



TOWARDS IMPROVEMENT OF **RUMINANT** BREEDING
THROUGH **GENOMIC** AND **EPIGENOMIC** APPROACHES



TEKNOLOGIRÅDET
DANISH BOARD OF TECHNOLOGY

Fælles om
samfundets
udvikling | Creating
society
together

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RUMIGEN concerns selection in different bovine breeds that are under genomic selection

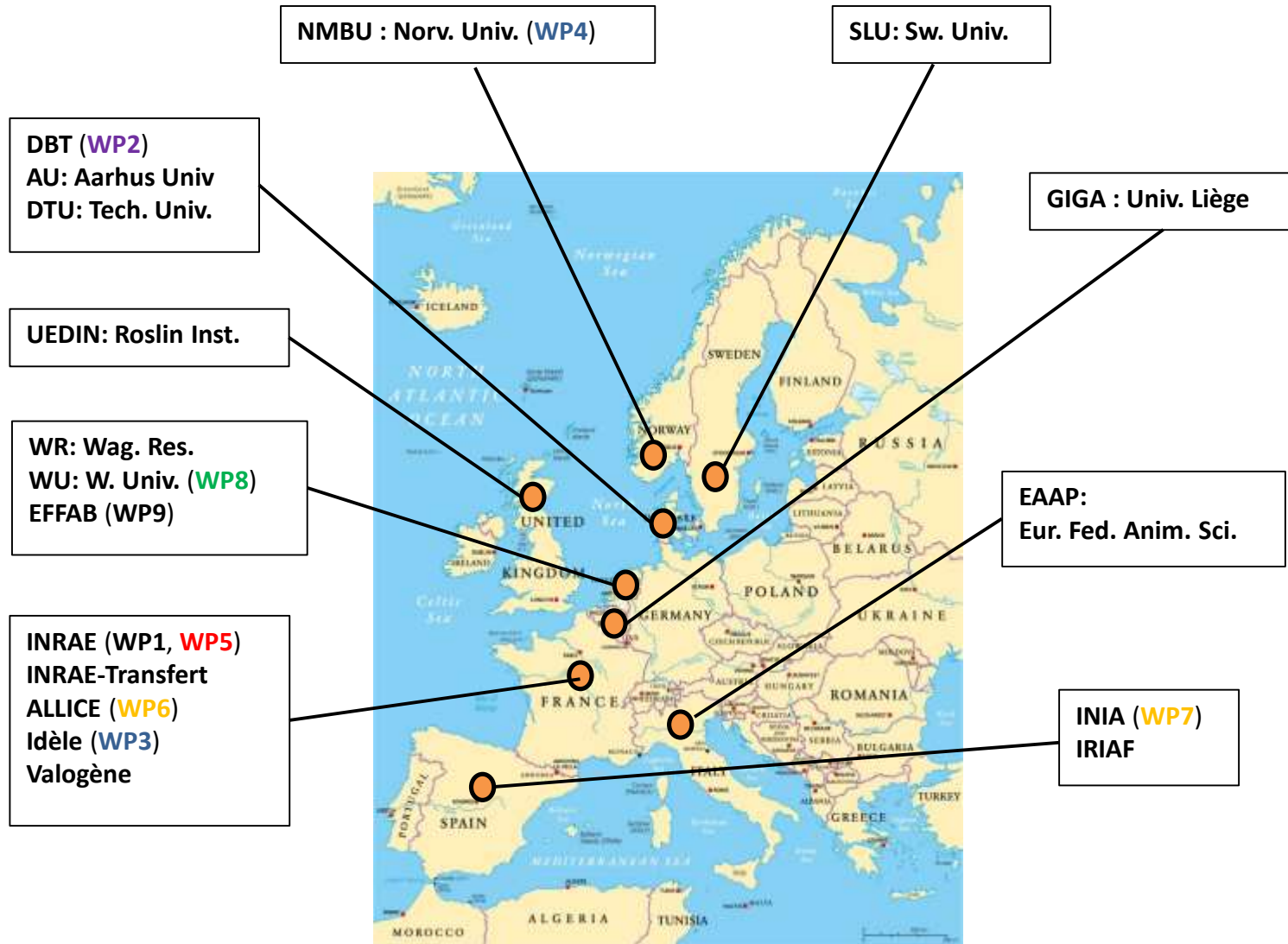
The main objective is to improve quantitative genetic tools in different bovine breeds (Holstein) through the addition (i) of new traits*, (ii) epigenetics data and (iii) potential use of new breeding techniques (GE: genome editing).

