

WP2 Presentation

AI FORA 1st General Partner Meeting

Mainz, 5 April 2022

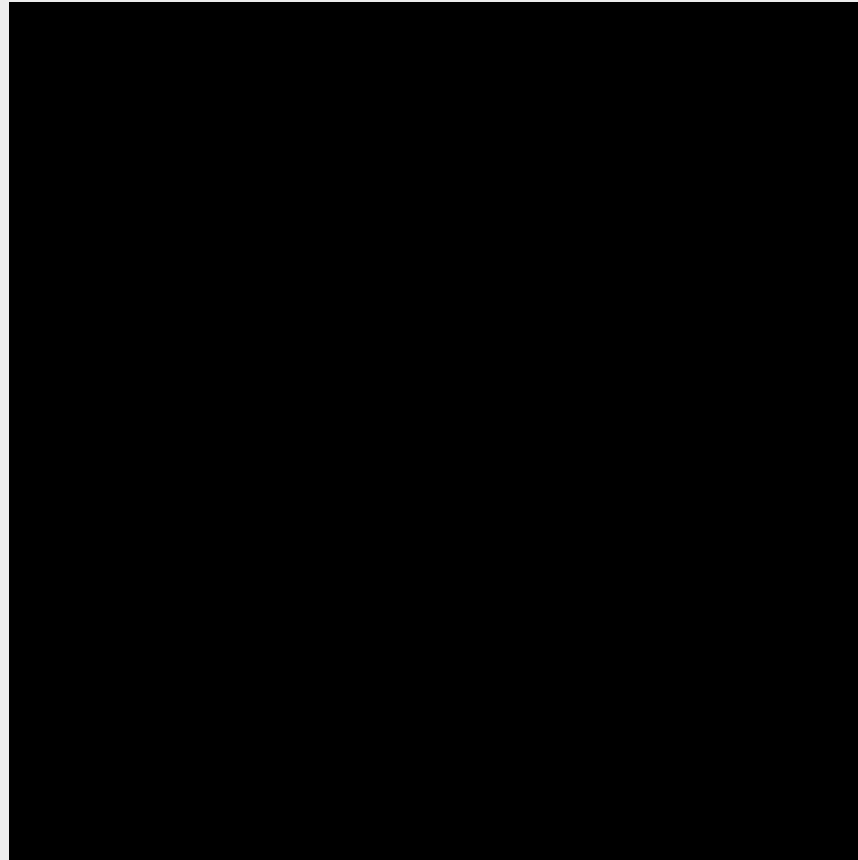
AI FORA project objectives

- The objective of the AI FORA project is to understand the status quo and the future options for AI-based social assessment in public service provision in order to create improved AI technology for social welfare systems.
 - Empirically analyse the status quo in AI-based social assessment of public service provisions in welfare systems and develop theoretical framework (WP1 + WP4)
 - Based on insights of (1), **analyse the future options for AI-based social assessment of public service provision in welfare systems using modelling and simulation** (WP2 + WP4)
 - Based on insights of (1) and (2), create improved technology for AI-based social assessment of public service provision in welfare systems (WP3 + WP4)

