



**GREEN
CITY
WATCH**

ICLEI: Session A2
Joining forces!



Chris van Diemen
26 June 2019

Overview

Intro

Who are we?

What drives us?

Work

How do we do it?

From local to global

Examples

Wrap up.

Time: ~10 minutes





MAXAR

**“Life is like a box
of chocolates...”**

**Tom Hanks,
Forrest Gump
(1994)**





MAXAR

“to any girl who feels,
there is some chance for
romance” - Emma Stone,
La La Land (2016)





Who is Chris?



Who is Chris?



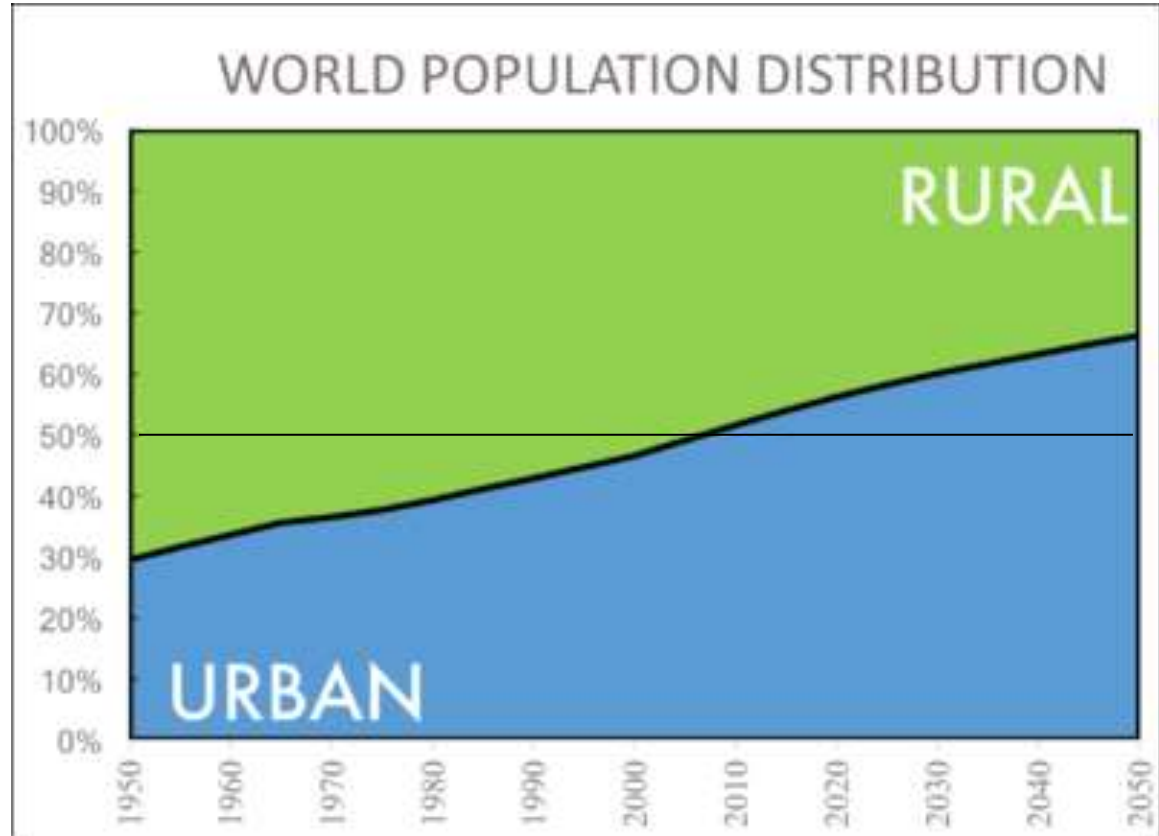
The beginning

The very best ideas are born
out of frustration.

– Richard Branson

Every week **3 million people** move to the city.

