



*Sustainable food  
production;  
Innovation, technology  
and the role of the  
veterinarian*

# Content



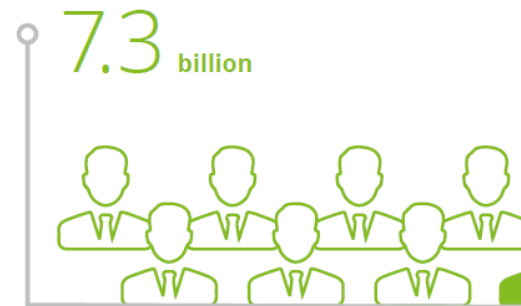
1. Framework; sustainability and digitalization
2. Two practical cases for business development

# KEY CHALLENGES IN THE MEAT PRODUCTION SECTOR

Increases in global population welfare are expected to lead to an increase in meat from 334 million tonnes in 2015 to 498 million tonnes\* in 2050.



Global population will increase almost 40% by 2050

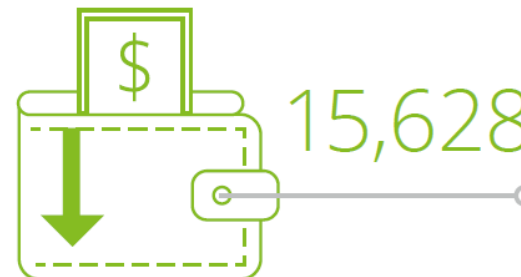


From 7.3 billion people in 2015 ...

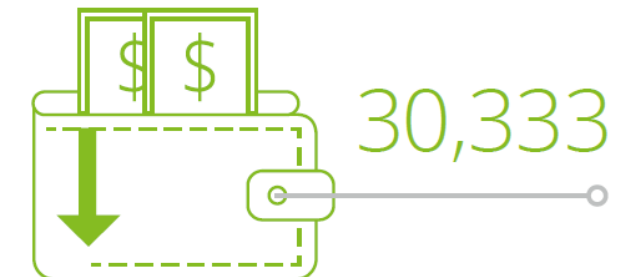


... to 9.7 billion in 2050

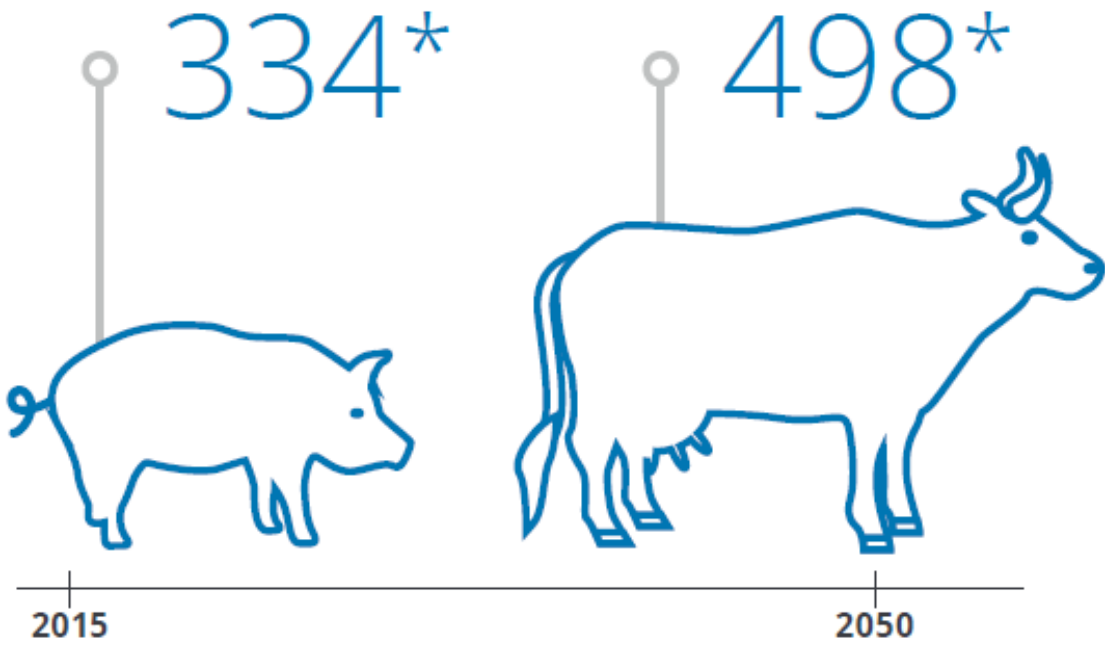
Global per capita income will almost double by 2050



From \$15,628 in 2015 ...



... to \$30,333 in 2050

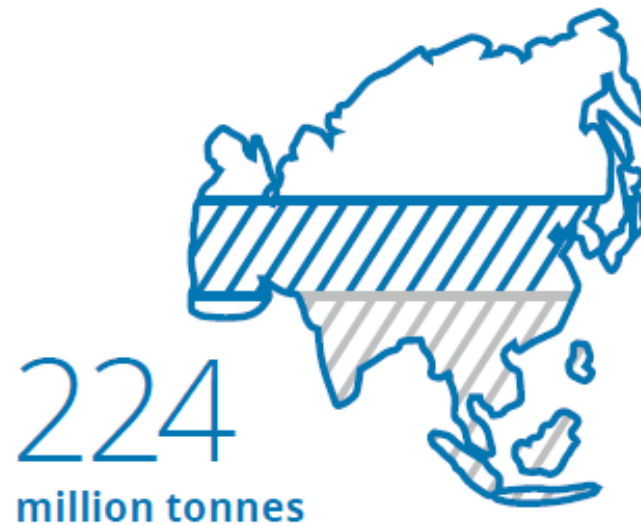


All indicates that consumption will continue to grow until 2050.

Most of this demand growth will come from developing regions, especially Africa and Asia



Africa will increase its meat consumption more than 2.5-fold from 20 to 71 million tonnes by 2050. Per capita consumption will rise from 18 to 30 kg per year.



Asia will increase its meat consumption by 50% from 150 to 224 million tonnes by 2050. Per capita consumption will rise from 30 to 43 kg per year.

- A detailed evaluation of land and water resources, as well as of manure land requirements, showed that the land and water available today will be sufficient at a global level until 2050
- Even under a worst-case scenario, where production remains at current levels and demand for livestock products and crops increases by 70 and 100% respectively, global resources would be sufficient
- However, regional shortages will very likely occur over the coming years and decades as spare land and water is often not readily accessible, located far away from where it is needed, or suffers from other constraints such as pollution or past disease outbreaks
- Therefore, a reduction of land and water use, as well as of manure generation, will be especially important for regions where resource constraints are already apparent today

By available land and water, we can produce what we need, if there are not unexpected events.



