

SAIEE Load research chapter

Current state of LR in SA and the future

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Overview

- Covers personal research exposure by author with Eskom, Business, Municipalities, Universities, Consultants, CSIR.
- Typically 70% of LR time & effort gathering data. Need to change this.
- The topics are complex. Deal with bare-bones only.
- Collaboration and re-use of data is the key.

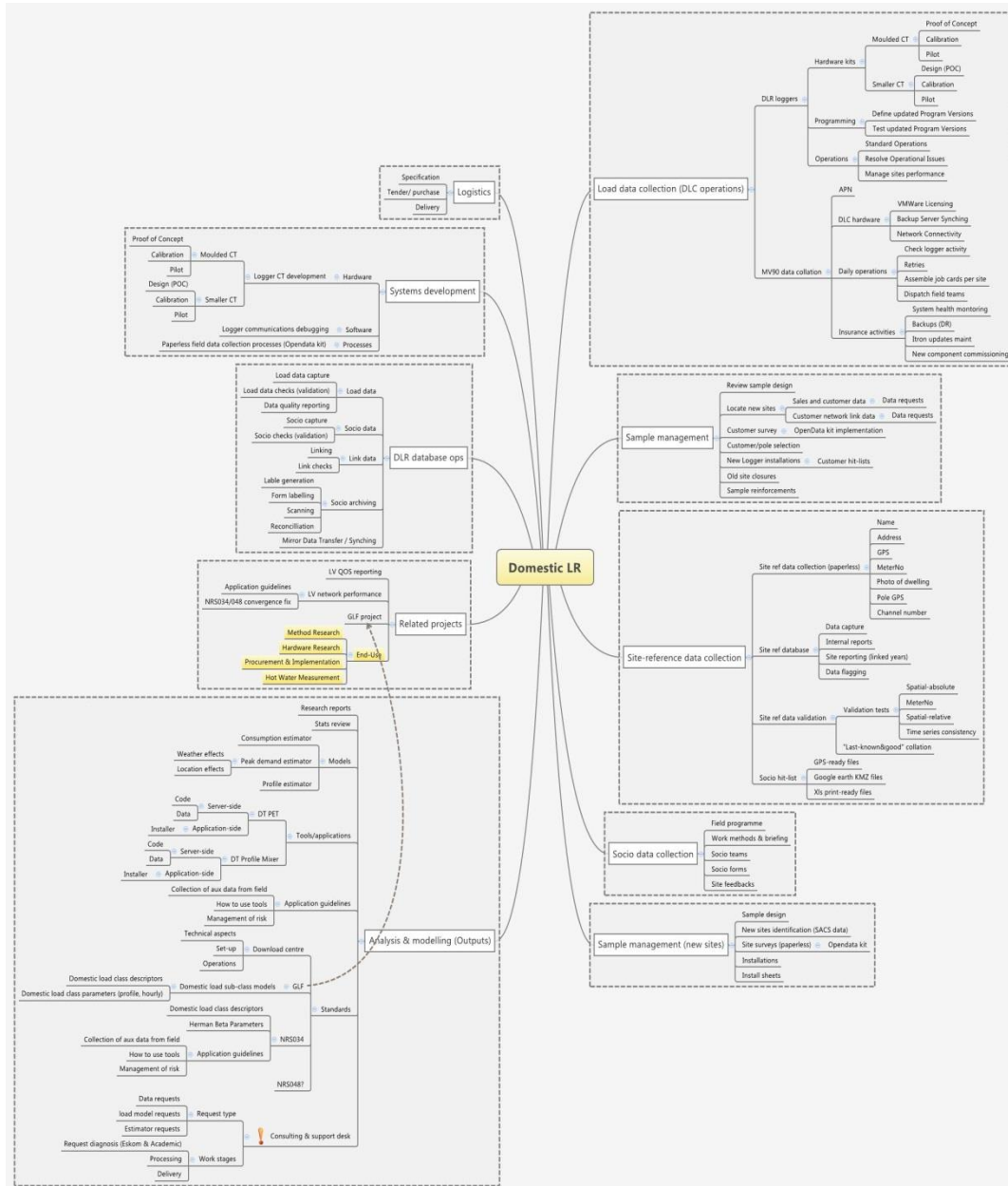
Content

- Definitions
- Domestic Load research
- Industrial and commercial load research
(Large power users)
- Small power user load research
- Concept of a LR Hub
- Closing thoughts

