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# **Business Collaboration Standards Development Methodology**

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Developed jointly by CIDX and RAPID

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## Introduction

35 Over the past few years numerous industries have committed significant human and financial resources to developing XML-syntax-based message standards. Industry standards organizations leading this work for their industries include, but are not limited to: CIDX for the industrial chemical sector; PIDX for the petroleum sector; and RAPID for the agricultural inputs sector. These organizations did their job well, but as their constituency began to implement the message standards it became clear that standards (or guidelines) addressing B2B business collaborations would be valuable in supporting implementation efforts.

40 This document outlines a methodology that industries may use to document their business collaborations (i.e. public business processes). This document's primary audience is team leaders who lead business collaboration documentation initiatives, which may lead to standards or guidelines publication.

45 **★★ This document is still a draft.**  
**★★ Several people have offered valuable input on format and content that hasn't been incorporated.**

## Methodology Process

50 The following process steps are an excerpt from a written use case expressed in the file KG7W.xml. See the file for an elaboration of these steps.

- 55 1. A management team within an organization (could be a steering team or other authority) charters a business collaboration documentation project. The association of the project's focus within the industry reference model must be specified. See *Appendix XYZ* for a sample project charter.
2. The management team reviews the project charter and the methodology outlined in this document with candidate team leaders.
3. The management team selects the project leader (leader) and project team members (team).
- 60 4. Launch the project
  - a. The leader reviews the project charter with the team.
  - b. The leader reviews the methodology with the team (training may be included).
- 65 5. The leader holds an initial work meeting with the team. (Note: Teams that have a successful track record of working together may not be required to meet face-to-face. Other teams probably will be required to meet face-to-face.)
  - a. The team drafts the top-level use case.
  - b. The team agrees on a prioritization of top-level use case steps on which they will drill down.

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- 70                   c. The team does the initial work on the second-tier use cases (see the *Use Case Development Process* section in this document).
6. The teams complete the project.
  7. The management team approves the work.
  8. The management team publishes the work.

### 75 **Methodology Work Product (Artifacts)**

Following the business collaboration documentation process outlined in the document leads to production of some of the following artifacts:

- 80                   1. Background information (this should be addressed, in part, in the project charter)\*
2. Business collaboration documentation expressed as:
  - a. Written use cases\*
  - b. UML activity diagrams
3. Element/attribute-usage rules and/or guidance in certain contexts (i.e. at certain steps of certain scenarios of certain use cases specify message structure and content requirements)
- 85                   4. Templates to support implementation project management
5. Templates to support trading partner agreements
6. Other related information

\*Required

### 90 **Getting Started (Team Leader)**

If you received this document in the intended fashion, it was packaged with several other files in a zip archive named *BCSDM YYYY-MM-DD.zip*. This document references the files in the archive and as a result you may want to unzip them. It is important that the files are in a specific folder structure located on the C:\ drive. (Note: When you unzip the files, ensure that the folder structure is created—an option in popular zip utilities.) Once the files are unzipped as intended, you will have a folder named *C:\UseCase* with a subfolder named *AirTravelExample*. Each folder will contain a number of files.

### **Use Case Approach**

Information to be Documented	See examples, the Business Collaboration tutorial, reference books, and the use case XML Schema file.
Maintenance File Type	XML (HTML for distributing for comment)
Maintenance Format	In general, formal use case format closely aligned with the UN/CEFACT Modeling Methodology User's Guide. Given that the maintenance file type is XML, any XML Schema-aware XML editor will work and will have its own edit format.

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Maintenance Application	Any XML Schema-aware XML editor. Technically one could use a text editor (e.g. Notepad), although it's generally not practical.
Publication File Type	XML, XHTML, HTML, Word, PDF, or whatever users require
Publication Format	Formal use case format closely aligned with the UN/CEFACT Modeling Methodology User's Guide.
Maintenance-Format-to-Publication-Format Process	This is primarily, if not exclusively, an issue for the publication manager. XML to XHTML can be done with XML Stylesheet Transformations. XML to PDF can be done with XML Stylesheet Formatting Objects and PDF engine. XML to Word and XML to Excel can be done with simple scripts.
File Naming Guidelines	Name files in the following format: UseCaseID.xml
File Versioning	Each use case requires an element named DateLastUpdated. That element's value should be kept up to date and will be ultimately updated to the publication date.

