Operational Concept Description (OCD)

Surgery Assist

Team 11

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Version History

Date	Author	Version	Changes made	Rationale
09/24/13	H.L.	1.0	• All details known as of 09/24/13	• Initial Draft, add Chapter Introduction, Share vision, Overview of the system, System Boundary and Environment
09/27/13	W.G.	1.1	• Update 3.1.1 3.1.2	• Update Information on Current System
09/27/13	H.L.	1.2	• Update UML and workflow in Chapter 2 and Chapter 3	• Update UML graph
09/30/13	H.L.	1.3	• Update Chapter 3	• Update infrastructure, artifacts
10/02/13	H.L.	2.0	• Add Chapter 3.2.1, 3.2.2	• Add Capability Goals, Level of Service Goals
10/06/13	H.L.	2.1	• Add Chapter 3.2.3-3.2.5	• Add Organizational Goals, Constraints
10/07/13	H.L.	2.2	• Modify Chapter 2.3	• Update workflow
10/09/13	H.L.	2.3	• Modify Chapter 3.2.1	• Update Capability Goals
10/12/13	H.L.	3.0	• Add Chapter 3.3	• Add Element Relationship Diagram
10/13/13	H.L.	3.1	• Add Chapter 3.4	• Add Organizational Transformations, Operational Transformations
10/14/13	H.L.	3.1.0	• Add Element Relationship Diagram	• Add Element Relationship Diagram
10/22/13	H.L.	3.1.1	• Change based on ARB feedback	• Change the environment diagram
10/27/13	H.L.	3.2.0	• Change the benefit chain	• Change the end outcome of benefit chain
11/01/13	H.L.	3.2.1	• Change Element Relationship Diagram	• Change environment again
11/02/13	H.L.	3.3	• Change current workflow and artifacts	• Make it more clear
11/10/13	H.L.	4.0	• Redraw element relational diagram	• Change outer environment
11/19/13	H.L.	4.1.1	• Change the level of services and relation to current system	• Make it more detailed.
12/02/13	H.L.	4.1.3	• Change the benefit chain again	• Change to one end output.
12/07/13	H.L.	4.2	• Changes after ARB feedback	• Change the artifact and environment part

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1. Introduction

1.1 Purpose of the OCD

The purpose of OCD is to provide a detailed early operational concept in order to achieve the shared vision of the success-critical stakeholders of SurgeryAssist – SurgeryAssist online reservation system.

The success-critical stakeholders for this project includes:

- Doctors, one end user group of SurgeryAssist
- Surgery Center, another end user group of SurgeryAssist
- David Vosicher, the project owner, Project and program manager
- Sales team, David's team
- Maintainers, David's team
- Developers, Team 11 as software developing team
- ICSM Directors, ICSM process instructors

This document is an initial reference for benefits expectation, benefits chain, current system and environment assessment, system objectives, constrains and priorities, new operational concept, organizational and operational implications.

1.2 Status of the OCD

This is an As-Built version number 1.0 in the valuation phase of the OCD, also part of VCP. The scope of the Surgery Assist system is the initial assessment for current system has been done, an initial vision of requirement has been established.

2. Shared Vision

2.1 Overview of the system

Table 1: The Program Model

Assumptions :

- **Surgery Center will trust this system to post their schedule on it.**
- **Doctors will use this system to reserve a surgery space.**
- **Online reservation will improve efficiency for current reservation process**

Stakeholders	Initiatives	Value Propositions	Beneficiaries
• David Vosicher, the project owner, Project and program manager • Sales team, David's team • Maintainers, David's team • Developers, Team 11 as software developing team • Surgery Center • Doctors	• Develop the system • Create profile, upload surgery room schedule • Create profile, reserve available surgery slot online • Monitor website log, administrate database • Advertise the system to client • Design revenue model • Provide detailed requirement, support the whole project	• Increase utilization, decrease vacant of room for Surgery Center • Increase the freedom to choose for Doctors • Increase revenue for Surgery Assist	• Surgery Center • Doctors

2.2 System Capability Description

SurgeryAssist System is intended for outpatient surgery centers seeking to have their surgery rooms optimally filled, thereby covering the large operating costs from

underutilization of their facility and for surgeons seeking surgical slots who are frustrated with the current antiquated scheduling system. Surgery Assist offers a specialized digital reservation software solution that optimally connects surgeons and outpatient surgery centers to improve the scheduling process and fill vacant surgical slots.

