



Civil Dialogue Group on Fruit and Vegetables,
Brussels, Nov, 20, 2023



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 862563.

SmartProtect

- H2020 Thematic Network
- Coordinated by INAGRO, Belgium
- Focusing on cross regional knowledge sharing of SMART IPM solutions for vegetable farmers and advisors
- 15 partners
- In short - SMART approaches to IPM in vegetable crops!!!

SmartProtect H2020 – IPM THEMATIC NETWORK (smartprotect-h2020.eu)



SmartProtect - 15 Partners - 12 countries - 2020-2023



SmartProtect

Approaches include:

- Application – pesticides/biocontrol agents
 - Diagnostics and detection
 - Monitoring
 - Decision support systems
- Check out what we've identified on the platform
<https://platform.smartprotect-h2020.eu/en>



INTEGRATED PEST MANAGEMENT

SMART CROP PROTECTION TECHNIQUES

On this platform you find Smart IPM solutions in vegetable production for open-field and greenhouse production systems. UV technologies for pest control, mobile applications for pest and disease detection, insect monitoring and a lot of case studies in Europe.

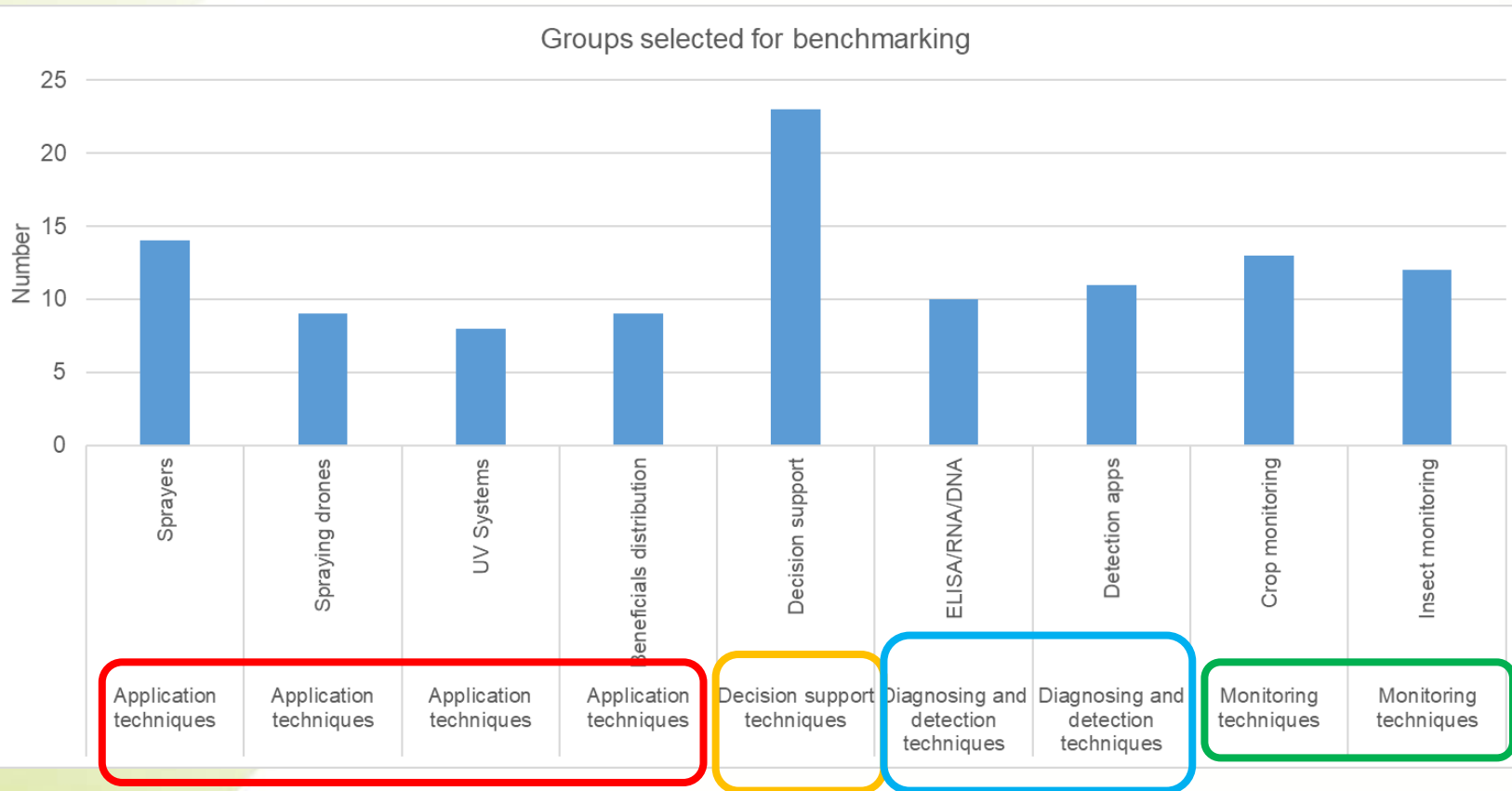
SmartProtect Platform

  **smart protect**
IPM THEMATIC NETWORK

The project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101017711.



