AI @ VDAB

28 April 2020

Trust - Transparency - Benefit

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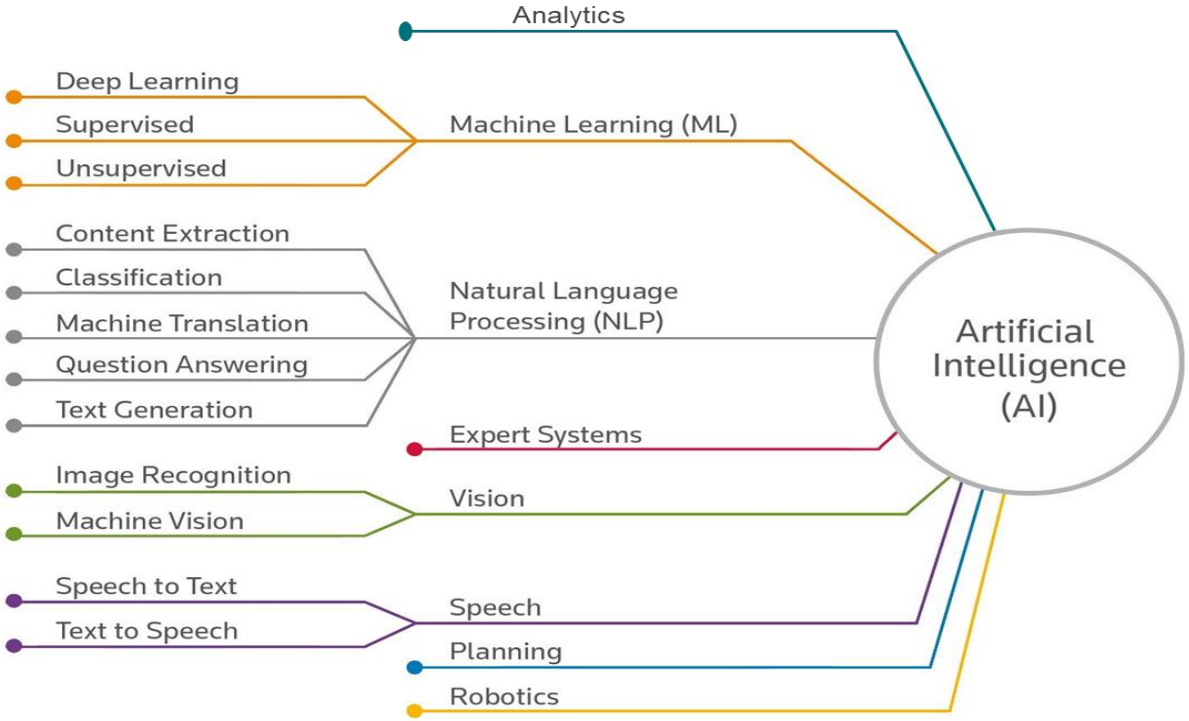
AI is een breed begrip



Het team

- Teamlead AI-Team : inhoudelijk en architecturaal: 2
- PLs: 2
- Deep Learning: 4
- Data Scientists: 6
- Data Engineers: 5
- DevOps/MLOps: 1