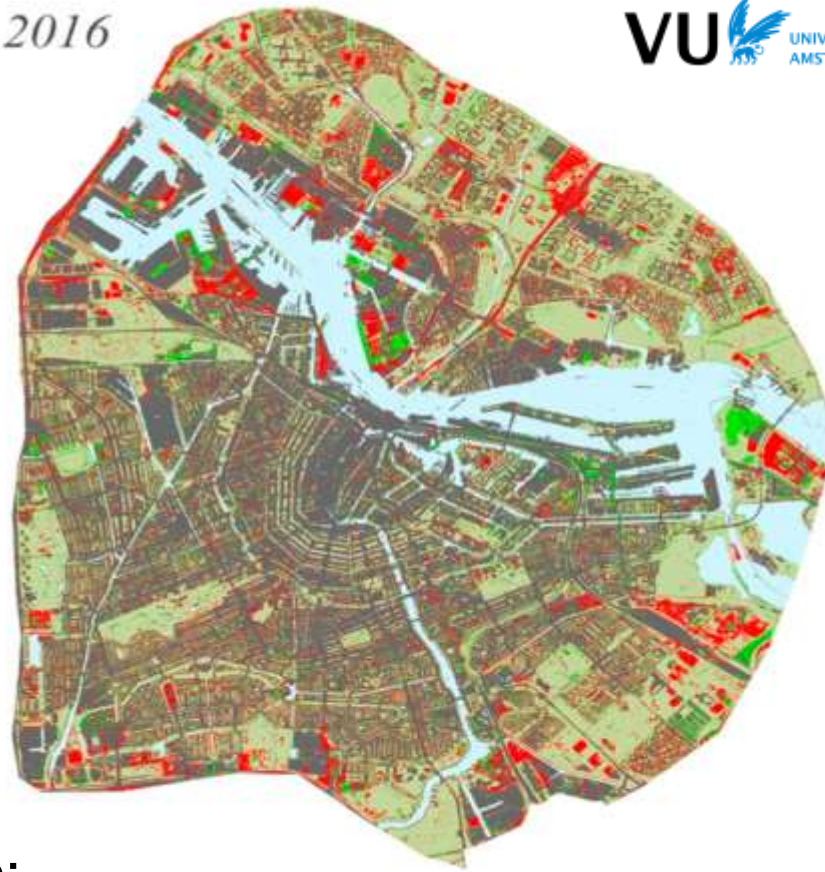
(UN, 2015)



2003



2016



Source: Giezen, Balicki & Arundel (2018)

Amsterdam:
11% decline in 13 years



Mission

To revolutionize the way we value nature, bring transparency to local government, and regenerate our cities.



The team!



Nadine Galle

**URBAN
ECOLOGICAL
ENGINEERING**



Jim Groot

**REMOTE
SENSING &
GEOMATICS**



**Anjelika Romeo-
Hall**

**SUSTAINABLE
DEVELOPMENT
GOALS**



**Florence van der
Hoven**

**MACHINE
LEARNING AND
SENSORS**



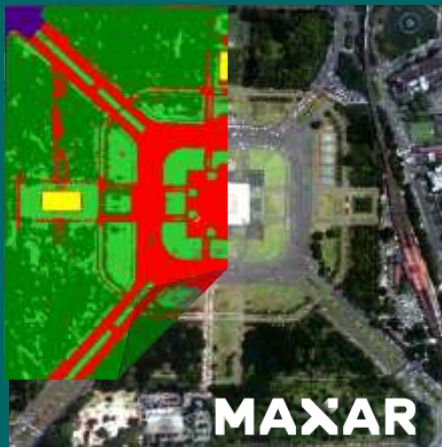
**Chris van
Diemen**

**DATA
SCIENCE**



How?





