Persona: Scientist

Bob is an experienced environmental scientist specialising in urban sustainability transitions and nature-based solutions (NbS). With more than 10 years of research experience and multiple publications in ecological urbanism, Bob conducts comparative analyses of NbS performance across cities. His expertise spans ecosystem service modelling, geospatial methods (GIS), climate adaptation modelling, and mixed-method evaluations of urban interventions.

He frequently works with complex datasets, urban case studies, and geospatial indicators, often needing integrated, interactive tools that allow him to combine spatial patterns with multi-criteria evaluation.

Bob's Research Goals and Analytical Needs

Bob's research focuses on producing generalisable evidence about the effectiveness of NbS, answering questions such as:

- Which NbS types yield the highest resilience benefits under different climatic, ecological, and socio-economic contexts?
- How do governance models, funding structures, and implementation scales influence success?
- Where do mismatches exist between NbS needs (e.g., flood risk, heat islands) and actual deployment?

Specifically, his goals include:

1. Pattern Identification in Urban NbS Deployment

Bob needs to identify:

- *Spatial clusters of NbS across countries and cities*
- *Underrepresented geographies (e.g., low-income districts with few interventions)*
- *Typological trends (e.g., blue vs green infrastructure; social vs ecological NbS)*

2. Multi-Criteria Evaluation

Bob compares alternatives using environmental, economic, and social metrics, including:

- *Cooling impact, biodiversity enhancement, CO_2 reduction*
- *Implementation or maintenance cost*
- *Social inclusion, accessibility, and public use evidence*

He needs coordinated views to weigh and balance criteria during evaluation.

3. Evidence Synthesis Across Case Studies

Bob frequently conducts:

- *Cross-city comparisons*
- *Effectiveness benchmarking*
- *Meta-analysis for policy recommendations*

He needs the ability to drill down from aggregated views to individual case details.

4. Data-Driven Storytelling for Academic Output

His publications require:

- *Clear figures and maps conveying spatial and typological insights*
- *Comparative visualisations showing trade-offs*
- *Exportable results that can be used in research papers and conference presentations*

Connection to the Naturvation Atlas Dataset

The Naturvation Atlas provides real-world, structured NbS cases across diverse European cities, including attributes such as:

- NbS type & category
- City & country
- Intended benefits (biodiversity, heat mitigation, recreation, water retention)
- Governance & stakeholder roles
- Funding mechanisms
- Scale & implementation year
- Outcomes, where available

For Bob, this dataset is especially valuable because:

- It mirrors the heterogeneity of real-world NbS (useful for evidence synthesis)
- It contains enough attributes to support multi-criteria decision analysis (MCDA)
- It allows cross-city comparison across governance, environmental, and socio-economic contexts

How Bob Would Use the Dataset

1. Explore Patterns – INTELLIGENCE Stage (Hypothesis Generation)

Bob uses the visualisation tool to:

- Identify spatial inequities in NbS deployment (e.g., wealthier districts receiving more interventions)
- Detect clusters of specific NbS (e.g., high prevalence of green roofs in northern Europe)
- Compare NbS types across climate zones, looking for adaptation mismatches.
- Explore whether certain NbS are systematically associated with specific urban morphologies (e.g., high-density vs suburban)

In this stage, Bob forms hypotheses such as:
"Cities with higher heat-vulnerability indices tend to adopt cooling-heavy NbS (e.g., urban forests, green corridors)."
He needs exploratory, flexible filtering and spatial overviews.

2. Evaluate and Compare – CHOICE Stage (MCDA / Comparative Analysis)

Bob employs the tool to perform comparative evaluations using linked visualisations:

- Rank NbS alternatives by environmental impact, cost-efficiency, or co-benefits
- Compare how similar NbS types perform across different governance models

- Adjust criteria weights interactively (e.g., prioritising biodiversity > cost) to simulate decision scenarios

This mirrors real scientific MCDA processes, such as:
- Weighted linear combination
- Pareto frontier analysis
- Trade-off curve analysis

3. Case Study Investigation – Evidence Deep-Dive

Bob investigates individual NbS implementations to answer:
- What funding models tend to succeed?
- How do multi-stakeholder governance structures affect outcomes?
- Which NbS types have replicability across cities?

He needs:
- Details-on-demand
- Chronological implementation timelines
- Consistent metadata views

These are essential for preparing academic case study comparisons.

4. Build Evidence for Publications – Knowledge Synthesis

Bob uses the visualisation tool to generate:
- High-quality visual summaries (exportable charts/maps for publication)
- Comparative charts for conference presentations
- Insight narratives for urban sustainability reports
- Spatial overlays that highlight mismatches between urban risks and NbS deployment

This aligns with core scientific needs: persuasion, clarity, and methodological transparency.

Why This Persona Is Ideal for the Project

1. Scientists rely on data-driven decision-making.

The Naturvation Atlas is inherently structured for systematic comparison, which matches scientific workflows.

2. They require deep exploration & transparent MCDA.

Bob values:
- Linked visualisations
- Transparent criteria
- Reproducible insight trails

3. Scientists are heavy users of exploratory visual analytics tools.

Bob's workflow mirrors the core purpose of the project:
supporting complex, multi-attribute decision-making in an intuitive, interactive environment.

4. They are ideal evaluators of NbS performance.

Because Bob is trained in:

- urban ecology
- GIS
- sustainability impact modelling

He understands and benefits from the data in depth.

5. The Scientist persona allows for sophisticated visual encodings.

Unlike a policymaker or a real estate developer (who need simpler UI),
Bob uses:

- multi-layer maps
- comparative matrix charts
- interactive scatterplots
- parallel coordinates
- MCDA panels