

# MOBILE INVENTORY MANAGEMENT FOR PHARMACIES

CPET 565 FALL 2012

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## Outline

2

- Introduction
- Current Information Service Environment
- Project Milestones
- Design Considerations
- Design Diagrams
- Vendors
- Prototype
- Demonstration

## Executive Summary

3

- Leaders of a global healthcare company specializing in pharmaceuticals approved \$50,000 to fund an Enterprise Mobility Pilot Project to explore new mobile technologies with business intelligence.
- A mobile BI solution will need to integrate into the companies' existing Enterprise Resource Planning (ERP) System.
- Our focus for the mobile enterprise pilot project will be on a mobile BI application for employees to facilitate efficient maintenance of pharmacy inventory.

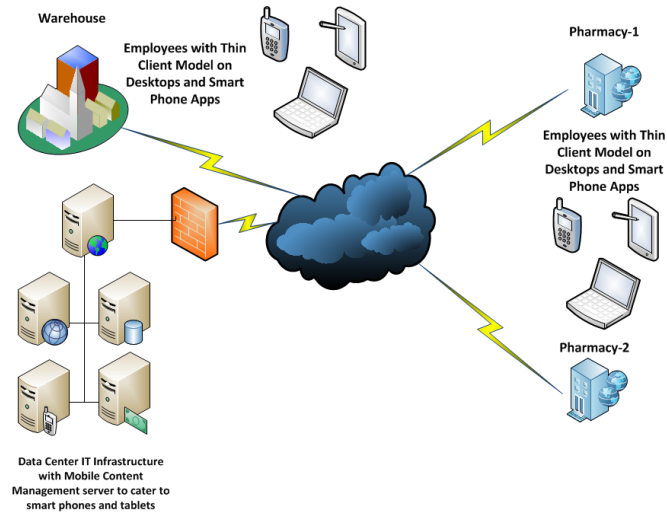
## Mobile Computing/ Information Service Environment

4

- The pilot project will be conducted in the company's northeast Indiana region which consists of one warehouse that supplies fifteen pharmacies in the area. The IT server infrastructure is maintained by a cloud service provider.
- The company currently maintains SAP ERP software on Linux servers and will be looking to either extend the SAP infrastructure or integrate it with Oracle business intelligence products.

## Network Diagram

5



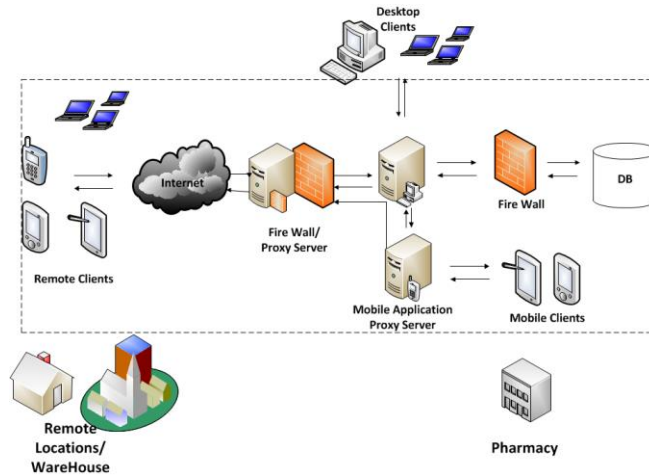
## Project Milestones

6

- Mobile Application Decision October 4, 2012
- Review of Just-in-time Study, Company Research & Risk Management Plan October 10, 2012
- Review Prototype for IT Management Meeting December 7, 2012
- IT Management Meeting December 13, 2012
  - ▣ Determine Scope
  - ▣ Select Software & Hardware
- Complete Report of Test Results February 15, 2013
- IT Management Review of Test Results February 18, 2013
- IT Management Presentation to Company Administration February 21, 2013

