



Collaboration, Innovation and Resilience: Championing a Digital Generation

Brisbane, Australia 6-10 April

## Worried about AI Hallucinations? What about Human Hallucinations?

Addressing the data acquisition challenges in the emerging AI paradigm

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Mr Jason Errey

Dr Brad McCusker



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## Overview

AI Hallucinations

Human biases and errors

What's behind data bias

How do we build trust in our data

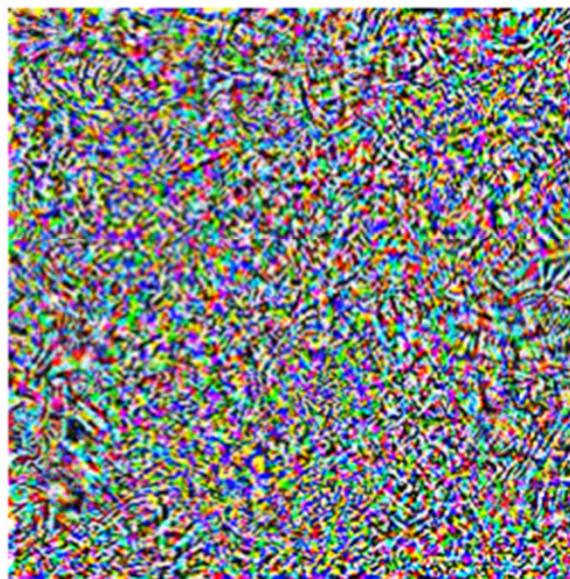


## AI Hallucinations - The issue of Uncertainty and Trust

“pig”

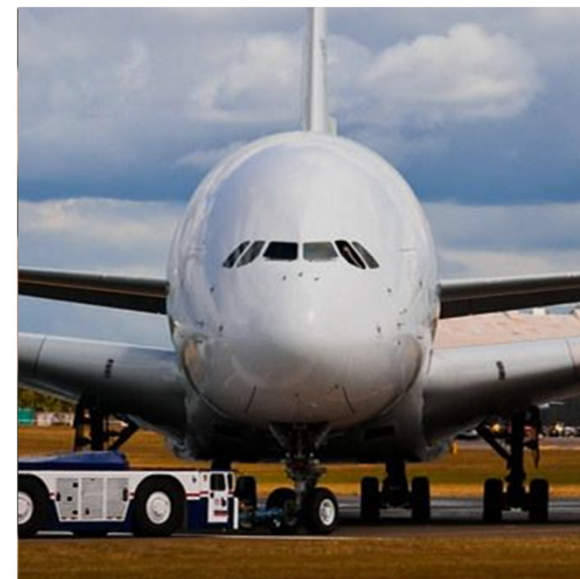


+ 0.005 x



=

“airliner”



[Source: <https://medium.com/attentive-ai/fooling-cnns-via-adversarial-examples-877a9e0ee84e>]



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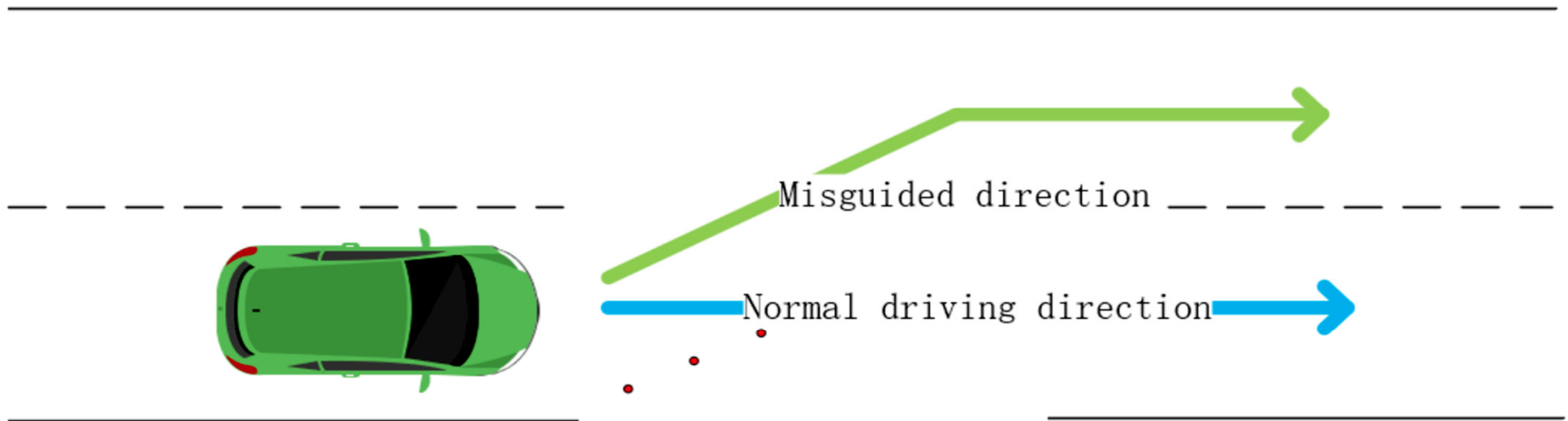
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## AI Hallucinations - The issue of Uncertainty and Trust



