

Resilience – Veerkracht

Meten en beïnvloeden

Draaglast en Draagkracht

Ingrid van Dixhoorn, Wageningen Livestock Research

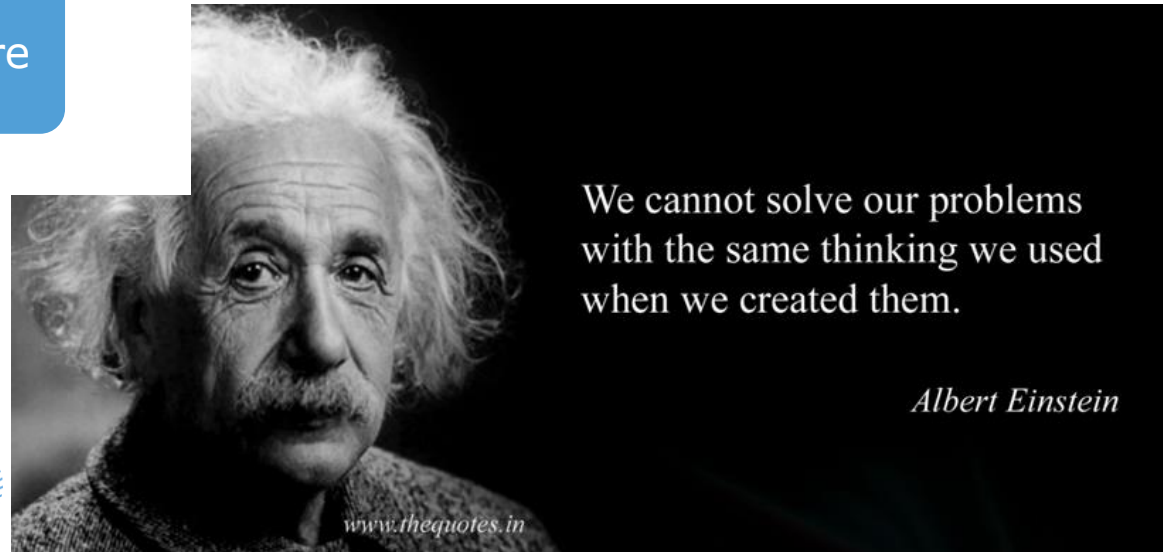
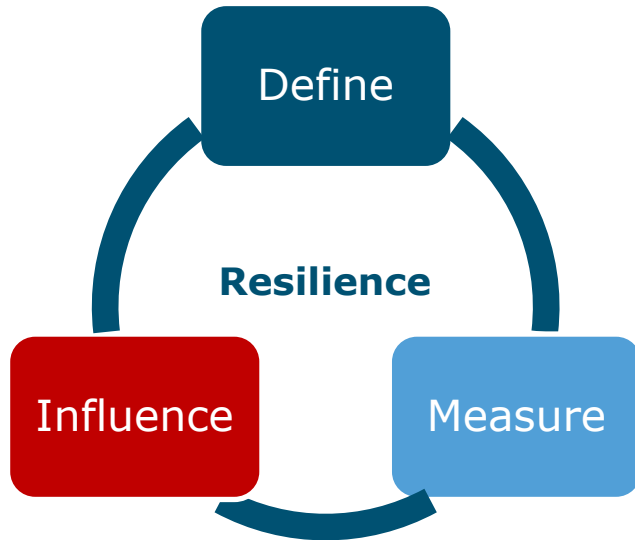


op  **KÖERS** 

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Resilience

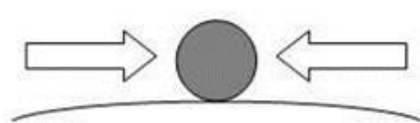
Resilience is the capacity of a complex system to adapt to changes and continue to function and develop (Holling, 1973)



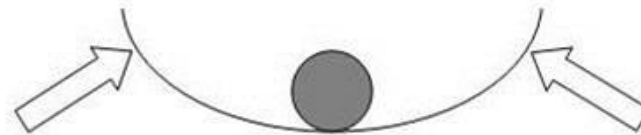
Organisatie van complex dynamische systemen: Twee strategien