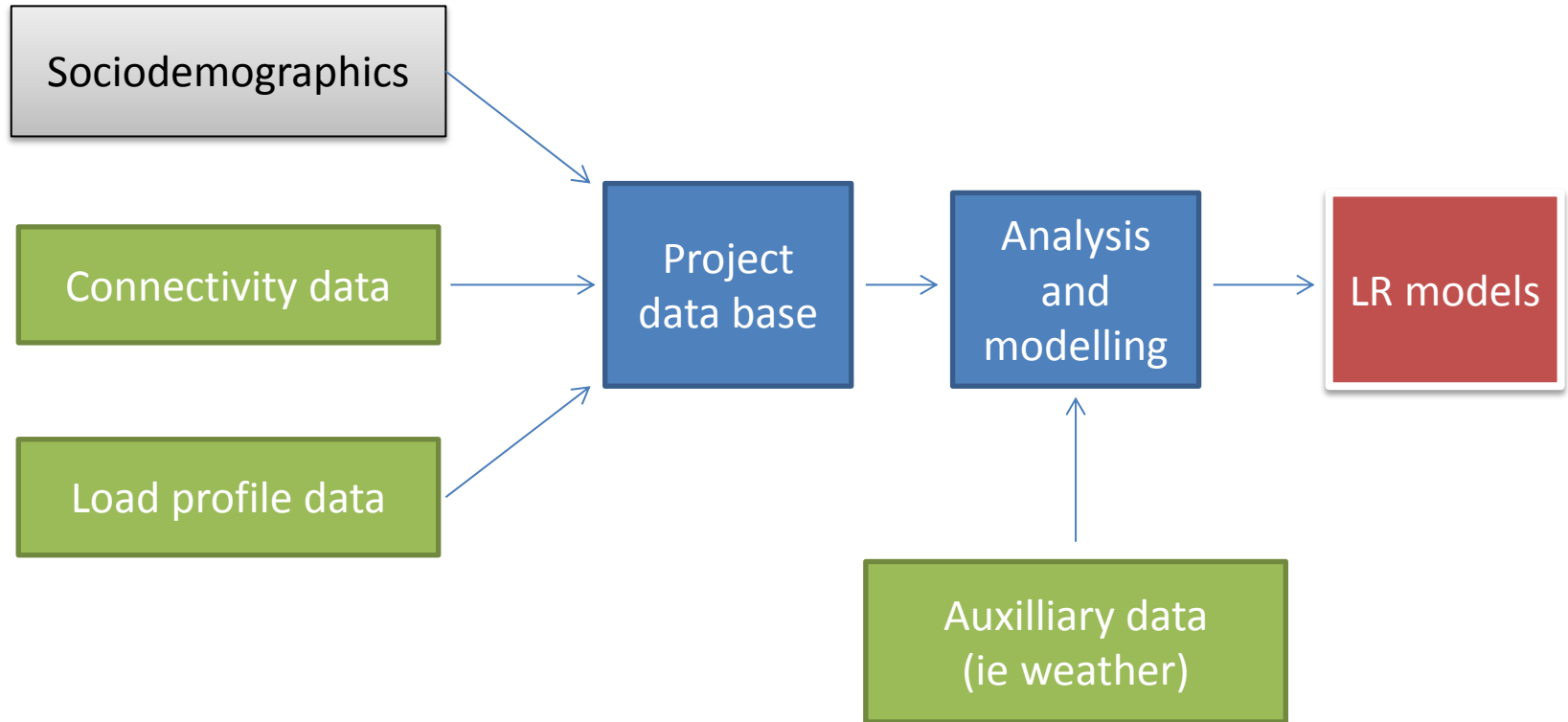
Some definitions

- Domestic: Primary use residential
- Large power user: Users $>5\text{MVA}$ MD
- Small power user: Users $<5\text{MVA}$, non-dom.
- Load model: Mathematical representation of load.