Land and water

If global emissions growth continues, GHG emissions will reach 139 Gt in 2100 and the earth's temperature will be 4.5°C above pre-industrial levels.

Under business as usual (BAU), GHG emissions would increase from 5.2 Gt per year today to almost 8 Gt in 2050.

As governments have realised the threat of global warming, agreements have been reached to reduce emissions. The meat sector plays a crucial role in achieving these targets, accounting for almost 10% of emissions.

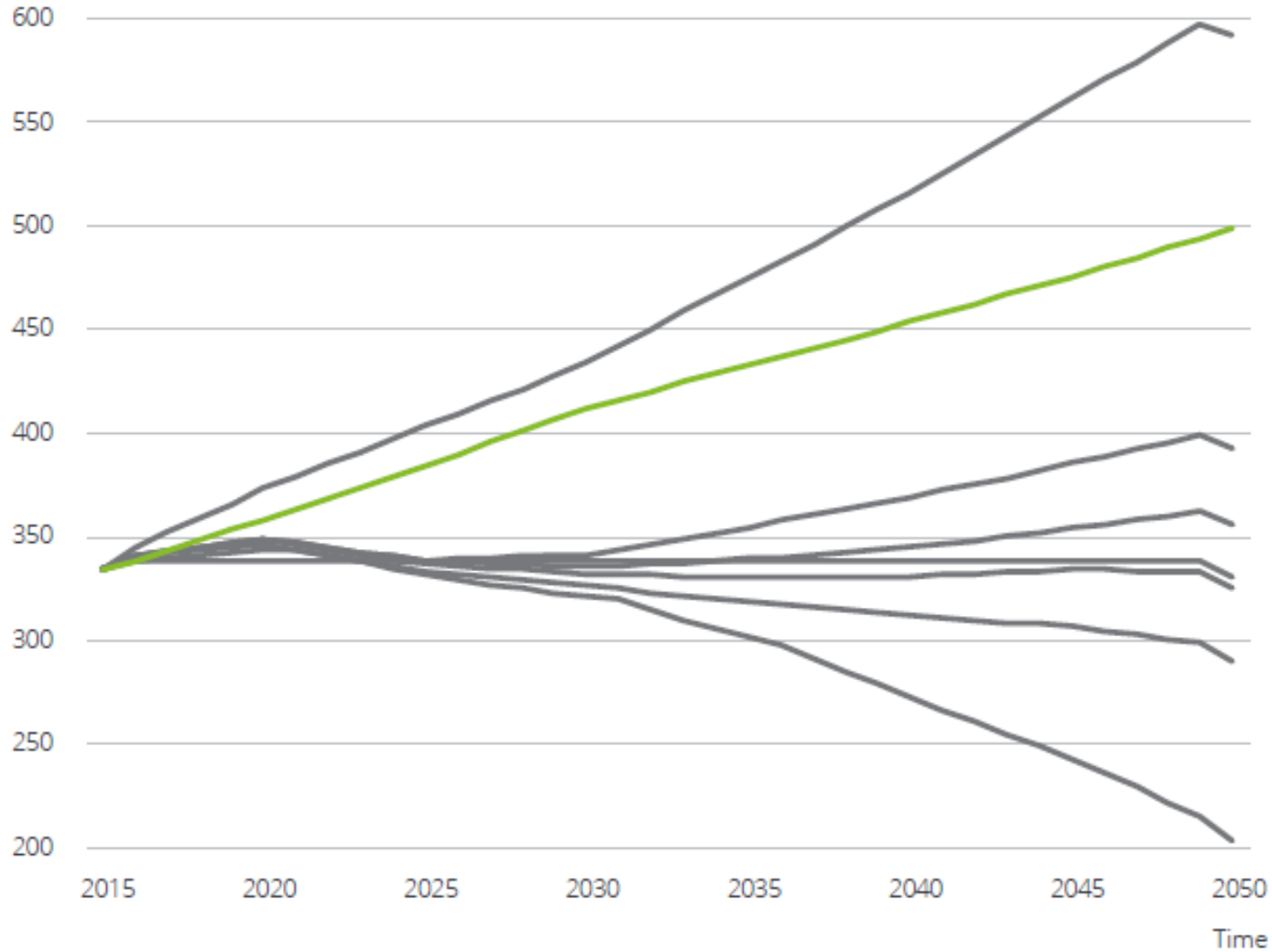
To keep global warming below 2°C, meat emissions have to be reduced to 3.2 GT by 2050.

But by emissions,  
we can't



Temperature and GHG

Atmospherical carbon dioxide in ppmv  
(parts per million by volume)



Relationship between increased temperature and meat demand achieved in current production model

- Demand - 498
- CO<sub>2</sub> level (3.5°C) - 392
- CO<sub>2</sub> level (3.2°C) - 355
- CO<sub>2</sub> level as today - 331
- CO<sub>2</sub> level (3°C) - 325
- CO<sub>2</sub> level (2.6°C) - 289
- CO<sub>2</sub> level (2°C) - 203

