Remote Meat Control
-
from opportunity to obligation ?

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What I am going to talk about?

- Some challenges in meat control – Swedish context
- Digital transformation - possibilities
- What can we do to get success?
- Drivers in Swedish context
- What have we done?
- What are we doing?
- Best case scenario – our vision
- Conclusion !

Meat inspection today - challenges

- Meat control has to be done **on the site**, physically
- Lot of **travelling** to Ante Mortem and Post Mortem inspection and control
- **Calibration** of the meat control is a demanding task - personnel cannot take ”a day off” for internal training
- In case of extrem weather or other external hurdles meat control can be hampered → **logistic** problem for abattoir or game handling establishment
- In case of **internal hurdles** (lack of personnel) meat control can be hampered → as above

Swedish meat production – red meat

Slaughtered domesticated animals 2021

- Pigs about 2 650 000
- Cattle about 400 000
- Sheep about 227 000

Source: https://jordbruksverket.se/djur/djurtransportorer-och-slakterier/statistik-om-slaktade-djur-och-klassning

Semi-domesticated reindeer 2021

About 50 000 reindeer slaughtered

Source: www.slv.se

204 abattoirs and GHEs

-

170 of them slaughtering <1000 ton/year

Wild game shooting 2020

- Wild boar 166 000 (11 % to GHA)
- Roe deer 118 000 (5 % to GHA)
- Moose 83 000 (6 % to GHA)
- Fallow deer 80 000 (21 % to GHA)
- Red deer 10 000 (26 % to GHA)

(Totally 75 000 carcasses to GHA)

Source: https://rapport.viltdata.se/statistik/

Swedish conditions – reindeer slaughter

- 13 red dots are reindeer abattoirs up and running seasonally (top season in November- December)
- 7 blue dots are offices for official control veterinarians and auxiliaries
  - During 2021 about 50 000 reindeer slaughtered in 12 reindeer abattoirs
  - During 2021 control staff was driving by car for meat inspection about 60 000 kilometres
  - 24 kg mean carcass weight → 1 200 ton meat
  - 20 kg (0.8 carcasses) per 1 kilometre

There are another
153
small abattoirs for other species
and game handling establishments
in Sweden

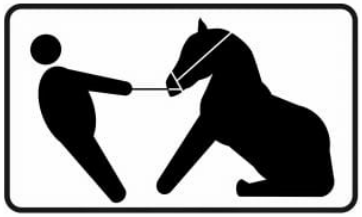
Digital transformation – on-going process

- Pandemic →
  - a weak up call for many businesses and authorities
  - Expanding digital services became an imperative - impossible to engage in an analog way.
- Food control →
  - Some inspections OK to do on distance during pandemic, NOT meat inspection
  - Digital systems in documentation exist already
  - Different authorities along the food chain – hurdles in sharing information
- Food businesses →
  - Already many digital systems in production environment
  - Big companies first in line, even smaller using digital tools in some cases

Public sector – much more needed

- Studies reveals – public sector not as digitalized as it should (Digitaliseringskommissionen, 2016)
- Reluctance exists in all levels of an organization, whole society
- Reluctance
  - personnel background diversified
  - Normal human behaviour
  - Economical reasons – public funding?
- Digital ecosystems > < psychological contract

  (the mutual beliefs, perceptions and informal obligations between an employer and an employee, by Denise Rousseau, 1989)
  - Does it work?



Possibilities to develop control

- In Official Control Regulation (EU) 2017/625 of the European Parliament and of the Council, Article 16.2:

"When adopting delegated acts and implementing acts provided for in this Section, the Commission shall take into account the following:

(a) the experience gained by competent authorities and food and feed business operators when applying the procedures referred to in Article 5 of Regulation (EC) No 852/2004 of the European Parliament and of the Council and Article 6 of Regulation (EC) No 183/2005 of the European Parliament and of the Council;

(b) scientific and technological developments……."

