

Data Driven Growing

Data sharing, IoT, Big Data & AI in Horticulture

GET CONNECTED, SHARE, LEARN AND IMPROVE



Lets **Grow**.com
YOU'RE IN CONTROL

REALTIME MANAGEMENT OVERVIEW



GROWING BASED ON ANALYTICS



Our goal: Provide a Control Room



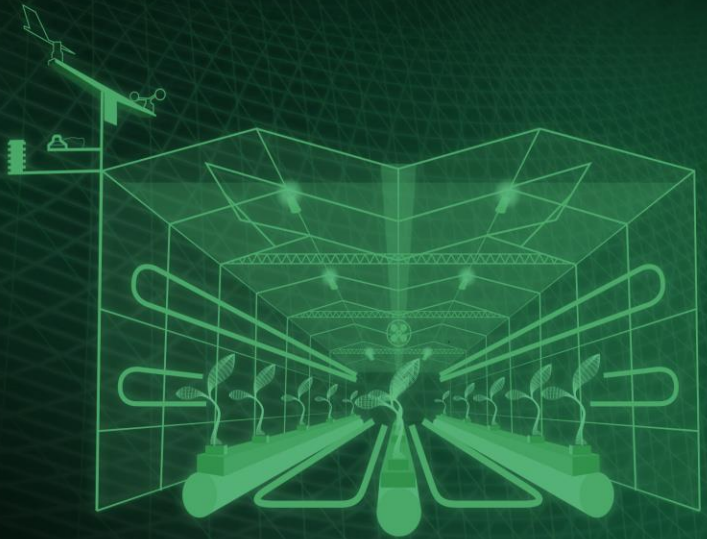
Is it possible to digitize growth?

Can we provide tools for better growing results?



ONLINE PLATFORM

COLLECT DATA



12°C N 4m/s 40°C 80%

CLIMATE COMPUTERS
(1000+ CONNECTED)

MACHINES & SENSORS

MANUAL INPUT

SALES SYSTEMS

PARTNERS

ADD VALUE



RESEARCHERS



GROWERS



CROP CONSULTANTS



GROWTH / PLANT MODELS

QUALITY MONITORING SYSTEMS

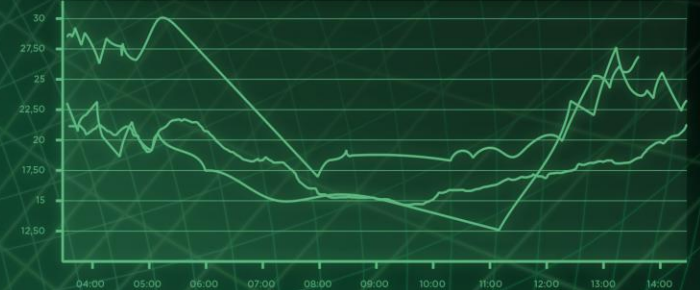
CALCULATIONS

ANALYSE TOOLS

INFORMATION

LetsGrow.com
YOU'RE IN CONTROL

Kastemp - °C - 5 min (2016 Teeltgroep Tomaat)



17.55
l/m²



3.574
m³



375
#/h



48
#/m²



+7%
€/m²



SHARE THE INFORMATION
WITH WHO YOU WANT



DECISION SUPPORT

GROWTH OPTIMALISATION

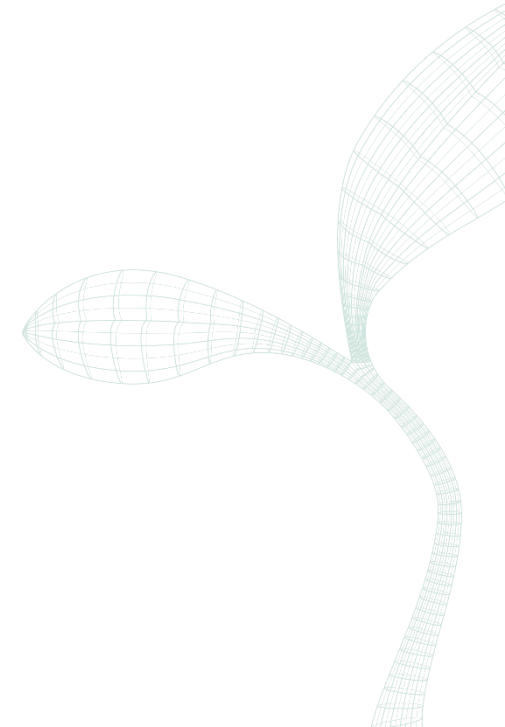
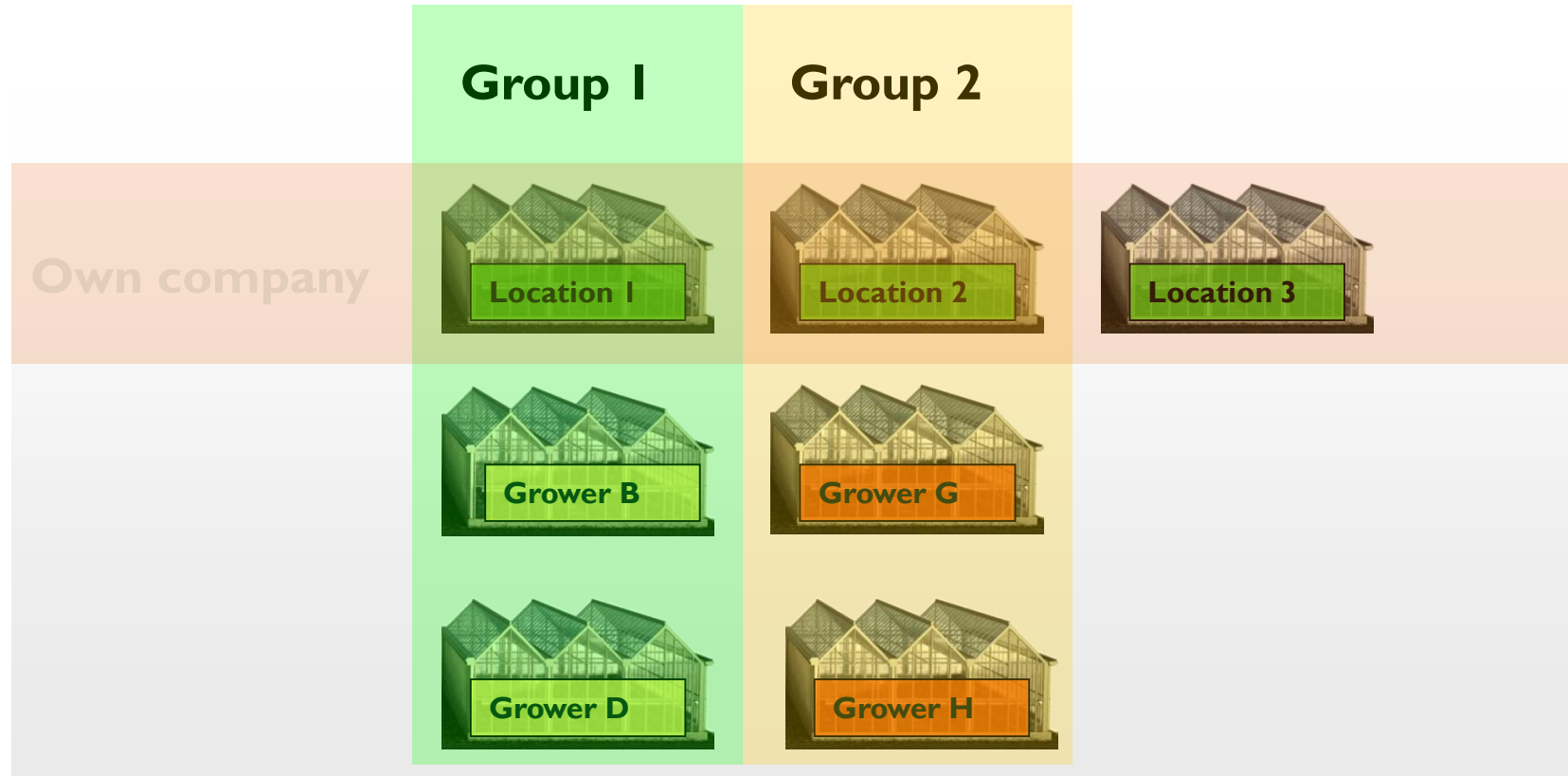
CONSULTANCY

