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net zero futures
Postdoc Pathways To Impact

Artificial Intelligence for Sustainable Future Solutions

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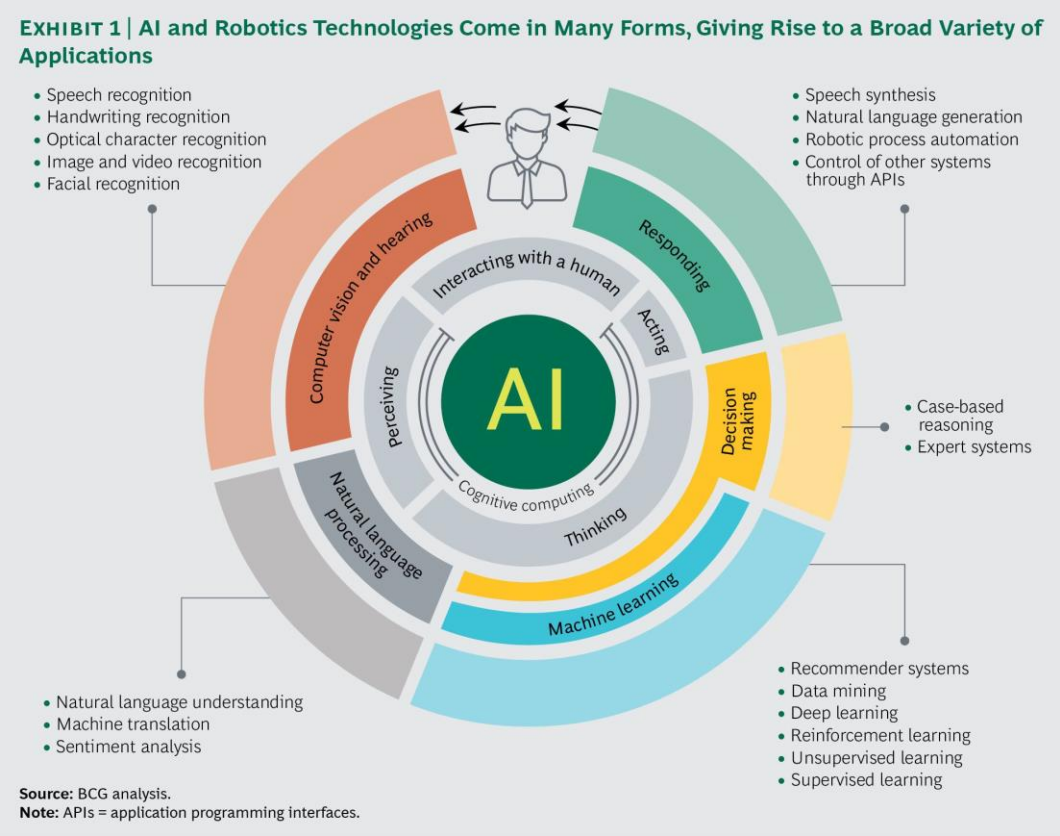
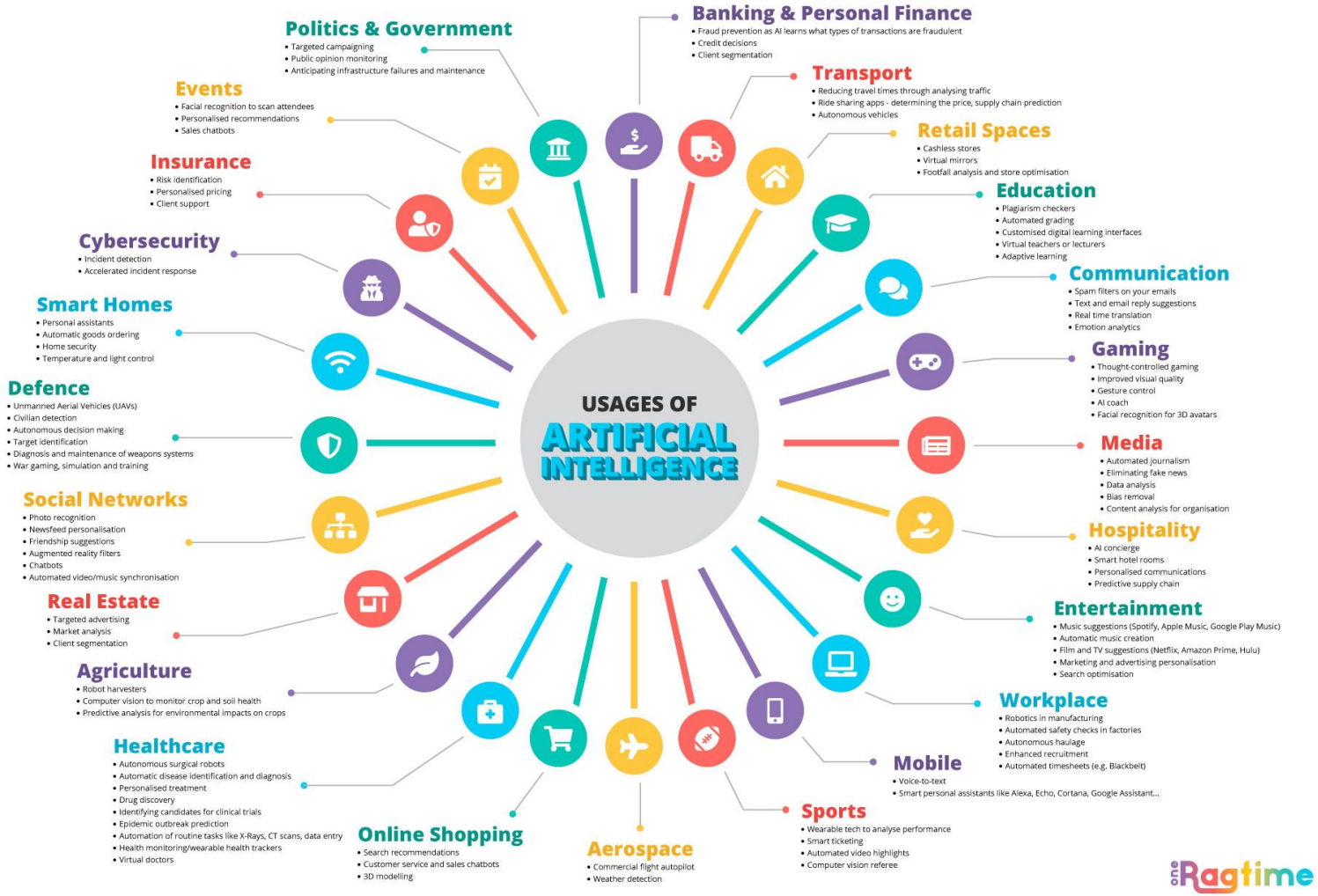
Introduction of AI

