

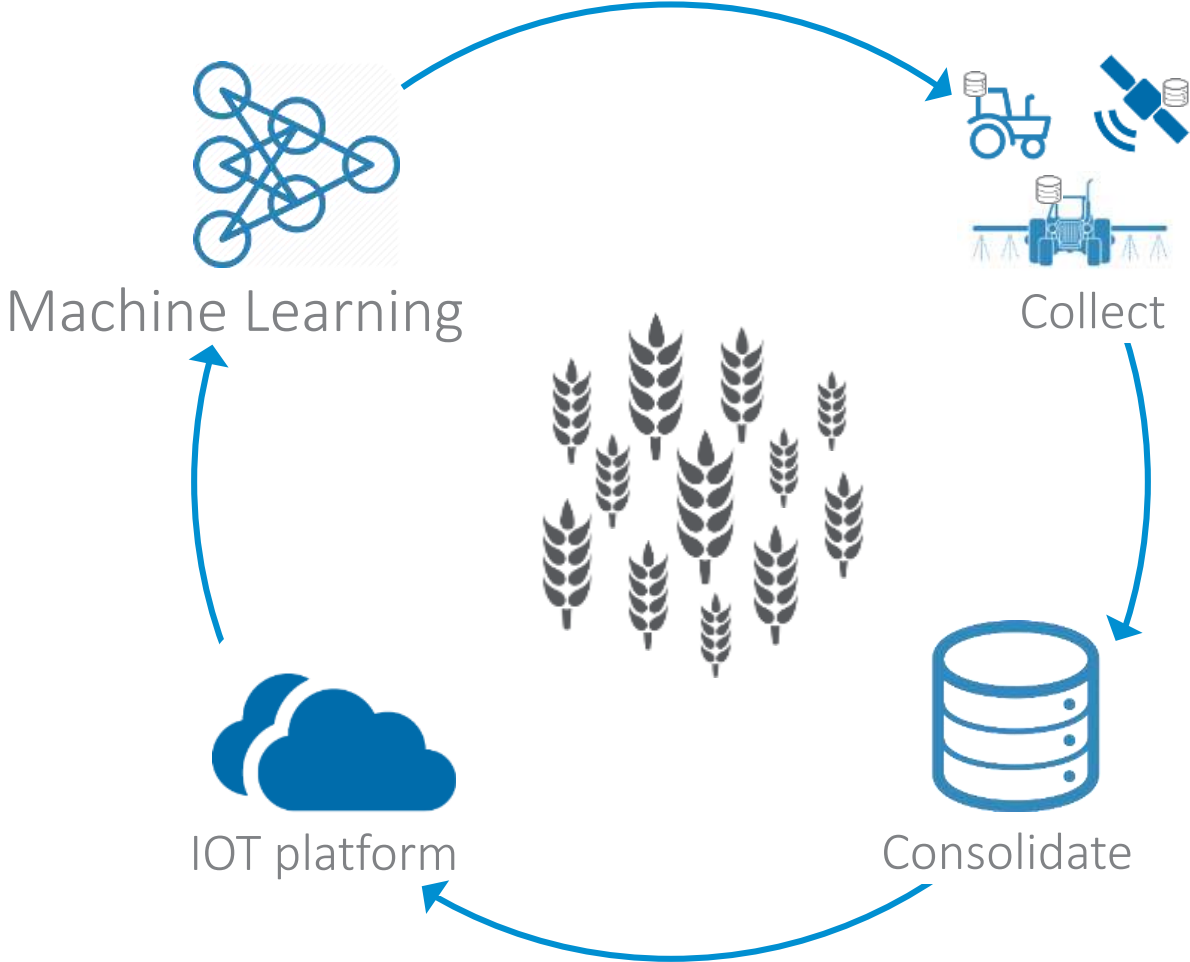


IT's about impact



Business case

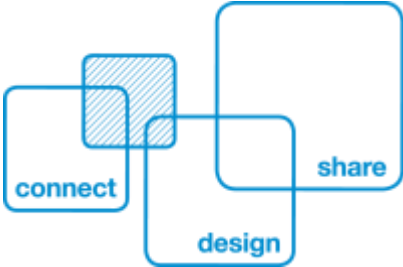
Savaco & ILVO



ILVO

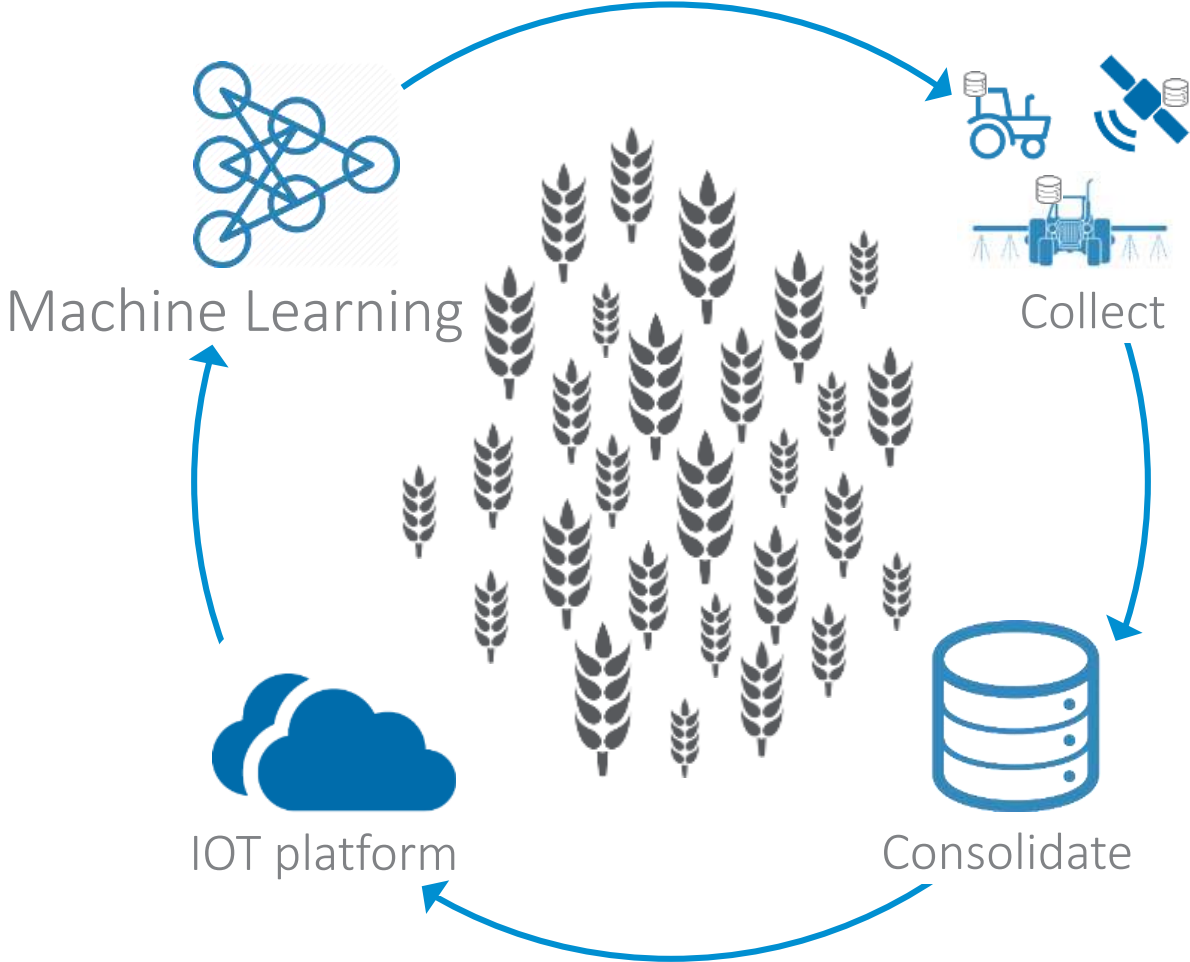


IT's about impact



Business case

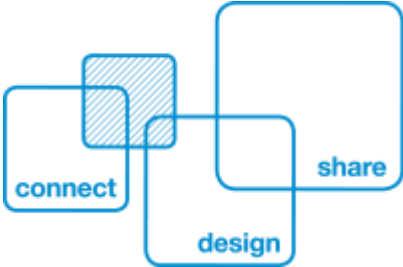
Savaco & ILVO



ILVO

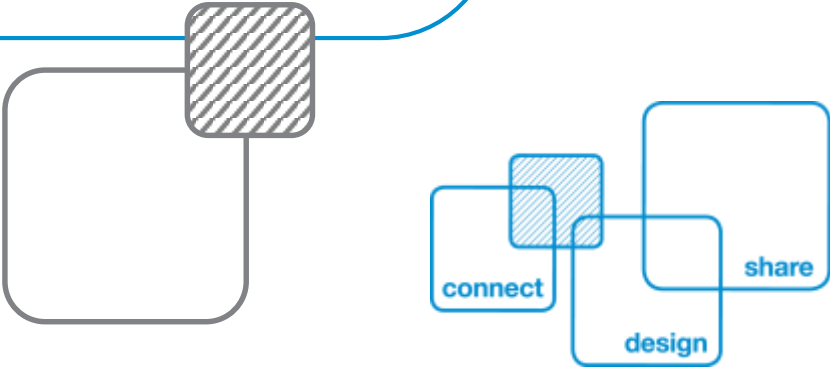
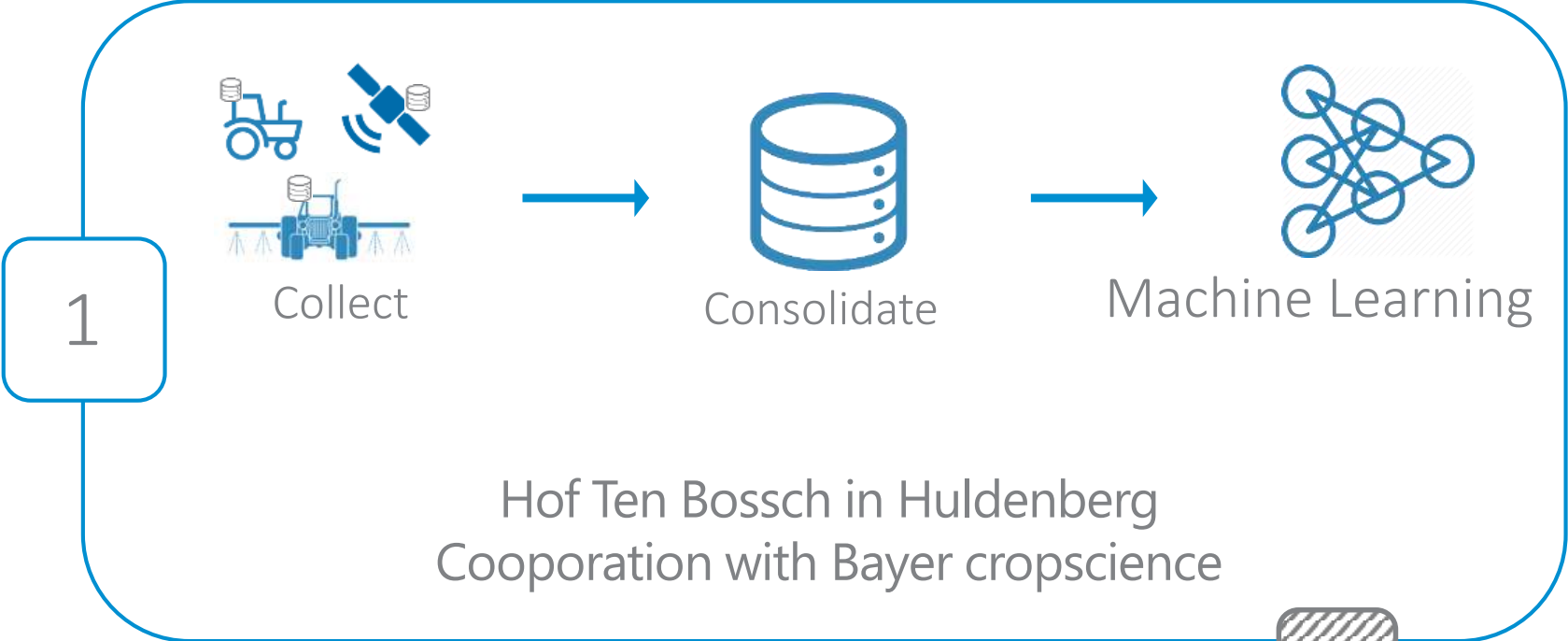
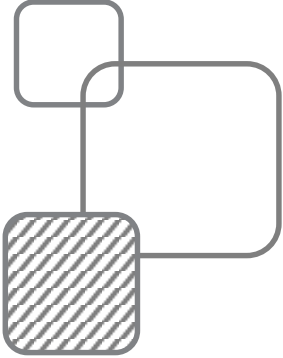