## UML Activity Diagram Approach

Information to be Documented	Use case steps.
Maintenance File Type	Poseidon file format
Maintenance Format	Activity diagram format. There are no requirements beyond the UML specification right now, but some could be established in the near future.
Maintenance Application	Poseidon (see section on obtaining it)
Publication File Type	PNG (Portable Networks Graphics)—viewable in a browser and embeddable in most document editors (e.g. Word, PowerPoint, Acrobat).
Publication Format	Same as the maintenance format.
Maintenance-Format-to-Publication-Format Process	Within Poseidon, select the menu commands "File   Save Graphics..." and choose "PNG image (*.png)" in the "Files of Type" drop-down box.
File Naming Guidelines	Name files in the following format: UseCaseID.png
File Versioning	Each activity diagram should have a text box in the upper-right corner with a "Last Updated:" label followed by the date in "YYYY-MM-DD" format. The date should match the latest update to the associated use case XML file.

## 100 Development Tools

### **XML Instance Document Editor**

Any XML Schema-aware XML instance editor will suffice for editing use cases.

Options include:

1. TurboXML, by TIBCO (<http://www.tibco.com>)
2. XML Spy, by Altova (<http://www.xmlspy.com>)
3. Authentic, by Altova (<http://www.xmlspy.com>)

### **UML Activity Diagram Editor**

Options include:

110

1. Visio, by Microsoft (<http://www.microsoft.com>)
2. Poseidon, by GentleWare (<http://www.gentleware.com>)
3. Together, by Borland (<http://www.borland.com>)

## Support Files

File Name	Expected Path	Users	Purpose
BCSDM YYYY-MM-DD.doc	C:\UseCase	All	This document (see introduction)
gen.html	C:\UseCase	Stylesheet developers	This is an artifact of the stylesheet development process. This file, if included, may be deleted without consequence.
genhtml.xslt	C:\UseCase	Stylesheet developers	This is an artifact of the stylesheet development process. This file, if included, may be deleted without consequence.
sample.xml	C:\UseCase	Stylesheet developers	This is a sample instance document used during the stylesheet development process. This file, if included, may be deleted without consequence.
UseCase.css	C:\UseCase	All	This is a cascading stylesheet file, which provides font and color styling to the XHTML representation of use cases. This file should never need editing except by the stylesheet editor, but those who want to explore are welcome to “play” with it.
UseCase.sps	C:\UseCase	All	This is a user input stylesheet required by Authentic. This file should never be edited except by the stylesheet editor.
UseCase.xsd	C:\UseCase	All	This is the W3C XML Schema file defining the required and allowable structure and content of our use case files. This file should never be edited except by the use case schema editor.
UseCase.xsl	C:\UseCase	All	This is the XML stylesheet transformation file that provides the rules for transforming a use case XML document to an XHTML document (for viewing in a browser). This file should never need editing except by the stylesheet editor, but those who want to explore are welcome to “play” with it.
UseCaseTemplate.xml	C:\UseCase	All	This is a file that should be copied whenever a new use case needs to be created. The copied file is the one used to contain the use case.
UseCase.prj	C:\UseCase	All	This is an artifact of the stylesheet development process. This file, if included, may be deleted without consequence.

File Name	Expected Path	Users	Purpose
UML Examples YYYY-MM-DD.vsd	C:\UseCase	Documentation maintainers	This is a Microsoft Visio file containing UML examples that are inserted in various other documents.
BCSDM YYYY-MM-DD.doc	N/A	All	The zip archive containing all the other files. This file may be deleted without consequence.