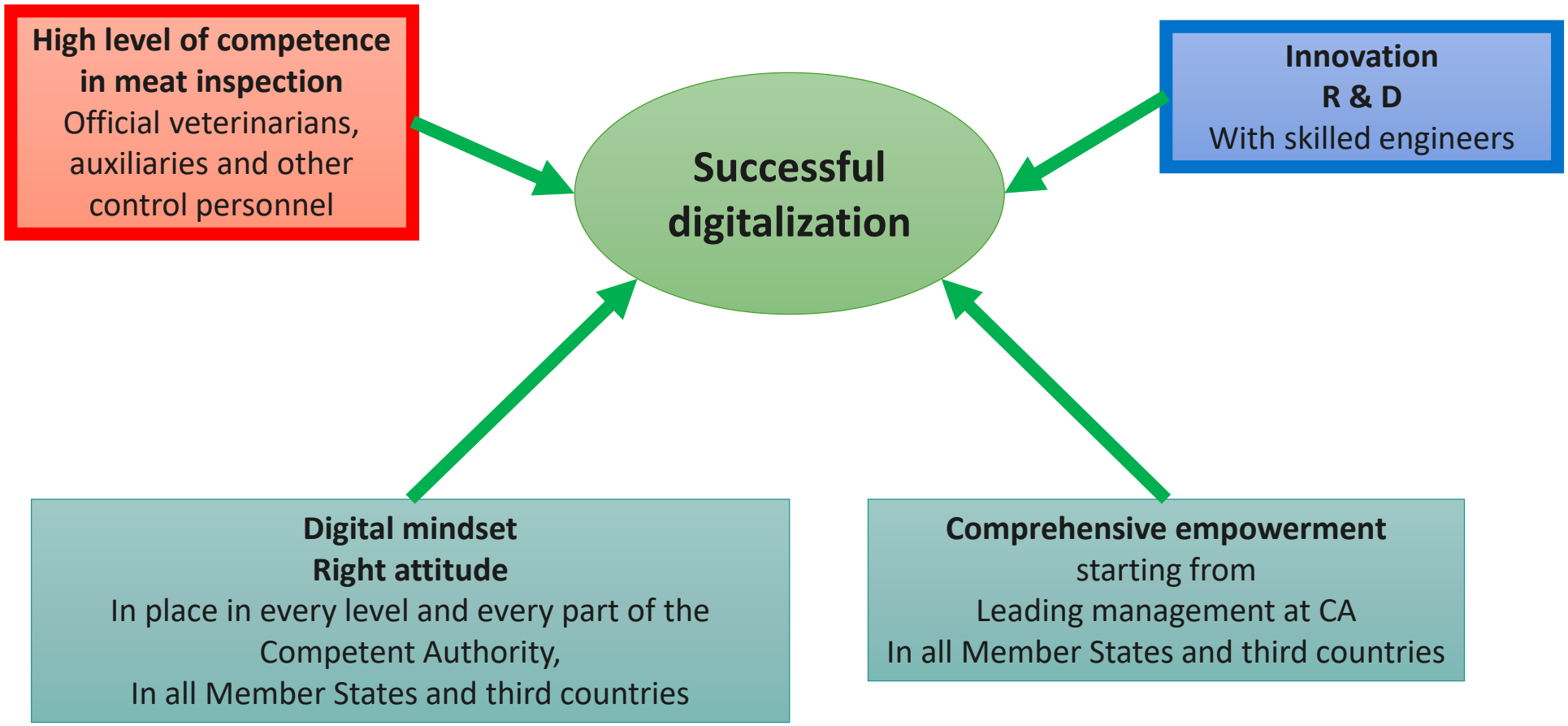
Actual demands of consistency and effectiveness

- In Official Control Regulation (EU) 2017/625 of the European Parliament and of the Council, Article 4.2.a.