1. Knowledge collection by Warwick University: ± 200 techniques



Application: 45

Decision support: 43

Diagnosing + detection: 73

Monitoring: 38

2. SmartProtect platform developed by Agenso



The Project

Vegetable IPM

News & Events

Platform

Resources

Links

Contact



*Implementing SMART IPM methodologies
for innovative vegetable crop protection*

Website link <https://www.smartprotect-h2020.eu/>

Subscribe to our newsletter: [SmartProtect H2020 \(smartprotect-h2020.eu\)](mailto:SmartProtectH2020@smartprotect-h2020.eu)



2. SmartProtect platform developed by Agenso

INTEGRATED PEST MANAGEMENT

SMART CROP PROTECTION TECHNIQUES



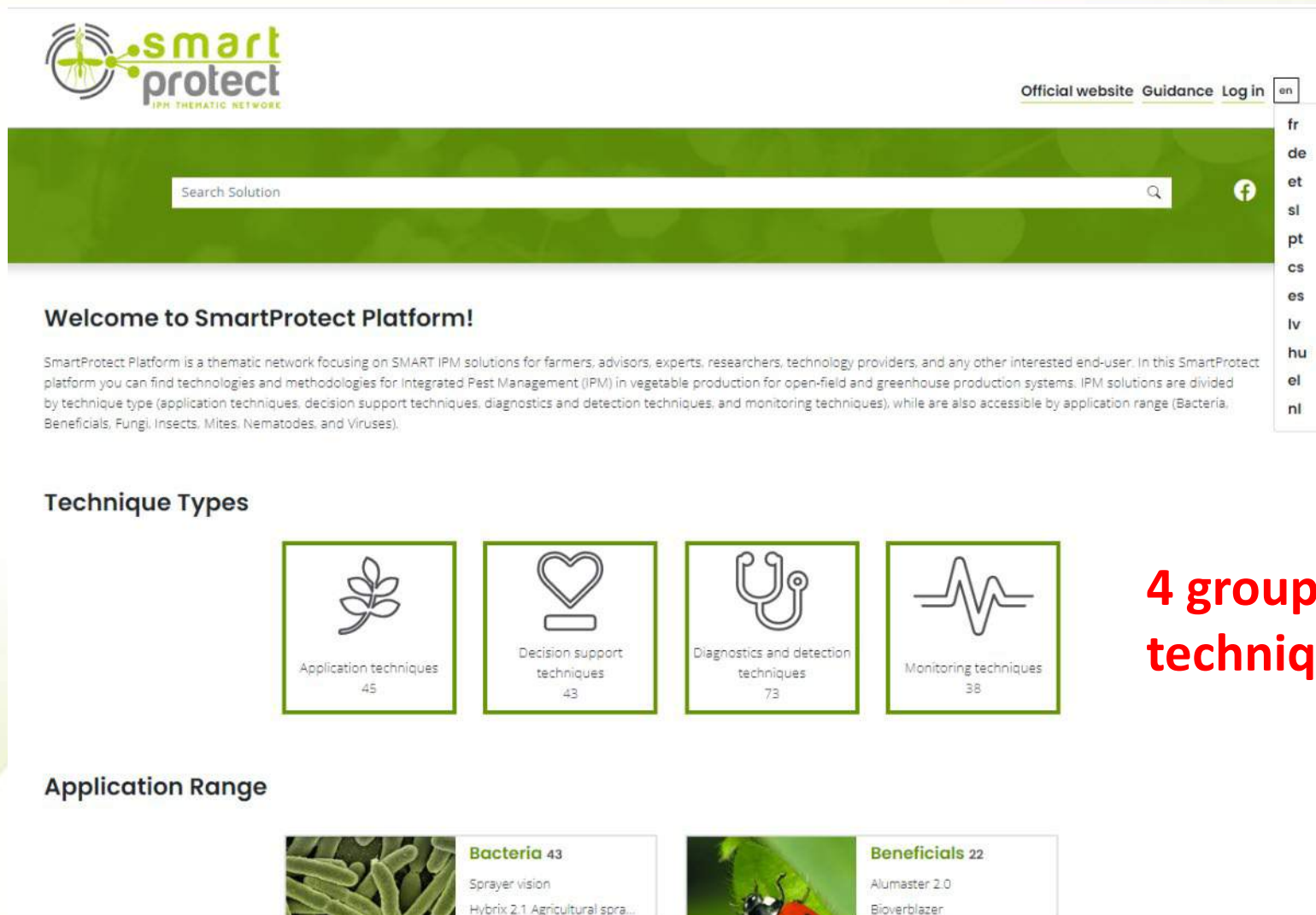
On this platform you find Smart IPM solutions in vegetable production for open-field and greenhouse production systems. UV technologies for pest control, mobile applications for pest and disease detection, insect monitoring and a lot of case studies in Europe.

SmartProtect Platform



The project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no 101019163.





The screenshot shows the SmartProtect platform homepage. At the top left is the logo for 'smart protect IPM THEMATIC NETWORK'. To the right are links for 'Official website', 'Guidance', and 'Log in', followed by a language selection dropdown menu currently set to 'en'. Below the navigation bar is a green search bar with the placeholder text 'Search Solution' and a magnifying glass icon. The main content area begins with a 'Welcome to SmartProtect Platform!' section, followed by a paragraph describing the platform's focus on SMART IPM solutions for various users. Below this is a 'Technique Types' section featuring four icons in green boxes: a leaf for 'Application techniques' (45), a heart for 'Decision support techniques' (43), a stethoscope for 'Diagnostics and detection techniques' (73), and a heartbeat line for 'Monitoring techniques' (38). The 'Application Range' section at the bottom shows two categories: 'Bacteria 43' with a microscopic image of bacteria and 'Beneficials 22' with a photograph of a ladybug.