## Example: Air Travel

115 A fully developed set of example use cases and activity diagrams is available. By default, they are located in the folder C:\UseCase\AirTravelExample. The following file types are included:

- 120     ▪ \*.xml: Use case XML files—you should be able to view these files in any recent version of Microsoft’s Internet Explorer
- 120     ▪ \*.html: Use case html files (XML files that have had the stylesheet applied)—you will be able to view these files in almost any browser
- 120     ▪ \*.png: Image files containing UML activity diagrams—you will be able to view these files in any recent browser
- 120     ▪ \*.zargo: Poseidon project file for project containing UML activity diagrams

125 The best starting point would be K8B7.html / K8B7.xml. These files represent the high-level use case that is a factored version of KD7H (*factored* being a term loosely used here to refer to a process of pulling “child” use cases out of a “parent” use case and then referring to them in the “parent” use case).

## Appendix A: Use Case Glossary

130 **Action Steps (or just “Step”):** A simple action in which one actor accomplishes a task or passes information to another actor.

**Actor:** An actor is someone or something that interacts with the system for the purpose of completing an event (or accomplishing a task). Note: Every actor is a stakeholder, but not every stakeholder is an actor.

135 **Context of Use:** Context of Use is a longer statement of the goal, if needed, including its normal occurrence conditions. Simply stated, Context of Use is a brief description of the use case.

**Extensions:** Extensions are deviations from the Main Success Scenario. Extensions are also referred to as alternative flows and exceptions.

**Level:** There are three defined levels:

- 140
- User-Goal Level is the goal the primary actor has in trying to get work done or the one the user has in using the system.
  - Subfunction-Level goals are those required to carry out user goals.
  - Summary-Level goals involve multiple user goals. They serve three purposes in describing the system:
- 145
- They provide a table of contents for the lower-level use cases.
  - They show the context in which the user goals operate.
  - They show the life-cycle sequencing of related goals.

150 **Main Success Scenario:** The Main Success Scenario is the scenario that represents common sequence of steps leading to success (goal achievement). *Main Success Scenario* may also be referred to as *Flow of Events*, *Happy Path*, and *Sunny-Day Path*. It is important to understand that the main success scenarios should not be considered as the “right”, “correct”, or even “most-traveled” path. It is just a path that serves as the starting point.

155 **Minimal Guarantees:** Minimal guarantees are the fewest promises the system makes to the stakeholders, particularly when the primary actor’s goal cannot be achieved. (Note to use case developers: Minimal guarantees are optional—don’t get hung up trying to discover them.)

**Postconditions:** Postconditions define what must be true after the use case ends. More formally: Constraints on the state of the system after the use case has successfully completed.

160 **Preconditions:** Preconditions define what must be true before the use case can start. More formally: Constraints on the state of the system before the use case can be triggered.

**Primary Actor:** A primary actor is the stakeholder that calls on the system to deliver one of its services. The primary actor has a goal with respect to the system—one that can be satisfied by its operation. The primary actor is often, but not always, the actor who triggers the use case.

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165 **Scenario:** A scenario reflects one instance of how a use case would execute under a given set of circumstances. *Scenario* is also known as *use case instance*, *instance scenario*, and *analysis scenario*. Note: A use case collects together all the scenarios—successes and failures.

170 **Scope:** Scope refers to the design, or business process, scope. Scope refers to the system being considered as black-box. This is a little more challenging to define in the context of business processes than it is for software applications.

**Stakeholder:** A stakeholder is someone or something that has a vested interest in the behavior of the system described in the use case.

**Step:** See *Action Step*.

175 **Success Guarantees:** The success guarantee states what interests of the stakeholders are satisfied after a successful conclusion of the use case, either at the end of the main success scenario or at the end of a successful alternative path. Success guarantees are generally additive to the minimal guarantees. (Note to use case developers: Success guarantees are optional—don't get hung up trying to discover them.)