IT's about impact



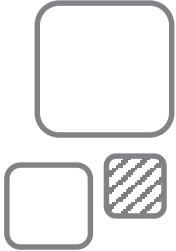
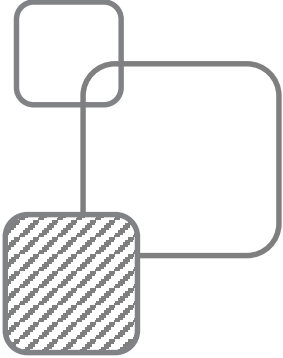
Proof Of Concept

Definition



Proof Of Concept

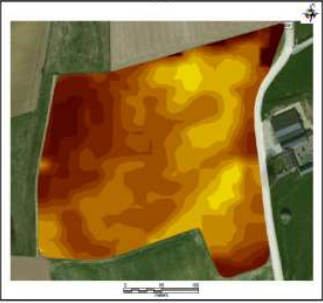
Definition



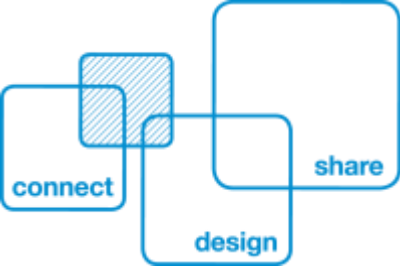
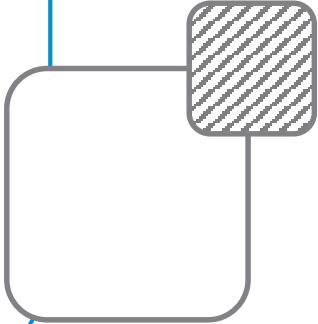
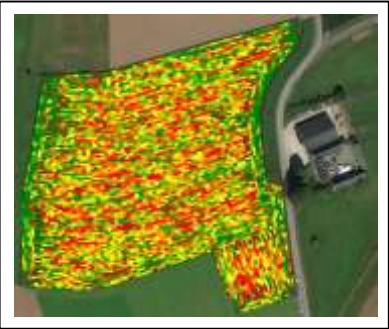
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EC Value

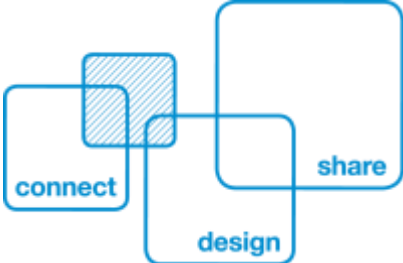
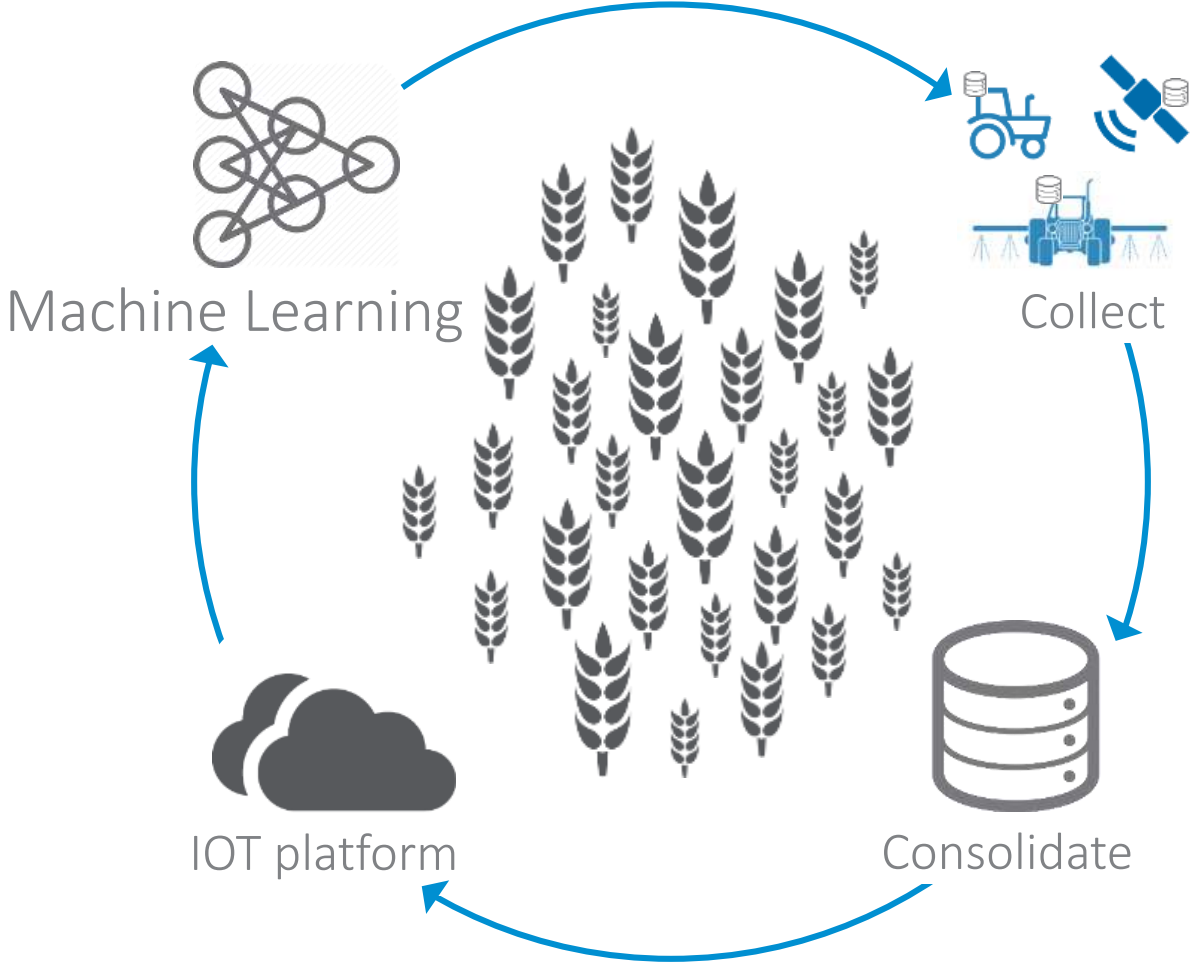