- **The type of system to be built:**

  - The system will enable Doctor/SC login/ logout/ signup
  - The system will enable Doctor/SC create profile, upload attachments, view each other's profile, update profile
  - The system will enable Doctor search surgical slot by name, location and time, get direction to surgery center via google map
  - The system will enable Doctor submit reservation, cancel reservation, view submitted reservation
  - The system will enable surgery center post surgical slot, view surgical slot posting, update surgical slot posting,
  - The system will enable surgery center view reservation request, confirm reservation request, decline reservation request
  - The system will enable maintainer create new user, view users, modify user role, delete user, reset user password
  - The system will generate reservation report and will enable project owner view the reservation report
  - The system will implement payment online, and track payment history
  - The system will send notification email to both surgery center and doctor, once a reservation has been submitted, confirmed, cancelled or declined.
  - The system will enable Doctor/ SC synchronous with external calendar API, like Google calendar, to add event to calendar with one press

- **The target customers for this system:**

  - The target customers will be the doctors and surgery center

- **The need that will be satisfied by the system:**

  - For outpatient surgery centers seeking to have their surgery rooms optimally filled, thereby covering the large operating costs from underutilization of their facility.
  - For surgeons seeking surgical slots who are frustrated with the current antiquated scheduling system.

- **The compelling reasons for the customer to buy/use the system**

  - Right now, the reservation can only be done via phone, the doctors need to check surgery space one by one, and accept some undesired time or location
  - The surgery center has lots of vacant space to fill, which is significantly decreasing their revenue

- **The closest competitor of the system**

- One of the competitor is surgery center's own website. It's an online reservation for single reservation system. Compared to competitor, our system will be more popular because the doctors have multiple choices other than check these websites one by one

2.3 Expected Benefits

- The surgery center and doctor will enhance communication and mutual trust
- The surgery center's time slot will be more likely being accessed by doctors, successfully decreases the vacant room space and fully utilizes its facilities and human resources
- The doctor will have more freedom to choose their preferred location and time to take surgery
- The reservation process will be greatly simplified and fastened
- Surgery center will save more time to resolve time conflict in calendar
- Surgery center will save more time to check doctors' qualification
- The doctor will be able to sync to own calendar and view map to the location
- Both sides will be notified before the date approaching
- The SurgeryAssist will build up reputation, increase revenue
- The SurgeryAssist will be more convenient to administrate and monitor the process