Official website Guidance Log in en

fr
de
et
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es
lv
hu
el
nl

Search Solution

Welcome to SmartProtect Platform!

SmartProtect Platform is a thematic network focusing on SMART IPM solutions for farmers, advisors, experts, researchers, technology providers, and any other interested end-user. In this SmartProtect platform you can find technologies and methodologies for Integrated Pest Management (IPM) in vegetable production for open-field and greenhouse production systems. IPM solutions are divided by technique type (application techniques, decision support techniques, diagnostics and detection techniques, and monitoring techniques), while are also accessible by application range (Bacteria, Beneficials, Fungi, Insects, Mites, Nematodes, and Viruses).

Technique Types

Technique Type	Count
Application techniques	45
Decision support techniques	43
Diagnostics and detection techniques	73
Monitoring techniques	38

Application Range

Application Range	Count
Bacteria	43
Beneficials	22

4 groups of
techniques

SmartProtect platform Smart Protect - Home (smartprotect-h2020.eu)

Application Range



Bacteria 43

Sprayer vision
Hybrix 2.1 Agricultural spra...
Spray Assist app
Innok - Spraying Robot SPE ...
Greenhouse sprayer OPRS ...



Beneficials 22

Alumaster 2.0
Bioverblazer
Buntata App
Ecoation
Biospreader



Fungi 90

Agrix Tech App
Cropify
Sprayer vision
Hybrix 2.1 Agricultural spra...
Burkard DNA auto spore tr...



Insects 111

Sprayer vision
Hybrix 2.1 Agricultural spra...
Spray Assist app
FDCONTROLO: BugSmartTr...
Trailed sprayer WHIRLWIN...



Mites 48

Sprayer vision
Hybrix 2.1 Agricultural spra...
Spray Assist app
Trailed sprayer WHIRLWIN...
Innok - Spraying Robot SPE ...



Nematodes 26

Innok - Spraying Robot SPE ...
Dropleg Hardi
360 undercover
Buntata App
FuturCrop



Viruses 43

Buntata App
Agdia - AmplifyRP® XRT
Ecoation
Margaret
CampoGest



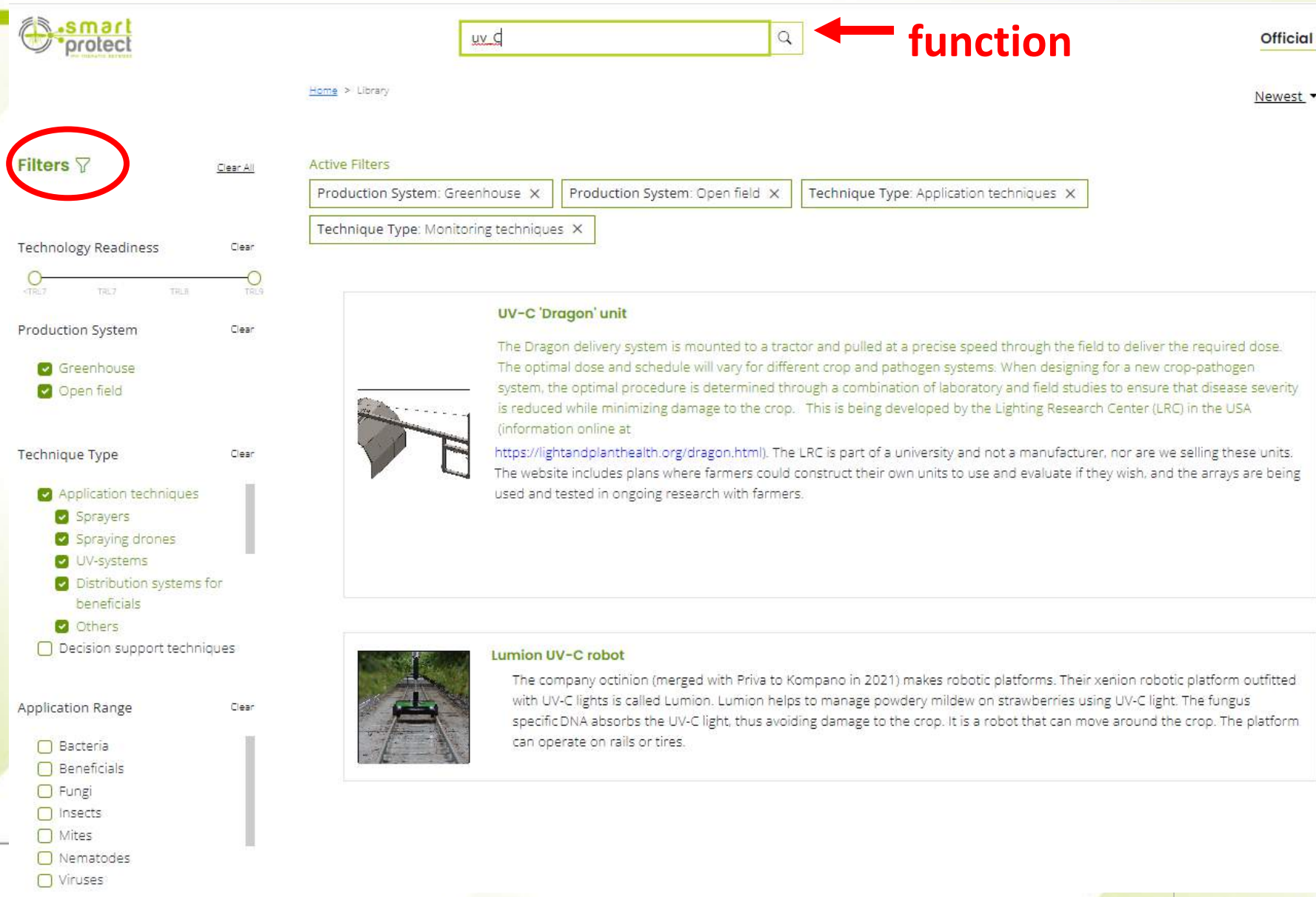
Others 25

Dropleg Hardi
360 undercover
Dubex Wave sprayers
Cropsurfer™ / Slapduk™
Margaret

**200 Smart Tools
dividend in 8
Application ranges**

SmartProtect platform Smart Protect - Home (smartprotect-h2020.eu)

