From data to decisions: Algorithms, power, and effective ocean management

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UN FAO global forum: Artificial Intelligence for a Digital Blue Planet

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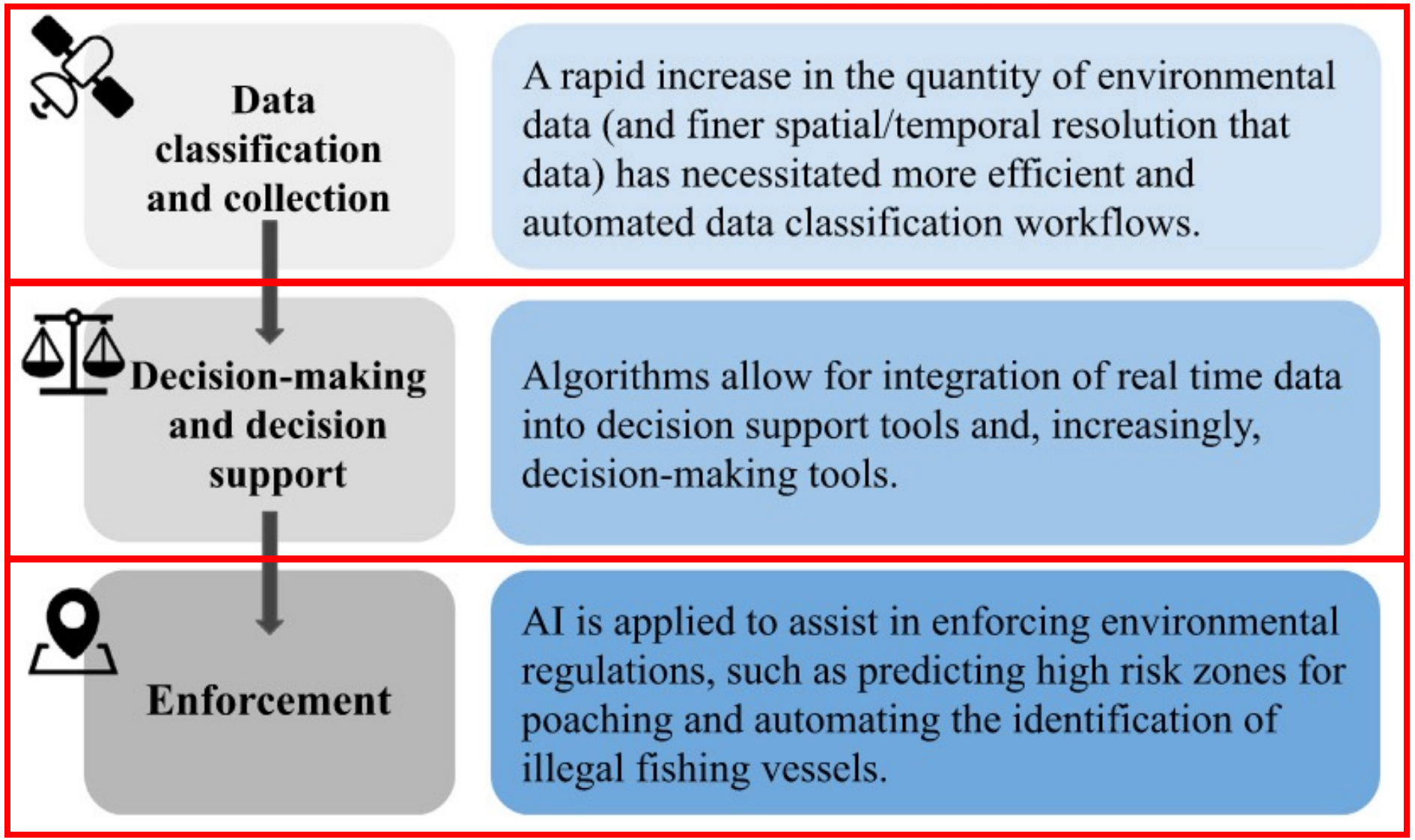

