

SenseFly Ag 360 aerial crop analysis system

(draft prepared by IPB, Serbia)



Project code:

Project acronym: Smart Food Supply Chains

Internal template:

Template for good practice cases

Work package number: T2

WP leader: CBHU

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Dissemination Level		
PU	Public	
PP	Restricted to other programme participants	
RE	Restricted to a group specified by the consortium	
CO	Confidential, only for members of the consortium	

1. Title of the case description

SenseFly Ag 360 aerial crop analysis system

2. Indicate your role in the Smart Food Supply Chain:

- individual member of the chain:
- chain operator:
- network operator:
- association:
- technical, scientific, or management expert:
- advisor:
- policy maker:
- other:

3. Indicate the region (if applicable):

world-wide

		Individual steps of the SFSC							Short food supply chain as whole						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
Needs of the consumers (citizens)	food safety	X	X									X			
	food quality	X	X									X			
	trust														
	ethical aspects	X													
	accessibility														
Needs of the chain actors	fair price	X													
	increased negotiating power	X													
	shared use of available resources	X													
	product development support	X													
	access to markets and consumers														
	access to infrastructure														

4. WP2 Cross-reference table

Please indicate with an X in the relevant box of the matrix for which needs and the steps / functions of the supply chain the described innovative solution is applicable

- 1: Farming**
- 2: Primary production**
- 3: Transport**
- 4: Processing and packaging**
- 5: Storage**
- 6: Logistics**
- 7: Sale**
- 8: Product integrity, authenticity, transparency**
- 9: Marketing concepts**
- 10: Food chain management and networking for enhancing cooperation among chain actors**
- 11: Business modelling**
- 12: Policy environment**
- 13: Legal requirements**
- 14: Labelling**

5. Short description of the innovative solution

- **Describe the specific need or problem being addressed by the case and please explain what is the novelty of this innovative solution**

SenseFly Ag 360 is a complete aerial crop analysis system which provides precise, timely data that can drive decision making for a better quality crop, higher yields and greater profits.

- **Describe the enabling function(s) and the practical benefit(s)-(e.g. for which types of problems and opportunities is used and can it be used, and how)**

The system captures multispectral images of fields up to 200 ha per flight, which are processed into index maps showing crop health.

- **Describe the method/procedure/technology/solution implemented. (Please explain, whether the innovative method is a product / service / process / marketing or organisational / management innovation) After completing the description, please indicate, whether this innovation is a technological or non-technological one.**

SenseFly's Ag 360 system relies on eBee SQ agricultural UAV. It flies up to 55 min at a height of 122 m and carries a Sequoia+ multispectral camera, which puts it at an advantage over regular multirotor drones which have considerably shorter flight time. eMotion Ag software supports flight missions planning and control, while Pix4DFields image processing software processes the image data, generates index maps and exports machine readable prescriptions.

technological

non-technological

- **Describe the business, which implemented the innovated solution (size, country, region, location, type of food)**

SenseFly is a commercial drone subsidiary of Parrot Group, with HQ in Switzerland.

- **Describe the distribution channels of the product(s)**

A global list of distributors can be found at <https://www.sensefly.com/sensefly-distributors/>

- **Describe what makes the innovation work.**

Monitoring crops from the sky using agricultural drones drives a farming revolution as agronomists, agricultural engineers and farmers turn to UAVs to gain more efficient crop insights and to more accurately plan and manage their operations.

- **Describe the specific prerequisites for the business related to the implementation of the method and/or related to the location, method, procedure, solution**
 - a: List the relevant necessary resources (including the estimated cost) for the specific innovation.**
Please list the relevant ones only (list is annexed)
 - Material: land of sufficient size to warrant this scale of aerial monitoring.
 - Human: technical skills to setup drone flight missions and use provided analysis software.
 - Infrastructure: a computer to run drone and analysis software.
 - b: List the relevant necessary capabilities for the specific innovation. Please list the relevant ones only (list is annexed)**
 - Food quality:
 - ability to define the product characteristics which are (tacit) basic requirements for the target segment(s) of consumers;
 - ability to define which product attributes/levels and augmented services represent an added value for the target segments of consumers;
 - ability to access the consumer willingness to pay for specific products of SFSCs.
 - Increased negotiation power:
 - ability to define, develop or maintain unique quality of products and augmented services;
 - Access to infrastructure:
 - ability to use existing own infrastructure in a focused way to serve consumer needs or to combine it with complementary infrastructures of other SFSC actors, cooperation culture;
 - Management:
 - to implement management systems for vision, planning, implementing, coordinating, controlling, monitoring continuously;

6. Describe the results, achievements and typical failures

Aerial monitoring using agricultural drone provides a unique perspective, whether monitoring emergence, assessing vigour or tracking disease. Issues can be detected earlier and with more precise location. Knowing that operation can be made more profitable by focusing problem management only on affected areas.