Infrastructuur

- OBDA
- 2 Bullions
- Neo4J
- VDAB AWS Cloud
- VDP *(VDAB Data Platform)*

Enkele voorbeelden

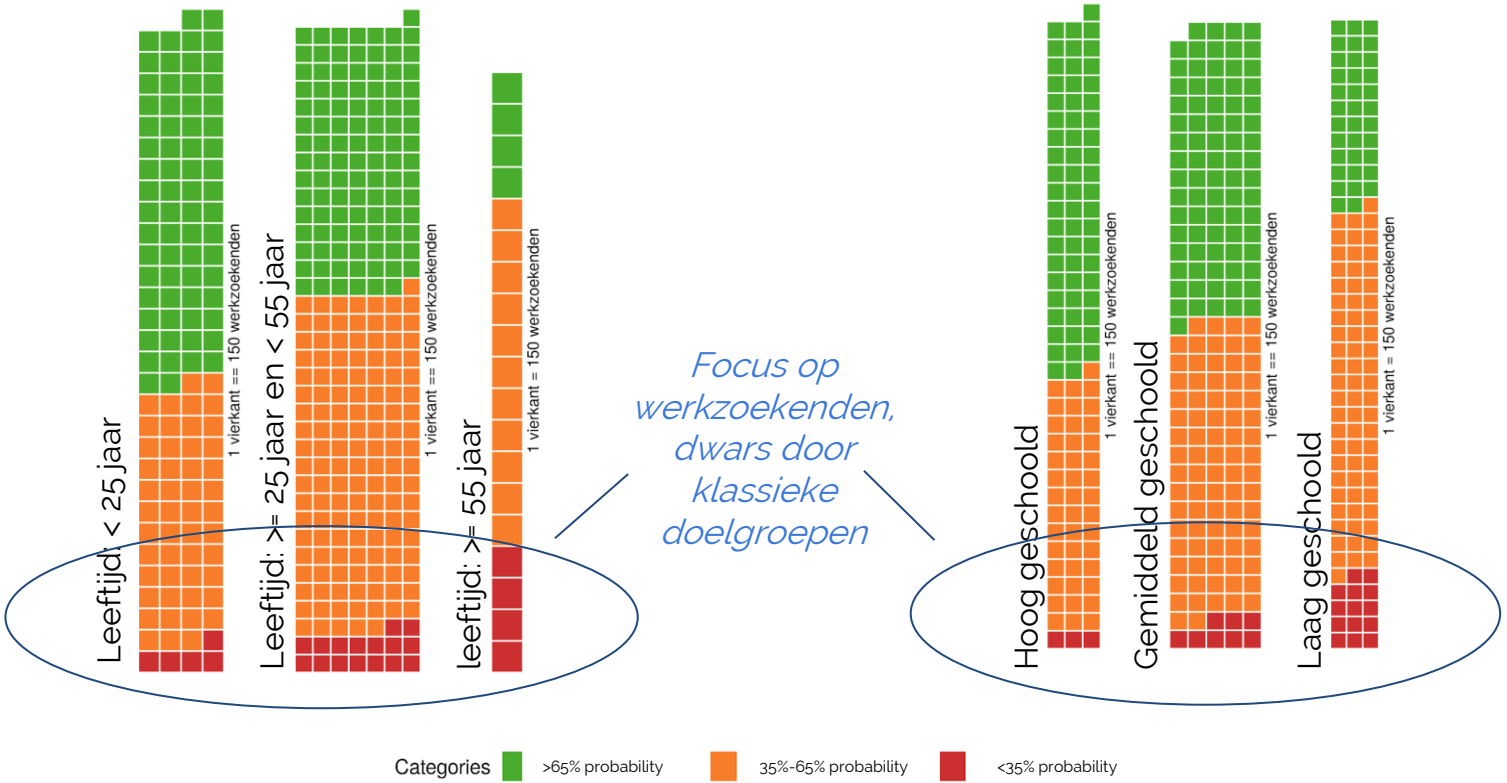
Competentiezoeker	NLP
Afstand tot de arbeidsmarkt	Random Forest
Jobnet	Deep Learning
Jobbereik	Graph DB
Beroepenzoeker	Deep Learning, NLP
Orient 2.0	Embedding, NLP
Skill Tag Extractor	NLP
…	

