Scenario 1
(adapted from IREB exercise given at REFSQ 2012)

PowerAB is an industrial group that runs a filling station at its plant in Traktoria. The filling station is used primarily for company vehicles but employees and their family members can also use it (and do so quite often due to the low prices for fuel charged there).

The filling station is open only on workdays during the regular working hours. It is run by one filling station attendant. A fuelling operation takes about six minutes (including the generation of the receipt). The fuelling operations naturally overlap because there are four pumps available to customers (1 for diesel, 1 for super, and two for lead-free). The filling station has nevertheless experienced a lot of congestion in recent months. The peak days are Fridays and Mondays.

When a company vehicle is fuelled, the receipt records the license number, the cost center (department to which vehicle belongs), the type of fuel, quantity and date. If an employee fills his/her private vehicle, the receipt includes the license number and personnel ID number (along with the other data, e.g., type of fuel, quantity, date and time). Family members of employees are entitled to pay cash when filling their vehicles.

At the end of his workday, the filling station attendant must give the company accounting department the daily cash, the current level of the fuel tanks and the receipts. These items are checked, either immediately or the next day (with any differences clarified with the filling station attendant). After this is done, the accountants are settled, i.e., fuel account is credited and the purchasers are debited. For purchases involving company vehicles, the cost centers for the departments are charged. For purchases involving employees, the personnel cost center is charged and the receipts are passed on to the personnel department. There the purchases are recorded as a deduction from the monthly salary account. Cash revenues are passed to the central cashier's office in financial accounting.

The attendant is responsible for seeing to the refilling of the station’s fuel tanks. As soon as a minimum level is reached (with reserves for five workdays), he orders a tanker delivery from the fuel supplier. This account is settled directly with the company accounting department (debit against the fuel account and payment of the supplier).

PowerAB objective: to put an information system (i.e., software-intensive system) in place for substantially simplifying and streamlining administrative activities.
Scenario 2
(adapted from the scenario of the Software Engineering course in 2012)

Tartu-based shirt manufacturer Sangar (www.sangar.ee) is considering the possibility of expanding its online presence. Currently (in November 2019) Sangar’s Web site re-opened standard e-shop functionality. The Web site allows customers to browse the catalogue of shirts sold by Sangar, to add shirts to the shopping cart and to check-out and pay online. Shirts are shipped to the designated address via postal services. The application has received an average of 3000 visits per month since its deployment. About 20% of these visits lead to purchases. On average, each purchase is for 2 shirts and the profit margin per shirt is EUR 4.

In December 2019, Sangar started to consider the possibility of manufacturing and selling customized shirts through their e-shop. Customers would be able to design customized shirts by selecting the fabric, the type of collar, type of cuff, and the types of buttons. Customers would also be able to add a label (e.g. their full name or initials) to their shirt design. Once a customer has completed a shirt design, he/she can add one or multiple units of this shirt to their shopping cart. At each step during the customization process, the web site will display an image of the customized shirt as well as the price of the shirt. The price depends on the options that have been chosen (e.g. the type of fabric chosen). One of the advantages of selling customized shirts is that they have a higher margin (EUR 8 per customized shirt, as opposed to EUR 4 for traditional shirts).

Sangar hired a consultancy company named LeftConsultants to make a market analysis and to assess the potential benefits of selling customized shirts. The consultants concluded that if Sangar introduced into their e-shop site an option allowing customers to design their own customized shirts, the number of customers using the customization option would be about 2000 per month (in addition to the existing customer visits), and the conversion rate of customers who design customized shirts would be 50% – meaning that 50% of customers who design a customized shirt would end up buying it. Customers of customized shirts would buy on average 1.5 shirts per purchase. Each customized shirt has a profit margin of EUR 8.

Sangar’s objective: to put a system (i.e., software-intensive system) in place for “mass-customisation” of shirts.

Disclaimer: Although based on a real-world company, the above scenario is fictitious and does not reflect the current situation or plans of the company in question.