Define

- **Controle Model:** Focus on oorzaken
- **Adaptatie Model:** Focus op gevolgen



Control model



Adaptation model

Draaglast-draagkracht

Define

Influence

Genetic
susceptibility

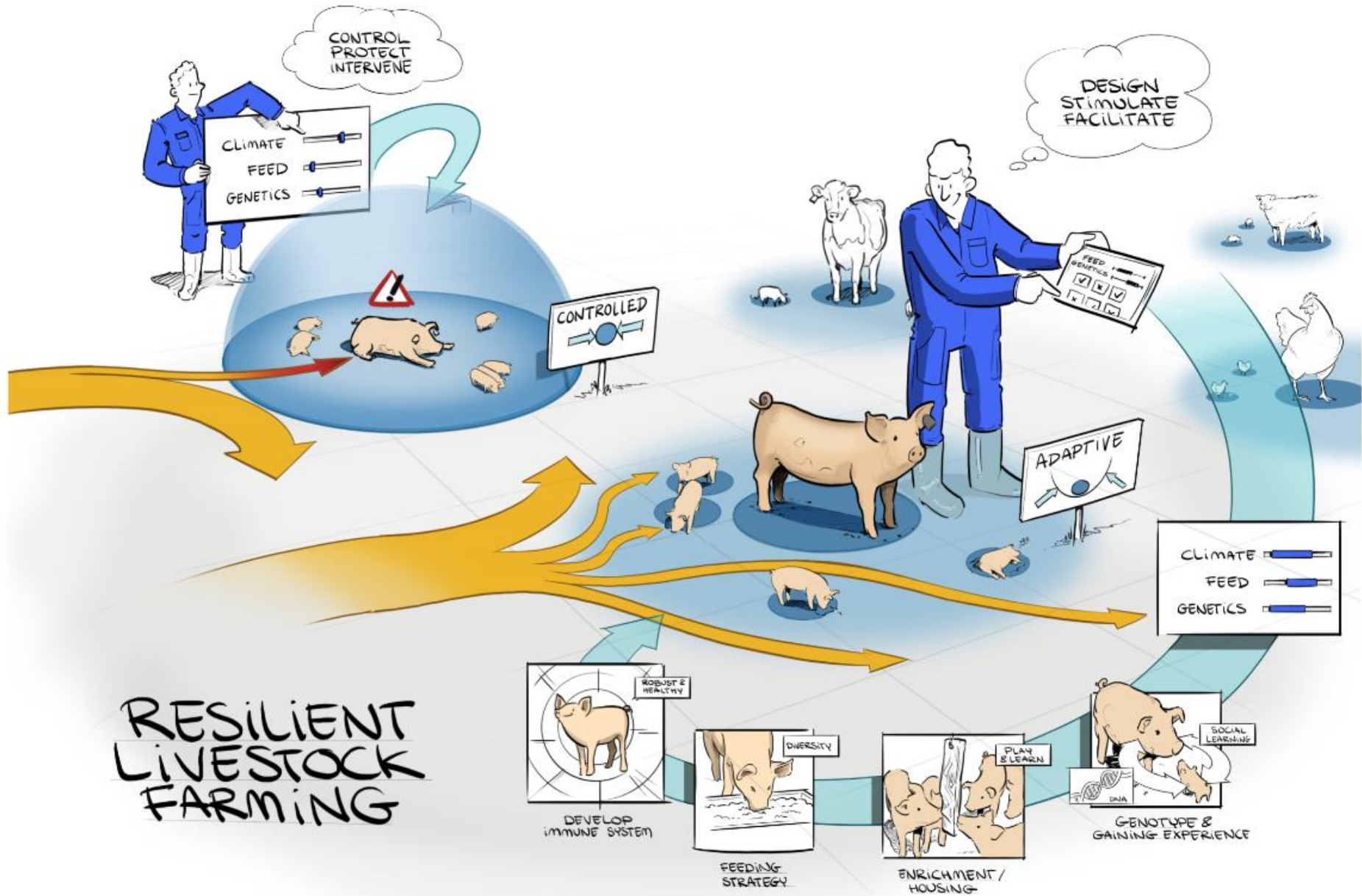
Pathogenicity

Husbandry
Conditions,
Hygiene

Age

Environment,
welfare



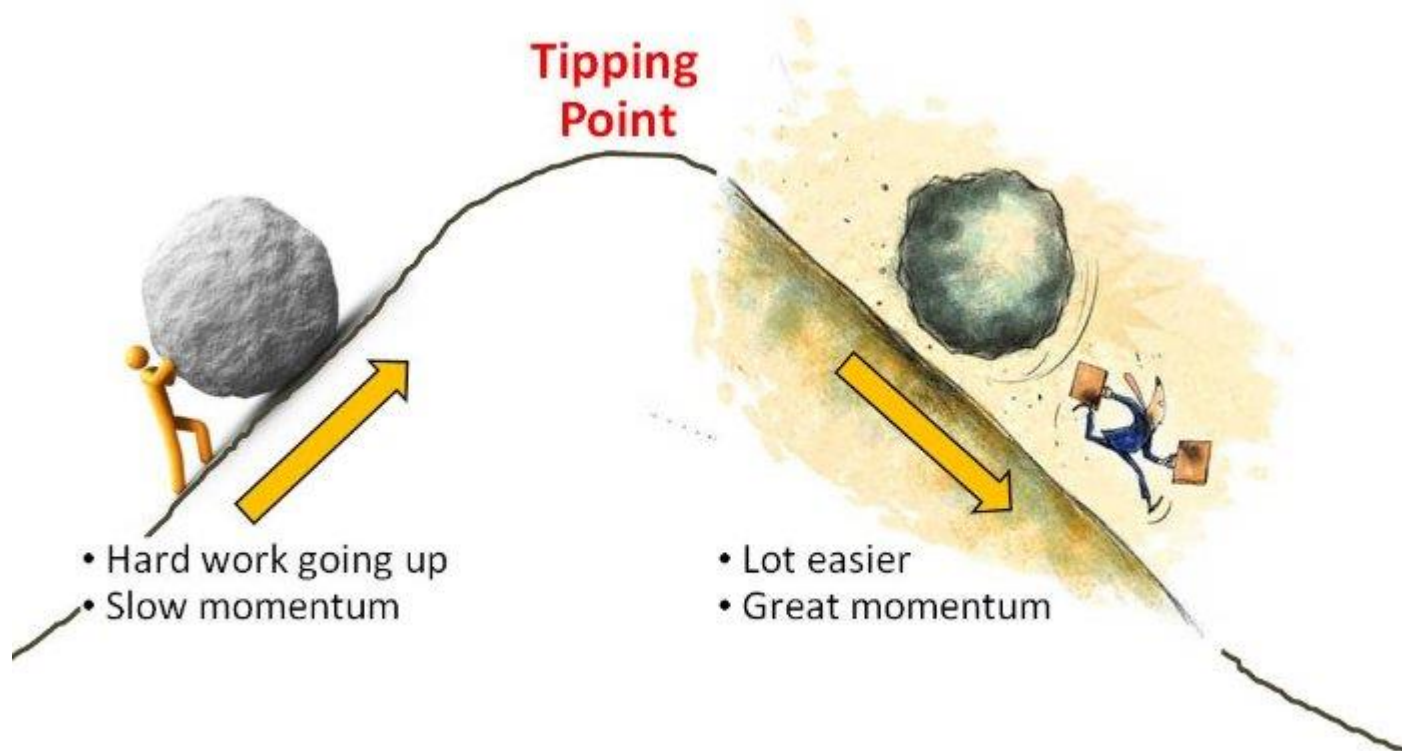


Tipping points