Afstand tot de arbeidsmarkt

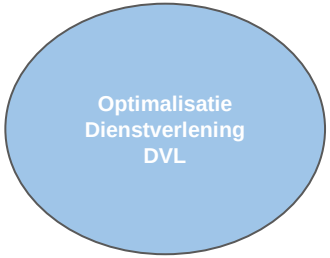
Random Forest

Afstand tot de arbeidsmarkt: context

Kans op werk binnen 6 maand voor werkzoekenden sinds 08/10/2018



AI 2020



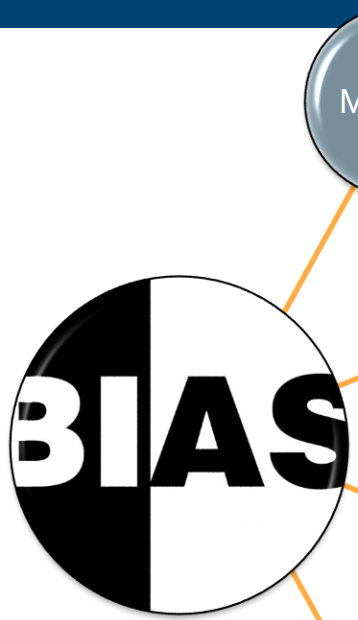
EXPLOIT	Afstand tot de arbeidsmarkt	Jobnet / Talent API Orient 2.0		Datacollectie Beroepenzoeker AI & ethics/validation
EXPLORE	Activiteitsgraad	Jobbereik/Loopbaan assistent		Optimalisatie Competent
EXPERIMENT	Bias in de dienstverlening Dienstverlening op maat Slimme tips voor dossiers	Voorspellen van jobverlies Services naar inactieven Ondersteuning in de leerweg	Werkgeversegmentatie Werknemerbereik Ondersteuning in de leerweg	Optimalisatie leermodules Onderzoek naar trending competenties & jobs Jobmap Diverse analyses voor business & IT

Ethical AI

Trust-Transparency-Benefit

“ Technology is neither good nor bad; nor is it neutral.”

First Law of Technology, Melvin Kranzberg (1917-1995), Professor, and Co-Founder, Society for the History of Technology



Mensen

- Inclusie & diversiteit in het team
- Multi-disciplinaire teams

Social Bias

- Gedrag in de markt
- Gedrag binnen bepaalde groepen
- Sociale realiteit

Data

- Verantwoorde keuze van de variabelen
- Kritisch kijken samen met business experts
- Checks op de data
- Data cleaning

Model

- Impact analyse op het model van de gebruikte variabelen
- Geautomatiseerde BIAS detectie middels tools
- Peer review van de gebruikte methodes

AI 4 GOOD

AI systems which have impact on people must be devellopped and continuously monitored following our three principles

Trust **Transparency** **Benefit**

ETHICS GUIDELINES FOR TRUSTWORTHY AI

INDEPENDENT HIGH-LEVEL EXPERT GROUP ON ARTIFICIAL INTELLIGENCE
SET UP BY THE EUROPEAN COMMISSION

Ethical Principles in the Context of AI Systems
(i) Respect for human autonomy
(ii) Prevention of harm
(iii) Fairness
(iv) Explicability

Trustworthy AI has three components, which should be met throughout the system's entire life cycle:
1. it should be **lawful**, complying with all applicable laws and regulations;
2. it should be **ethical**, ensuring adherence to ethical principles and values; and
3. it should be **robust, both from a technical and social perspective,** since, even with good intentions, AI systems can cause unintentional harm.

Requirements of Trustworthy AI

1. **Human agency and oversight**
   Including human control and human supervision
2. **Technical robustness and safety**
   Including resilience to attack and security, fall back plan and general safety, accuracy, reliability and reproducibility
3. **Privacy and data governance**
   Including respect for privacy, quality and integrity of data, and access to data
4. **Transparency**
   Including traceability, explainability and communication
5. **Diversity, non-discrimination and fairness**
   Including the avoidance of unfair bias, accessibility and universal design, and stakeholder participation
6. **Societal and environmental wellbeing**
   Including sustainability and environmental friendliness, social impact, society and democracy
7. **Accountability**
   Including auditability, minimisation and reporting of negative impact, trade-offs and redress.