**Search
function**



The screenshot displays the SmartProtect platform interface. At the top left is the logo. A search bar at the top center contains the text 'uv.c' with a magnifying glass icon. To the right of the search bar, the text 'Search function' is written in red with an arrow pointing to the search icon. Below the search bar, the breadcrumb 'Home > Library' is visible. On the right side, there are links for 'Official v' and a dropdown menu for 'Newest'. On the left side, a 'Filters' button is circled in red. Below it, there are sections for 'Technology Readiness' (a slider from <TRL7 to TRL9), 'Production System' (with checkboxes for 'Greenhouse' and 'Open field'), 'Technique Type' (with checkboxes for 'Application techniques', 'Sprayers', 'Spraying drones', 'UV-systems', 'Distribution systems for beneficials', 'Others', and 'Decision support techniques'), and 'Application Range' (with checkboxes for 'Bacteria', 'Beneficials', 'Fungi', 'Insects', 'Mites', 'Nematodes', and 'Viruses'). In the center, under 'Active Filters', there are three filter boxes: 'Production System: Greenhouse X', 'Production System: Open field X', and 'Technique Type: Application techniques X'. Below these, there is a fourth filter box: 'Technique Type: Monitoring techniques X'. The main content area shows two results. The first result is titled 'UV-C 'Dragon' unit' and includes a small image of a tractor-mounted unit. The text describes the system and provides a link to <https://lightandplanthealth.org/dragon.html>. The second result is titled 'Lumion UV-C robot' and includes a small image of a robot on a track. The text describes the robot and its application in managing powdery mildew on strawberries.

Filters

Clear All

Technology Readiness

<TRL7 TRL7 TRL8 TRL9

Production System

☒ Greenhouse

☒ Open field

Technique Type

☒ Application techniques

☒ Sprayers

☒ Spraying drones

☒ UV-systems

☒ Distribution systems for beneficials

☒ Others

☐ Decision support techniques

Application Range

☐ Bacteria

☐ Beneficials

☐ Fungi

☐ Insects

☐ Mites

☐ Nematodes

☐ Viruses

Home > Library

Official v

Newest

Active Filters

Production System: Greenhouse X

Production System: Open field X

Technique Type: Application techniques X

Technique Type: Monitoring techniques X

UV-C 'Dragon' unit

The Dragon delivery system is mounted to a tractor and pulled at a precise speed through the field to deliver the required dose. The optimal dose and schedule will vary for different crop and pathogen systems. When designing for a new crop-pathogen system, the optimal procedure is determined through a combination of laboratory and field studies to ensure that disease severity is reduced while minimizing damage to the crop. This is being developed by the Lighting Research Center (LRC) in the USA (information online at <https://lightandplanthealth.org/dragon.html>). The LRC is part of a university and not a manufacturer, nor are we selling these units. The website includes plans where farmers could construct their own units to use and evaluate if they wish, and the arrays are being used and tested in ongoing research with farmers.

Lumion UV-C robot

The company octinion (merged with Priva to Kompano in 2021) makes robotic platforms. Their xenion robotic platform outfitted with UV-C lights is called Lumion. Lumion helps to manage powdery mildew on strawberries using UV-C light. The fungus specific DNA absorbs the UV-C light, thus avoiding damage to the crop. It is a robot that can move around the crop. The platform can operate on rails or tires.

Information on platform

platform.smartprotect-h2020.eu/en/view/ipm/164

smart protect


Search Solution

Official website Guidance Log in en

Home > Library > Solution

f t in

Lumion UV-C robot



Technology Readiness Level
TRL 9

Farm Scale Types
Big scale, Small scale

9

Description

The company octinion (merged with Priva to Kompano in 2021) makes robotic platforms. Their xenion robotic platform outfitted with UV-C lights is called Lumion. Lumion helps to manage powdery mildew on strawberries using UV-C light. The fungus specific DNA absorbs the UV-C light, thus avoiding damage to the crop. It is a robot that can move around the crop. The platform can operate on rails or tires.

For More information [Visit Website](#)

Crops Used

- Cucumber
- Strawberry

Crops Possible

- All

Countries Used

- Belgium
- Canada
- Germany
- Netherlands

Countries Not Suitable

- No Countries

Species

- Range of species

Tech Requirement Comment

System on rails or concrete paths > 2.4m needed

Training Comment

Information on platform

CapTrap



Technology Readiness Level
TRL 9

9

Farm Scale Types
Big scale, Small scale

Production Systems
Greenhouse, Open field

Technique Types
Decision support techniques, Monitoring techniques,
Insect monitoring (Monitoring techniques)

Application Ranges
Insects

Company Name
Cap2020

Country Origin
France

Contact Person

Description

Cap2020 offers 3 connected traps designed for trapping different kinds of pests. The funnel trap is suitable for trapping noctuids, but also other pests such as the boxwood borer. Thanks to the attractiveness of the pheromone and the analysis of the movement of the insect in the trap, only the target insect is counted. The second trap is an ideal tool for monitoring populations of corn pests including the European corn borer, the creel trap has for several years proven its worth in mass trapping of this pest. This trap works with a specific pheromone. The vision trap as third system is a multiple pests trap. The CapTrap Vision system was designed to identify and enumerate pests on sticky plates. To count pests, performant algorithms using deep learning are used and integrated into the trap. The counts are send directly to your CapTrap account, allow real-time monitoring of the presence of the pest and optimal interventions.

