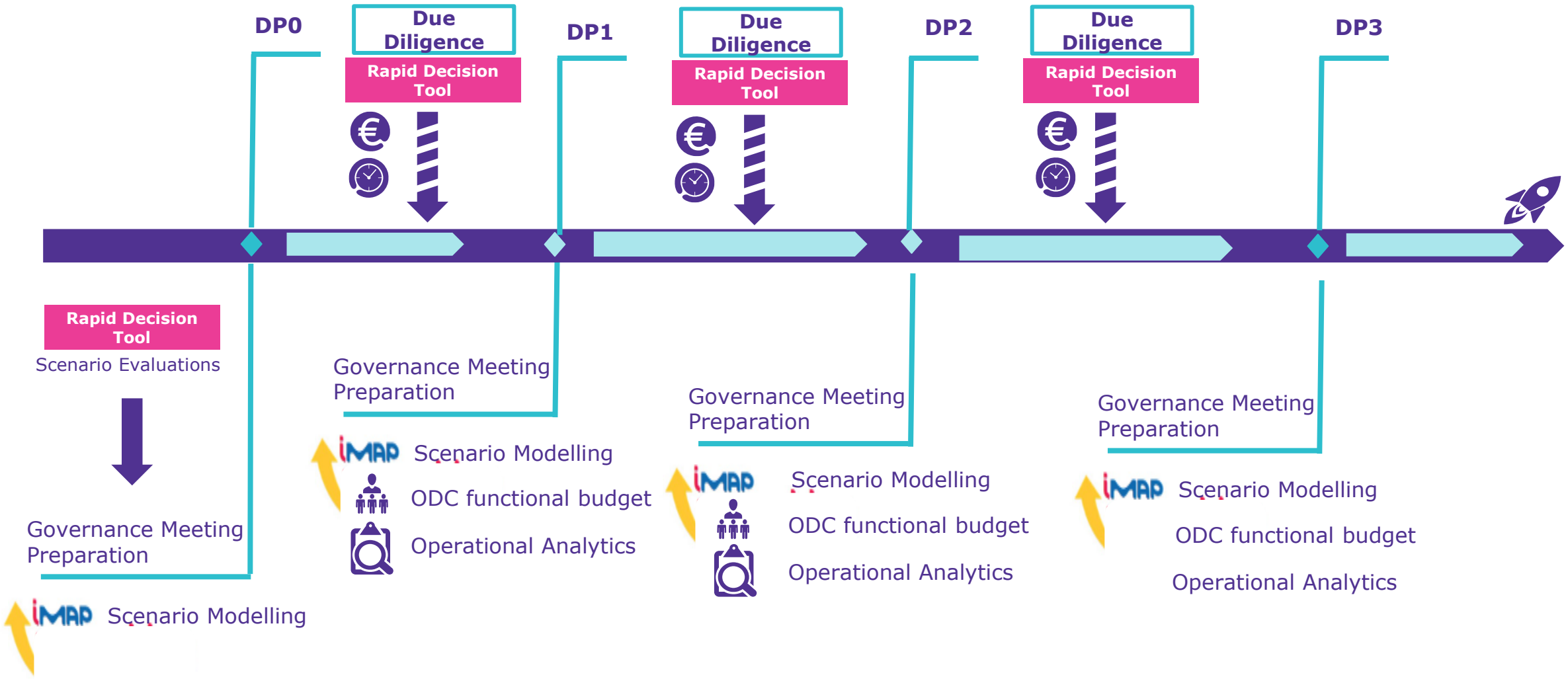
Development journey

Decision continuum – fit for purpose decision tool



Rapid Decision Tool
How does the tool work?

- Actual **data sourced from iMAP**
- **Data processing** within palantir
- **Linear regression model** based on actual costs per phase and phase durations
- **Variables kept to a minimum**: Phase, patient number, number of sites,Therapeutic area, entity (NBE/NCE)…
- Output shown visually as box-plot for costs and timelines
- **Continual learning of the model:** everytime new actual data is uploaded to palantir
- Model can only be as good as the input data – limited data available based on low mass pipline