
Development Process of Delaware International Logistics Web Application

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Overview

- Introduction to the system
 - Tools/Environment used for development
 - Rapid Development Strategy
 - Developmental Fundamentals
 - Classic Mistakes made
 - Risk Analysis
-

Introduction to DIL

- DIL is a Shipping Management Company
 - Hires necessary shipping providers to ship customer cargo from one place to another
 - Services offered by DIL
 - Packing
 - Moving
 - Shipping
 - DIL operates along with other companies for the packing, moving and shipping of cargo
-

Our Goal

Build a web-based system that integrates :

- Registration of various users of the system
 - Senders
 - Shippers
 - Movers
 - Packers
- Booking of shipping services
- Generation of shipping orders
- Management of a shipping orders
- Tracking of bookings and shipping orders



Functional Requirements

- Provide an interface for user registration
 - Such that the user can select his/her role
 - Have an authentication system
 - Provide an interface for user login
 - Interface for user to change his/her user profile
 - Have a password recovery system
 - Interface for booking a shipping service
 - User be able enter all cargo information
 - Generate a unique tracking number for each booking
 - Interface to view an order once its booked
 - Interface for user to track his/her shipment
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Development

- Dia
 - Dia is a free and open source general-purpose diagramming software. It has a modular design with several shape packages available for different needs: flowchart, network diagrams, circuit diagrams, and more. We used Dia to draw UML diagram.
 - Parse::Dia::SQL
 - Convert a Dia UML diagram to DB specific SQL
 - LAMP
 - **L**inux **A**pache **M**ySQL **P**HP development stack
 - CakePHP
 - Used CakePHP for the MVC pattern to develop the front-end views, the model and the controller
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Development on CakePHP

- Open-source web application framework, written in PHP
 - Uses code generation and scaffolding features to rapidly build prototypes
 - Translations, database access, caching, validation, authentication are built into the framework
 - Need to just set-up the database in order to "bake"
 - analyzes database and creates basic classes
 - Comes with a set of MVC conventions to guide the development
 - Limitations:
 - setup is non-trivial
 - learning curve is substantial
 - complex object model
-

Development on CakePHP

Language	files	blank	comment	code
-----	-----	-----	-----	-----
PHP	639	24668	70829	143110
CSS	6	19	36	690
XML	6	37	44	237
YAML	1	6	0	114
SQL	3	5	0	80
DOS Batch	2	12	0	52
Bourne Again Shell	2	6	40	38
Javascript	6	0	2	4
-----	-----	-----	-----	-----
SUM:	665	24753	70951	144325
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Dia and Parse::Dia::SQL

- Dia is a free open-source diagramming tool
 - special components to draw UML/ERD diagrams
 - used to draw the data model for DIL
 - Parse::Dia::SQL is PERL module to convert UML diagrams in Dia to SQL statements
 - used to convert DIL data model to SQL
 - used generated SQL to initialize DIL database
 - - With database ready, website for DIL was ready to be baked on CakePHP
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Testing

Selenium

Selenium is a portable software testing framework for web applications. It provides a record/playback tool for authoring tests without learning a test scripting language. It also provides a test domain-specific language to write tests in a number of popular programming languages, including Java, C#, Groovy, Perl, PHP, Python and Ruby (in our case, we tested PHP). The tests can then be run against most modern web browsers.

Testing

Selenium

- **Usability:** Testing browser based applications such as web pages or some mobile applications.
 - **Installation:** Firefox plugin
 - **Key Features**
 - It offers adjustable testing speed.
 - It has the recording ability.
 - It can parse or interpret the HTML easily, so we can do GUI testing for web pages.
-

Configuration Management

Google Code SVN


link: <https://code.google.com/p/delaware-international-logistics/>


 **delaware-international-logistics**
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Labels
Software, Process,
Management, CakePHP

 **Members**
[stephenrhein](#), [alparslansari](#),
[archanaraghav28](#),
[zhangyulin8787](#)

Your role
[Owner](#)