*: genetic diversity, adaptation to new environments and/or climate change (to improve efficiency, sustainability and resilience)

With, also an important Humanities and Social Science (HSS) lever, to evaluate societal acceptability of New Breeding Techniques (NBT) but also breeding strategies in general: co-construction of new breeding schemes.

RUMIGEN – Consortium – 9 countries – 18 Partners

9 countries = Different environmental conditions // 18 Partners with mixed profiles (academic & breeding organizations)



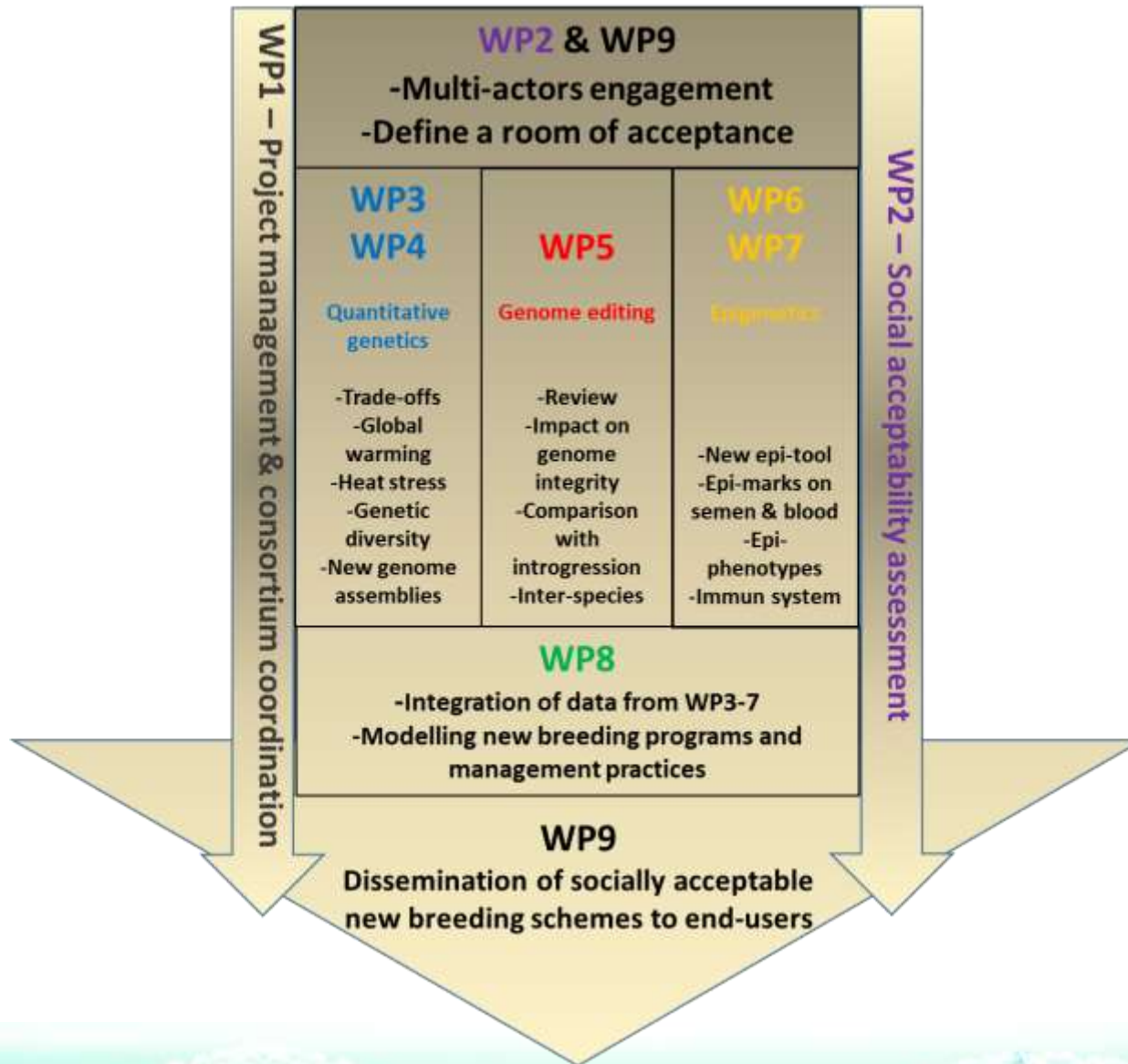
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Historical Context:

