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Information Systems 01PDWOV

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

Phantom test.
Automotive companies need to verify the quality of service of workshops doing maintenance service on the vehicles. Workshops belong to companies that are independent of the automotive company, and are spread geographically. Phantom test analyzes the quality of service with special care in not making aware workshops that they are tested.

Verification of the quality of service is made as follows. Assume that the Automotive company is A. A subcontracts the verification to a specialized company B (this is important to guarantee that workshops cannot know when and how they are verified). B finds owners of vehicles manufactured by A and asks them to volunteer for the service. Volunteers are paid an amount of money. A volunteer brings its car to B, B introduces a defect in the car. Then the volunteer brings the car to a workshop for repair. After repair B inspects the car to verify the repair. Further, B interviews the volunteer about the quality of service (courtesy, cleanness, speed, price, etc).
After having collected a defined number of cases (each case is a repair of a vehicle where a defect was injected) B submits a report to A.

The AS IS situation uses mostly paper records to handle the process.
The TO BE situation aims at replacing paper as much as possible, using instead smartphones, tablet PCs or similar devices.

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

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

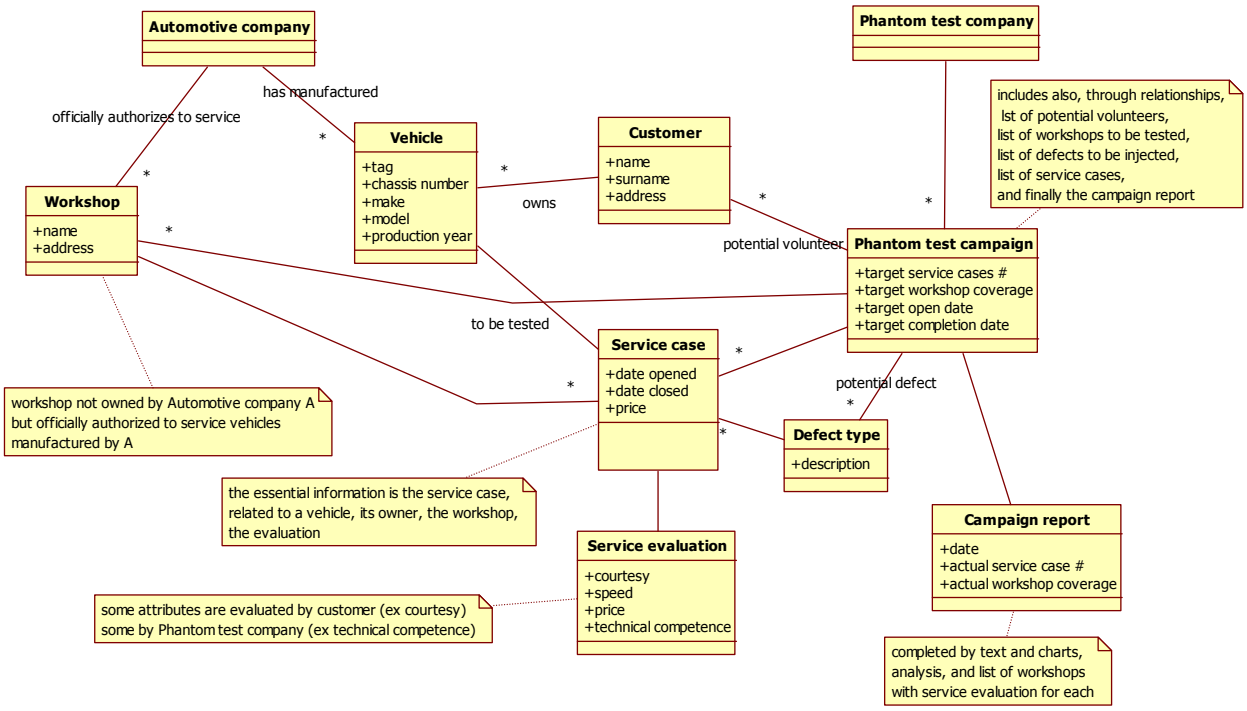
Client server:

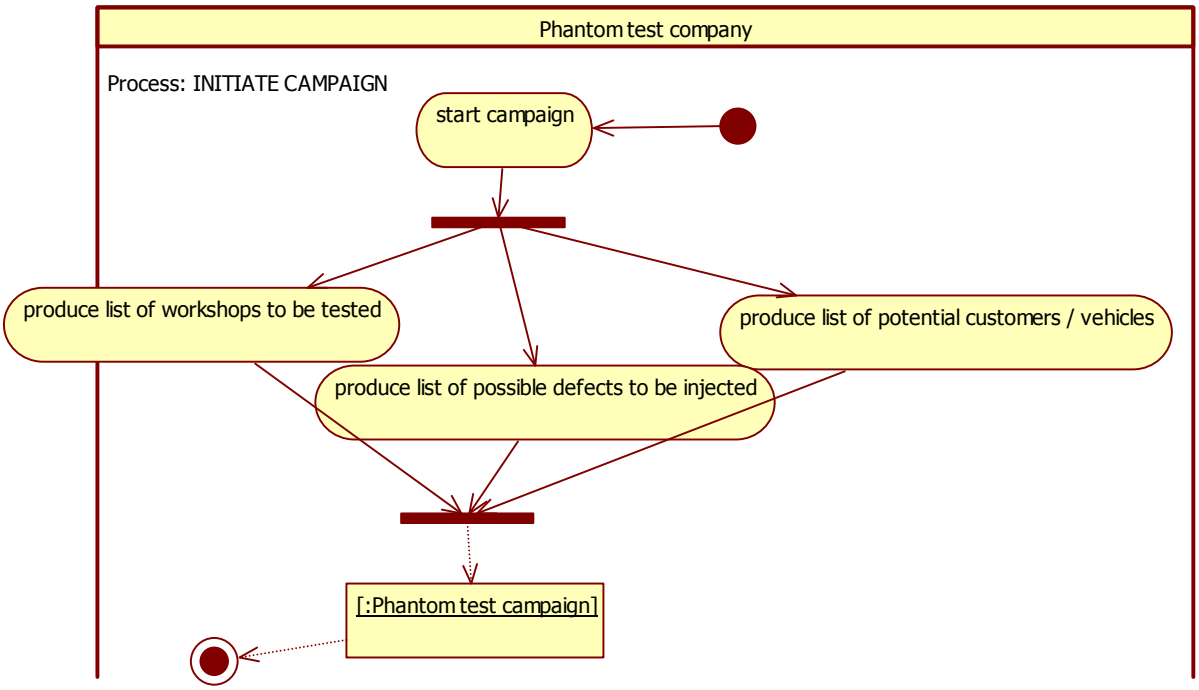
server (managed by company B) with data on vehicles, repairs, volunteers
clients (mobile or desktop) for users