RESEARCH

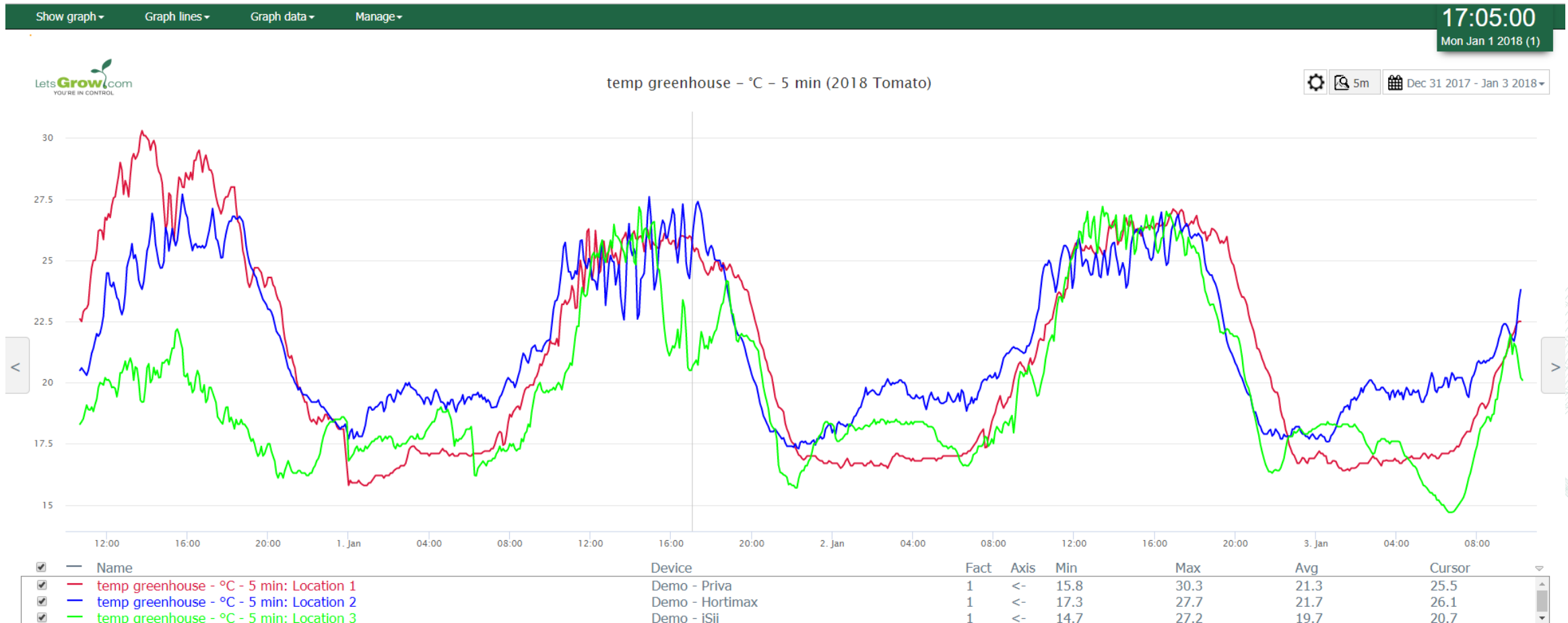
COMPARE / BENCHMARK

Data sharing

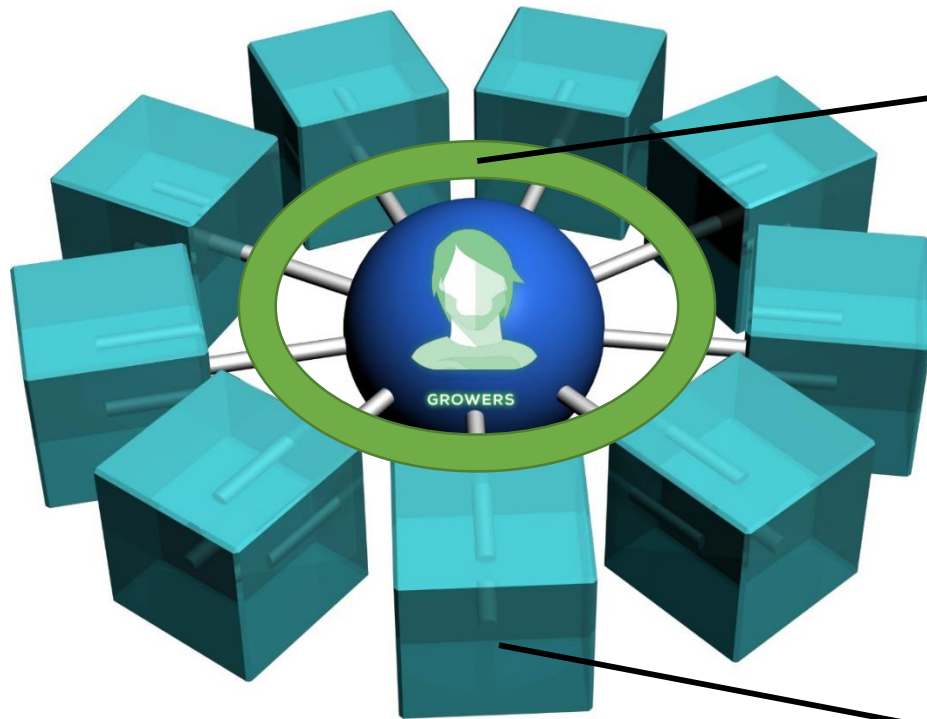
Share data within & between companies



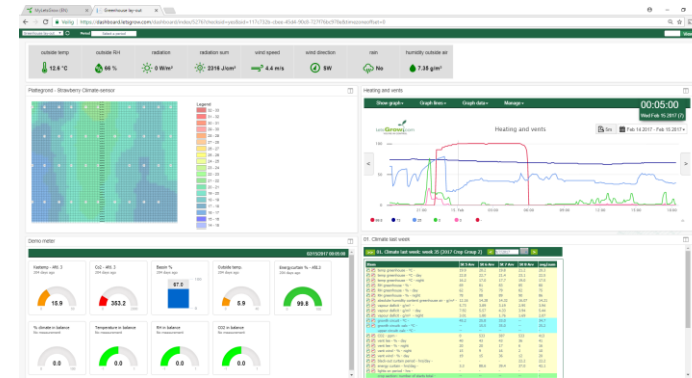
Share, learn & improve



Share data with suppliers or researchers

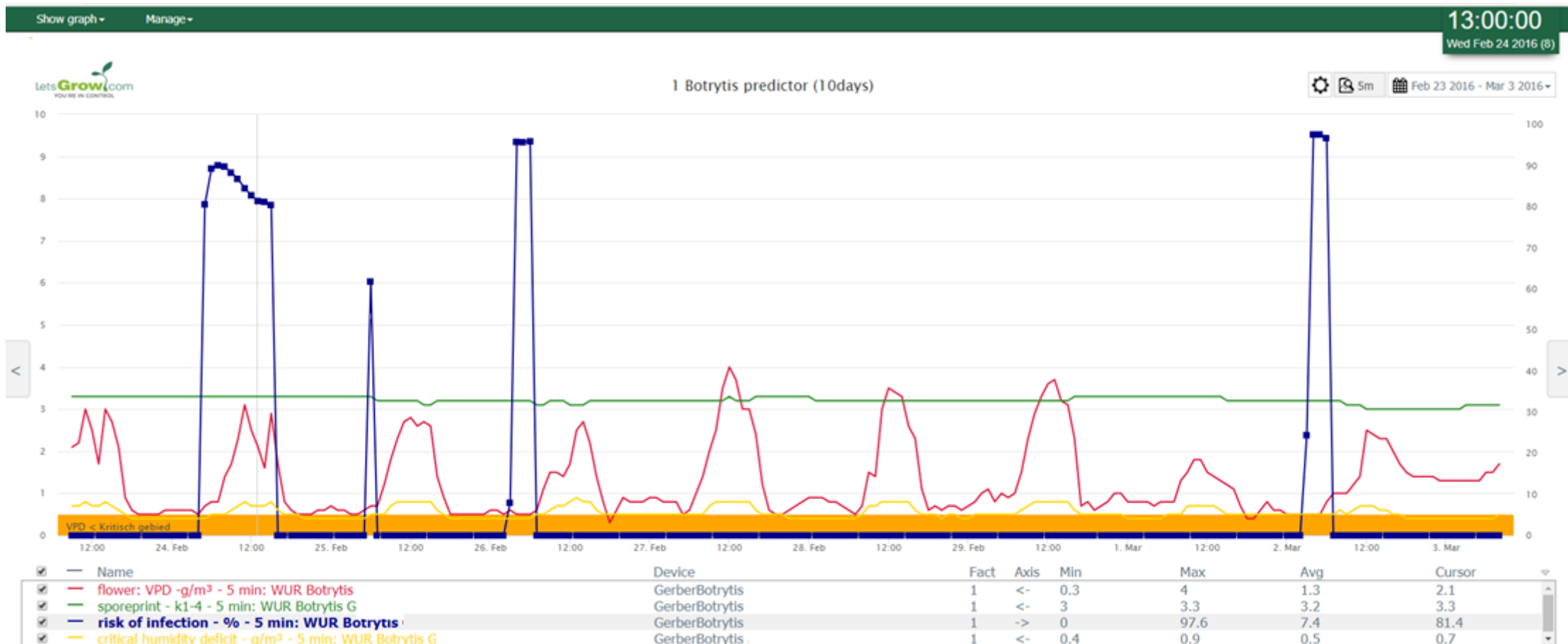


OpenAPI
Grower is in control



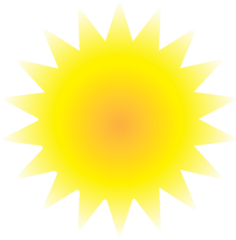