"Artificial Intelligence (AI) is the simulation of human intelligence in machines programmed to think and learn like humans."



Capabilities of AI



AI for Sustainable Development

- Integrating Data Analysis with Sustainable solutions

- Predictive Capabilities Supporting Decision-Making

- Automation Improving Resource Utilization Efficiency

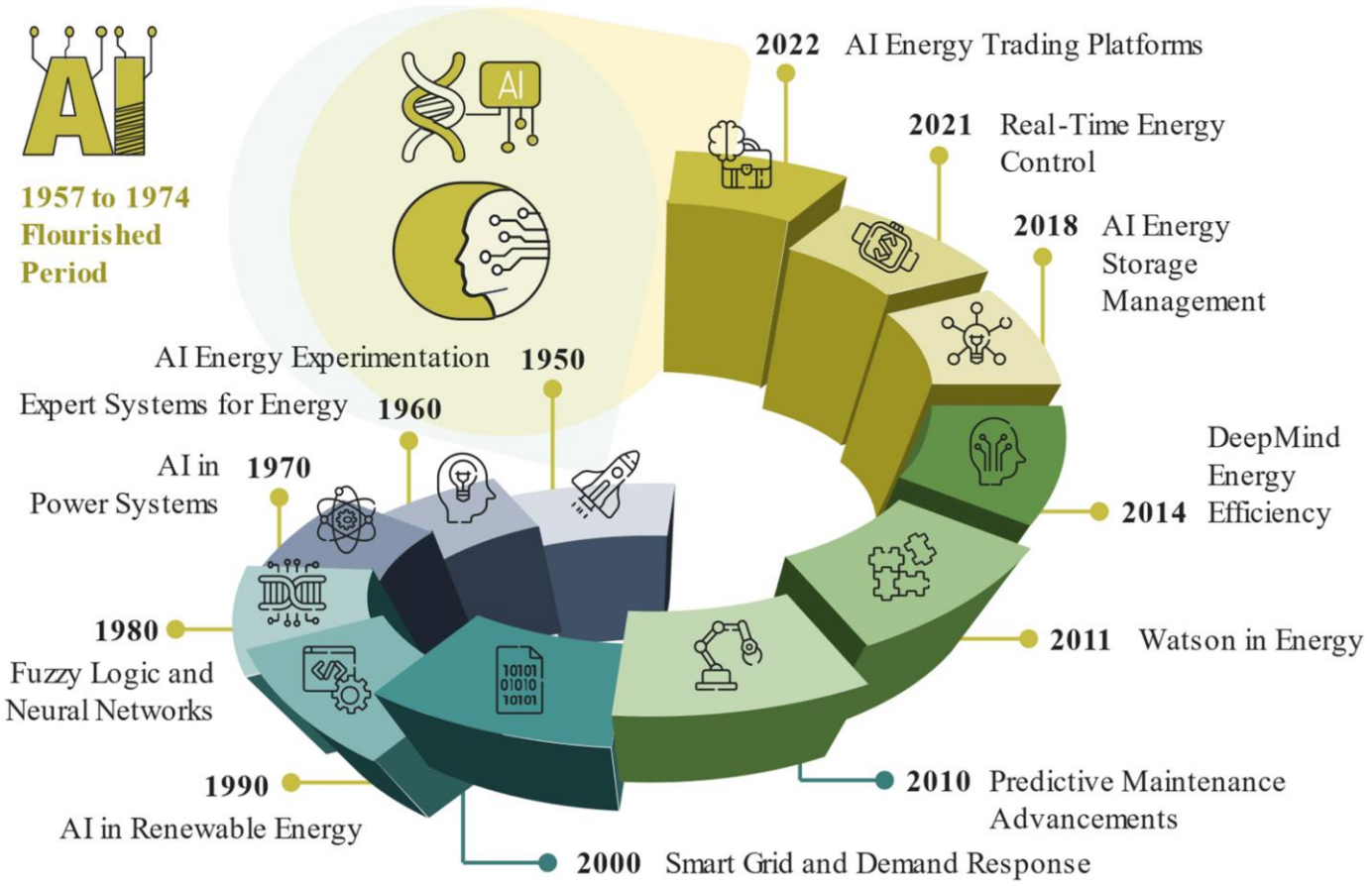
- Optimizing Systems to Reduce Environmental Impact

- Innovative Design Promoting Sustainable Lifestyles

- Precise Monitoring Supporting Timely Intervention

- Accelerating Research to Overcome Sustainable Technology Bottlenecks

AI for Energy



- AI optimizes renewable energy's efficiency and reliability.
- AI-powered smart grids integrate variable energy.
- AI reduces consumption across multiple sectors.
- AI develops and manages crucial energy storage tech.
- AI enables sustainable energy trading, incentivizing energy markets.
- AI optimizes carbon reduction strategies.
- AI advances circular economy in energy through recycling management.
- AI addresses energy access and equity issues.
- AI optimizes water-energy nexus, finding synergies in resource use.
- AI revolutionizes urban energy planning.