Pull Force



Collect

POC execution



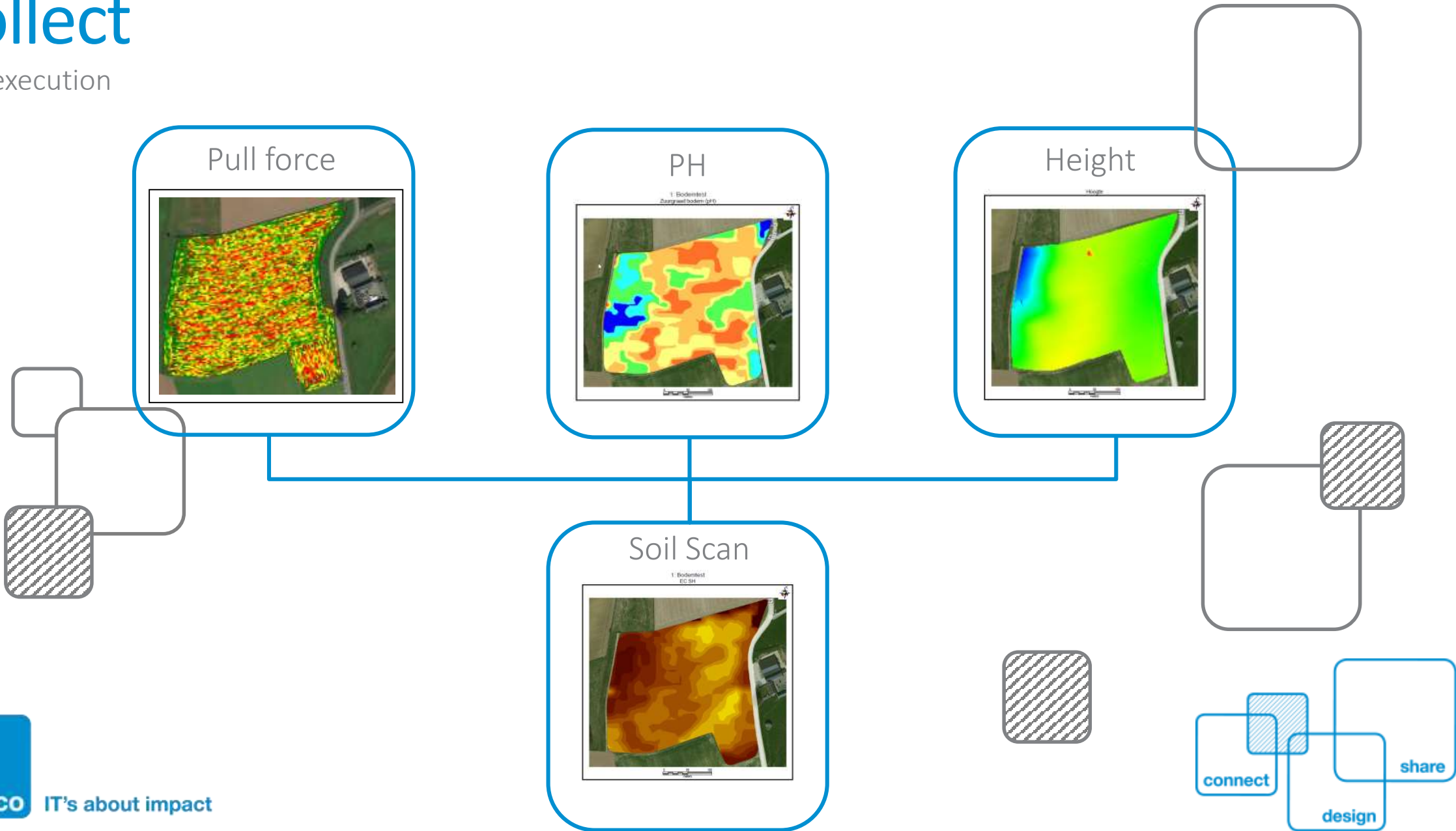
Collect

POC execution

Externe factoren		Bewerken	Planten	Bewerken	Oogsten	Bewerken oogst	Transporteren
Bodemsamenstelling	Weersomstandigheden	Bewerken voor planten	Planten	Bewerken na planten	Oosten	Bewerken na o	Transporteren
<ul style="list-style-type: none"> ◉ Bayer <ul style="list-style-type: none"> ◉ Bodemscan <ul style="list-style-type: none"> EC Organisch Materiaal PH Textuur ◉ Publiek <ul style="list-style-type: none"> ◉ Databank ondergrond vlaanderen <ul style="list-style-type: none"> jaar Soort gew as ◉ GIM <ul style="list-style-type: none"> ◉ Landsat 15 m optical imagery <ul style="list-style-type: none"> Area of Interest (image footprint) Acquisition date and time reflectance value per pixel and spectral band (e.g. RGBNIR) other metadata (acquisition parameters such as view angle, etc) ◉ Landsat 15 m optical imagery (Processed) <ul style="list-style-type: none"> NDVI, soil indices ◉ Grootchalig Referentie Bestand (GRB) (open data FI) <ul style="list-style-type: none"> parcels hydro network ◉ Soil map of Belgium <ul style="list-style-type: none"> soil type texture drainage 	<ul style="list-style-type: none"> ◉ Bayer <ul style="list-style-type: none"> ◉ Weerstation <ul style="list-style-type: none"> ? ◉ Hvanderhaeghe <ul style="list-style-type: none"> ◉ ISOXML TASKDATA <ul style="list-style-type: none"> Bedrijfsnaam Boerderij Veldnaam ◉ Machinedata Amazone strooi <ul style="list-style-type: none"> Wind direction relative Wind speed relative ◉ Tractordata Fendt <ul style="list-style-type: none"> Driving direction` Locatie Outdoor temperature`C Timestamp ◉ GIM <ul style="list-style-type: none"> ◉ google weather <ul style="list-style-type: none"> Locatie Timestamp Neerslaghoeveelheid Windsnelheid Aantal uren zon 	<ul style="list-style-type: none"> ◉ Bayer <ul style="list-style-type: none"> ◉ Bespuiting proefveld <ul style="list-style-type: none"> GPS coördinaten Greenseeker data product volume ◉ CNH <ul style="list-style-type: none"> ◉ Tractordata <ul style="list-style-type: none"> Hoogte Richting Snelheid ◉ Hvanderhaeghe <ul style="list-style-type: none"> ◉ ISOXML TASKDATA <ul style="list-style-type: none"> Bedrijfsnaam Boerderij Chaufeur Machine Middelen Veldnaam ◉ Machinedata Amazone Spu <ul style="list-style-type: none"> Actual Dose L/ha Pressure bar Tank volume L ◉ Machinedata Amazone stro <ul style="list-style-type: none"> Actual Dose kg/ha Tank volume kg Wind direction relative Wind speed relative ◉ Tractordata Fendt <ul style="list-style-type: none"> Driving direction` Height (GPS) m Locatie Outdoor temperature`C Real speed kmh Timestamp Working width m ◉ Publiek <ul style="list-style-type: none"> ◉ Databank ondergrond vlaar <ul style="list-style-type: none"> jaar Soort gew as ◉ Dewulf <ul style="list-style-type: none"> ◉ Pootmachine <ul style="list-style-type: none"> Locatie Timestamp Plantafstand Aantal geplante aardappelen Ras Hoeveelheid meststof Soort meststof Spuitspoor ◉ GIM <ul style="list-style-type: none"> ◉ google weather <ul style="list-style-type: none"> Locatie Timestamp Neerslaghoeveelheid Windsnelheid Aantal uren zon ◉ traktordata bemesting <ul style="list-style-type: none"> Locatie Timestamp Hoeveelheid meststof Soort 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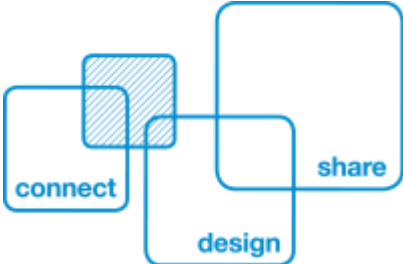
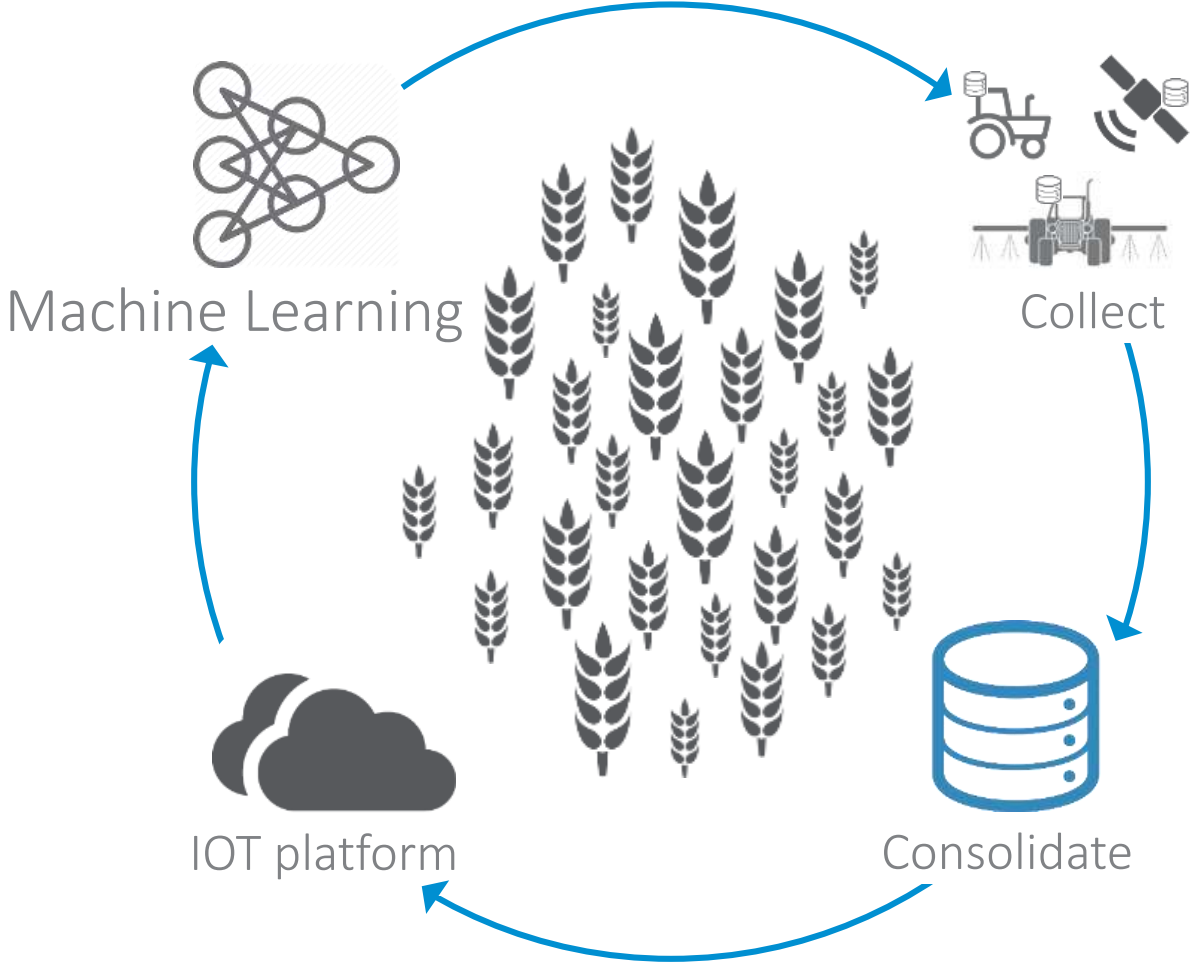
Collect

POC execution



Consolidate

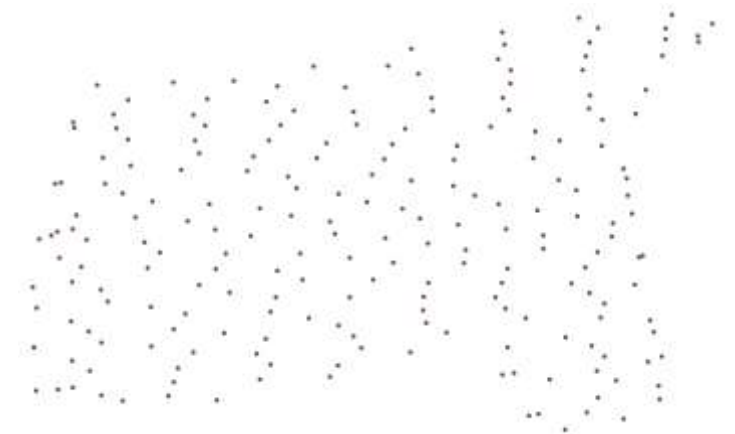
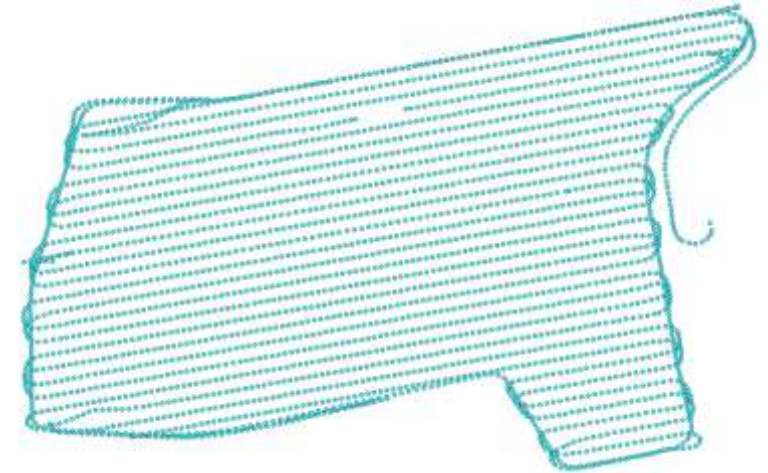
POC execution



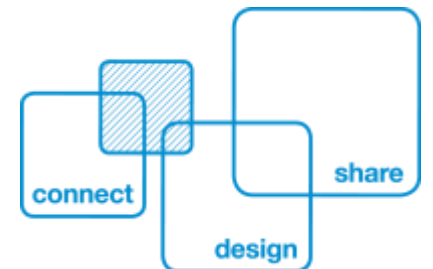
Consolidate

POC execution

- ▶ Consolidate the datasets is complicated.
 - ▶ Different input formats: csv, shape files, ISOXML data.
 - ▶ Values on different geographical coordinates.
 - ▶ Unequal number of measure points
 - ▶ Use of different geographical coordinates systems
 - ▶ Lambrecht(Belgian coordinate system)
 - ▶ WGS84 : EPSG4326

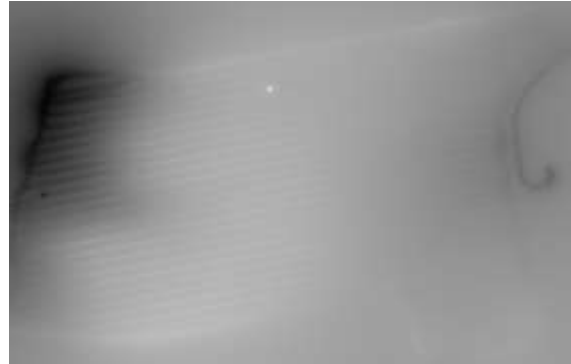
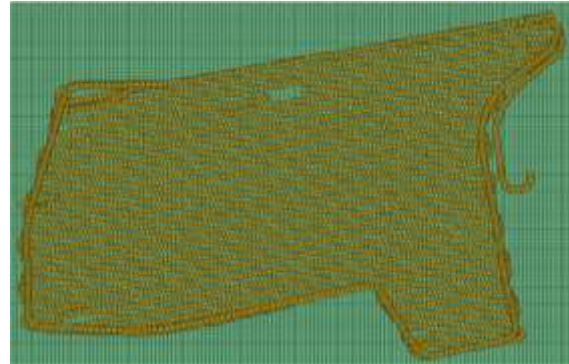
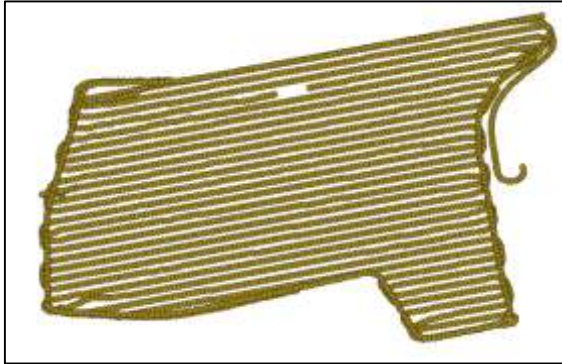