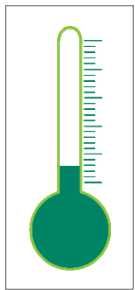
35+ Partners:
Read, enrich & write data

Model: Manage diseases with predictions

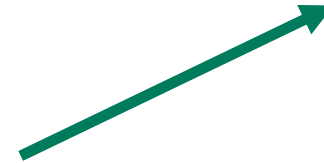


Manage energy with predictions

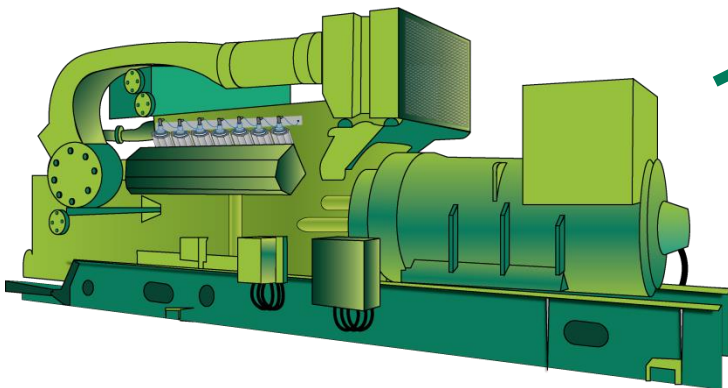
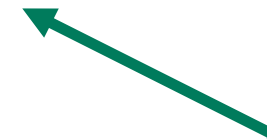
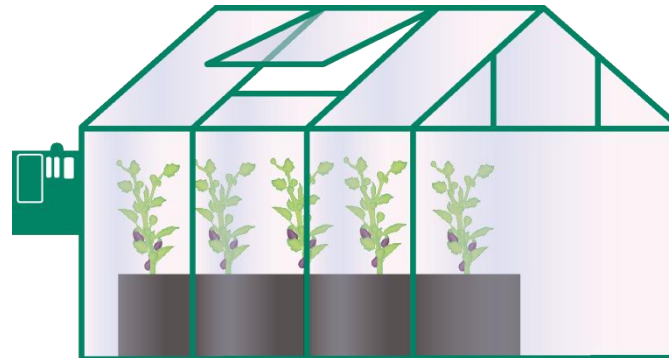
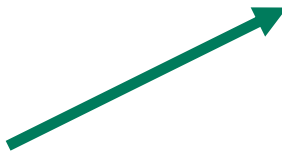
Weather forecasts



