Data Visualization

TASK ABSTRACTION

Outline

Motivation

Goals and tasks

Actions and targets

Motivation

Tasks are typically described with the domain language

Transforming them into abstract form allows you to reason about similarities and differences between them

Without abstraction, all tasks are different

- o Epidemiologist: "*Contrast the prognosis of patients who were intubated in the ICU more than one month after exposure to patients hospitalized within the first week*"

- o Biologist: "*See if the results for the tissue samples treated with LL-37 match up with the ones without the peptide*"

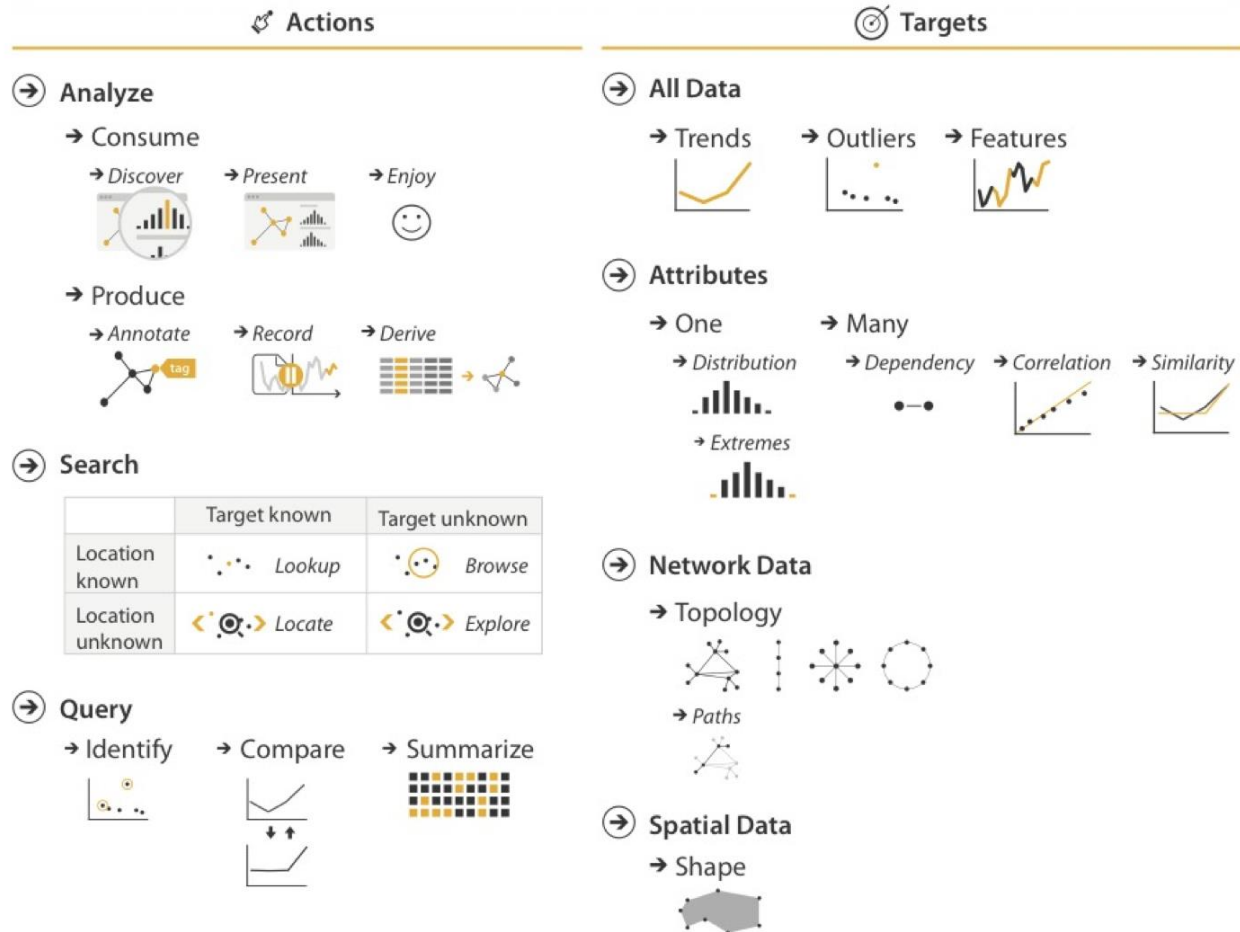- o Both: "*Compare the values between two groups*"

Goals and tasks

Visualization tasks are activities to be carried out on a visual data representation for a particular goal

Goal: *"Understand the extent and overlap of ranges of six wolf packs"*

Task: *"Show the movements of the wolf packs on the map with the ability of looking at each pack separately"*
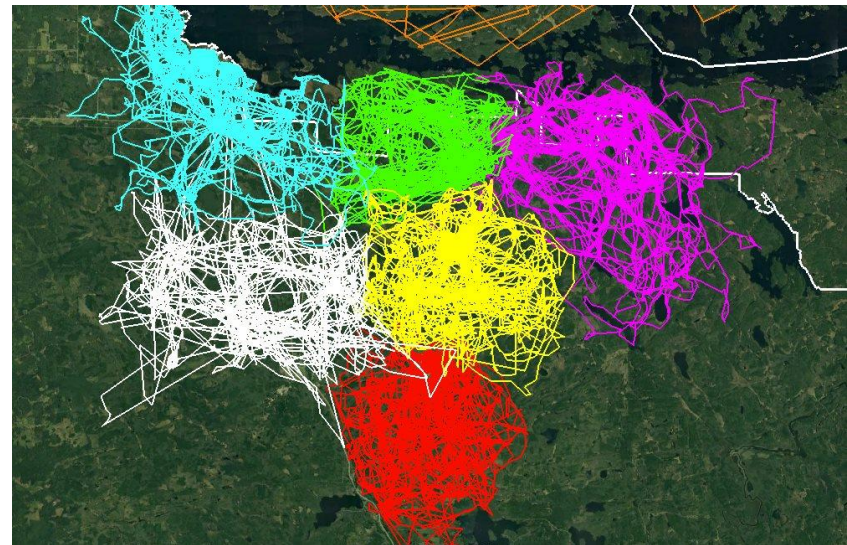
Actions and targets

Actions: Analyze

High-level actions

Consume (most often)
- Discover = find new knowledge
- Present = communicate information
- Enjoy

Produce
- Annotate
- Record = capture elements as persistent artifacts
- Derive (transform) = produce new data elements based on existing ones

Actions: Search

Mid-level actions

Search

	Target known	Target unknown
Location known	Lookup	Browse
Location unknown	Locate	Explore

Search
- o **Lookup** (look up humans in the phylogenetic tree of animals)
- o **Locate** (find rabbits in the phylogenetic tree of animals – they are not rodents!)
- o **Browse** (find the closest relative to rabbits in the phylogenetic tree of animals)
- o **Explore** (find unexpected classifications the phylogenetic tree of animals)

Actions: Query

Low-level actions

Query
- o Identify single target
- o Compare multiple targets
- o Summarize multiple targets

Targets
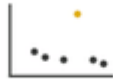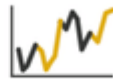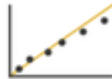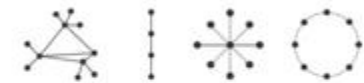
Target = some data aspect that is of interest to the user

Implications for design

Design choices highly depend on the goals and tasks