AI Driving Sustainable Innovation

GOAL AND MISSION
For a mission-driven ecosystem, aligning stakeholders around shared goals and purposes is crucial. The ecosystem's structure must centre on these core objectives, with clearly defined roles and contributions from each participant. This alignment ensures that all actors work collaboratively toward the common goal, maximising the ecosystem's impact.

SECTIONS
The eight sections are designed to categorise and group similar actors, ensuring clarity in their roles and contributions within a mission-driven ecosystem. By using these sections, organisations can effectively map out the ecosystem, identify key stakeholders, and facilitate collaboration to achieve shared goals.

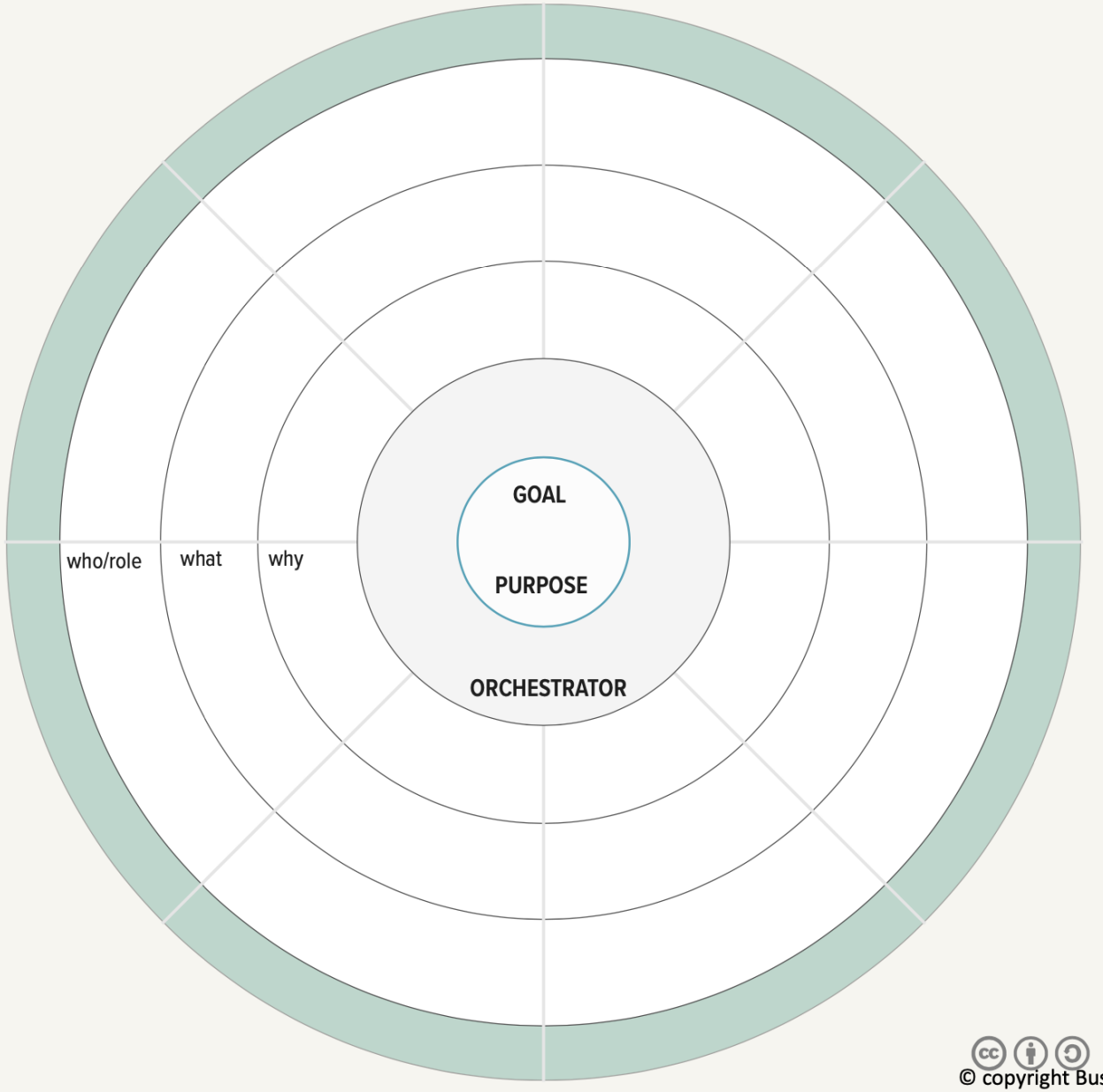
1. Who
Who identifies the actors involved and their specific roles, highlighting their contributions and responsibilities.

2. What
What defines the activities and resources each actor provides, outlining how these inputs drive progress toward the mission.