"Where, for the same area, a Member State confers the responsibility to organise or **perform official controls** or other official activities on more than one competent authority, at national, regional or local level, or where the competent authorities designated in accordance with paragraph 1 are allowed by that designation to transfer specific responsibilities for official controls or other official activities to other public authorities, the Member State shall:

(a) ensure efficient and effective coordination between all authorities involve and the **consistency and effectiveness** of official controls or other official activities across its territory;

Prerequisites – how to get success



Efforts to develop EU-legislation

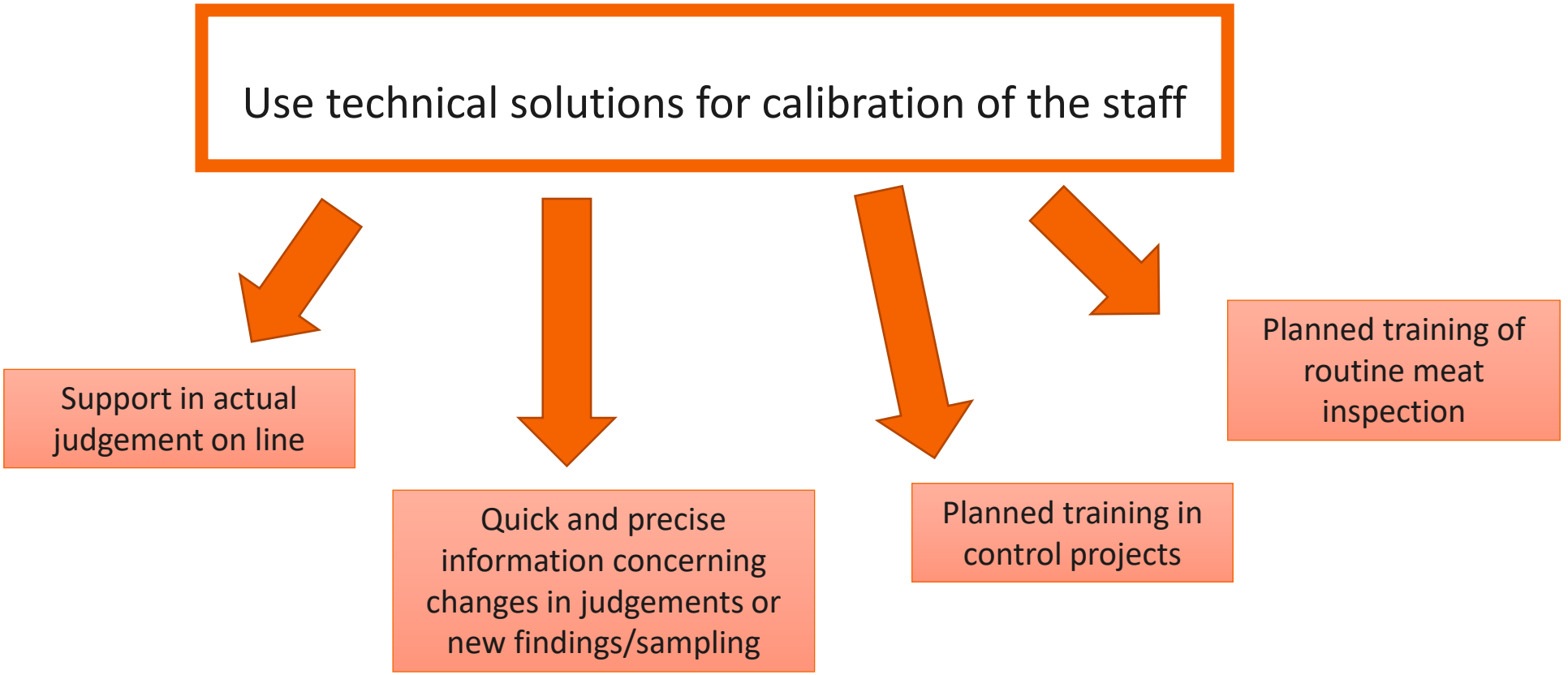
Communication with Commission concerning the needs and possibilities supported by the results from research projects