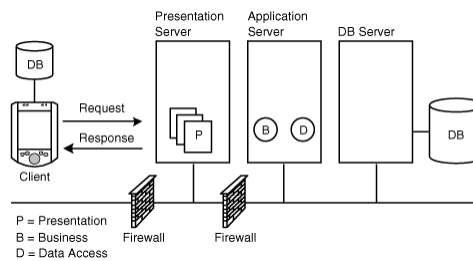
# Hardware Architecture

7



# Three Tier Server Architecture

8



Three Tier Server Architecture as displayed in [5]

## Thin & Fat Clients

9

- For thin clients, the mobile devices basically serves as a user interface and all the computing is done either at server or proxy end.
- If communication is not reliable, a fat client should be used.

| Thin Client                        | Fat Client                                   |
|------------------------------------|--|
| Computation at Server end          | Computation at Client end                    |
| Constant communication with server | Weak Communication with server               |
| PHP Scripting                      | Java Script, Java                            |
| Basically a UI                     | UI and computation utilizing local resources |

## Security in Software Architecture

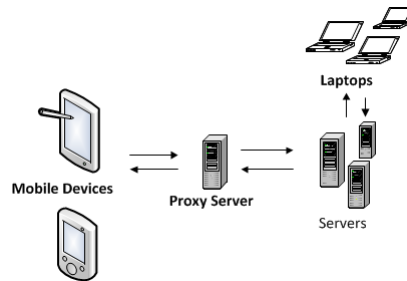
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- **User Account Management**
- **Authentication Mechanisms**
  1. **Machine-level authentication.** This is used to authenticate the machine that is accessing the service.
  2. **User-level authentication.** This is used to authenticate a particular user.
  3. **Third-party authentication.** This is typically an out-of-band authentication mechanism where the third-party is used to verify the user credentials.

# Middleware

11

## Client-Proxy Server Model



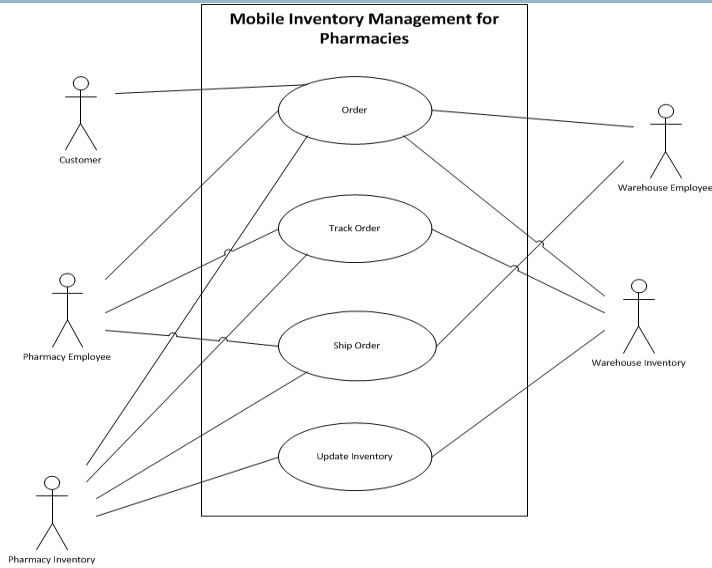
## Supported Mobile Devices: Intelligent Servers

12

- Existing servers can be made more intelligent by incorporating scripts that detect the type of client device and render appropriate pages.
- Code can be incorporated at server end that detects the device type and run appropriate scripts.
- This kind of intelligence is used in industry to cater for heterogeneous browser platforms.