Define

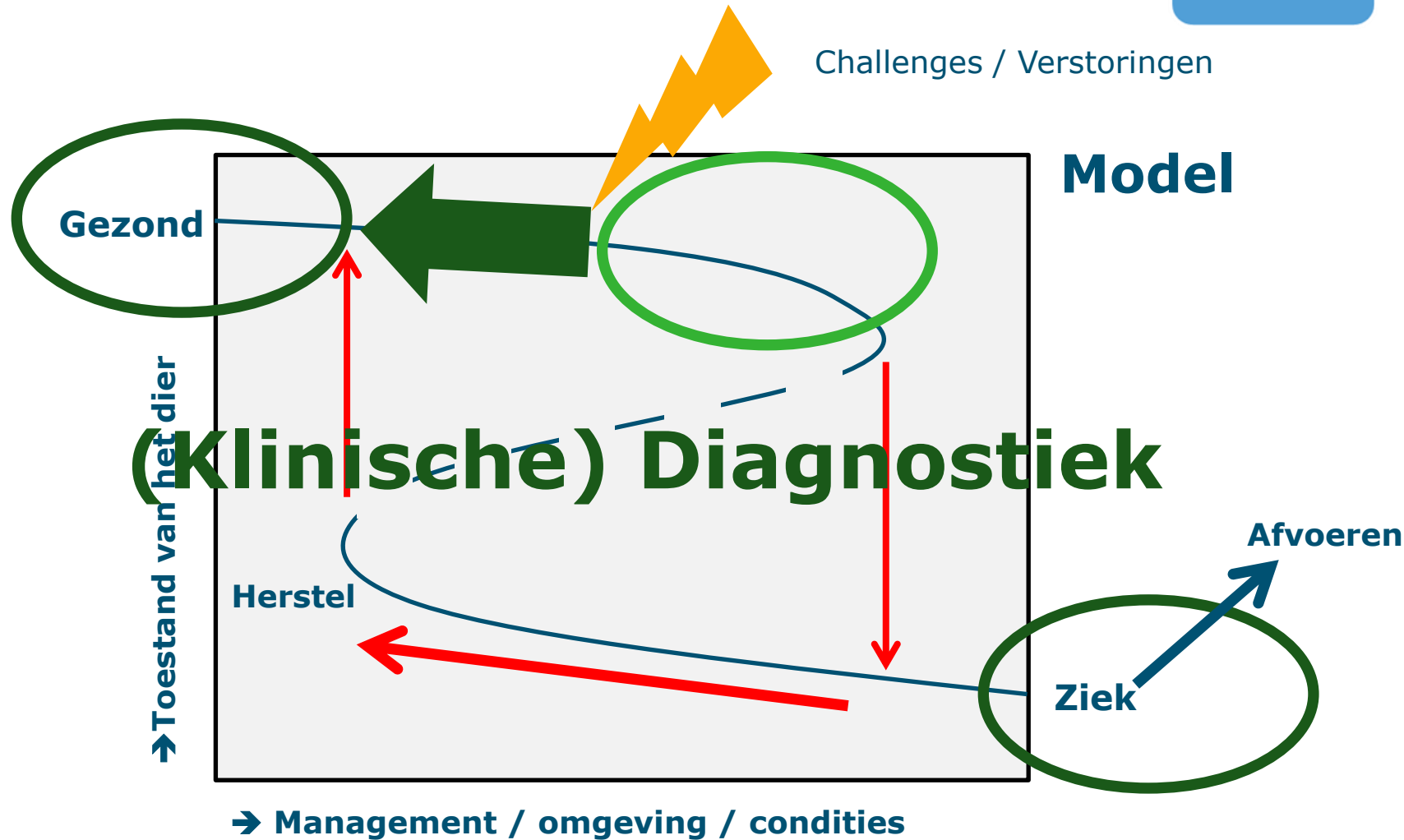


Measure



Tipping points - gezondheid

Measure

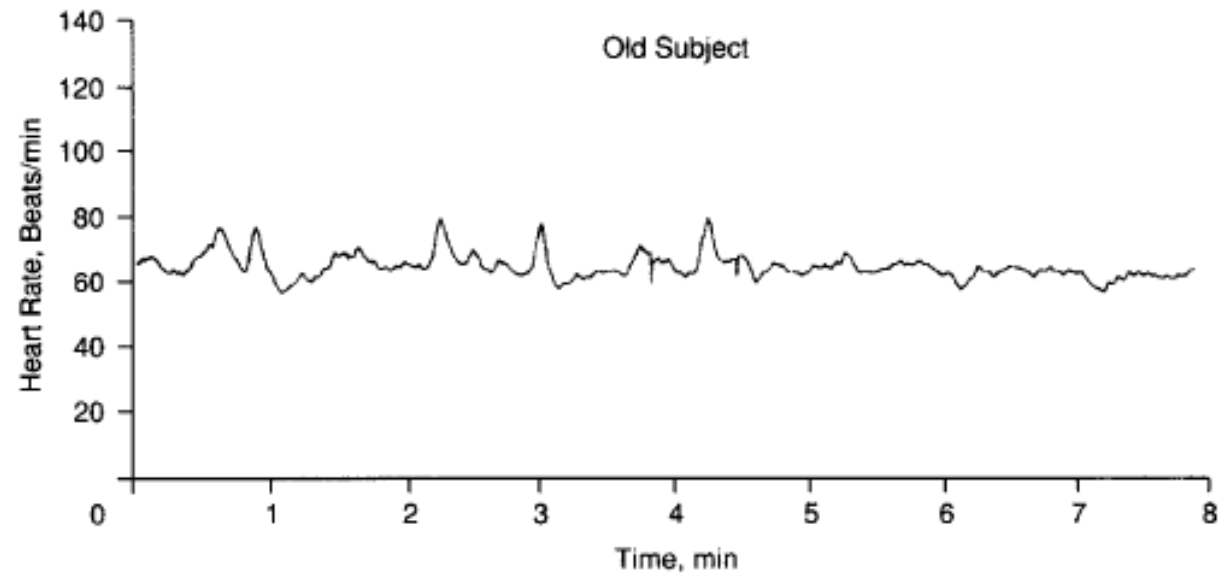
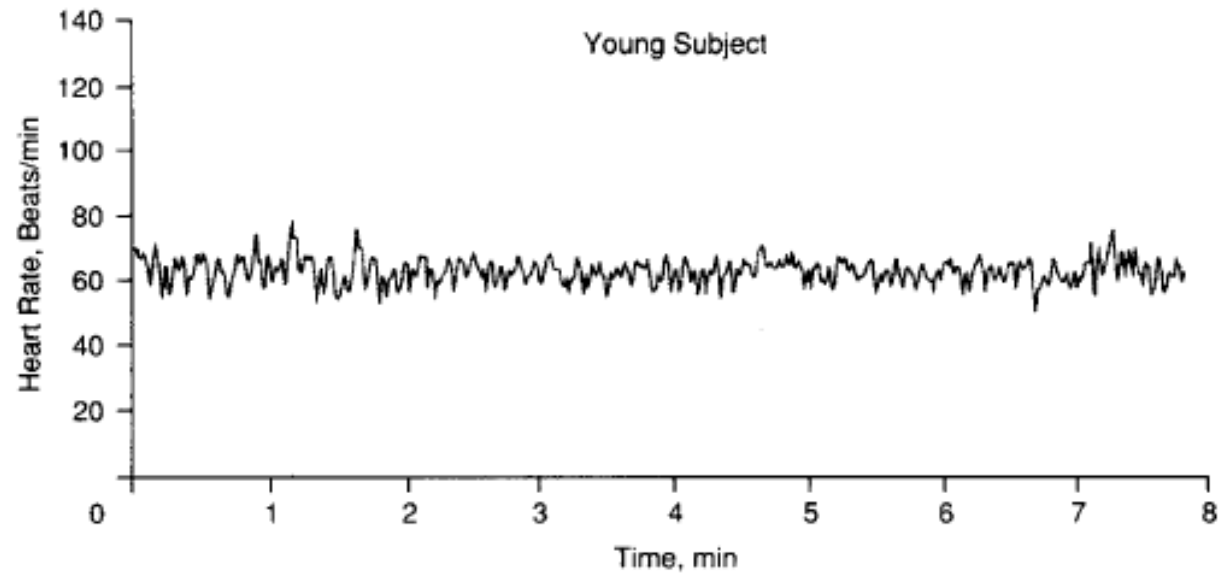