EFSA
Risk assessors for Commission

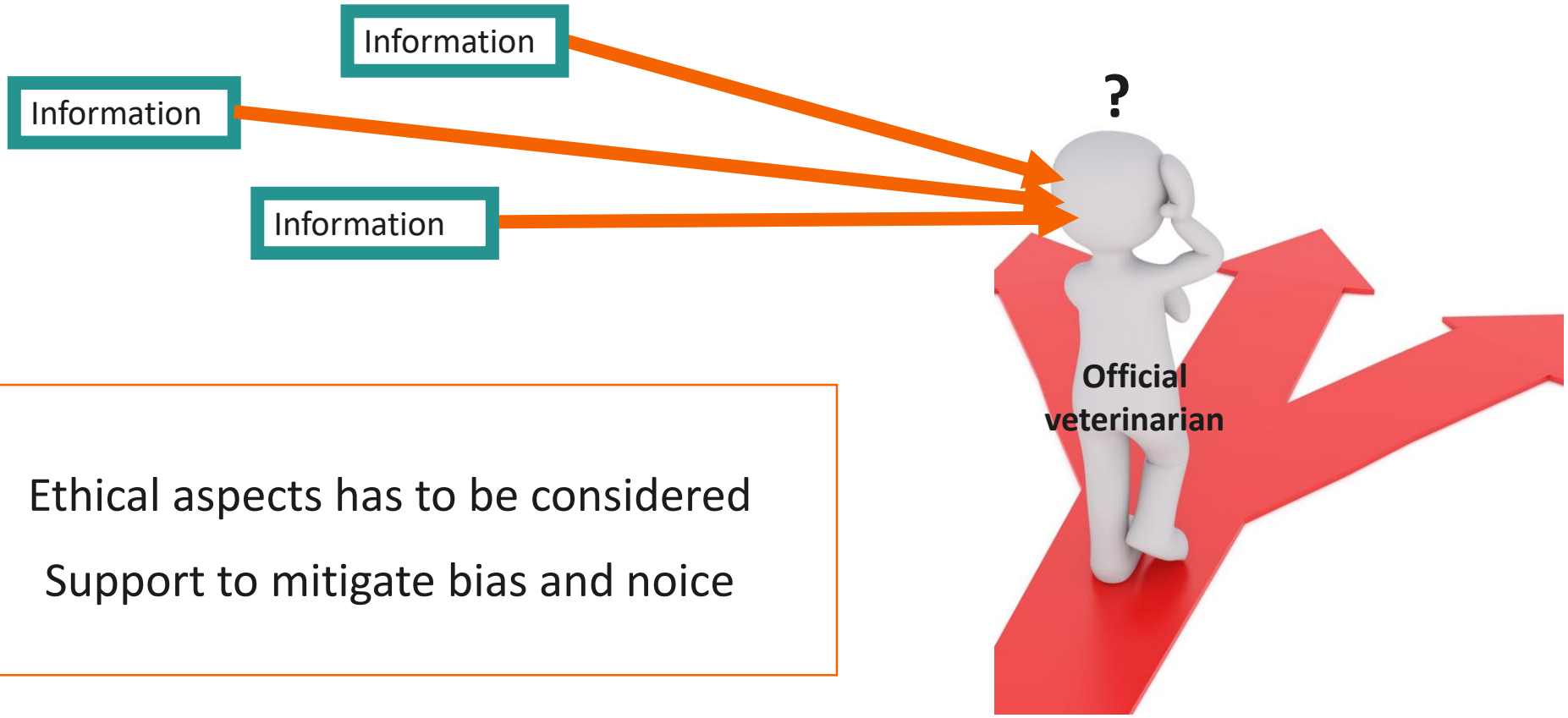
COMMUNICATION BETWEEN LIKE–MINDED COUNTRIES

Results from all different projects to be published,
Denmark, Italy, Norway, Sweden …

What can we do meanwhile?