- 7. Summarize what makes the case to a good practice for the members of the SFSCs (e.g. lessons learned)**

- 8. Aspects, methods for transfer of methods for other SFSC members**

- 9. Recommendations for members of other SFSCs for further applications**

- 10. More information is available at (web), if it is relevant**
<https://www.sensefly.com/industry/agricultural-drones-industry/>

Annex

1. Checklist for necessary resources (tangible and non-tangible):

- materials (access to: raw materials/ ingredients - including volume, land – including size, packaging materials)
- human: labour force: size, knowledge & skills (production, technical, marketing, managerial, ICT, financial, etc.)
- technology: patents, know-how, trademarks, copyrights, trade secrets
- infrastructure, equipment, facilities, - size, minimum volume of production/sales, IT infrastructure
- information, reputation, brand, trust
- financial*

*: estimated cost:

0 - 10 000 Eur
10 001 - 50 000 Eur
50 001 - 100 000 Eur
100 001 - 300 000 Eur
300 001 – 1 000 000 Eur
1 000 000 Eur above –

- other specific necessary resources for the application of the specific innovation

2. Checklist for the necessary capabilities

- **food safety:**
 - basic skills to comply with the EU food safety regulations
 - ability to understand what makes the product safe (the key controls, which ensure the safety of the product – biological, chemical and physical hazards, providing the safety shelf life of perishable products)
 - food safety culture (motivation, responsibility for food safety) and basic skills for the implementation of HACCP

- **food quality:**
 - ability to define the target segments of consumers for SFSCs
 - ability to define the product characteristics which are (tacit) basic requirements for the target segment(s) of consumers;
 - ability to define which product attributes/levels and augmented services represent an added value for the target segments of consumers;
 - food quality culture (motivation, responsibility for food quality);
 - production experiences which help to provide the expected quality reliably, uniformly;
 - ability to provide distinguishable quality which meets the needs of the targeted consumer segment;
 - meeting (local) legal requirements, application of the labelling rules;
 - ability to access the consumer willingness to pay for specific products of SFSCs.

- **trust:**
 - ability to ensure product integrity, authenticity and transparent information for the consumers (including systems, tools);
 - ability to access external trust enhancers (third party certification, internal certification system, participatory guarantee systems);
 - application of the labelling rules and branding (mandatory and voluntary);
 - ability to meet third party certification requirements

- **ethical aspects**
 - ability to understand consumer needs for ethical behaviour related to the specific product(s) of the SFSCs;
 - culture for ethical food production and supply;
 - ability to implement necessary measures to ensure ethical food production and supply;

- ability to access the consumer willingness to pay for products meeting ethical aspects

- **accessibility to consumers:**
 - ability to organize logistics efficiently and to exploit innovative solutions and distribution channels;
 - efficient, innovative sales methods;
 - ability to develop and implement new business models for ensuring access of consumers to products and augmented services;

- **fair price:**
 - collecting marketing information;
 - ability to enhance and maintain cooperation among chain actors including the combined use of available complementary resources, capabilities, competences of SFSCs actors, networking, understanding the principles of food value chain management;
 - ability to define, develop or maintain unique quality of products and augmented services;
 - ability to develop and implement new business models;
 - ability to access the consumer willingness to pay for fair price

- **increased negotiation power:**
 - collecting marketing information;
 - ability to enhance and maintain cooperation among chain actors including the combined use of available complementary resources, capabilities, competences of SFSCs actors, networking, understanding the principles of food value chain management, cooperation culture;
 - ability to define. develop or maintain unique quality of products and augmented services;
 - ability to develop and implement new business models;

- **shared use of available resources:**
 - ability to enhance and maintain cooperation among chain actors including the shared and combined use of available complementary resources, capabilities, competences of SFSCs actors, networking, understanding the principles of food value chain management, cooperation culture;
 - the level of value chain management culture;
 - ability to access the consumer willingness to pay for food with reduced environmental impacts

- **input for R+D:**
 - ability to monitor, research, evaluate, and understand the needs and wants of customers and consumers;
 - ability to develop new products, processes, packaging, preservation techniques, systems and access to new markets, including in other categories;
 - access to innovative technologies; distribution and marketing solutions and methods. management systems;
 - access to local input for R+D covered by other aspects

- **access to markets: and market success**
 - effective promotion, customer service, efficient and innovative sales methods;
 - ability to understand consumer's needs;
 - ability to organise logistics efficiently and to exploit innovative solutions and distribution channels,
 - unique value propositions;
 - ability to develop and implement new business models for ensuring access of consumers to products and augmented services, develop the market accessibility for the suppliers.
 - stock control;
 - ability to access to required raw materials within a restricted geographical area

- **access to infrastructure:**
 - ability to use existing own infrastructure in a focused way to serve consumer needs or to combine it with complementary infrastructures of other SFSC actors, cooperation culture;

- **management:**
 - to implement management systems for vision, planning, implementing), coordinating, controlling, monitoring, continuously;
 - improving; ability to motivate, authorize staff;

- **production, processing:**
 - management system, production experience, specific controlling, monitoring, continuously;
 - willingness to consider and ability to evaluate the adoption of TECI and NTI in the current production processes;
 - any additional specific resources necessary for the application of the specific innovation.