TECH CARE

Integrating innovative TECHnologies along the value Chain to improve small ruminant welfARE management

HORIZON 2020

Grant 862050

Quantifying the value of Early warning system in sheep

Alon Bar-Shamai, Assaf Godo, Joseph Lepar, Adi Alon, Almog Hitelman, Eitan Metuki, Ilan Shimshoni, Ilan Halachmi

PLF Lab – ARO

Haifa University

PLF Lab

PLF lab

- The Precision Livestock Farming (PLF) Lab, is a PLF research unit of the Volcani institute , (Agriculture Research Organization - ARO), Israel.

- While the ARO encompass the full range of agricultural research activities, the PLF lab focuses on developing PLF management concepts and their associated monitoring technologies (sensors) for farmed animals (dairy, sheep, goats, poultry, insects and aquaculture).

HORIZON 2020
Grant 862050
TECH CARE
Integrating innovative TECHnologies along the value Chain to improve small ruminant welfARE management

PLF technologies in SR

- Many PLF technologies and solutions exist today (over 70 have been recorded in TechCare project)
- Generating individual data per animal in SR is proving costly (per cap)
- Individual data is essential for a meaningful Early Warning system (EWS)

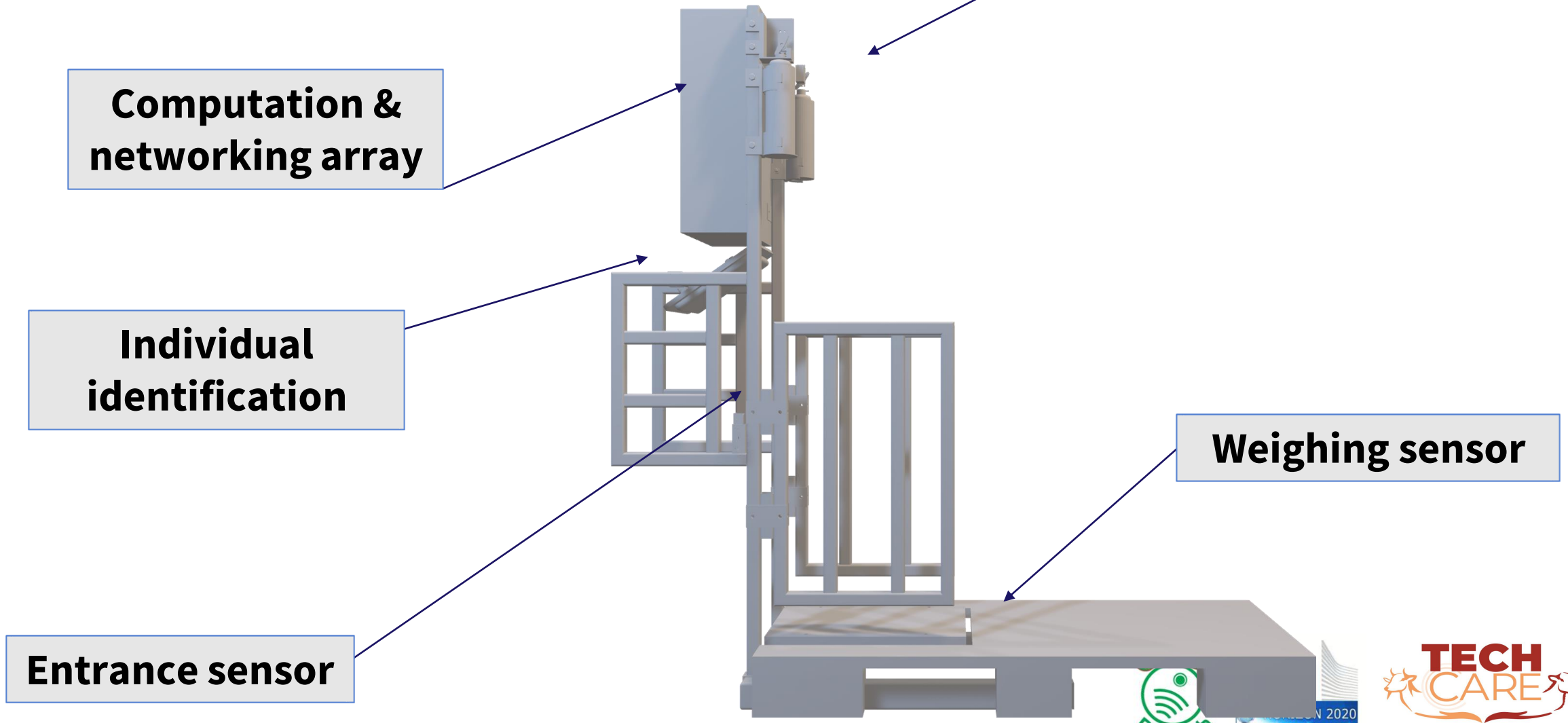
HORIZON 2020
Grant 862050
TECH CARE
Integrating innovative TECHnologies along the value Chain to improve small ruminant welfARE management

