

84th Advisory Forum meeting
Virtual Meeting, 08-09 June 2022

Thematic Discussion on Systematic Literature Review and the use of AI

Where are we and how can we jointly progress

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Knowledge Innovation and Partnership
Management Unit



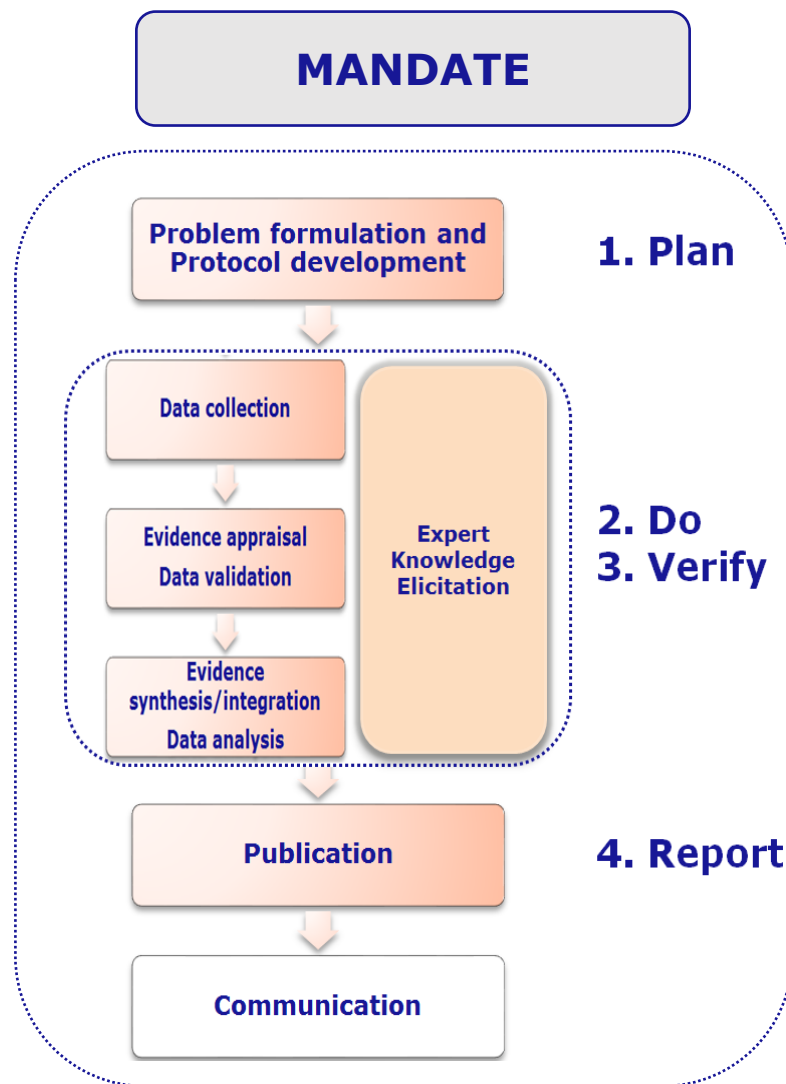
Trusted science for safe food

- 83rd AF meeting
 - SPIDO roadmap ON AI which was presented
 - SC work programme
 - execution of systematic reviews in risk assessment
 - partnering for the execution of systematic reviews (an EU reference centre)
 - the role of Systematic review based on the needs of the 'clients'
 - the automation of the SR process
 - where are with the automation of systematic review.

- The role of Systematic review in risk assessment
- Use of SR key principles for the use of evidence in the RA process
 - The evolution
 - The guidance
 - The implementation framework
 - The process integration (Quality)
 - The digitalisation of the process
 - The future (is now!)
- The opportunities for automation with examples brought by the Member States
 - Some EFSA current and planned activities
 - Germany AI4NAM
 - Slovenia CAFETERIA
 - Poland/Norway REFSA
- Discussion