Need for
energy

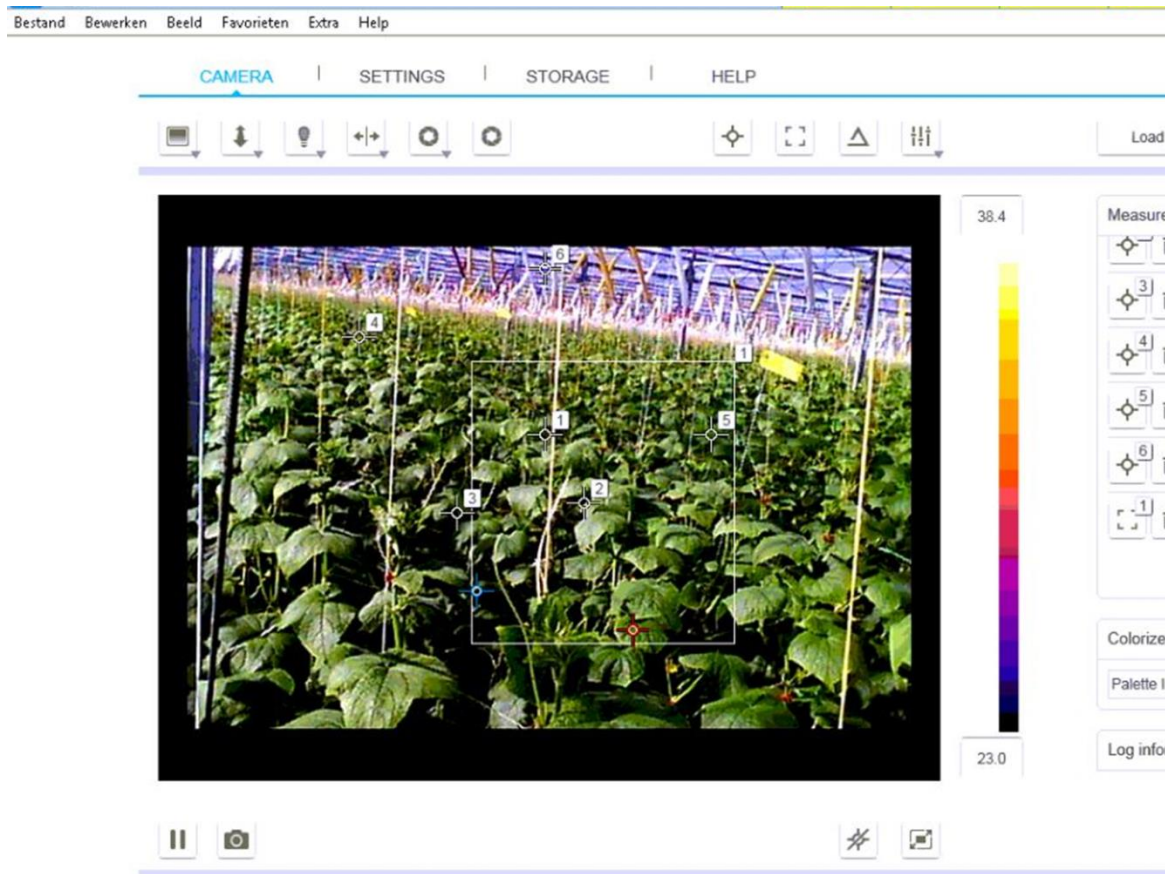


Energy market



Internet of Things

Thermoview



CoCreation



CoCreation of:

- Phenovation
- B-Mex
- LetsGrow.com
- Hoogendoorn

5% more production realized!

Internet of Things



Wireless technology

Measurements:

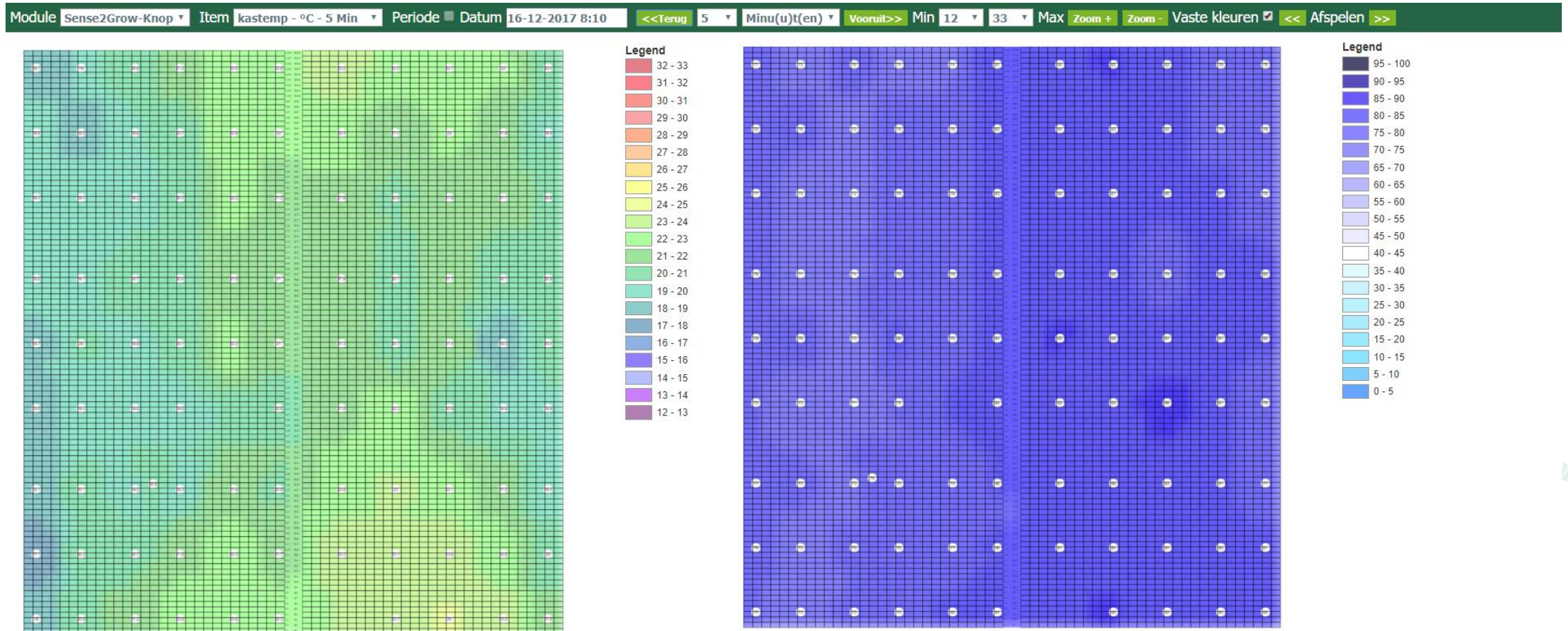
- Temperature
- RH
- CO2
- Soil
- Weight
- Smoke