Agent-Based Modelling

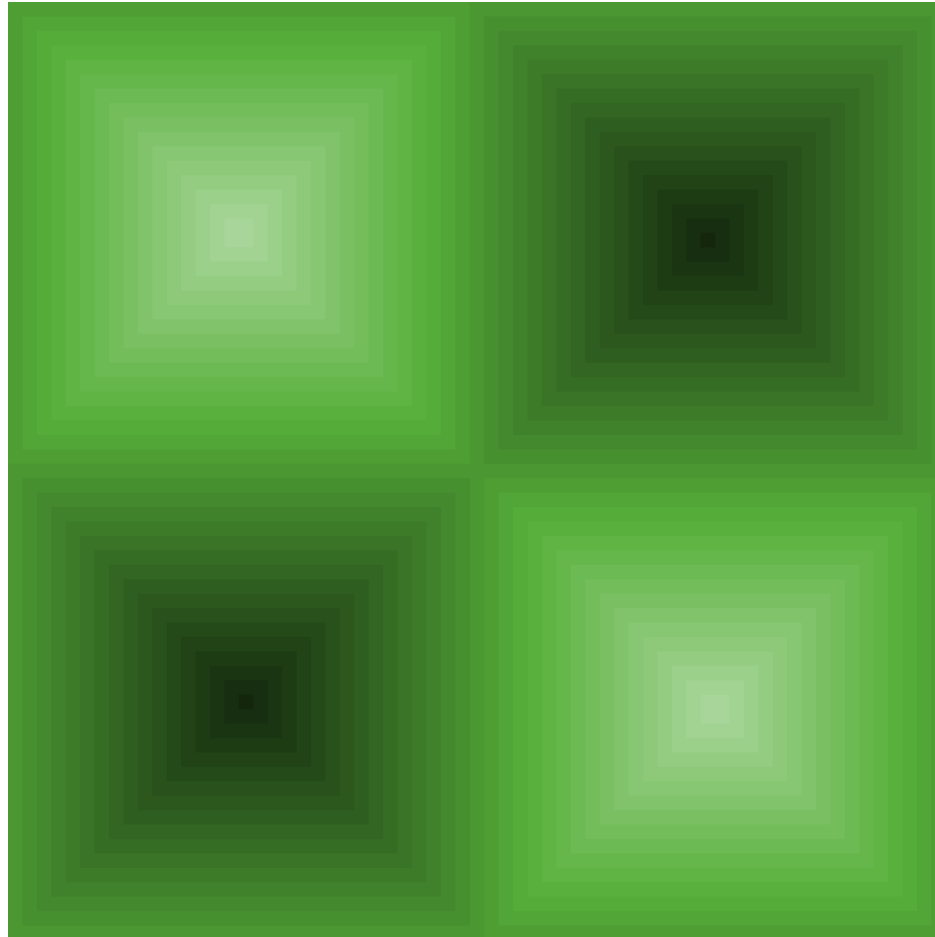
Agents

In the
beginning
there was
nothing . . .



. . . but then grew the . . .