IT's about impact

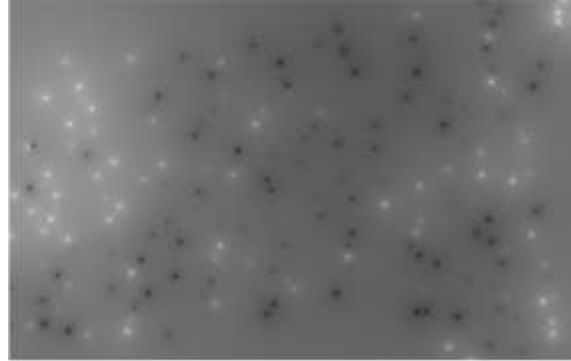
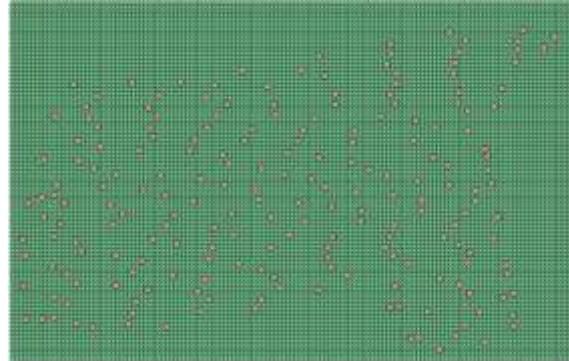
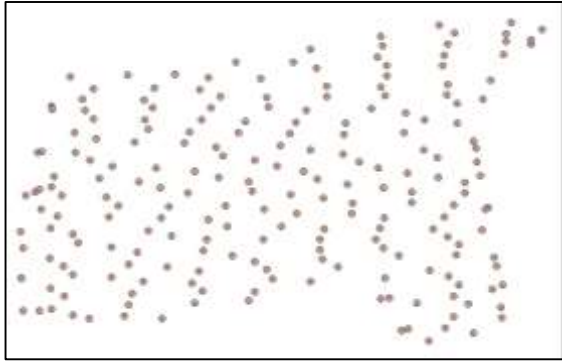


Consolidate

POC execution



left	top	Interpolat
4.57207473628379	50.8051756024303	90.92145
4.57207473628379	50.8051376024303	90.93391
4.57207473628379	50.8050996024303	90.94902
4.57207473628379	50.8050616024303	90.96226
4.57207473628379	50.8050236024303	90.97092
4.57207473628379	50.8049856024303	90.98068



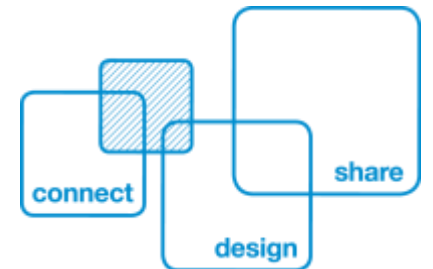
left	top	Interpolat
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4.572074736283...	50.80513760243...	7.15428
4.572074736283...	50.80509960243...	7.17035
4.572074736283...	50.80506160243...	7.18392
4.572074736283...	50.80502360243...	7.19415
4.572074736283...	50.80498560243...	7.19917

Input data

Sampling based on grid

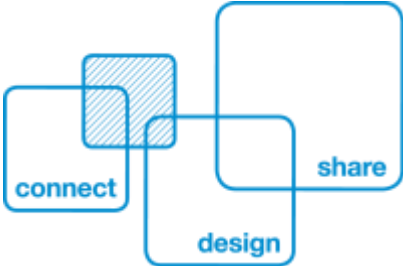
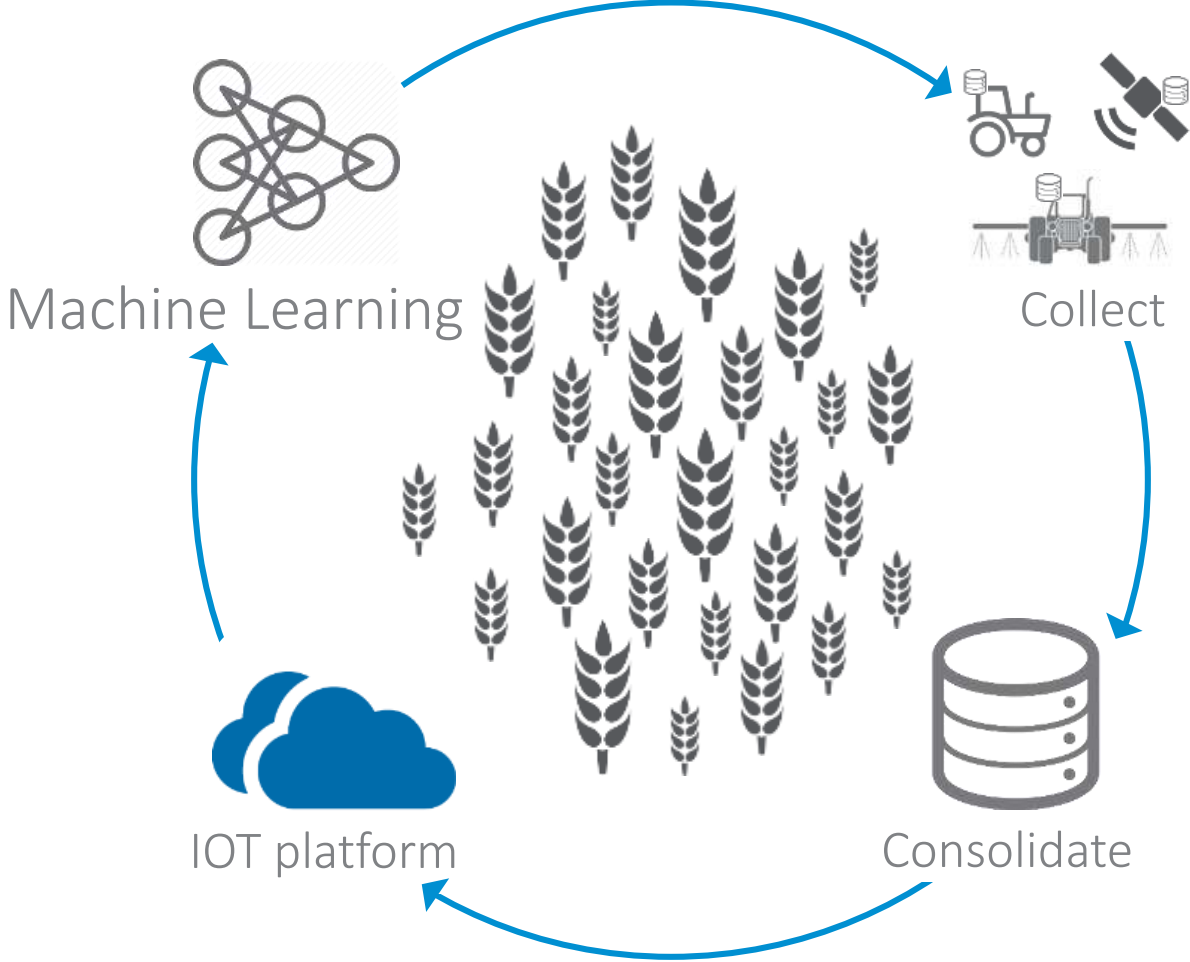
Interpolation

Export to CSV



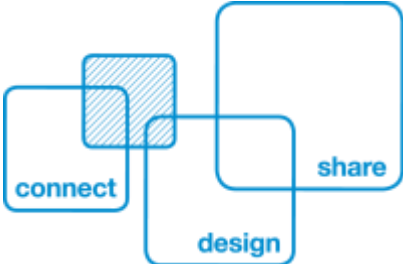
IOT Platform

POC execution



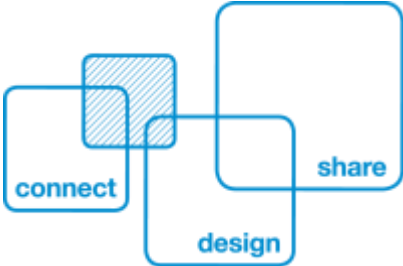
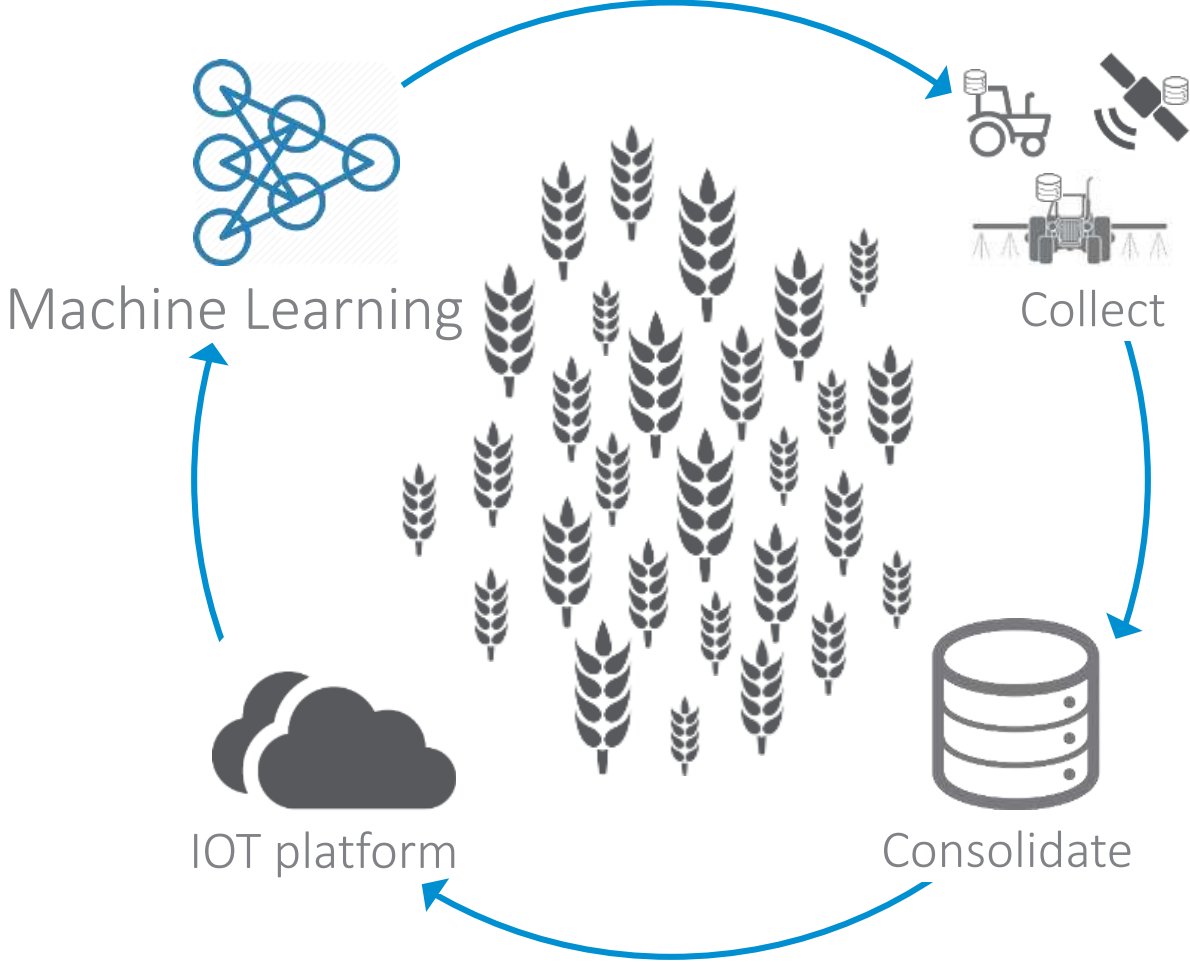
IOT Platform