It is possible to expand number of sensors very easy

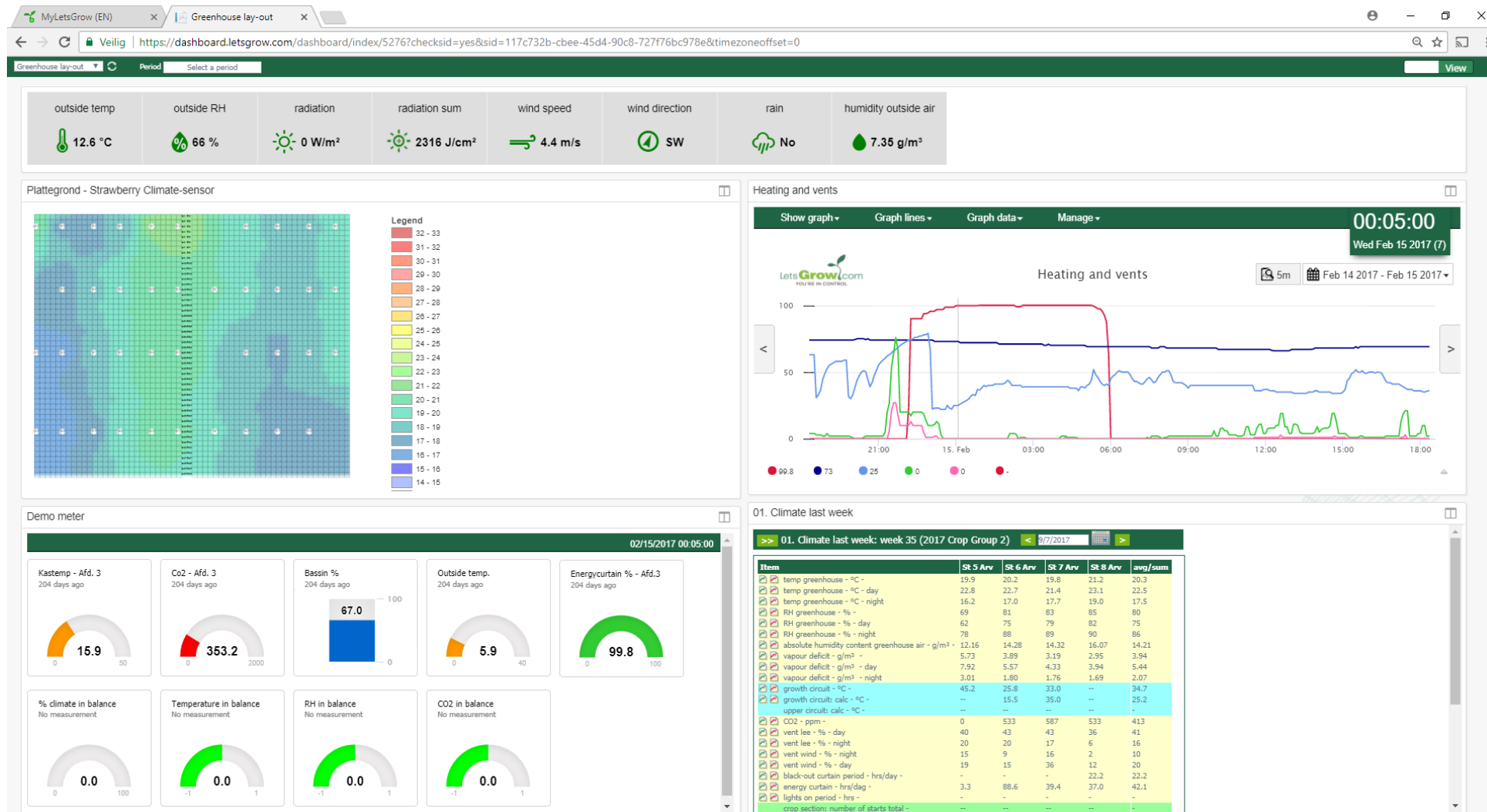
Possible to put sensors on multiple heights

Big Data & AI

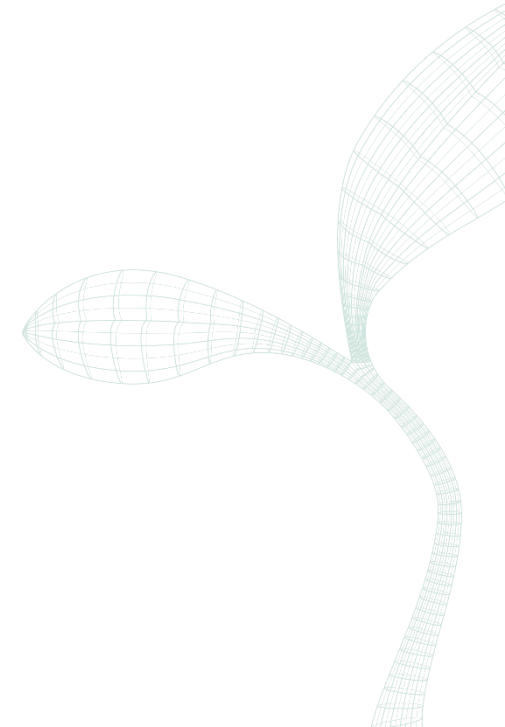
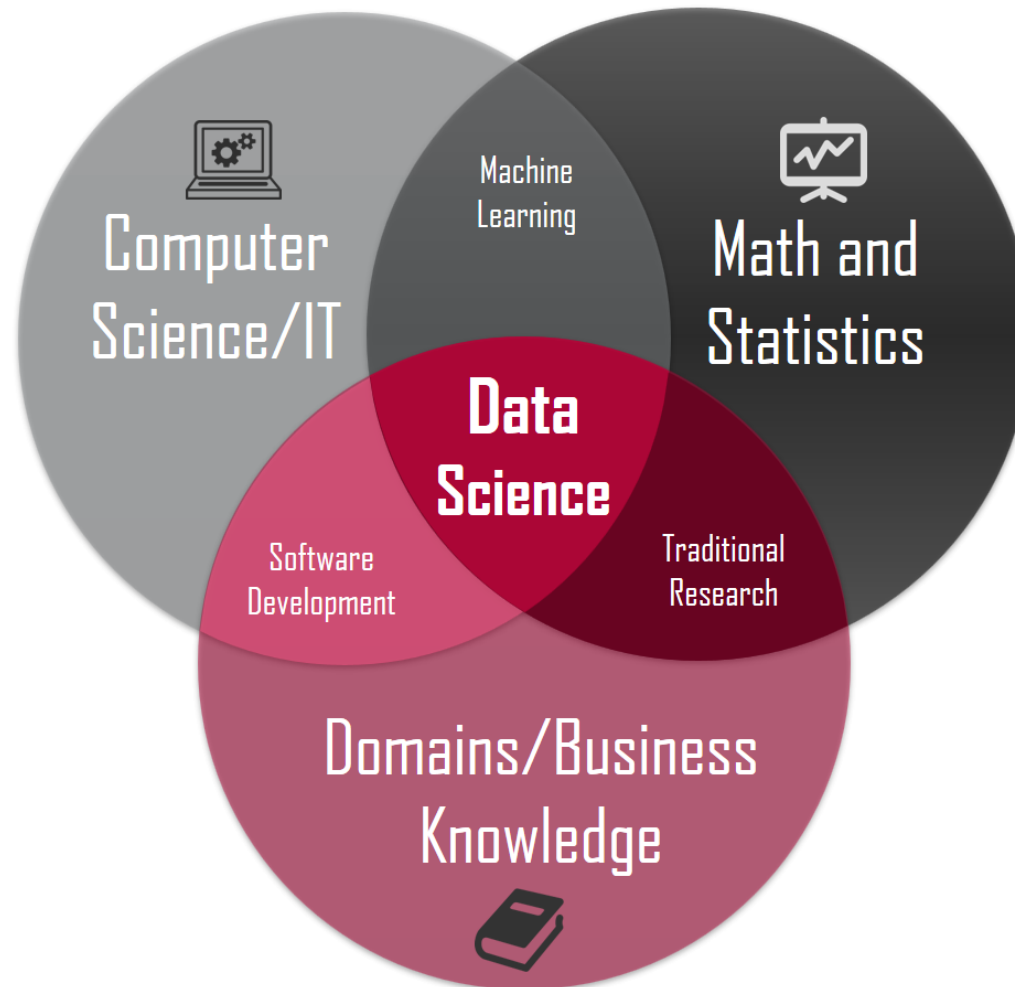
The power of data: uniform climate