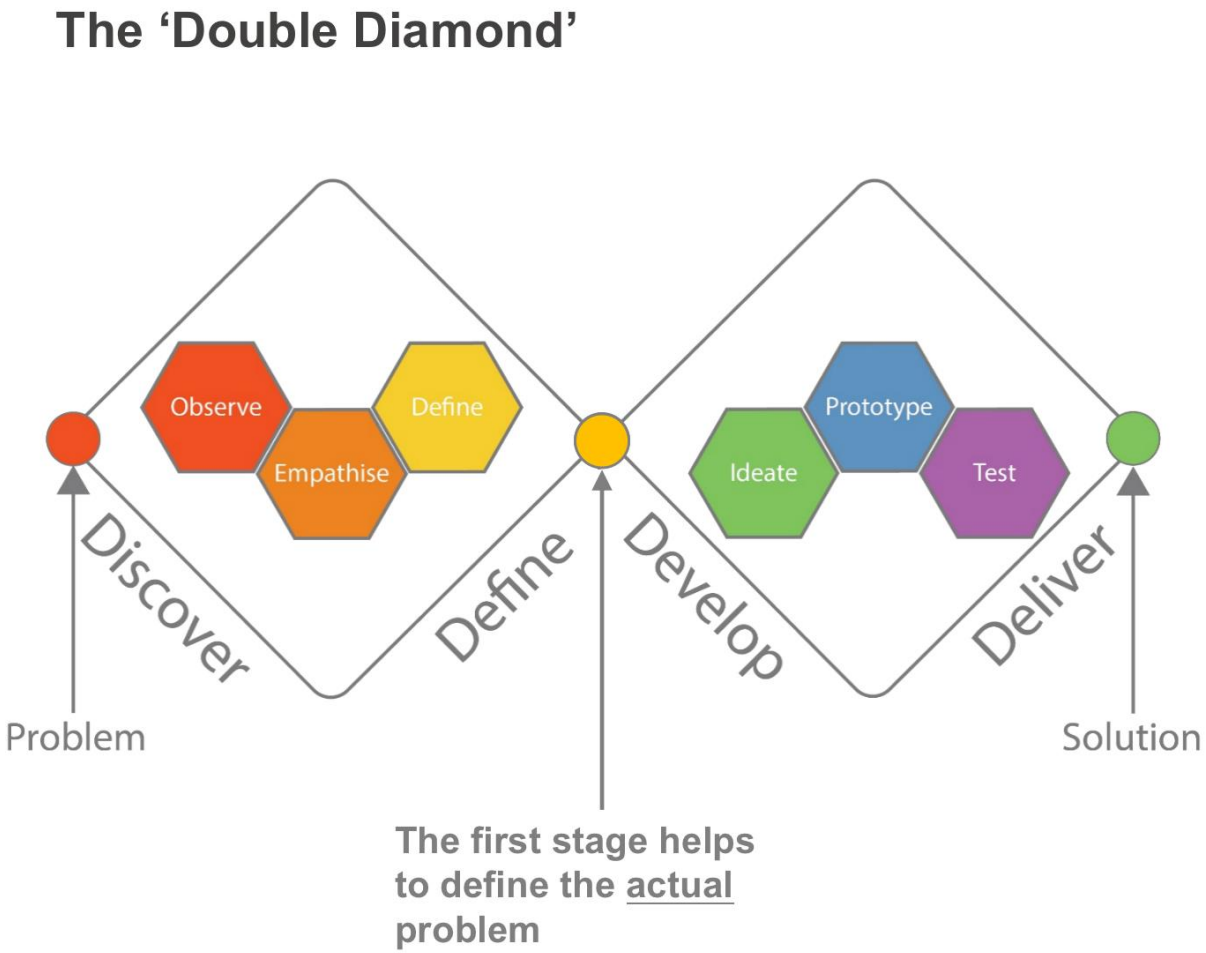
3. Why
Why explains the motivations and incentives for each actor, ensuring alignment with the overarching goals.

4. Orchestrator
Who is going to coordinate, govern and orchestrate the ecosystem?

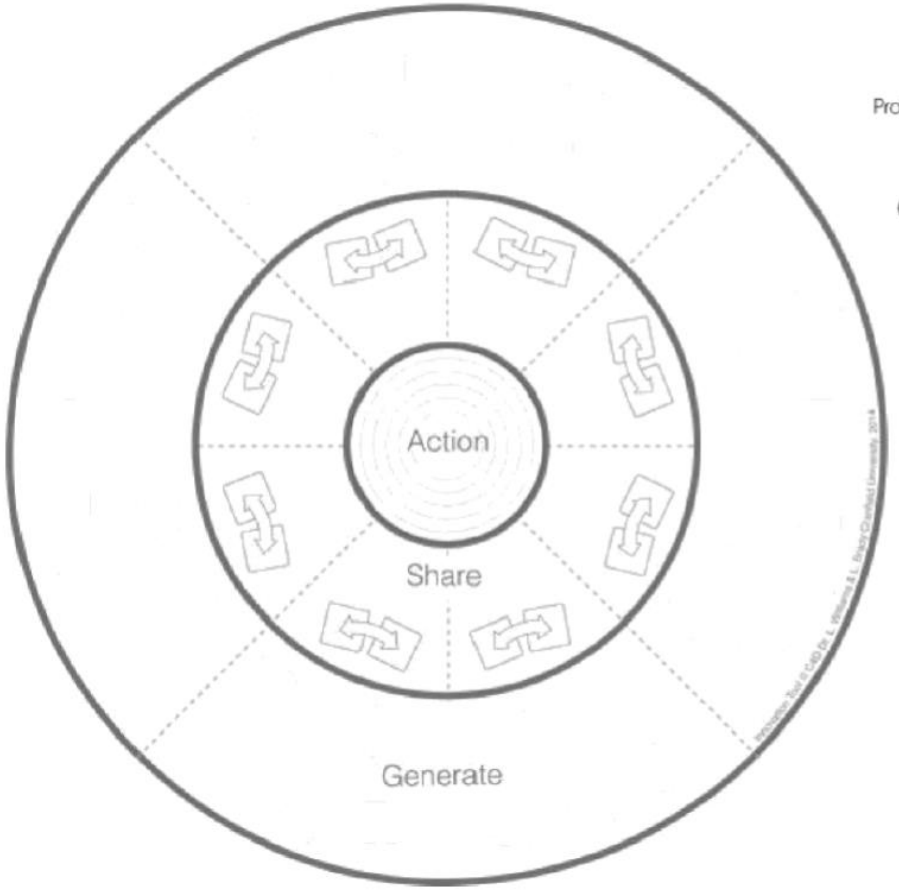
4. Interactions
Use lines to highlight which actors interact and collaborate to support the ecosystem's mission.