POC execution



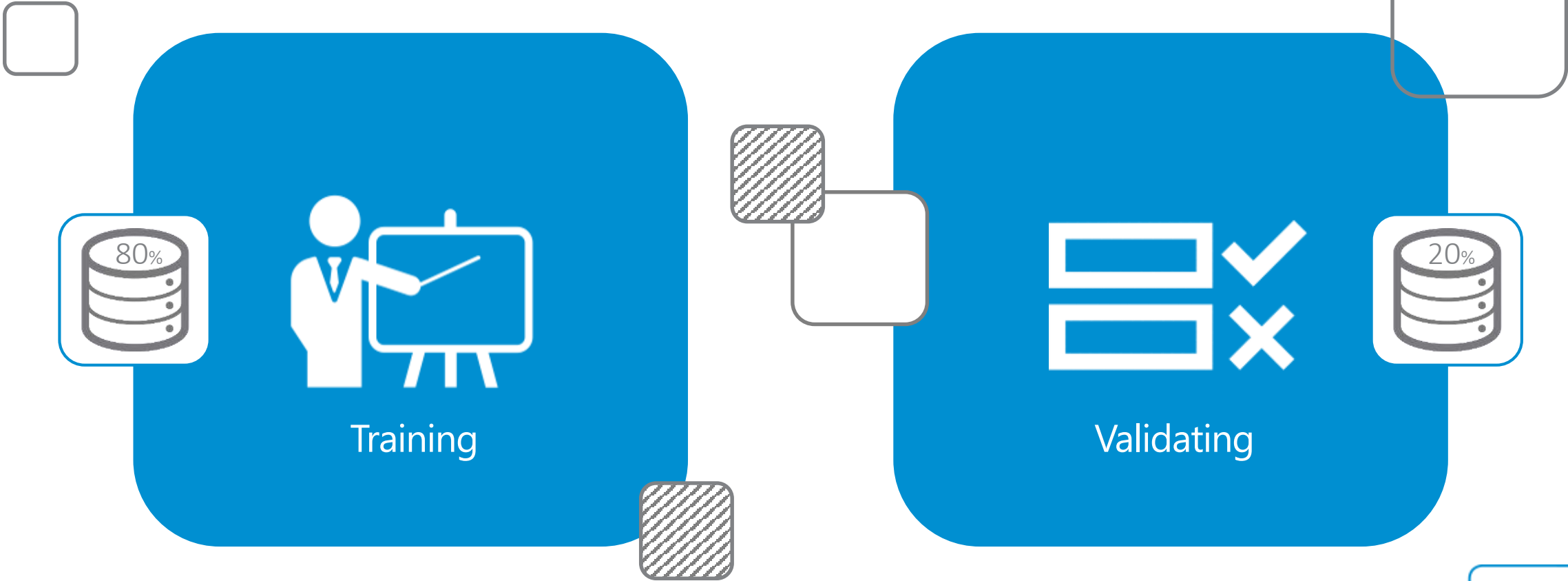
Machine Learning

POC execution



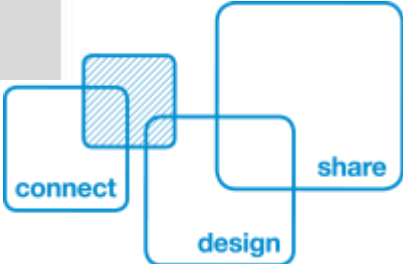
Machine Learning

POC execution



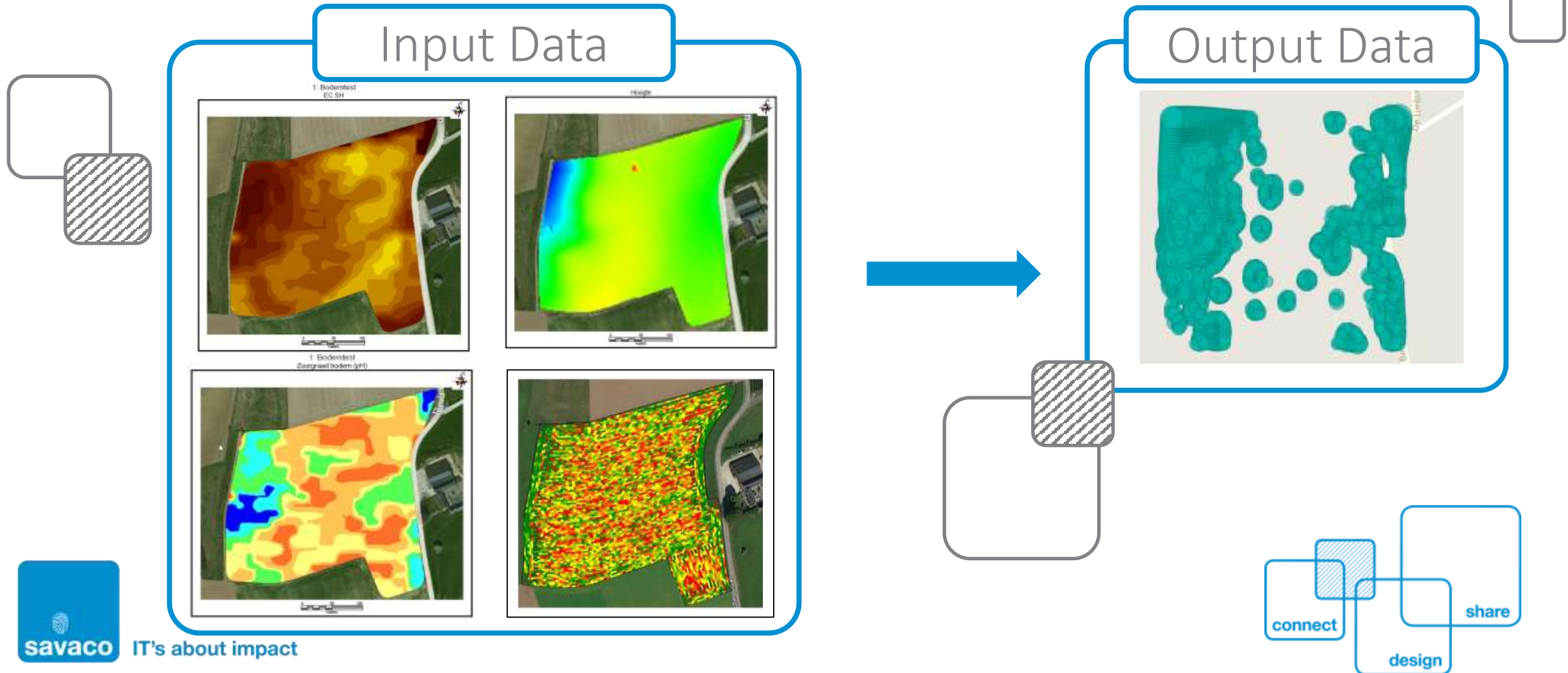
Machine Learning

POC execution

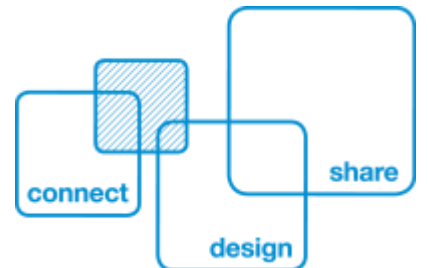


Analytics results

- ▶ Visualization EC – Height – Ph – Pull force

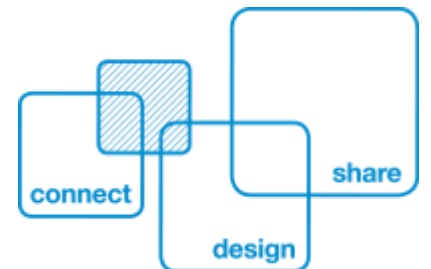


IT's about impact



Result

- ▶ Based on the original datasets we could not find any correlation between EC and pull force.
 - ▶ Possible reason: field was ploughed several times and therefore no obvious difference in consistency of the soil.
 - ▶ Dataset of 1 field is too restricted.
- ▶ Both software solutions(ThingWorx – Azure Analytics) found correlation between Ph,height and EC based on its input values.
 - ▶ It's possible to build an analytics model on the consolidated data





- Home
- Ploughing
- Fertilize**
- Insecticide application
- Pesticide application
- Sowing
- Harvest

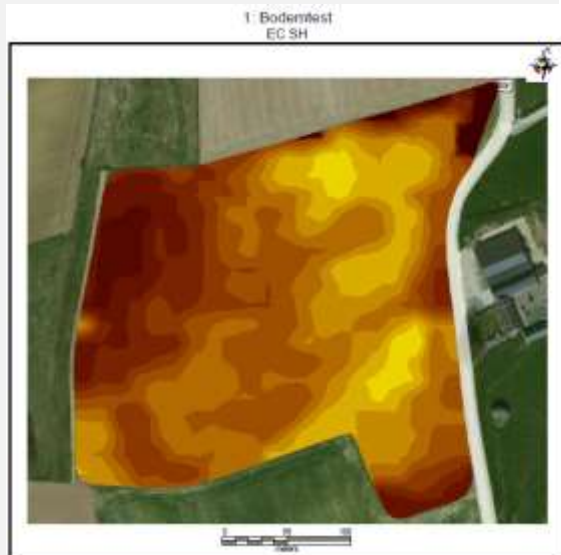
select field :

current weather info :

Ideal wind conditions until 17:00 UTC (12km/h SE)

select crop :

application advice :



stock :

qty(card based) :

cost(card based) :

cost(area based) :

Buienradar

Actueel 3 uur vooruit 24 uur vooruit 24-48 uur

10:15


10:00 10:10 10:20 10:30 10:40 10:50

-  **ACME-52350000**
MOD-45123
-  **ACME-52350001**
MOD-45123
-  **ACME-52350002**
MOD-45123
-  **ACME-52350003**
MOD-45123
-  **ACME-52350004**
MOD-45123
-  **ACME-52350005**
MOD-45123
-  **ACME-52350006**
MOD-45123
-  **ACME-52350007**
MOD-45123
-  **ACME-52350008**
MOD-45123
-  **ACME-52350009**
MOD-45123

Customer
Cindy Lopez

Vibration Data



 Speed (mph) 0.0	 Humidity 78.00
 RPM 670	 Hydraulic Pressure 2,474
 Light Level 100.0	 Sound Level (dB) 17.00
 Engine Temp (F) 350.0	 Ground Temp (F) 72.00



Status Service Orders Diagnostics Maintenance Fault Data

New fertilizer program is being downloaded to tractor. Please wait until download is complete.