Early Warning System in sheep

- There is a slow rate of uptake by small ruminants' producers
- Cost per animal - main reason
- **One sensor to monitor them all** - seems like the right approach

Grant 862050

Our “precious” invention



Grant 862050

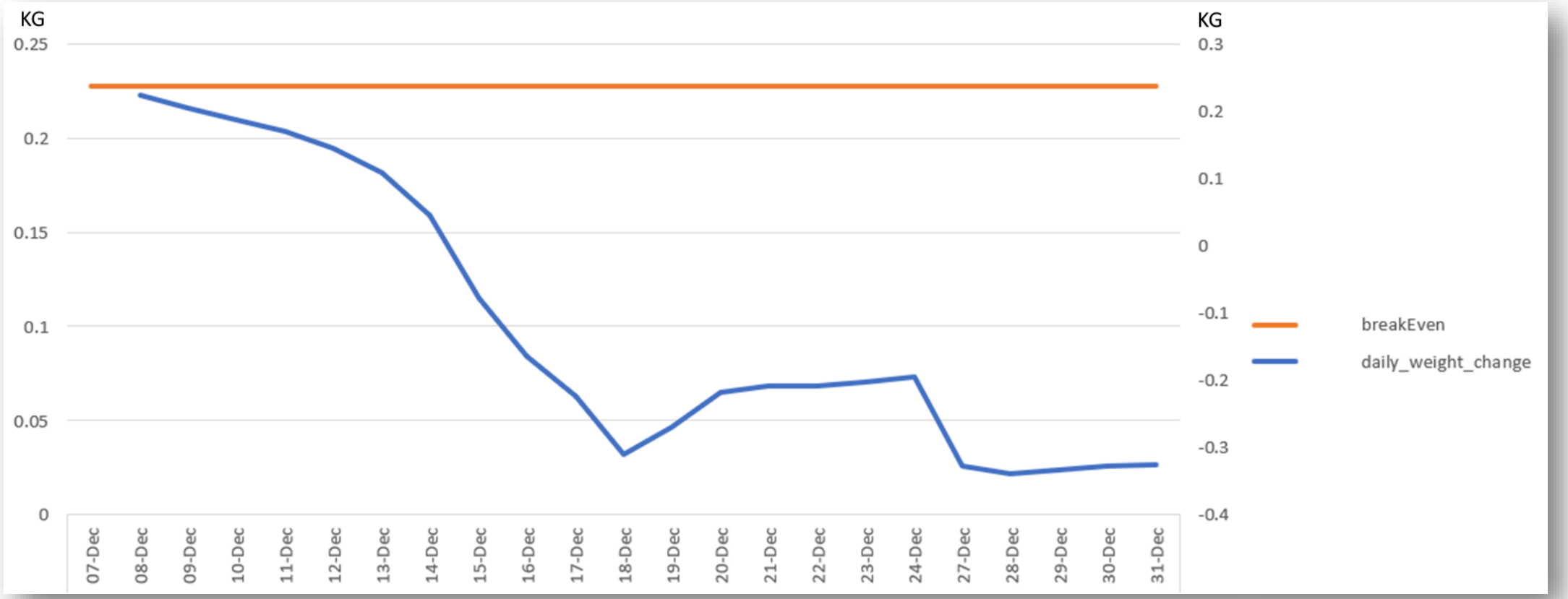
Methods - Quantifying value

- Obtain income value per KG (22 NIS/KG)
- Obtain the avg. daily feed cost (5NIS)
- Calculate daily “Breakeven” point (0.227KG)
- Financially sig. events
  - Animals to never breakeven(e.g. 608)
  - Animals becoming in-efficient* (e.g. 396)