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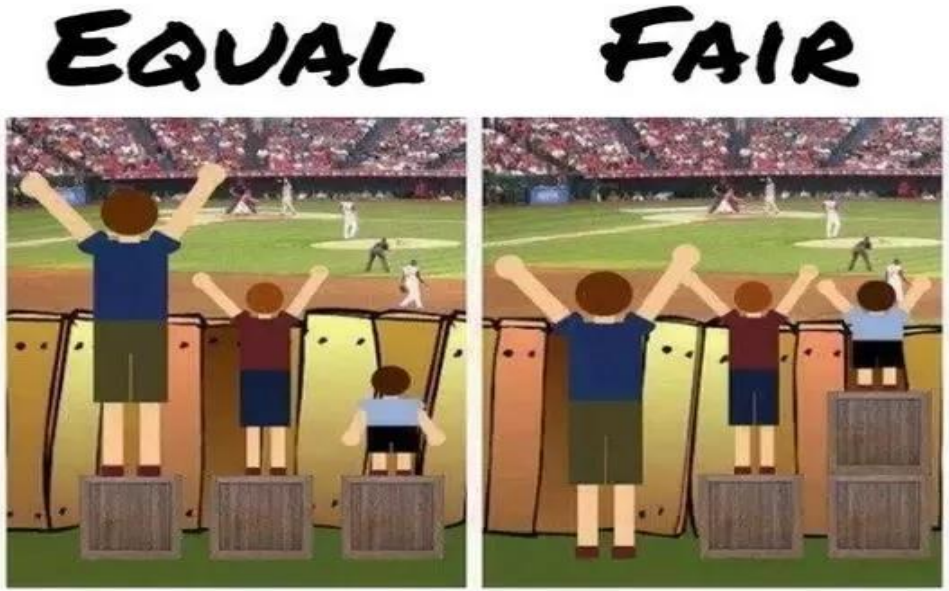
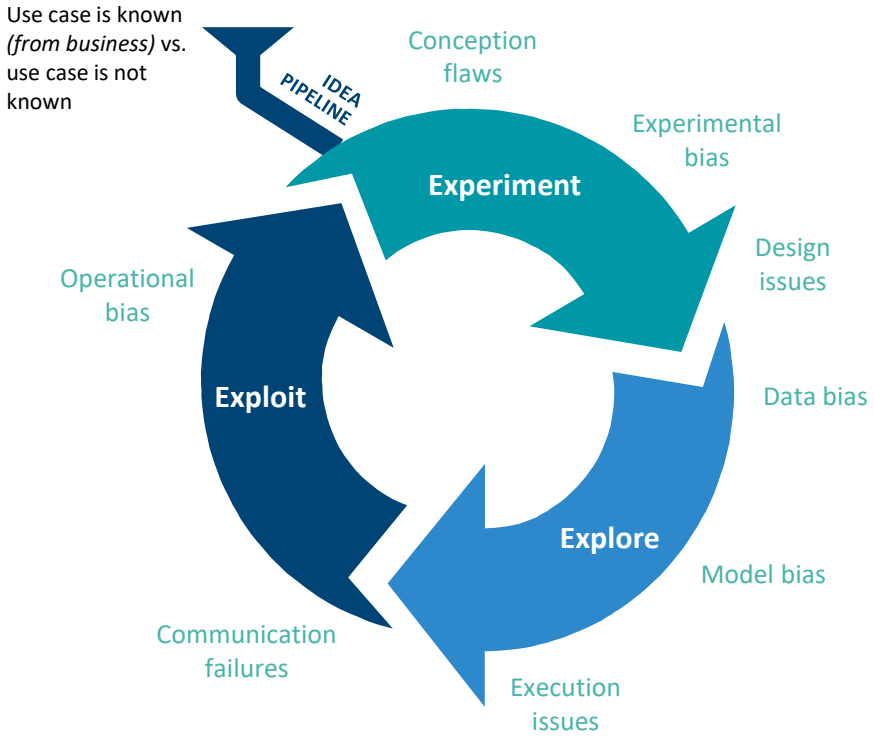
Fair or Equal

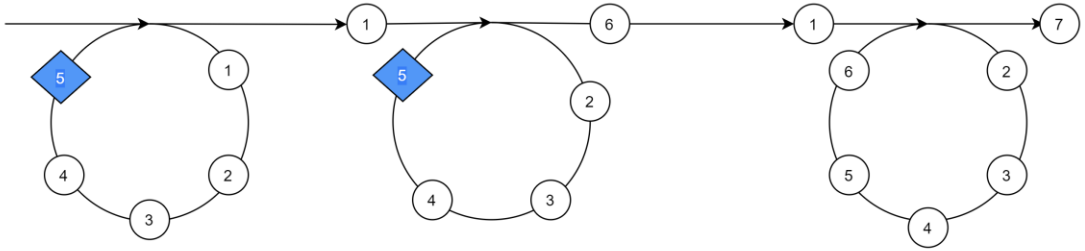


VDAB Ethical AI programma

Putting AI 4 Good into practice



Taken binnen elke fase



EXPERIMENT

1. Define AI use case
2. Initiate experiment and iterate
3. Define the sensitive variables
4. Perform qualitative assessment
5. /* **Milestone**: Provide feedback to move to next phase

