OpenEyes - Functional Design

Editors: G W Aylward
Version: 1.1
Date issued: 19 June 2012

Target Audience

General Interest	✔
Healthcare managers	✔
Ophthalmologists	✔
Developers	✔

Amendment Record

Issue	Description	Author	Date
0.9	Draft	G W Aylward	20 Jan 2011
0.95	Draft	G W Aylward	10 Jul 2011
1.0	First release	G W Aylward	9 Mar 2012
1.1	Update	G W Aylward	19 Jun 2012

Table of Contents

Introduction

This document describes the overall functional design and architecture of open eyes, and where information is laid out and placed within the system. The design is compatible with the principles described in the OpenEyes overview. The document will serve as guidance for clinicians and developers who wish to add functionality to OpenEyes.

Browser requirements

The current layout is optimised for a web browser with a minimum screen width of 1280 pixels so that data can be read and entered without the use of a horizontal scroll bar. Any modern browser compliant with HTML5 can be used.

Modes of use

OpenEyes has three modes of use which are described as follows;

Login Mode

When logging in the RBAC is checked and any relevant choices are then presented to the user. This includes choice of consultant firm and/or site.

User Mode

In this mode, a user may carry out administrative, general and other tasks, (for example editing a user profile) that do not pertain to an individual patient. The following table lists some of the functions available or currently planned.

Function	Description
Find Patient	Search for a patient, and if found change to patient mode
Admin	Administrative functions for OpenEyes
Diary	See operating lists and other schedules
Audit	Access outcome data for research and audit
Waiting list	Access to patients who are booked for surgery but have no date to come in
Profile	Read and edit user preferences and settings
Logout	Logout of system, return to login page

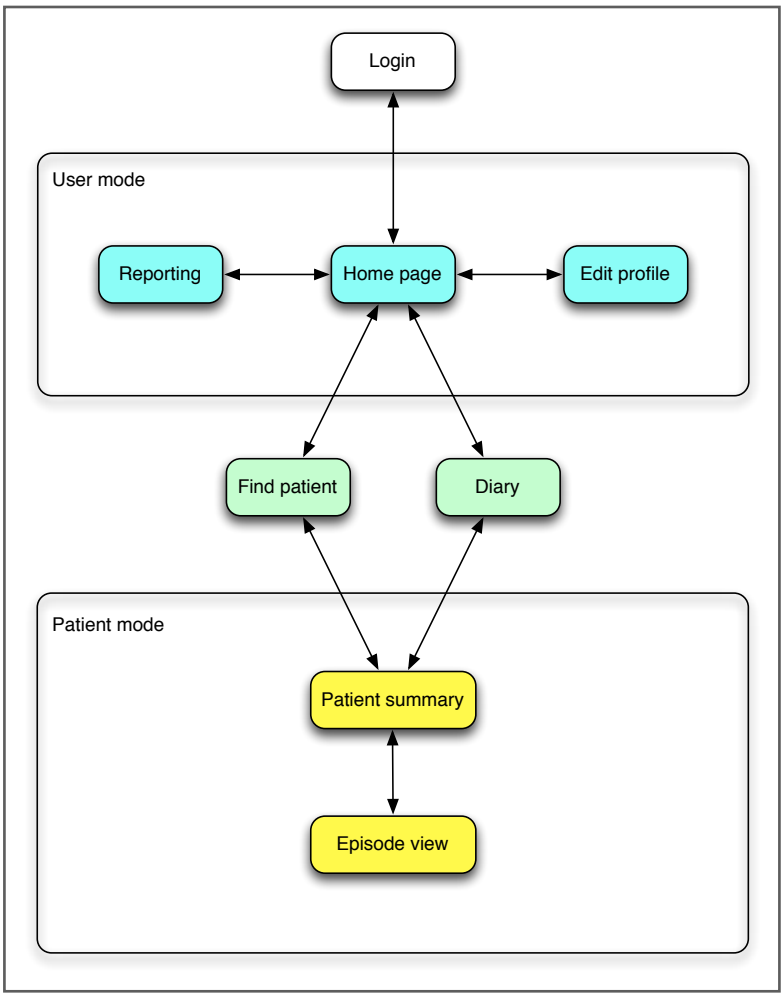
Patient Mode

Patient mode allows the user to carry out tasks relating to a particular patient, including reading and entering clinical data, and reading or writing correspondence.

