

INTERNET OF THINGS AND BLOCKCHAIN TO CREATE SHARED VALUE IN THE BEEF SUPPLY CHAIN

UC 5.4. IoF2020

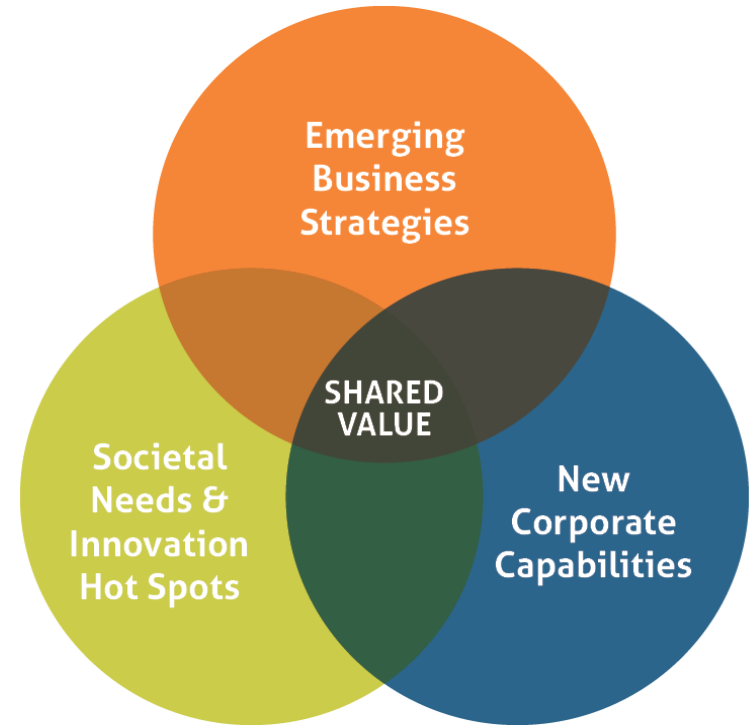
FRANCISCO MAROTO-MOLINA

August 28th, 2019



THE MAIN CONCEPT: SHARED VALUE

- ***“Shared Value is not social responsibility, philanthropy, or sustainability, but a new way for companies to achieve economic success”*** Michael E. Porter and Mark Kramer, “Creating Shared Value”, Harvard Business Review
- **Shared Value is a management strategy in which companies find business opportunities in social problems**
- Three levels of Shared Value:
 - Reconceiving products and markets
 - **Redefining productivity in the value chain**
 - Enabling Local Cluster Development