EXPLORE

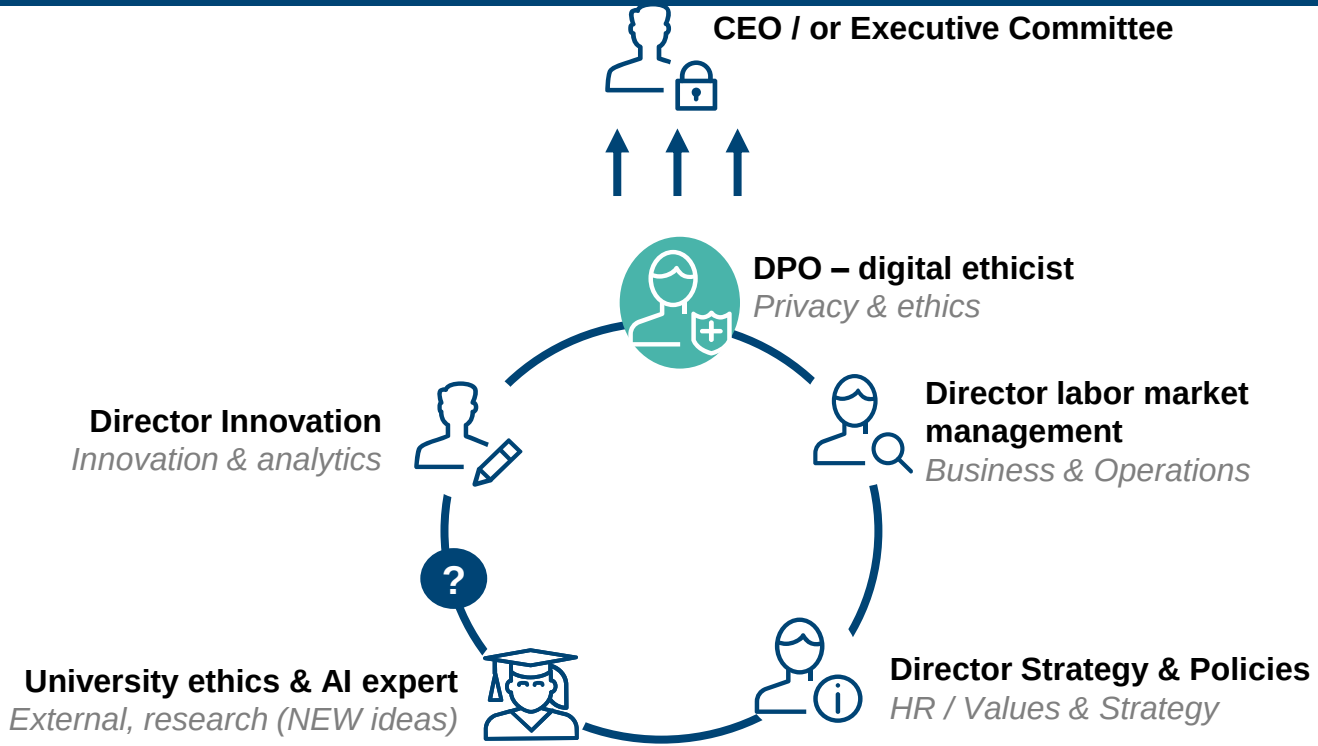
1. Select fairness metrics & define fairness for the use case
2. Perform qualitative assessment
3. Perform quantitative assessment
4. Create & share assessment results
5. /* **Milestone:** Review assessment results & provide feedback
6. Prepare for internal communication

EXPLOIT

1. Handovers (1. production ready AI systems to software factory 2. Usecase to Business Owner)
2. Share / update internal communication
3. Perform qualitative assessment checks
4. Monitor and assess data & model checks using the quantitative assessment asset
5. Create & Share assessment results
6. Review assessment results & provide feedback
7. Create & Share external communication material

Model Risk Mgmt Industrialization

A sustainable operating model ‘Ethical board structure’
There will be decisions to be made …