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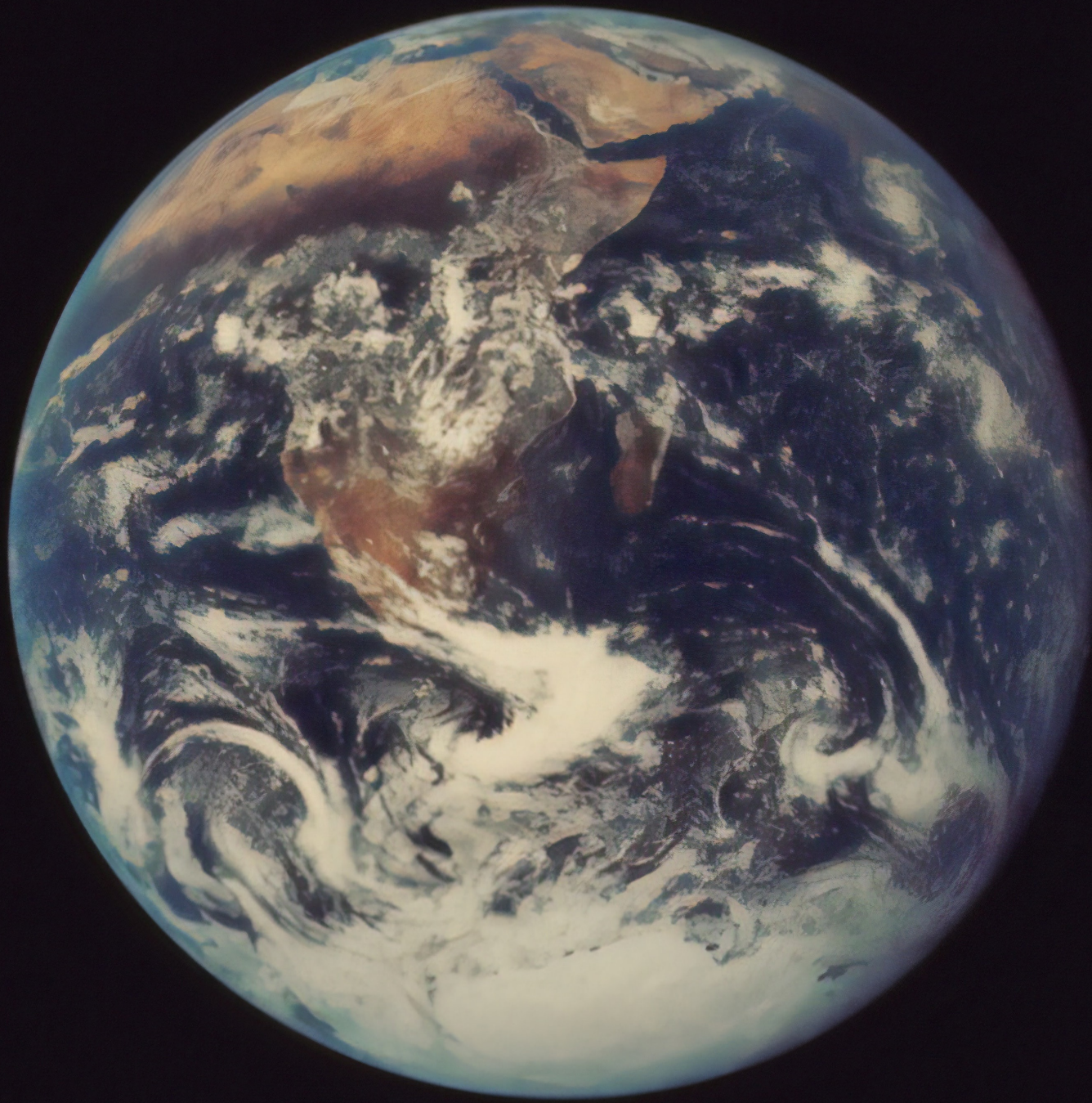