Measure

Dynamics of variables
reveal more
information

Average Heartbeat/min
young person 64.7; SD 3.9
old person 64.5; SD 3.8

Lipsitz & Goldberger,
1992



Identificeren van risico koeien

Measure

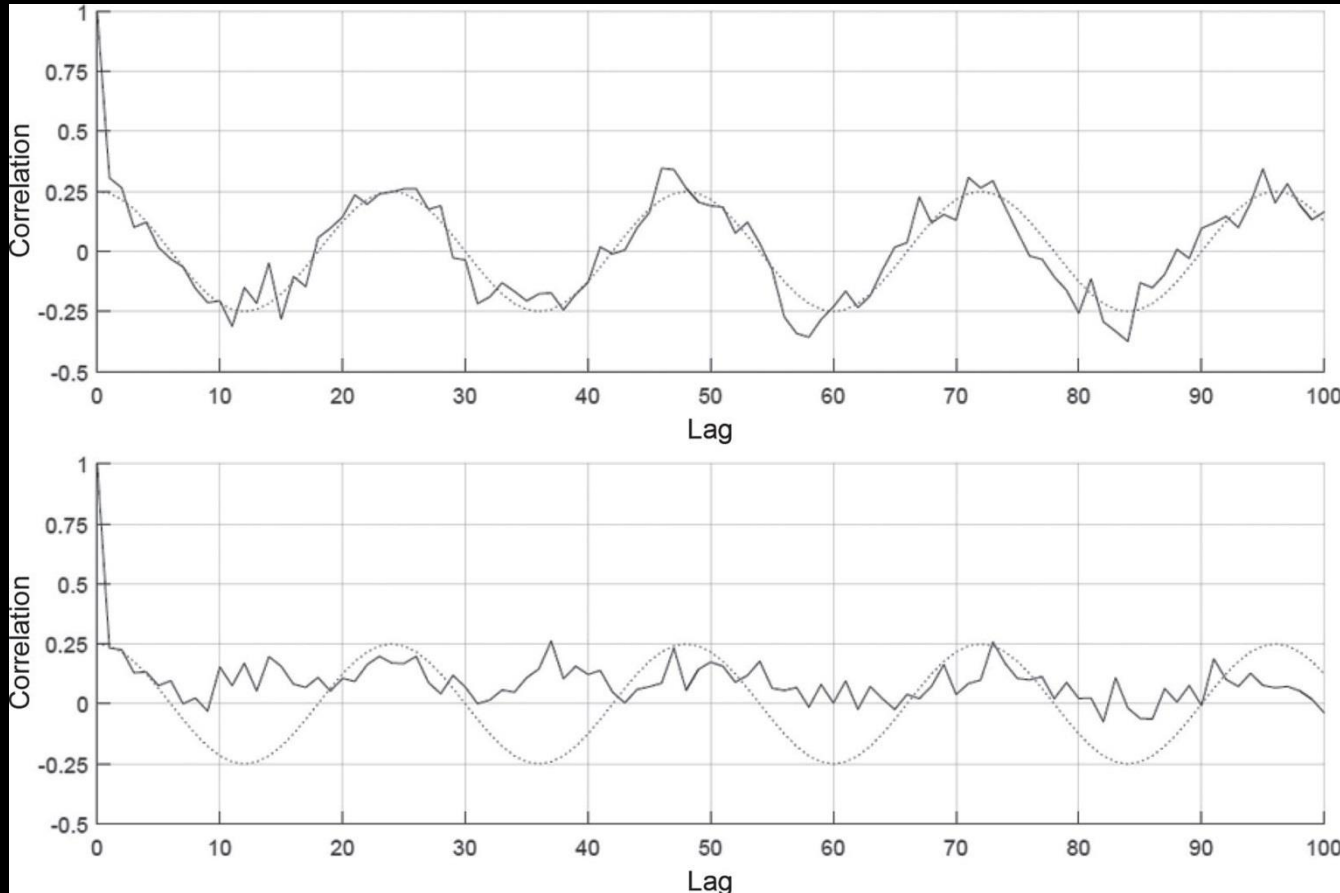
- Klinisch onderzoek
- Sensor data
- KoeKompas