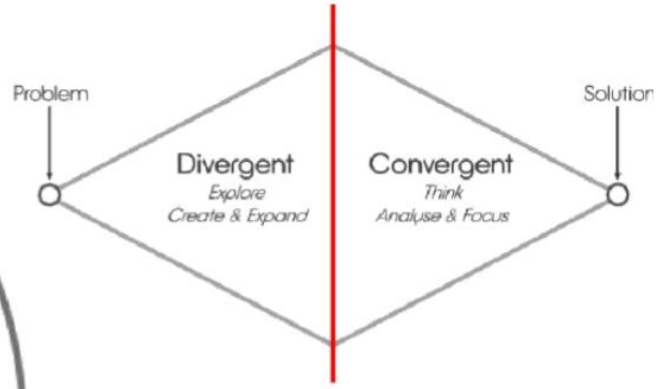


Design Your Sustainable AI solutions



Design Your Sustainable AI solutions





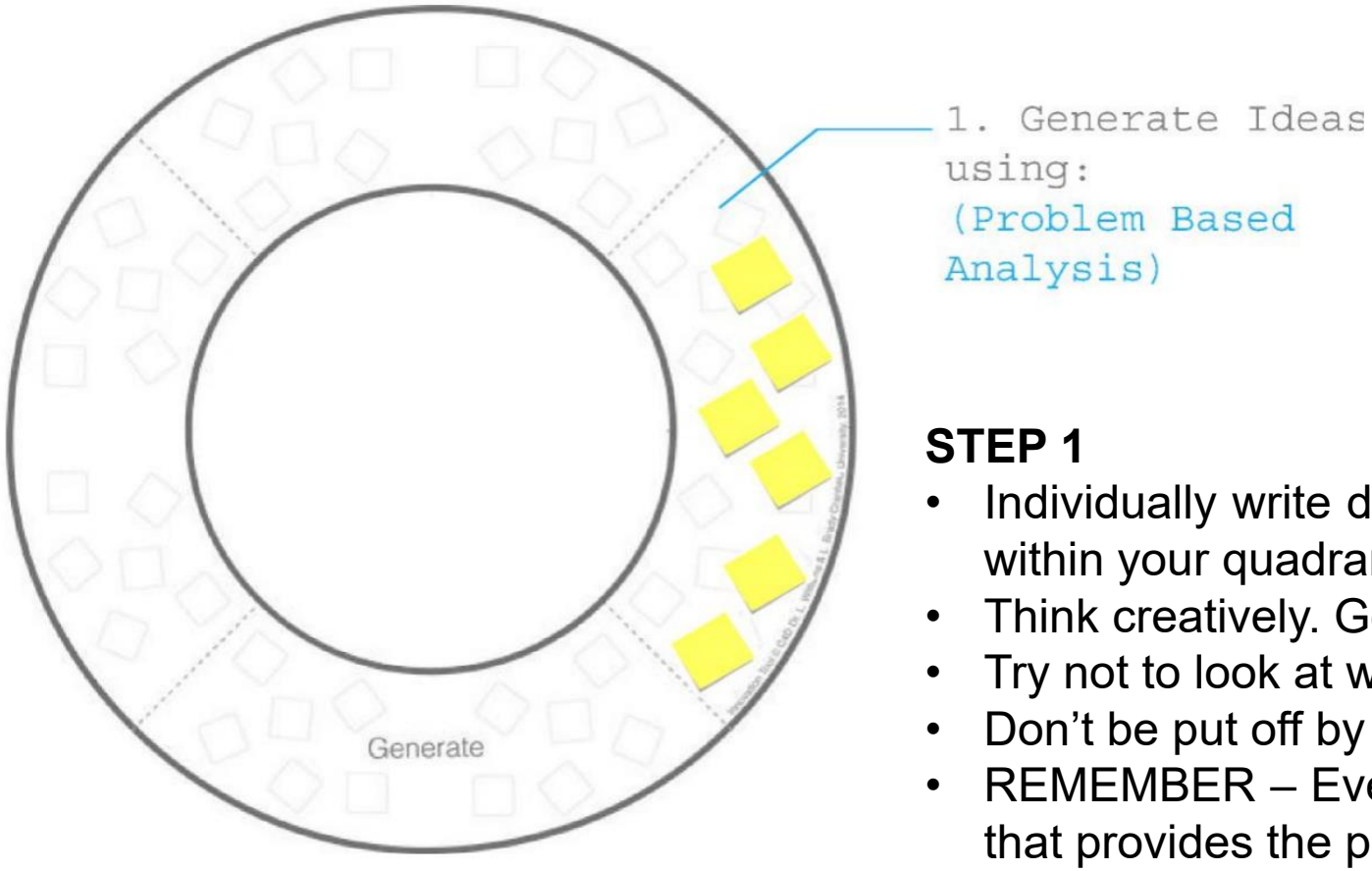
The Collaborative Innovation Tool

AI Driving Sustainable Innovation

AI for Waste Management Case Study

Cities struggle to sustainably manage escalating waste volumes amid rapid urbanization.