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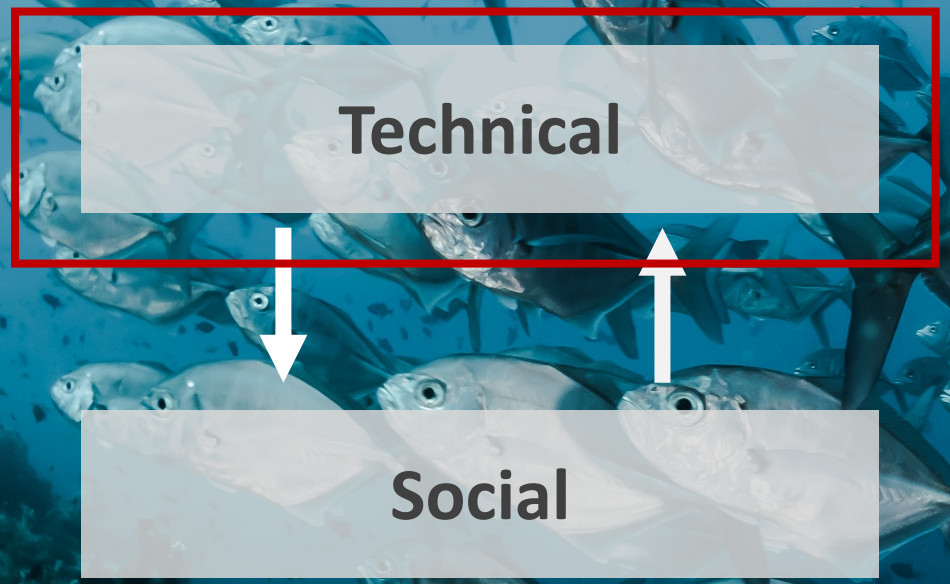
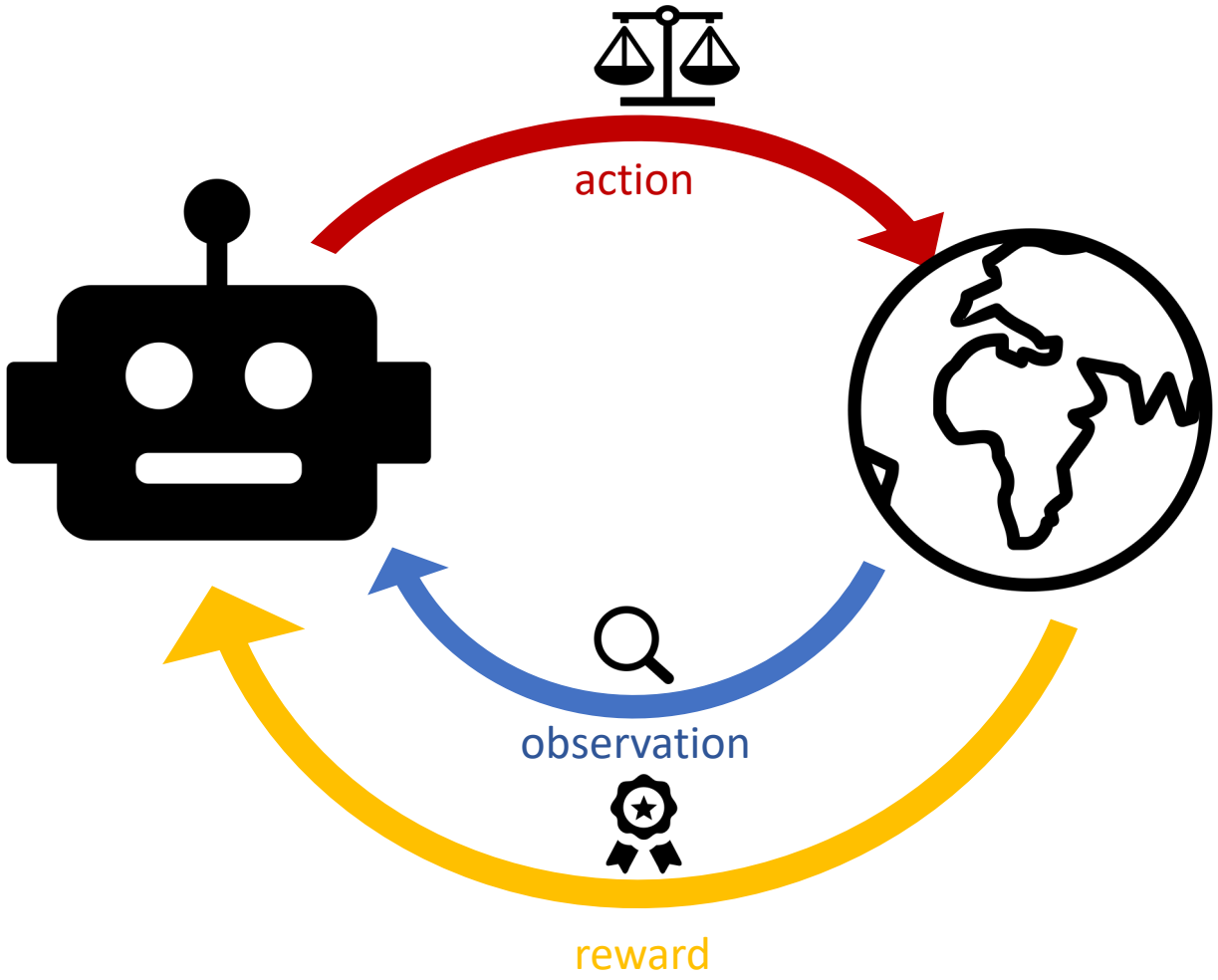
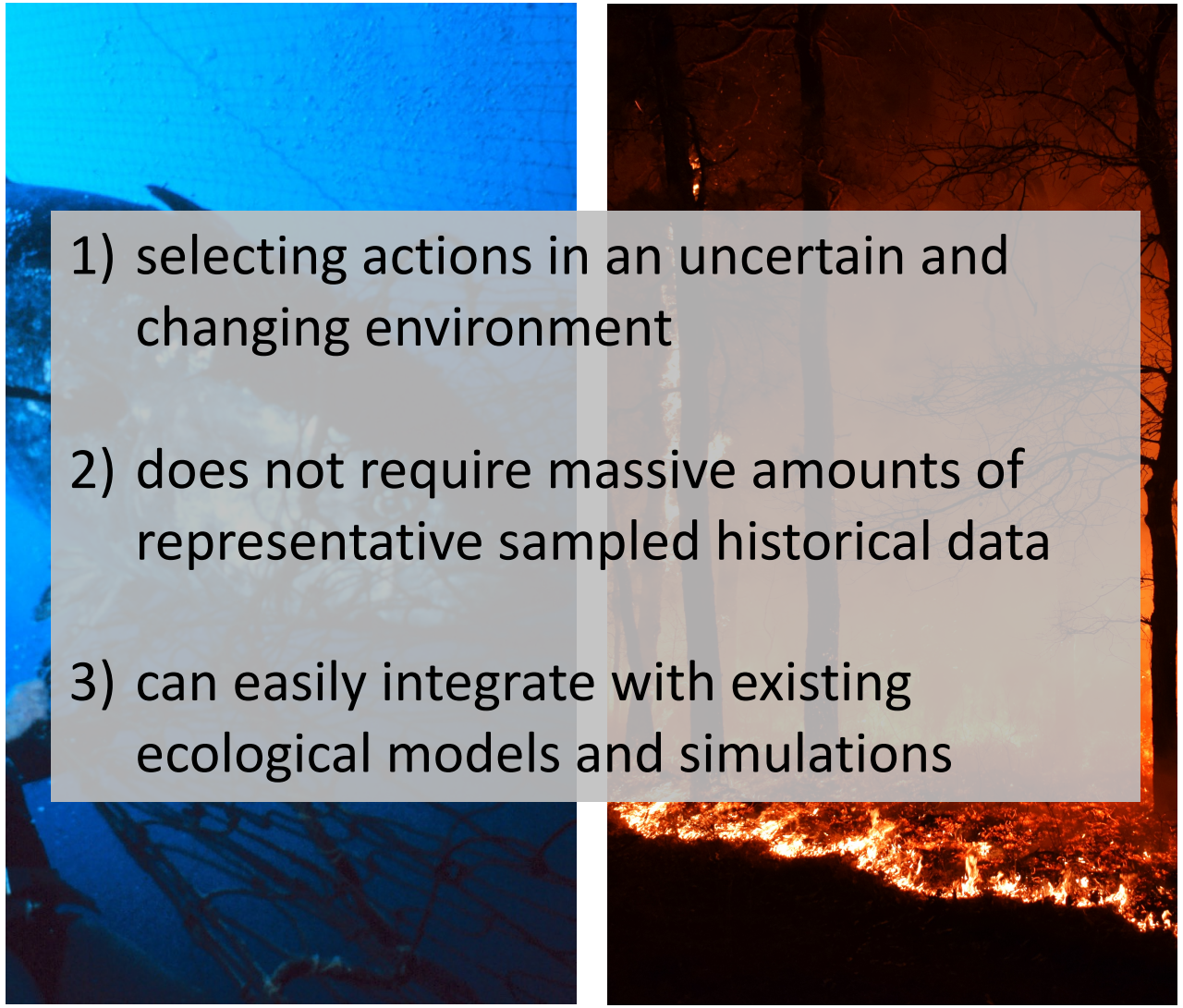
Can AI help us make better conservation decisions?