For More information

[Visit Website](#)

Crops Used

- o All
- o Brussels sprouts
- o Cabbage
- o Cauliflower
- o Corn
- o Head cabbage (white, red, savoy)
- o Maize

Crops Possible

- o All

Countries Used

- o France

Species

- o Autographa gamma
- o Plutella xylostella
- o Agrotis segetum
- o Range of species

Information on platform

Technique Types Decision support techniques, Monitoring techniques, Insect monitoring (Monitoring techniques)	
Application Ranges Insects	
Company Name Cap2020	
Country Origin France	
Contact Person contact@cap2020.fr	
Special Requirement	<input type="checkbox"/>
Need for a special agricultural landscape	<input type="checkbox"/>
Need Special Training	<input type="checkbox"/>

Crops Possible

- All

Countries Used

- France

Species

- Autographa gamma
- Plutella xylostella
- Agrotis segetum
- Range of species
- Tuta absoluta

Tech Requirement Comment

The traps are completely autonomous, because they are connected to solar panel. They are geolocated to a GPS location.
The sim-cards are multi-operators communicating in the world that will always be able to communicate with you on all continents.
An optional weather forecast for a temperature and humidity is available

Cost Detail

Buy a trap : from 539 €
Rent a trap : between 200 and 400 € per season (depends on the trap and the duration)

Example Cases/Additional information


Helicoverpa armigera, Mamestra brassicae, Striacosta albicosta, Ostrinia nubilalis, Sesamia nonagrioides, Lobesia botrana, Eupoecilia ambiguella, Cryptoblabes gnidiella, Duponchella fovealis, Cacoecimorphapronubana, Cydalima perspectalis, Cydia pomonella, Cydia funebrana, Thaumatopoea pityocampa

Support


Free central support

Media Files

Youtube Videos




Fact sheets on website: allium, brassica and tomato



The Project Vegetable IPM News & Events Platform Resources Links Contact

- What is IPM?
- Alliums
- Brassicas
- Tomatoes
- Fact Sheets


Tomatoes



Diseases

Current Status and Challenges

Disease control in tomatoes




Diseases

Current Status and Challenges

Disease control in horticultural brassicas


Pests

Current Status and Challenges



Pest control in tomatoes

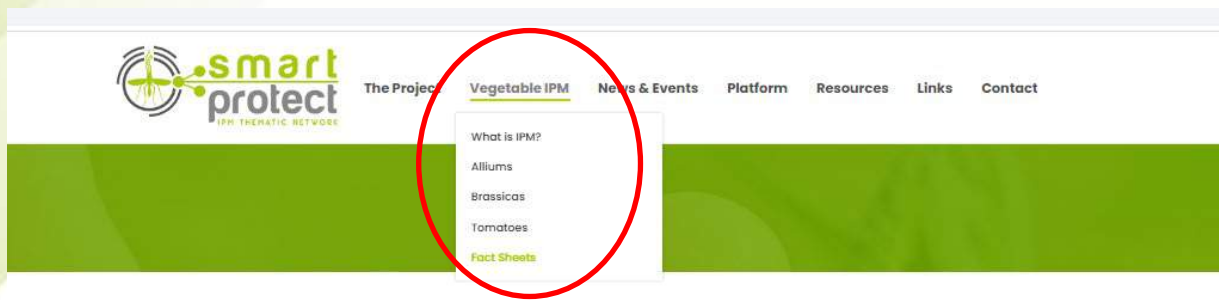
Alliums



Viruses

Virus control in horticultural Alliaceae

Fact sheets for 7 crops + traps + wireless monitoring sensors



**Brassica
Fact Sheet**
[Download here](#)



**Carrot
Fact Sheet**
[Download here](#)



**Cucumber
Fact Sheet**
[Download here](#)



**Lettuce
Fact Sheet**
[Download here](#)



**Onion
Fact Sheet**
[Download here](#)



**Pepper
Fact Sheet**
[Download here](#)



**Tomato
Fact Sheet**
[Download here](#)



**Traps
Fact Sheet**
[Download here](#)



**Wireless
Monitoring
Sensors**
[Download here](#)



Brassica Fact Sheet

- **Pest target:** Flying insects (unspecified).
- **Technology used:** Automatic pest trap status updates from imagery, Disease imagery automatic recognition, Pesticide application performance imagery

2.1.7 Koppert: traps, lures & beneficials

- **What is it?** Koppert offers a range of traps and suitable beneficials for the monitoring and control of common brassica pests. The company's website is simple to navigate and contains a useful search feature.
- **TRL:** 9
- **Pest target:** Diamondback moth (*Plutella xylostella*), Silver Y moth (*Autographa gamma*), Cutworms (*Agrotis* spp.), Cabbage leafroller (*Clepsia spectrana*), Cabbage moth (*Mamestra brassicae*), Peach Potato aphid (*Myzus persicae*).
- **Technology used:** Range of traps, lures and suitable beneficials