+



=



Photo: Hamza Javaid

High resolution
Satellite imagery

Green City Watch
Indicators

The right
solution
in the right
location



City:

Rio de Janeiro



Use sliders to change importance of different score groups

Social:



Ecology:



Economy:



Parque Jardim do Carmo



Social mean score: 3.67

Social Indicators	Score
Amenities and recreational facilities	1.00
Gray vs Green	5.00
Greenness in winter	5.00



Eco mean score: 2.6

Ecological Indicators	Score
Green within a riparian zone	1.00
Width of blue space in a park	1.00
Impermeable surfaces	5.00
Stormwater Capture	5.00
Leaf Area Index	1.00



Monetary value: 21461 \$

Economic Indicator	\$
Economic value of ecosystem services	21461.00

From **Local Knowledge** to a **Global Standard**



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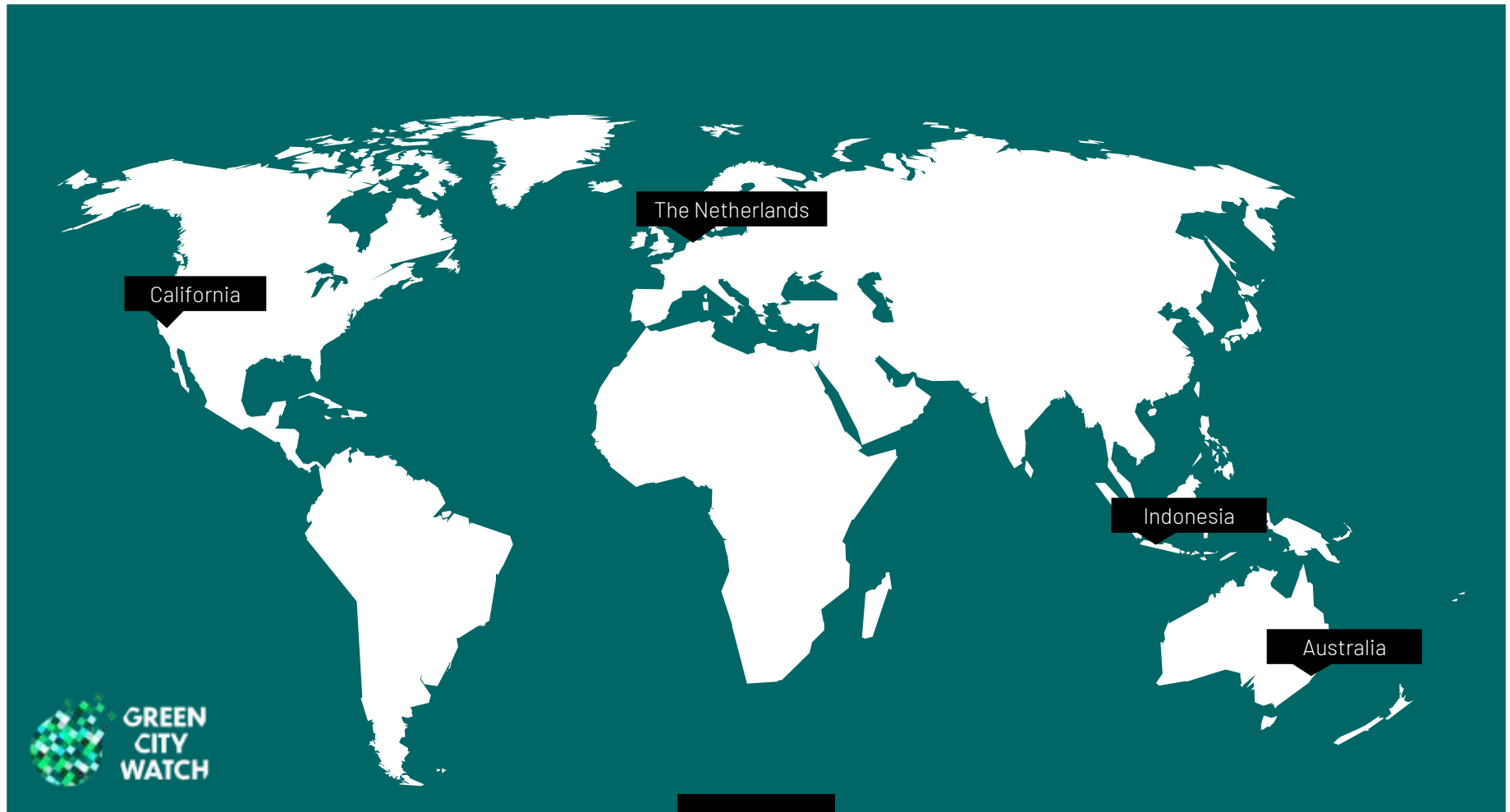
Use