THE VALUE CHAIN OF BEEF PRODUCTION



CROP FARMS



COW-CALF FARMS & FEEDLOTS



TRANSPORTERS



SLAUGHTERHOUSES & PROCESSING INDUSTRIES



RETAILERS & END-CONSUMERS



IOT FOR DATA GATHERING



BLOCKCHAIN FOR DATA INTEGRITY

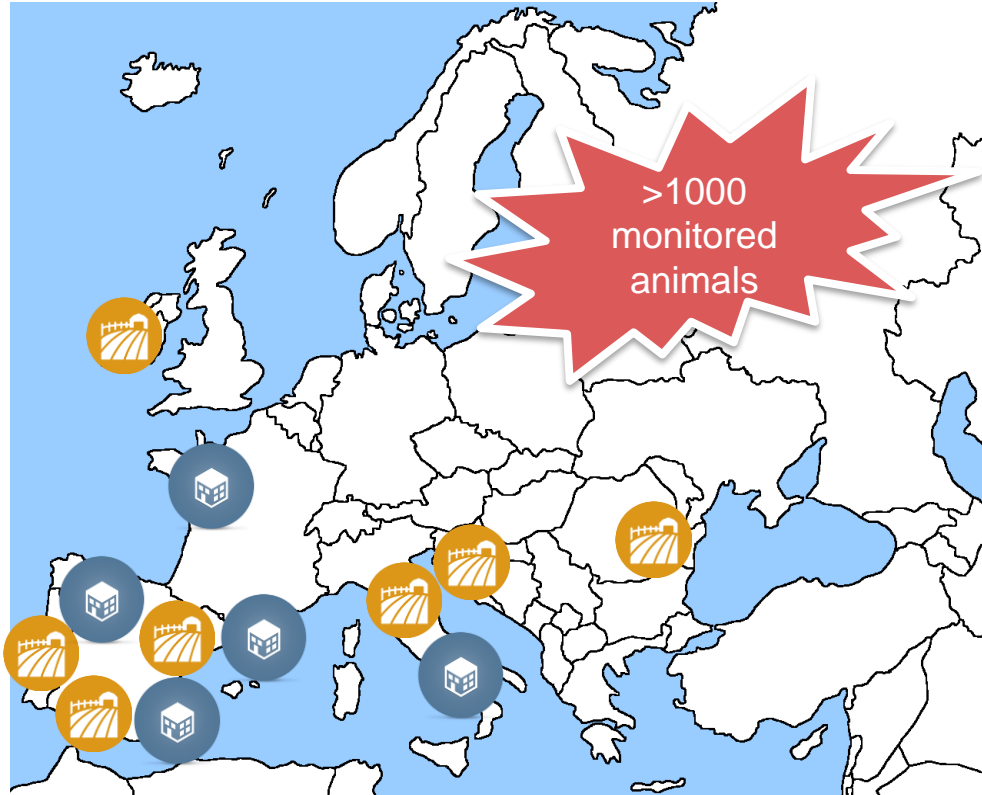
AN EUROPEAN PROJECT: DIVERSE PRODUCTION SYSTEMS

AGRICOLUS



SENSOWAVE
Professional solutions

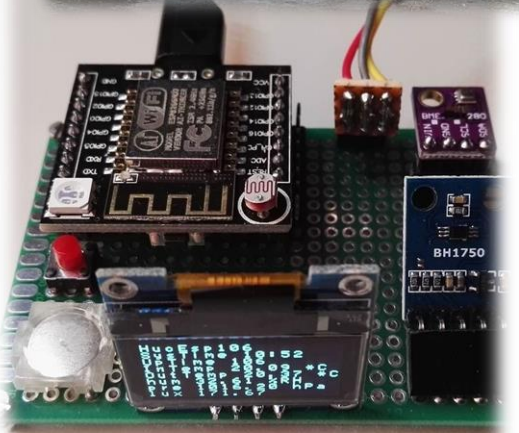
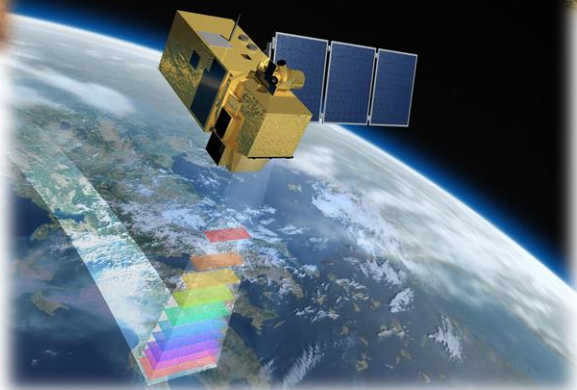
applifarm




