Matricola_____
Surname_____
Name:_____

Information Systems 01PDWOV

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Books, notes are not allowed. Write only on these sheets.

Purchase group

Purchase groups (PG) aggregate people with the goal of buying goods. Buying larger quantities of goods reduces the unit price. A typical example is a purchase group for food. On one side are private customers (such as families) who need to buy food every day / week (called PG members). On the other side are producers or resellers of food (farmers, food companies, supermarkets). In the middle is the PG. The producers make weekly offers for large quantities of specific products to the PG. The PG collects single orders from PG members, aggregates them, buys from the producers. Goods are delivered at the PG site, where PG members collect them.

In the AS IS situation the PG works as follows. An employee of the PG receives customers and records their membership on a PC. The same employee receives every day offers from the producers, by email. An offer refers to a product, with a defined quantity and price (ex 100kg potatoes at 0.75euro/kg). Remark that the PG either accepts an offer in full or not (the PG either buys 100kg of potatoes, or nothing, it is not possible to buy 75kg only).
The PG employee compiles all offers from producers, and sends them by email to PG members every evening.
PG members may answer by email to the PG, making their orders (ex 10kg potatoes).
The PG employee, using an excel file, collects orders from members, aggregates them, and when possible (ex 10 members order 10kg potatoes each) makes an order to the producer, and communicates to the interested members that the product has been ordered. Finally the PG employee has to handle the payment and delivery.
The AS IS situation is slow, error prone and limits the number of members and orders that the employee can manage.

The TO BE situation is based on an IS capable of
-publishing offers from the producers on a web site
-receiving orders from PG members on the same web site
-handling the status of offers, orders from PG members, orders to producers, payments by PG members

In the following, analyze and model in detail the TO BE situation.