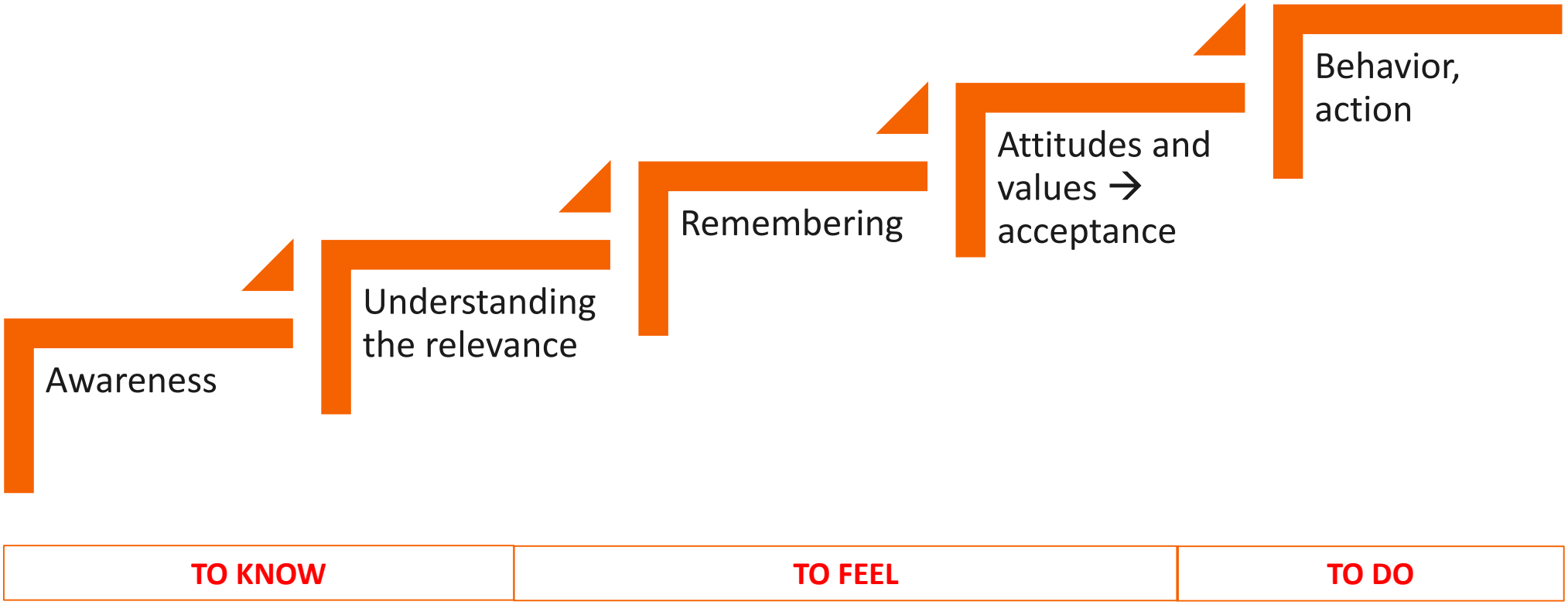
Human judgements – technical support



Ethical aspects has to be considered

Support to mitigate bias and noice

The staircase of communication



Drivers in Swedish context

The global and national sustainability goals

- Reduce the official meat control's environmental burden
- Create higher level of resilience in the food chain

Drivers in Swedish context

Logistic hurdles →

constraints on

- production and
- profits

in small abattoirs and GHE

Calibration of control →

- Impartiality
- Quality
- Consistency

Agenda 2030

GREEN DEAL

National Food Strategy

National Sustainability Goals

What have we done?

Remote control projects

Desk study – what can be done, how and when, 2018

<u>The goals in study with digital technics in meat inspection 2019:</u>

- Clarify the practical and technical needs and inventory of technical solutions
- Assess the reliability of the inspection,
- Assess the overall consequences for food safety, infectious disease control and animal protection
- Assess the technical functionality

Very few findings and lot of bias in Ante mortem inspection with smart phones and augmented reality.

Reliability of PMI on distance is approximately equivalent with PMI on-site.