Figure 1

Dagpatroon

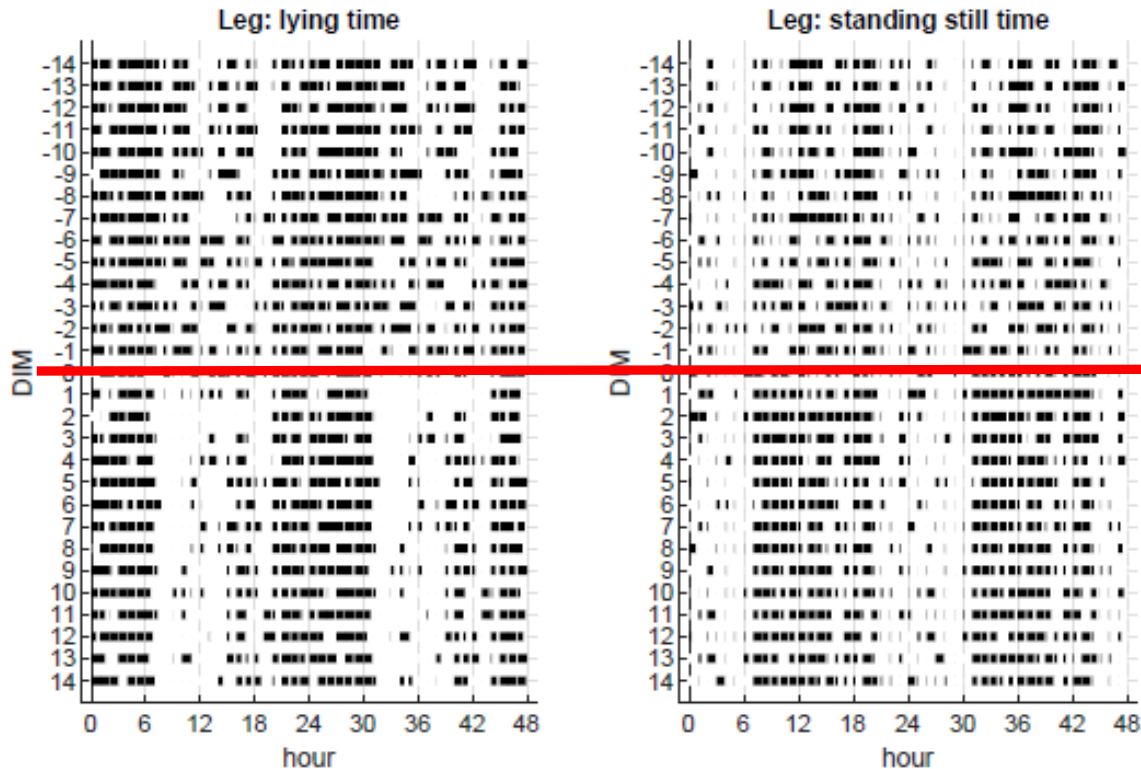
Measure



Vast dagpatroon voor afkalven:
Gezonde koeien na kalven


Geen vast patroon:
Meer problemen na afkalven

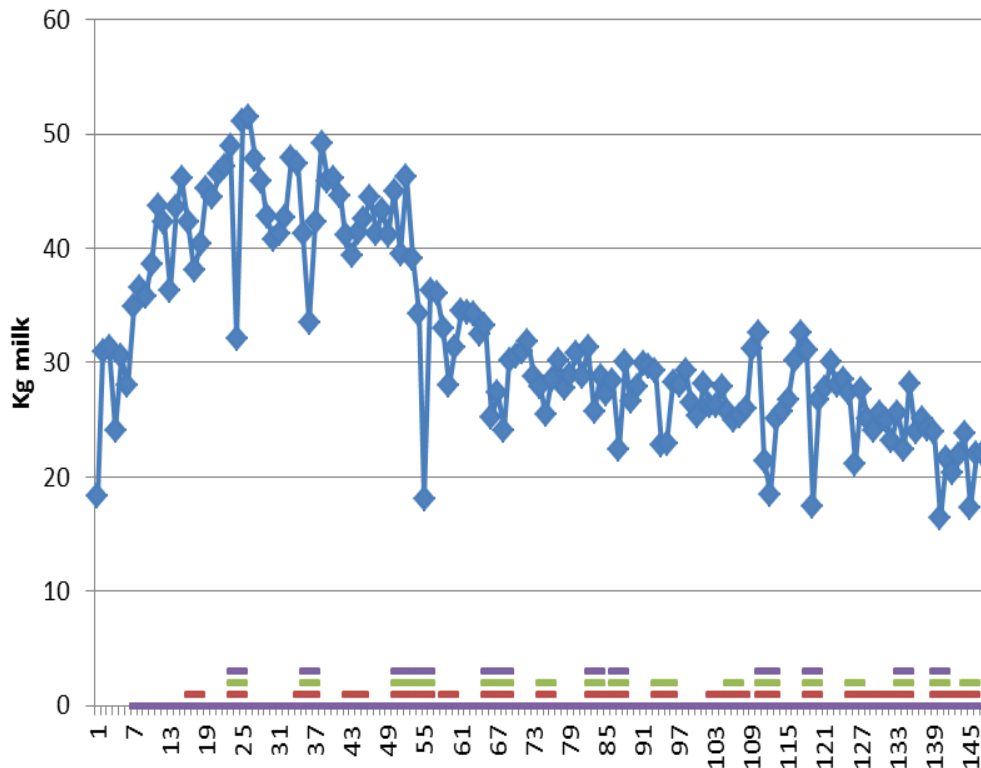
Verschil in vast dagpatroon voor en na afkalven