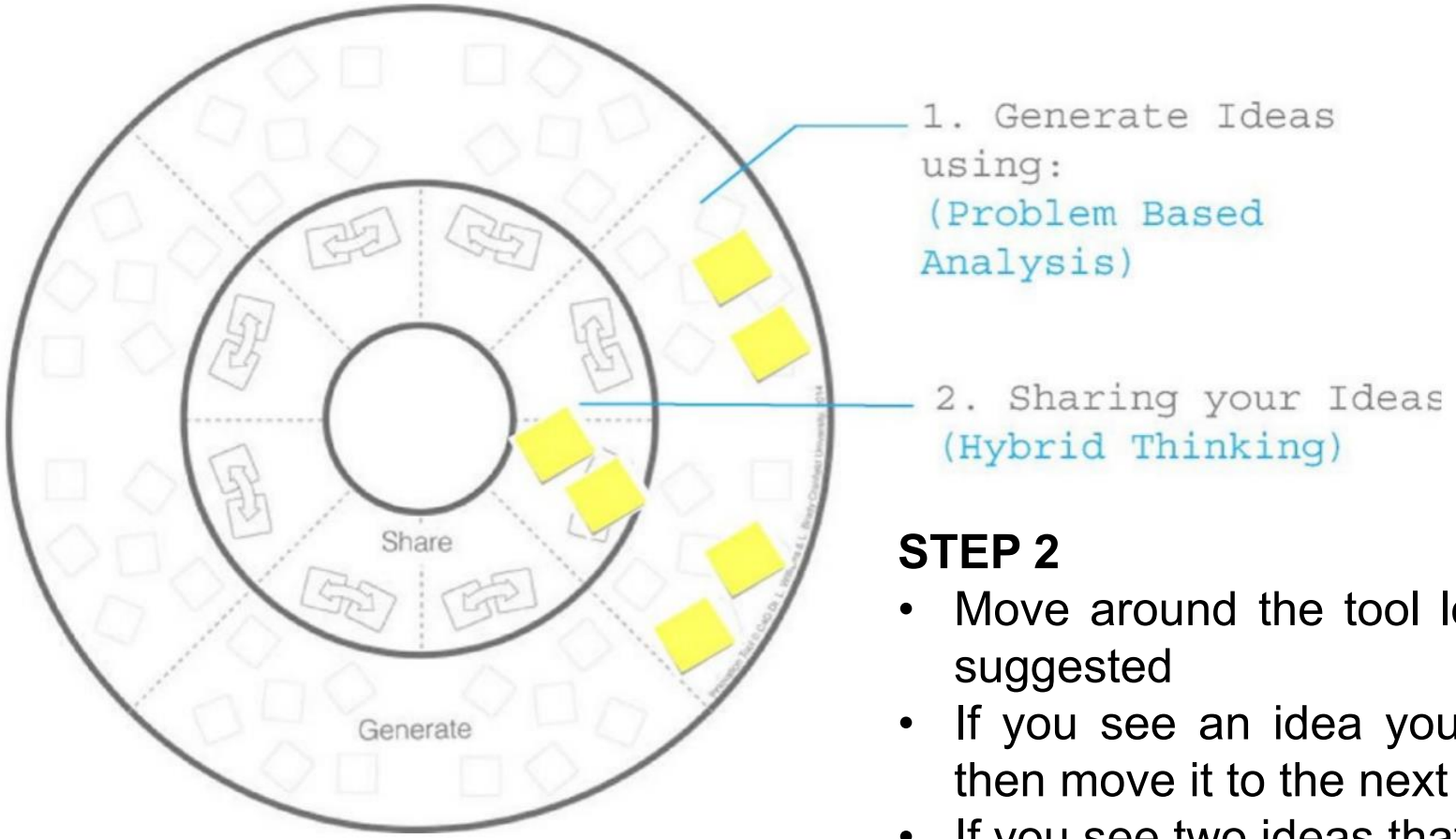
Design Your Sustainable AI solutions



STEP 1

- Individually write down any of your ideas on Post-It notes. Keep within your quadrant and come up with as many as you can.
- Think creatively. Go crazy! There are no bad ideas at this stage.
- Try not to look at what others are doing!
- Don’t be put off by someone who is putting down lots of ideas
- REMEMBER – Even one good idea from YOU might be the one that provides the pathway for the team to progress…