Open Source Technology

Invest in

Stakeholder Engagement





California

The Netherlands

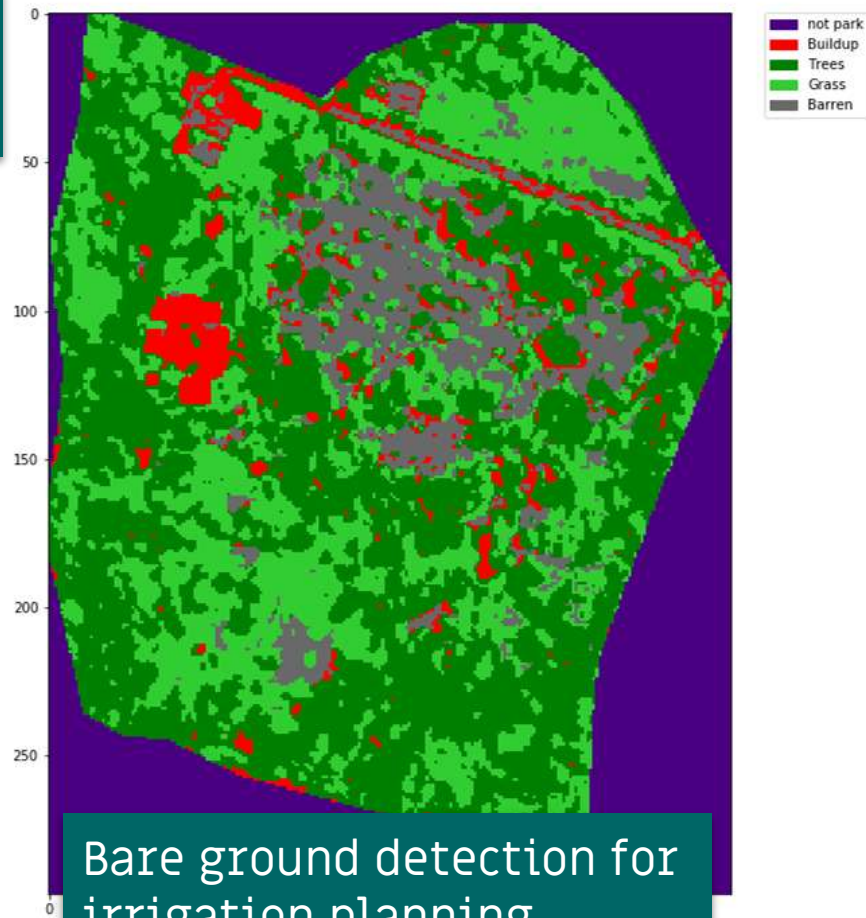
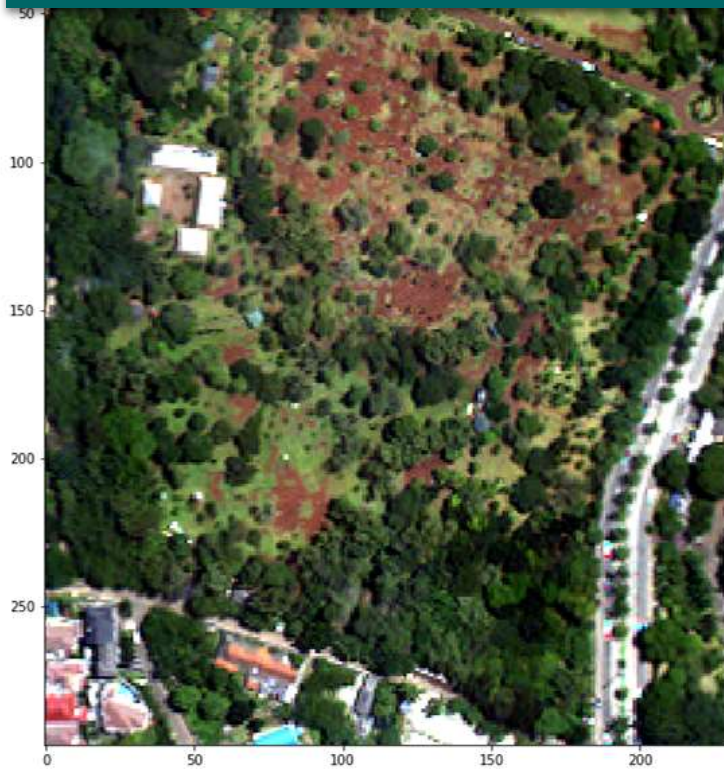
Indonesia