Research

Fluctuations in milk yield are heritable and can be used as a resilience indicator to breed healthy cows

G.G. Elgersma*, G. de Jong†, R. van der Linde†, H.A. Mulder*  



Minder fluctuaties =

- minder mastitis
- minder ketosis
- betere fertility
- Blijven 150 dagen langer op het bedrijf

Measure

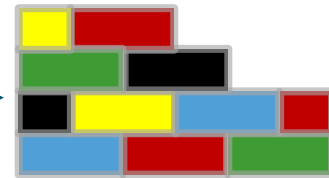
Kennis op Maat (KOM) - project

resilience



Decision Support System
Precision transition management

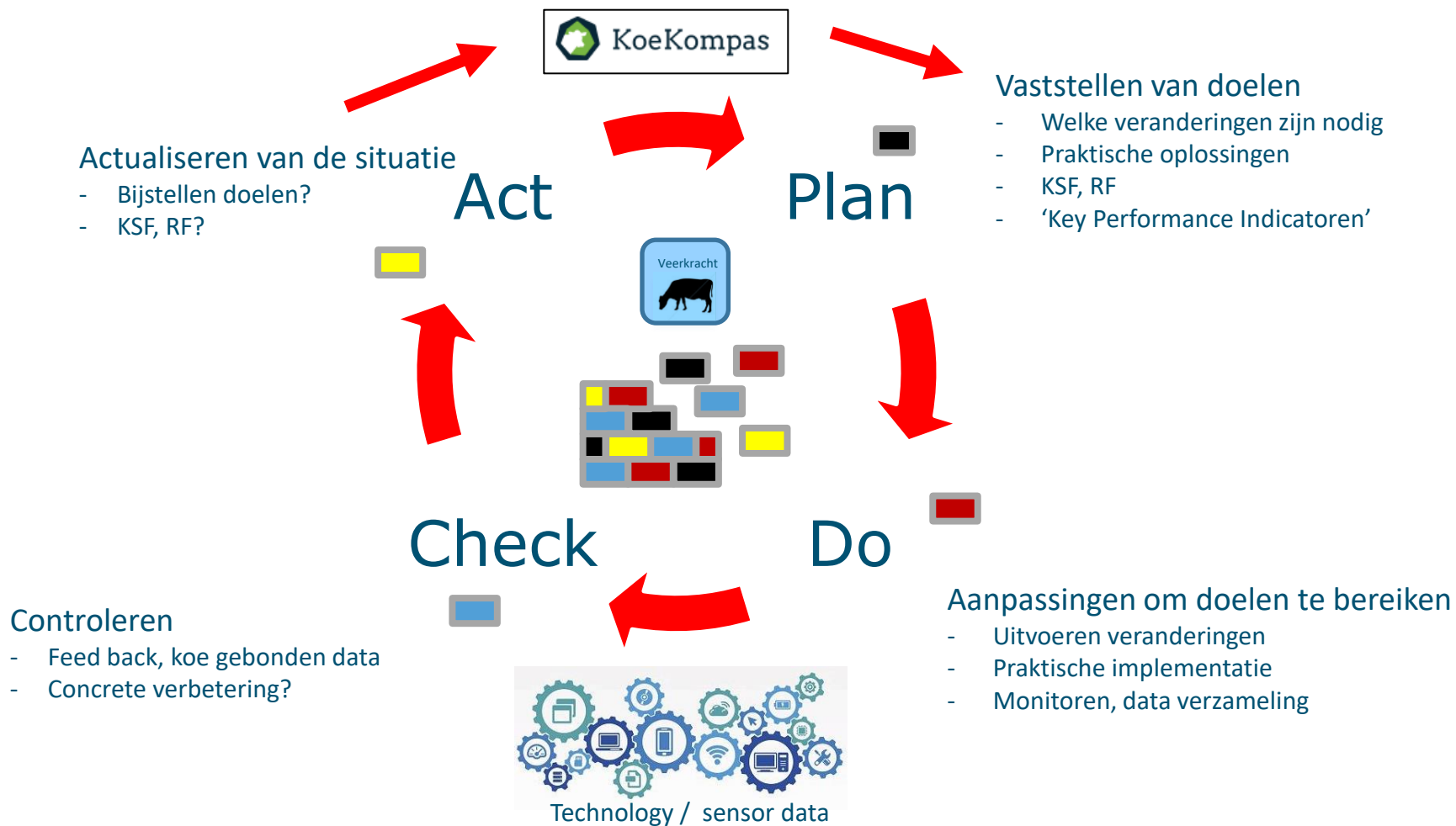
App



Sensordata