2018-07-19 12:12:18.885

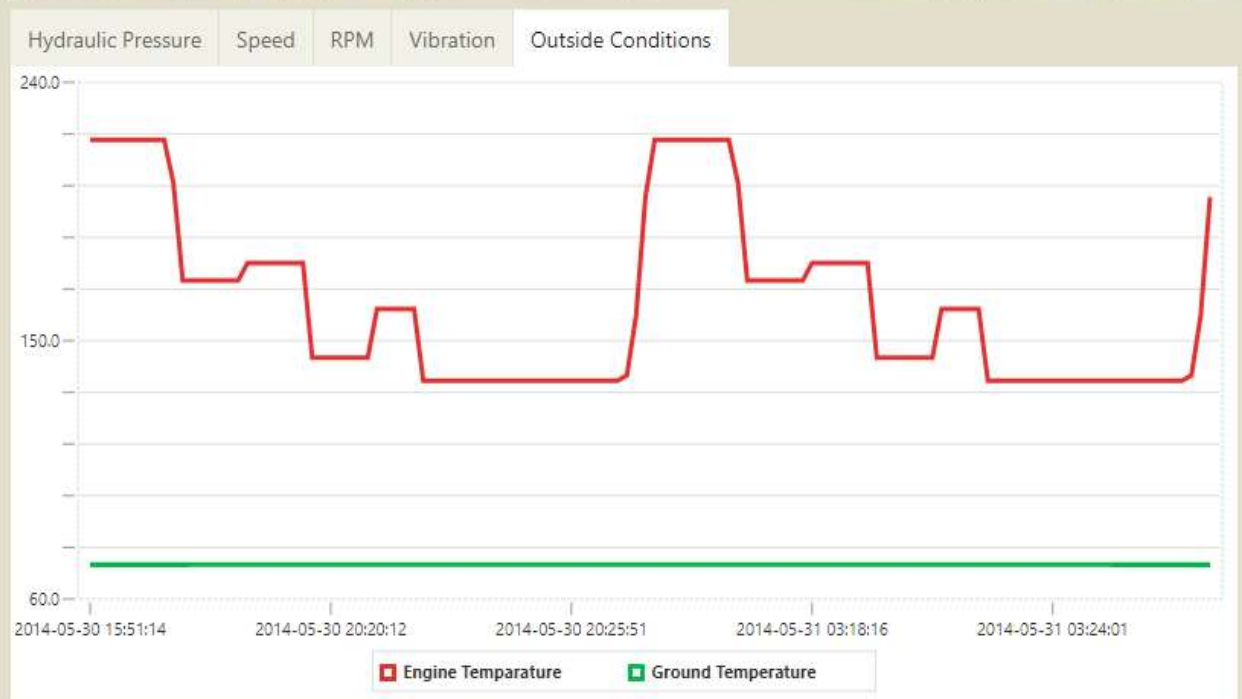
New fertilizer program is being downloaded to tractor. Please wait until download is complete.

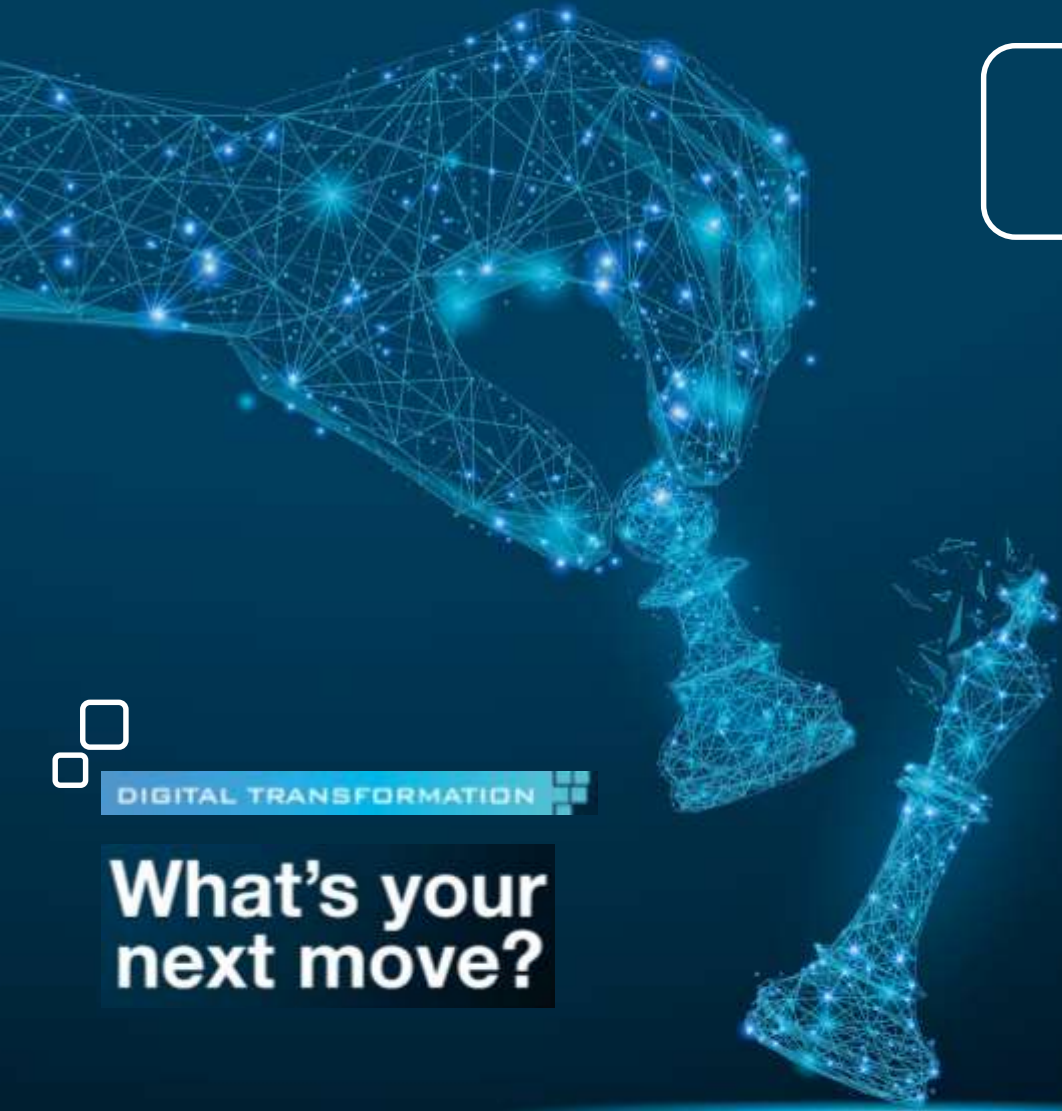
2014-06-06 08:03:31.463

Tractor operational. All systems normal

2014-06-06 08:03:00.229

Predictive maintenance required. System detail: Hydraulic pressure below warning limit. Predictive service scheduled.





DIGITAL TRANSFORMATION

What's your next move?

The business landscape is changing at a fast pace. Today's challenge is to leverage the power of digital transformation to stay ahead of the game.

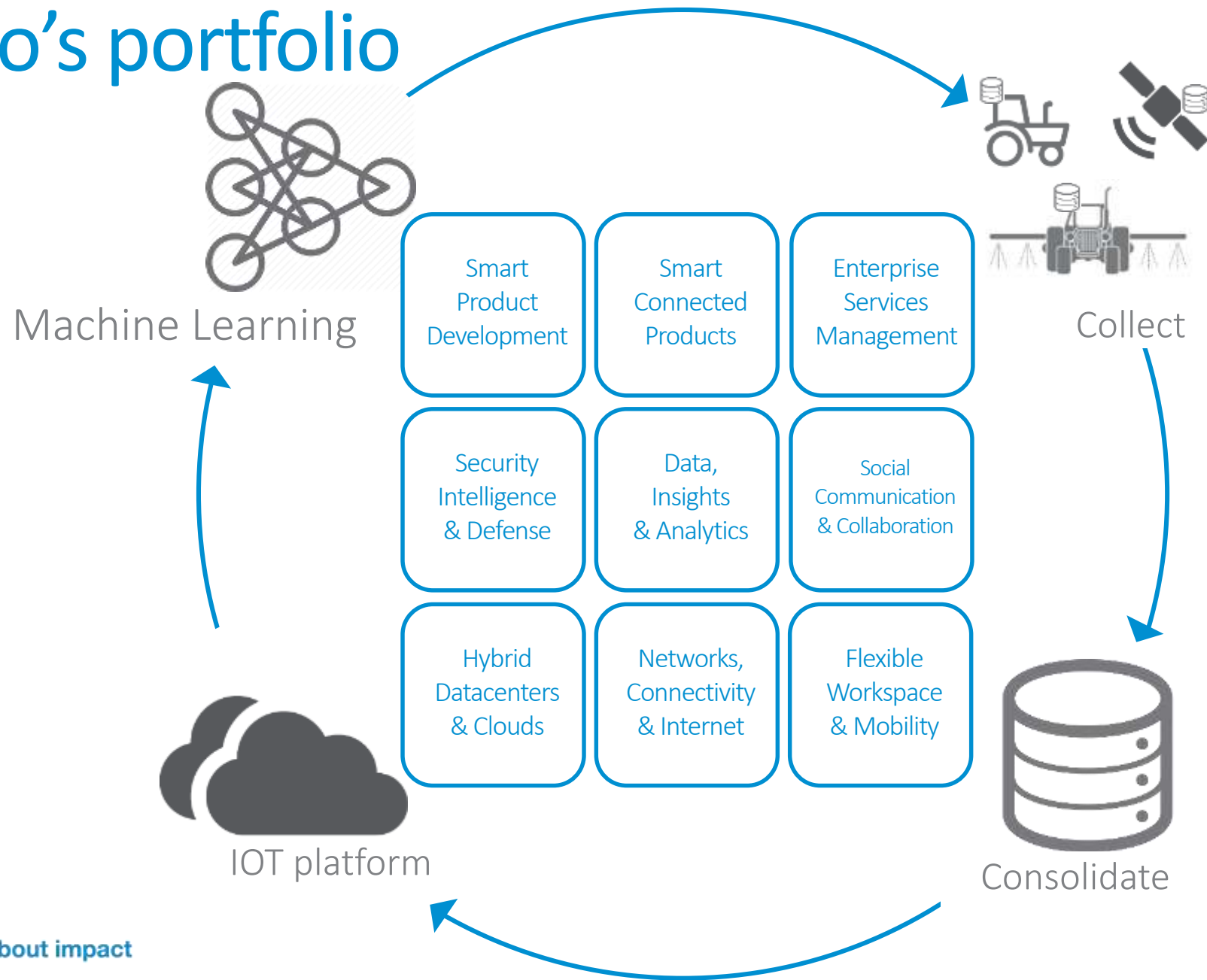
DIGITAL TRANSFORMATION

What's your next move?



