4D4F

Data Driven Dairy Decisions for Farmers

This project has received funding from the European Union's Horizon 2020 research and innovation programme (ISIB-2015-1 programme) under grant agreement Nº 696367

WP4 'Tailored Standard Operating Procedures'

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van hall larenstein university of applied sciences

End review 8-5-2019

Work done and results

Objective

- Develop(/test/implement) a series of Standard Operating Procedures (SOP's) which can be tailored to the specific needs of individual farms when adopting sensor and/or data analysis technology in dairy farming.

Results

- *D4.1 Standard Operating Procedures: Report on internal validated sensor based SOPs, (2017) Lokhorst, Wind, Biewenga*
- *Additional report 'WP4 Tailored Standard Operating Procedures Report on improved external validated sensor based SOPs' (2018) Wind, Biewenga and Lokhorst*
- *D4.2 'SOP External testing and integration in a management decision support tool' (2018) Wind, Biewenga, Roemen, Hansson, Lloyd and Lokhorst*
- *Several events and workshops*
- *Prototype web application, VHL*

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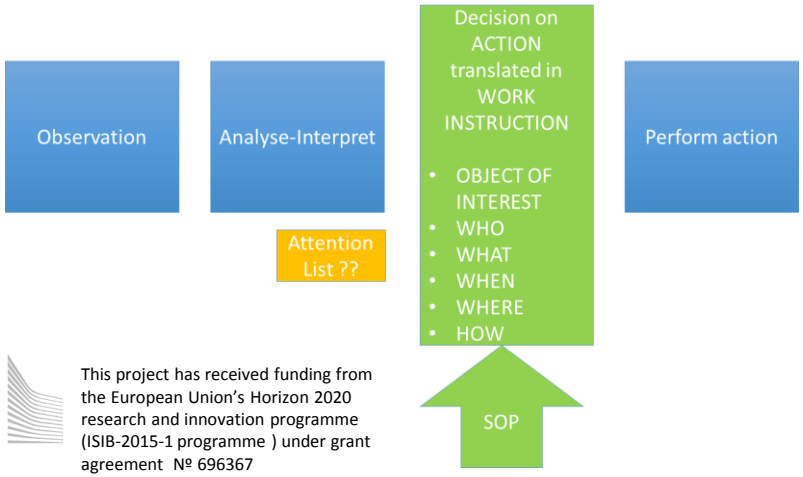
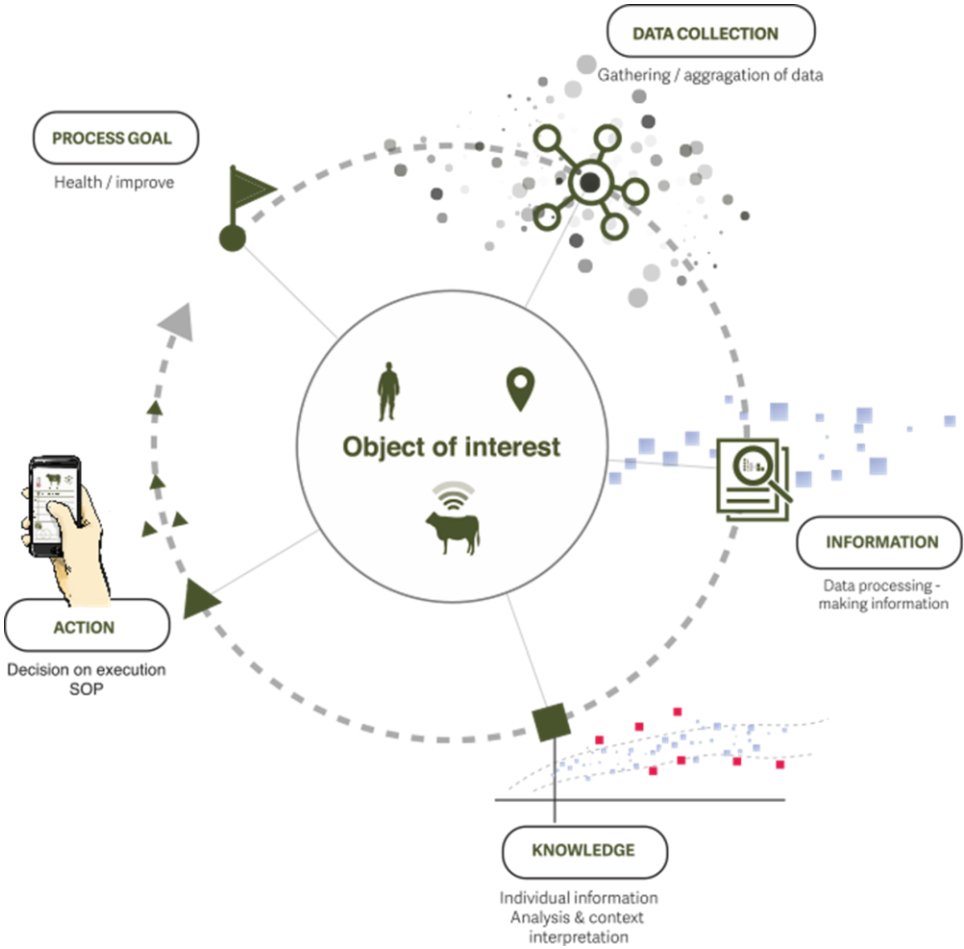
SOP → ACTION, WORK INSTRUCTION