*in-efficient = daily growth is less than daily feed cost

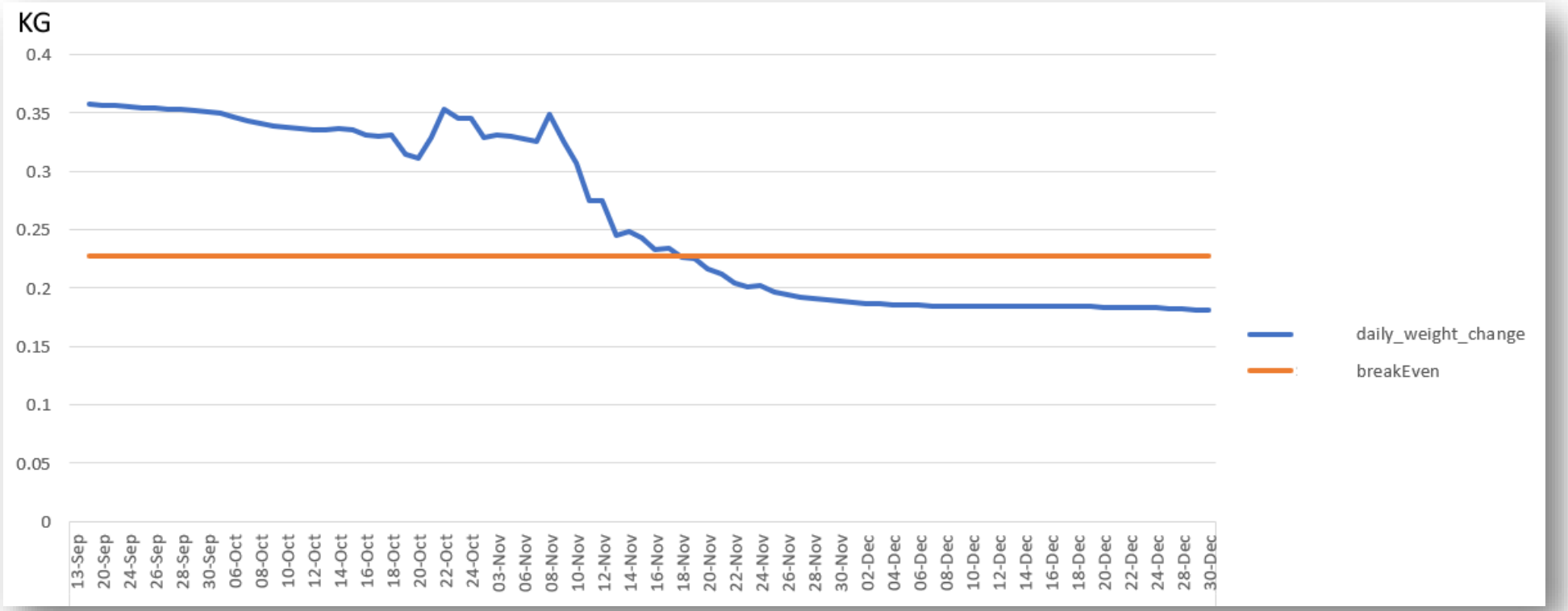
PLF Lab
HORIZON 2020
Grant 862050
TECH CARE
Integrating innovative TECHnologies along the value Chain to improve small ruminant welfARE management