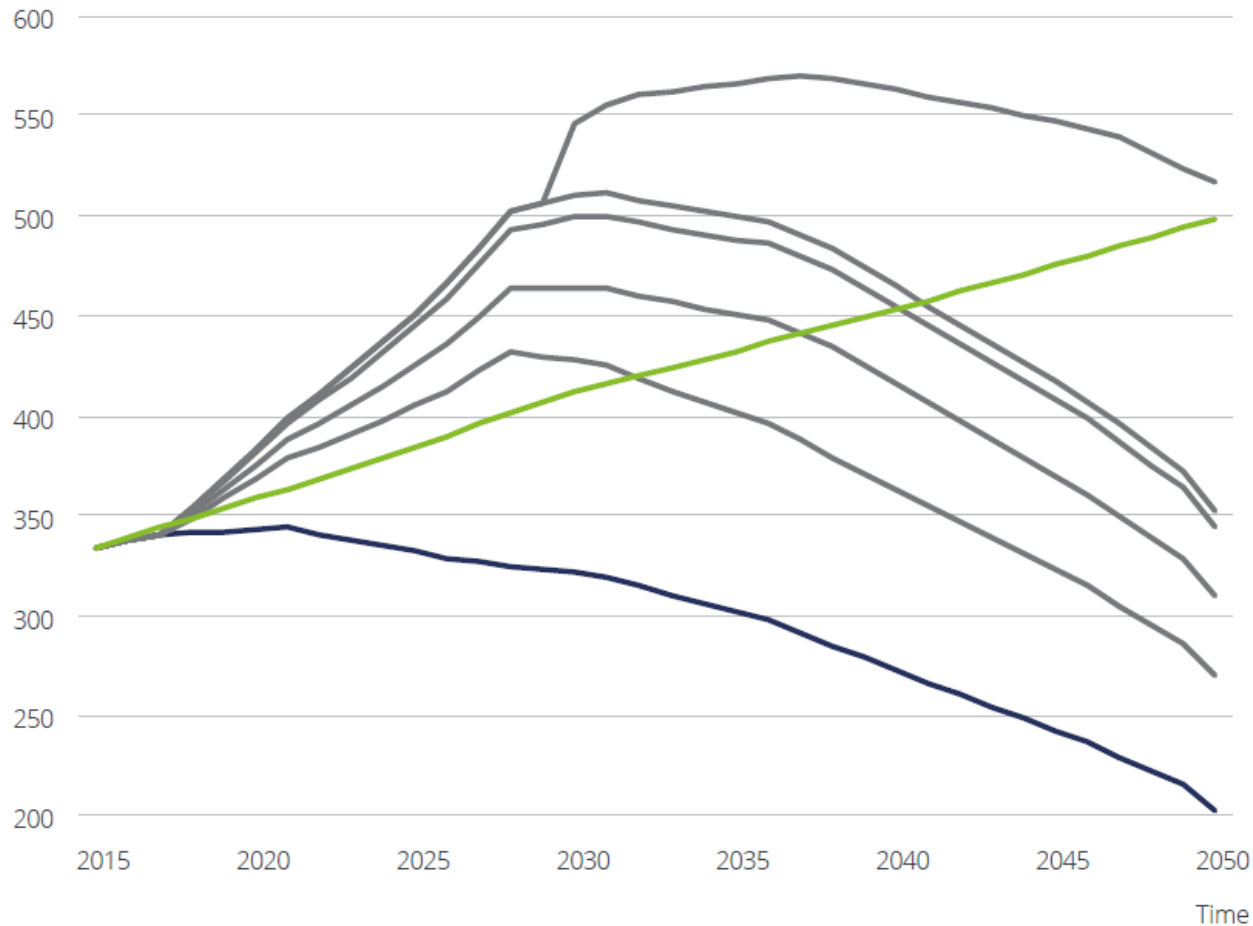


If global warming is to be kept within 2°C above pre-industrial levels, only 41% of global meat demand can be met by 2050



# Solutions are complementary and cumulative

Atmospherical carbon dioxide in ppmv  
(parts per million by volume)



Beef reduction - 516

Demand - 498

Health monitoring - 353

Smart waste management - 344

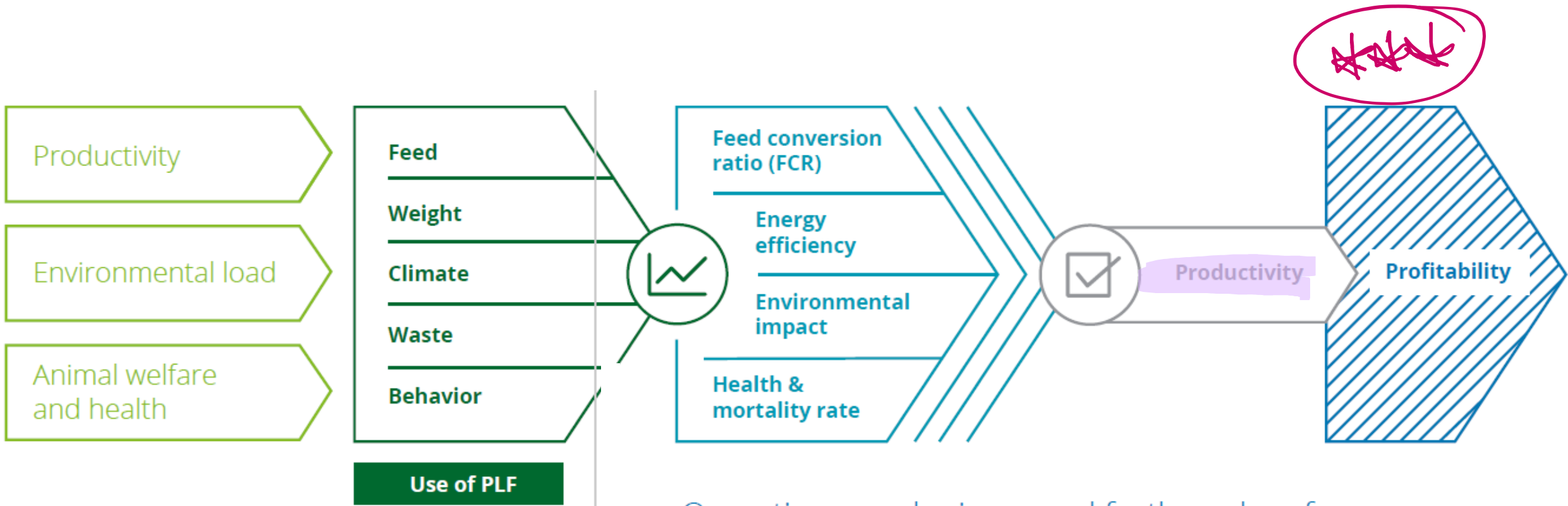
Precision feeding - 310

Best practice roll-out - 271

Business as usual - 203

In the context  
of a 2°C  
maximum  
increase we  
can only  
achieve  
production with  
cumulative  
measures.