Technical functionality of normal smart phone is good enough

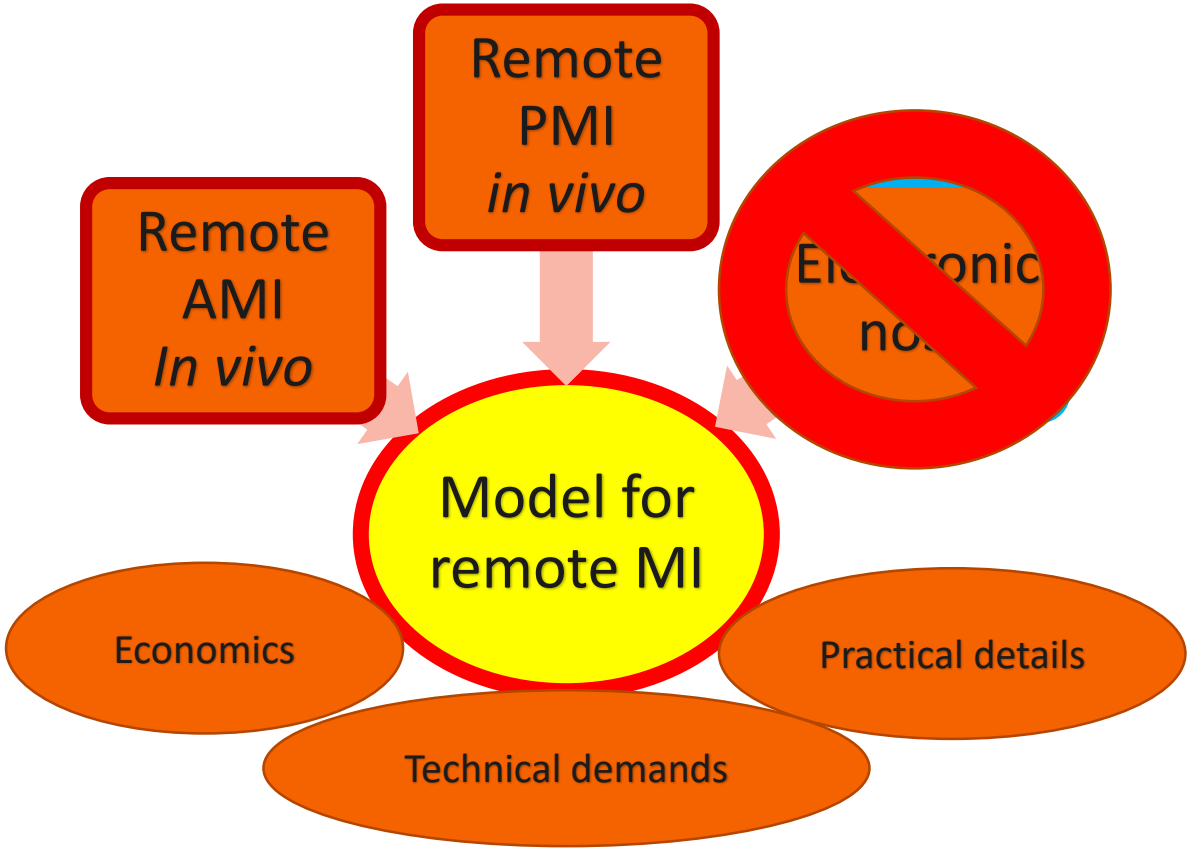
Main hurdle is the bandwidth and other problems with Internet.

A great potential to use AI as a possible tool to automate pig PMI, in particular the carcass.

Pandemic stopped practical work in abattoirs 2020

Project plan modernization 2021 -2023

All the time meeting the goals for good food safety, animal welfare and animal health !!!



Remote PMI in vivo done 2021

Preliminary results:

- The main hurdle is the bandwidth in the positions for PMI
- Wi-Fi router needed inside the “Faradays cage”
- Smart phone a useful device
- Good technical assistance on-site a basic condition needed

Feasibility of remote AMI – 2022 - 2023

- Behavioral study up and running
- Practical AMI at small abattoir by smart phone up and running
- Focus on screening hurdles, possibilities and solutions
- Testing ”best case” and ”worse case” scenariors
- Further activities according the results