The role of Systematic review in risk assessment

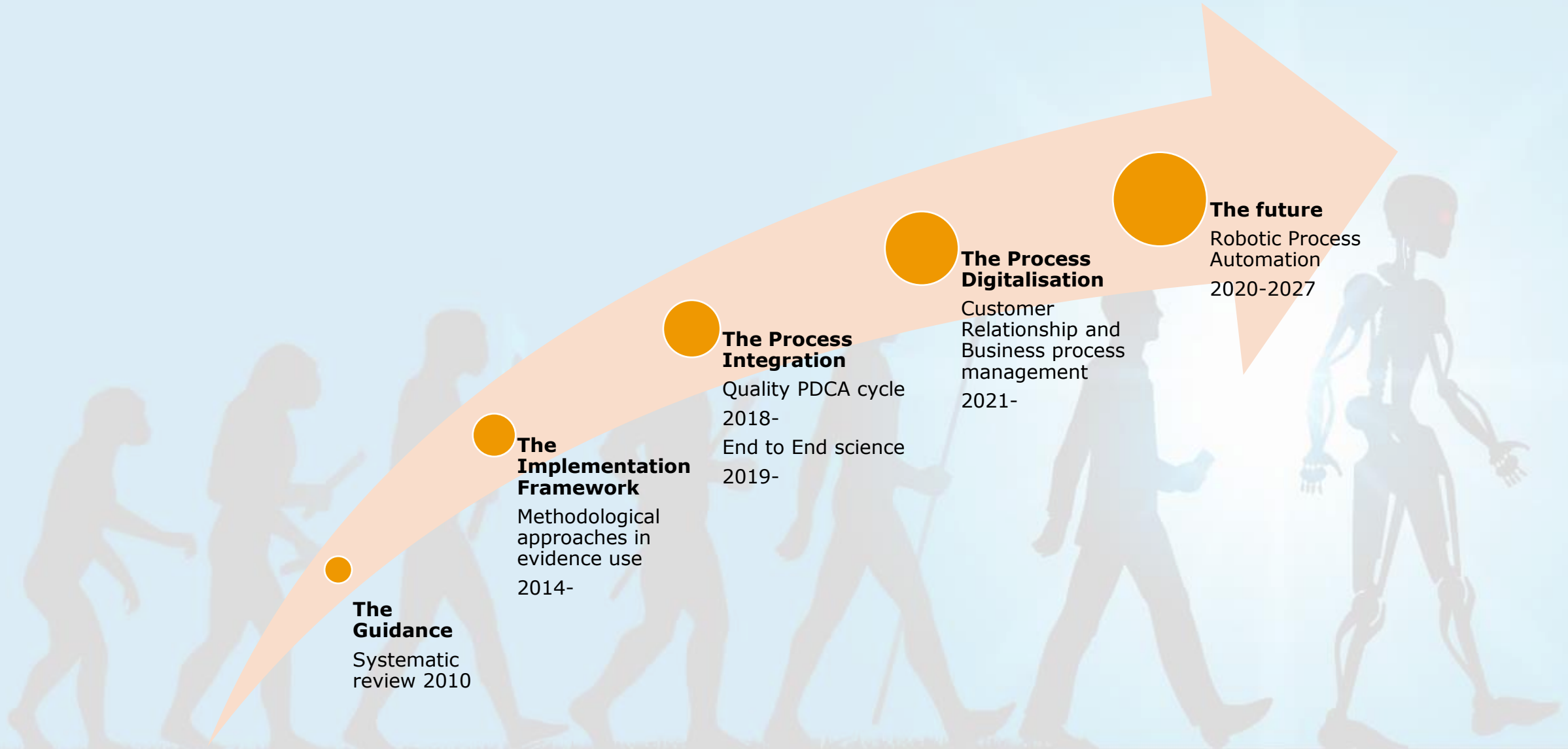
Risk assessment and Systematic review



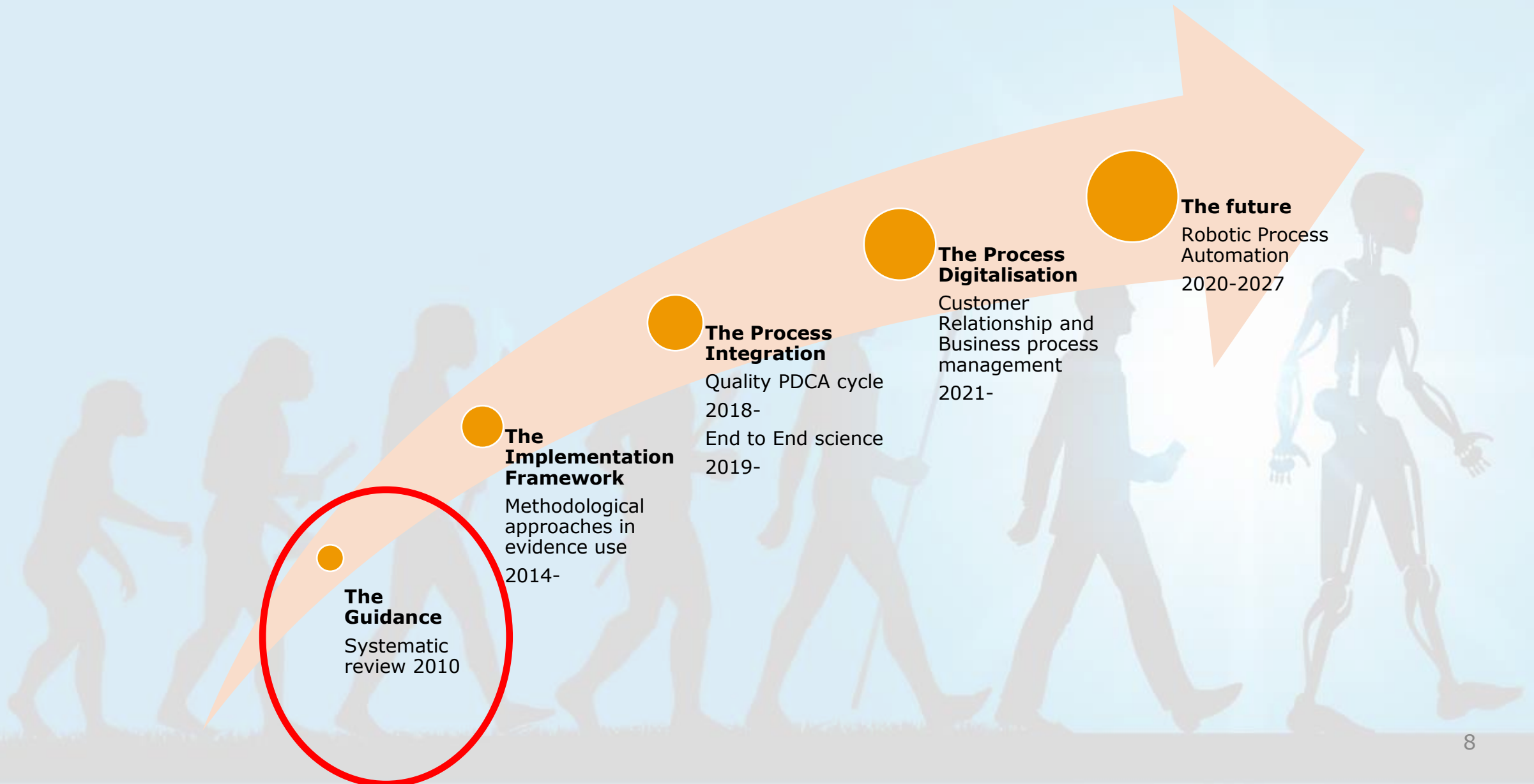
The evolution of Systematic Review



The evolution



The Guidance



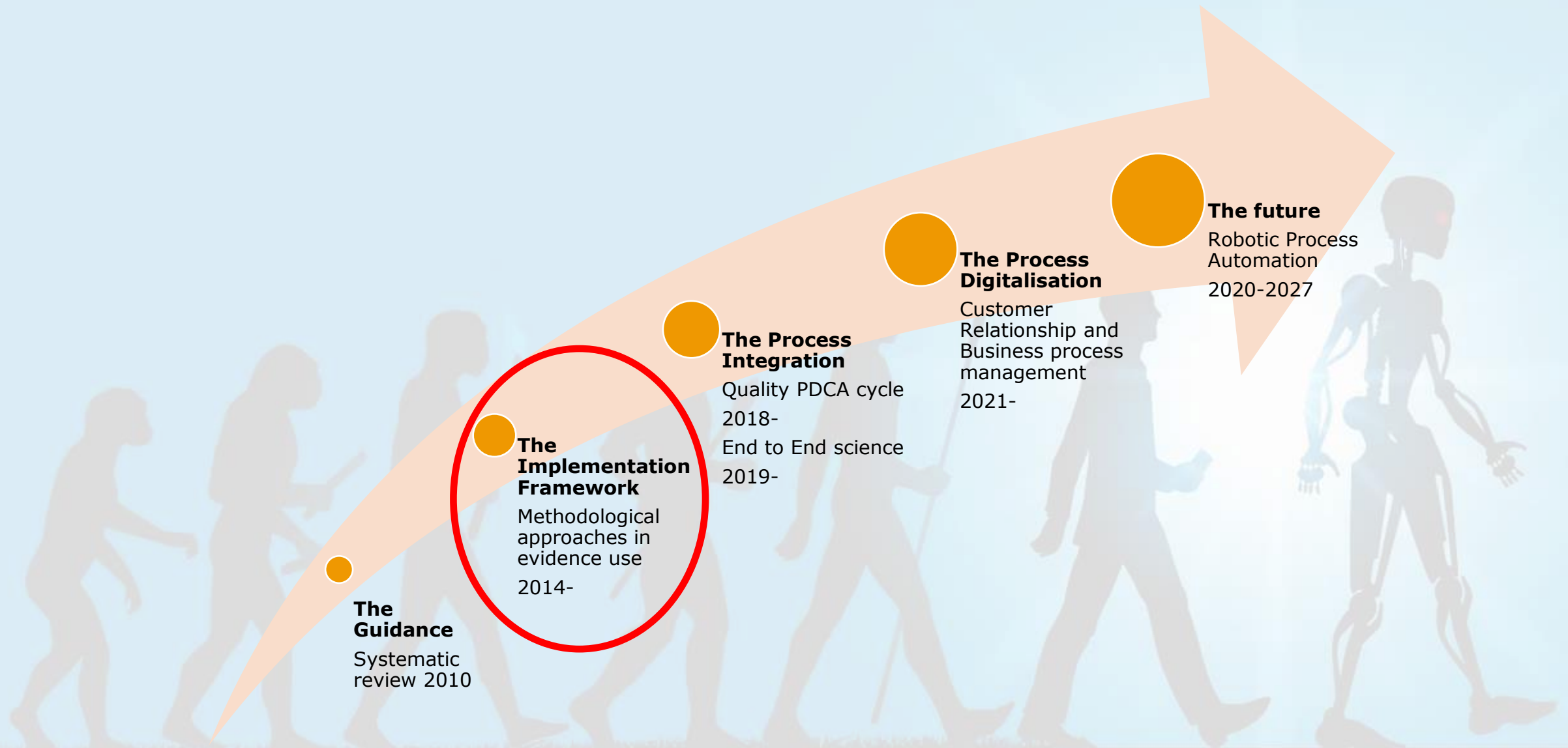
- ☐ Advantages of SR:
 - ✓ Methodological rigour
 - ✓ Transparency
 - ✓ Reproducibility
- ☐ Guidance on:
 - ✓ assessing question suitability for SR
 - ✓ determining the need for SR

when dealing with broad food and feed safety policy problems

- ☐ For all EFSA assessments (regulated products and not)

