2st Seminar – Structural Modeling

1 Background

We are engineers at the newly founded *Shopping Experience Ltd.* We provide a cloud-based *price matching service* ("who sells this cheaper?") free of charge, where users of our smartphone app may scan product barcodes (optionally entire price tags) while browsing the aisles of a shop or supermarket, and we retrieve real-time price matching for the same or similar product from other retailers.
We plan to continuously extend our network of retailer partners who accept and promote usage of this app as a *self-checkout* mechanism. Users may indicate via the app which scanned items they want to add to their cart; the app will provide a running total, as well as greatly expedite the checkout and payment phase. The device uses positioning services to identify the store where the purchase is made.
For customers who do not own smartphones, do not wish to install our app, or simply do not arrive to the store prepared, partner stores may offer to lend our *custom-made single-purpose devices* for the shopping process, with full support for self-checkout and price-matching.
A key engineering focus will be ensuring that barcodes and price tags may be captured quickly and accurately using both our custom-built devices and a wide array of consumer smartphones.

2 Seminar tasks

- Design a high-level functional decomposition of one aspect of the problem, focusing specifically on the support for devices with various cameras (fixed or variable focal length, sensors arrays, etc.). Draw the defined blocks on a Block Definition Diagram and their interconnections on one or more Internal Block Diagrams.
- Discuss how we can reasonable expect to find these model artifacts packaged.
- Extend the model to cover the rest of the offering, including hardware and app design, as well as the required cloud services.