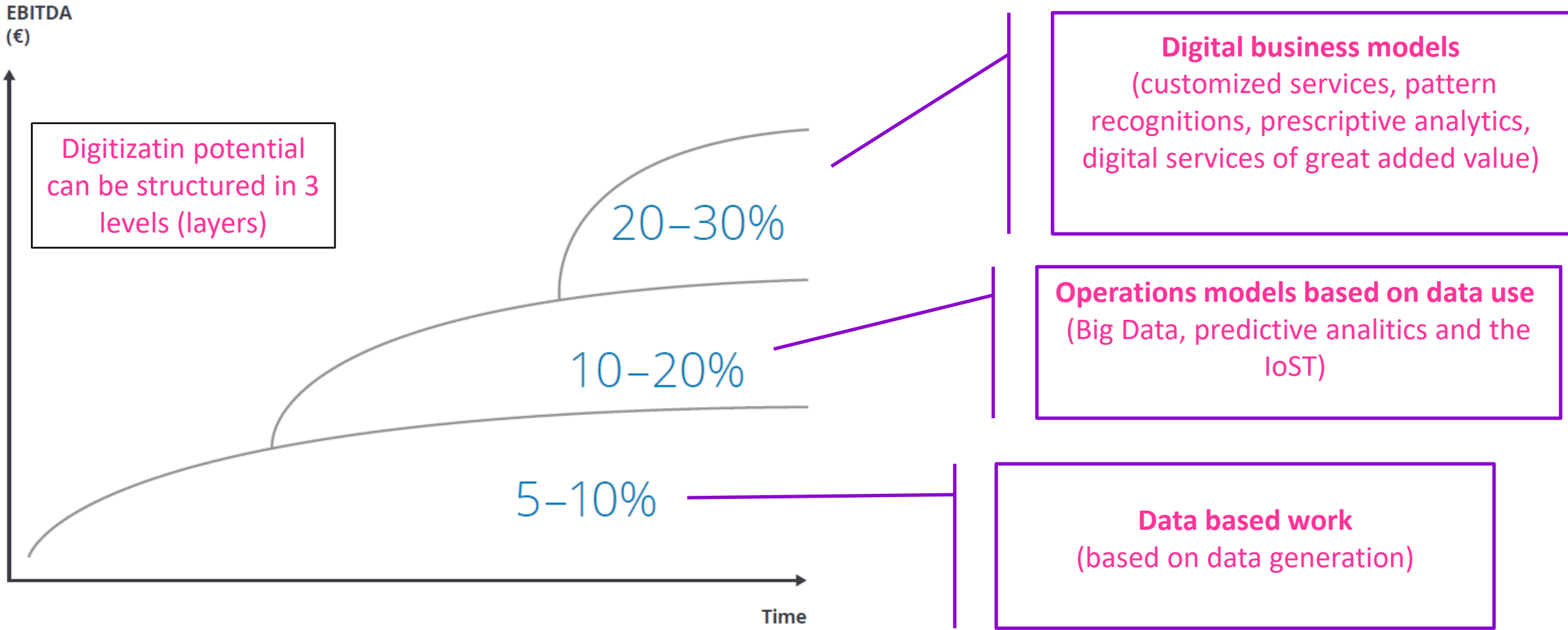


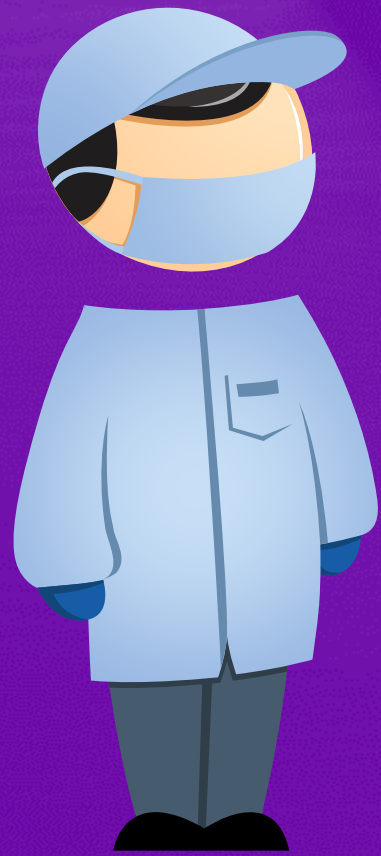
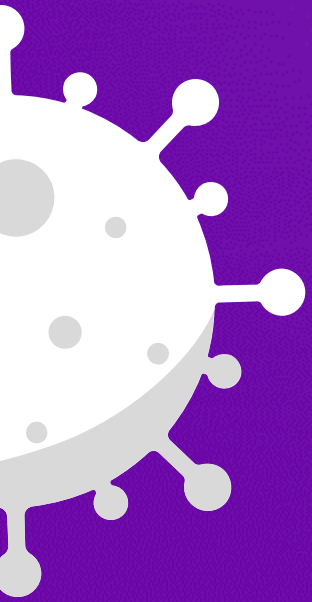


***We will not be able to achieve these goals without technology***

Operations can be improved further when farmers also share the information collected across the supply chain with relevant stakeholders, such as veterinarians, slaughterhouses, meat processors, and animal feed producers.