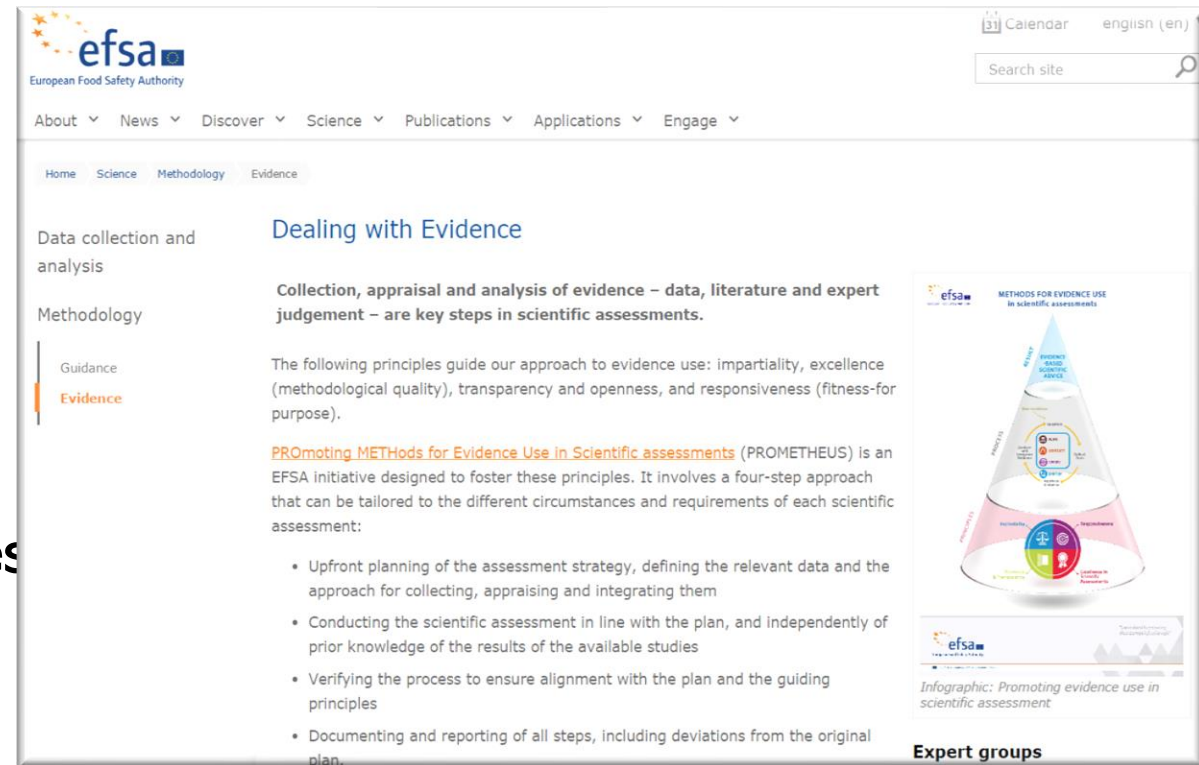


The Implementation Framework



The Framework

1. Question formulation and protocol development
2. Searching for studies
3. Selecting studies for inclusion
4. Collecting data from included studies
5. Appraising individual studies
6. Evidence integration
7. Interpreting results in light of uncertainty
8. Presenting data and results



The science of combining apples and oranges: Joint colloquium on evidence integration in risk assessment

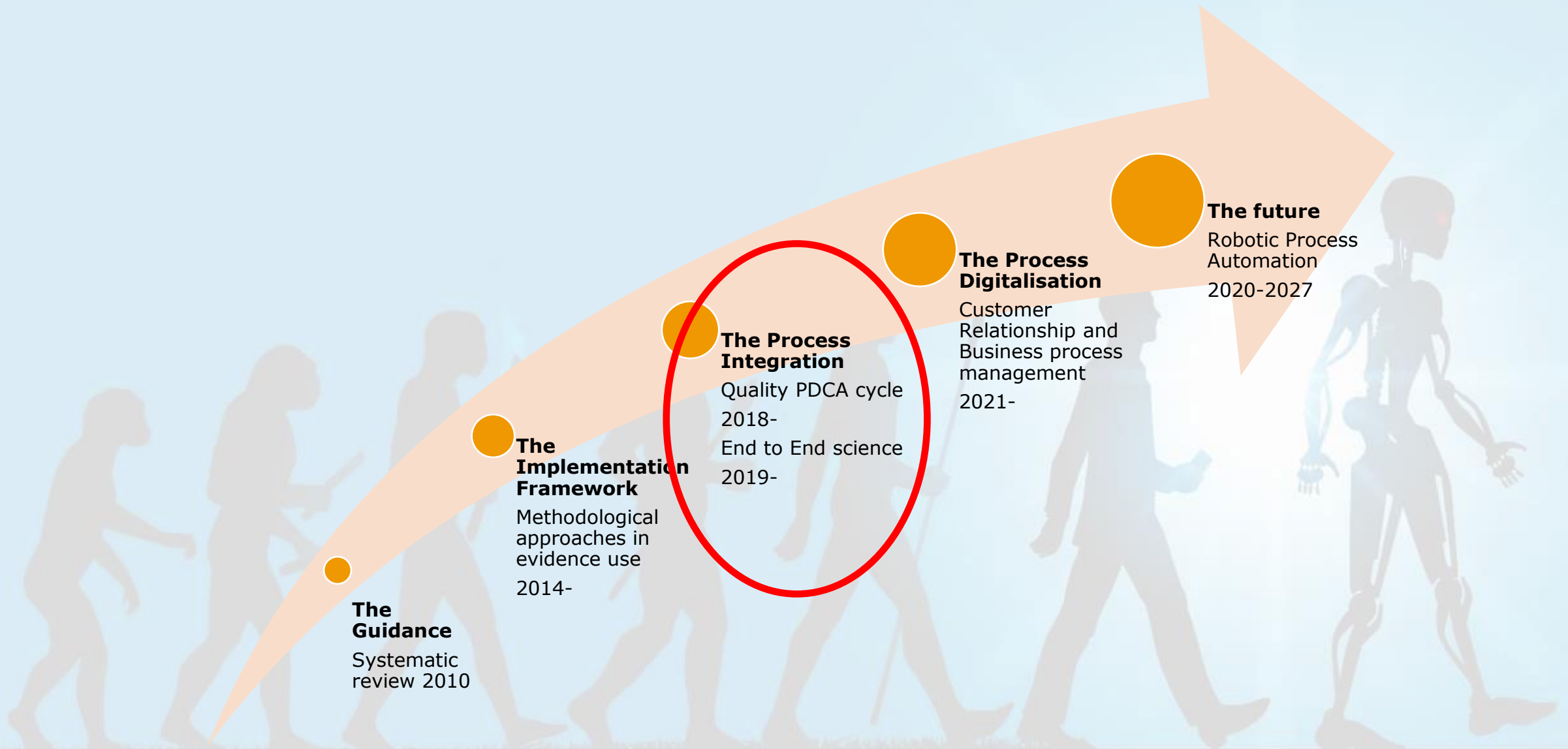
Location: Lisbon, Portugal Date: 25 October 2017



EBTC EFSA workshop on AOPs

2-3 October 2019. EBTC organized, together with the European Food Safety Authority (EFSA), a two-day expert meeting on applying evidence-based methods to the development, assessment and implementation of adverse outcome pathways (AOPs).