Delaware International Logistics (DIL) is a shipping Management Company that is in charge of the logistics associated with the shipping of cargo by ship. DIL operates along with other companies for the packing, moving and shipping of cargo, and nowadays offers its services to five countries around the world. Currently the reservation, payment and management of the services is totally manual, by phone, email, fax or/and using paper-based documents, which makes the process slow and error prone. Furthermore, the actual system lack of an effective way to communicate the services provided by the company to their actual customers and potential customers around the world. To address this shortcoming of the current system, we propose a DIL web-base system that integrates the registration of users of the system (customers and employees), the booking of shipping services, the generation of shipping orders, the management of a shipping orders and the tracking of bookings and shipping orders, all in an automated way. The Web-based system will support the main activities of DIL described above, and will be a communication medium for customers around the world having interests in the services provided by the company. Furthermore, the Web-based system will provide an easy and simple way for employees access the information and services managed by IDL, and it will support the organization of shipping orders with the provider companies associated with IDL.

[Tip: Project owners, see our \[Getting Started\]\(#\) guide for steps to configure your project.](#)

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Rapid Development Strategy

Chief Programmer Concept

- Chief Programmer - Steve
 - Tester - Alp
 - Clerk - Archi
 - Toolsmith - Yulin
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Development Strategy

- People

- Job matching : used prior technical experience of team members to match
- Team balance :

- Product

- Implemented essential features only
- Additional features require additional specification, design, construction and testing.

- Process

- Followed development fundamentals
- Risk Management
- Lifecycle planning (I dont think we did any lifecycle planning)

- Technology

- Use more effective tools CakePHP- the Rapid Development

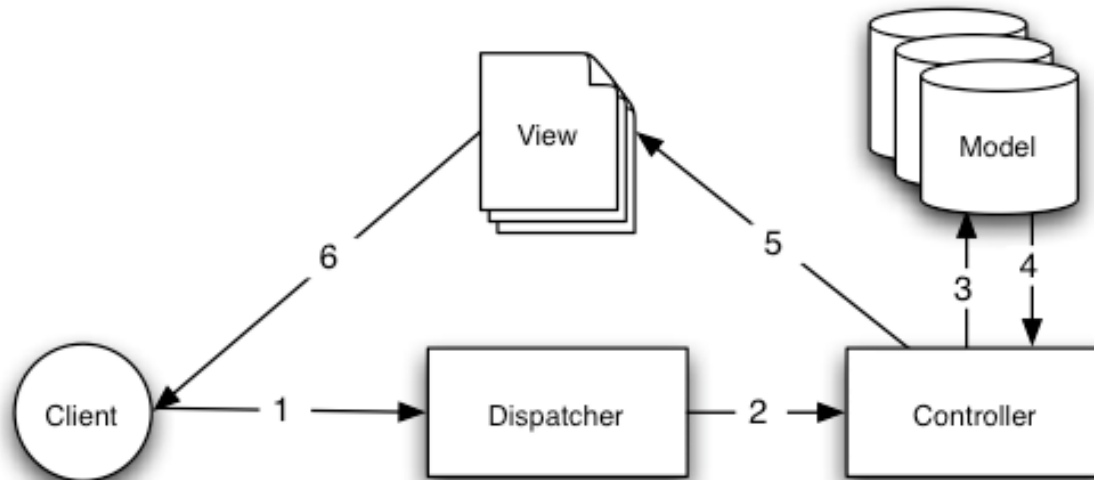
Development Fundamentals

- Requirements
 - Followed requirements document for development
 - Design
 - Designed MVC architecture for the application
 - Developed modules to follow the architecture
 - Testing
 - Data model was a crucial part, hence had reviews for the data model
 - Website was tested using Selenium
 - Google SVN was used for bug tracking
-

