ICT platform for the fruit growing sector in Belgium

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Project (2014-2019)
Innovations in fruit growing

Situation
- Upscaling companies
- Grower becomes manager – has to delegate tasks

New Needs
- Easier collecting and interpreting data
- Easier registration treatments
- Use data for
  - More correct applications
  - Taking strategic decisions

Topics
- ICT applications
- Sensor platforms
- Robotization / Localization
How to meet the growers’ = customers’ expectations

• Involve 10 growers from start
  – Open mindset
  – Interest in new technologies

• Incorporate their input in each project step
  – Translate issues into requirements
  – Identify issues at early stage
    • Less costs and time

• Involve them in the validation process
  • Growers act as owners of the development.

STEPS

1. Prioritize
2. Benchmark
3. Planning / concept
4. Prototype
5. Launch
1 Prioritize

- ICT applications
- Sensor platforms
- Robotization / Localization

- Base for further developments
- Technology readiness levels (TRL)
- Interest of growers

- Registration of spray applications
  - Complexity legal regulation
    - Dose
    - Number of applications
    - Waiting time
  - Time consuming – repeating elements

1. Prioritize
2. Benchmark
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4. Prototype
5. Launch
2 Benchmark

• visit growers on-site
  – How do they work?
  – Applications are based on
    • Warning systems
    • advisers

• Investigate available registration software
  – Registration software is available but:
    • Mixes of products are not foreseen
    • Not compatible with website/extranet of grower association/cooperation’s
    • Special fruit growing requirements are not supported

1. Prioritize
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4. Prototype
5. Launch
3 Planning /concept

Generating and evaluating different concepts

- Discussion of possible solutions with the growers
- Ask input from growers with regards to the
  - ease of use
  - correct wordings
  - special requirements
- Translate input into requirements

1. Prioritize
2. Benchmark
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4. Prototype
5. Launch
4 Prototype

Development of prototype according requirements.

• Validation by
  1. Advisers
  2. Our 2 test Gardens
  3. 10 growers

• Results: Improvements necessary
  – Simplifying
  – More “fruit” specific functions
  – User experiences

1. Prioritize
2. Benchmark
3. Planning / concept
4. Prototype
5. Launch
5 Launch

Eindelijk (Finally)

Vereenvoudigde (Simplified)

Administratie (Administration)

1. Prioritize
2. Benchmark
3. Planning / concept
4. Prototype
5. Launch

! One registration for a complete registration!

! Developed by growers for growers!
• Web based application
  – Web app for PC / laptop / tablet
  – Mobile app for smartphone
PROEFCENTRUM FRUITTEELT VZW

TITEL

10 Milieu & Techniek
Kris Ruysen

Basic data
Instructions
Check data
Export data
Parcel info
Only available products are selectable in the advised dos.
- Check number of applications for each product or active ingredient

**Toepassingen controle**

<table>
<thead>
<tr>
<th>Product</th>
<th>Dosis</th>
<th># toepassingen behandeling</th>
<th># toepassingen actieve stof</th>
<th># toepassingen familie</th>
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<tbody>
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<td>CAPTAN 80 WG</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>OK</td>
<td>1 / 10</td>
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<td>EPSP synthase: 5 / -</td>
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<td>SDHb: 6 / 4</td>
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<td>2 / -</td>
<td>6-BENZYLADENINE: 2 / -</td>
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<td>1 / -</td>
<td>6-BENZYLADENINE: 1 / -</td>
<td>SDHb: 4 / 4</td>
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- Screen to check for possible failures
- Check Dose
Where to apply?

Machine Information?

Amount of product and water in the tank?

Automatically calculation and stock level adaption
## Overview of applications

<table>
<thead>
<tr>
<th>Date</th>
<th>Product</th>
<th>Rate</th>
<th>Time</th>
<th>Condition</th>
<th>Weather</th>
<th>Application Instructions</th>
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<td>23/03/2015</td>
<td>HYDRO SUPER 25</td>
<td>4 kg/ha</td>
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<tr>
<td></td>
<td>WG</td>
<td></td>
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<td>01/04/2015</td>
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<tr>
<td></td>
<td>Ureum 46%</td>
<td>2.667 kg/ha</td>
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<tr>
<td>14/04/2015</td>
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<td>+ 28 days</td>
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<td>WG</td>
<td></td>
<td></td>
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<tr>
<td>23/04/2015</td>
<td>PROMALIN</td>
<td>0.21 l/ha</td>
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<td></td>
<td>BELCAP 80 WG</td>
<td>1.2 kg/ha</td>
<td>+ 28 days</td>
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<tr>
<td>29/04/2015</td>
<td>RAK 3+4</td>
<td>500 ampullen/ha</td>
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<tr>
<td>06/05/2015</td>
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<td>1.2 kg/ha</td>
<td>+ 28 days</td>
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</tr>
</tbody>
</table>

*Print and export*
Other registrations

- harvest
- labor
- diseases
- phenology
- weather
- reminder
Different dose expressions!

Ligneous small fruit & vineyards
1 or kg/ha LWA
Growers are used to it, they start the season with small plants

Apple pear & cherries
1 or kg/ha standard orchard (based on LWA)

Strawberry
L or kg/ha ground
Offered to growers (also non-ICT minded)

- a practical training (3 hour)
- access to our helpdesk.
  - Help function
  - Input Ideas for improvements

160 users > 10% of fruit growers in 1 year time
Future possibilities

EVA is the basic platform ready for extensions

- Link and transfer data to grower cooperation's (auctions)
- Extension to other crops / countries

Related to smart farming

- Integrate input of sensed data like
  - spray parameters,
  - visualisation drought status, pest status, plant stress, ... from various sources (machine sensing, drones, satellite, ...)
  - Automatized localisation for the input of issues (fallen tree, fire blight infection, .......)