- Environmental Science
- Computer Science
- Sociology
- Data ethics

Reinforcement Learning



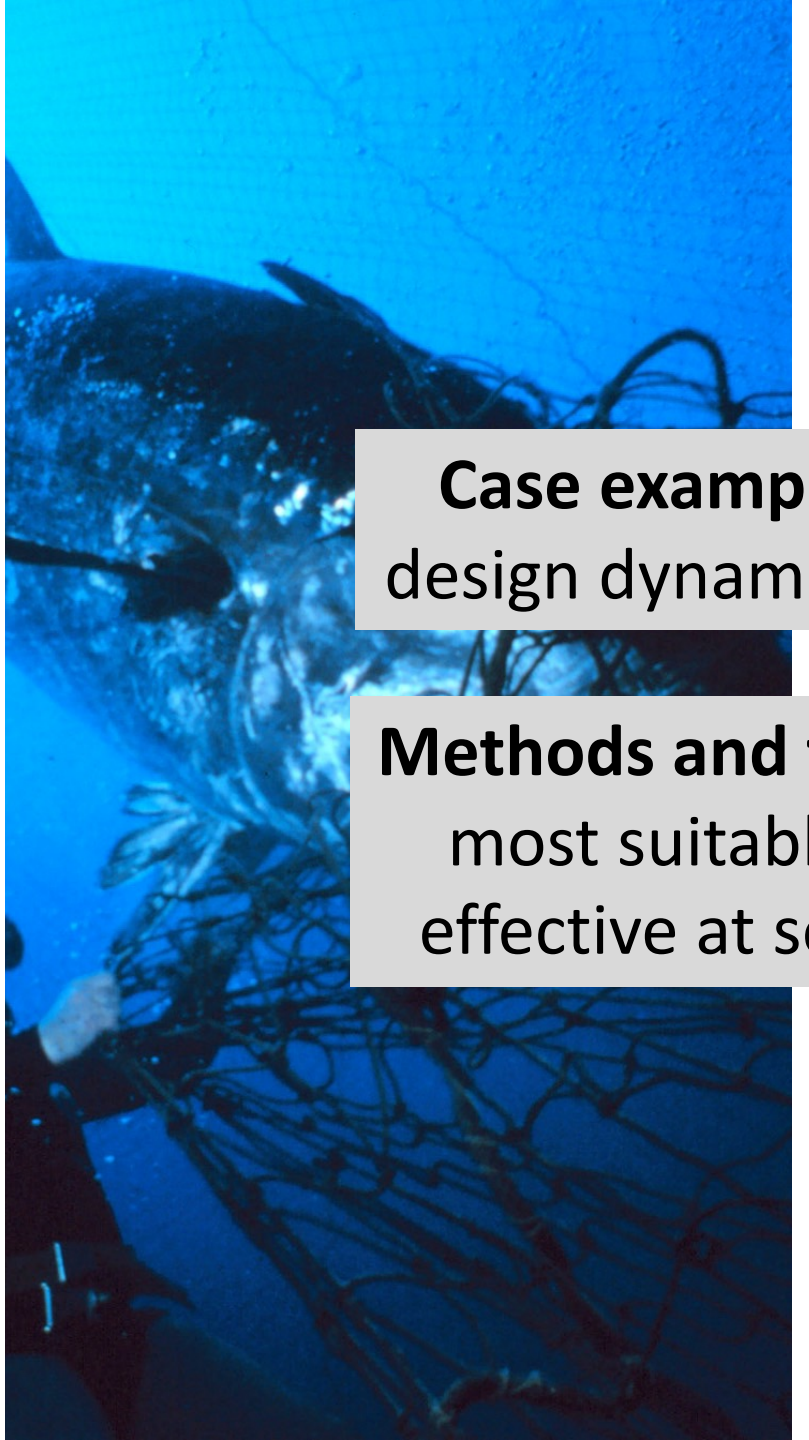
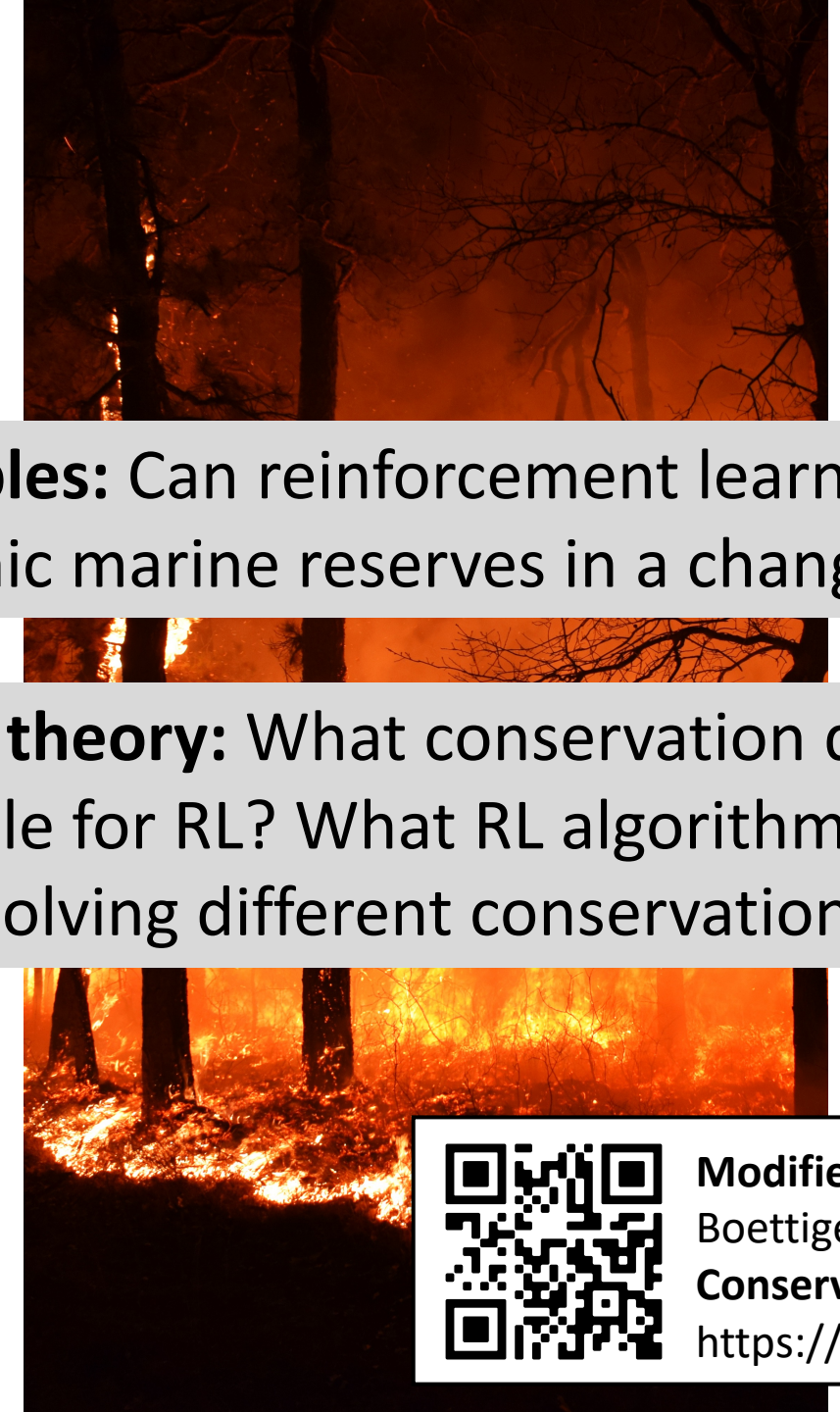
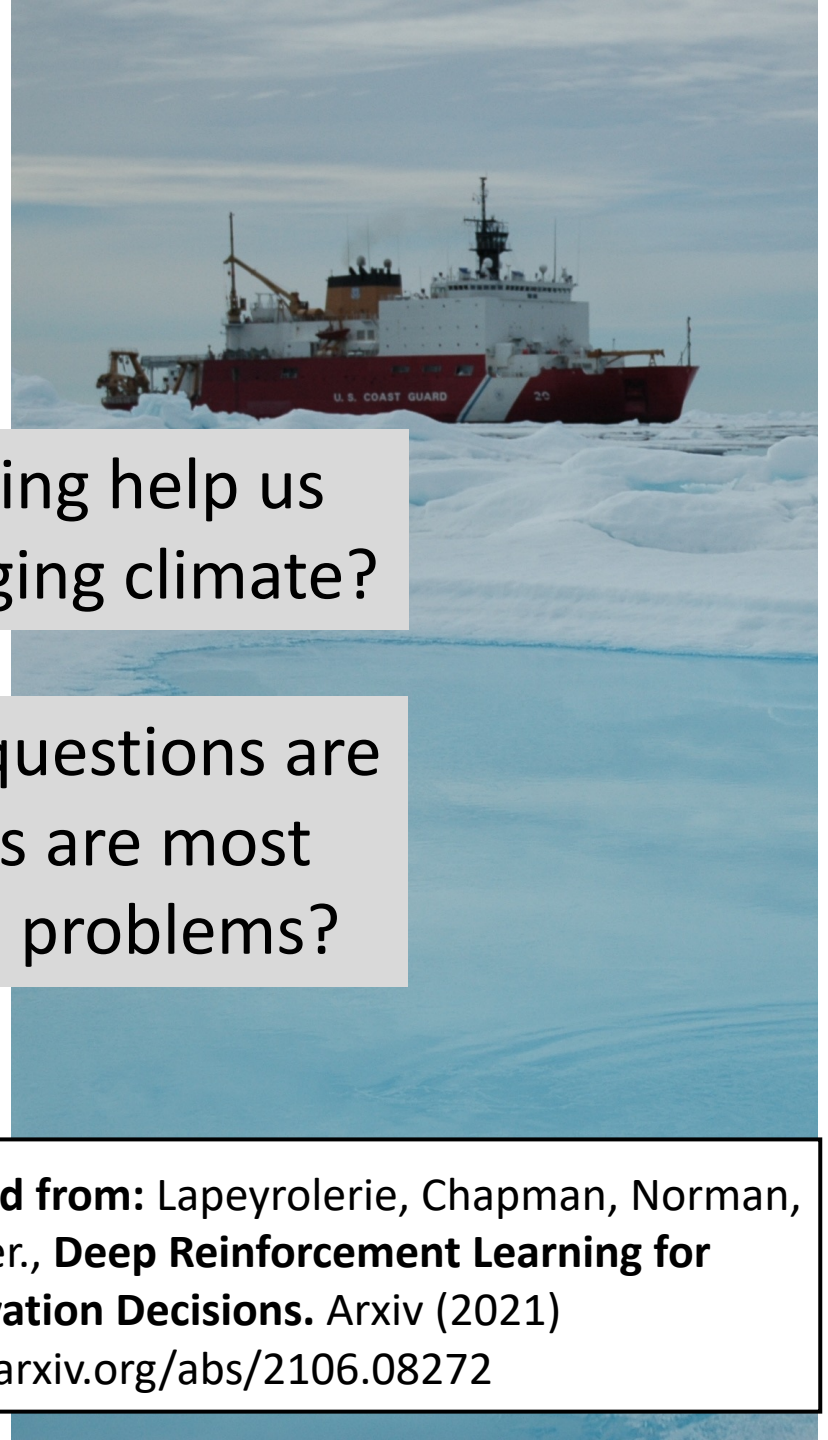