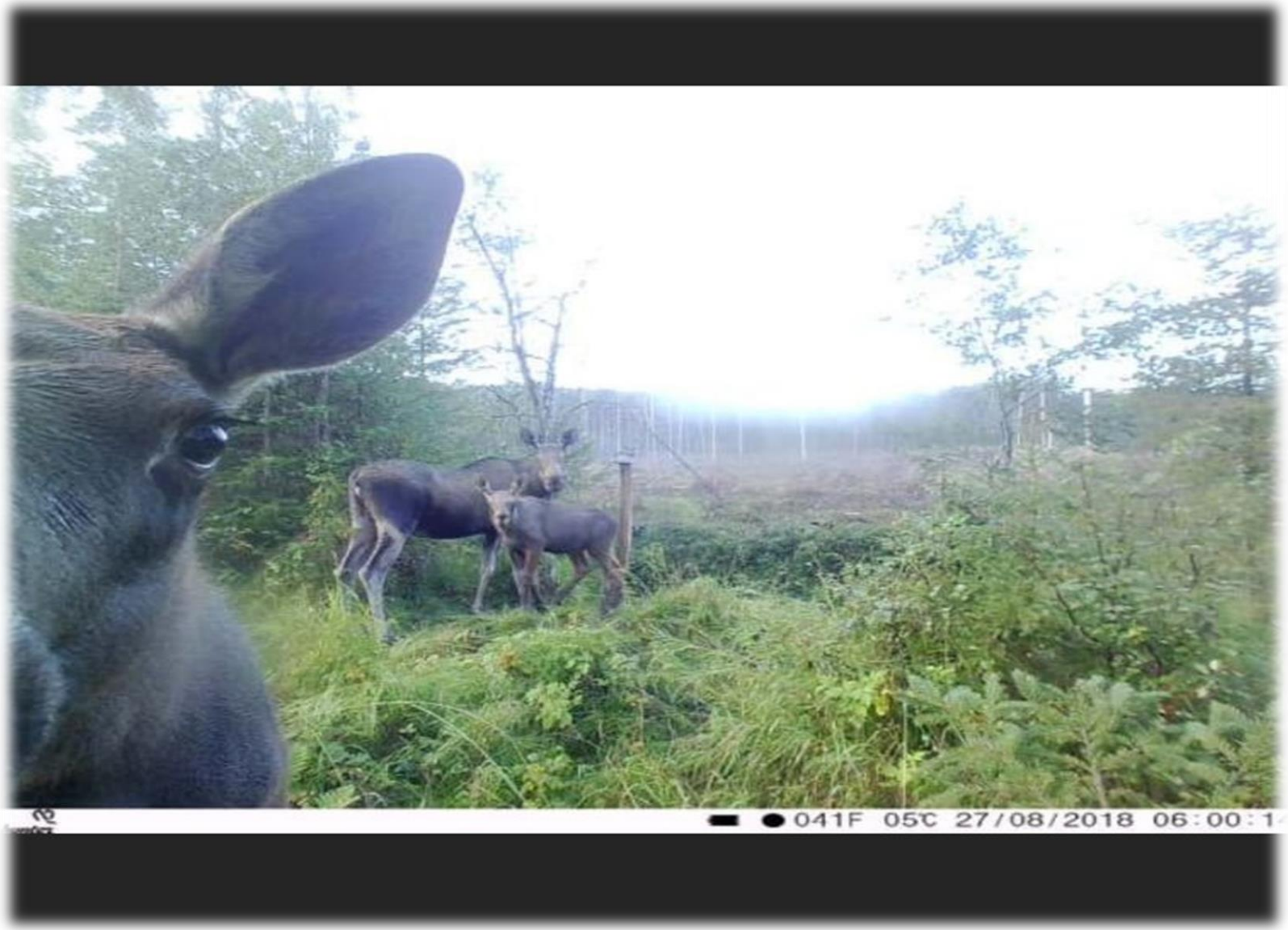
Our future vision

- Meat control can be done
  - on distance when demand exists and circumstances are good enough
  - with technical devices easy to use and reliable, protected from hackers
  - by well calibrated control staff, familiar in use of technical devices

Technical development
→MI popular as working field
→ veterinarians,
meat inspectors and
engineers
work together in
a good working environment
supported by new technics

Inaction not an option!

Thank you for your attention!



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