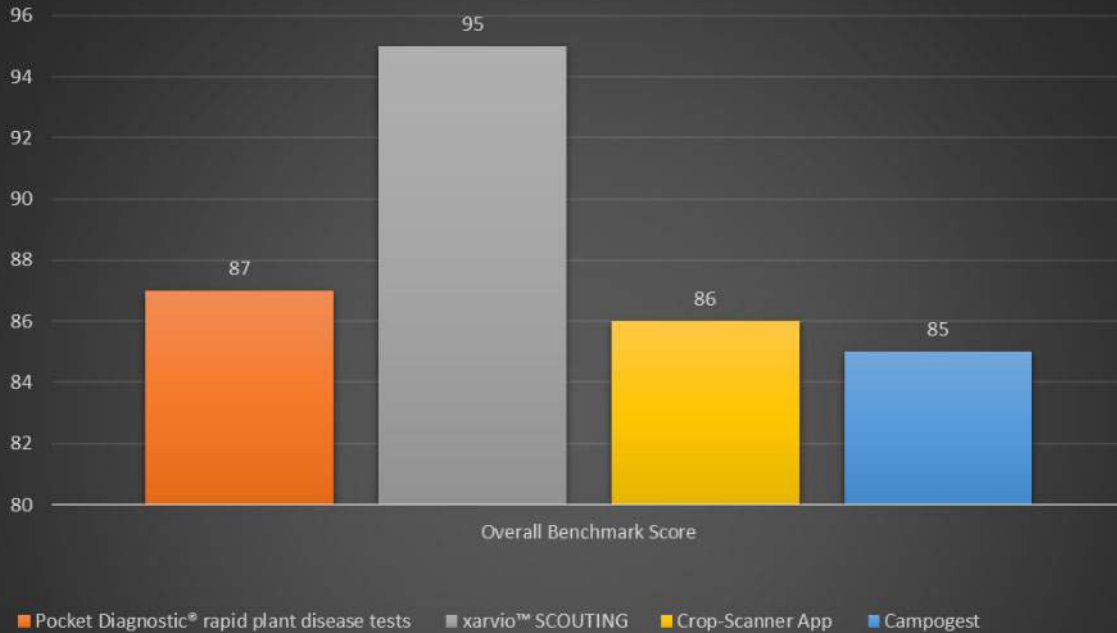
2.1.8 AlphaScents: traps & lures

- **What is it?** A company that provides an array of traps and species-specific lures. Lures are sold separately to traps. Traps are UV resistant coloured meaning they will not fade and are also waterproof and resistant to heavy winds when properly hung.
- **TRL:** 9
- **Pest target:** Banded Cucumber Beetle (*Diabrotica balteata*), Cabbage Moth