180 **System Under Discussion (SuD):** An SuD is the system that is the focus of the use case. The SuD is what the actors act upon. Examples include: Word processor; ATM; Ag-industry trade; Parachute;

185 **Technology or Data Variations:** Technology or Data Variations express different ways in which a step can be accomplished. (Note to use case developers: Technology and data variations are optional—don't get hung up trying to discover them.)

**Trigger:** The trigger specifies the event that gets the use case started. Sometimes the trigger precedes the first step of the use case, sometimes it is the first step. Time can be a trigger (e.g. every night at 3 a.m. the main system backup starts).

190 **Use Case Name:** Name the use case with an active verb phrase that represents the goal of the primary actor. The name sets the tone and association for the audience and can provide a focal point for the writer. Meaningless, generic names will not set reader expectations or provide a convenient reference point. An appropriate name provides a handle for the use case.

195 **Use Case:** A use case is a sequence of actions that actors perform within a system to achieve a particular goal. (Note: This definition is in the UML context.)

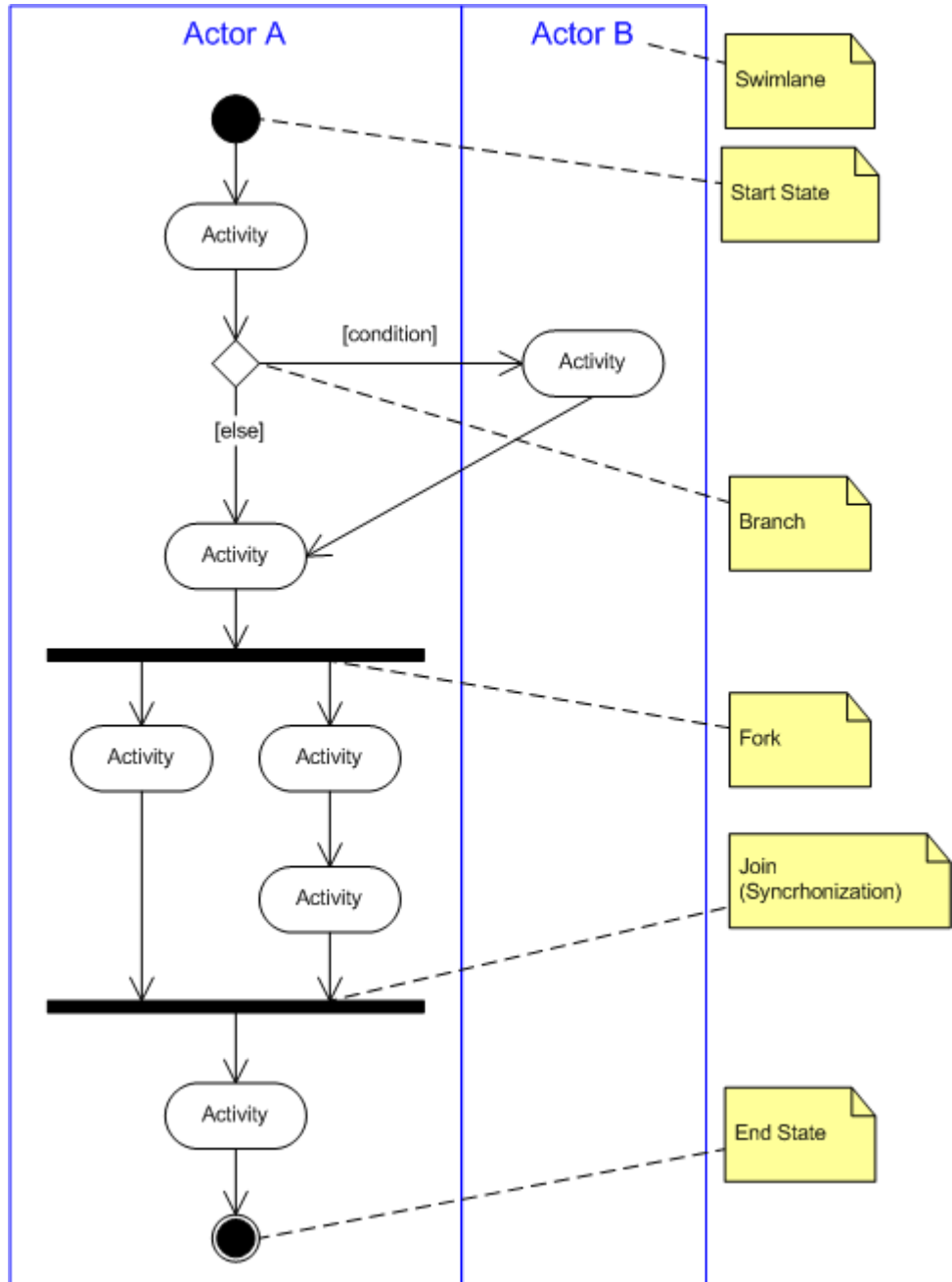
## Appendix B: Use Case Spot Checks

- 200
- Action Steps
    - Uses simple grammar
    - Show clearly “who has the ball”—who the actor is
    - Written from a bird’s eye view
    - Shows the process moving forward
    - Shows the actor’s intent, not the actor’s movements
  - [Others to be added over time...]

## Appendix C: Frequently Asked Questions (FAQ)

- 205 1. ***What's the difference between a business process and business collaboration?*** Most people intuitively understand what a business process is—in one sense a series of steps to accomplish a goal. A *business collaboration* is a term that, in UN/CEFACT context, refers to a public business process among trading partners that does not address activities internal to one of the trading partners.
- 210 2. ***What's the difference between a use case and a scenario?*** A use case is a sequence of actions that actors perform within a system to achieve a particular goal. A scenario reflects one instance of how a use case would execute under a given set of circumstances. *Scenario* is also known as *use case instance*, *instance scenario*, and *analysis scenario*. A use case collects together all the scenarios—successes and failures.