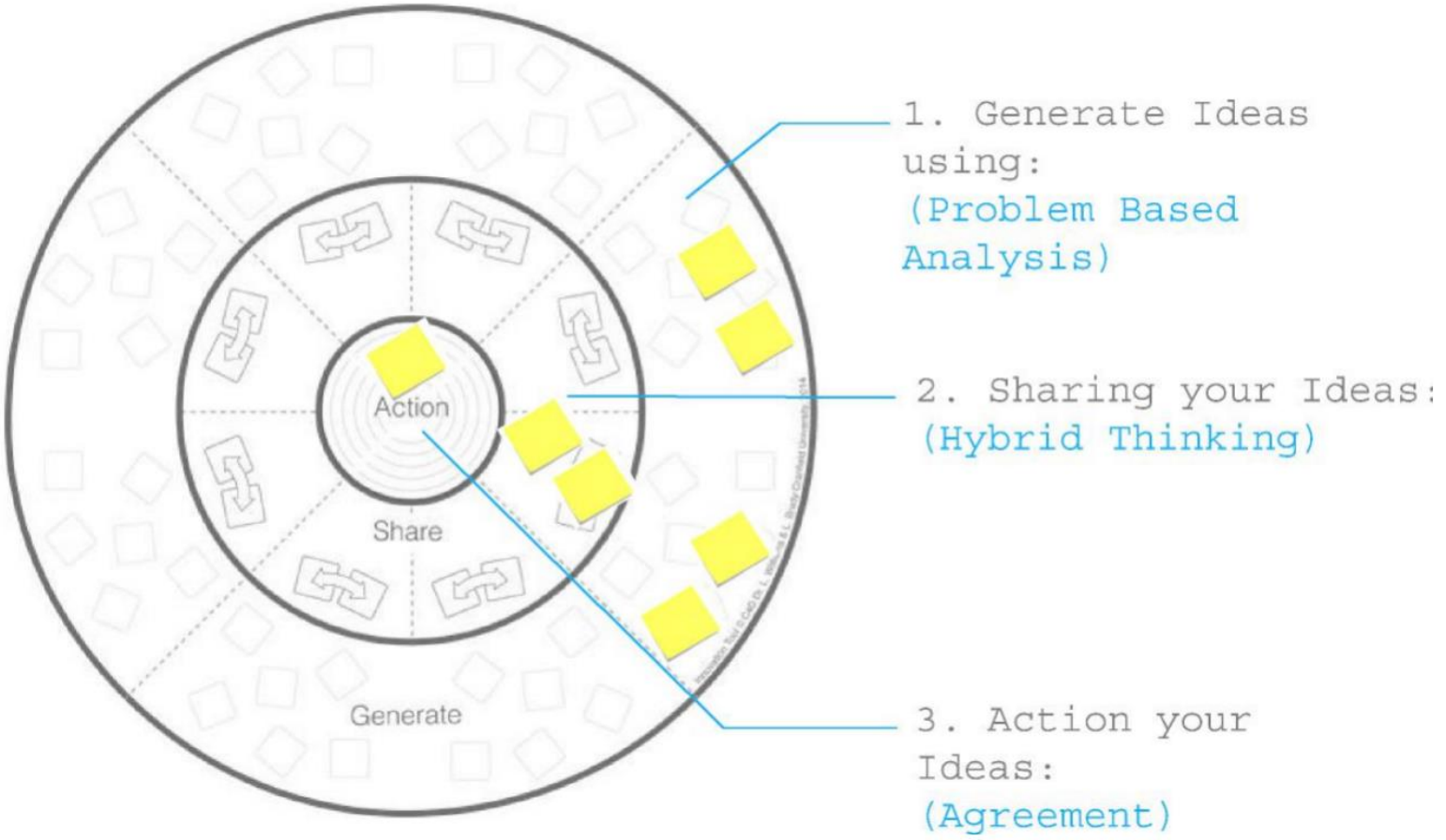
Design Your Sustainable AI solutions



STEP 2

- Move around the tool looking at what ideas others have suggested
- If you see an idea you like (you can include your own) then move it to the next ring inwards.
- If you see two ideas that inspires a new idea, write it down on a Post-it note and add it to the middle ring also.

AI Driving Sustainable Industry Innovation



STEP 3

- As a group, discuss all of the ideas and try to decide which one to take forward to the centre.
- If you need to use Pairwise Analysis to help you choose.
- If you wish you can run through the tool again to generate new ideas and suggestions for your groups chosen idea. This will really help you to explore the idea in great detail.

AI Driving Sustainable Industry Innovation

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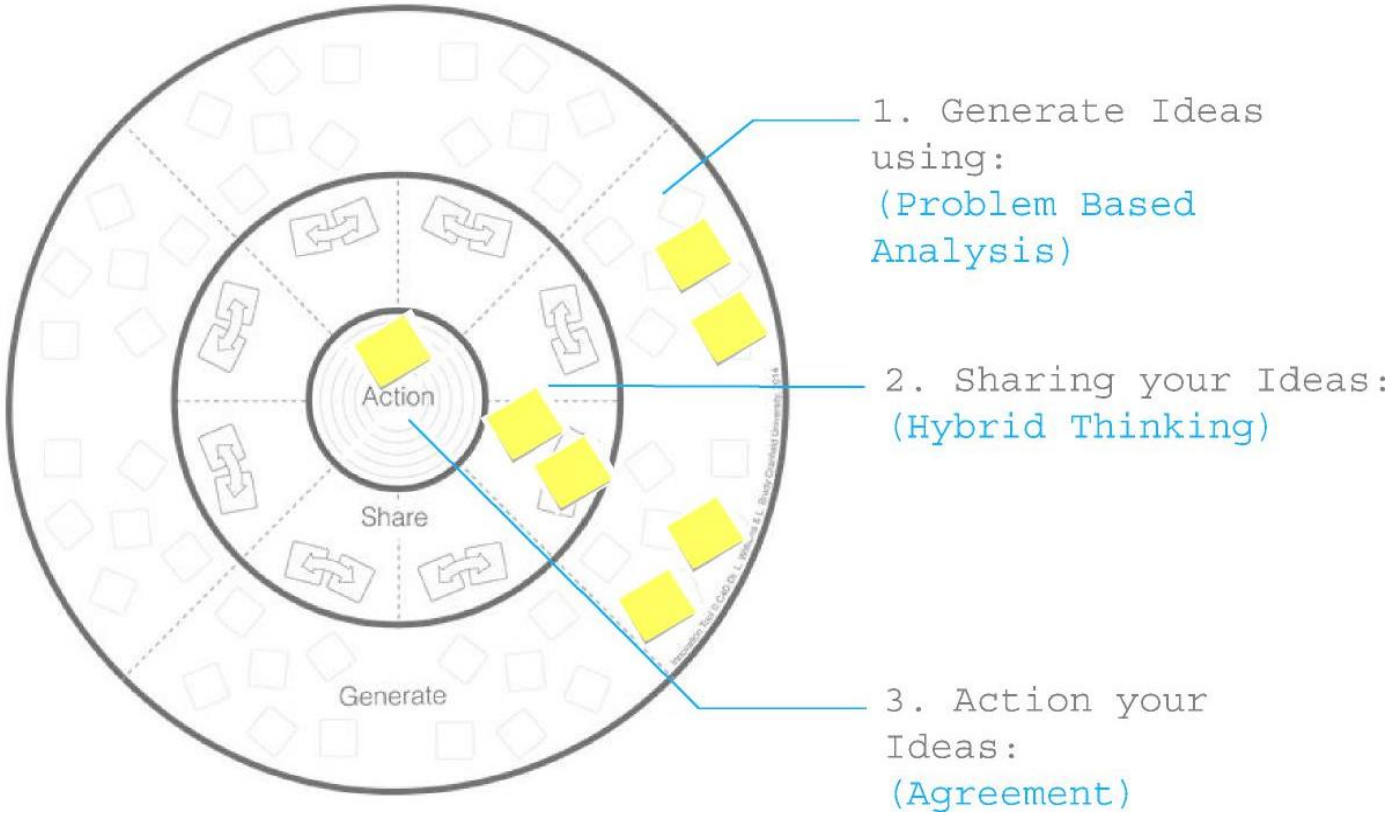
Collaborative Thinking