Breakeven days – Lamb 608



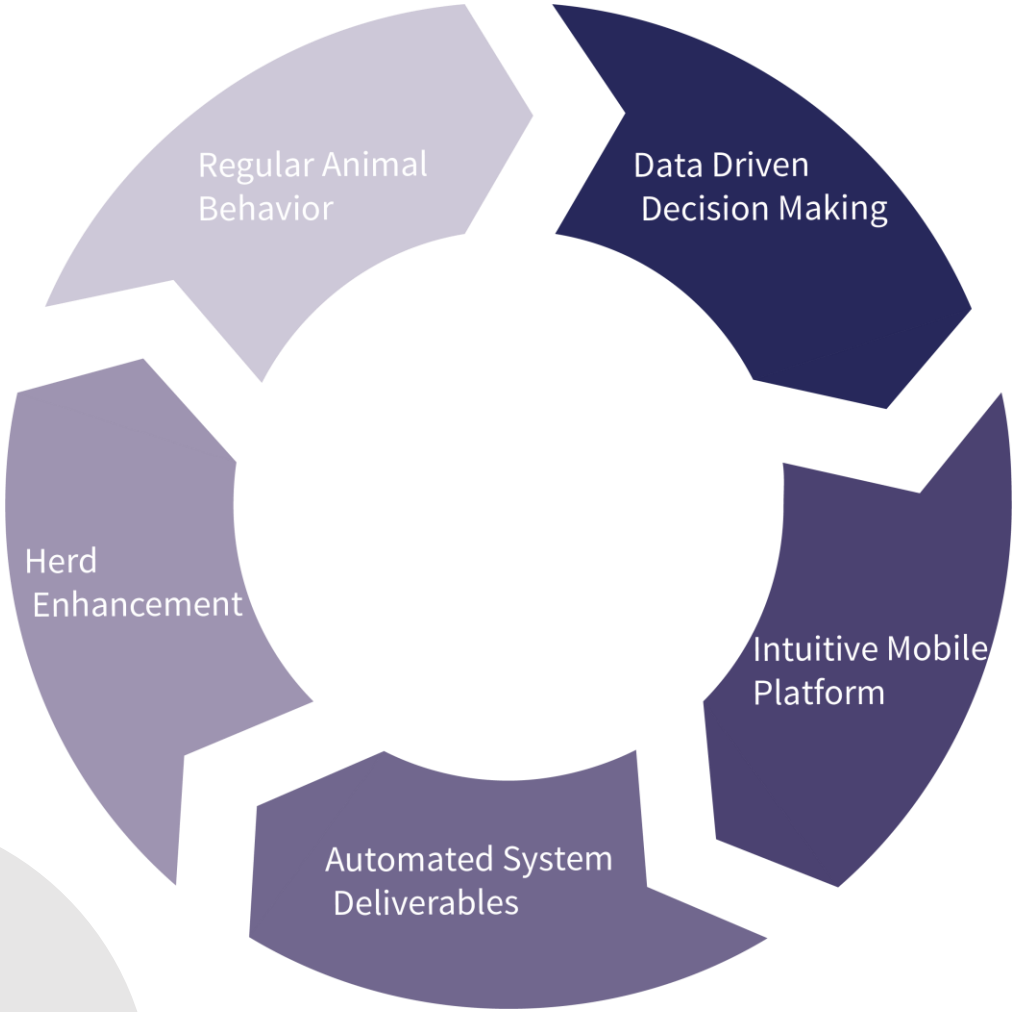
PLF Lab
HORIZON 2020
Grant 862050
TECH CARE
Integrating innovative TECHnologies along the value Chain to improve small ruminant welfARE management

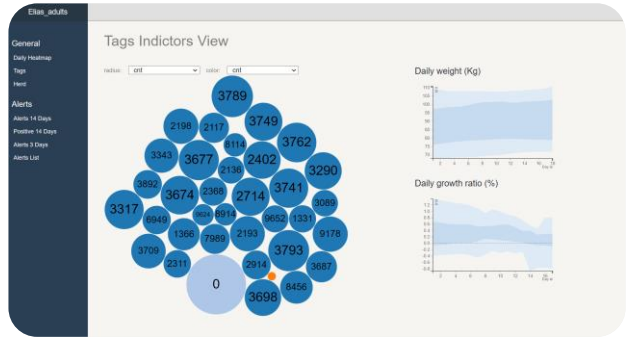
Becoming in-efficient – Lamb 396

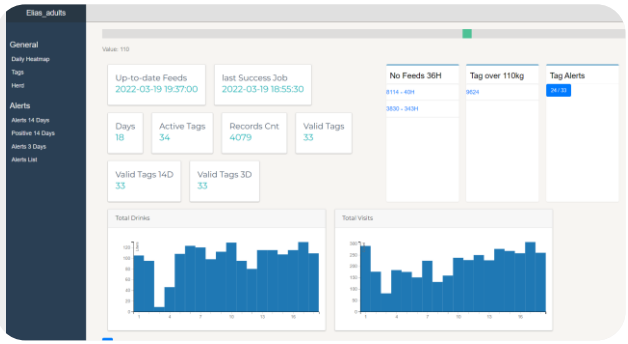


PLF Lab
HORIZON 2020
Grant 862050
TECH CARE
Integrating innovative TECHnologies along the value Chain to improve small ruminant welfARE management