Function	Description
Find Patient	Search for a patient, and if found change to that patient
Summary	Summary of patient details, including diagnoses
Diary	See operating lists and other schedules
Events	Clinical details (Full list of clinical events for the current patient)
Contacts	List of contacts involved in the care of the patient
Home	Return to home page of User mode
Logout	Logout of system, return to login page

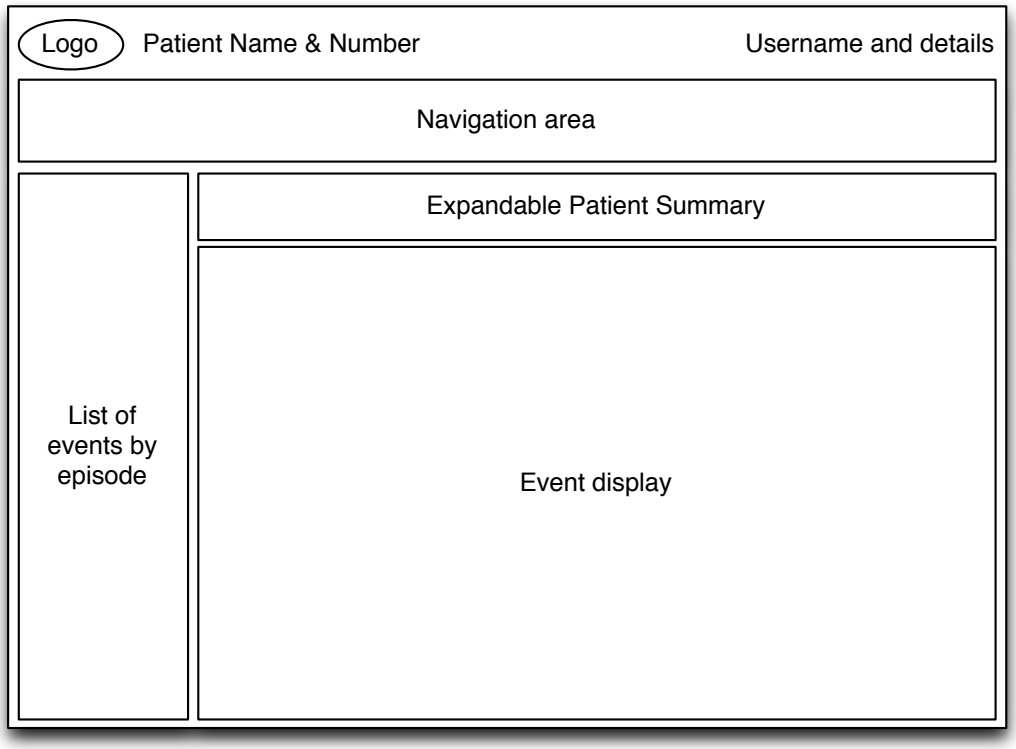
Navigation

The following diagram illustrates the structure of the site and gives a broad outline of the navigation structure.