# Digital business models improve companies results

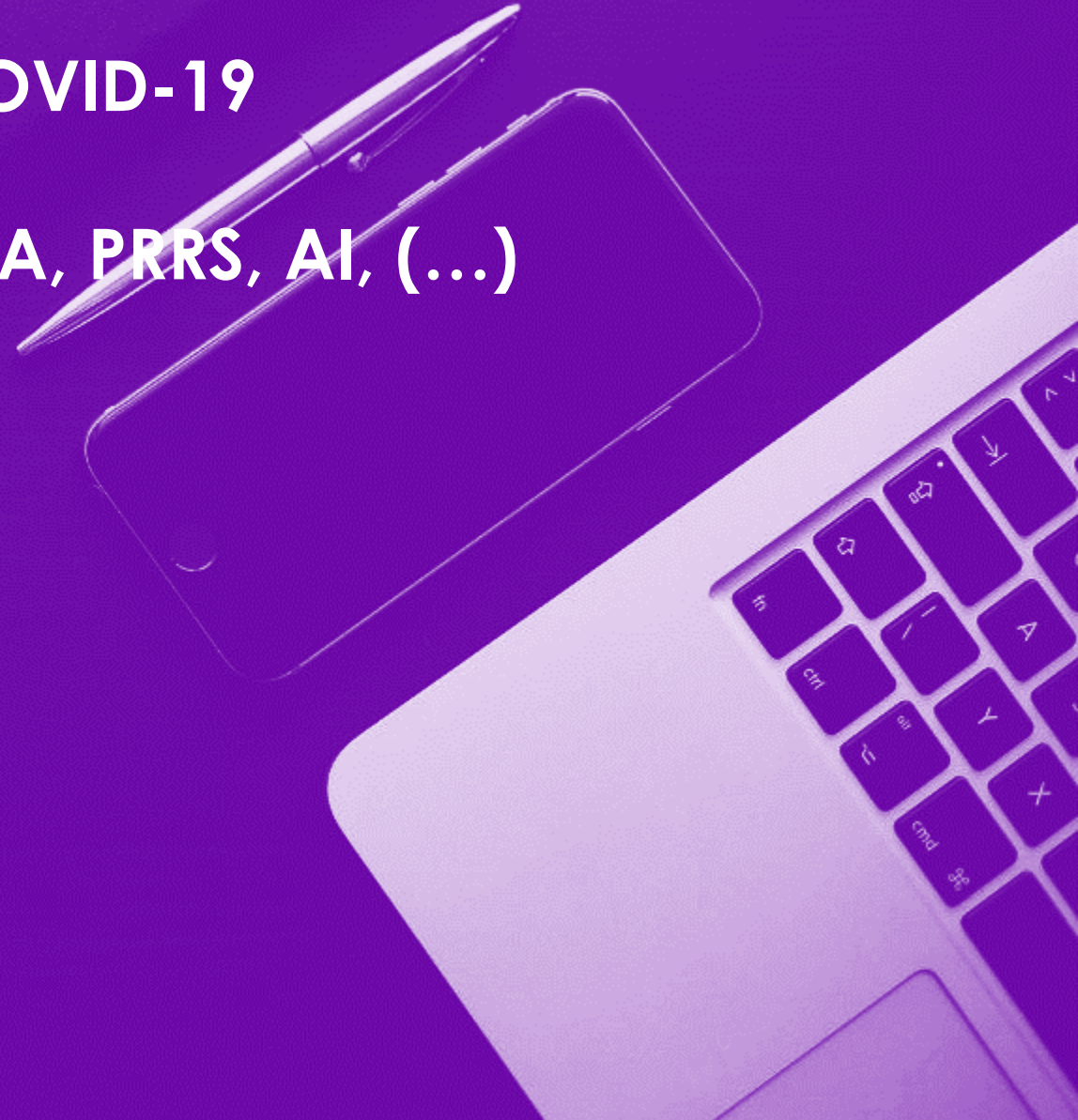




Farm visits are becoming very difficult; remote monitoring makes more sense than ever