[Source: <https://arstechnica.com/information-technology/2019/04/researchers-trick-tesla-autopilot-into-steering-into-oncoming-traffic/>]



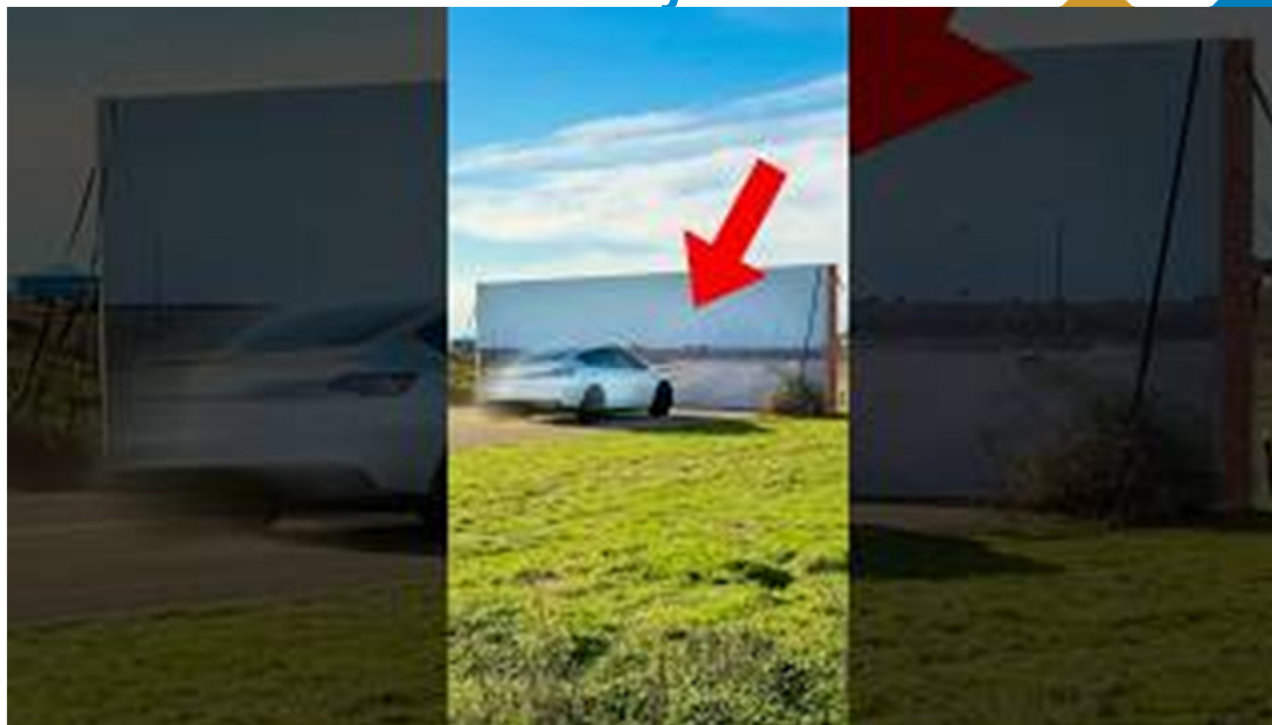
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## AI Hallucinations - The issue of Uncertainty and Trust