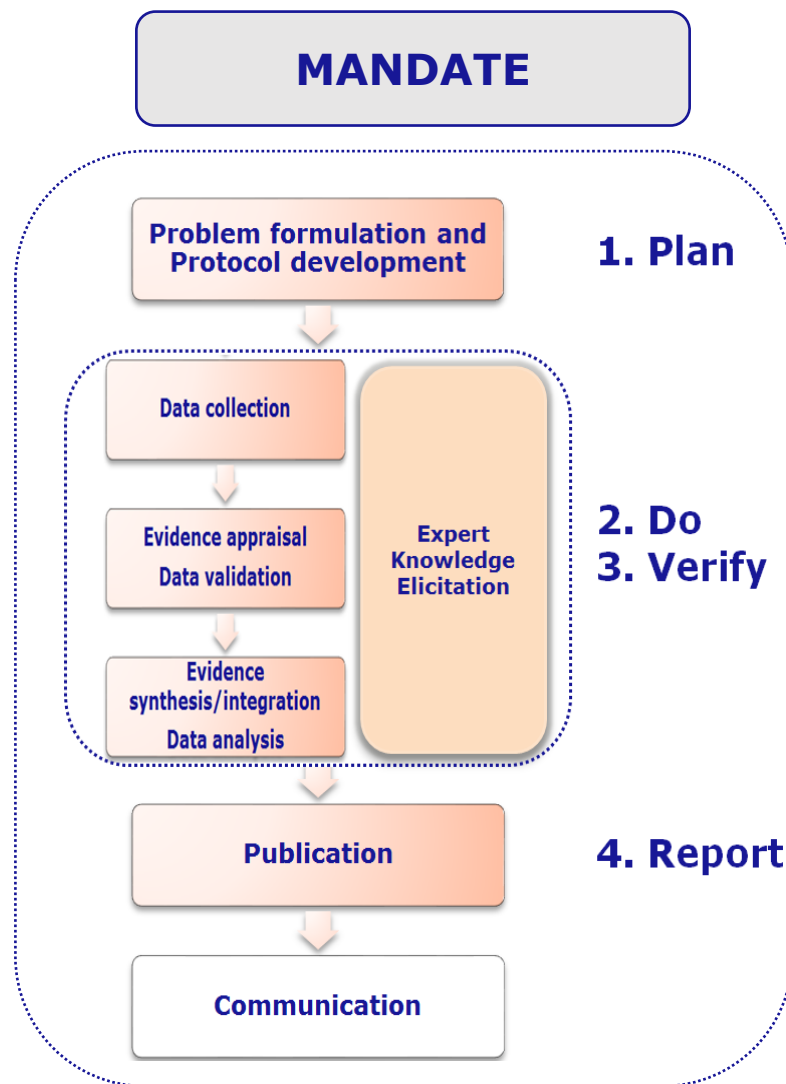
The Process Integration



Integration into quality management



Integration into Quality Management



End to End science process

Transparency Regulation and stakeholder engagement

01

Mandate
Intake

02

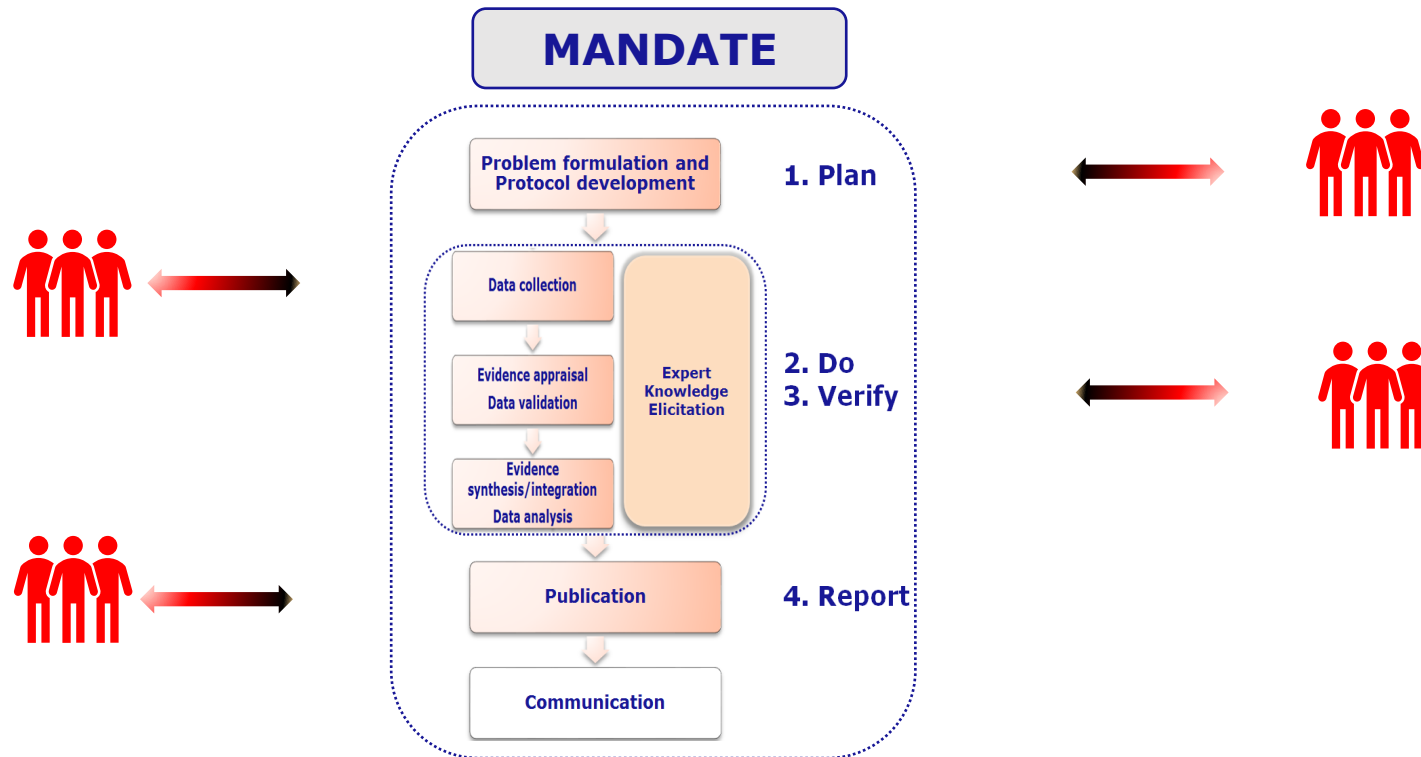
Preliminary
activities to Risk
Assessment