Highest biosecurity context ever

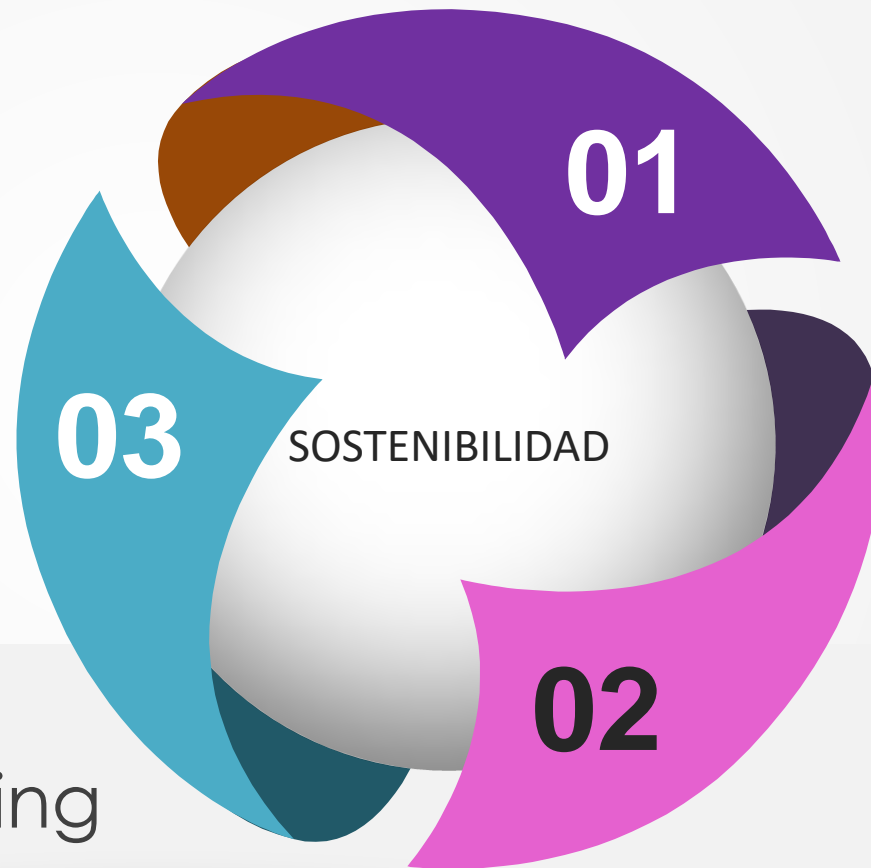
**COVID-19  
&  
PPA, PRRS, AI, (...)**



# Vets as farms advisors are a key role in this process



Health monitoring  
and antibiotics  
control



Precision  
Feeding

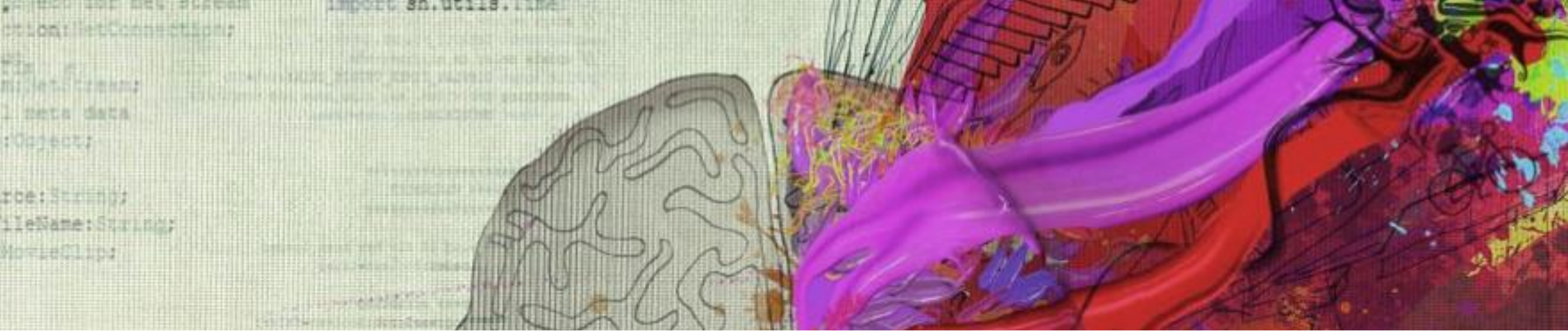
Digital  
biosecurity



Business case 1

**Digital biosecurity control**



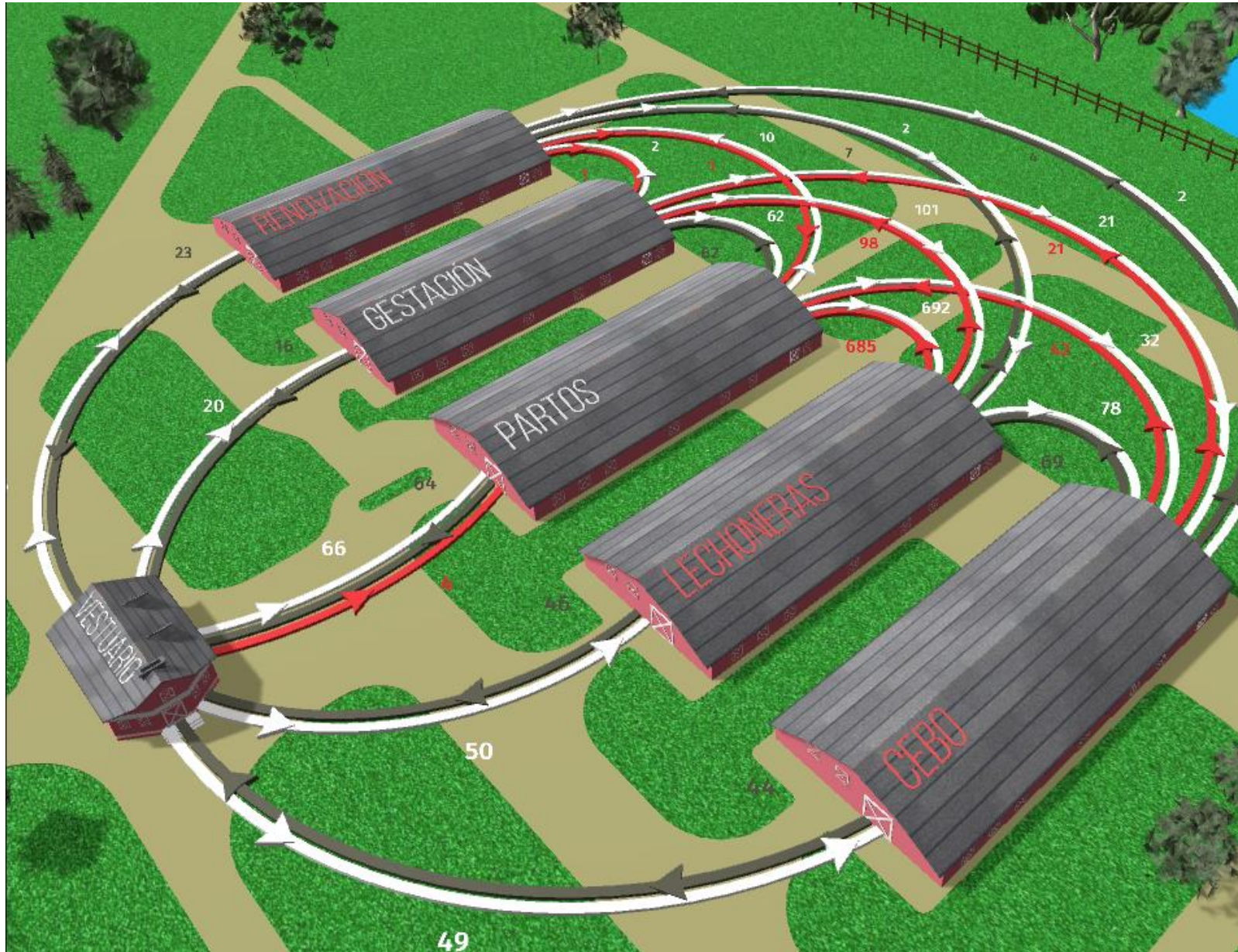


**We must move from guessing to facts**  
and that means  
Working protocol + data





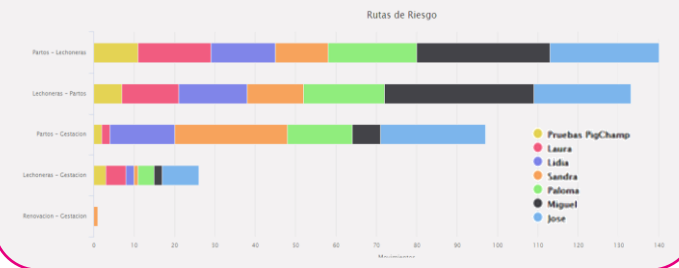
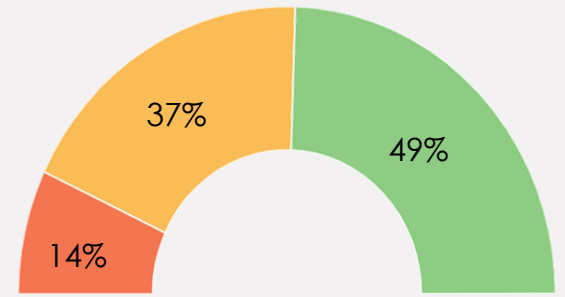
# Internal biosecurity control



3

Biorisk classifies the potential risk of every movement depending on origin-destination.

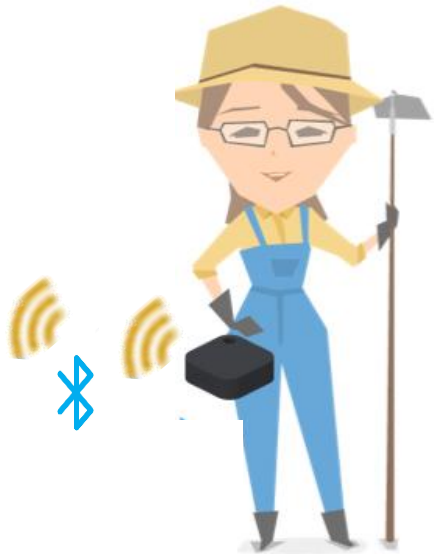
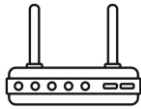
Safe movements  
 Unsafe movements  
 Risk movements







