This seminar is a self-contained presentation, starting with a bird's eye view of Service Engineering and Telephone Call Centers. Then some empirical findings of service systems will be presented, which motivate or are motivated by (or both) interesting research questions. These findings give rise to model-features that are essential to capture in useful service models, for example customers' (im)patience, time-varying service demand (predictable variability), heterogeneity of customers and servers (skills-based routing), over-dispersion in Poisson arrivals, generally-distributed (as opposed to exponential) service- and patience duration, and more. Empirical analysis also enables validation of prevalent models and protocols, either supporting or refuting their relevance and robustness.

Our main data-source is a repository of call centers data, that has been developed through a joint effort at Wharton and the Technion. The data is unique in that it is transaction-based: it details the individual operational history of all the calls handled by the participating call centers. For example, one source of data is a network of 4 call centers of an east-coast bank, spanning 2.5 years and covering over 800 agents; there are 218,047,488 telephone calls overall, out of which 41,646,142 where served by agents, while the rest were handled by an IVR = Interactive Voice Response.

Data-bases of call centers are inadequate for operational analysis. To support the latter, a universal data-structure has been designed and implemented, under the heading Data MOCCA= Data Models for Call Centers Analysis. (See
http://iew3.technion.ac.il/serveng2006W/References/DataMOCCA.pdf)

The friendly and remarkably flexible user-interface of Data MOCCA will be demonstrated, in particular its ability for online analysis at resolutions that span the whole range from single seconds to months.