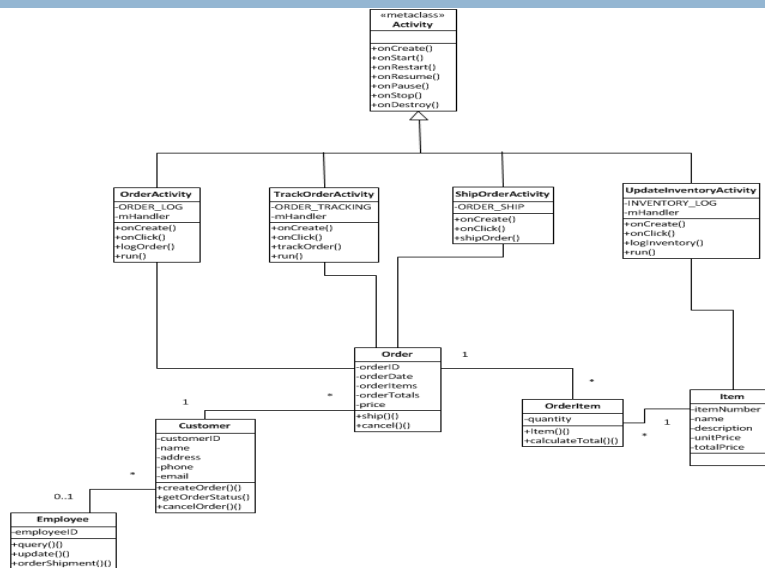
# Use Case Diagram

13



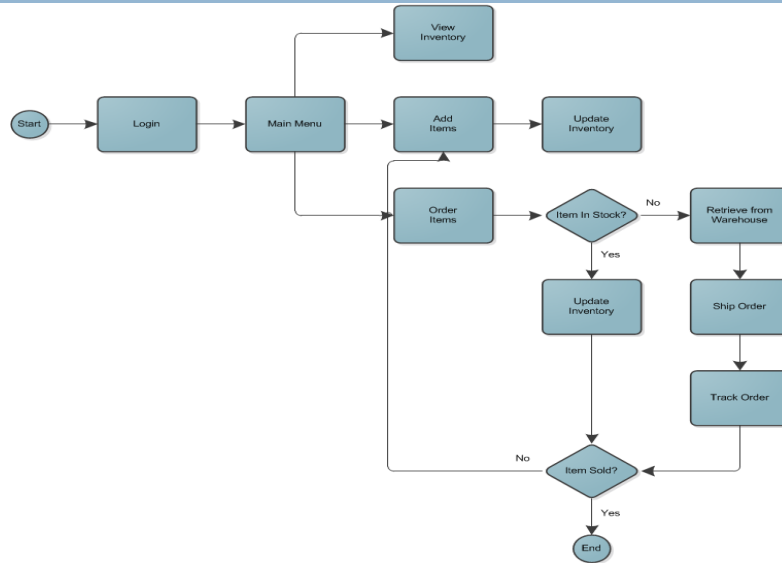
# Class Diagram

14



## Business Process Diagram

15



## Considered Vendors

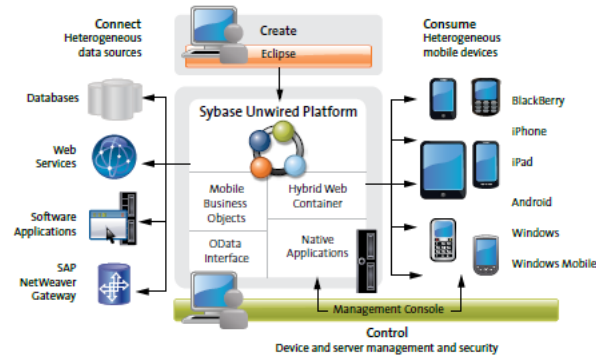
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- The company currently uses an SAP Enterprise Resource Planning system. However, Oracle has a business intelligence product that will run on SAP.
- The Oracle mobile BI solution is relatively inexpensive. However, it will only run on Apple iPhone and iPad clients.
- In contrast, SAP BusinessObjects Mobile will run a wide variety of clients. SAP also has a huge range of platform independent software.