Our approach

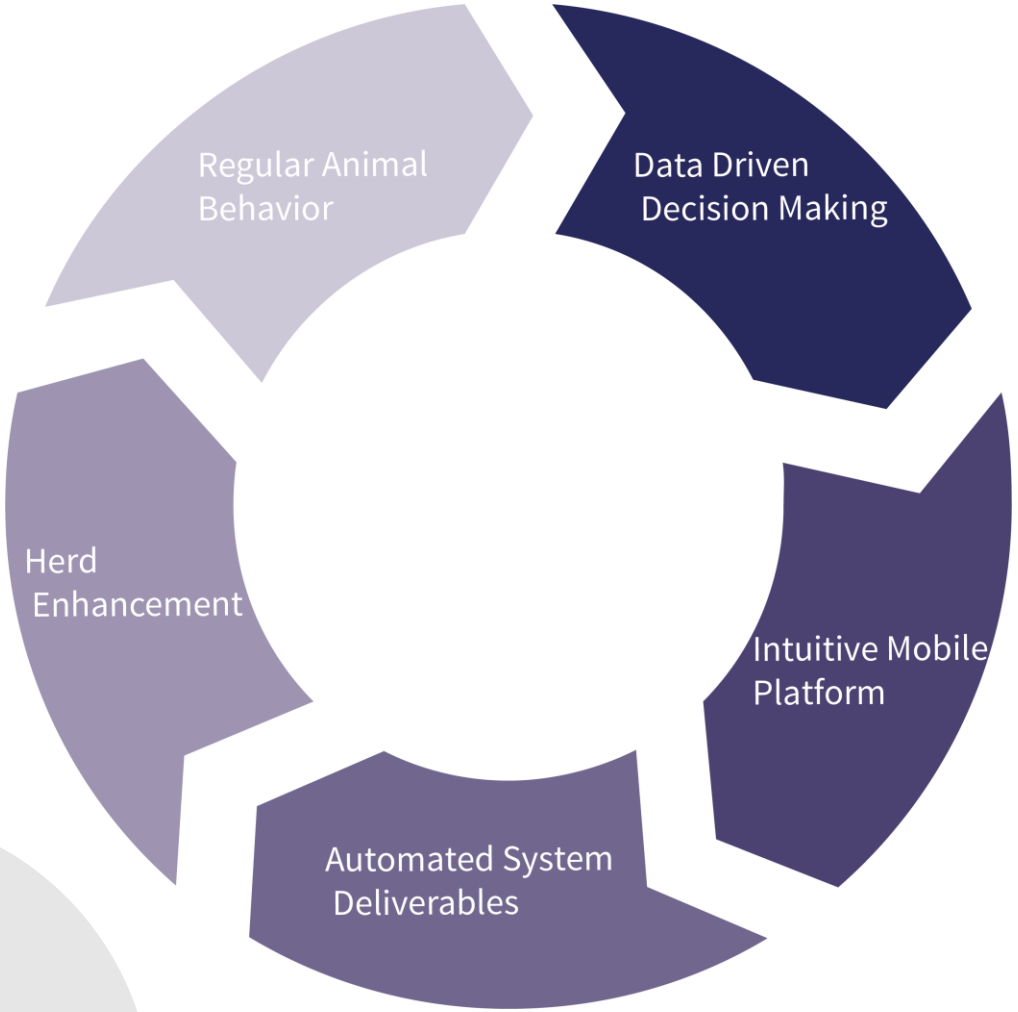


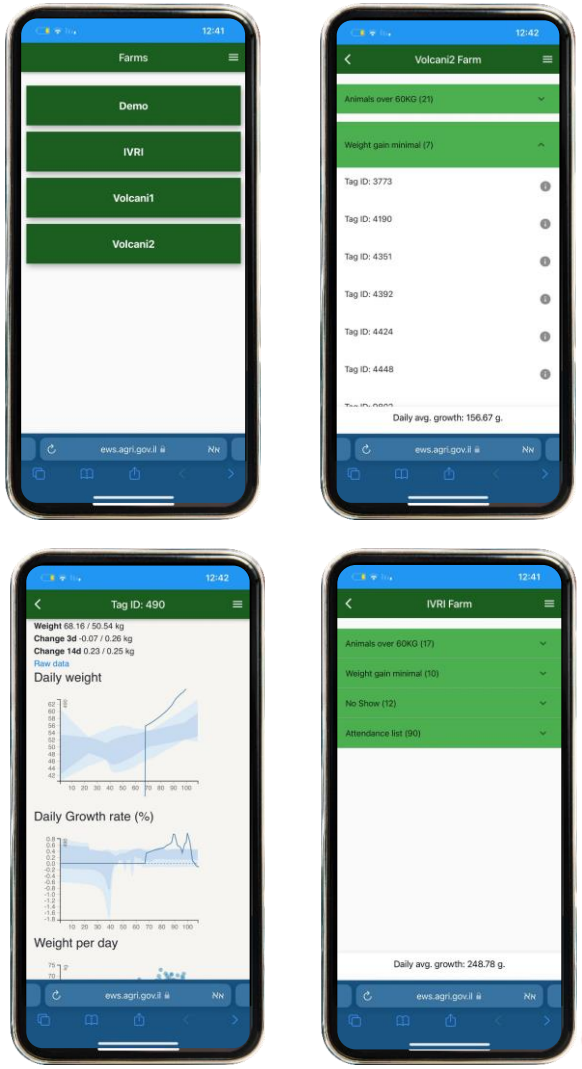




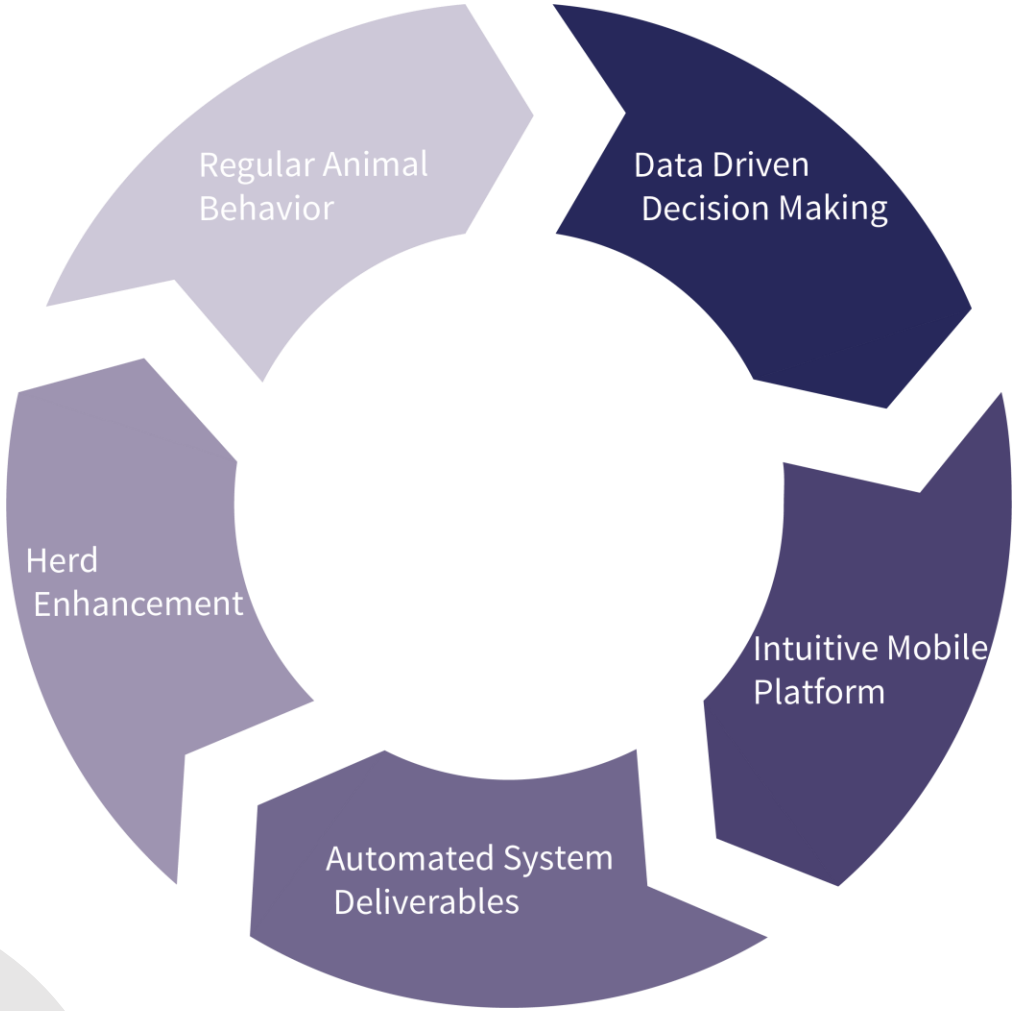
PLF Lab
HORIZON 2020
Grant 862050
TECH CARE
Integrating innovative TECHnologies along the value Chain to improve small ruminant welfARE management