<https://youtu.be/U1MigIJXJx8>

<https://www.youtube.com/@MarkRober>

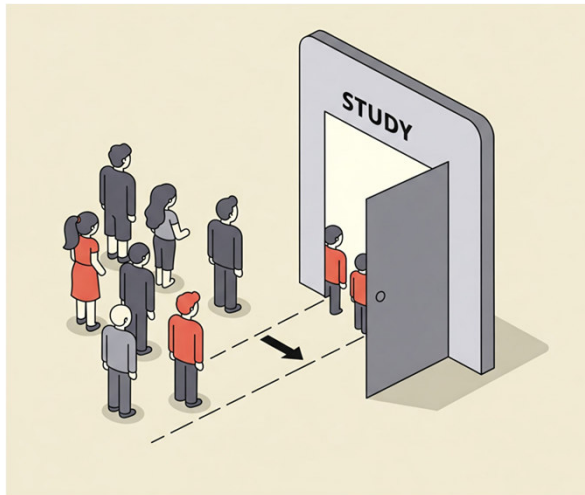


## What about Human Bias and Hallucinations?...



### Confirmation bias

Subconsciously, or consciously, Cherry Picking data/results that supports our preconceived arguments.



### Selection bias

Looking at samples that are not representative of the population.



## What about Human Bias and Hallucinations?...

### Historical Bias

Data from historically-biased sources are used to train machine learning models



### Survivor Bias

Focus on the winners rather than the runners-up.

## What about Human Bias and Hallucinations?...

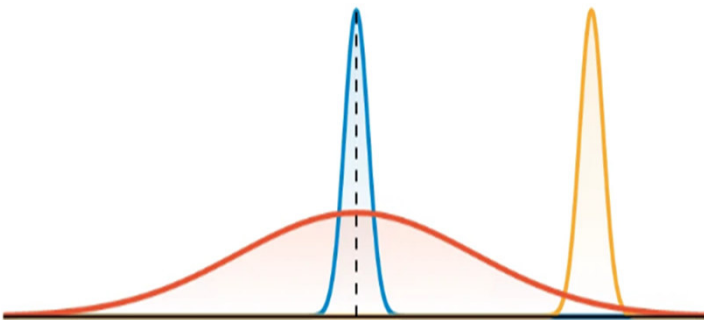
### Availability Bias

Availability of data has a big influence on how we view the world



### Outlier Bias

Blindly averaging data can hide the effect of outliers and anomalies, and can skew our observations.