03

Risk Assessment

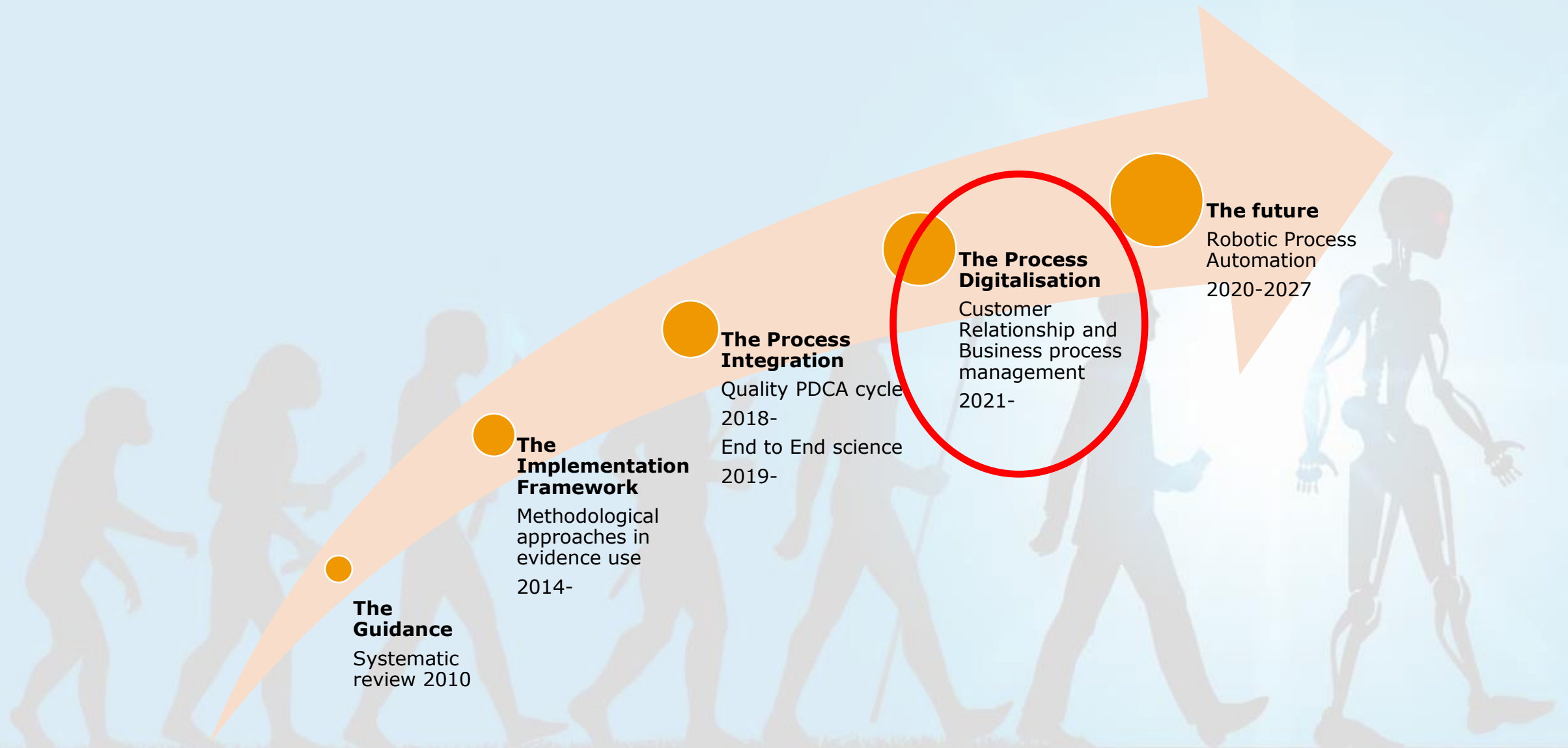
04

Output
publication &
dissemination



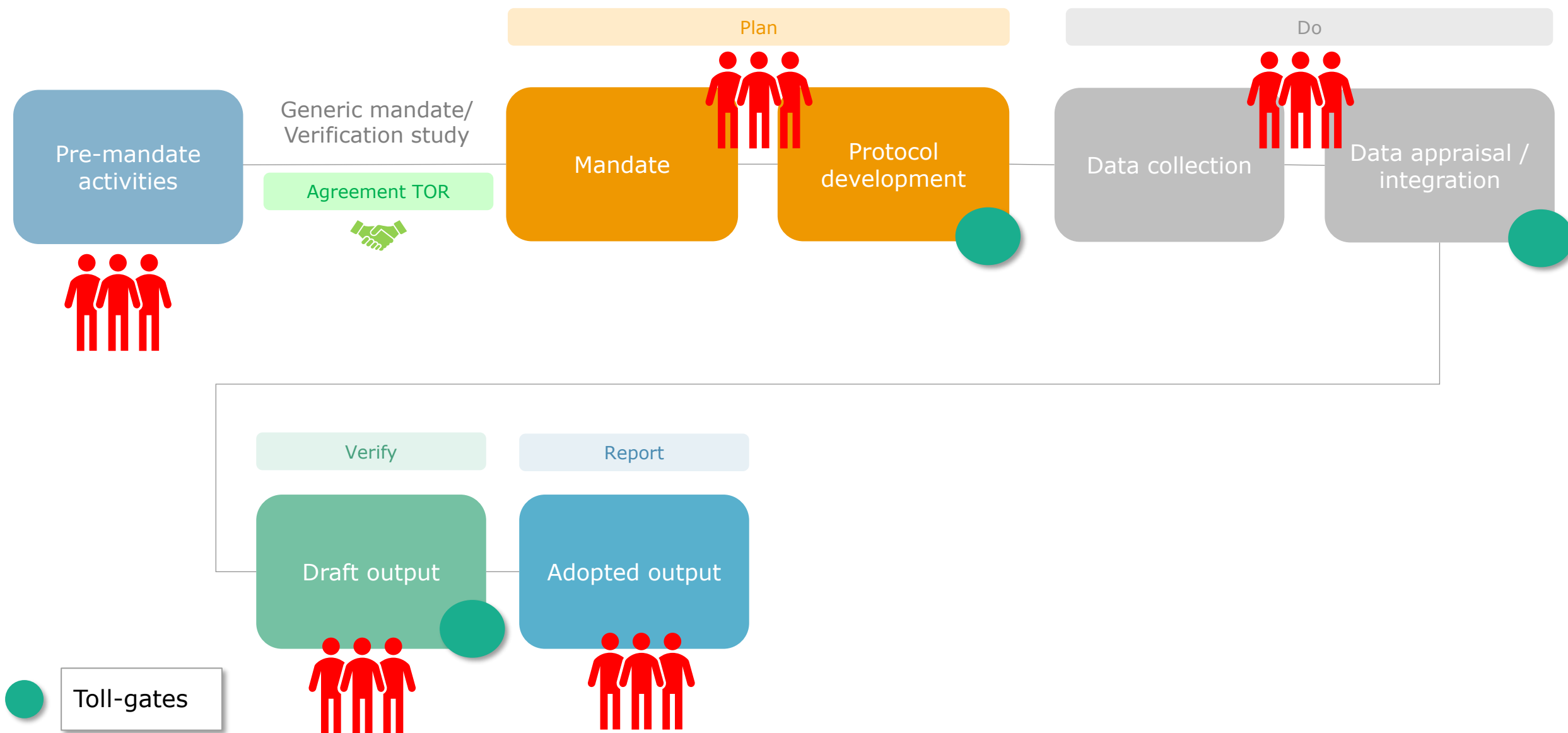
The steps shown may **overlap** each other. For Example: the preliminary activities can begin immediately after receipt of the mandate.