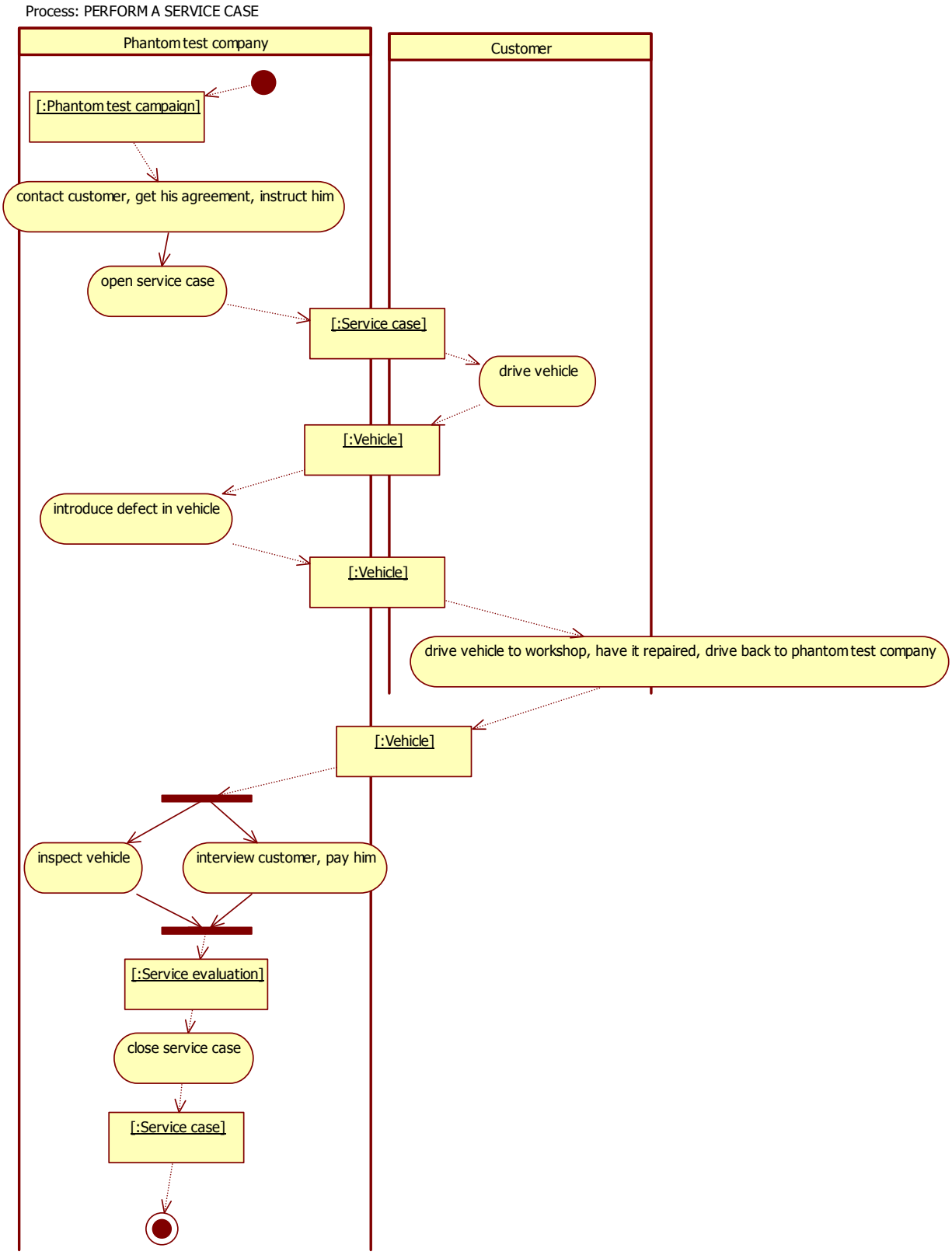
2 Organizational model: list roles or organizational units involved

Automotive company A
Phantom Test company B
Volunteer (owner of car)
Workshop

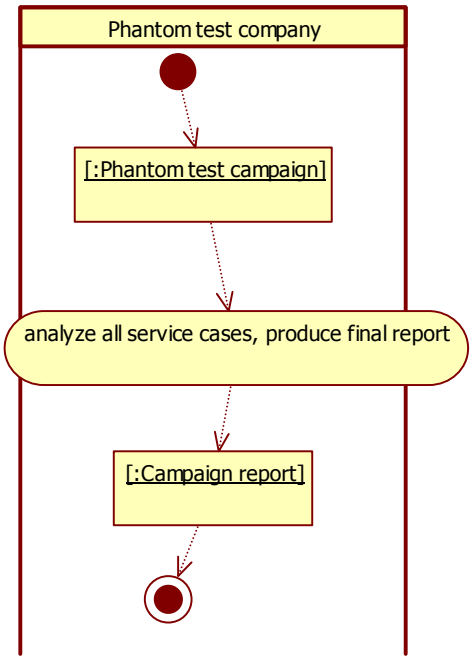
3 Functional model: Design and model (using UML activity diagrams with swimlanes + class diagram) the processes needed for phantom test