Australia



Example: Indonesia

JAKARTA, INDONESIA

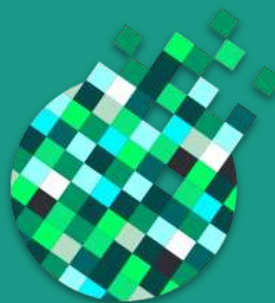


Bare ground detection for
irrigation planning

JAKARTA, INDONESIA



Bare ground detection for
irrigation planning



**GREEN
CITY
WATCH**

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DT4D

**DISRUPTIVE TECHNOLOGIES
FOR DEVELOPMENT**

Technology Solution

Data Input

± 30 cm resolution 8-band WorldView-3 satellite imagery with global coverage

OpenStreetMap data

Extension (mini pilot): Drone imagery



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Algorithms & Cloud

Stage: Feasibility tests done

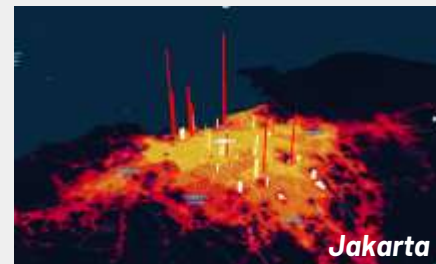
Tech: AI using Python & Docker on GBDX & AWS cloud platforms, open source, open access



Visualizations

Stage: Initial Mockup

Tech: Open-source visualizations with R shiny & Javascript nodejs/kepler.gl



Implementation Activities

Kickoff

Indicator Brainstorm: Engage government counterparts

Study: Review literature & scalability measures

Indicator Prioritization: Govt discussions + scalability

Aug 2019

Development &
Operation
(feedback loop)

Modelling: Execute and optimize AI algorithms

Evaluation: Verify with OSM, human eye & Drone data

Data understanding: Produce pilot visualizations

User feedback: Govt + WB engagement for operations



**Rapid
Iterative
Prototyping**
2-4 week cycles
(i.e. CRISP-DM)

Jan 2020

Dissemination

Final product: Code + Online, interactive app

Launch: May 2020, Event in Indonesia

May 2020

CALIFORNIA



Enforcement

Other examples



THE NETHERLANDS



Green roof management effectiveness



Green roof management
effectiveness



Green roof management effectiveness

SYDNEY, AUSTRALIA

15 LIFE
ON LAND



Biodiversity
SDG 15.4, 15.5



Biodiversity
SDG 15.4, 15.5



Building wildlife
corridors on existing
green spaces

Spreading the word





TEDx
ParcDuCinquanten



—
**NOW: Local Governments
for Sustainability!**

Let's work together :D



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MAXAR

A satellite image of a coastal city, likely Sydney, Australia, showing the harbor and surrounding land. A white dot is placed on a small island in the harbor, with a white line pointing to it from the text below. The city is densely packed with buildings, and the water is dark blue. The sky is dark with some white clouds.

**“Feel that right there? You are in
the middle of the world man”**

Mahershala Ali,
Moonlight (2016)



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Thanks!



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