- SOP is a protocol describing what to do when and how (ACTION)
- based on management decisons and integrated sensor data





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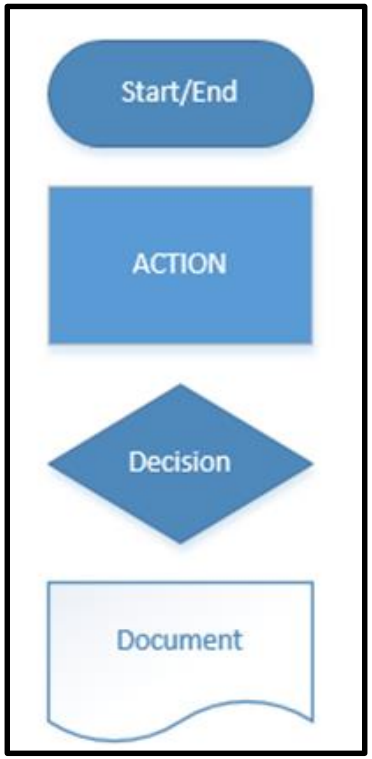
Adopted method



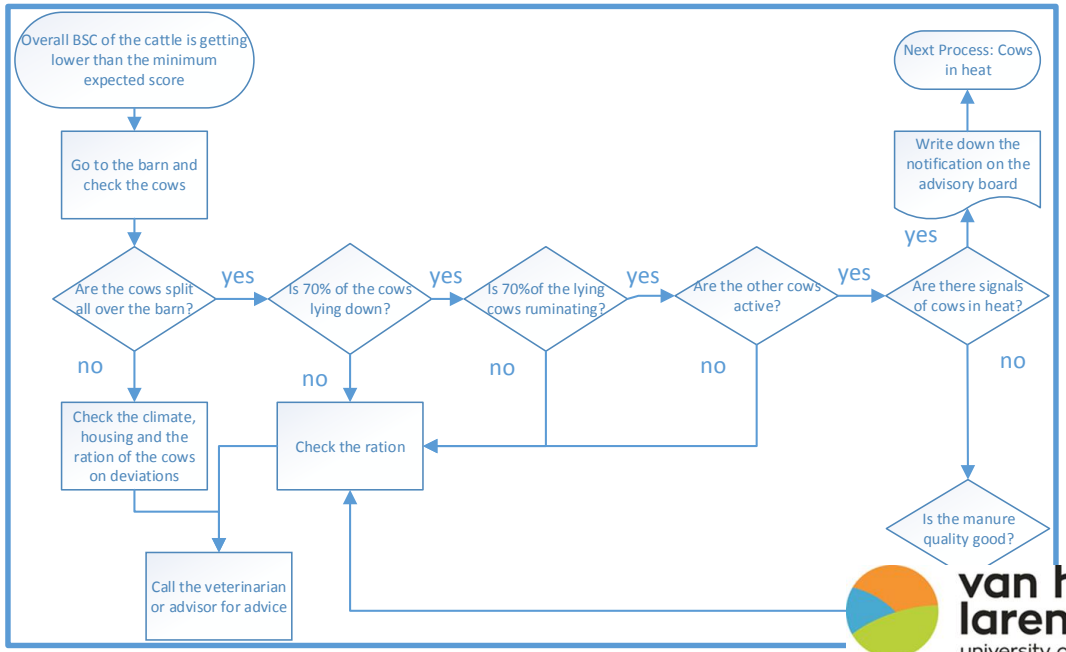
PennState Extension

http://extension.psu.edu/animals/dairy/hr/personnel/ud011

Standard Operating Procedures: A Writing Guide

Standard operating procedures used in combination with planned training and regular performance feedback lead to an effective and motivated workforce.