2.4 Benefits Chain

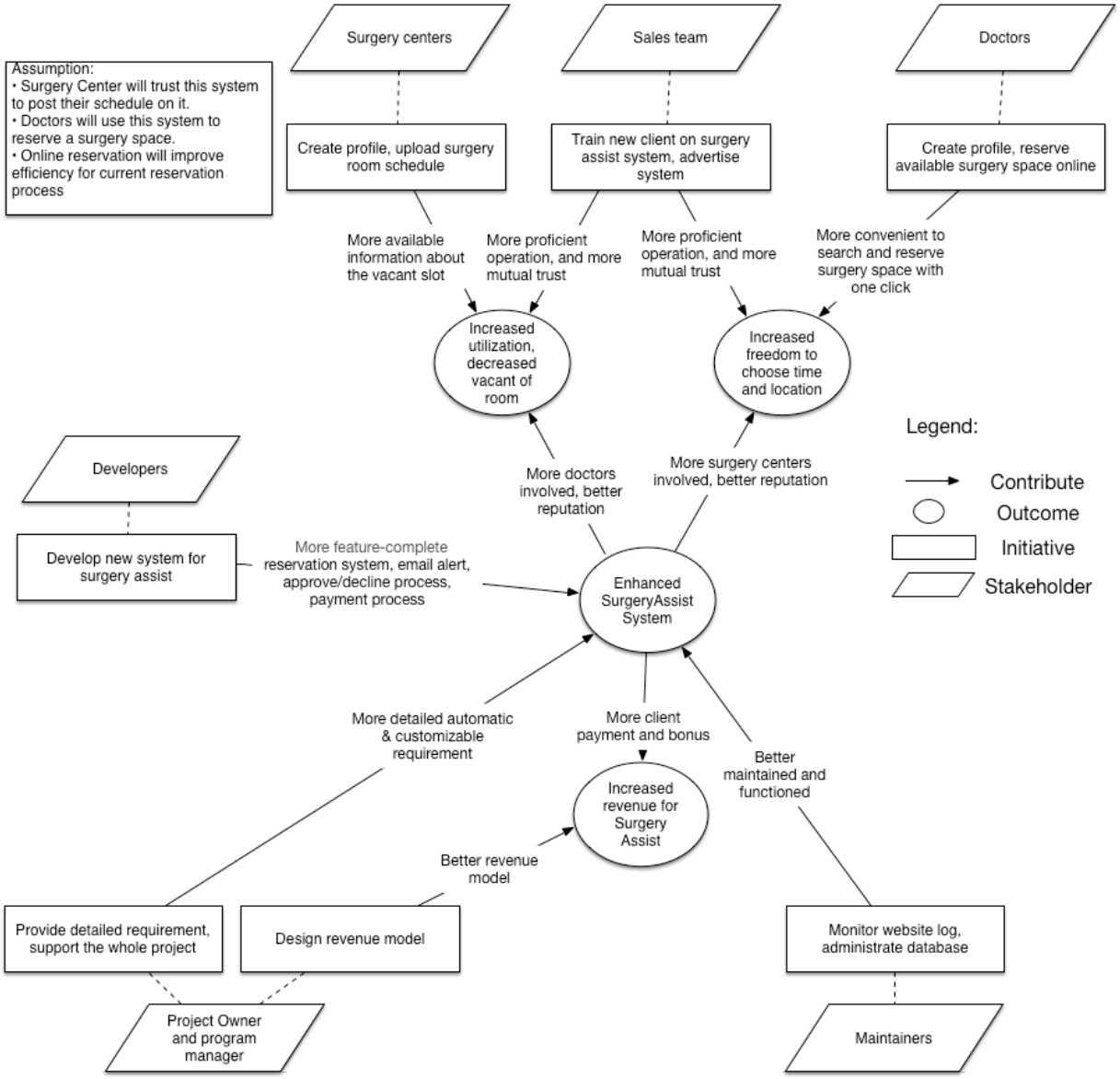

Figure 1: Benefits Chain Diagram of Surgery Assist System

2.5 System Boundary and Environment

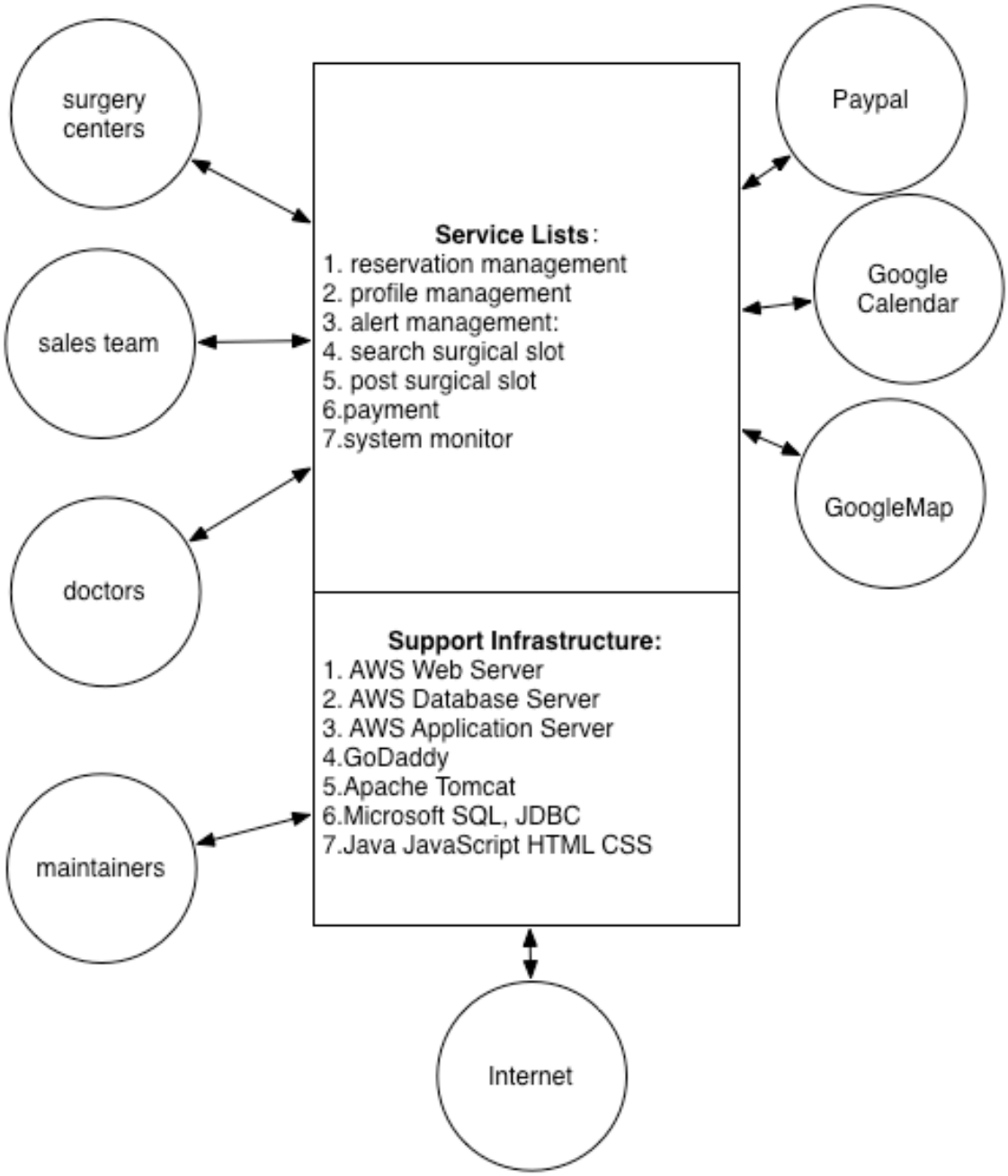

Figure 2: System Boundary and Environment Diagram of Surgery Assist System

3. System Transformation

3.1 Information on Current System

3.1.1 Infrastructure

Hardware:
- Terminal: PC
- Database Server: AWS Database Server
- Web Server: AWS Jenkins Server
- Application: AWS App Server

Software:
- Web Server: Apache Tomcat
- DBMS: Microsoft SQL Server, JDBC

Operating system: All Compatible
Domain: GoDaddy
Development Environment: Eclipse IDE (Sprint Source Tools Suite, Maven Integration), Node.js
Framework: Spring Framework
Programming Language: Java, JavaScript, HTML, CSS, PHP, Express, Jade, Stylus

3.1.2 Artifacts

Table 2. Artifacts of Surgery Assist System

Artifact	Description	Request/Shown/ Receive	Planned Delivery Date
ATF-1: Surgery center profile	The surgery center profiles, including license number, distance, description	Received	09/13/2013
ATF-2: Surgery center calendar	Sample surgery center calendar, include nurse, facility	Shown	09/13/2013
ATF-3: SurgeryAssist reservation	Surgery Assist reservations, including status, duration, description	Shown	09/13/2013
ATF-4: Doctor profile	Code for existing system	Received	09/13/2013
ATF-5: Email Template	Email Template for email system	Received	09/13/2013