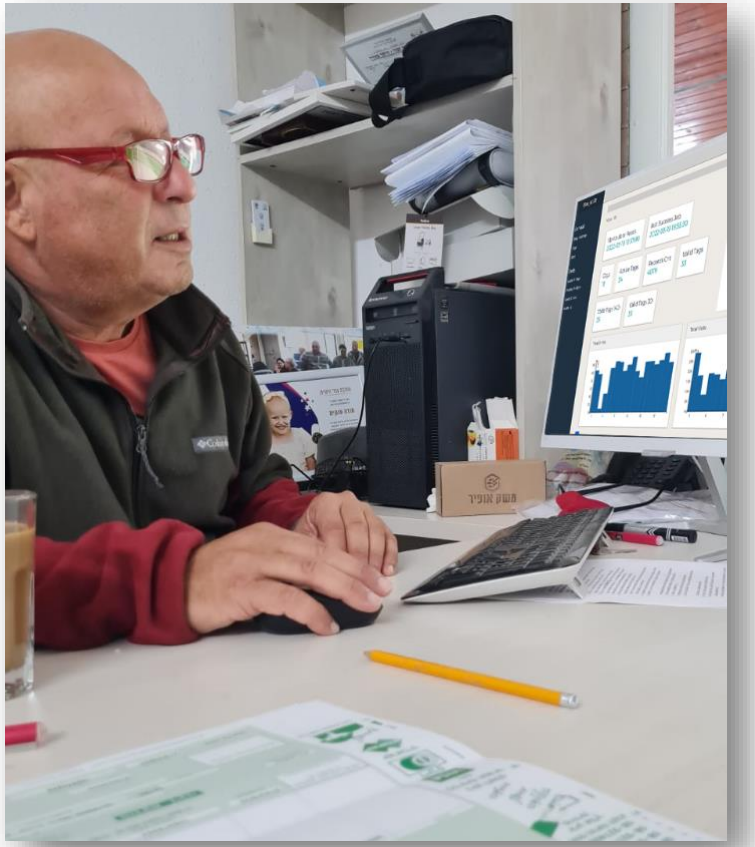
Our approach





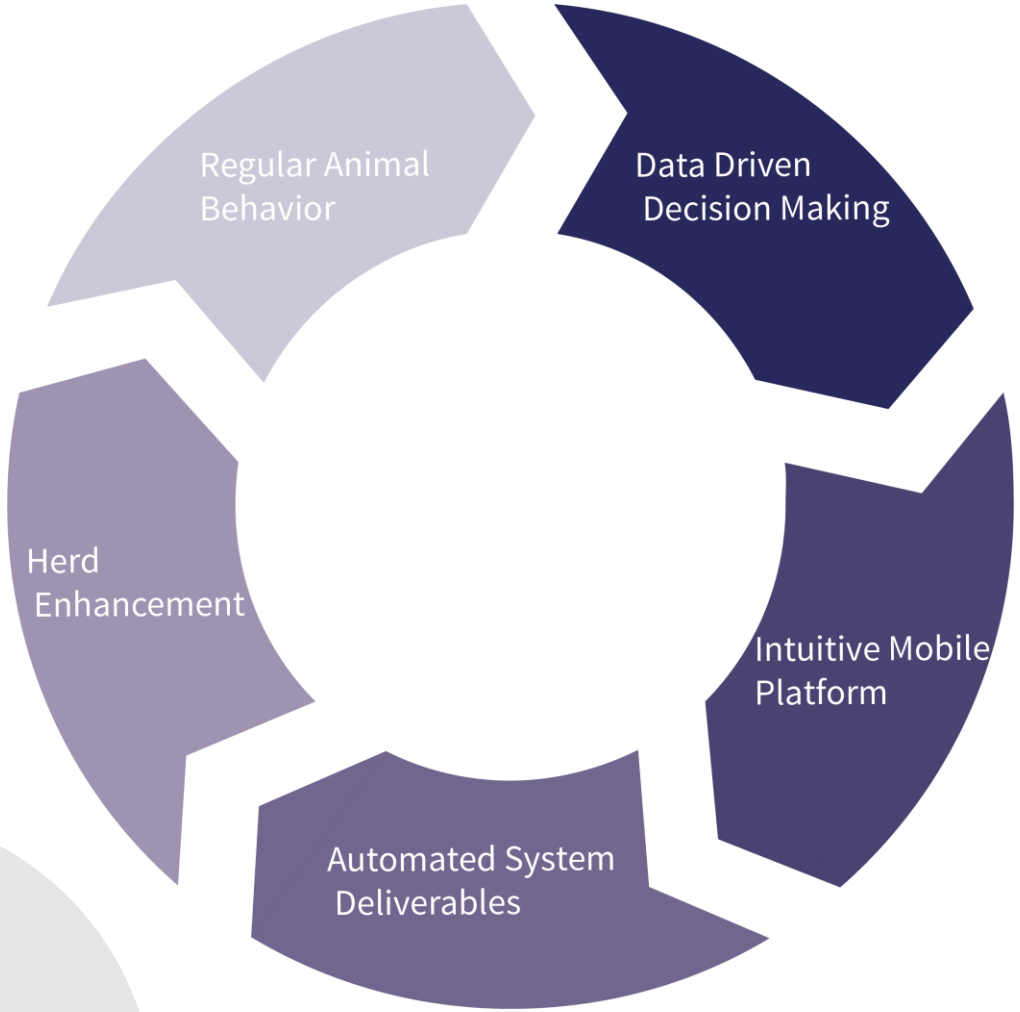
PLF Lab
HORIZON 2020
Grant 862050
TECH CARE
Integrating innovative TECHnologies along the value Chain to improve small ruminant welfARE management