1. Plan for results
2. First Draft
3. Internal Review
4. External review
5. Testing
6. Post
7. Train



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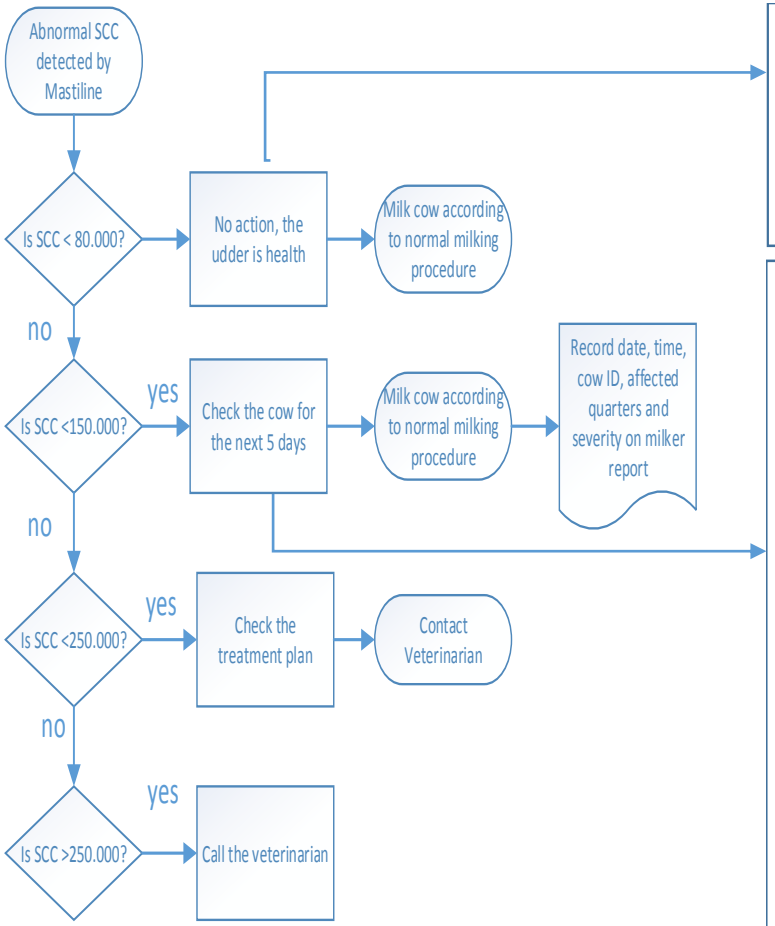
Mastiline – SCC - process detection mastitis



SOP – No action

Object of interest: The udder
Who: The person who is responsible for the mastitis
What: No action
When: By SCC between < 80.000
Where: No specific area
How: Milking the cow just like all the other cows.