3.1.3 Current Business workflow

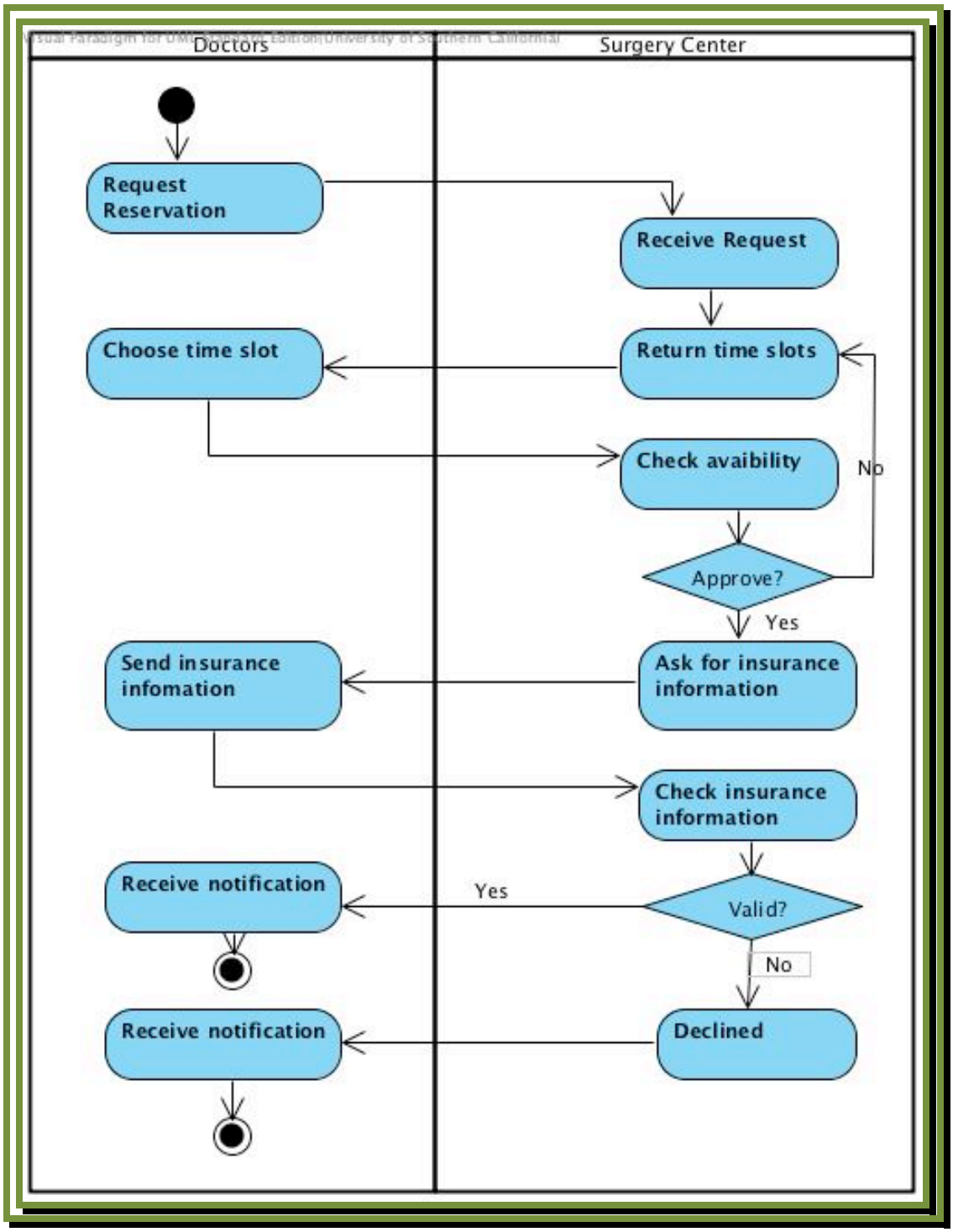

Figure 3: Current Workflow Diagram of Surgery Assist System

3.2 System Objectives, Constraints and Priorities

3.2.1 Capability Goals

Table 3 Capability Goals of Surgery Assist System

Capability Goals	Priority Level
OC1-alert management: The system will send notification email to both surgery center and doctor, once a reservation has been submitted, confirmed, cancelled or declined	Must have
OC2-reservation management: The system will enable doctor submit reservation, cancel reservation, view submitted reservation	Must have
OC3-profile management: The system will enable Doctor/SC create profile, upload attachments, upload profile, view each other's profile, update profile	Must have
OC4-search surgical slot: The system will enable Doctor search surgical slot by name, location and time, get direction to surgery center via Google map	Must have
OC5-post surgical slot: The system will enable SC post their available surgical slot, and upload attachments	Must have
OC6-payment: The system will implement payment online, and track payment history	Must have
OC7-system monitor: The system will generate reservation report and will enable project owner view the reservation report	Should have

3.2.2 Level of Service Goals

Table 4: Level of Service Goals

Level of Service Goals	Desired Level	Acceptance Level	Referred WinWin Agreements
System availability	Never shut down,100% of time available	Shut down at most one day out of one year	All WinWin agreements
System notification minor delay	0.5s	60 min	Email notification (WC_2422 , WC_2419, WC_2418, WC_2415)

System query time	100ms	400ms	Profile (WC_2754), Reservation (WC_2419)
System account for and detect human error	100% user errors can be addressed	96% user errors can be addressed	Reservation (WC_2419), Profile (WC_2754), Payment (WC_2425)

3.2.3 Organizational Goals