All data together on one dashboard!

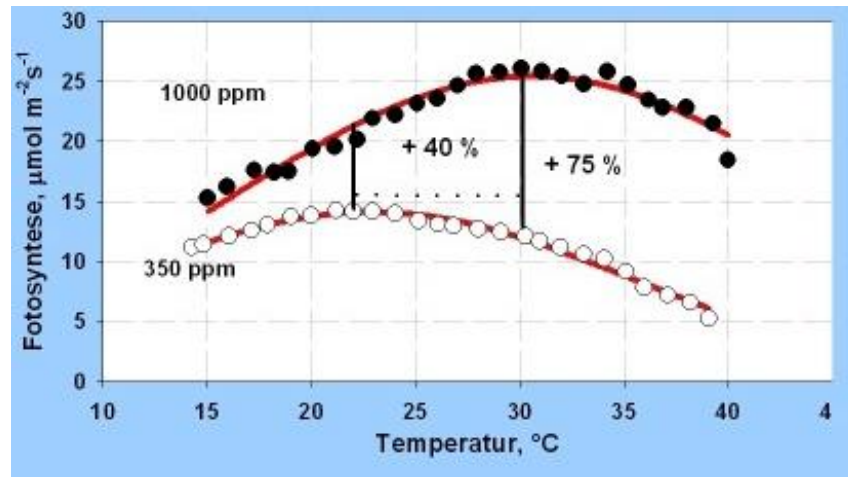


Let your data work for you!



Let your data work for you!

We combine scientific plant physiology knowledge & data analysis



Know **what** you are doing **and why**

Know what you can **improve**

Optimise production & quality!

Light Use Efficiency

Why these differences in LUE?

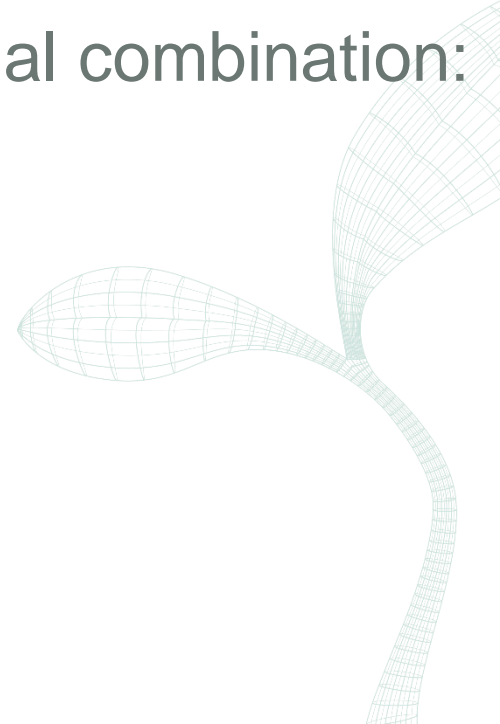
What is the optimal combination:

Radiation

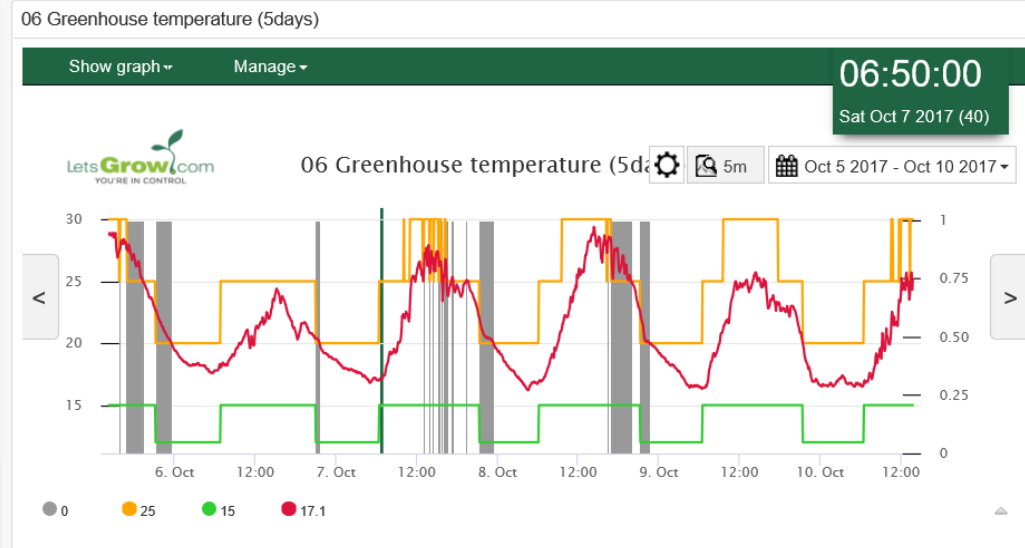
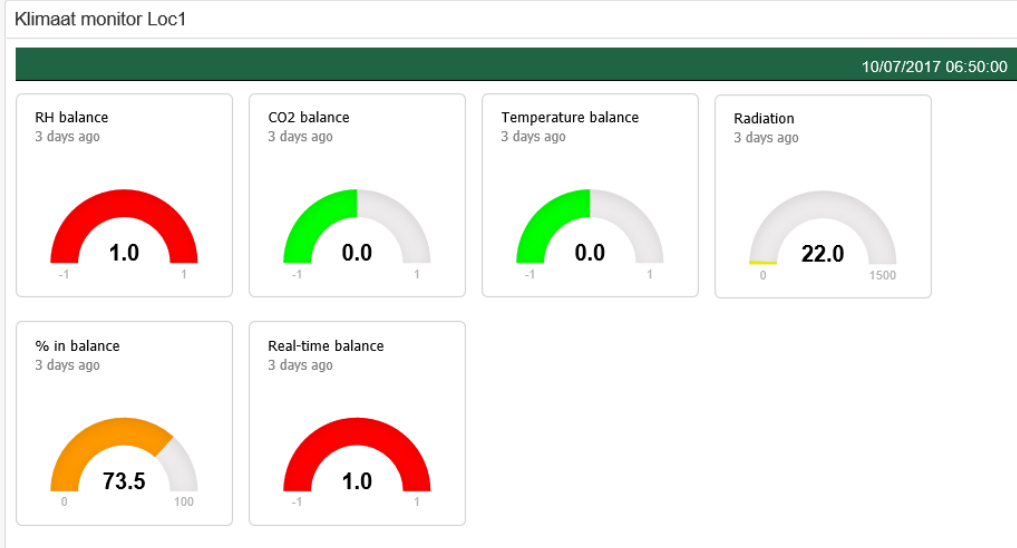
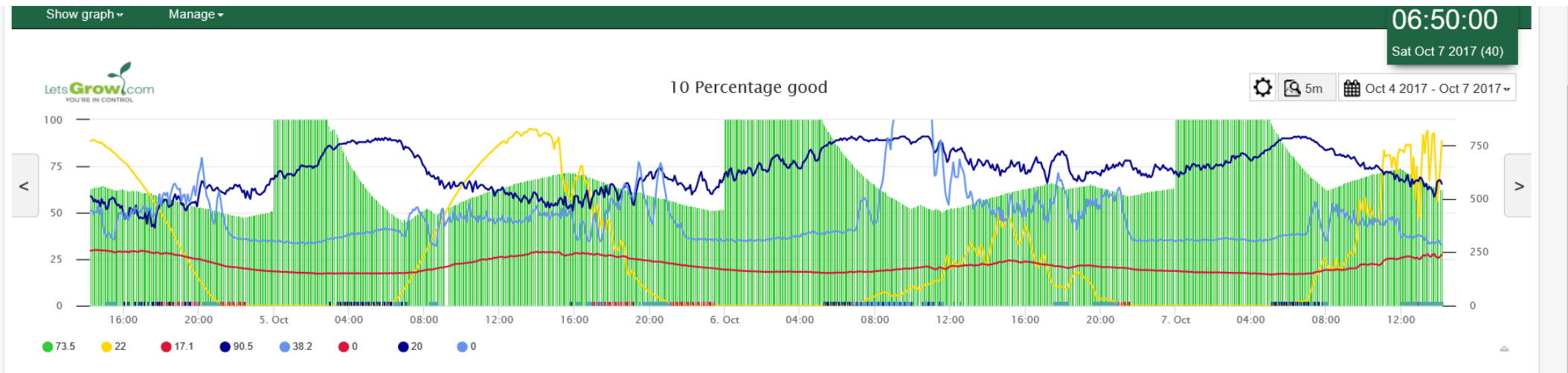
Temperature

CO₂

RH

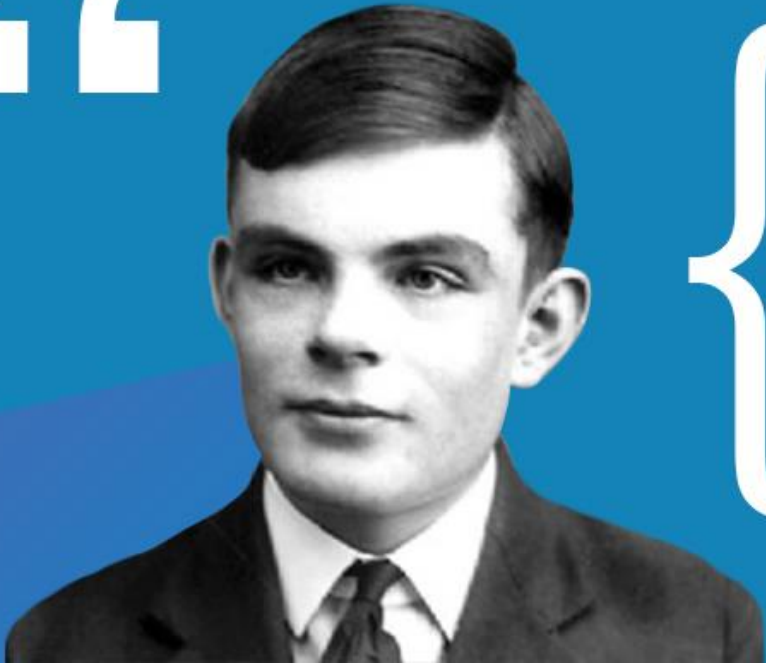


Monitoring tools



Artificial Intelligence: Machine Learning

“



...what we want is a
machine that can learn
from experience.

Alan Turing, 1947

Yield prediction: based on physiology

Crop Plan

<< GrowthPlan 7/3/2017											
Item	w 23-17	w 24-17	w 25-17	w 26-17	w 27-17	w 28-17	w 29-17	w 30-17	w 31-17	w 32-17	w 33-17
temp greenhouse crop plan - °C -: Yieldprediction (Manual-jsm)	20.0	20.0	20.0	20.0	20.0	20.0	22.0	22.0	20.0	20.0	20.0
truss weight crop plan - g -: Yieldprediction (Manual-jsm)	350	350	350	350	350	350	350	350	350	350	325
fruits per truss crop plan - #/truss -: Yieldprediction (Manual-jsm)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
fruit growth period (first truss) crop plan - days -: Yieldprediction (Manual-jsm)	-	-	-	-	-	-	-	-	-	-	-

