AARHUS UNIVERSITY

Space Herding

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Abstract

Human-wildlife-conflicts are increasing while natural resources are declining in regions were humans and megafauna still coexists. By incorporating Sentinel 1 and 2 satellites I will assess the historical, current and future grassland dynamics in an East African savanna landscape.

Combining Copernicus constellations of optical and radar sensors, with long-term data from third party platforms there could be a potential for monitoring the big herds of wildebeests from satellites through space and time. Furthermore, these satellite datasets can reveal patterns of human settlement expansions, agricultural area increases and desertification in areas surrounding protected national reserves.

Study Area - Mara-Serengeti Ecosystem

Keywords

- Remote sensing and GIS
- Multi-temporal imagery
- Satellite-derived proxies for animal movement
- Megafauna ecology
- Data fusion (vegetation index, backscatter..)
- Social Media Mining
- In-situ data
- Climate and human impacts
- Biodiversity and Ecosystem services
- Human wildlife coexistence
- Interdisciplinary research
- Restoring ecosystems
- African landscape management
- Big Data perspective
- World's most intact ecosystem

Objectives

- Identify spatial and temporal changes in biophysical inter- and intra-annual variations.
- Use Social Media Mining as ground validation for mapping ecological events.
- Quantify the extent of desertification in Masai Mara.
- Quantify the habitat exclusion effects from tourist camp in riparian forest zones.
- Quantify local spatial vegetation changes by livestock encroachments into protected areas.
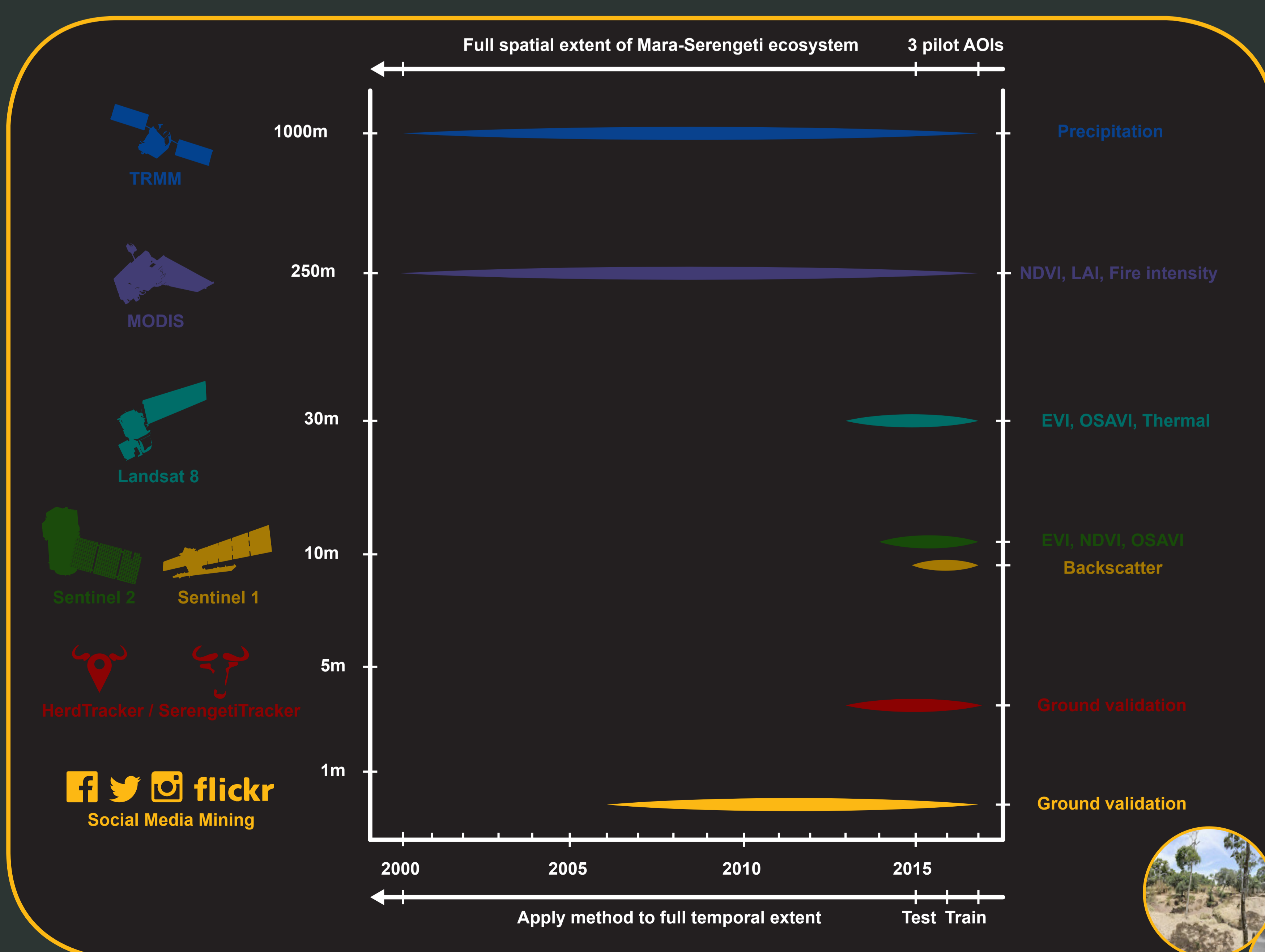- Provide detailed landscape connectivity analysis from high-resolution satellite imagery.
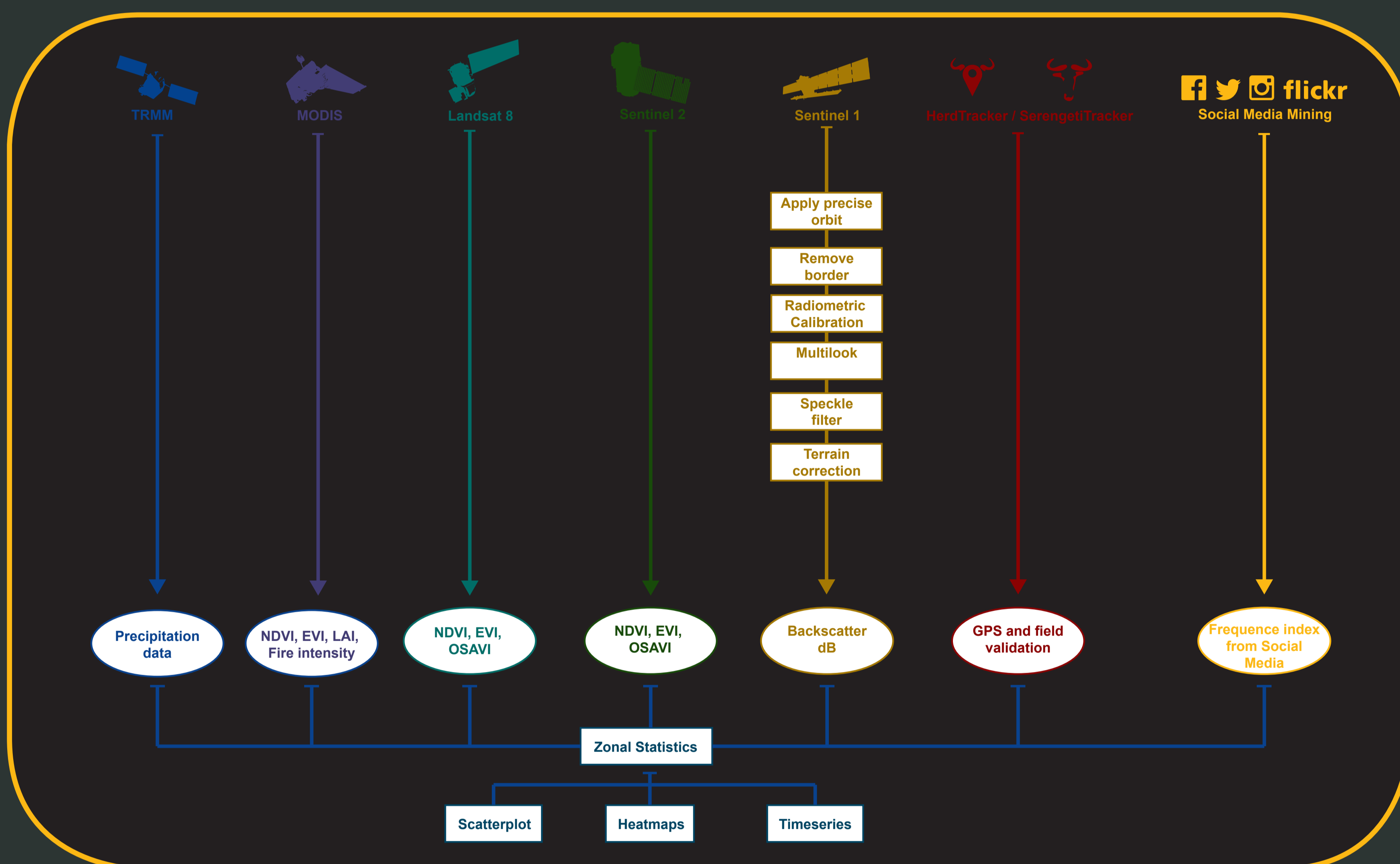
Data work flow - current focus on combining Sentinel-1 and -2 data
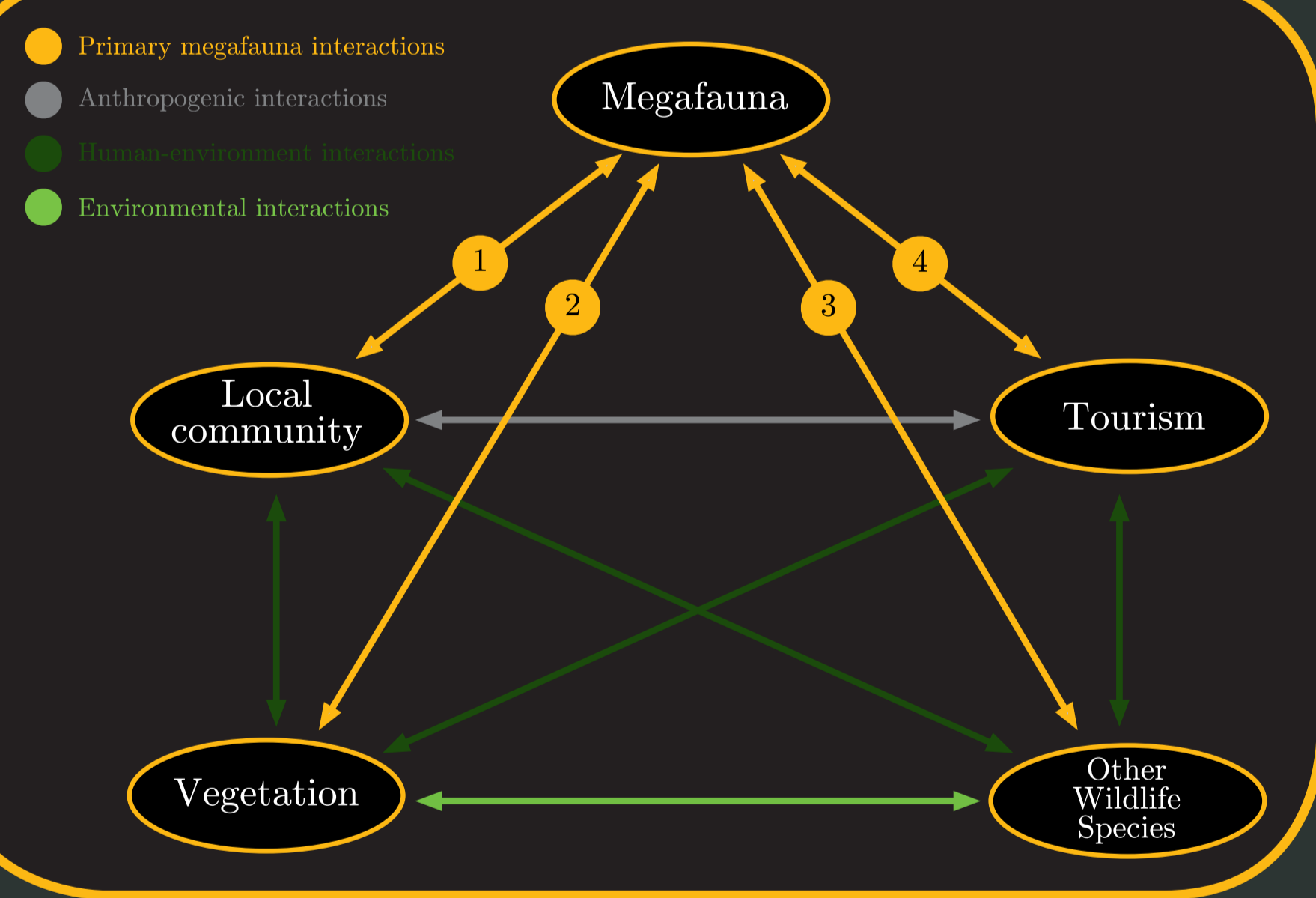
Relevant savanna ecosystem interactions