No action, the udder is health

SOP – Check the cow

Object of interest: The udder of the cow
Who: The person who is responsible for mastitis
What: Check the cow for the next 5 days
When: When the SCC is higher than 150.000
Where: In the milking parlour

Check the cow for the next 5 days

HOW TO PRE MILK THE COW

1. *Clean all four teats*
2. *Make sure the floor under the udder is clean*
3. *Milk the cow by hand until you have 4 milk rays*
4. *Do you see deviations? Like flakes or is the milk washy?*
5. *Write down the deviations*
6. *Clean your hands*
7. *Clean the floor*

How: see how to pre milk the cow

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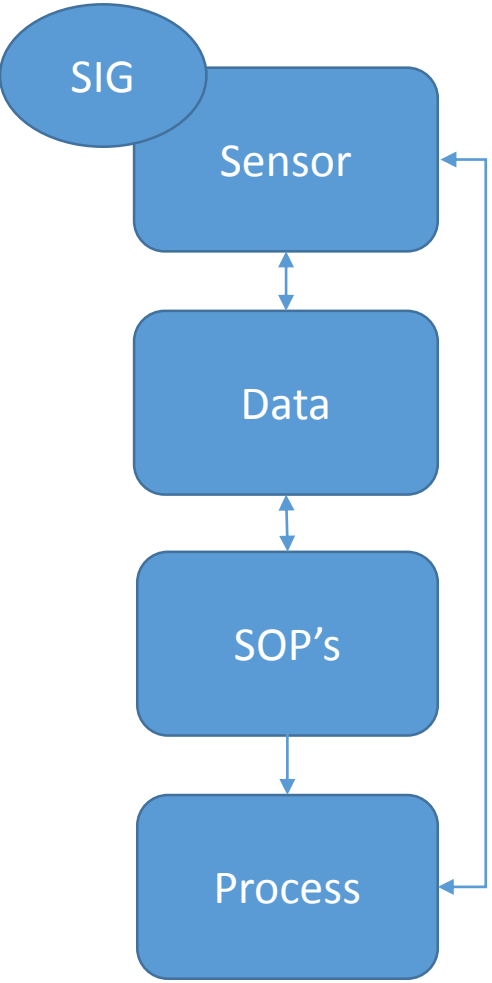
Results D4.1



3. Internal validated sensor based SOPs

3.1 Udder Health

Mastiline – SCC - process detection mastitis

Delaval Herd Navigator - LDH – process detection mastitis

Delaval Herd Navigator – Conductivity – process detection mastitis

Lely Milk Quality Control - SCC - process detection mastitis

3.2. Reproduction

Delaval Herd Navigator – Progesterone – process detection heat

Nedap Smarttag Neck – Activity – Process detection heat

Delaval Body Condition Score Camera – Body Condition Score – process after detection heat