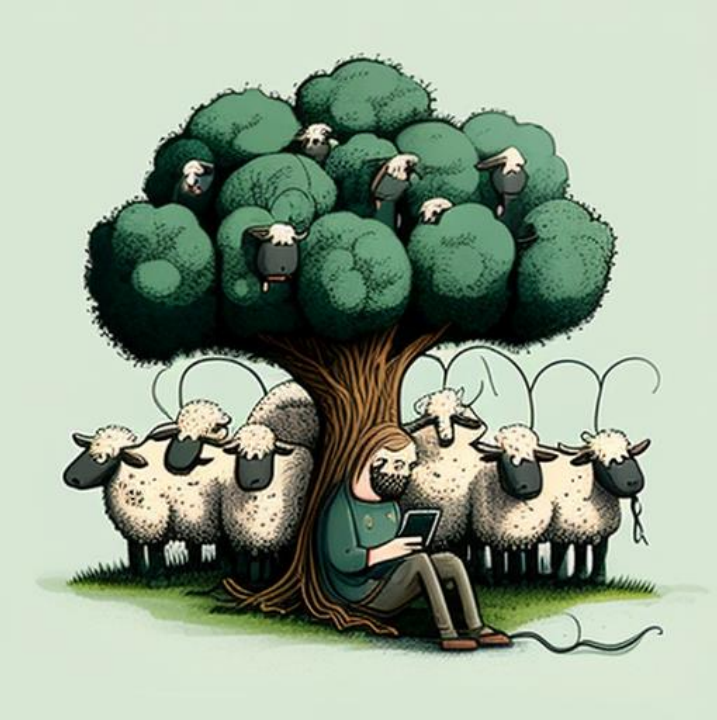
PLF Lab
HORIZON 2020
Grant 862050
TECH CARE
Integrating innovative TECHnologies along the value Chain to improve small ruminant welfARE management

Our approach



PLF Lab
HORIZON 2020
Grant 862050
TECH CARE
Integrating innovative TECHnologies along the value Chain to improve small ruminant welfARE management

How much saved



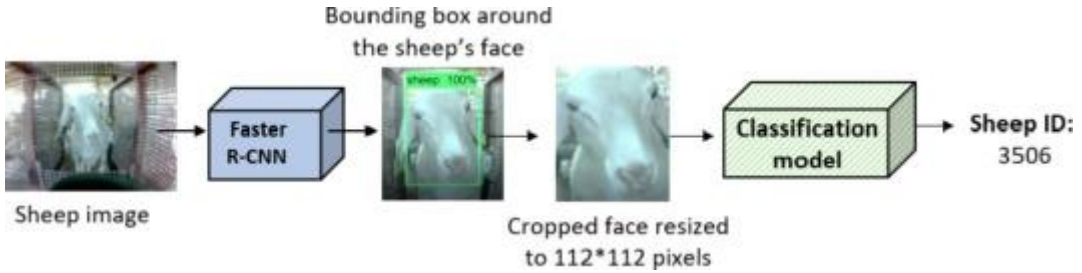
- 17% of the sheep (9) never pass the breakeven line – making them 100% loss
  - (calculated to ~1170 NIS that could have been saved just in terms of feed)
- 43% of the sheep (23) found to have a break-point in growth
  - (calculated to ~2723.5 NIS that could have been saved just in terms of feed)

- 2723 + 1170 = Profit from 12 Lambs = 22.6% of group

PLF Lab
HORIZON 2020
Grant 862050
TECH CARE
Integrating innovative TECHnologies along the value Chain to improve small ruminant welfARE management

Further research – Biometric identification

- Work by Almog hitelman
  - Hitelman, A., Edan, Y., Godo, A., Berenstein, R., Lepar, J., & Halachmi, I. (2022). Biometric identification of sheep via a machine-vision system. *Computers and Electronics in Agriculture*, *194*, 106713.



PLF Lab
HORIZON 2020
Grant 862050
TECH CARE
Integrating innovative TECHnologies along the value Chain to improve small ruminant welfARE management

Thank you for your attention

PLF Lab

HORIZON 2020
Grant 862050

TECH CARE
Integrating innovative TECHnologies along the value Chain to improve small ruminant welfARE management