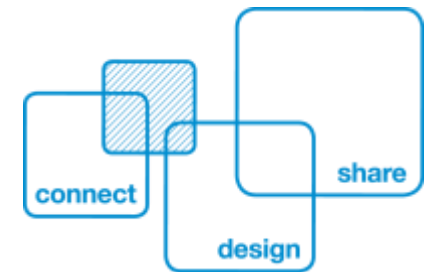
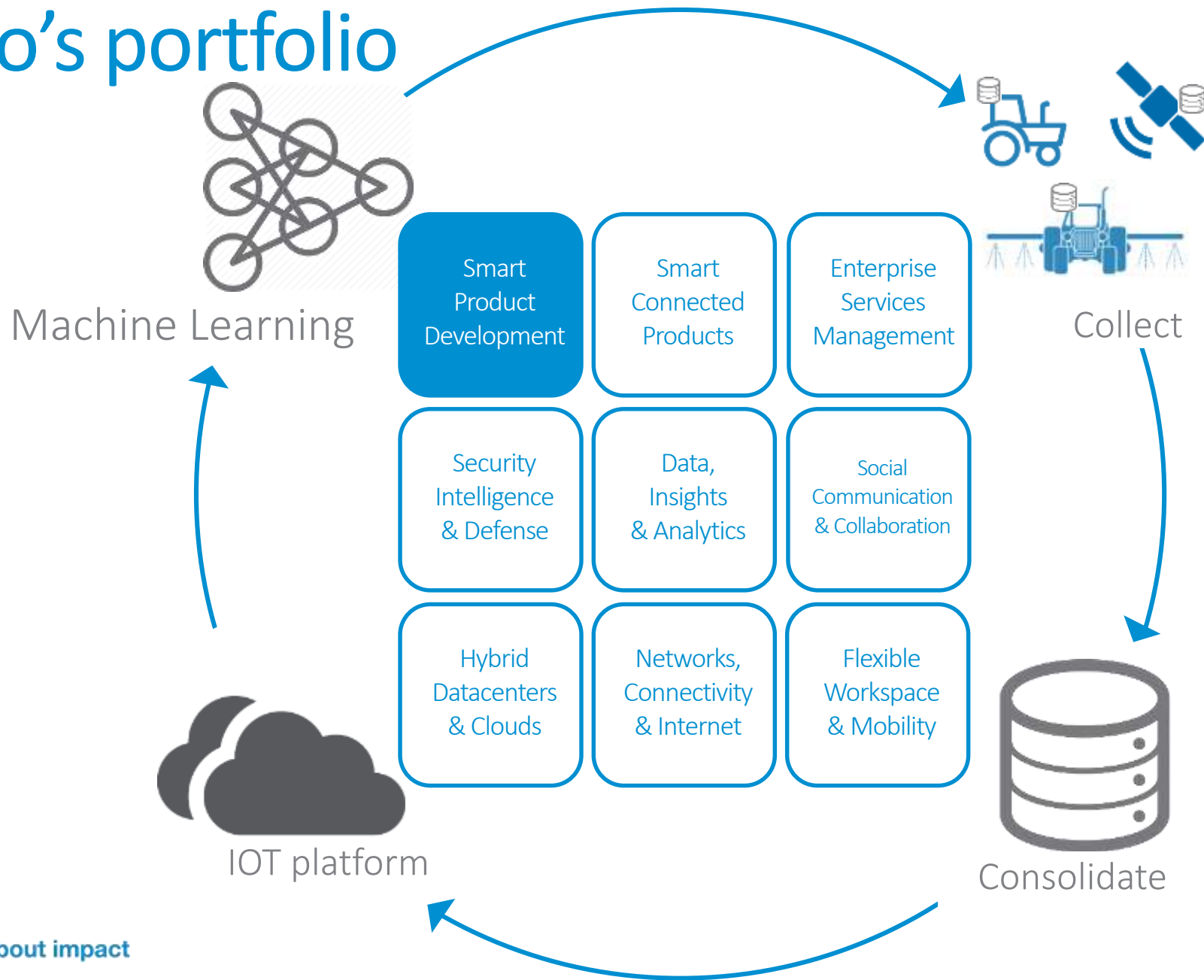
IT's about impact

Savaco's portfolio



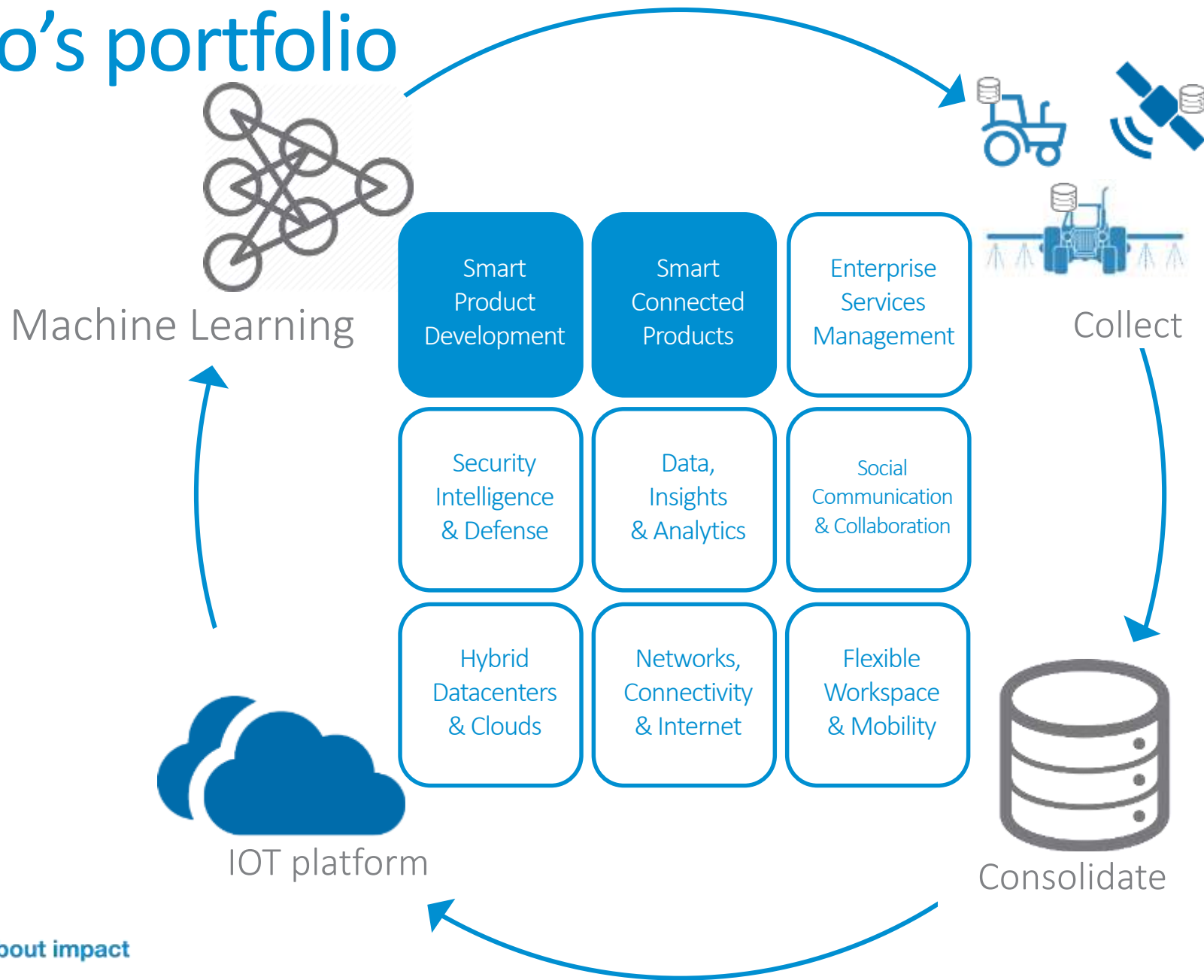
IT's about impact

Savaco's portfolio



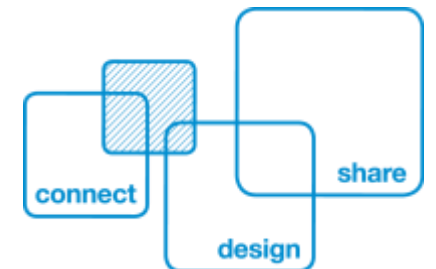
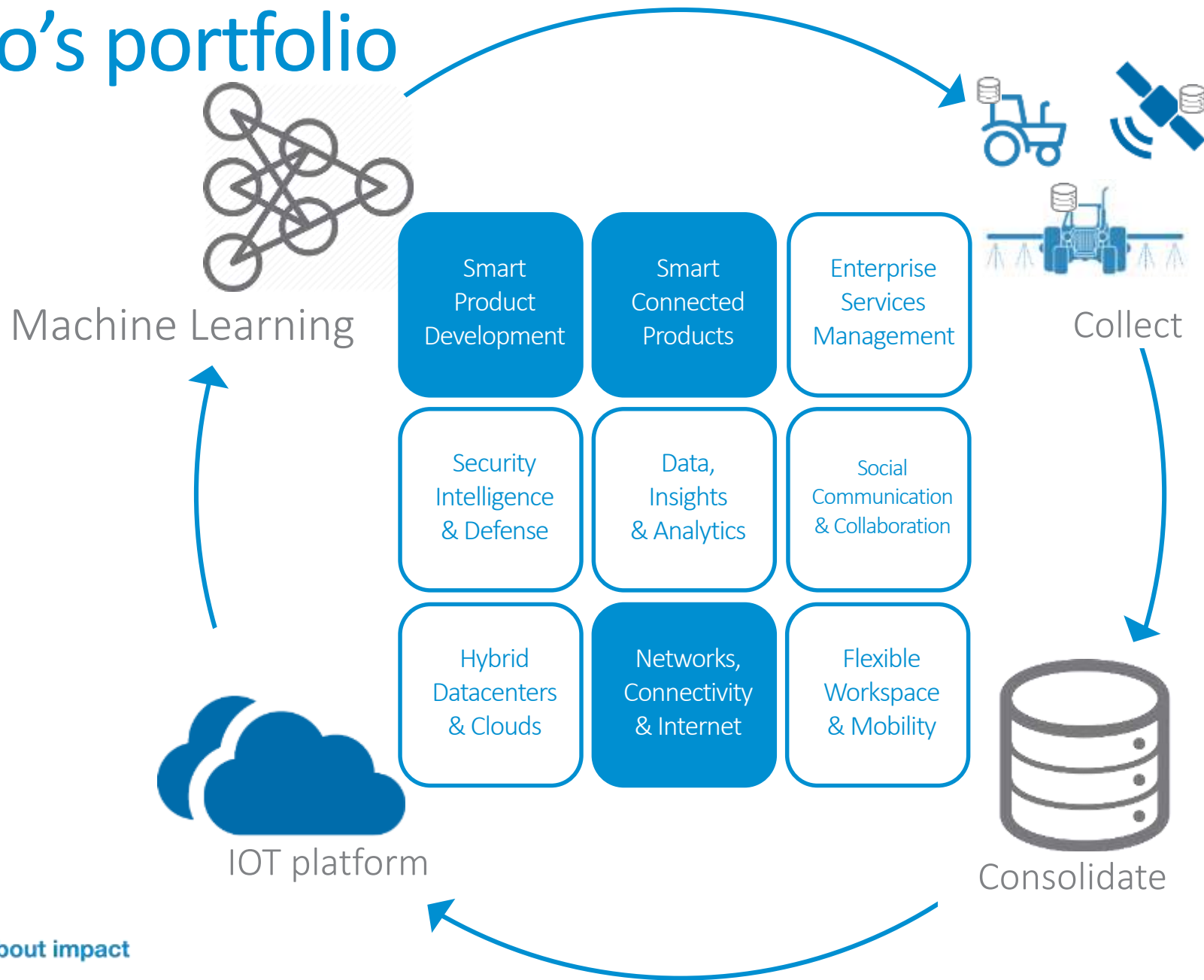
IT's about impact