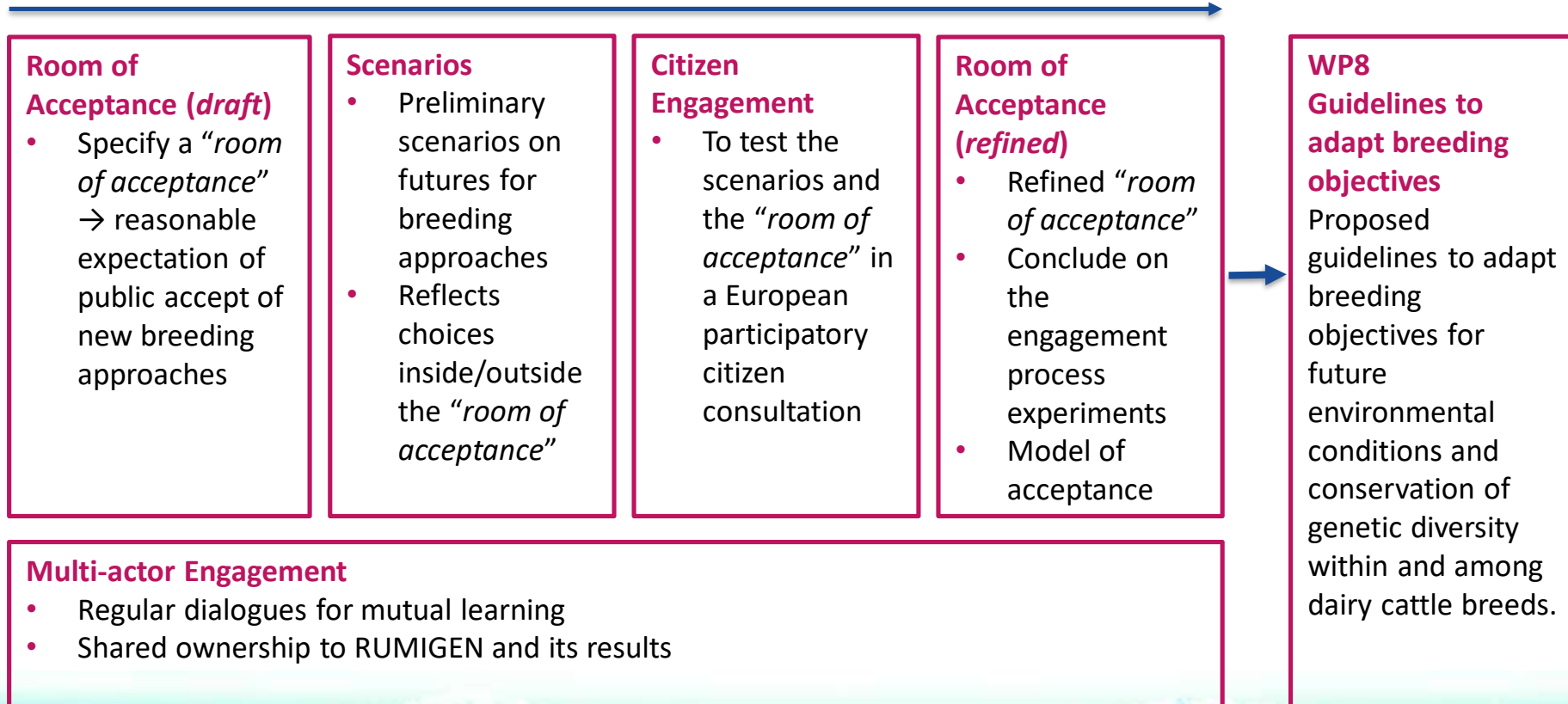
- **Selective breeding/Genomic Selection (GS) – Still doing and have been done since we domesticated animals**
- **Transgenic Organism/Genetically Modified Organisms (GMO) – Taking a trait(s) from a different species and inserting it into another organism/species to achieve a desired result (1970s - Today).**
- **CRISPR/Cas9 – Genetic engineering technique allowing highly precise editing of existing genes to be removed and/or new ones added (2010s – Today)**

The overall objective of WP 2:

to ensure that the outcomes of RUMIGEN, in terms of new approaches to breeding, are acceptable as seen from the viewpoints of stakeholders and citizens in Europe.