1 IT Model / Technological model: describe the hardware architecture of the system

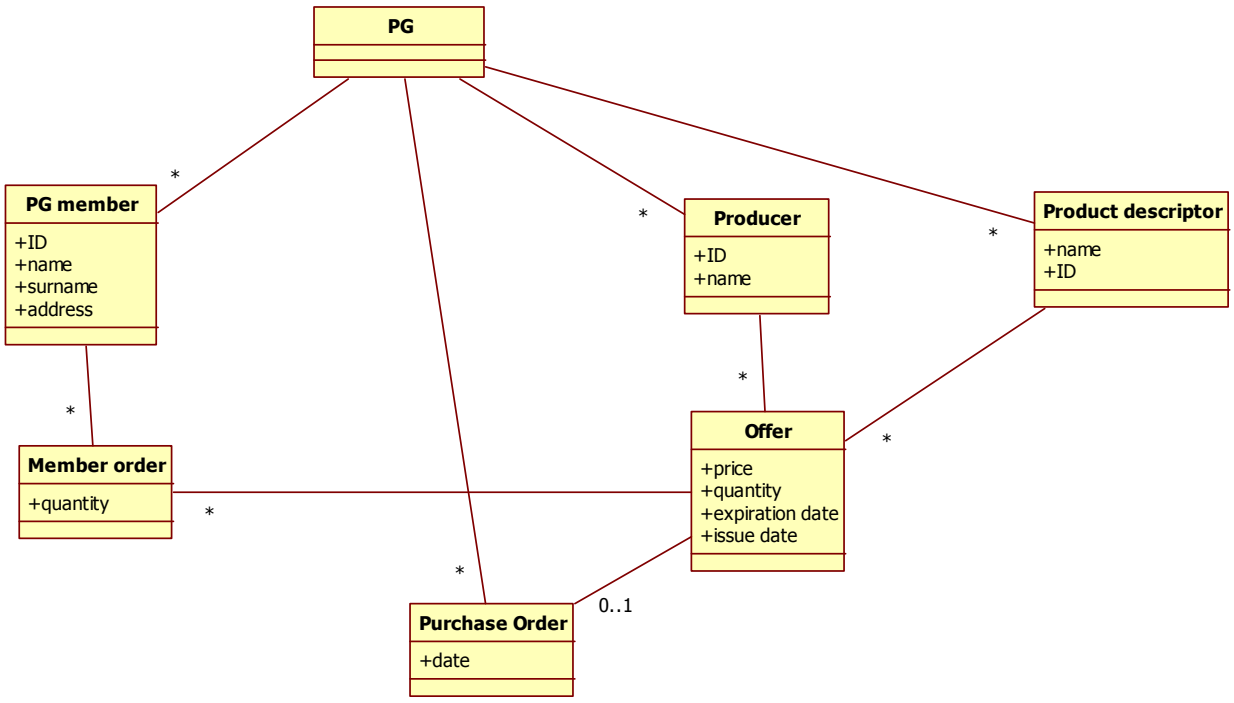
Client server

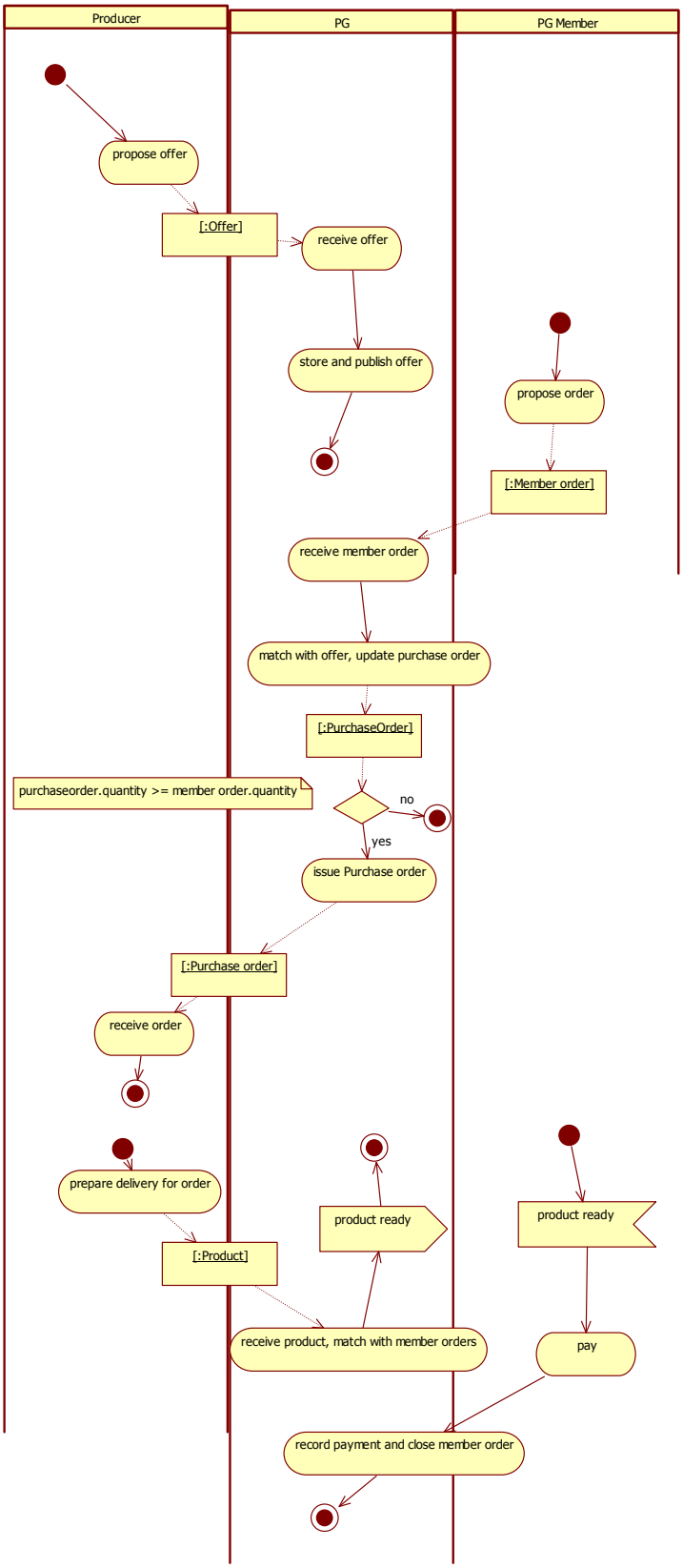
2 Organizational model: list roles or organizational units involved

PG members
PG employee
Food producers /sellers

3 Functional model: Design and model (using UML activity diagrams with swimlanes + class diagram) the following processes.