Wi / Fi



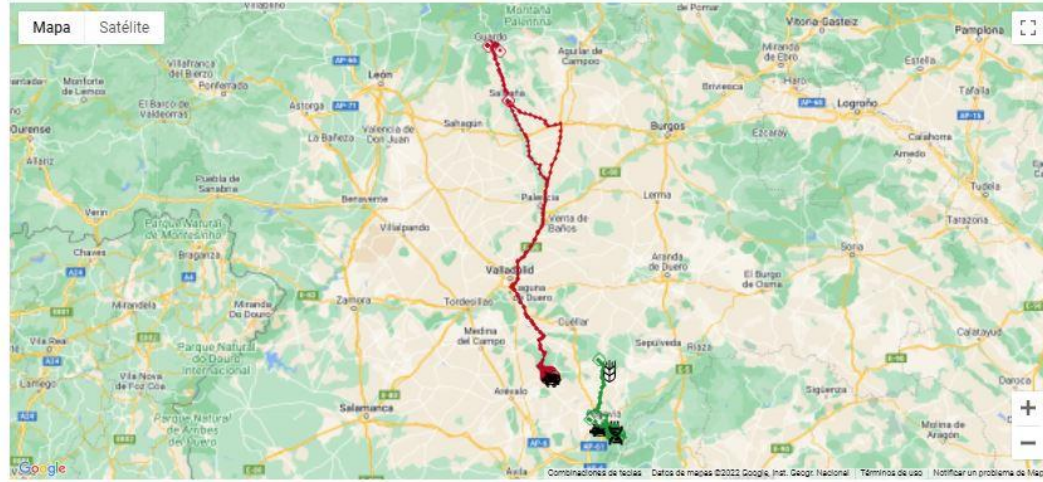
pigChamp<sup>®</sup>  
pro europa

# External biosecurity control; visitors

Rutas de hoy

Mapa de calor Ninguno Todos Mostrar matrículas

3746LHX  8888888



Visitas de la última semana por centro

Tipo de visita

Visita Persona Visita vehículo

Centros

Eva Centro de cadáveres

< Hoy >

11 - 18 ABR 2022

1 semana Día Lista

	lun 11/4	mar 12/4	mié 13/4	jue 14/4	vie 15/4	sáb 16/4	dom 17/4	tun 18/4
10								
11			<span style="background-color: #007bff; color: white; padding: 2px;">prueb... Yo con... nombre</span>					<span style="background-color: #007bff; color: white; padding: 2px;">9y Mart...</span>
12			<span style="background-color: #007bff; color: white; padding: 2px;">facul... Weste...</span>					
13	<span style="background-color: #007bff; color: white; padding: 2px;">Nuria Mart...</span>							
14							<span style="background-color: #28a745; color: white; padding: 2px;">3746LHX Pien...</span>	<span style="background-color: #007bff; color: white; padding: 2px;">Jolma Mart...</span>
15			<span style="background-color: #007bff; color: white; padding: 2px;">prueb... persona</span>					
16			<span style="background-color: #28a745; color: white; padding: 2px;">1234567890 el suntu...</span>				<span style="background-color: #007bff; color: white; padding: 2px;">Albertillo Vote...</span>	<span style="background-color: #28a745; color: white; padding: 2px;">3746LHX Alba...</span>
17								<span style="background-color: #007bff; color: white; padding: 2px;">3746LHX Mart...</span>
18				<span style="background-color: #28a745; color: white; padding: 2px;">3746LHX Pien...</span>				
19								
20	<span style="background-color: #28a745; color: white; padding: 2px;">3746LHX Pien...</span>		<span style="background-color: #28a745; color: white; padding: 2px;">3746LHX Pien...</span>					
21								
22								

Visitas de la última semana por persona/vehículo...



# External biosecurity control; visitors

17:07

Settings

## Preferences

Select language

English

**Allow notifications**

Authorized visits

Not authorized visits

**Change company**

Select company

PigChamp Pro Europa

Select center

Arandina

SAVE PREFERENCES

## Advanced


SEND ERRORS

RESET APP

17:03

Visit detail

## Unauthorized with access



Center

Arandina

Date

04/11/2022 12:13 p. m.

Plate

3746LHX

Type of visit

Feed

Authorizer

Inma

DENY ACCESS

BACK DELETE

17:02

Biorisk

Last sync:  
lun., abr. 18, 2022 05:00 p. m.

Selected center

Arandina

NEW VISIT

Last visits

**Miércoles**

3746LHX	08:37 a. m.	Feed
3746LHX	08:23 a. m.	Feed

**Martes**

3746LHX	06:51 p. m.	Feed
198765F	01:16 p. m.	Maintenance

**Lunes**

3746LHX	12:13 p. m.	Feed
3746LHX	09:53 a. m.	Feed

12

17:04

Visits

Arandina

04/13/2022

3746LHX	08:37 a. m.	Feed	Unauthorized without access
3746LHX	08:23 a. m.	Feed	Authorized

04/12/2022

3746LHX	06:51 p. m.	Feed	Unauthorized without access
198765F	01:16 p. m.	Maintenance	Authorized

04/11/2022

3746LHX	12:13 p. m.	Feed	Unauthorized with access
---------	-------------	------	--------------------------

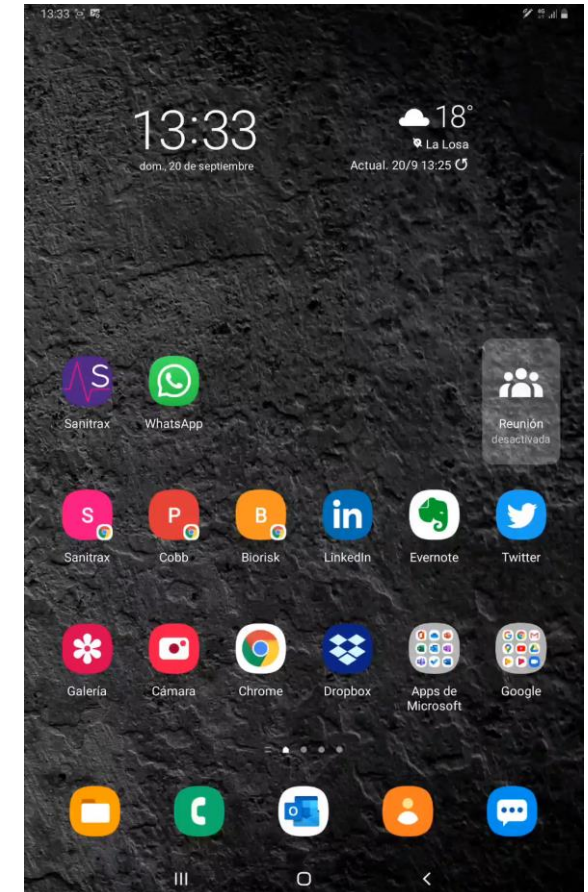


Business case 2

## Health monitoring and antibiotics control



Platform for real-time control and monitoring of animal health, including control of the use of medicines and vaccines with continuous online support from veterinary experts.