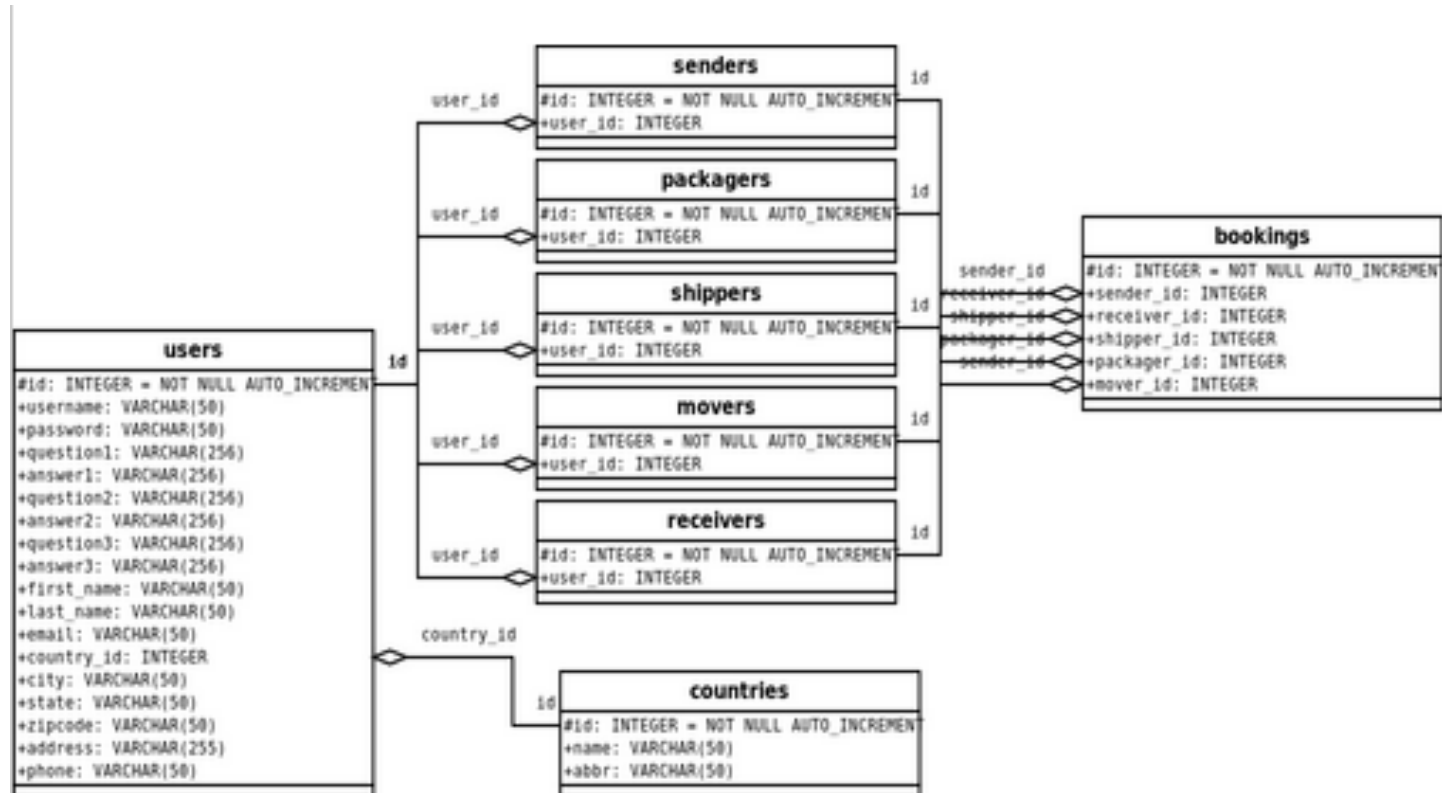
Design

Model–view–controller (MVC)