Load research is complex



Domestic Load research (current state)



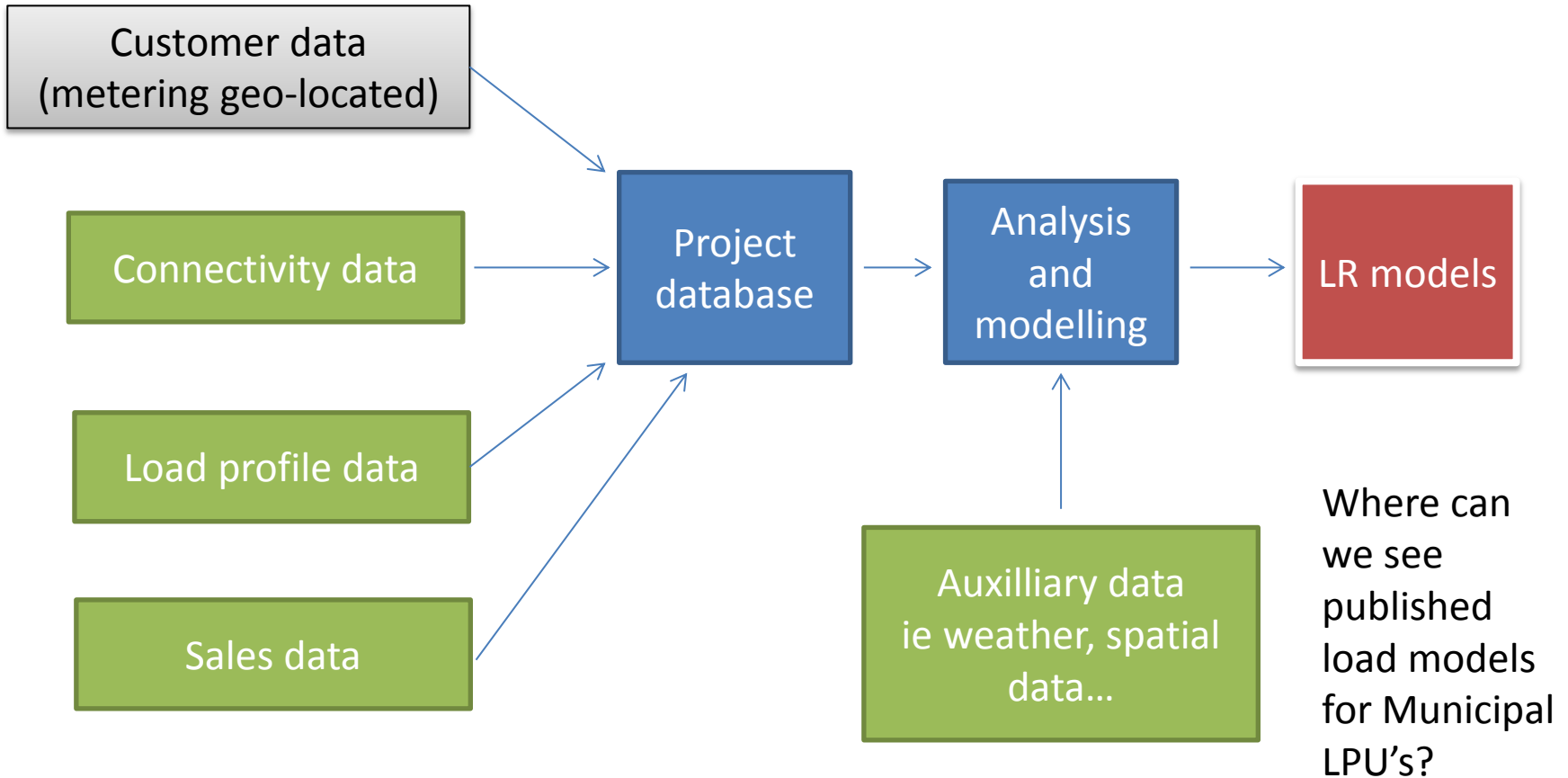
All 16 “live” sites is currently Eskom customers.

Stats for SA (2014)
15m “households”.
9m dwellings.