OG-1: Increase freedom to choose a preferred location and time slot for doctors

OG-2: Decreases the vacant room space and fully utilizes its facilities and human resources

OG-3: Increase the revenue for SurgeryAssist

3.2.4 Constraints

CO-1: Database infrastructure： The new system's database will build over Microsoft SQL Server and JDBC.
CO-2: Web server: The new system should be built on AWS web server.
CO-3: Developing language: Java will be used as the core development language.
CO-4: Minimal Budget: The system development expense must be under $2300.
CO-5: Limited delivery time: Time limit for delivery/installation is one year at max.

3.2.5 Relation to Current System

Table 5: Relation to Current System

Capabilities	Current System	New System
Roles and Responsibilities	Surgery center: can only create profile, edit profile Doctors: can only create profile, edit profile, view others' profile Maintainer: can manage users Project owner: do no have monitor log	Surgery center: can post surgical slot, approve/ decline a reservation, generate report Doctors: can search available slot, submit the reservation, cancel the reservation, get notified when surgery center approved Maintainer: can monitor the website Project owner: can generate report
User Interactions	Surgery center: can only reserves via phone, fax the file Doctors: can only notify result via	Surgery center: can post calendar on profile for doctors, view pending requests.

	phone Maintainer: None	Doctors: can search for the surgery center and send reservation request. Maintainer: can generate the report
Infrastructure	System is using Java Spring framework, using HTML and CSS for front-end.	Adopt Bootstrap.js and Bootstrap.css to further simplify the front-end development.
Stakeholder Essentials and Amenities	N/A	Built up a reliable and convenient communication between doctors and surgery centers.
Future Capabilities	N/A	Ability to interactive with insurance company directly.