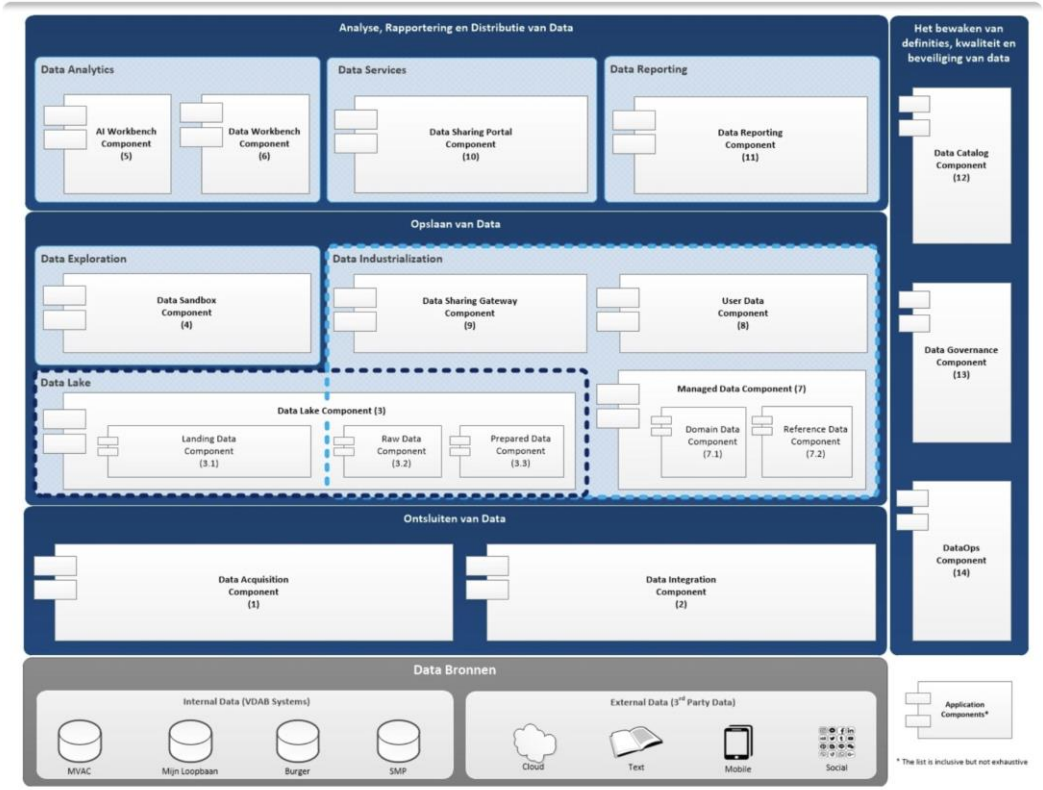
AI FOR GOOD - Bedenkingen & Uitdagingen

- Transparantie toepassen met externe partijen (vermijden van blackbox effect)
- Een eenvoudig governance model
- Continu blijven innoveren
- Een visie voor Open data
- Neutraliteit garanderen
- Uitleggen vs verantwoorden vs justificatie
- Ethics by design samen met Privacy en Security by design
- Communicatie intern en extern (reputatie impact)

C-level support	Experiment	Explore	Exploit
Phase 1 • BIAS Awareness • Business Informed	• Purpose • Data • People (competences) • Tools (e.g. Python, Neo4J, Tensorflow, …) • Data exploration • Computing power	X	X
Phase 2 • Keep experimenting • Start working on Data & AI Literacy • Set up Digital Ethics/Ethical AI • Business Consulted	• Multiple simulationuous experiments • Enrich internal data with external data • People must spend 20% of their time in experimenting and exploring new technologies & data	• API first • Manually Set up (realtime) data pipelines • Choice of tooling • Manual Model Risk Mgmt • First steps in MLOps	• Integrate in operational systems • Integrate with operational databases • APIs published • Data Pipelines run manually • Manual deployment of model • **Manual Model Risk Management**
Phase 3 • Keep experimenting • Data & Literacy rolled out • Ethical AI in place • Shared Accountability	• Find solutions for new problems/challenges • Identify new and better solutions for existing problems • Keep looking for new ideas, technologies for the right purpose	• Project oriented approach • Several parallel projects • Model Risk management set up for every new model	• API first -versioned • Industrialized Data Pipelines • **Regular retraining of AI-models** **Industrialized Model Risk Mgmt** • Version mgmt of data, model and bias checks • Industrialized MLOps as separate SDLC

DRAFT

VDAB Data Platform - VDP



AI for Good

Global Summit 2020

Accelerating the United Nations Sustainable Development Goals

4-8 May 2020
Geneva, Switzerland

ITU XPRIZE

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