Domestic Load research (what's required)

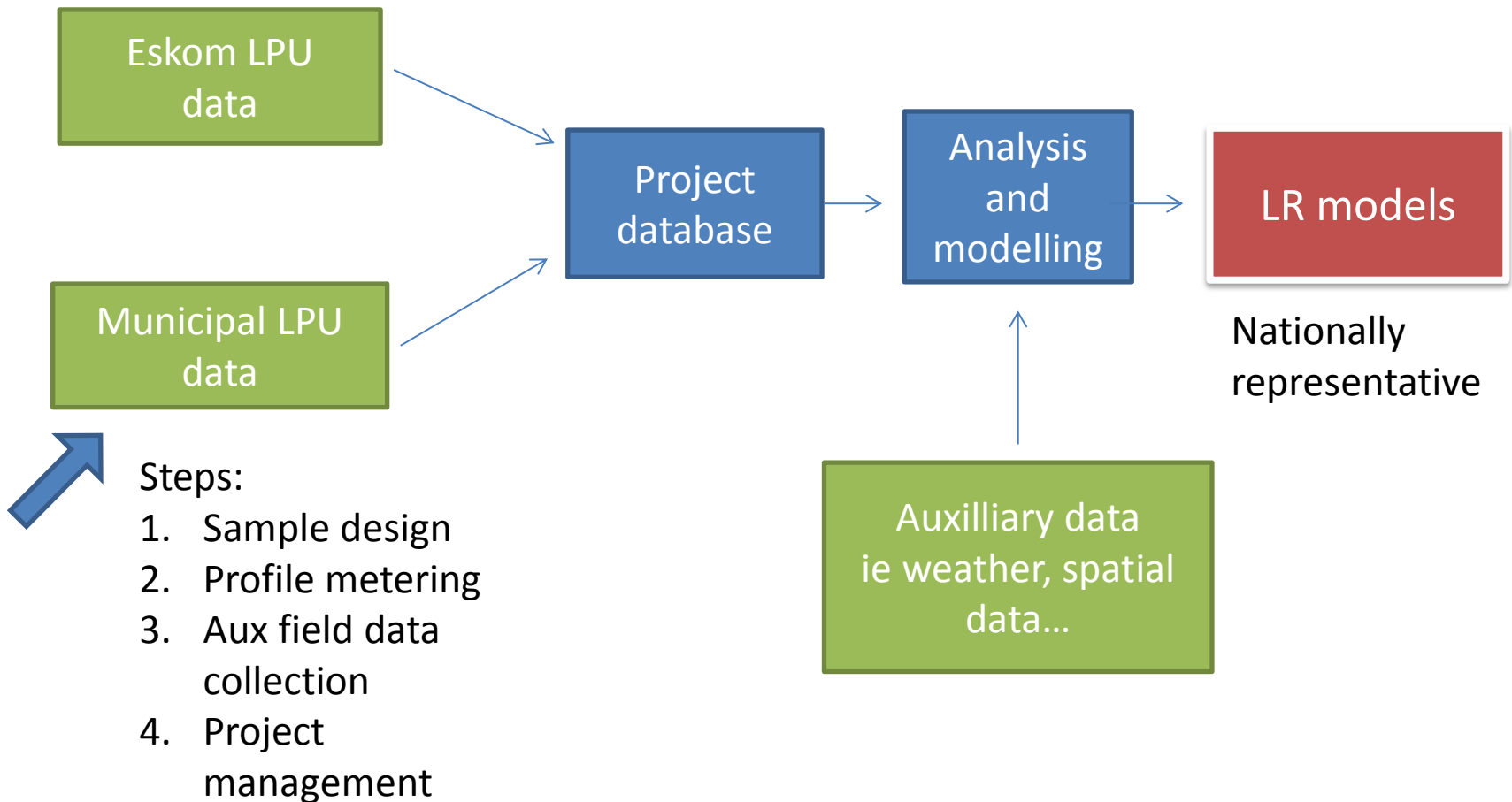
- Representative live sample for SA.
- 26 or more live sites, with remaining 10-12 from Municipal customers.
- 360 additional loggers.
- Collect Sociodemographics each year (>1620 interviews) .
- Increase scope to track renewables.