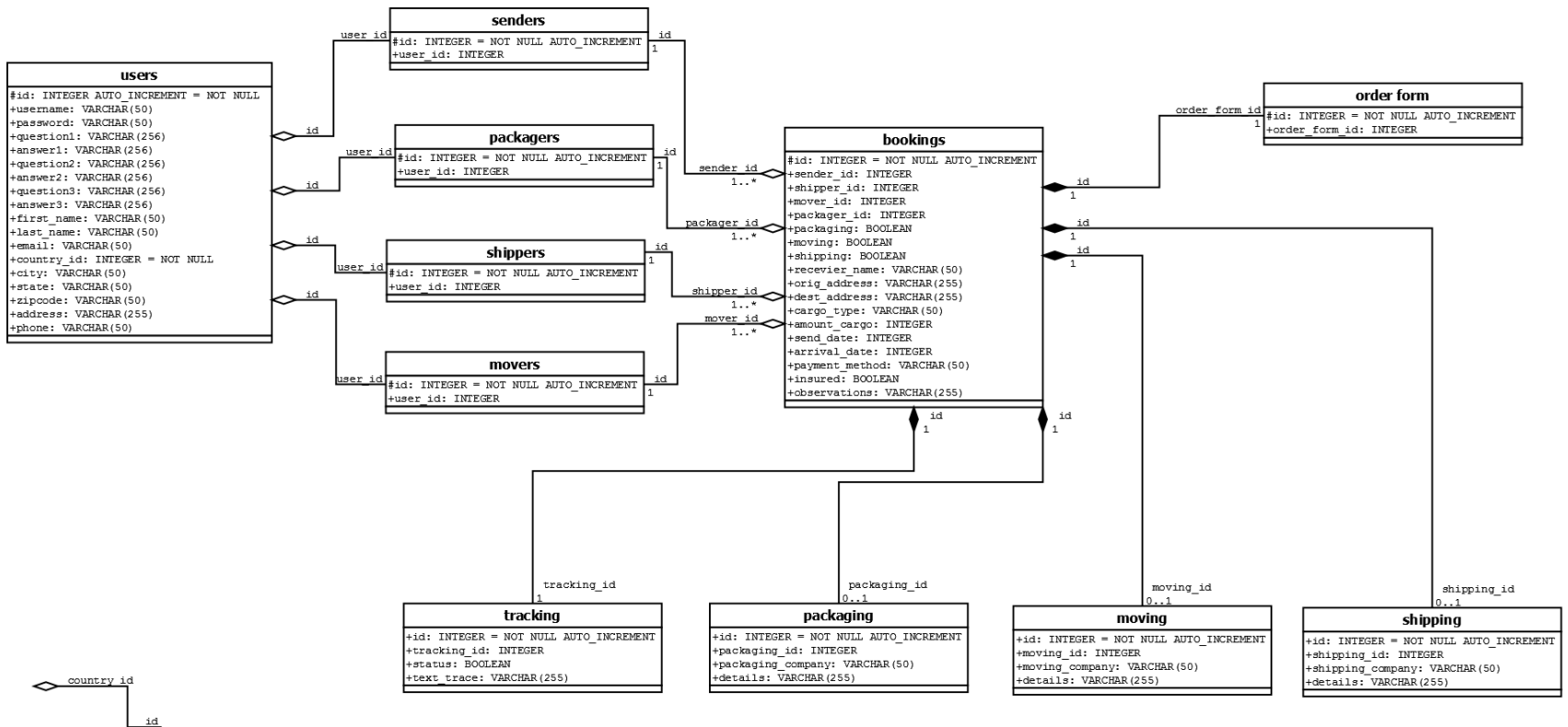
Delaware International Logistics Architecture