natrus
TERNERA DE LA VALL D'EN BAS

AM
ETSIAM
Escuela Técnica Superior de
Ingeniería Agrónoma y de Montes

IOT FOR DATA GATHERING

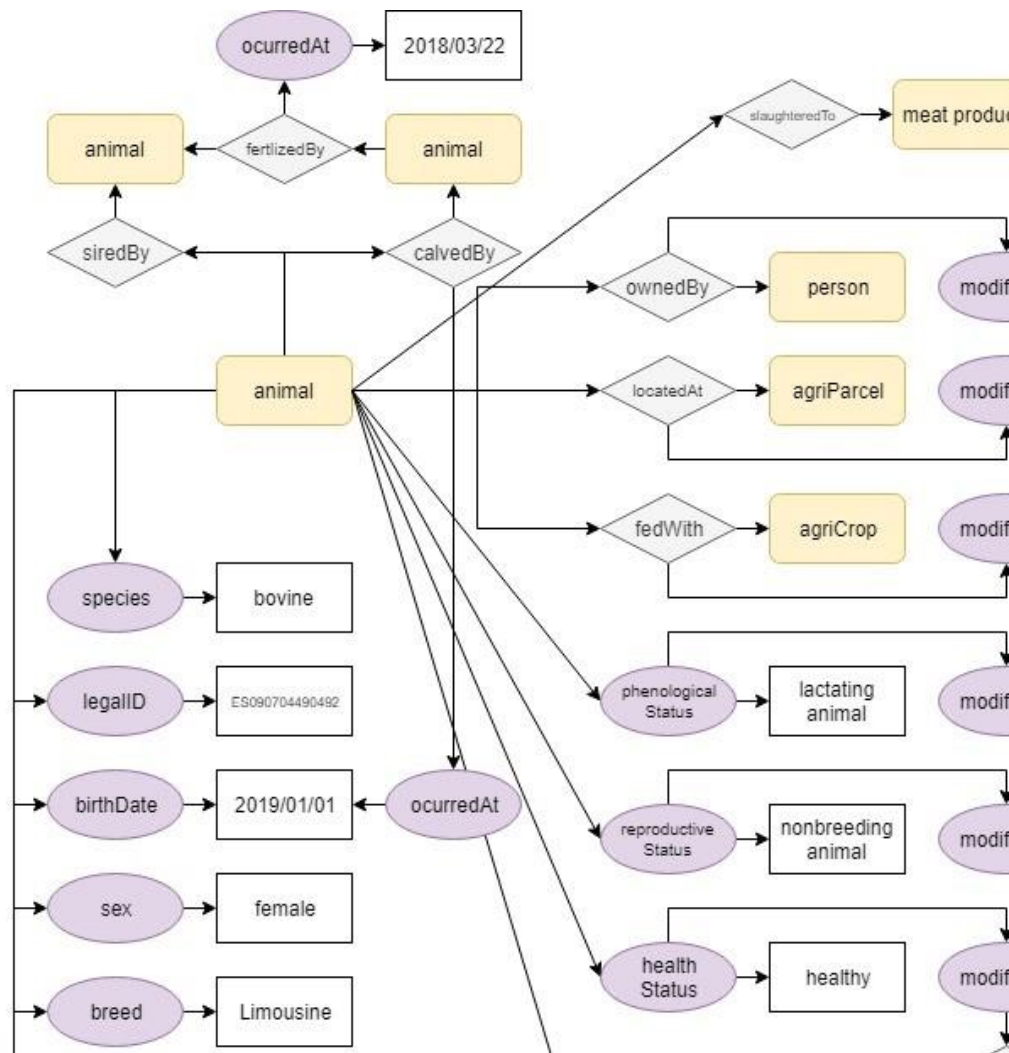


DATA INTEGRATION



NGSI LD

<https://github.com/FIWARE/dataModel/tree/master/specs/AgriFood/Animal>



DATA SHARING WITH A DUAL PURPOSE

1. Decision-making for an improved resource efficiency

2. Improved traceability and transparency

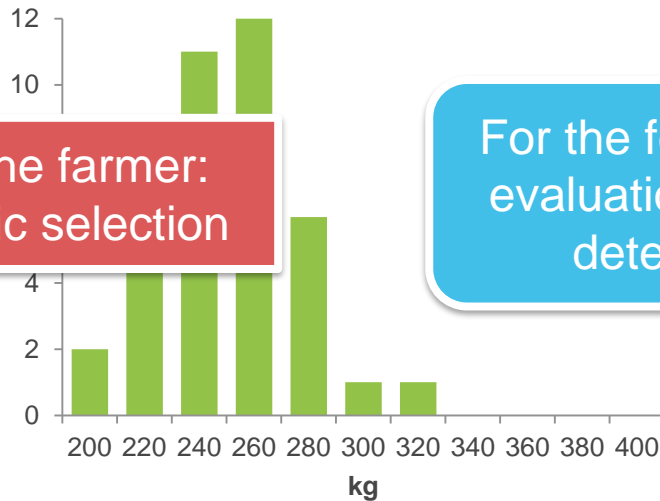
Data	Gathered at:	Shared with:	Utilities
Crop productivity	Crop farm	Suckler cow farm	Feed availability
		Feedlot	Feed availability
Crop health		Suckler cow farm	Feed purchase forecast
		Feedlot	Feed purchase forecast
Animal position	Suckler cow farm	Consumer	Grass-fed certification
Calving date		Feedlot	Calf availability forecast
Weaning date		Authorities	Official records
		Feedlot	Update of calf availability forecast
Health and welfare alerts		Consumer	Welfare certification
		Consumer	Welfare certification
Calf growth	Feedlot	Crop farm	
		Suckler cow farm	
		Slaughterhouse	
		Consumer	
Welfare alert	Transport	Consumer	
Carcass quality	Slaughterhouse	Suckler cow farm	Grass-fed certification
Health and welfare alerts		Consumer	Welfare certification