In your Groups:

Practice using the tool using the ‘Challenge’ set.

- 10 mins per STEP.
- 30 mins total.
- You will present your ideas in the next part of this workshop.



Challenge

“Cities struggle to sustainably manage escalating waste volumes amid rapid urbanization.”

(We’ll work through the tool together in 3 steps of 10 minutes each)

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AI for Waste Management Case Study

Your Solutions

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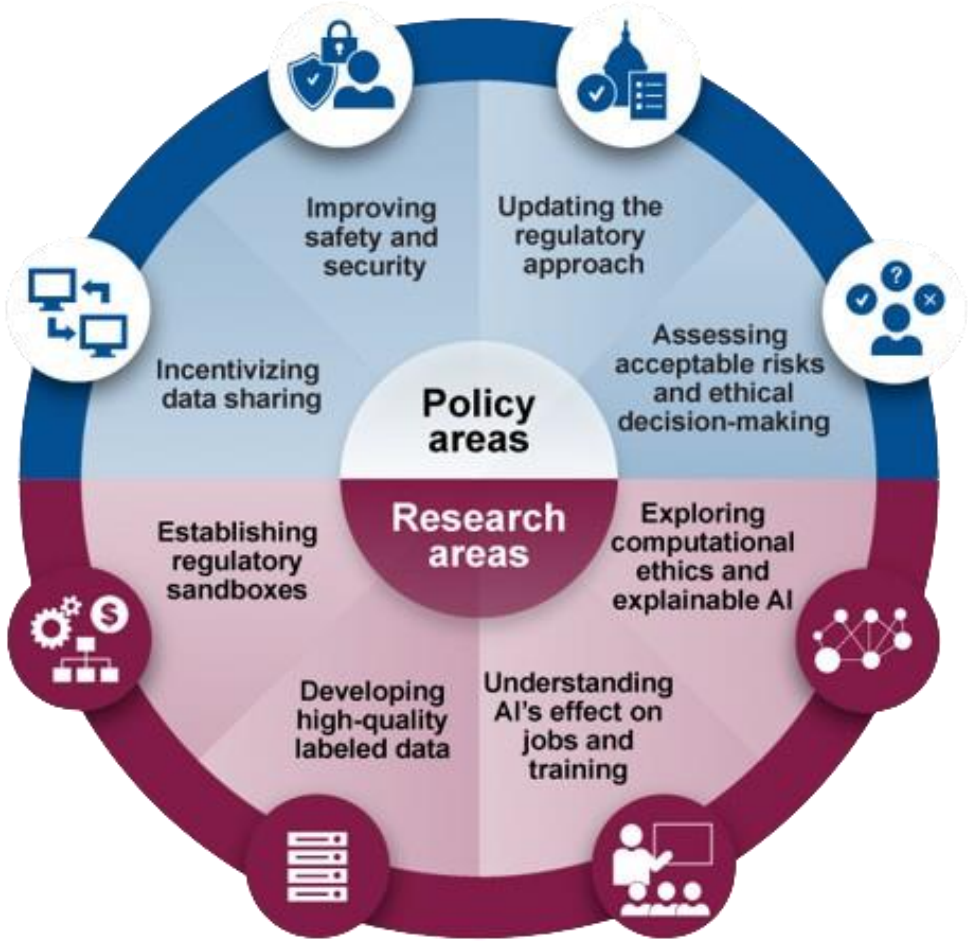
Postdoc Pathways To Impact

Opportunities and Challenges



Opportunities for sustainable AI:

- Energy efficiency optimization
- Smart grid management
- Climate modeling and prediction
- Sustainable resource management
- Environmental monitoring and conservation

Challenges for sustainable AI:

- High energy consumption of AI systems
- Electronic waste from hardware
- Potential for AI-driven overconsumption
- Ethical concerns and bias in AI decision-making
- Ensuring equitable access to AI benefits

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Future Events

Artificial Intelligence for Sustainable Future

One-day in-person workshop at Cranfield University

Date: 18th November, 2024