Large Power User load research (current state)



15,000-20,000 Eskom customers analysed.
Load subclass models published into GLF standard

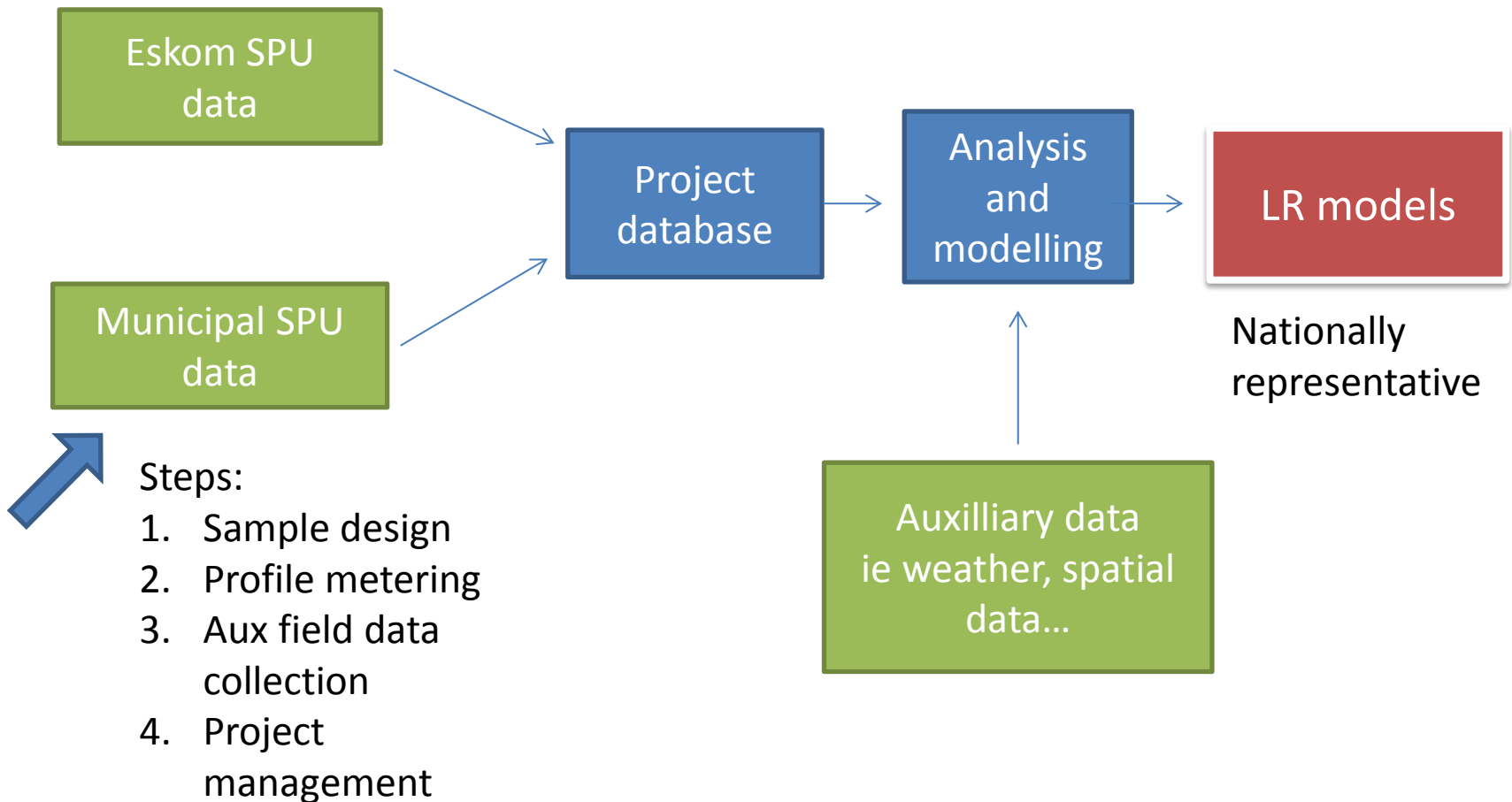
Large power user load research (What's required)



Small power user Load research (Current state)

- Estimate 10 times more SPU 's than LPU's
- No published load models for SPU's.
- Most rural distribution lines carry these customers.