- 215 3. ***Why is the use case information stored in XML format? Wouldn't Microsoft Word or Excel file formats work better since more people are familiar with them?*** XML provides extensibility, separation of information from its format, automated manipulatability, platform independence, and application independence. The trade off of these features with those of Microsoft Word or Excel led to the selection of XML.
- 220 4. ***My corporate IT policy won't allow me to install Authentic or Poseidon. What do I do?*** Check with your corporate IT staff and determine what XML Schema aware XML instance editors and UML modeling tools your company supports.
- 225 5. ***Should I be concerned about being "hooked" into Authentic or Poseidon?*** No. The use case file format is XML which can be manipulated with any XML instance editor or even text editor. The Poseidon file format is open, for the most part, but not something that a person would likely edit without using the tool. However, the concepts learned by using Poseidon are transferrable to other UML modeling tools. The methodology explained in this paper would not require an in-depth understanding of Poseidon's intricacies and therefore not much investment in learning to use the tool. The biggest investment is related to understanding
- 230 UML concepts—something with enduring value independent of any tool.
- 235 6. ***Where do the Use Case IDs (UseCaseIDs) originate? Why are they seemingly random? Wouldn't it be better to make them sequential? Why do they all begin with a particular letter?*** UseCaseIDs are four-character identification codes assigned to each use case. The naming convention for use cases is the UseCaseID with ".xml" extension. A list of allowable UseCaseIDs was generated for the convenience of use case developers (although it would be fine for a team to generate and track use of UseCaseIDs on their own). The UseCaseIDs are seemingly random because it is important that there is no suggestion of order or any other meaning. All UseCaseIDs don't necessarily begin with the same character, although it may appear that way since for convenience, blocks of UseCaseIDs are assigned to industries by
- 240 first character.

## Appendix D: UML Activity Diagram Symbols



## Appendix E: Authentic™ Setup

245 Estimated time to complete these steps using typical corporate Internet bandwidth: 8 minutes

1. Read this document in its entirety if you're not clear what Authentic is and why you would want to install it. If, after reading this document in its entirety you're still not clear, talk with your team leader.
- 250 2. In your browser, navigate to <http://www.xmlspy.com>.
3. Find a link to Authentic and follow it.
4. Request a free Authentic license key-code.
5. Download Authentic.
6. Install Authentic.
- 255 7. Start Authentic and enter the license key-code.