3.3 Milking Data

Delaval Herd Navigator - LDH – Process detection mastitis

Delaval Herd Navigator - Conductivity – Process detection mastitis

Delaval Herd Navigator – Progesterone – process detection heat

Delaval Herd Navigator - BHB – Process detection ketosis

Lely Milk Quality Control - SCC - process detection mastitis

3.4 Metabolic Diseases

Cowmanager SensOor – Temperature - Process detection ketosis

Delaval Herd Navigator – BHB – Process detection ketosis

Nedap Smarttag Neck with Cow Positioning – Activity – Process detection diseases

Cowmanager Sensoor – Temperature – Process detection diseases

3.5 Calves and Youngstock

Moocall – Activity – Process detection giving birth

Refractometer – Antibodies – process detection quality of colostrum

3.6 Grassland Management

Nedap Smarttag Neck with cow positioning – activity – Process det

Grass altimeter – height – process detection grass growth

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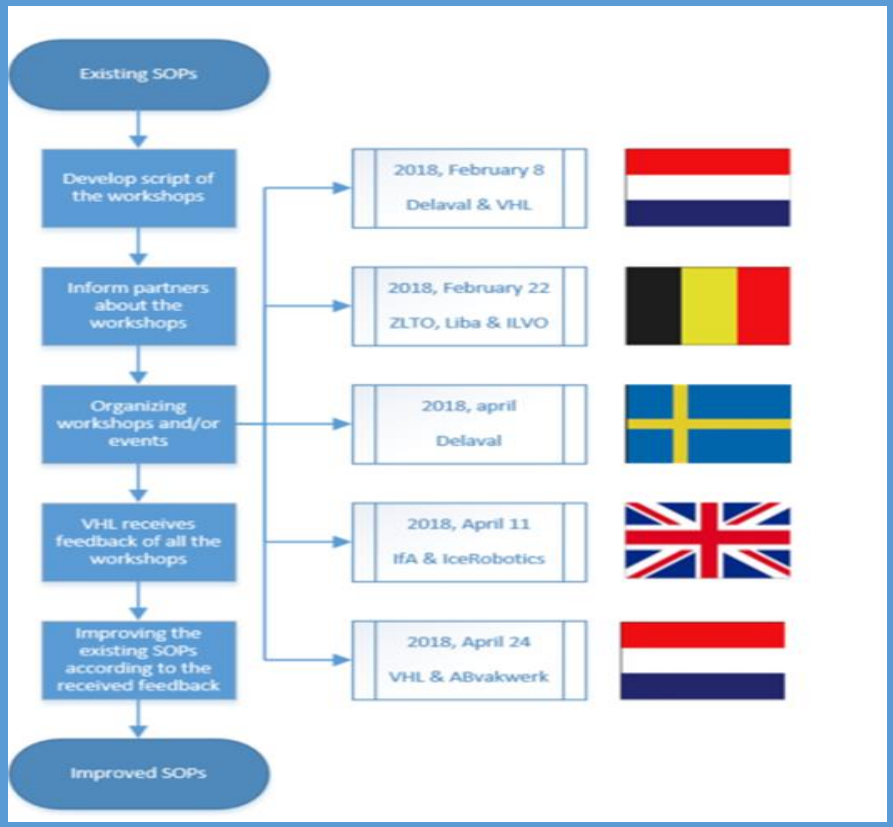
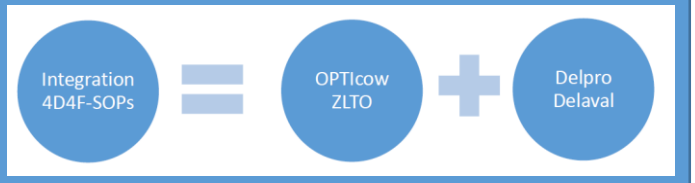
Process to improve SOP's and MIS integration

Report on improved external validated sensor based SOPs'



D4.2 SOP External testing and integration in a management decision support tool



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Review of the workshops

Description	February, 08	February, 22	April	April, 11	April, 24
Workshop requirements:					
2 specific SOPs per workshop	√ (2)	±	√	±	√ (3)
6-10 attendees	√ (7)	Event (34)	√ (6)	√ (6)	± (5)
Location in described country	√ (NL)	√ (BE)	√ (SW)	√ (UK)	√ (NL)
SOP experts attending	√ (3)	√ (3)	√ (2)	√ (1)	√ (2)
Received clear answers to:					
Is the method of current SOPs correct?	√	±	±	±	√
What are the weaknesses and the strengths of the current SOPs?	√	±	±	-	√
Which modifications of the current SOPs are necessary to make them practically feasible?	√	±	±	-	√
How would the SOP look like if you would design these SOPs?	√	-	±	√	√
Create an improved version of the SOPs	√	-	±	±	√

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Example of metadata SOP improvements