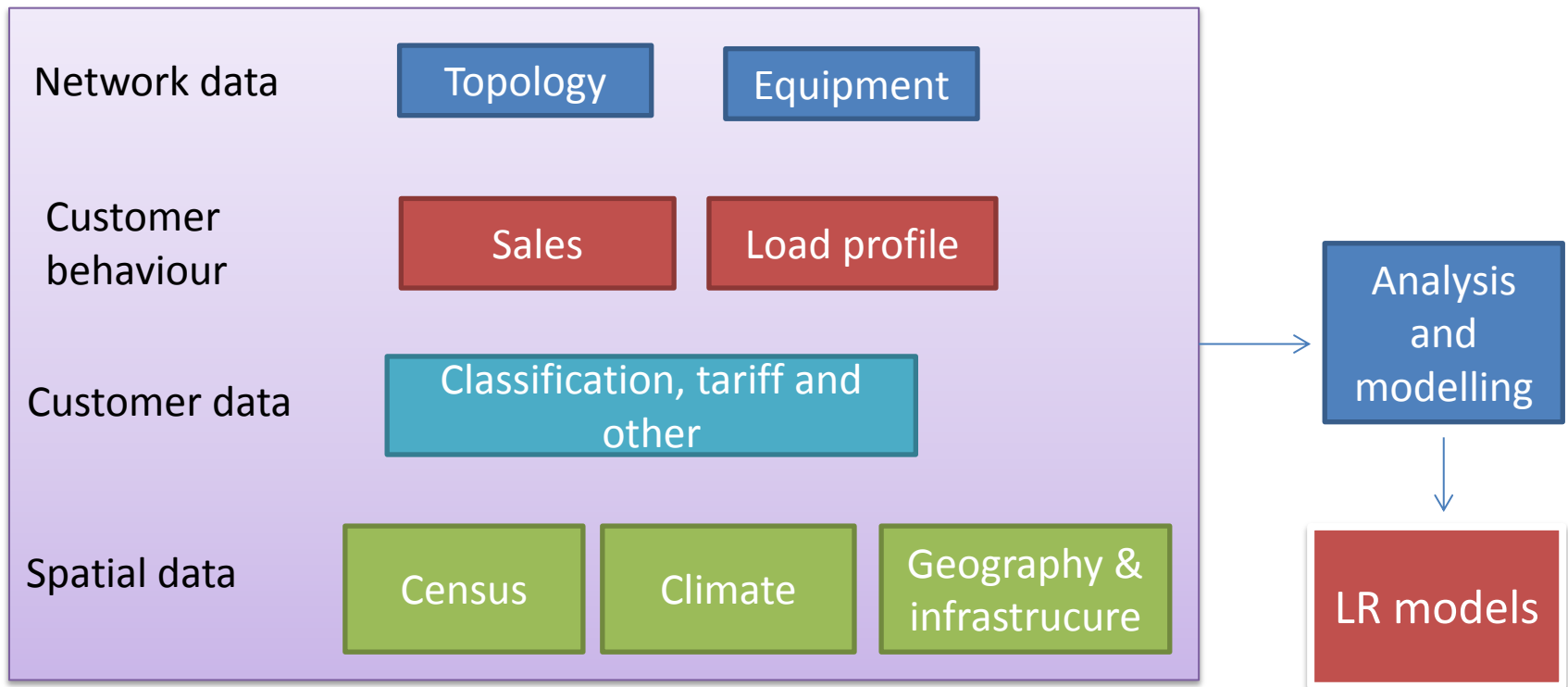
Small power user Load research (What's required)