Data to be shared are customizable

DECISION-MAKING FROM SHARED DATA

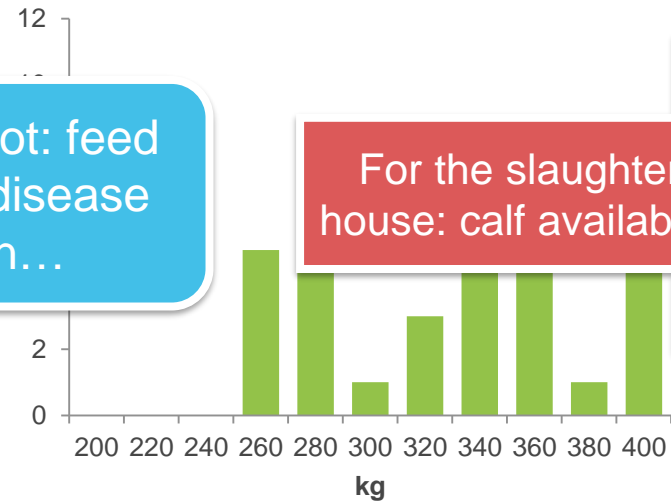
The main challenge is to manage variability: precision livestock farming

Calf weight when entering the feedlot



For the farmer:
genetic selection

Calf weight after 2.5 months



For the slaughter-
house: calf availability

For the feedlot: feed
evaluation, disease
detection...

THERE ARE ALSO UTILITIES FROM NON-SHARED DATA...



A TRANSPARENT SUPPLY CHAIN

← Anterior

CRIANZA ENGORDE TRANSFORMACIÓN DISTR

PASTO
Ha pasado **180 días** en el campo



📶 Origen de los datos provenientes del collar GPS de Digit Animal

← Anterior

CRIANZA ENGORDE TRANSFORMACIÓN DISTR

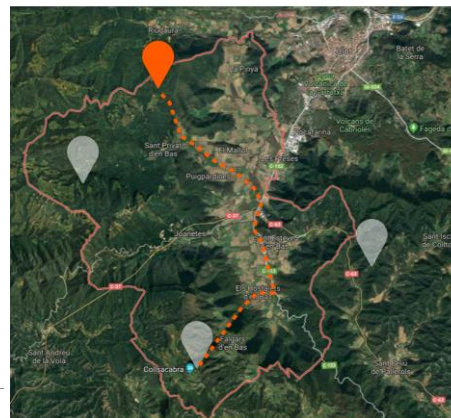
TRANSPORTE
hacia transformación

PRINCIPIO
05/02/20 - 7H20

DURACIÓN
1h30

DISTANCIA
125 km

TEMPERATURA MEDIA
22°C



CRIANZA PRINCIPIO 03/04/19 FIN 05/10/19

LUGAR DE NACIMIENTO Y CRIANZA
📍 Mas La Carrera - La Vall d'en Bas

ALIMENTACIÓN
Leche materna y pasto

ENGORDE PRINCIPIO 05/10/19

LUGAR DE ENGORDE
📍 Mas La Carrera - La Vall d'en Bas

ALIMENTACIÓN
Alimentado con pasto, maíz y forraje de la misma granja

SENSOR DATA VS. PAPER DATA



Open Access Article

A Low-Cost IoT-Based System to Monitor the Location of a Whole Herd

by Francisco Maroto-Molina ^{1,*} , Jorge Navarro-García ², Karen Príncipe-Aguirre ², Ignacio Gómez-Maqueda ³, José E. Guerrero-Ginel ¹, Ana Garrido-Varo ¹ and Dolores C. Pérez-Marín ¹

TO BE CONTINUED THANK YOU!

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