by numerical investigations contrasted for speed, replicability, and robustness with the sustainability of the Seas case study (Figure 2). The success of ROBHOOT would represent a breakthrough in the current discovery computation with direct application to sustainability of ecosystems and beyond. It exploits eco-evolutionary biology-inspired computational capabilities of evolving traits and interactions to discovery and transfers their properties to natural ecosystems. The combination of rapid, data heterogeneity and cooperation for discovery computation based on open-source languages will lead to fast implementations of the demonstrators with high flexibility that will permit a rapid transit to the public (Impact section).

Table 1.4a: Critical risks for the research approach

Description of risk	**Objective**	**WP**	**Proposed risk- mitigation measures**
Evolutionary semantic algorithms insufficiently developed: Medium	2	WP1	Use traditional non-semantic genetic algorithms to infer data connections.
Multilayer metrics accounting for spatiotemporal patterns along many datasets insufficiently developed: Low	2	WP1	Implementation of more standard complex networks metrics to characterize data knowledge discovery.
Low number of training data available: Medium	2,3	WP2	Alternative methods focusing on matrix decomposition methods.
Automated evolutionary-inspired expressions for causal knowledge discovery insufficiently developed: Medium	2,3	WP2	Symbolic regression methods to full automation for causal discovery accounting for evolutionary rules.
Eco-evolutionary dynamics of multiple traits in species-rich ecosystems insufficiently developed: Medium	1-4	WP3	Mean-field approximations using classical ODE systems and novel universal differential equations for scientific machine learning.
Evolutionary neurobiology-inspired federated networks insufficiently developed: Medium	1-4	WP3	Spiking neural network models as alternatives to evolutionary neural biology-inspired algorithms in federated networks.
Cooperative forecasting mixing eco-evolutionary dynamics and neural nets in large scale federated networks insufficiently developed: Medium	1-4	WP3	Mix eco-evolutionary dynamics models with less alternative neural nets models working a smaller spatiotemporal scales.

2 Impact

2.1 Expected impact

- **Scientific and technological contribution to the foundation of a new future technology**: ROBHOOT targets novel approaches towards sustainable ecosystems. One of the tasks in WP3 focus on the discovery of novel evolutionary neurobiology-inspired algorithms to provide results for sustainability fisheries. Solutions around WP3 ultimately depend on merging WP3 with the rest of WP's in the proposal. For example, it is known that sustainable ecosystems strongly depend on many data sources collected by different groups using different technologies (refs +++).