## Appendix F: Poseidon for UML Community Edition Setup

Estimated time to complete these steps using typical corporate Internet bandwidth: 6 minutes (less if you can skip step 2).

- 260 1. Read this document in its entirety if you're not clear what Poseidon for UML Community Edition (henceforth just *Poseidon*) is and why you would want to install it. If, after reading this document in its entirety, you're still not clear, talk with your team leader.
2. Install Java runtime (see steps below). If you know you have a J2SE v1.4 or later, you may skip this step.
- 265 In your browser, navigate to <http://java.sun.com/j2se/downloads.html>.
  - b. Choose J2SE v1.4 or later and download the JRE.
  - c. Install the JRE.
3. In your browser, navigate to <http://www.gentleware.com>.
4. Find a link to Poseidon and follow it.
- 270 5. Follow the instructions to download Poseidon Community Edition. Choose the *Local installation* option.
6. Download Poseidon.
7. Install Poseidon.
8. Start Poseidon. The application will indicate that it found a license key. Choose to use it and
- 275 then follow the prompts to register.

## Appendix G: Developing Your First Use Case

The following steps will walk you through the process of using XML

1. Acquire and unzip the file *BCSDM YYYY-MM-DD.zip*. Check to see that folders and files are in place as outlined in this document's *First Things First* section.
- 280 2. Launch Authentic.
3. Choose the menu option *Project | Close Project* to close the example project.
4. Choose the menu option *Project | New Project* to create a new project.
5. Choose the menu option *Project | Save Project* to save your new project. In the Save As form, create a new folder *C:\FirstUseCase*. Navigate to *C:\FirstUseCase* and save the file as *test.spp*. (Authentic will automatically add the "spp" extension for you.)
- 285 6. Copy the file *C:\UseCase\UseCaseTemplate.xml* as *C:\FirstUseCase\K39H.xml*.
7. In the *Project* window (the upper-left window, by default), right-click on *XML Files* and choose *Add Files...* from the context menu. Select the file *C:\FirstUseCase\K39H.xml*.
8. In the *Project* window, double-click on *K39H.xml*.
- 290 9. You will get a message that says: *Your license only allows you to edit files in Authentic view. Do you want AUTHENTIC to try and open chosen file in an Authentic view?* Click on "OK".
10. The template file should load. Note that at the bottom there is big red circle with a white "X" in it next to a statement indicating that there is an error. That's to be expected. Once we add required data, you can revalidate and the error message will disappear.
- 295 11. In the *ID* field, enter *K39H*.
12. In the *Name* field, enter *Test*.
13. In the *Level* field, click on the drop-down and select *Summary*.
14. Click on the link *add StakeholderAndInterest*. Enter text in the two fields that appear.
15. Under the *Main Success Scenario* heading, click on the link *add Steps*. Enter text in the two fields that appear.
- 300 16. In the *Date Created* field (near bottom), enter *2003-05-22* (or current date, if you like).
17. In the *Date Last Updated* field, enter *2003-05-22* (or current date, if you like).
18. Click on the *Revalidate* button. You should see a green circle with a white check in it next to a statement indicating that the file is valid. Click on "OK".
- 305 19. At this point you've completed the basics. Fill out the form a bit more, save the file, and then take a look at it in Internet Explorer.