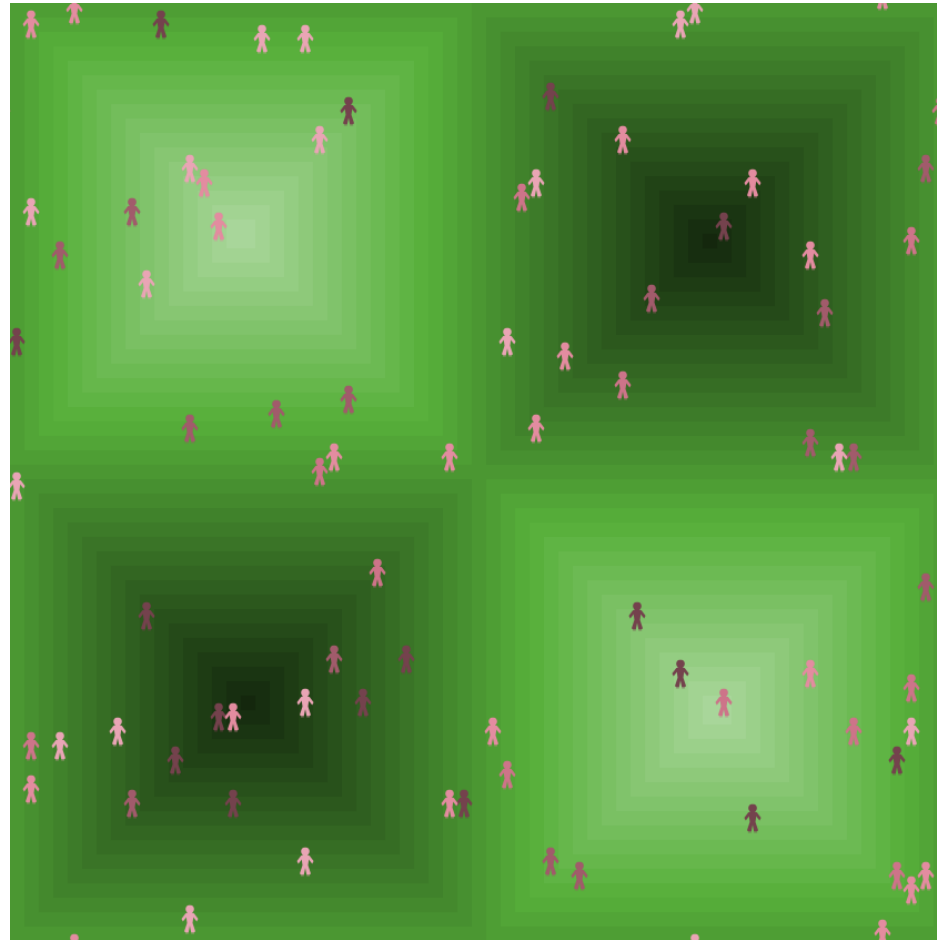
Environment



. . . which was populated by . . .