Phantom test company
Process: INITIATE CAMPAIGN
start campaign
produce list of workshops to be tested
produce list of potential customers / vehicles
produce list of possible defects to be injected
[:Phantom test campaign]


Process: PERFORM A SERVICE CASE
Phantom test company
Customer
[:Phantom test campaign]
contact customer, get his agreement, instruct him
open service case
[:Service case]
drive vehicle
[:Vehicle]
introduce defect in vehicle
[:Vehicle]
drive vehicle to workshop, have it repaired, drive back to phantom test company
[:Vehicle]
inspect vehicle
interview customer, pay him
[:Service evaluation]
close service case
[:Service case]

Process CLOSE CAMPAIGN



4 Define the KPI, considering as strategic goal ‘reduction of lead time’ and ‘reduction of cost to manage the phantom test system’.

Category (General, cost ..)	Name	Description	Unit of measure
General	N_SC	Number of services cases performed, per year	
Service	LT_SC	Lead time service case (see process Perform service case, from open service case to close service case)	Days
	LT SC customer1	Lead time customer brings car for defect	Hours
	LT_SC_customer2	Lead time customer returns car (from time customer brings car to B, to end of interview and car inspection)	Hours
	LT_campaign	Lead time campaign (from start campaign to produce campaign report)	Days
Cost	C_SC	Cost of a service case for company B (effort to introduce a defect. Effort for interview, effort to inspect car, compensation of volunteer customer)	Euro
	C_C	Cost of a campaign = C_SC * nservices cases per a campaign + cost (close campaign) + cost (initiate campaign)	Euro
Quality	Err_SC	Errors in data entry and data manipulation for a SC	

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

KPI	AS IS	TO BE
LT_SC	Days	No change, the important delays are in introducing defect in the car, driving it around. Improving paper handling may reduce LT by some minutes
LT_SC customer1		Limited reduction, the important delay is probably in introducing the defect
LT SC customer2		Limited reduction, the important delay is probably in inspecting the car
LT campaign		No change, since no change in LT SC
C_SC		Some reduction possible, but real cost is in car inspection, interview, compensation
C_C		Limited reduction possible if C_SC is reduced
Err_SC		Important reduction due to computer based sheets instead of paper

6 List costs and benefits (savings) when switching to the TO BE situation.

Cost	**Benefit**
Hardware and software infrastructure, training	Paper forms
	Err_SC

From Cost Benefit analysis is the TO BE situation better? (answer Yes or No): no

Why?

No meaningful advantages in cost and delay. However the quality of data collected could improve, due to the reduction in errors in data entry and data manipulation.

7 What are the three key ideas of the ERP model?

Data sharing, prescriptivity, modularity

8 Describe the Total Cost of Ownership (TCO) for a software package (such as Excel).

Search and evaluate, acquire, install (first time), learn, install (patches and fixes), uninstall

9 An IT department of a manufacturing company is in charge of supporting the Human Resources department (providing an application for HR management), and the Manufacturing department (providing several applications for managing a factory, a warehouse and suppliers). The IT department is organized in a CIO and 20 people in two units. One unit is in charge of the HR application, that is bought from an external provider. The other unit is in charge of the manufacturing applications, that are acquired from an external provider but also partially customized internally.
Analyze this case in term of transaction costs, agency costs, decision costs.

Transaction costs:
For HR application, for manufacturing application:
search and acquisition, contract writing, monitoring relationship with outsourcer
Agency cost: monitoring (CIO over two units and their outsourcing choices)
Bonding (two units vs CIO, about outsourcing decisions)
Residual loss: applications or outsourcers selected are not the best, or insourcing was best
Decision cost: collection and communication of information about the outsourcing relationship (providers quality and behavior, applications effectiveness)

10 What could be the hidden costs in an IT application outsourcing relationship?

if current provider discontinues the product / service, or if quality too low.

-search for other product / provider (or cost of insourcing)
-convert data
-litigation

11 In organizational terms, what is a ‘Machine bureaucracy’?

See slides

12 Give a definition of SOP and an example.

See slides.