Crop Registration

KPN NL 11:20

Select location Enter data

17/3/2016 Growth registration P 16.
R. plant 1

thickness head - mm

leaf length - cm

length growth - cm/week

flowering height - cm

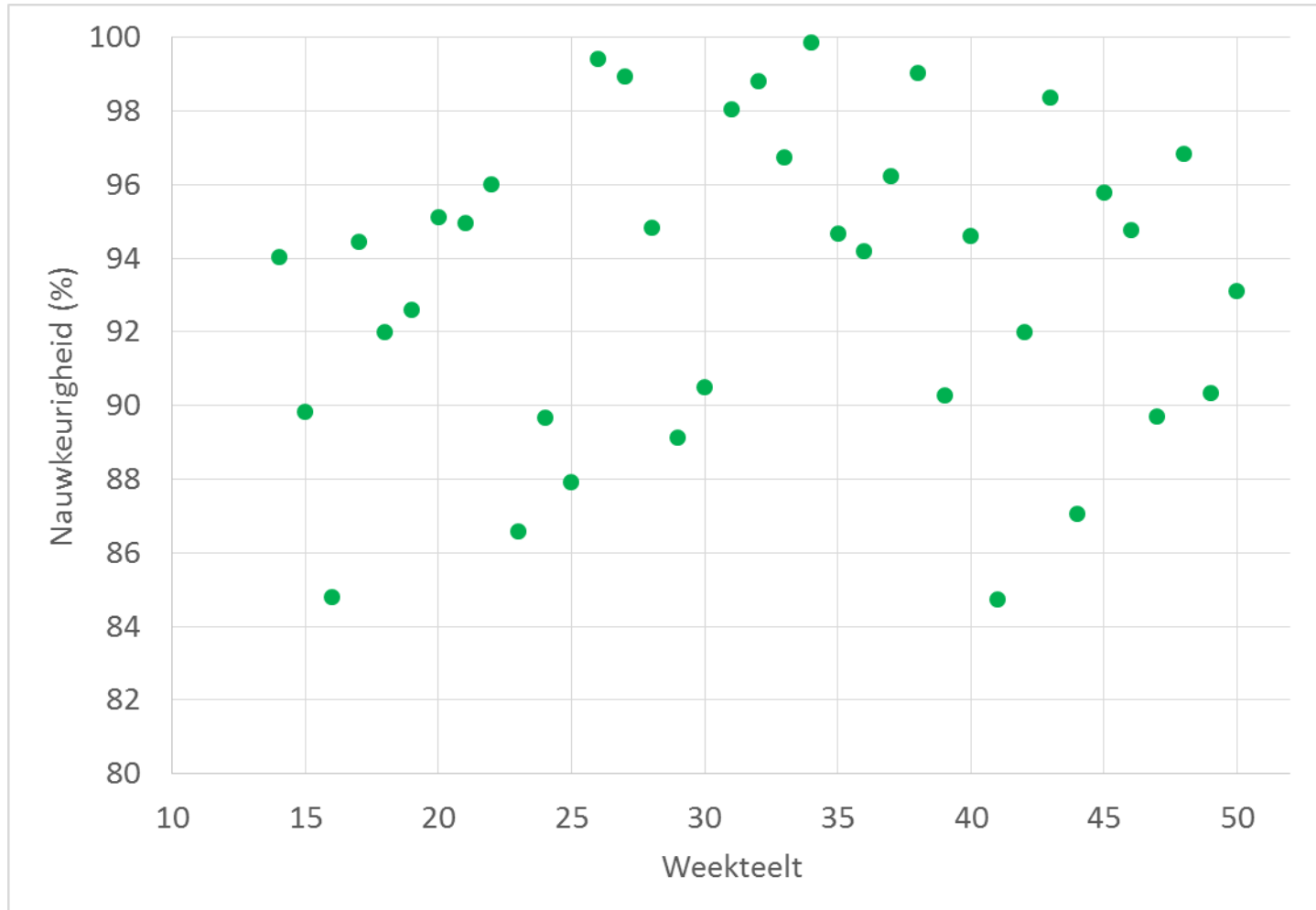
flowers per truss - #/truss

truss number flower

Save



Artificial Intelligence: Yield prediction



Based on your own historical data

Very high average accuracy (above 90%!)

Very low maximum deviation

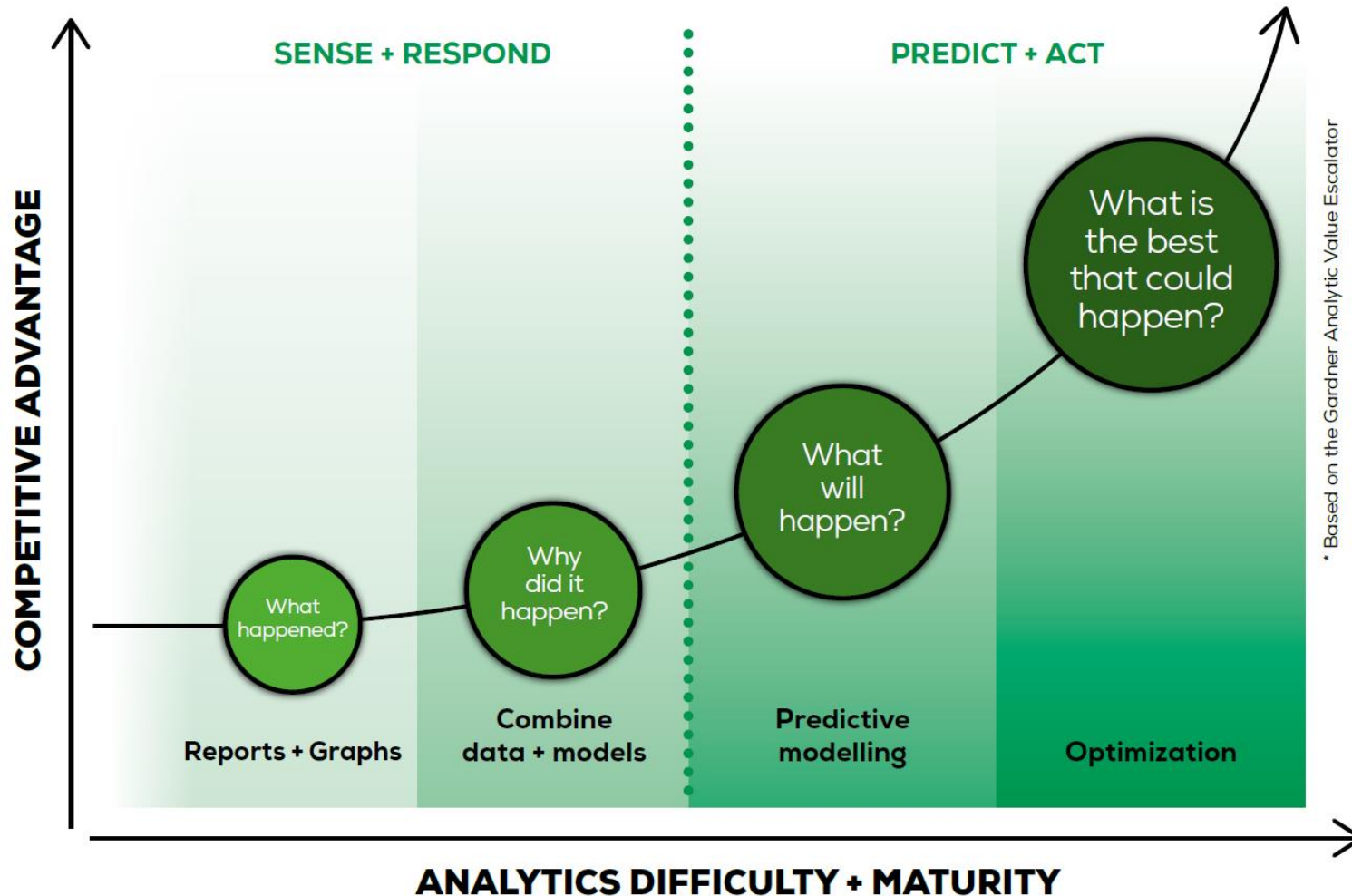
Still improving!

Future

Control Room: Growing from a distance



Analytic Value Escalator: Optimization



Help your company and your growers to the next level of Optimization!



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