Algemene gegevens	
PPS-nummer	AF16082
Titel	Cool Data, Big data for optimised cold storage of food
Thema	Kernthema Gezond en Veilig
Uitvoerende kennisinstelling(en)	Wageningen Food & Biobased Research (WFBR)
Projectleider onderzoek (naam + emailadres)	Eelke Westra, Matthijs Montsma (matthijs.montsma@wur.nl)
Penvoerder (namens private partijen)	Kees de Kat (Fruitmasters) , cn.dekat@fruitmasters.nl
Contactpersoon overheid	Cor Wever
Werkelijke startdatum	01/01/2017
Werkelijke einddatum	31/12/2020

Goedkeuring penvoerder / consortium	
De jaarrapportage dient te worden besproken met de penvoerder/het consortium. De TKI's nemen graag kennis van evt. opmerkingen over de jaarrapportage.	
De penvoerder heeft namens het consortium de jaarrapportage	v goedgekeurd ☐ niet goedgekeurd
Evt. opmerkingen over de jaarrapportage:	

Korte omschrijving inhoud/doel PPS

Wat is er aan de hand? Wat doet het project daaraan?

Wat levert het project op? Wat is het effect hiervan?

The complexity of the fresh food supply chain is increasing. It is a major challenge to ensure optimal product quality and availability in a sustainable and cost efficient manner. Current approaches to supply chain control and optimisation are typically based on practical experience and intuition, even in modern control systems. The limits of this approach are in sight. With Big Data technology rapidly evolving, now is the right moment to make a leap forward. It is time to begin exploiting the data that is already being generated in a diversity of sources, from high-tech sensors to written notes. Combined with expert knowledge, this will facilitate supply chains to follow entirely new operational strategies.

This project aims to implement this Big Data vision in the Dutch fresh product supply chain. For we focus on the optimisation of the conditions in which products are harvested, stored sorted. Dutch companies in this sector are leading world-wide and already generating massive amounts of data on pre- and postharvest conditions and product quality. This data is typically used locally in the supply chain. However, the wealth of information hidden in this data is not yet used to create advanced, supply chain wide control mechanisms. Moreover, gaps still exist in the data collection process.

In this project we want to prove that Big Data technologies (in particular machine learning combined with linked data standards and knowledge modelling) will allow storage and transport providers of fresh products to operate significantly more effective and efficient than they do now. Ultimately, the partners in this project aim to establish a platform in which the developed data, models and algorithms can be continuously shared and updated: the Cool Data Hub.

This project will lead to improved and homogeneous product quality and a more sustainable process in the fresh product supply chain. The project will create new business opportunities throughout the chain and in IT. Scientifically, our challenge is to integrate self-learning methods such as Bayesian Belief Networks with Linked Data, i.e., semantically enriched data. If this can be done, a continuous self-learning cycle involving data, models and applications can be realized.

Planning en voortgang (indien er wijzigingen zijn t.o.v. het projectplan svp toelichten)	
Loopt de PPS volgens planning?	Ja
Zijn er wijzigingen in het consortium/de projectpartners?	nee
Is er sprake van vertraging en/of uitgestelde opleverdatum?	nee
Is er sprake van inhoudelijke knelpunten, geef een korte beschrijving	nee
Is er sprake van afwijkingen van het ingezette budget/de begroting? Indien financiering uit WR-capaciteit: is er sprake van NAPRO? Zo ja geef een toelichting	nee Er is een NAPRO van 11K euro vanwege het uitstel van de go/no-go beslissing van december 2017 tot het voorjaar 2018
Verwacht u een octrooi-aanvraag vanuit deze PPS	nee

Highlights: geef een korte beschrijving van de belangrijkste resultaten tot nu toe

The project has been organised in three business-oriented teams (Cultivation, Storage and Sorting) and a team Big Data. A number of start-up meetings have been organised to get a shared understanding of the goals of the project. A protocol consisting of ten steps has been installed. In order to have a focused data collection process, we start from business goals. Where do we expect possibilities for more efficiency or quality when we share and use the underlying data? From a first hypothesis we start selecting and cleaning data and perform data analysis. This allows us to accumulate high quality data in a central data store. Meanwhile we get to understand all limitations of the data collection and analysis process in this type of business. For data collection and analysis Microsoft Azure has been made available to the participants.
Three use cases have been finalized. An important outcome of the project is that data quality is not always yet as expected. Metadata do not always adhere to standards and the identity of products (from field to transport) is not always defined at the required level of detail.
A link with the Fruit 4.0 project has been made to assess possibilities for synergy.
In spite of the results so far, the steering committee has decided not to proceed with the project. The ground for proceeding is considered insufficient. Partners will first discuss with Wageningen UR how to proceed along the lines of the project, but the PPS Cooldata is closed.

Aantal opgeleverde producten in 2017 (geef in een bijlage de titels en/of omschrijving van de producten of een link naar de producten op openbare websites)			
Wetenschappelijke artikelen	Rapporten	Artikelen in vakbladen	Inleidingen/ workshops
	Zie beneden bijlage		Zie beneden bijlage

Actuele samenvatting van het project voor de website Kennisonline

The ambition of this project is to promote the availability of high quality fresh food with low environmental footprint, using a data-driven approach.
The complexity of the fresh food supply chain is increasing. It is a major challenge to ensure optimal product quality and availability in a sustainable and cost efficient manner. Current approaches to supply chain control and optimisation are typically based on practical experience and intuition, even in modern control systems. The limits of this approach are in sight. With Big Data technology rapidly evolving, now is the right moment to make a leap forward. It is time to begin exploiting the data that is already being generated in a diversity of sources, from high-tech sensors to written notes. Combined with expert knowledge, this will facilitate supply chains to follow entirely new operational strategies.

This project aims to implement this Big Data vision in the Dutch fresh product supply chain, for now focussing on the optimisation of the conditions in which products are stored and transported. Dutch companies in this sector are leading world-wide and already generating massive amounts of data on pre- and postharvest conditions and product quality. However, the wealth of information hidden in this data is not yet used to create advanced, evidence-based control mechanisms. Moreover, gaps still exist in the data collection process.

In this project we want to prove that Big Data technologies (in particular machine learning combined with linked data standards and knowledge modelling) will allow storage and transport providers to be significantly more effective and efficient than they are now. Ultimately, the partners in this project aim to establish an platform in which the developed data, models and algorithms can be continuously shared and updated: the Cool Data Hub.

This project will lead to improved and homogeneous product quality and a more sustainable process in the fresh product supply chain. The project will create new business opportunities throughout the chain and in IT.

Bijlage: Titels van producten en links naar informatie op openbare websites (w.o. Kennisonline)

https://www.wur.nl/nl/project/AF16082-Cool-data-big-data-for-optimised-cold-storage-of-food-1.htm

https://www.google.nl/search?q=Cool+Data,+Big+data+for+optimised+cold+storage+of+food&tbm=isch&tbo=u&source=univ&sa=X&ved=0ahUKEwiWmu2bi8zZAhWGZlAKHaw5CjsQsAQIMQ&biw=1463&bih=734#imgrc=G2Sai8hn47SrPM:&spf=1519940430013

http://topsectoragrifood.nl/project/cool-data-big-data-for-optimised-cold-storage-of-food/

Akkoord: Hans van der Kolk (Topsectorsecretaris)