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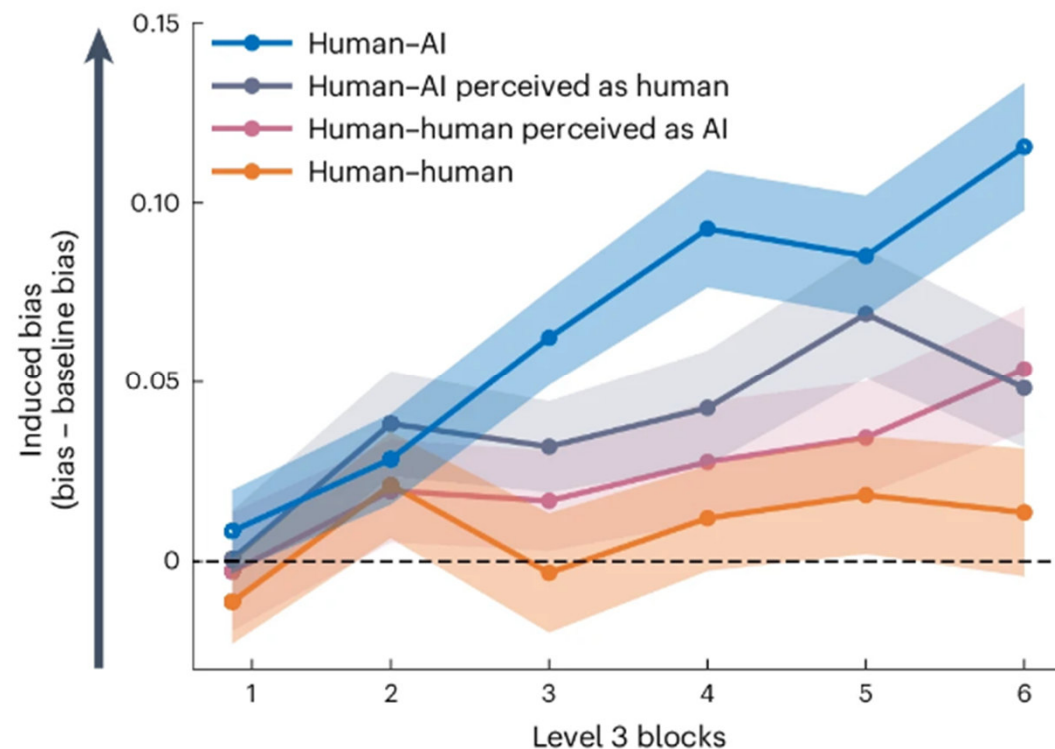
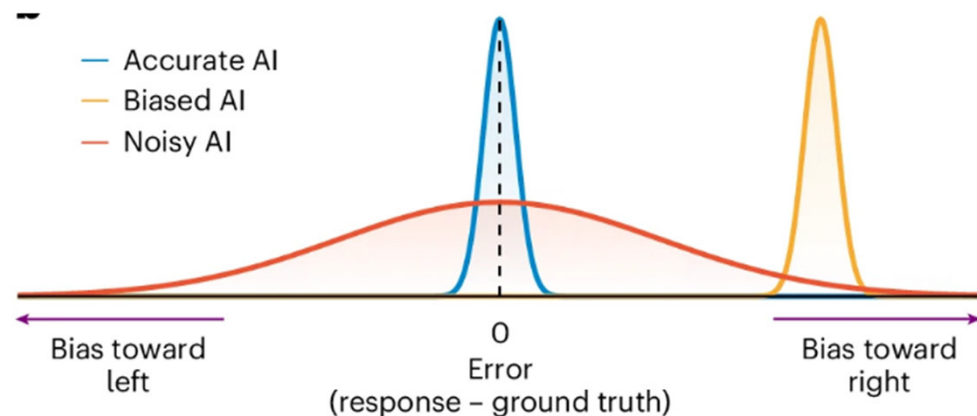
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## What about Human Bias and Hallucinations?... Runaway Bias Amplification



Glickman, M., Sharot, T. How human-AI feedback loops alter human perceptual, emotional and social judgements. *Nat Hum Behav* 9, 345–359 (2025).

<https://doi.org/10.1038/s41562-024-02077-2>

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## Human + AI Hallucinations and Bias can lead to Absurd Outcomes





# What's really behind the issue of bias in our use of data?



## Integrity

how much do we know about uncertainty of our data?

## Provenance

do we know the history of our data?



## Integrity

how much do we know about uncertainty of our data?





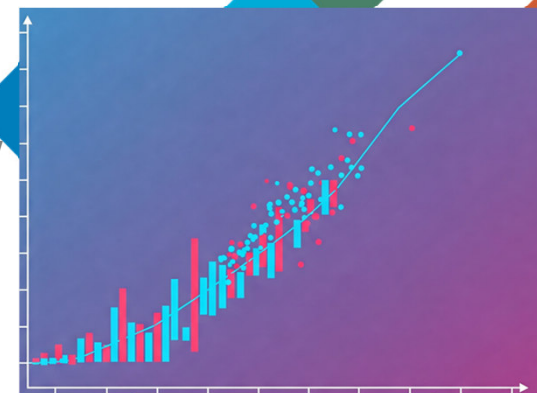
## How to Rebuild Trust in our Data - Integrity