Agents

Environment

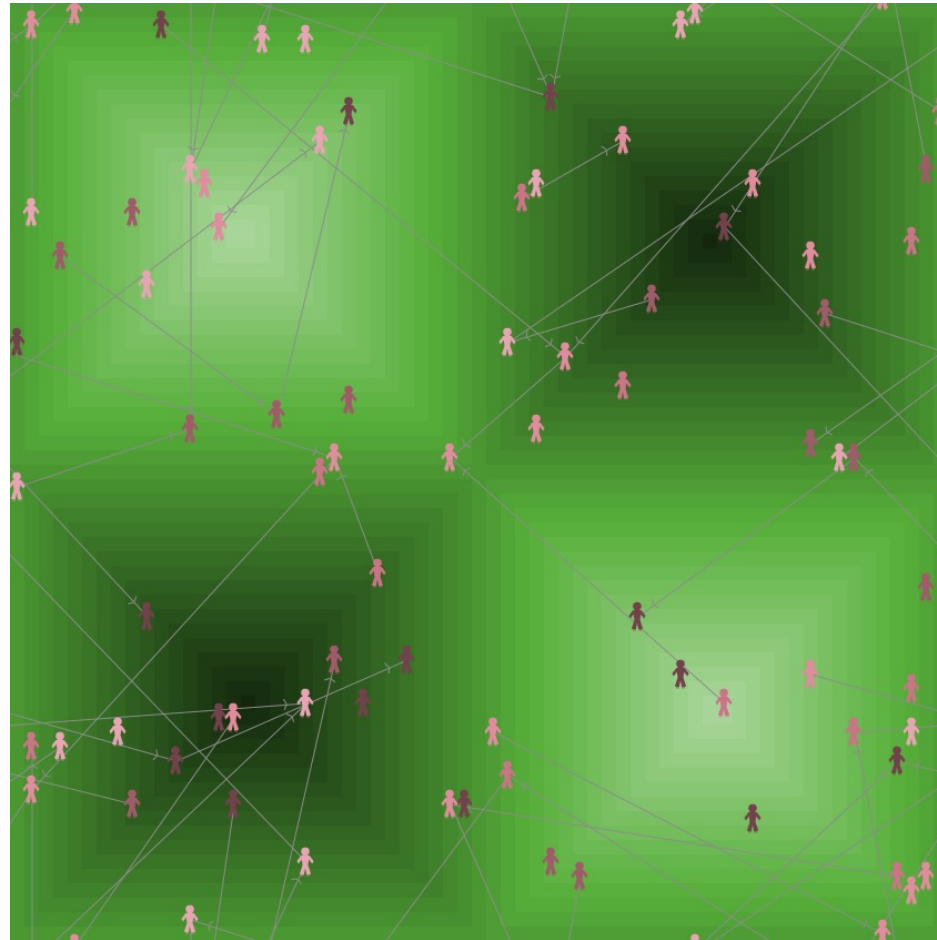


. . . that interacted, exchanging information

Agents

Interactions

Environment



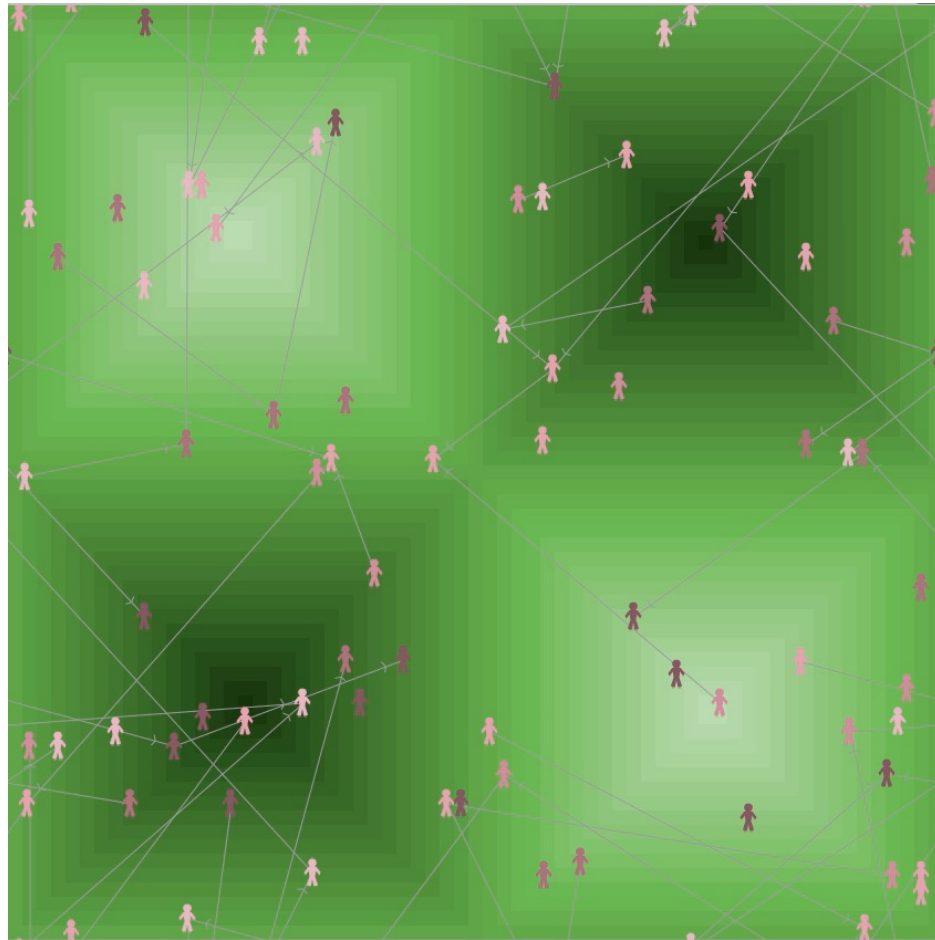
. . . and moved about autonomously

Agents

Autonomy

Interactions

Environment



. . . following rules of behaviour*

Agents

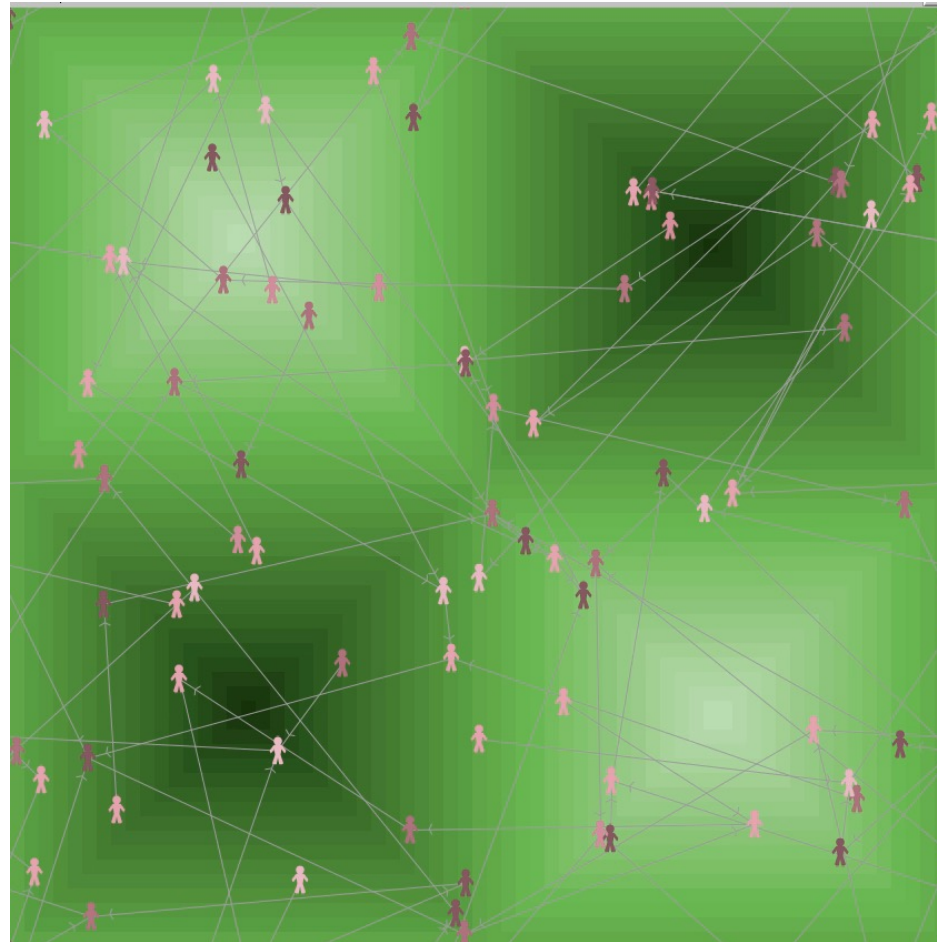
Autonomy

Interactions

Behaviour

Environment

* follow my friends



An ABM for the Corona Game

Corona game ABM

- We have created an ABM for the Corona game
 - to check the consistency, completeness and clarity of the rules
 - to check that the game has a terminating condition and that implausible outcomes are not possible
- With it, we can also:
 - test the effect of variations in the rules
 - check whether varying the Hofstede dimension parameters has the expected consequences on the game play

Corona game ABM

Edit Delete Add abc Button | normal speed | view updates | continuous | Settings...

Interface Info Code

ticks: 6

HP-cost 10 MU

disinfectant-cost 10 MU

health-check-cost 20 MU

initial-MU-mean initial-MU-sd

initial-HP-mean initial-HP-sd

```

Player 84 randomly caught covid
Player 63 was admitted to hospital
Player 98 was admitted to hospital
Player 19 paid 10 MU to reduce their hospital stay by 1 round
Player 19 was discharged from hospital
Player 19 randomly caught covid
Player 61 was admitted to hospital
Player 31 was admitted to hospital
Player 44 was admitted to hospital
Player 45 was admitted to hospital
Player 12 was admitted to hospital
Player 2 was admitted to hospital
Each player received a dividend of 49.5 MU
The office factor increased by 0.825
***End of round 2***
Player 13 went to school to improve their education
Player 14 went to school to improve their education
Player 71 went to the office to increase their MU
Player 11 went to school to improve their education
Player 58 went to the office to increase their MU
Player 60 invested 40 MU in the vaccine fund
Player 73 went to school to improve their education
Player 4 went to the office to increase their MU
Player 1 found out their infection status is false
Player 95 bought disinfectant
Player 67 went to the office to increase their MU
Player 0 went to the office to increase their MU
Player 87 went to the office to increase their MU
Player 52 went to the office to increase their MU
Player 70 went to school to improve their education
Player 24 went to school to improve their education
Player 30 went to school to improve their education
Player 43 went to the office to increase their MU
          
```

