(subtitle) Ways to make your job easier!

Software Quality Group of New England (SQGNE)

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Intro: About Norman Daoust

■Daoust Associates, 2001

■Software Process Improvement

■Use Case, Requirements, and UML modeling, training, group facilitation

■Data Architecture and Data Modeling

■Healthcare Standards

Intro: Goals

Goals

■learn how use case models can assist the SQA process

■understand why you should make friends with your use case modelers

■learn know how to influence the use case modeling process to make your life easier!

Outline

■Use Case Modeling Context

■Example Use Case Diagram

■Example Use Case Text

■Use Case Model advantages for SQA

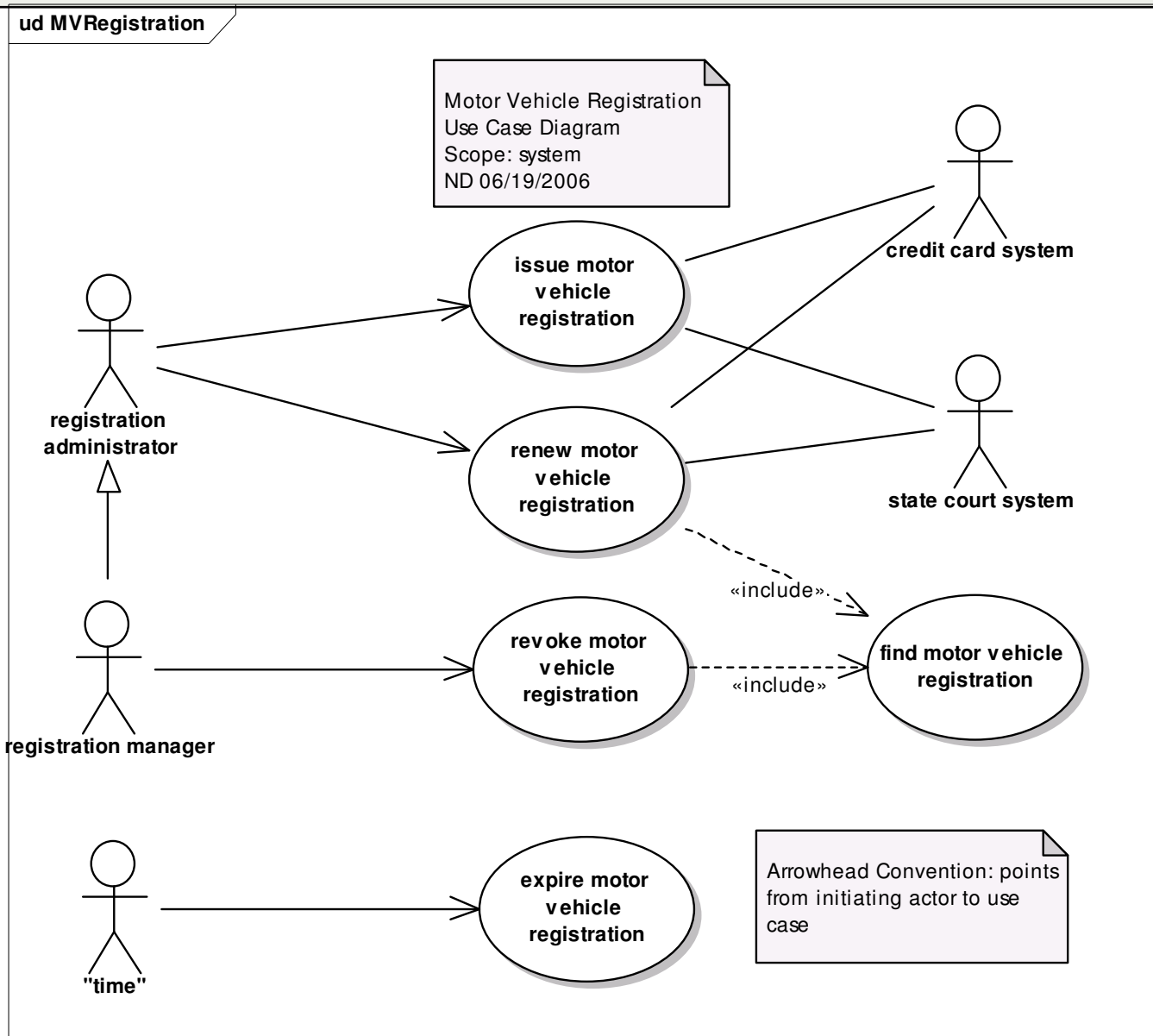■SQA Involvement in Use Case Modeling Process