## Benefits of SAP & Sybase

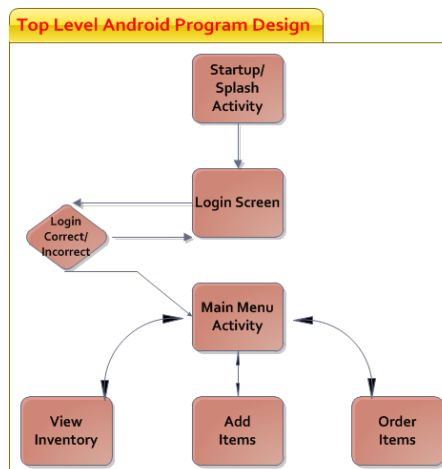
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Sybase Unwired Platform as shown in [17, p.2]

## Mobile Device Program Design

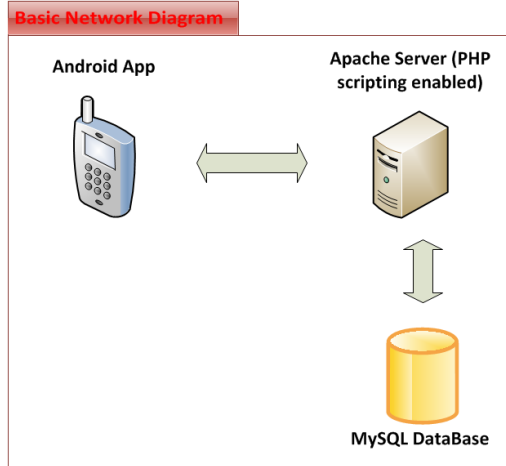
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Top Level Android Program Design, revised based on [12]

# Prototype: Networking

19



# Prototype: WAMP server

20

 WampServer







































Version 2.2 Version Française

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**Server Configuration**


Apache Version : 2.4.2  
PHP Version : 5.4.3

**Loaded Extensions :**

|   |  |  |  |   |
|---|--|--|--|---|
|  Core      |  bcmath     |  calendar       |  com_dotnet |  ctype   |
|  date      |  ereg       |  filter         |  ftp        |  hash    |
|  iconv     |  json       |  mcrypt         |  SPL        |  odbc    |
|  pcrc      |  Reflection |  session        |  standard   |  mysqlnd |
|  tokenizer |  zip        |  zlib           |  libxml     |  dom     |
|  PDO       |  Phar       |  SimpleXML      |  wddx       |  xml     |
|  xmlreader |  xmlwriter  |  apache2handler |  mbstring   |  gd      |
|  mysql     |  mysqli     |  pdo_mysql      |  pdo_sqlite |  rhash   |
|  xdebug    |  |  |  |   |

MySQL Version : 5.5.24

**Tools**

-  [phpinfo\(\)](#)
-  [phpmyadmin](#)

# Prototype: MySQL Database

21

The screenshot shows the phpMyAdmin interface for a MySQL database. The left sidebar shows the database structure with 'androidhive' selected and 'products' as the current table. The main area displays a table with 7 rows. The SQL query executed is 'SELECT \* FROM `products` LIMIT 0, 30'. The table columns are: pid, name, price, description, created\_at, and updated\_at.

|                          | pid | name           | price    | description           | created_at          | updated_at          |
|--------------------------|-----|----------------|----------|-----------------------|---------------------|---------------------|
| <input type="checkbox"/> | 1   | advil          | 65.00    | general medicine      | 2012-11-07 16:19:47 | 0000-00-00 00:00:00 |
| <input type="checkbox"/> | 2   | mengwei iPhone | 10000.00 | used phone            | 2012-11-07 16:23:02 | 0000-00-00 00:00:00 |
| <input type="checkbox"/> | 3   | htc            | 636.00   | great package         | 2012-11-07 16:27:13 | 0000-00-00 00:00:00 |
| <input type="checkbox"/> | 4   | Morphine       | 550.00   | proscription required | 2012-11-07 17:51:30 | 0000-00-00 00:00:00 |
| <input type="checkbox"/> | 5   | gfl            | 93.00    | tcag                  | 2012-11-07 18:10:10 | 0000-00-00 00:00:00 |
| <input type="checkbox"/> | 6   | ipfw           | 63.00    | university is kool    | 2012-11-07 20:53:19 | 0000-00-00 00:00:00 |
| <input type="checkbox"/> | 7   | etcs106        | 58.00    | classroom             | 2012-11-19 10:29:32 | 0000-00-00 00:00:00 |

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22

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23

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