The specific objectives

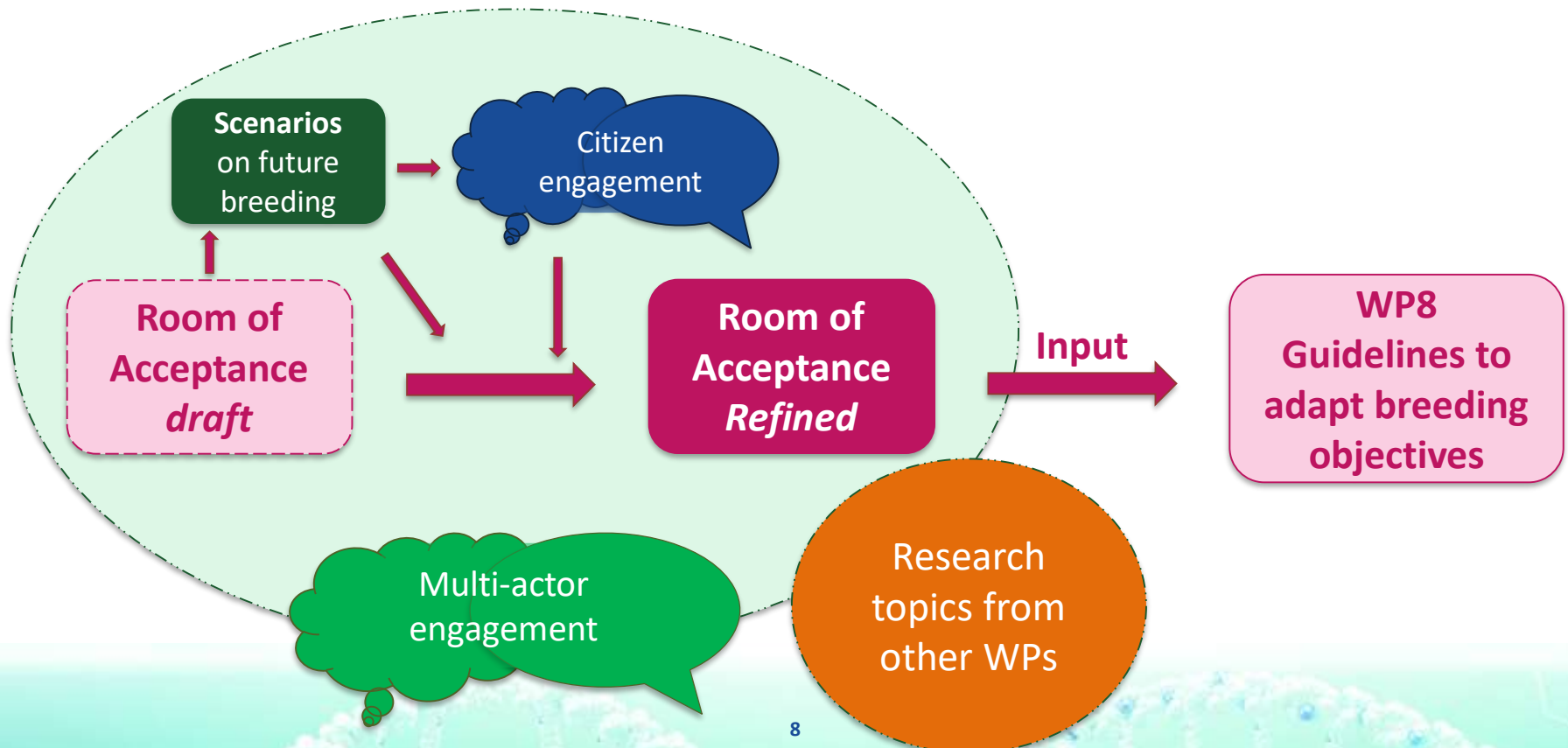
Timeline



Stakeholder Involvement

WP2 organizes half-yearly events (webinars/workshops) to ensure insights from multi-actors, supplied by engagement activities such as citizen consultations.

Multi-actor involvement in all steps



The Role of DBT:

- **Build upon previous work regarding consensus on the usage of Genetic Engineering**
- **Figure out whether we should renew the societal contract on these matters**
- **Function as a mediator between industry and society**
- **Provide guidelines for the European Unions policy on the application of new genomic approaches to breeding**