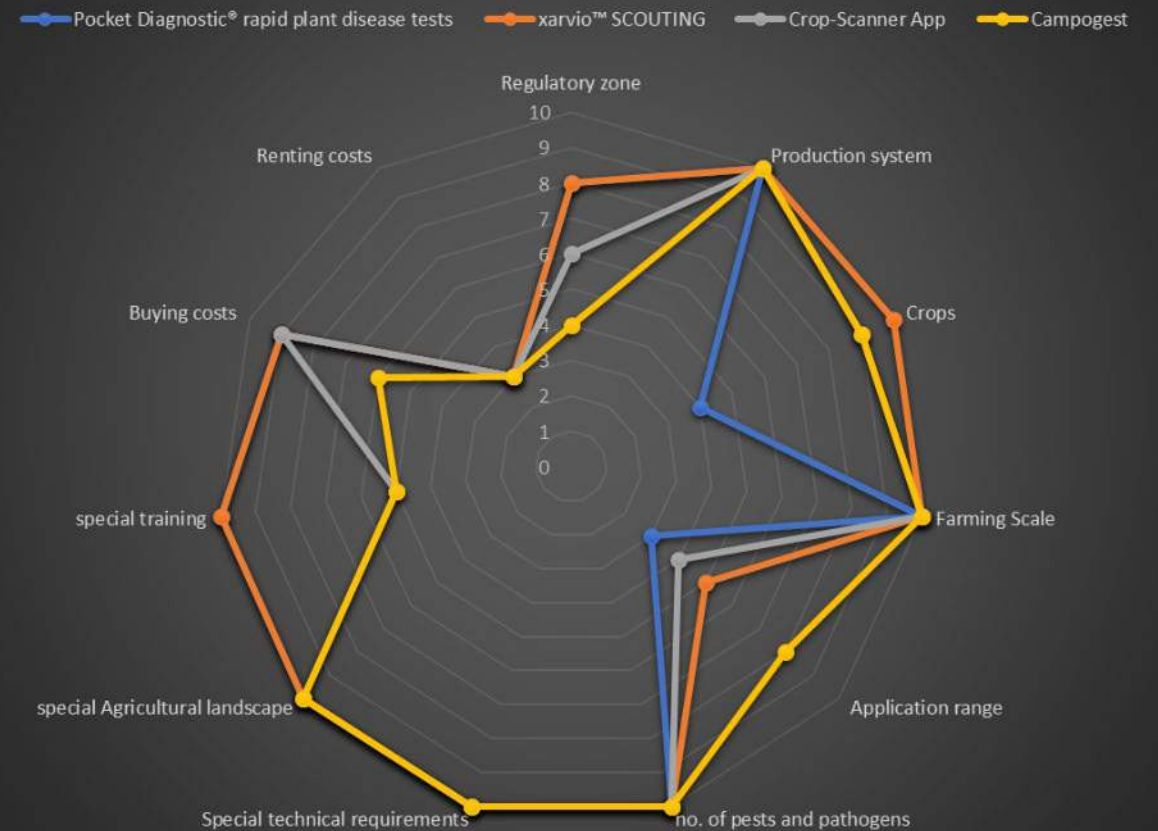


Output benchmarking: selection best techniques \Rightarrow case studies 2022

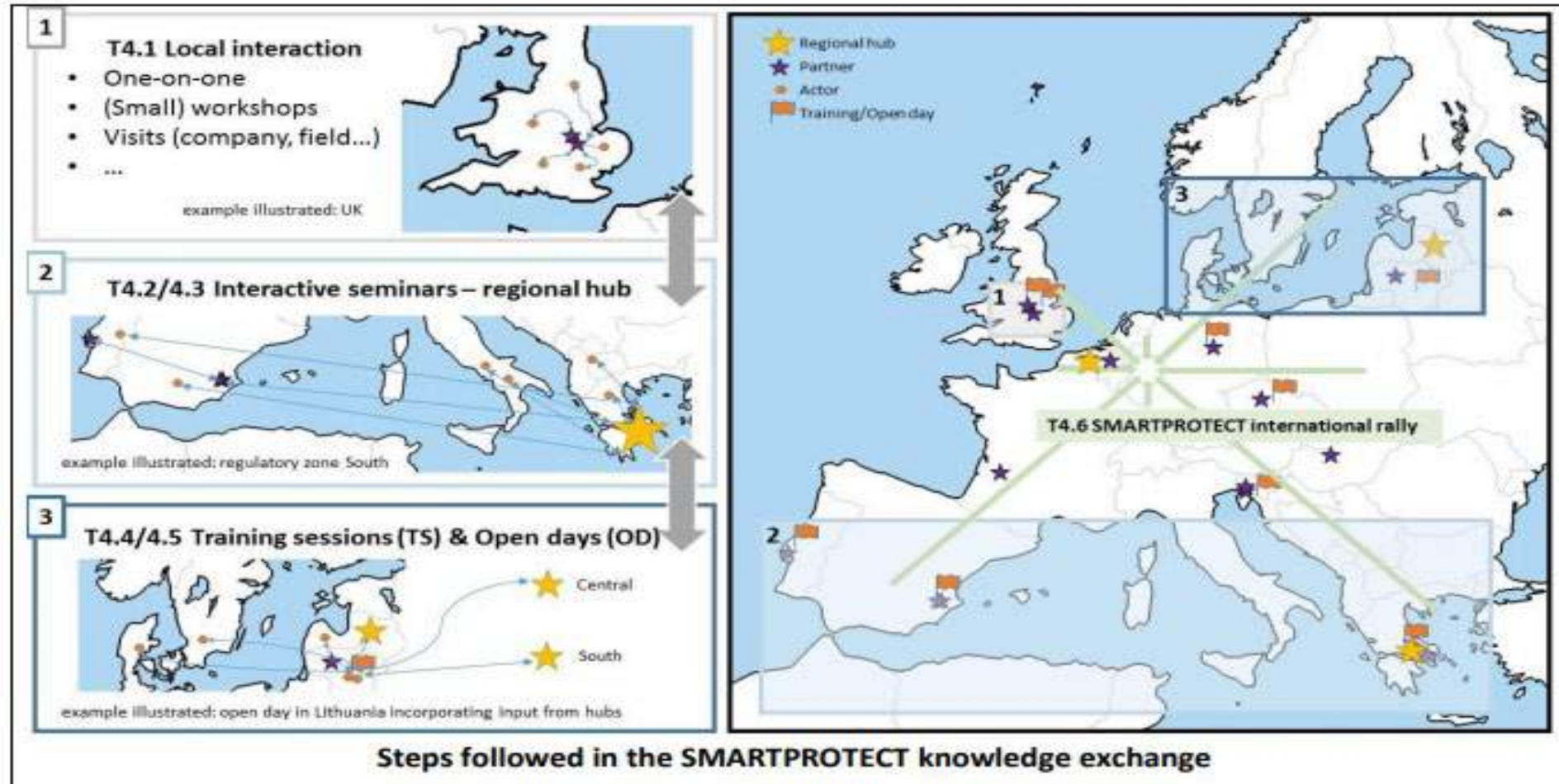
Monitoring APPs



Competitors Radar Chart



4. Knowledge exchange in 2022-2023



Knowledge exchange Inagro: introduction end-users on smart traps



Demo Field Day, Inagro, Belgium 04/10/2022



smart protect
IPM THEMATIC NETWORK

Implementing SMART IPM methodologies for innovative vegetable crop protection

A thematic network that

- Detection of beneficials, pests and pathogens using specific algorithms.
- Innovative monitoring techniques like sensor systems, multispectral imaging and automatic counting.
- Prediction models for incorporation into warning and DSS.
- Innovative biological control techniques.

www.smartprotect-h2020.eu | info@smartprotect-h2020.eu

PARTNERS

inagro, VITO, University of Ghent, WUR, JKI, ARES, EFOP, AHDB, and others.