Standard Operating Procedure	Special Interest Group	Changes made	Workshop	Country	Attending Farmers (F) or SOP-Experts (E) or Other (O)	Tested (T) or Discussed (D) or New (N)
Delaval Herd Navigator – LDH – detection mastitis	*Milking Data*	X	1,3	NL, SW	F E	T, D
Delaval Herd Navigator – Conductivity – detection mastitis						
Delaval Herd Navigator – Progesterone – detection heat		X	1,3	NL, SW	F E	T, D
Delaval Herd Navigator – BHB – detection ketosis						
Lely Milk Quality Control – SCC – detection mastitis		X	5	NL	E	D
Cowmanager SensOor – Temperature – detection ketosis	*Metabolic Diseases*	X	-	NL	O	D
Delaval Herd Navigator – BHB – detection ketosis						
Nedap Smarttag Neck (pos.) – Activity – detection diseases		X	-	NL	O	D
Cowmanager SensOor – Temperature – detection diseases		X	-	NL	O	D
Moocall – Activity – detection giving birth	*Calves and Youngstock*	X	-	NL	O	D
Refractometer – Antibodies – quality of milk		X	5	NL	E	D
Nedap Smarttag Neck (pos.) – Activity – detection location	*Grassland Management*					
Grass Altimeter – Height – detection grass growth		X	-	NL	O	D

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Planned work

- Task 4a – Develop 10 draft Standard Operating Procedures (SOPs) → D4.1
- Task 4b – Test the Standard Operating Procedures → internal and external review → D4.2 and additional work
- Task 4c – Integrate SOPs into a management decision tool → Opticow & Delpro in D4.2
- Task 4d – Publish Standard Operational Procedures (SOPs) → 4D4F website
- Task 4e – Link to EIP Operational Groups → 4D4F website and Nefertiti project

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Impact

- Proposed method ‘how to write SOP’s’ (in a process, sensor and data context) impacts the way we advise farmers to integrate new sensing systems or data sources. They really have to think of how they are working now, and how they think to work when they buy/use new data/sensors.
- Extra possibility to integrate in a management system environment
- Train young professionals. This work method was introduced in the minor Smart Dairy farming at Van Hall Larenstein University of applied science.
- Inspired project partners (also goat SOP) and visitors of the workshops and Studium Generale at VHL

Standard operating procedures

How can we make Standard Operating Procedures (SOPs) more useable in dairy farming? Today's farms are getting more and more in touch with automatic systems, such as for example milking robots, sensor technology and more real-time applications that make work on a dairy farm more feasible. Standard operating procedures can help to make a decision on what to do when a certain alarm shows up when using sensors on cattle.

The main objective of work package 4 is to develop, test and implement a series of SOPs which can be tailored to the specific needs of individual farms when adopting sensor and data analysis technology in dairy farming.