■Summary

Use Case Modeling Context

- typically during requirements phase

- typically written or edited by an analyst

- for capturing functional requirements

- range of formality: informal (back of a napkin) to formal (ala following example)

- for clarifying system scope

Use Case Model
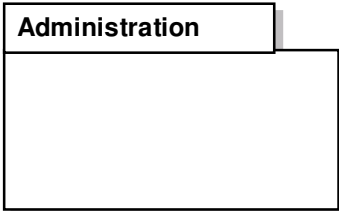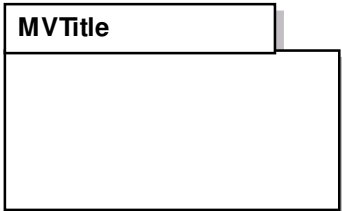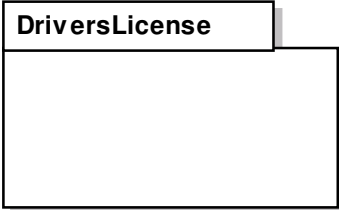
■Use Case Model includes both diagrams and associated text

Use Case Diagram Example

ud MVRegistration

Motor Vehicle Registration
Use Case Diagram
Scope: system
ND 06/19/2006

credit card system

issue motor vehicle registration

registration administrator

renew motor vehicle registration

state court system

«include»

registration manager

revoke motor vehicle registration

«include»

find motor vehicle registration

expire motor vehicle registration

Arrowhead Convention: points from initiating actor to use case

"time"

Use Case Package Diagram Example

pd **Department of Motor Vehicles - Use Case Package**

Department of Motor Vehicles
Use Case Package Diagram
Scope: system
ND 06/19/2006

MVRegistration

DriversLicense

MVTitle

Administration

Use Case Text Example: part 1 of 4

Use Case Name**:** Renew Motor Vehicle Registration

Primary Actor**:** registration administrator for motor vehicle owner

Goal in Context**:** renew the vehicle owner's motor vehicle registration

Scope**:** system

Level Code: 0

Stakeholders and their Interests**:** motor vehicle owner - renew motor vehicle registration; registration manager – insure all business rules are enforced, insure appropriate payments are received

Precondition(s): registration administrator is logged into the system

Trigger: motor vehicle owner or their proxy presents to the Registration Administrator requesting motor vehicle registration renewal

Success Guarantee(s): owner has an active motor vehicle registration with expiration date two years in the future and a payment receipt

<u>Main Success Scenario</u>:
1. The registration administrator inquires on the status of the motor vehicle registration using either the owner's name or vehicle registration number provided by the owner or their proxy.
2. The system locates the vehicle registration and vehicle owner, and sends an inquiry to the state court system to confirm the owner has no outstanding parking tickets.
3. The state court system returns the list of the owner's outstanding parking tickets to the system.
4. The system returns the current status and expiration date of the motor vehicle registration, the name and address of the vehicle's owner, and a record of any outstanding parking tickets for the owner.
5. The registration administrator verifies the person's address on file is correct, and enters the payment method (cash, check, credit card).
6. The system records the payment method, renews the motor vehicle registration and updates the expiration date, prints the new motor vehicle registration, and prints a payment receipt.

Extensions:
3.a. outstanding parking tickets
3.a.1. If the owner has any outstanding parking tickets, the system returns an appropriate message to the registration administrator, and the use case ends.

