

## A Appendix: Grounded Theory Method

Grounded Theory (GT) [50, 51, 22] is a method for qualitative analysis of data aimed at providing a systematised approach for constructing a theory about phenomena or a question of interest firmly grounded in (i.e. linked to) the collected data (e.g. via observations, interviews, reports, etc.). Here, a theory “states relationships between abstract concepts and may aim for either explanation or understanding” [22] (p. 228). Briefly stated, the key notions of GT [50, 51, 22] relate to:

- Theoretical sampling: a purposeful selection of sources and collection (i.e. sampling) of additional data for analysis which is expected to be relevant to the notions under analysis.
- Coding: the process of examining the data, and breaking it down into small portions (e.g. from individual text lines to a few sentences) and assigning labels (called codes) to each portion.
- Constant comparative analysis: the codes are continuously compared and contrasted, as they emerge when data is examined. As a result of this process, data is collated into conceptual categories, and links/relationships between the categories are identified. Unlike many other qualitative analysis approaches, there is no restriction on what themes/categories are considered as relevant, so all emerging categories are acknowledged and considered. Throughout the analysis process, the reflections of the analysts are recorded into memos.
- Conceptualisation and abstraction: development of theories that emerge from the abstraction and review of the coding results and memos.

Presently, there are three main strands of GT in practice, which differ substantially in a philosophical worldview (e.g. objectivist [50] vs. constructivist [22]) and processes (e.g. could the researcher study the relevant literature prior to data analysis). A recent study by Stol and colleagues has proposed a set of good practice guidelines for GT [52], suggesting that each study that uses GT should detail from which specific strand it draws and how it carries out data collection and analysis, as well as theory building and evaluation.

The grounded theory approach used in this study draws on work of Charmaz [22] and guidelines by Stol et. al [52], whereby the *initial research question* for the study is set, although it can evolve throughout the study. The researchers had also carried out a full *literature review* on skills shortages within the SLES, looking both at the models used for skills shortages analysis, [53] as well as various “smart” energy services, such as DSR [15, 54] and peer-to-peer energy trading [13].

The interviews (both for stakeholders and for the citizens) were first piloted with a few participants to validate the questions and the process. The feedback from these pilots was used to improve the interview structure and questions. Thereafter, the interview data collection was carried out as full studies (again, for both stakeholder and citizen categories). The results of the interviews were analysed and a set of casual loop models were derived to demonstrate the SLES adoption process within the specific SLES subarea in Bristol, along with the set of skills’ requirements.