1) selecting actions in an uncertain and changing environment

2) does not require massive amounts of representative sampled historical data

3) can easily integrate with existing ecological models and simulations

Modified from: Lapeyrolerie, Chapman, Norman, Boettiger., **Deep Reinforcement Learning for Conservation Decisions.** Arxiv (2021) https://arxiv.org/abs/2106.08272

Case examples: Can reinforcement learning help us design dynamic marine reserves in a changing climate?

Methods and theory: What conservation questions are most suitable for RL? What RL algorithms are most effective at solving different conservation problems?

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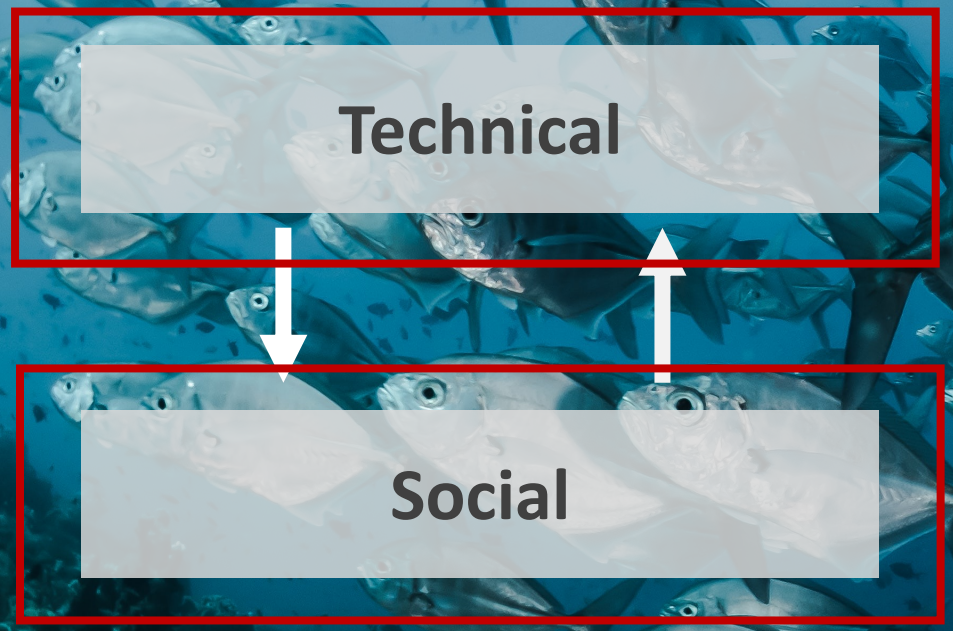
Can AI help us make better conservation decisions? *better for whom?*