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inagro
ONDERZOEK & ADVIES IN LAND- & TUINBOUW

Met advies duwen we je bedrijf vooruit





**Demo Field Day mobile smart Apps, JKI,
Gülzow, 31/08/2022**

Demo Field Day of Pest monitoring, EMU, Tartu, Estonia, 05/10/2022





**Open day - LATHORT - plant protection
in vegetable growing
Latvia, 19/09/2022**



Open Day - CAJAMAR RESEARCHCENTRE
- Smart Technologies for IPM
Spain, 27/04/2022



Benchmarking traps in tomato greenhouse, Portugal

Open day - AREFLH – INAGRO – International Horticultural Congress (IHC) France, 14 – 20/08/2022





Seminar - INIAV – The use of advanced techniques in crop protection Portugal, 21/11/2022

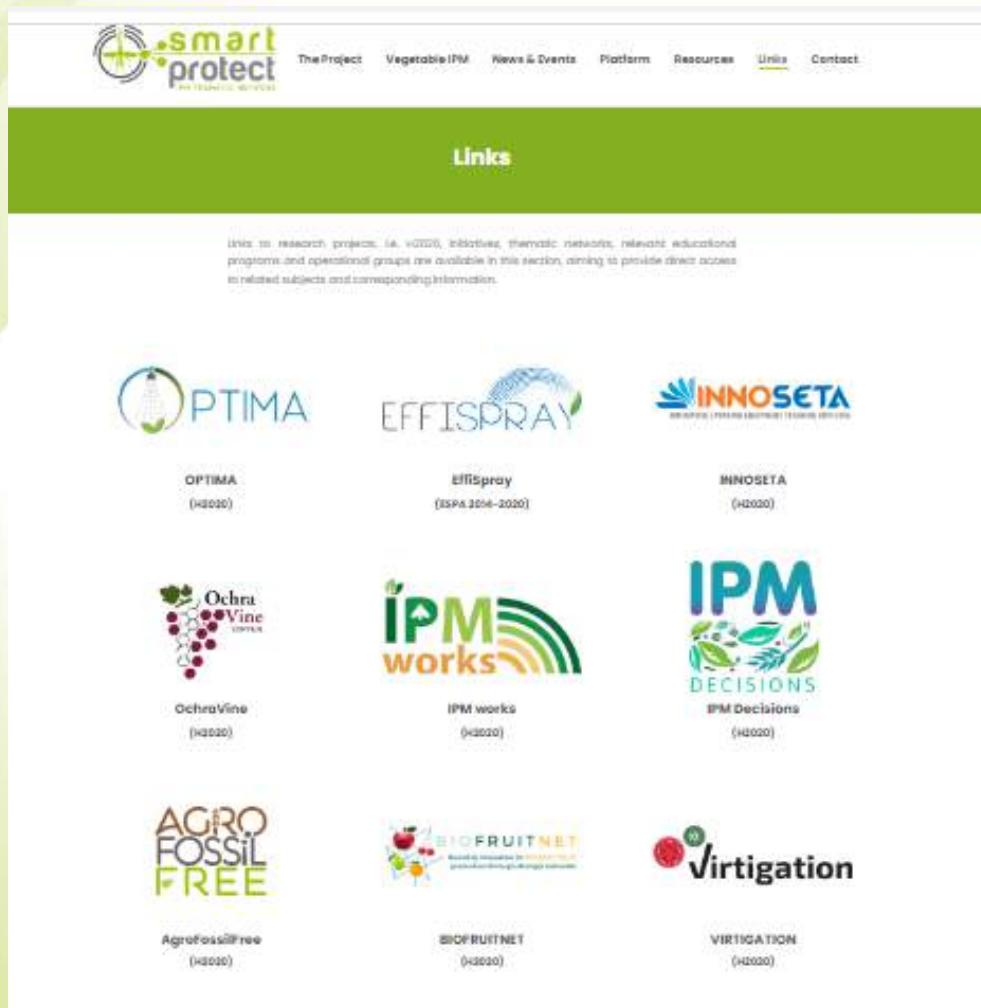
Benchmarking traps in carrots and bean seed fly, UK



SmartProtect booth in IPM Essen, Jan 2023



SmartProtect links with 25 other EU projects and APAARI



The screenshot shows the SmartProtect website with a green header and a 'Links' section. Below the header, there is a paragraph: "links to research projects, i.e. H2020, initiatives, thematic networks, relevant educational programs and operational groups are available in this section, aiming to provide direct access to related subjects and corresponding information."

Project Logo	Project Name	Project ID
	OPTIMA	(H2020)
	EffiSpray	(ESPA 2014-2020)
	INNOSETA	(H2020)
	OchraVine	(H2020)
	IPM works	(H2020)
	IPM Decisions	(H2020)
	AgroFossilFree	(H2020)
	BIOFRUITNET	(H2020)
	VIRTIGATION	(H2020)



noviGRain
(H2020)



ATLAS
(H2020)



EURAKNOS
(H2020)



NOVATERRA
(H2020)



DIVERFARMING
(H2020 726003)
DIVERFARMING
(H2020)



FF-IPM
(H2020)



WASTE4GREEN
(LIFE)



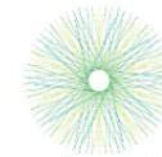
SPRINT
(H2020)



NEFERTITI
(H2020)



EcoStack
(H2020)



EIP-AGRI
(NETWORK)



MIND-STEP
(H2020)



SUSFERT
(H2020)



PestNu
(H2020)



EU CAP NETWORK



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newsletter: [SmartProtect H2020 \(smartprotect-h2020.eu\)](http://SmartProtect H2020 (smartprotect-h2020.eu))



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