Totals

Funds

Netlogo <https://ccl.northwestern.edu/netlogo/>

Corona game ABM


- At the beginning of the game, we create 100 agents - the players. They each start off with a certain amount of money and health points, and a 10% chance of having Covid.
- During each round, players visit 'stations' at random (home, the mall, school, the office and the lounge) where they can carry out different actions, such as earning money or buying things.

home 

mall 

school 

office 

lounge 

hospital 

evening 

Corona game ABM

- At the end of each round:
 1. Players lose a certain number of health points depending on whether they are Covid-positive or not. Players who have lost all their health points go to hospital for one or two rounds.
 2. Some players catch Covid:
 - At the end of each round 10% of players randomly catch Covid.
 - Players may also catch Covid if they visited a station after a Covid-positive player.
 3. There's a chance of finding a vaccine. This chance increases if players go to the mall and invest in something called the 'vaccine fund'.
- The game ends when a vaccine is found.

N.B. In comparison to the 'live' games where players have choices (e.g. what to buy at the mall), in the ABM most of the players' actions are decided at random with a certain probability.

**Next steps and
questions for
discussion**

Immediate next steps

1. For the Corona game ABM:
 - a. Add sliders which allow us to ‘tweak’ the Hofstede dimensions of the agent population and see how this influences gameplay.

Q: What else (if anything) do we want to do with the Corona game ABM now we have it? How else might we use it for further analysis and/or comparison with empirical results from the ‘live’ games?

2. Develop an ABM for the ‘employment game’ (to test rules and help to quickly develop and finalise the employment game before planned workshops in May).

Q: What else might we do with this ABM once it has been created?