PDF Report on SOPs. Version 2.0

PDF SOP testing and integration in a management decision support tool

PDF SOP 1. Fat in goat milk

PDF SOP 2. Urea in goat milk

PDF SOP 3. Protein in goat milk

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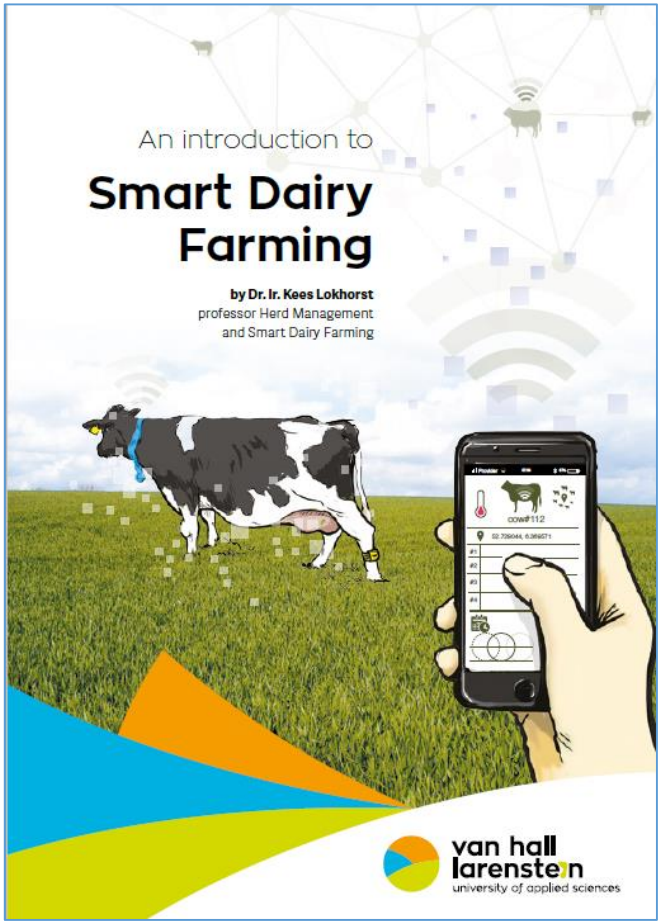
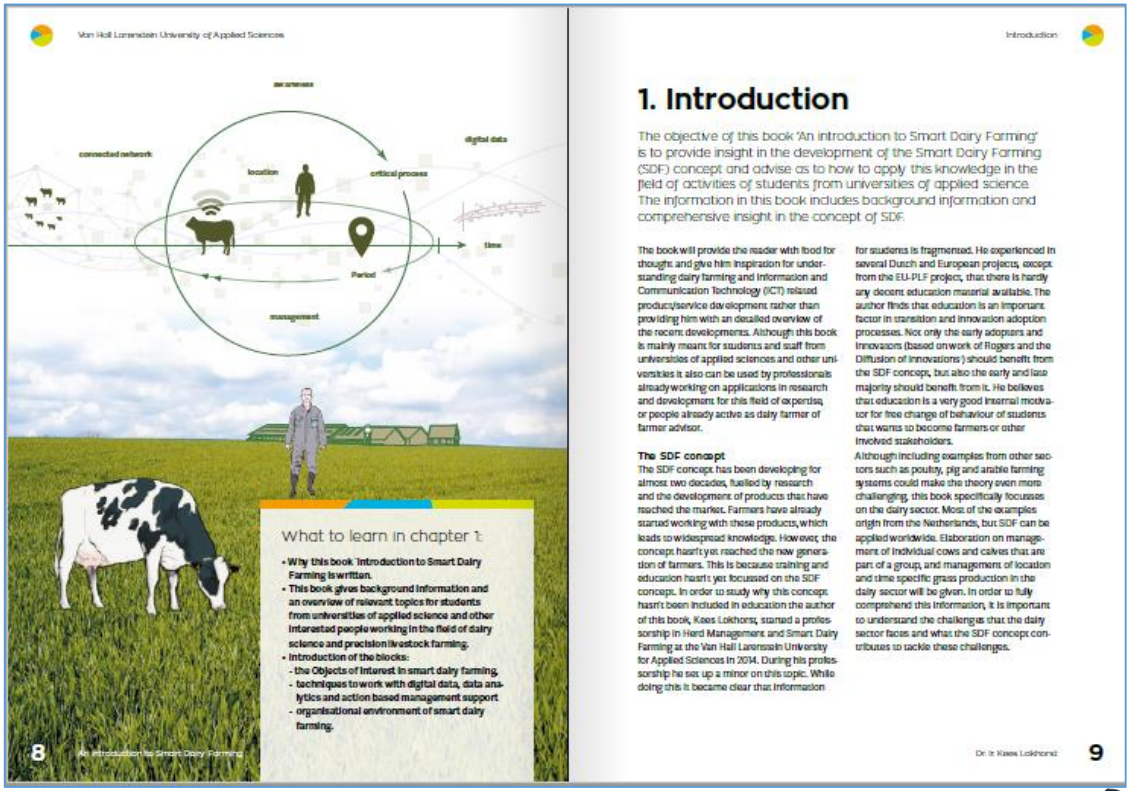
Chapter 7 is dedicated to writing SOP's



PDF can be downloaded:
https://doi.org/10.31715/20181



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DAIRY CAMPUS

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Bonus

- Webapplictation 4D4F-SOP

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4D4F

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END

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