Measurement, acknowledgement and reporting of data uncertainty



Multiple views of a problem

Validation and continual improvement of data



# How to Rebuild Trust in our Data - Provenance



Tracking data provenance of data for its entire life cycle

Metadata and Provenance Standards

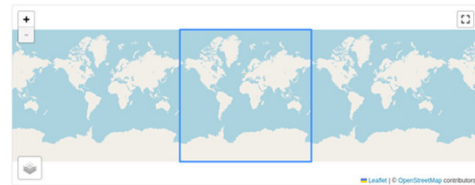
## Terra Nexus DGGS Immutable Catalog

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Immutable catalogues

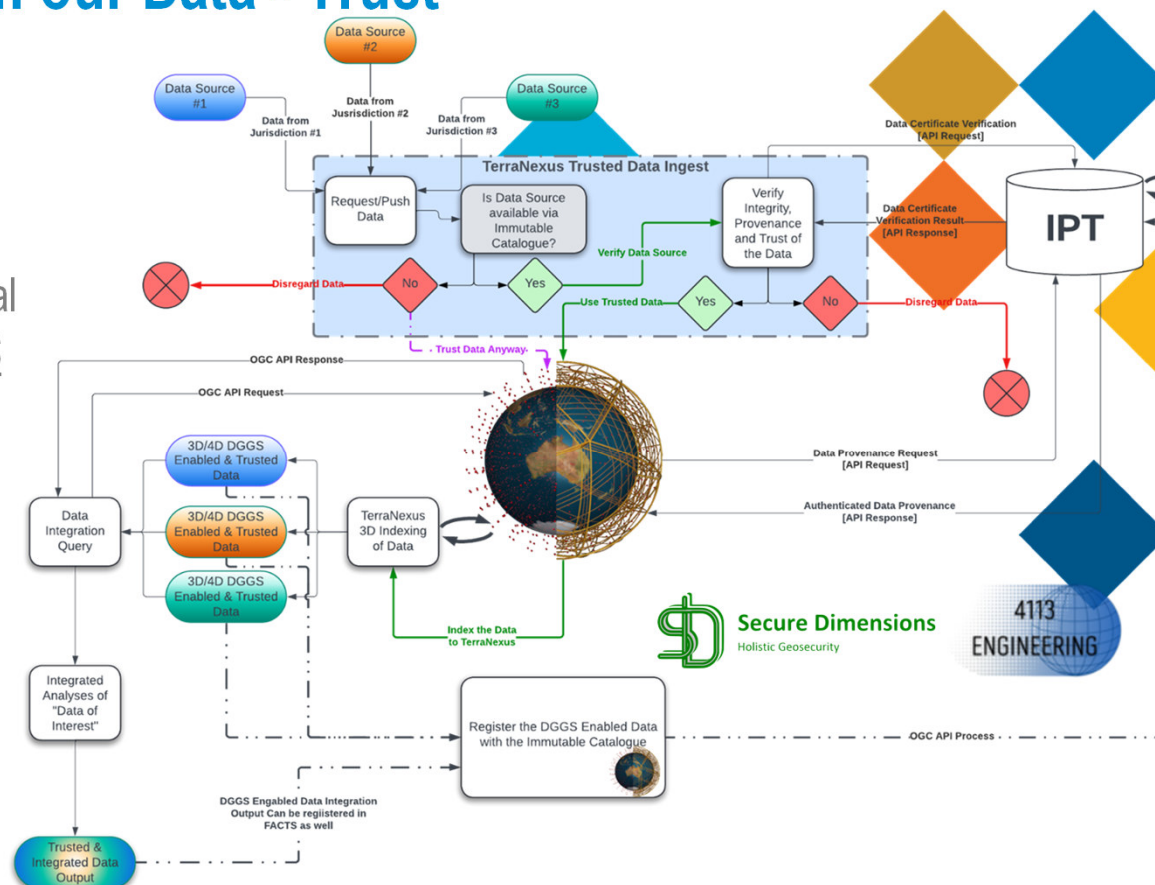




## How to Rebuild Trust in our Data - Trust

How do we establish trust in a “trustless” world?

- Common, but scalable spatial data management => **DGGS**
- Better Provenance and Metadata management
- Blockchain and/or similar “tamper-free” data validation and authentication.







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## The most relevant SDGs related to the presentation and theme of this session