The Process Digitalisation

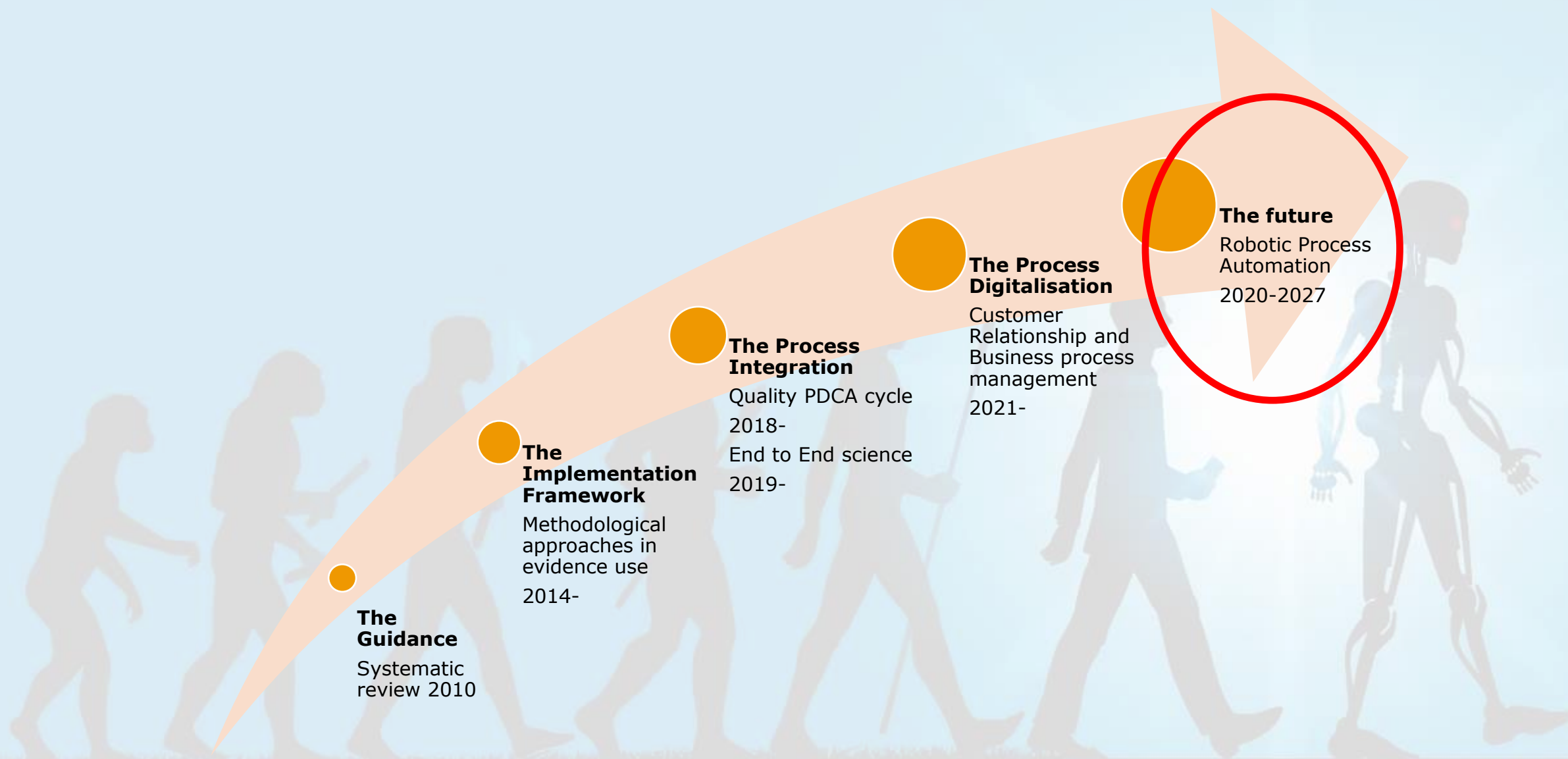


- DistillerSR: Systematic Review (SR) Software accessible via web
- Designed having in mind the SR steps and rules
- It can also be used for single steps of the SR process
- Essentially it allows to:
 1. Manually and Automatically (AI) Screen papers by title and abstracts
 2. Manually Appraise papers
 3. Manually extract data from papers

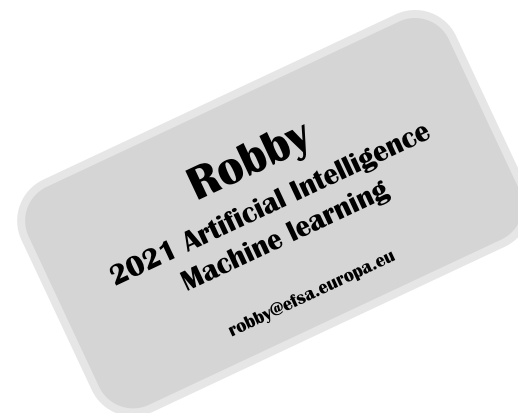
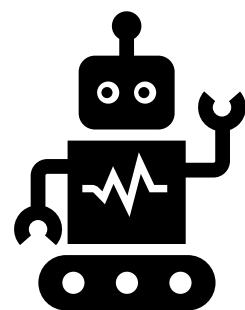
Business Process and Customer Relationship Management cloud solutions



The Future (is now)



The future: Robotic Process Automation



Think big

Start small

Little parts of the process that can be automated using
AI/ML

EFSA Current Activities in Systematic Reviews



Question Formulation and Protocol Development

Searching for Studies

Selecting Studies for Inclusion

Collecting Data from included studies

Appraisal Individual Studies

Synthesizing Data

Interpreting result and drawing conclusions in light of the identified uncertainties

Presenting data and results



Topic Modelling



AI Tool for Abstract Screening: savings of 50%



a) AI Tool for Data Extraction using Named Entity Recognition (with US-EPA)
b) Build an EFSA Ontology deriving EFSA historical data from DistillerSR

EFSA Activities ready to start

Data
Pipeline
(with EBTC)



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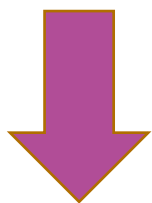
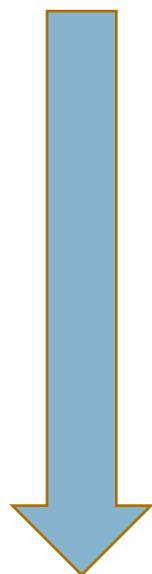
Presenting data and results



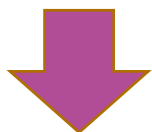
Automate Risk of Bias evaluation

MS contributions on stage today

AI4NAMS



REFSA



Question Formulation and Protocol Development

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Cafeteria

- The need for collaboration and opportunities
 - Partnering/collaboration on Execution of SR and sharing SR's
 - Sharing finished, ongoing, planned protocols and SR's
 - Sharing and co-developing automation
- The first step to the 'Common service/EU centre' by setting up a virtual community on 'SR'
 - Who should populate this community?



Data
Pipeline
(with EBTC)

July 8th mini workshop. setting approach: how to exchange info + content of info

Sept 20th mini workshop. market scan of what is existing in terms of standard and tools (proprietary and open source)

Oct 19th mini workshop. Prepare for workshop

Dec 5th – 6th – 12th – 13th **Workshop**. define approach to come to requirements for standards for data exchange and data definition, recommend roadmap for implementation and maintenance



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SAVE
THE
DATE!

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