- Processing of offers from producers
- Processing of orders from PG members and orders to producers
- Handling of deliveres to PG members and payments




Producer
PG
PG Member
propose offer
[:Offer]
receive offer
store and publish offer
propose order
[:Member order]
receive member order
match with offer, update purchase order
[:PurchaseOrder]
purchaseorder.quantity >= member order.quantity
no
yes
issue Purchase order
[:Purchase order]
receive order
prepare delivery for order
[:Product]
product ready
product ready
receive product, match with member orders
pay
record payment and close member order

4 Define the KPI, considering as strategic goal ‘improvement of service for PG members’

Category (General, cost ..)	Name	Description	Unit of measure
General	N_MO	Number of member orders (per day / per year)	
	N_O	Number of offers	
	N_PO	Number of purchase orders	
	N_E	Number of PG employees	
Cost	C_O	Unit cost to process member order	Euro
	P	Productivity: member orders processed per day per PG employee	
	E_MO	Effort to process member order	Person h
Service	LT_O	Lead time to process offer (from reception of offer to offer published to PG members)	
	LT_MO	Lead time to process member order	
Quality	Q	Defects in handling offers and member orders (offers lost, member orders lost, offers not treated in time, payments requested to wrong PG member, or wrong amount requested, payments not requested, members not alerted of order ready ..)	

5 Compare the previous and the current situation, using the KPIs defined above

KPI	AS IS	TO BE
N_MO		Could increase
N_O		Could increase
N_PO		Could increase
N_E		Could decrease, or employees used to do other tasks
C_O		Could decrease
LT_O		Could decrease (even to zero)
LT_MO		Could decrease
Q		Could increase much

6 Define the TCO (time span: 4 years) for the TO BE situation

Phase	Cost factor	Cost estimate
Construction	Development of IS (purchase)	10-20K Few K if off the shelf IS is purchased, or web service is purchased
Deployment	Install IS on server, train employee	1-2K
Operation	Costs for IS maintenance, web server operation	1-2K

7 List pros and cons when switching to the TO BE situation. Discuss quantitative (especially cost) and qualitative pros and cons

Pro	**Con**
C_O reduced,	Cost of infrastructure (see TCO)
Q increased	
LT reduced	

From PRO vs CON analysis is the TO BE situation better? (answer Yes or No): yes
Why?

The IS can automate nearly all parts of the processes described, with great reduction of effort of personnel, increase in quality, reduction of lead time. The investment required is probably in the order of 10-20K, corresponding to less than one person year. This means that the investment could be recovered in less than one year

8 (1 point) What are the main processes in the retail domain?

See slides

9 (1 point) Most manufacturing companies outsource IT at application level, and use for instance ERP products. Banks usually do not outsource IT, and develop internally most of the applications they use. Propose a reason that explains this difference.

IT is core to banks, that often prefer to develop internally to increase IT governance, and IT alignment. Security may also be a driver.

10 (1 point) A company produces glasses for cars, it has an office in Turin, with the direction, sales office, accounting office, human resources. A factory in Nice (France) and another in Naples. There is no design office (designs are received from the car manufacturer). What kind of organization does it follow?

Functional (no functions are repeated.) It is partially geographical because manufacturing is repeated in two places (assuming that the same products are produced in the two factories)

11 (2 points) Consider the same company above (car glass manufacturer). Define, using the Balanced Score Card (BSC) approach one meaningful indicator in each dimension of BSC.