**12** RESPONSIBLE  
CONSUMPTION  
AND PRODUCTION



1st  
relevant  
SDG

**11** SUSTAINABLE CITIES  
AND COMMUNITIES



2nd  
relevant  
SDG

**13** CLIMATE  
ACTION



3rd  
relevant  
SDG

**SUSTAINABLE  
DEVELOPMENT GOALS**

International Federation of Surveyors supports the  
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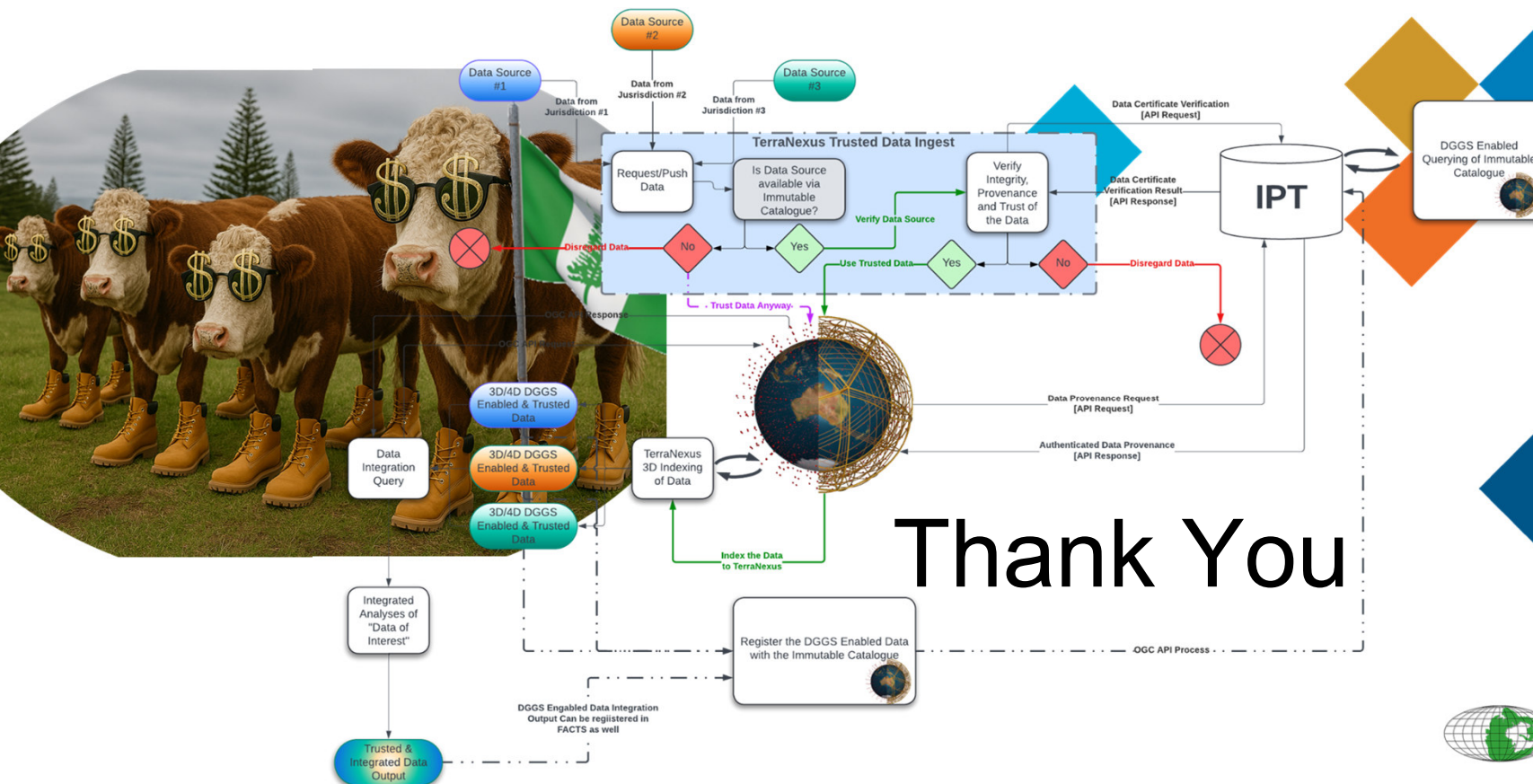
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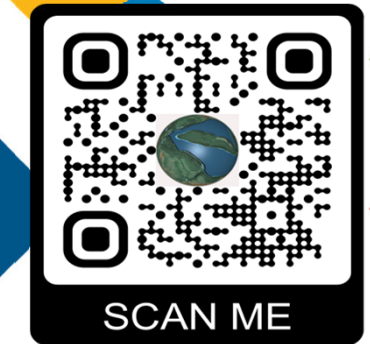


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STEP 1: SELECT HERE THE THREE MOST RELEVANT SDGs  
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