SKIN

Simulating Knowledge Dynamics
in Innovation Networks

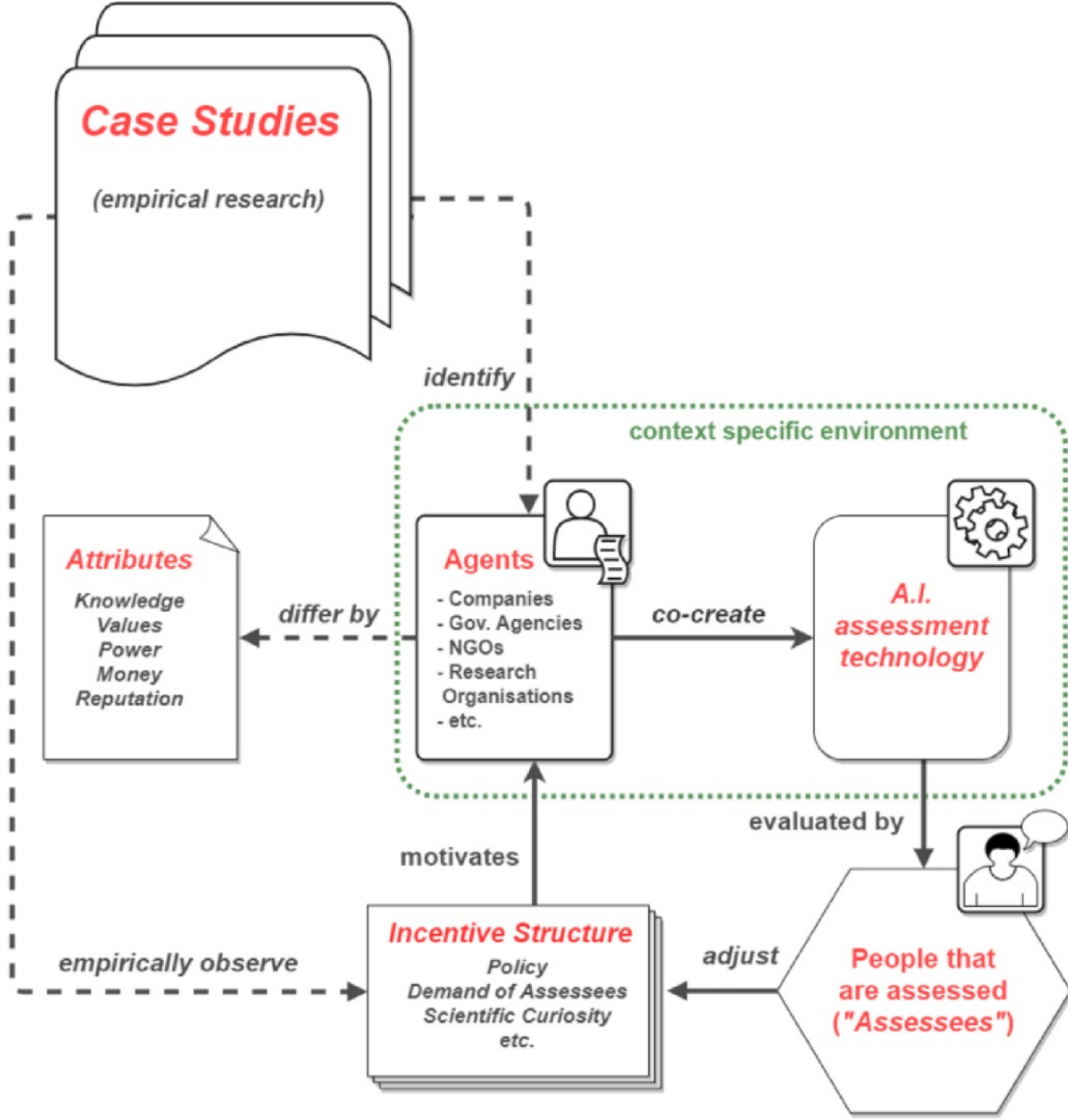
AI FORA SKIN

The proposal says:

- » AI FORA will build on and further develop the agent-based SKIN simulation platform for policy research, which models the complex network dynamics of heterogeneous actors involved in technological innovation.
- » Existing policy modelling applications of SKIN include IT policy, and studies of the governance of Responsible Research and Innovation (RRI) in IT, which can be used as a starting point for the AI FORA application.
- » Because the platform was originally built to allow the country comparison of European Union member states concerning their innovation networks, there is also a sound track record of SKIN applications for country comparison.

AI FORA SKIN

- Agents in AI FORA SKIN will be private companies, government agencies, public service providers, NGOs, research organisations and other actors identified as relevant by empirical case study research.
- Agents differ by inter- or transdisciplinary knowledge backgrounds, value attitudes, and resources such as power, money, reputation etc.



AI FORA SKIN

- The basic loop of the simulation will model agents incentivised by policy, user demand, scientific curiosity or other incentive structures that have been empirically observed in case studies, to envisage, negotiate, co- create and co-produce new AI social assessment technology.
- Agents are enabled and constrained by context-specific institutional environments and political, economic or regulatory frameworks.
- The performance of AI-based social assessment is evaluated by users and societal observers (e.g. public policy analysts, assessed individuals, service-supplying organisations, media and law etc.) with feedback to the agents' technology production process, which results in new measures for incentivising agents, thus starting the simulation loop again.

Other next steps

1. SKIN

Q: Will we use SKIN?

Q: If so, what data will the case studies provide that we can use as input parameters?

2. Sense check:

Q: Do our current plans for WP2 meet the project's needs?

Q: Have our collective ambitions or understanding in AI FORA changed at all since the proposal, and if so, what does this mean for WP2?

Any questions?



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