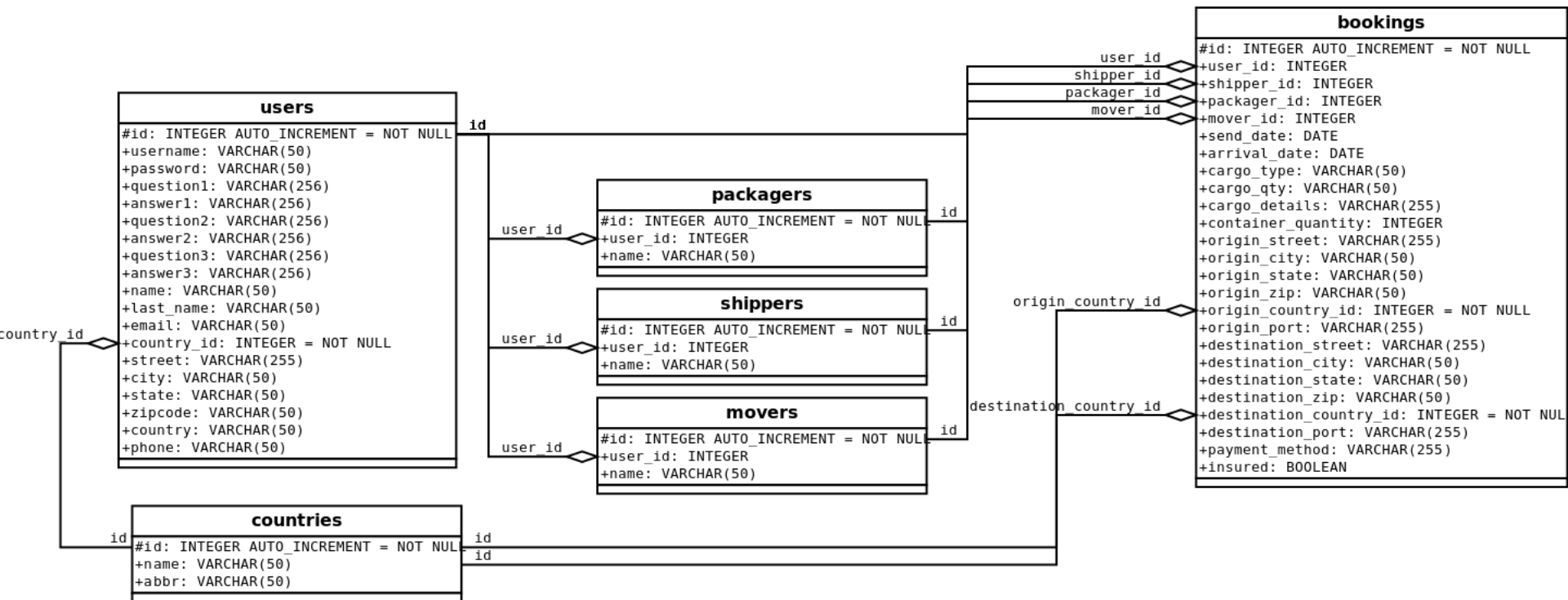
Data Model - Initial



Data Model - intermediate



Data Model - Final?



Testing

Testing
Used Selenium
Bug tracker in google code

Select: All None Actions... ▼							
	ID ▼	Type ▼	Status ▼	Priority ▼	Milestone ▼	Owner ▼	Summary + Labels ▼
<input type="checkbox"/> ★	1	Defect	Fixed	Medium	---	stephenrhein	Missing Method in BookingsController
<input type="checkbox"/> ★	2	Defect	Accepted	Medium	---	stephenrhein	Logout::Movers Page
<input type="checkbox"/> ★	3	Defect	New	Medium	---	stephenrhein	Logout::Packagers Page
<input type="checkbox"/> ★	4	Defect	New	Medium	---	stephenrhein	re-Login
<input type="checkbox"/> ★	5	Defect	New	Medium	---	stephenrhein	username uniqueness

Testing

delaware-international-logistics

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for

 **Issue 1: Missing Method in BookingsController**
1 person starred this issue and may be notified of changes.

Status: Fixed
Owner: [stephenrhein](#)
Closed: Today
Cc: [zhangyulin8787](#), [archanaraghav28](#)
Type: Defect
Priority: Medium

[Add a comment and make changes below](#)

Project Member

Reported by [alparslansari](#), Apr 30, 2013

I was trying to logout when I was booking page. Please see the attached file.
<http://wonka.pc.udel.edu:2280/dil/bookings/logout>

 Delaware International Logistics_Errors.pdf
127 KB [Download](#)

Project Member

#1 [stephenrhein](#)

(No comment was entered for this change.)

Status: Fixed

Risk Exposure

- Certain scenarios and functional requirements were not covered in the requirements document.
 - CakePHP is a new framework and team members needed extra time to learn the use of, and set up the environment.
 - Learning curve for new development tool was longer than expected.
 - Architectural design of the system was developed to be compliant with CakePHP for development, hence could not be finalized until the data model was final
 - Data model developed on Dia needed to be converted to SQL to be used on CakePHP, faced compliance issues
-

Classic Mistakes

- Lack of stakeholder buy-in
 - Do not any stakeholders yet
 - Insufficient risk management
 - did not address risk associated with unclear requirements early enough
 - resulting in change of data model late into the schedule
 - which impacted the design as well
 - Inadequate design : as a result of change in data model
 - Developer Gold Plating
-

Conclusion

- Software engineering is hard
 - New tools don't necessarily facilitate Rapid Development
 - Different schedules of different people make finding common ground difficult
 - $N * (N-1) / 2$ communication problem
 - Advanced technologies helped a lot
 - Google Drive, Google Code SVN
-