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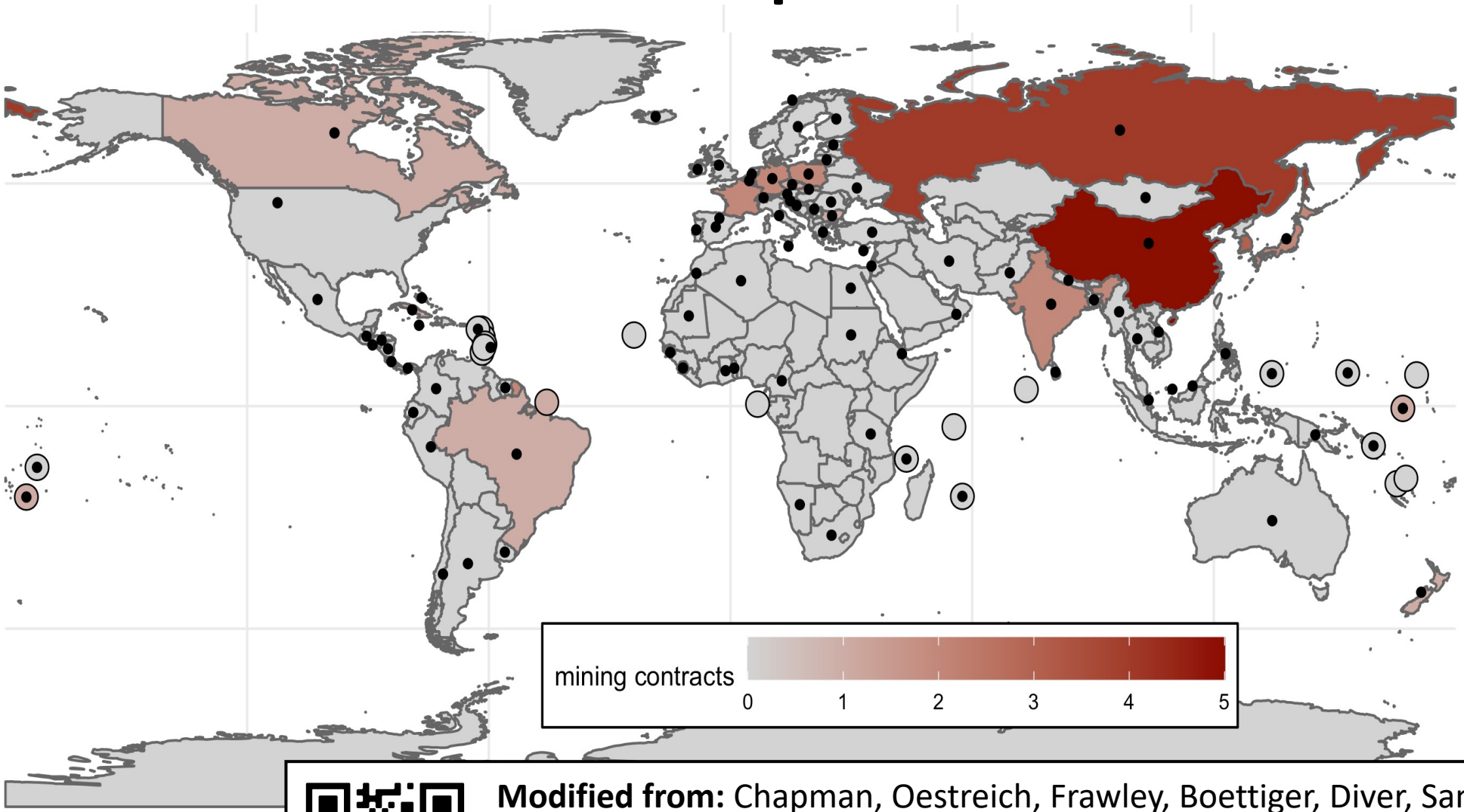
Data disparities



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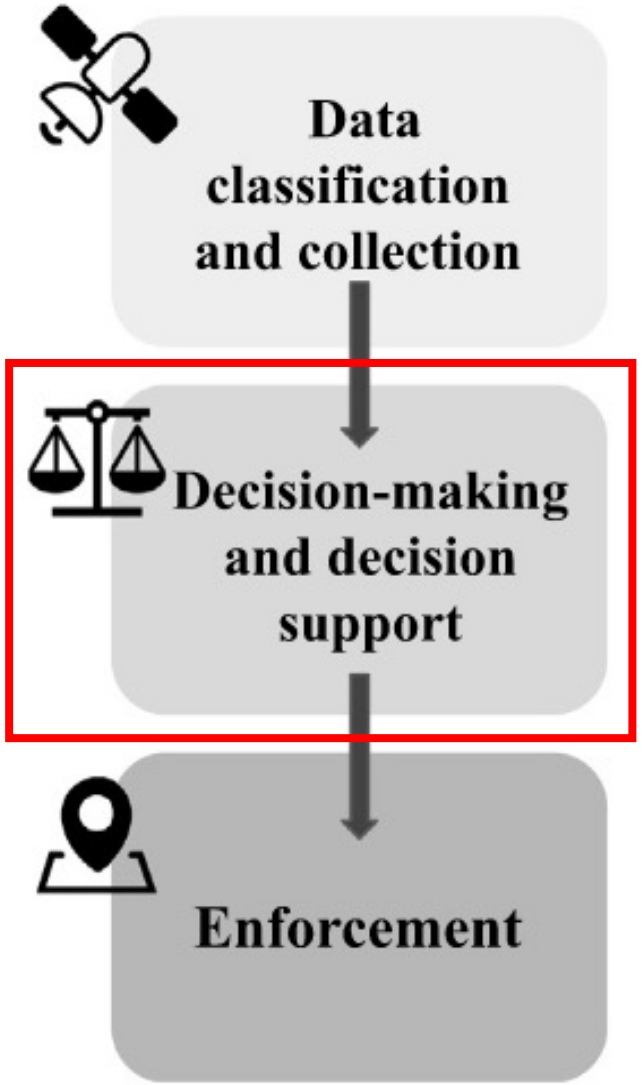