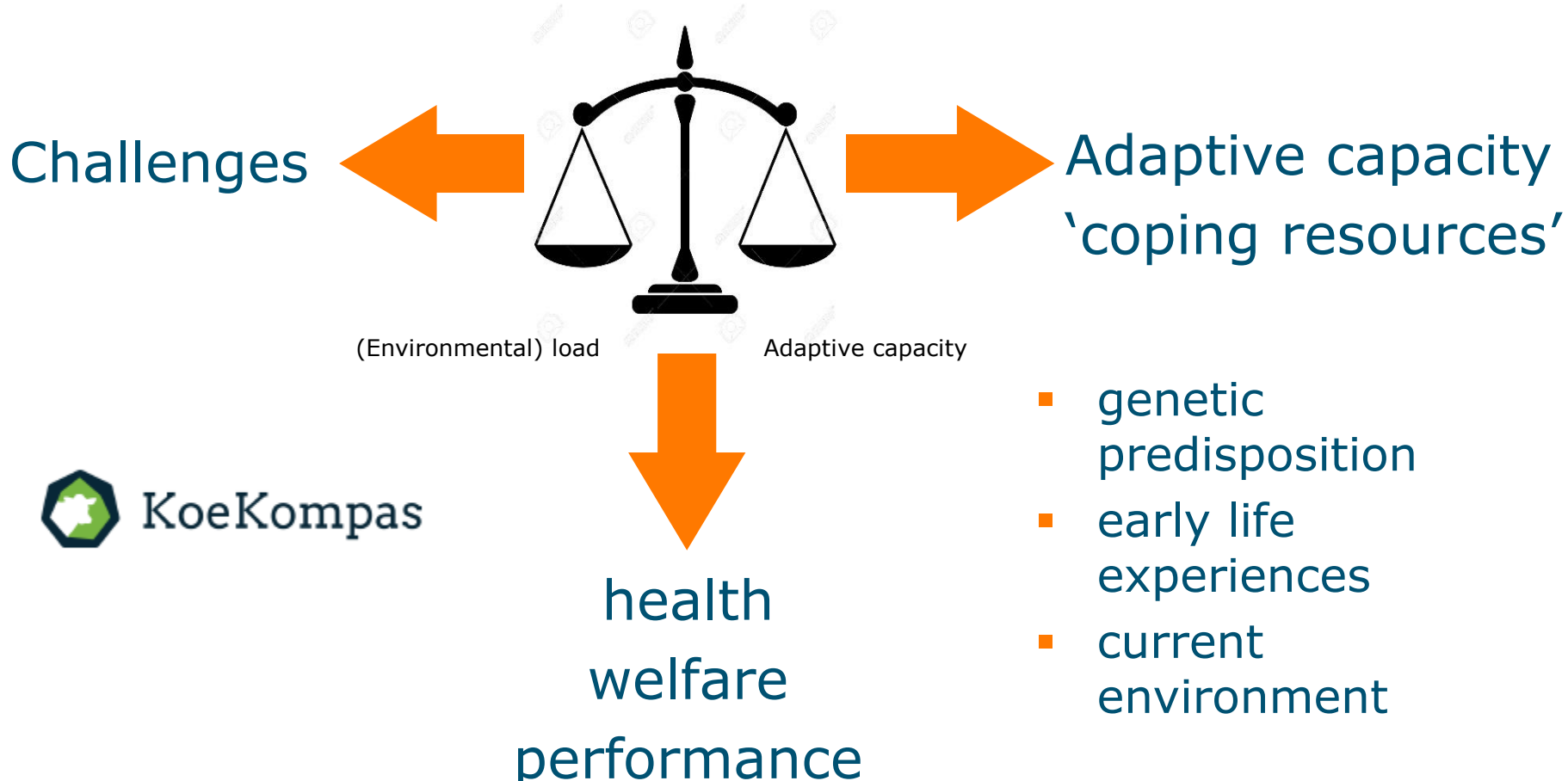
Ambitie: inbedding in management



Resilience: Balans tussen

draagkracht (adaptieve capaciteit) en draaglast

(management- en omgevingsdruk)



KoeKompass



WAGENINGEN
UNIVERSITY & RESEARCH



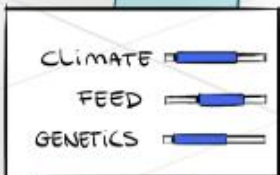
100years
1918 — 2018

Dank voor jullie aandacht

op KÖErs

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DESIGN
STIMULATE
FACILITATE



RESILIENT LIVESTOCK FARMING



DEVELOP IMMUNE SYSTEM



FEEDING STRATEGY



ENRICHMENT / HOUSING



GENOTYPE & GAINING EXPERIENCE