3.3 Proposed New Operational Concept

3.3.1 Element Relationship Diagram

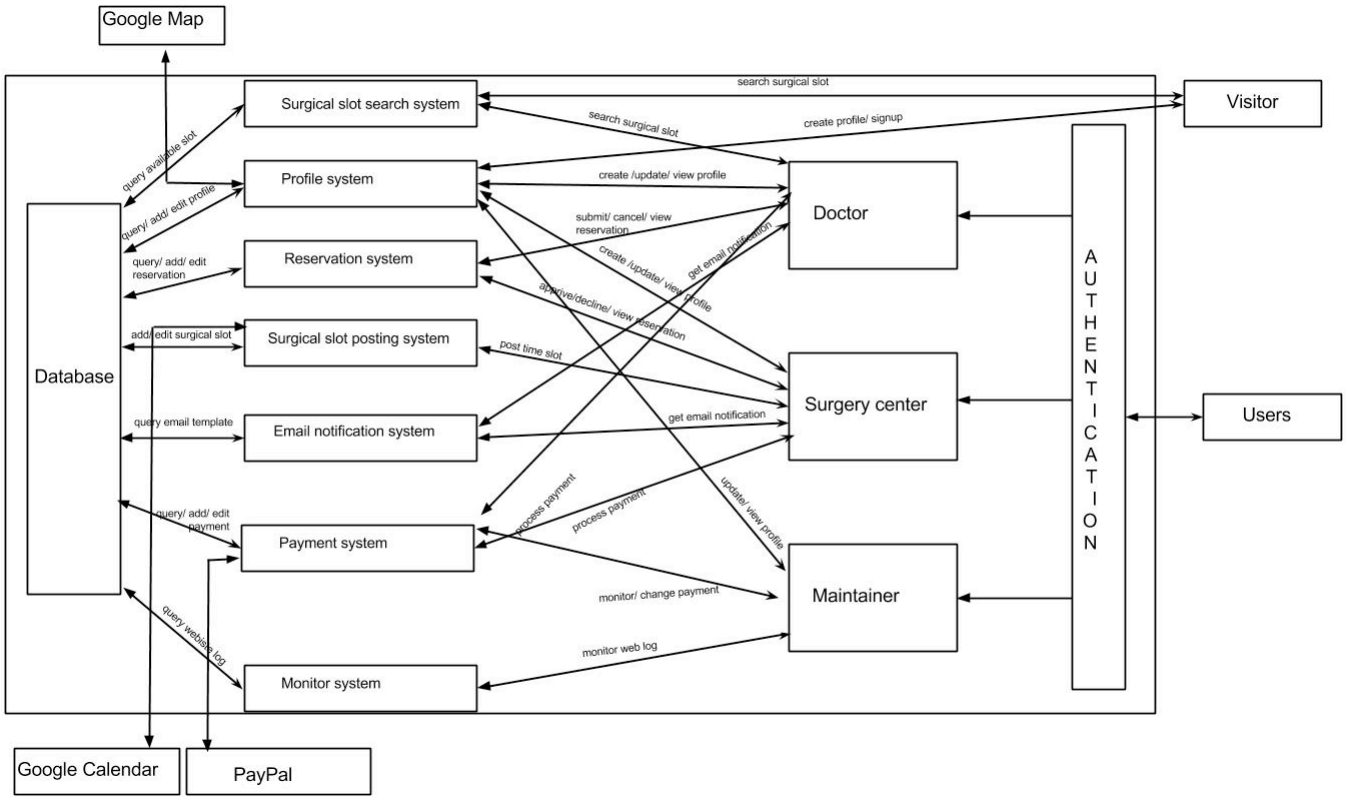

Figure 4. Element Relationship Diagram Surgery Assist Systems

3.3.2 Business Workflows

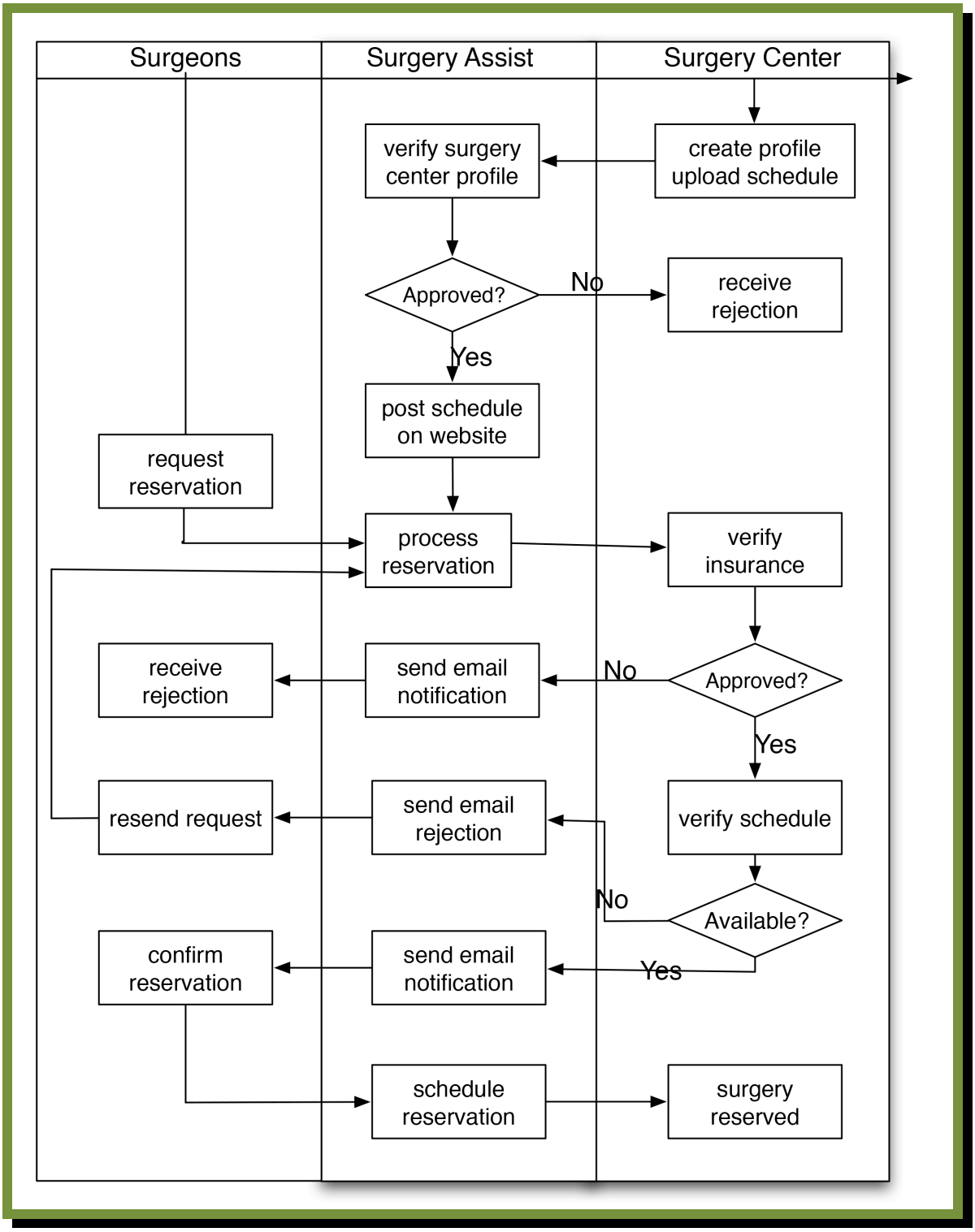

Figure 5. Business Workflow of Surgery Assist System

3.4 Organizational and Operational Implications

3.4.1 Organizational Transformations

- The need to hire a new system maintainer to take care of the system
- The elimination of the need for current, time-consuming reservation management approvals before initiating reserve actions
- The need to have surgery center approve /decline reservation online
- The need to have surgery center create and update surgery slot
- The need to have doctors fill reservation form

3.4.2 Operational Transformations

- The option for doctor to reserve online instead of reserve by phone, e-mail or fax.
- The option for surgery center to post their schedule instead of advertise of new paper or other materials
- The option for surgery center get all the needed information processed in shorter time, instead of several days
- The options for surgery assist cut expense on stuff salary, and have more resource to expand business
- The option for doctors to access multiple surgery center at one time, instead of checking via phone one by one