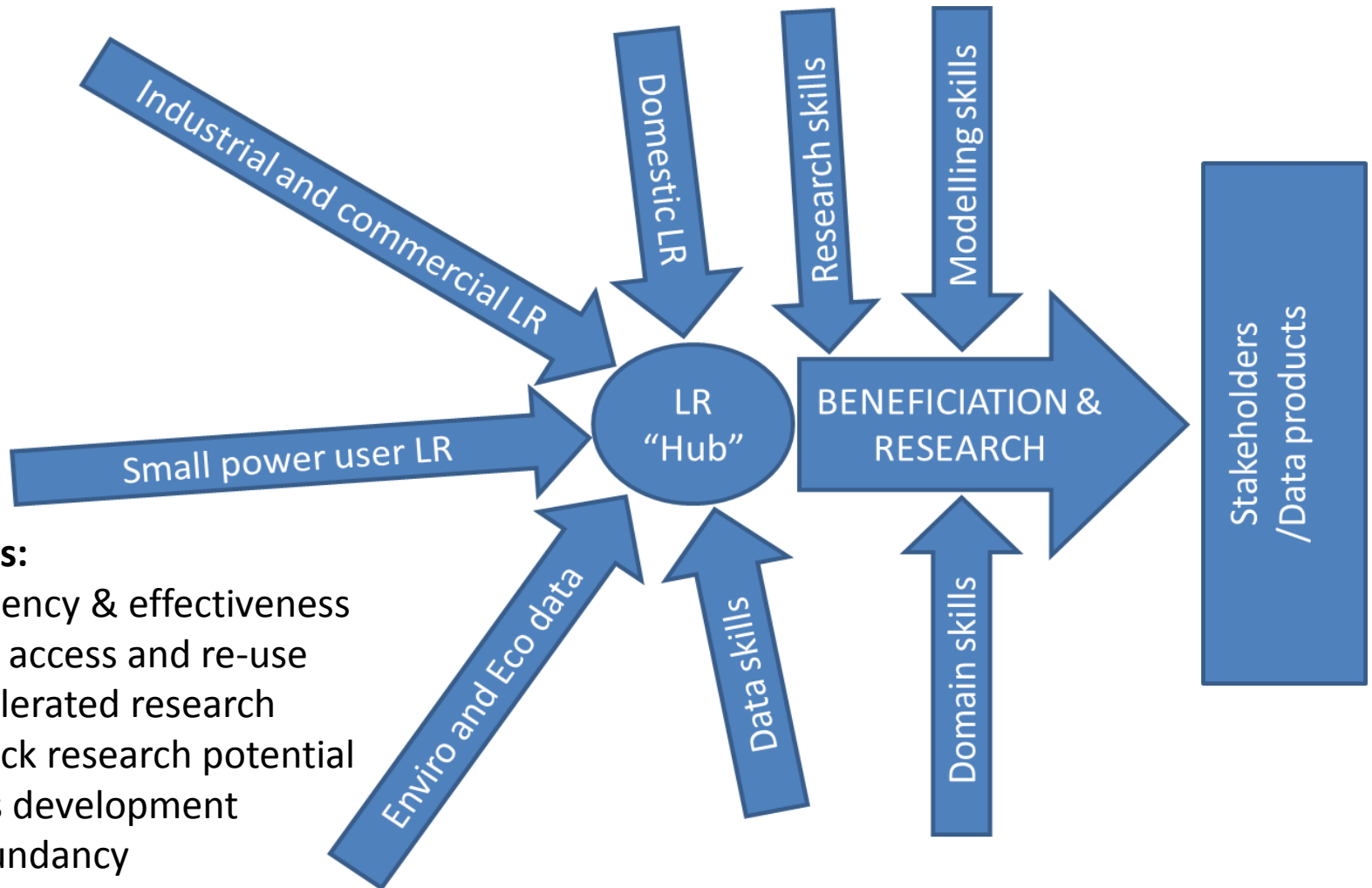
Load research Hub

(Sample of current state)

Project database



Load research Hub (Future state)



Features:

- Efficiency & effectiveness
- Data access and re-use
- Accelerated research
- Unlock research potential
- Skills development
- Redundancy

Conclusions

- Future networks wont be ready for future loads (ie Renewables and tech).
- Supplementary energy and storage sources are arriving (renewables, gas, battery).
- Must understand and broadcast changing customer behaviours.
- Need to collaborate and coordinate under common standards.
- Obtain funding with business case/s.