6.a. the owner or their proxy elects to pay via credit card
6.a.1. The registration administrator enters the credit card information.
6.a.2. The system sends a payment request message to the credit card system.
6.a.3. The credit card system debits the account of the credit card, credits the registry's account, and sends a response message to the registry system.
6.a.3.A. If the credit card payment is not accepted, the vehicle owner or their proxy is given the option to pay by another payment method and the use case continues with step 5.

6.b. payment method not accepted
6.b.1. The vehicle owner or their proxy is allowed to offer an alternative payment method.
6.b.2. If the vehicle owner or their proxy does not offer another acceptable payment method, the use case ends.

Business Need Priority: high
Scheduled Software Release: initial
Technical Difficulty: high
Status: initial draft
Revision Number (or Date): 06/19/2006
Owner: Raisa Renaut, Registration Manager
Critical Reviewers: Raisa Renaut, Registration Manager; Ron Rosen, Registration Administrator
Frequency of Use/Occurrence: 4000 per day
Business Rules: 101 - motor vehicle registrations are good for two years; 102 - motor vehicle registrations are not allowed to be renewed if the owner has any outstanding parking tickets
Channel to Primary Actor: web browser
Secondary Actor(s): credit card system; state court system
Open Issues: none

Main Success Scenario Example (MSS style 2)

<u>Main Success Scenario</u>:
1. The registration administrator inquires on the status of the motor vehicle registration using either the owner's name or vehicle registration number provided by the owner or their proxy. The system locates the vehicle registration and vehicle owner, and sends an inquiry to the state court system to confirm the owner has no outstanding parking tickets. The state court system returns the list of the owner's outstanding parking tickets to the system. The system returns the current status and expiration date of the motor vehicle registration, the name and address of the vehicle's owner, and a record of any outstanding parking tickets for the owner.
2. The registration administrator verifies the person's address on file is correct, and enters the payment method (cash, check, credit card). The system records the payment method, renews the motor vehicle registration and updates the expiration date, prints the new motor vehicle registration, and prints a payment receipt.

Main Success Scenario Example (MSS style 3)

<u>Main Success Scenario</u>:
1. The registration administrator inquires on the status of the motor vehicle registration using either the owner's name or vehicle registration number provided by the owner or their proxy.
2. The system locates the vehicle registration and vehicle owner
3. The system sends an inquiry to the state court system to confirm the owner has no outstanding parking tickets.
4. The state court system returns the list of the owner's outstanding parking tickets to the system.
5. The system returns the current status and expiration date of the motor vehicle registration, the name and address of the vehicle's owner, and a record of any outstanding parking tickets for the owner.
6. The registration administrator verifies the person's address on file is correct, and . The system enters the payment method (cash, check, credit card).
7. The system records the payment method
8. The system renews the motor vehicle registration
9. The system updates the expiration date
10. The system prints the new motor vehicle registration
11. The system prints a payment receipt.

Categories (labeled "Scope" in example)

■ system (typical)

■ business (n/a for you)

■ component (sw engineers write)

Use Case Model advantages for SQA

■diagrams provide a high level overview

■diagrams and packages: may provide partitioning guidance

■Main Success Scenario: illustrates the system interactions

■Extensions: identify exception conditions and resolution; basis for test cases

■basis for allocating testing resources

■Secondary Actor(s): identify external systems

■clearly define system scope

■any others?

SQA Involvement in UC Modeling Process

■provide a generic set of exception conditions for consideration (e.g. timeout, external system failure)

■reviewers of use cases: identify additional exception conditions

■have input to the use case template: insure it includes those items important to SQA process

■have input to use case style guidelines

■any others?

Could Use Cases make your life easier?

- test coverage

- project scope

- project schedule

- workload predictability

- finding bugs sooner

- any others?

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■SQA Involvement in UC Modeling Process

■Summary

Questions?

Summary

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■ understand why you should make friends with your use case modelers

■ learn know how to influence the use case modeling process to make your life easier!

References

■Writing Effective Use Cases, Alistair Cockburn, 2001, Addison-Wesley; one of the best books on use cases

■UML Modeling Tips, Norman Daoust, August 2007; tips for use case modeling and the other twelve UML models

■UML/Use Case tools: www.uml.org/#Links-UML2Tools

Further Questions?

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