## Appendix H: Developing Your First UML Activity Diagram

- 310 1. Select a use case to serve as a narrative for your UML activity diagram. (One is provided in this document.)
2. Start Poseidon for UML Community Edition and close the *Tip of the Day* form.
3. In the window on left side, right-click on *Class Diagram 1* and then choose *Remove Diagram* from the context menu. Click on “Yes” when prompted.
4. Choose the menu option Create Diagram | Activity Diagram.
- 315 5. Click on the start-state symbol button (the button with the black circle) and then click somewhere on the canvas (the big window with the gray grid).
6. Click on an arrow protruding from the start state symbol. Click on other UML symbol buttons and add them to the diagram. Play around a bit.
- 320 7. Save your work by choosing the menu option File | Save Project... and then choosing a folder and a filename.
8. Create a PNG image of your work by choosing the menu option File | Save Graphics... and then choosing a folder and filename.
9. Check out your PNG image in a browser.

325 **Appendix I: Sample Use Case—Santa Clause Delivers Toys**

**Use Case Name:** Santa Clause Delivers Toys

**Context of Use:** Santa Clause delivers toys to boys and girls around the world on Christmas Eve.

330

**Scope:** North Pole Operations

**Level:** Summary

335

**Primary Actor:** Santa Claus

**Stakeholders and Interests**

340

- **Santa:** Deliver toys; Children's happiness
- **Elves:** Support Santa; Children's happiness; Reindeer health & welfare
- **Children:** Receive toys
- **Parents:** Children's happiness

**Success Guarantees:** Presents have been delivered

**Trigger:** Christmas Eve

345

**Preconditions**

350

- Santa has Naughty & Nice list
- Toys are wrapped
- Reindeer are fed and watered
- Santa has map and GPS

**Main Success Scenario**

1. Elves load sleigh with toys and coal, and hitch reindeer to sleigh.
2. Santa flies to child's house.
3. Santa lands on rooftop.
4. Santa checks Naughty & Nice list and gathers toys.
5. Santa climbs down chimney.
6. Santa puts toys under tree and goodies in stocking.
7. Santa climbs up chimney.
8. Santa flies back to North Pole.

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9. Elves unhitch and care for reindeer.

### **Extensions**

2. Flight path is foggy.

2a1. Santa has Rudolph shine his nose brightly.

4. Child is listed as "naughty".

4a1. Santa gets coal instead of toys.

6. Child is listed as "naughty".

6a1. Santa puts only coal in stocking and doesn't leave any toys.

### **Postconditions**

- Santa, sleigh, and reindeer are at North Pole.
- Presents are under Christmas trees.

360

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**Author:** Jim Wilson

**Date Created:** 2003-05-22

**Date Updated:** 2003-05-22

## Appendix J: References

- 365 1. *Writing Effective Use Cases* by Alistair Cockburn, Copyright 2001 by Addison-Wesley  
(Note: Many regard this book to be the best introduction to use case development.)
2. *Advanced Use Case Modeling* by Frank Armour and Granville Miller, Copyright 2001 by  
Addison-Wesley
3. *UML Explained*, by Kendall Scott, Copyright 2001 by Addison-Wesley
- 370 4. *Simple Guide to the UMM*, developed and maintained by the United Nations Center for  
Trade Facilitation and Electronic Business, [http://webster.disa.org/cefact-  
groups/tmg/doc\\_bpwg.html](http://webster.disa.org/cefact-groups/tmg/doc_bpwg.html)
- 375 5. *Patterns for Effective Use Cases* by Steve Adolph and Ralph Bramble, Copyright 2003 by  
Pearson Education, Inc. (Note: This is somewhat of a sequel to *Writing Effective Use Cases*  
and is targeted mostly at use case development team leaders or facilitators.)

## Appendix K: Methodology Requirements

To achieve business collaboration standardization (document what needs to happen to meet a business desired outcome), several questions must be answered:

1. What kinds of information need to be documented?
- 380 2. In what format(s) will the standards/guidelines be expressed? What file type will be used?
3. In what format will the standards be maintained? What file types will be used?
4. In what practical way will working teams work with the standards in the maintenance format?
- 385 5. How will the standards be transformed from the maintenance format and file type to the publication format(s) and file type(s)?
6. What are the file naming guidelines?
7. What are the versioning guidelines? What constitutes a major version, minor version, and release?