Data Integration and work flow in the Space Herding Project
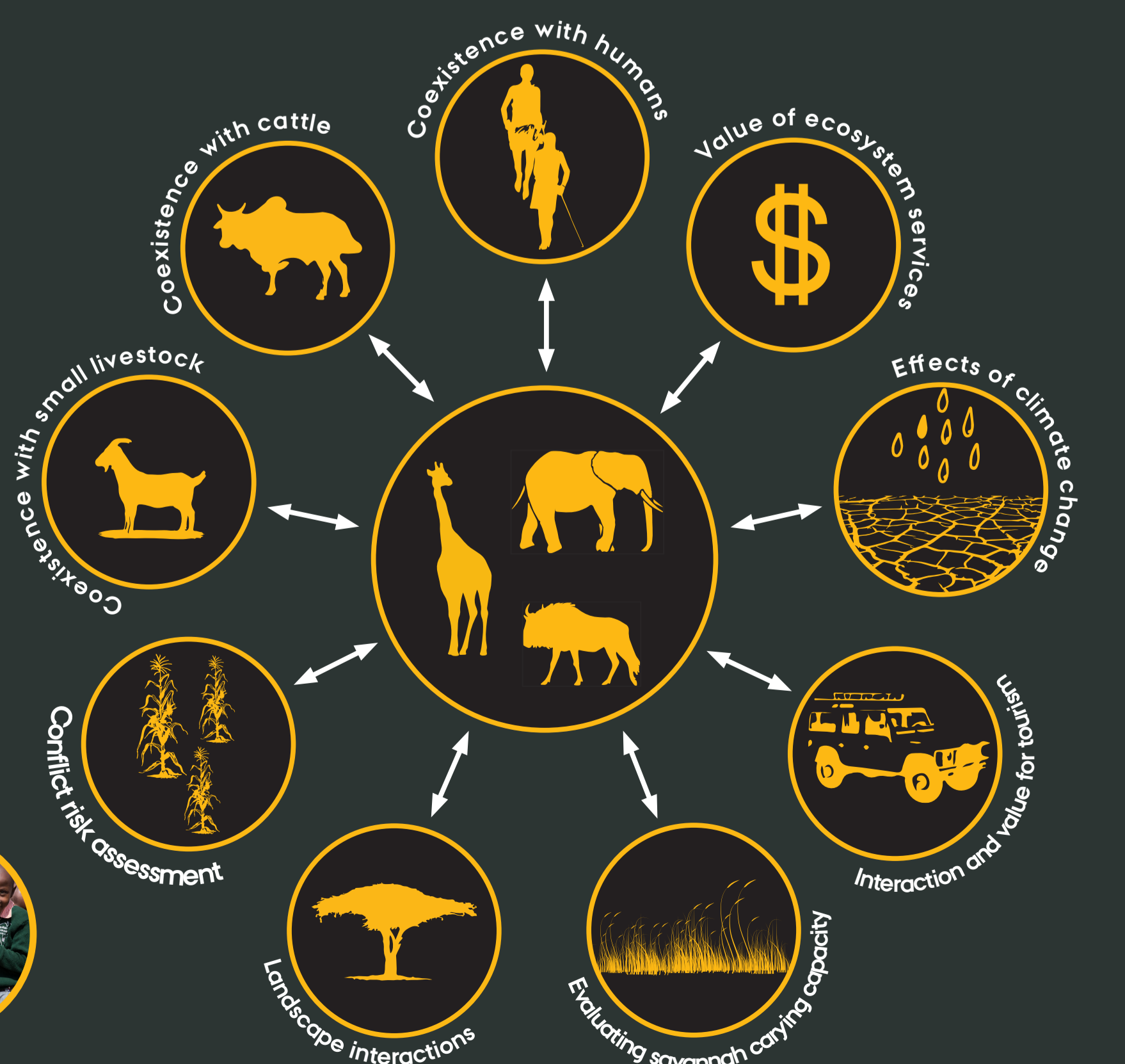
Socio-economic focus points for space herding in Masai Mara