Savaco's portfolio



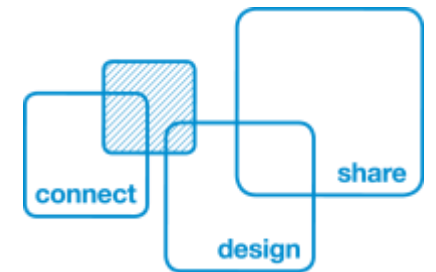
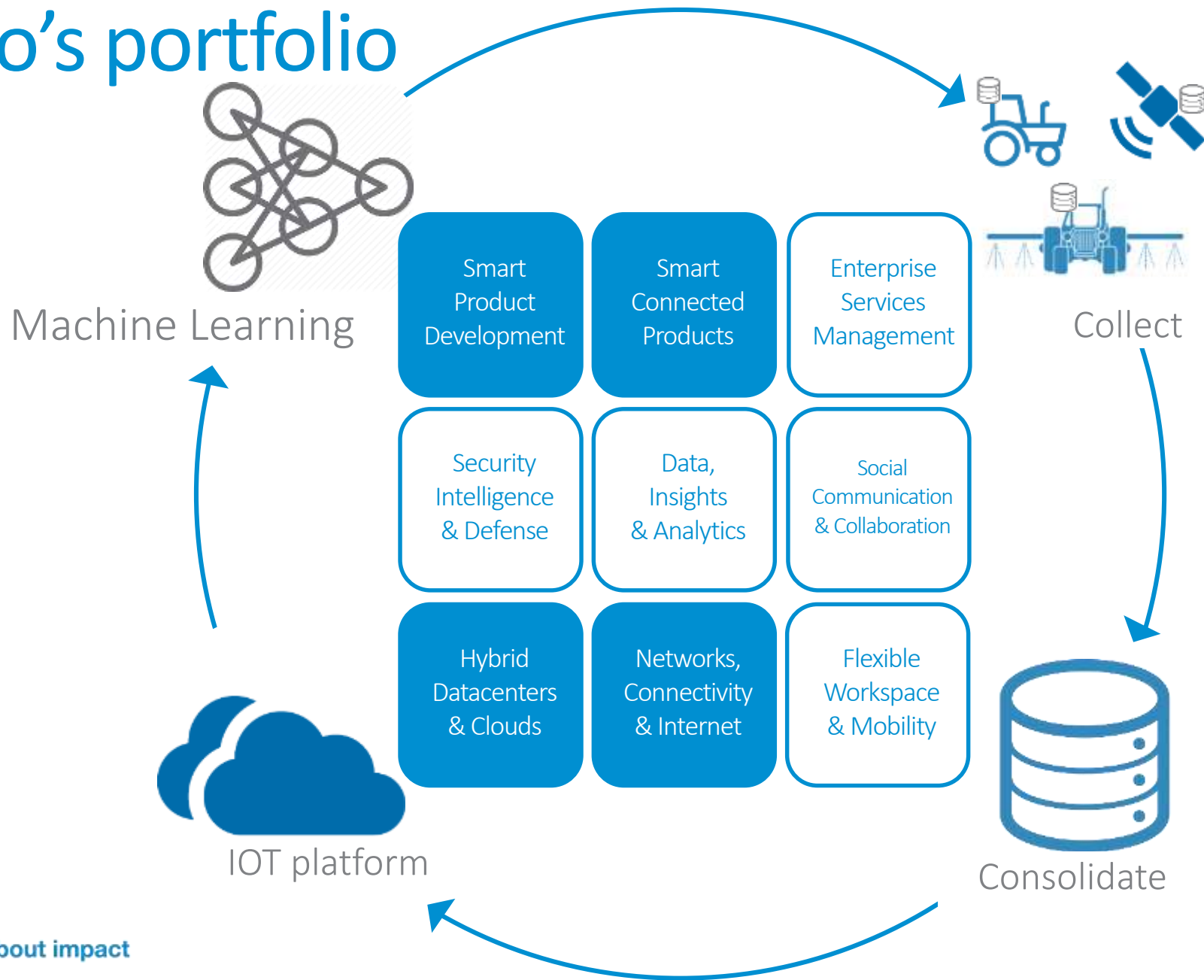
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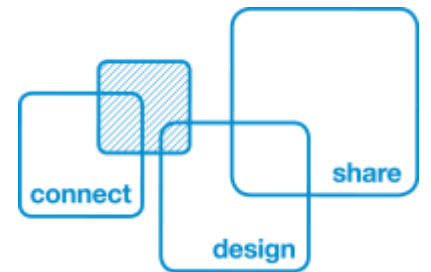
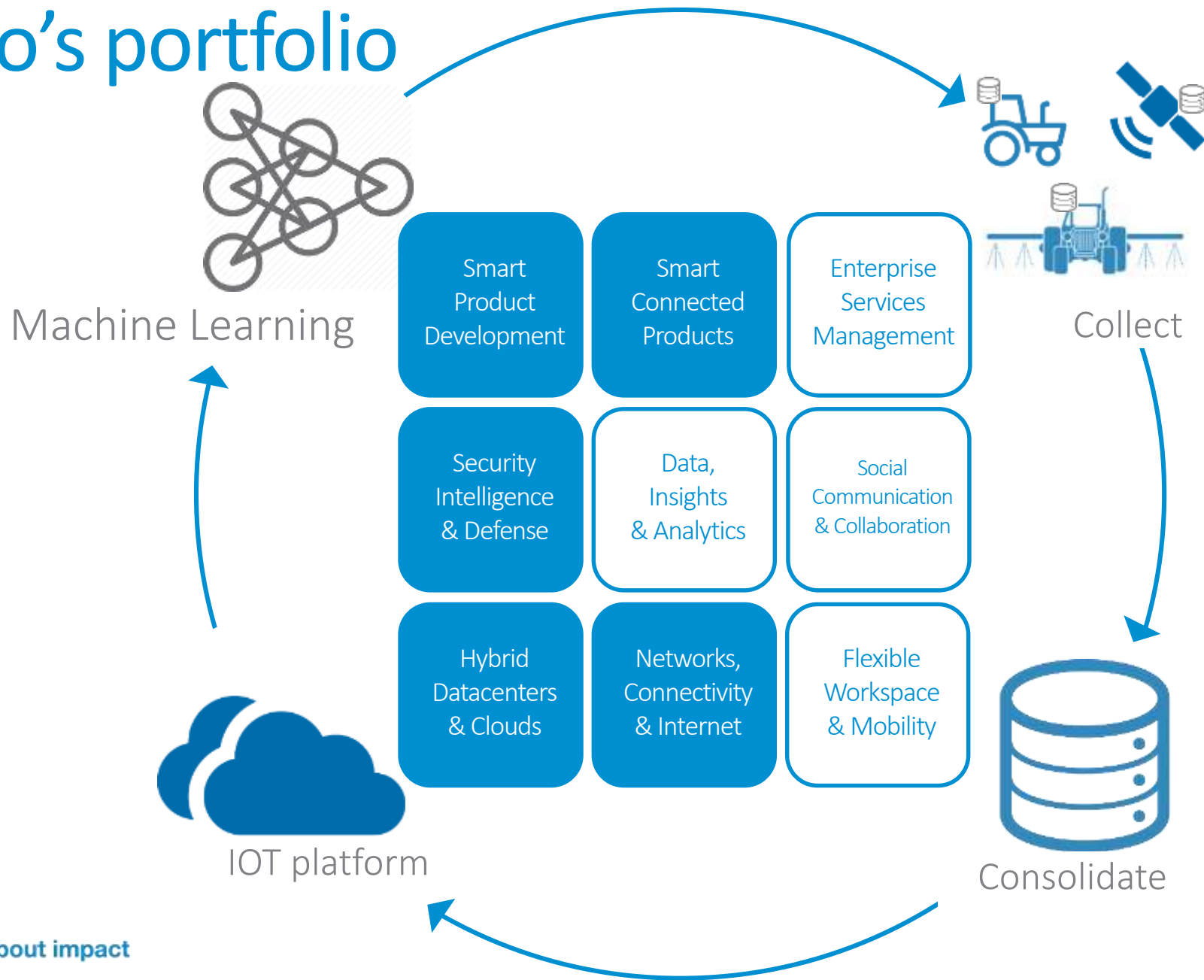
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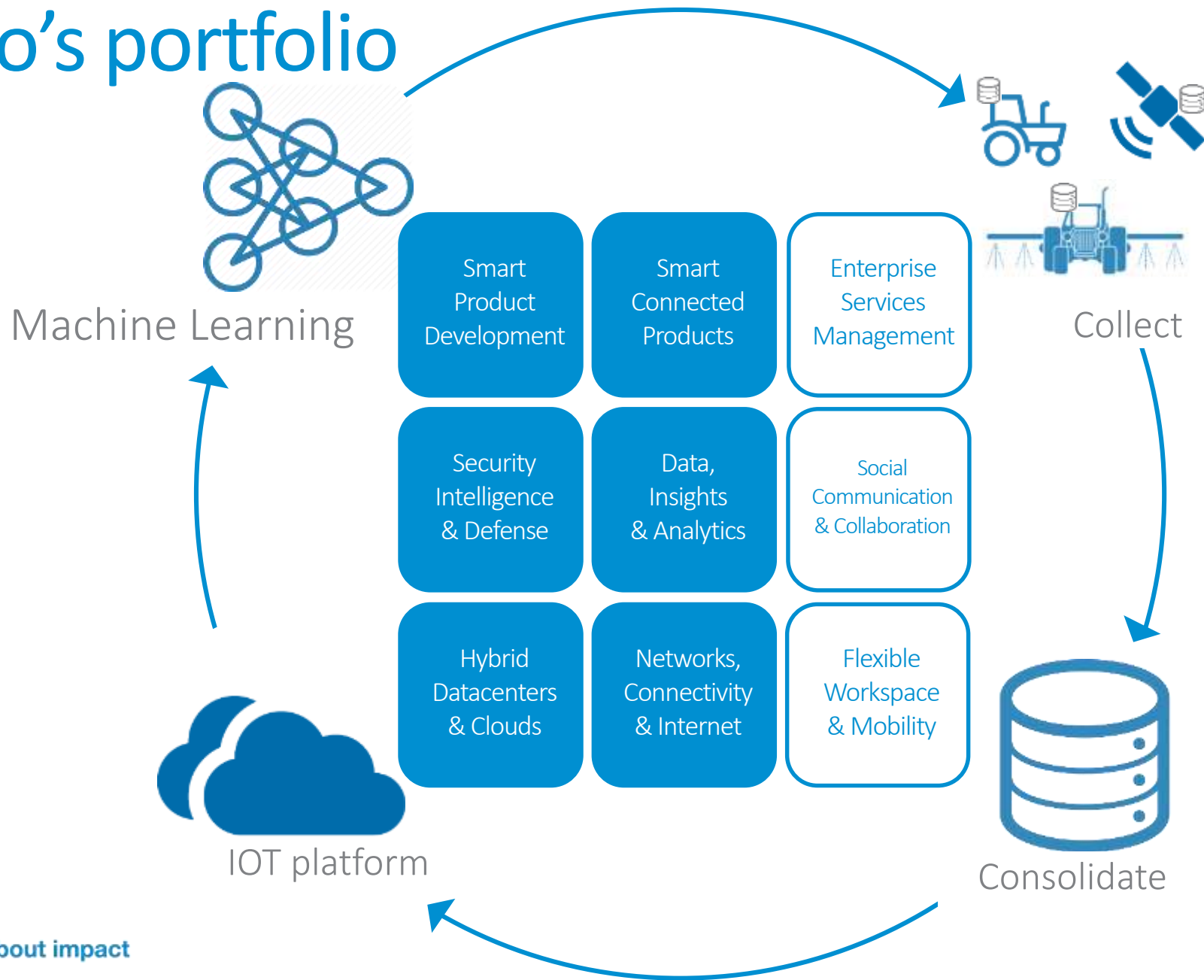
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