# Health monitoring real-time

Listado de lotes abiertos de CEP\_ Recría

Código de lote	Granja	Censo inicial	Fecha de entrada	Días estancia	Censo actual	Mortalidad	Progreso de estancia
RLG 210125	CEP_ Recría	15	25/01/2021	56	15	 Tasa de mortalidad(Act: 0% Vs Obj: 3%)	 40%
RLP 201119	CEP_ Recría	30	19/11/2020	123	30	 Tasa de mortalidad(Act: 0% Vs Obj: 3%)	 87,9%
RLP 210125	CEP_ Recría	30	25/01/2021	56	30	 Tasa de mortalidad(Act: 0% Vs Obj: 3%)	 40%

Lotes abiertos

97

Notificaciones activas

22



- Active batches
- Progress
- Mortality
- Notifications

# Antibiotic use, total consumption, per animal and per kg of animal entered

Consumo total y ratio de dosificación

Buscar:

[Copiar](#) [CSV](#) [Excel](#) [PDF](#) [Imprimir](#)

Principio activo	Ratio de dosificación	Situación	Total consumido	Total consumido / animal entrado	Día medio de vida
Enrofloxacin	1.1	Correcto	60670.0 mg	6.5 mg	37.1
Gentamicina	0.9	Correcto	5120.0 mg	7.9 mg	42.2
Marbofloxacin	1.1	Correcto	31500.0 mg	7.5 mg	39.3
Tiamulina	1.0	Correcto	343246.1 mg	173.1 mg	31.1
Tildipirosina	1.1	Correcto	87032.0 mg	13.0 mg	30.5
Acido clavulánico	0.3	Inframedicado	34380.5 mg	8.7 mg	34.9
Amoxicilina	0.4	Inframedicado	232275.5 mg	19.7 mg	36.1

- Simple and visual warnings
- Alerts for withdrawal periods



# Health and antibiotics control real time

Barriolobos English

Losses

Losses Report

Species: Poultry Type of production: Fattening Flocks: 2021/01

Filtering options

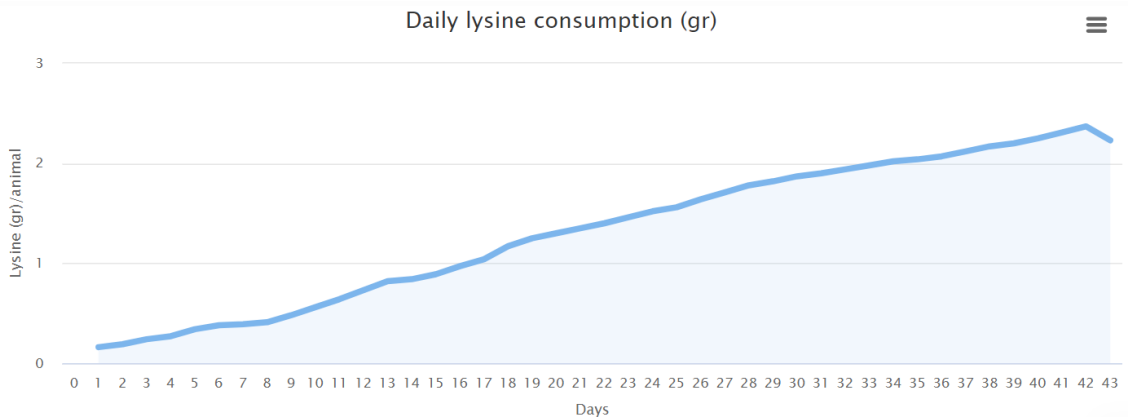
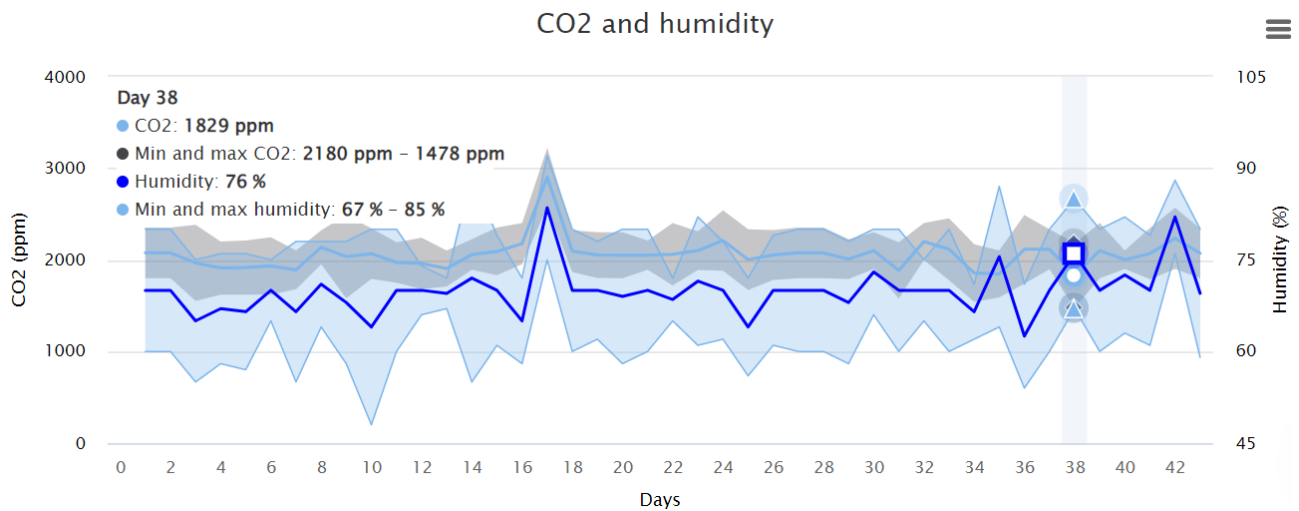
Distribution of losses by disease

## Farm Barriolobos / Flock 2021/01 - Fattening

Birth date:	09/06/2021	Status:	Closed	Losses:	1,619
Entry date:	09/07/2021	Lineage:	Cobb-500	Target mortality (%):	3
Close date:	03/23/2022	Initial census:	36,000	Real mortality (%):	4.50
Days of life:	198	Average entry weight (gr)/animal:	48	Total sold:	34,378
Target stay days:	45	Average out weight/animal (gr):	2,777.87	Sales rate (%):	95.49
Stay days:	197				

### Departures details:

Total sold:	34,378	Day of life:	40.16	FCR:	1.64	ADG:	70.18
Sales rate (%):	95.49	Average weight (gr):	2,777.87	FCR (w/l):	1.61	PEF:	120.64



# Conclusions

1. Sustainability and digitalization are a solid binomial
2. We need to set up a reliable remote monitoring of health, production and antibiotics use.
3. Veterinarians have a better position than ever having a key role to address these needs in the context of the digital transformation