Power in algorithmic conservation

Distributive

Who pays the costs for conservation? Who receives the benefits?

Constitutive

Who frames the questions we ask? Who decides on the methods we use?

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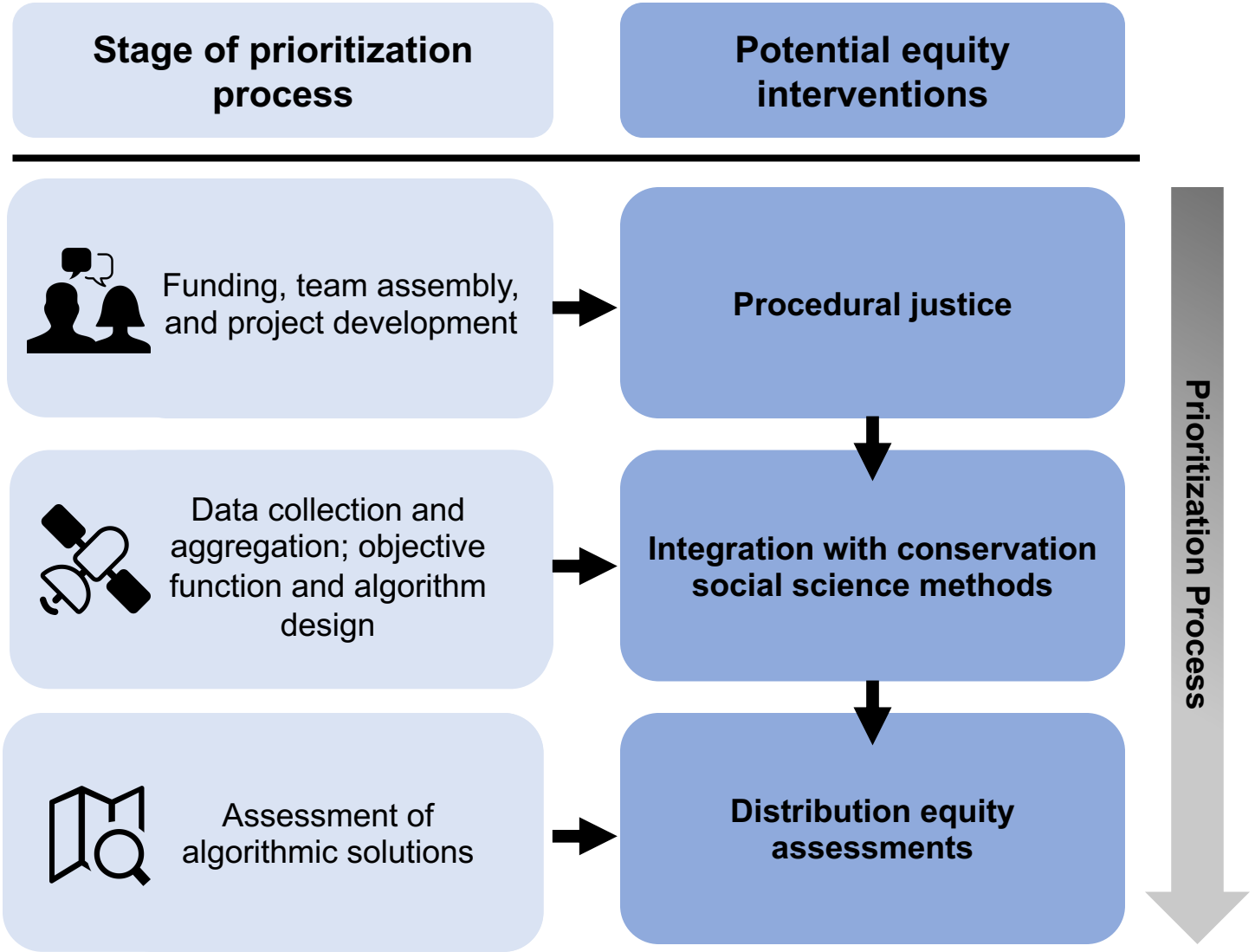
Is there an equitable path forward?



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Don't hesitate to reach out!

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AFOG UC BERKELEY Algorithmic Fairness and Opacity Group

Winkler Family Foundation

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