Event display

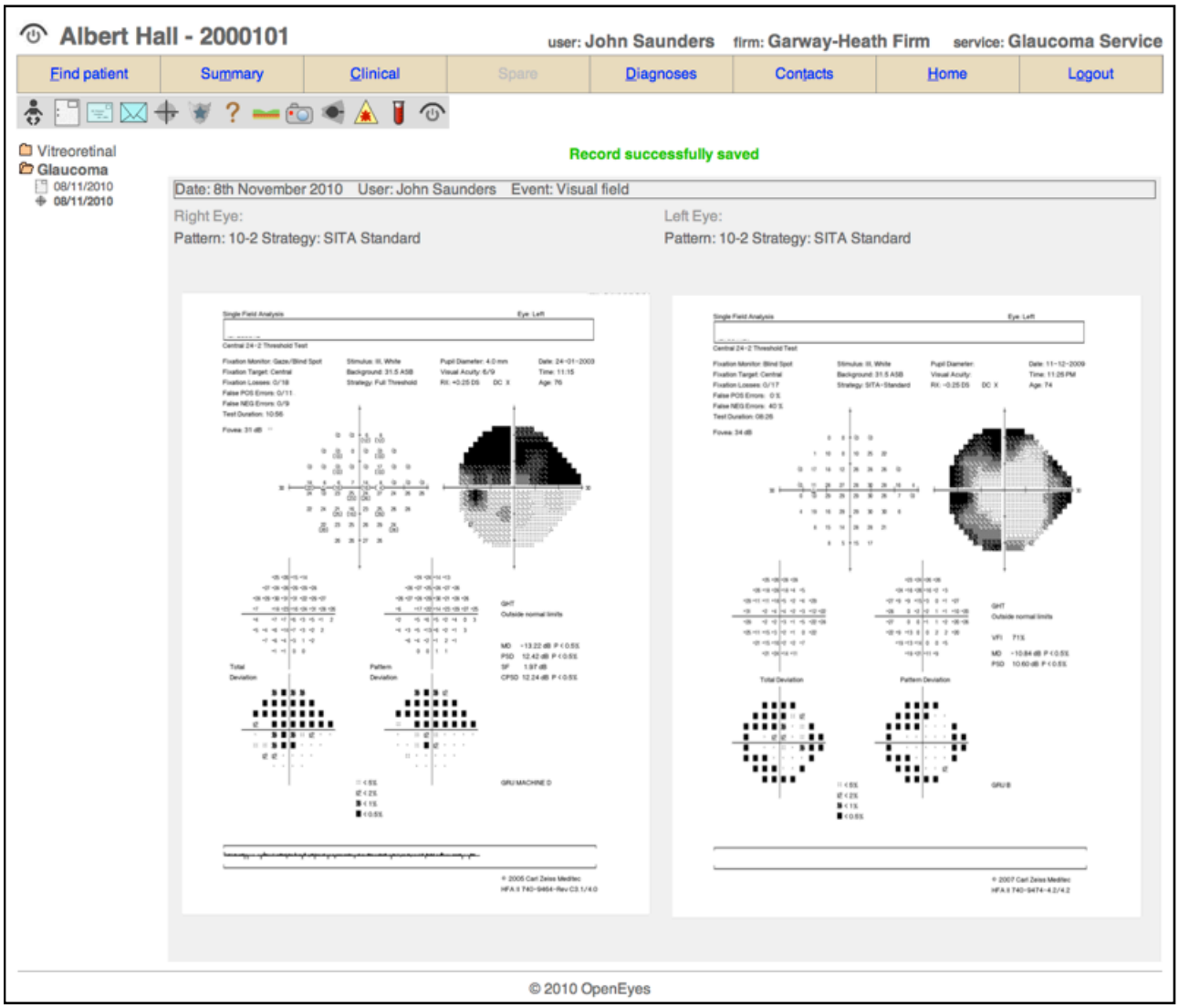
It is envisaged that the majority of user's time will be spent in patient mode, adding, viewing, and editing events. The layout of information in the user interface is illustrated in the following diagram. The user needs to be able to rapidly assess the range of events within an episode. Event types will be added to OpenEyes to cover the full range of clinical entities, so the event display area must be as large as possible.



Events have two distinct modes of presentation, 'Edit' and '‘View', described in the following table.

Event mode	Description
Edit	Mode for data entry and editing of event information
View	Mode for display only, with editing 'overhead' removed

An example of the an event in view mode is shown in the following screen shot, taken from the OpenEyes prototype.



Where is clinical information displayed?

There are a number of places in the system where clinical information can be displayed, but it is important to have a consistent scheme to avoid user confusion.

Summary

This section is intended to be a broad outline of the patient, so that a user can quickly see the overall condition and status of the patient. Therefore it displays brief summaries of previous medical history, current medication, allergies, and episodes of care. The Role Based Access Control system will allow different views of the summary according to the role. A brief summary of the patient is displayed at the top of the page, so any event can be seen in its proper context.

Episode

Clicking on the episode folder icon will display an episode page. This is where data pertaining to the whole episode should be displayed. Such data will include the start date, the principal diagnosis for the episode, and any summary data such as graphical displays of changes in acuity or IOP.

Event

Information in an individual event should only display data pertaining to that event. However, it is perfectly acceptable to use an event while in editing mode to add information to other parts of the system. For example, a diagnosis (which is displayed as part of the episode) could be added as part of an examination event (see next section)

Diagnoses

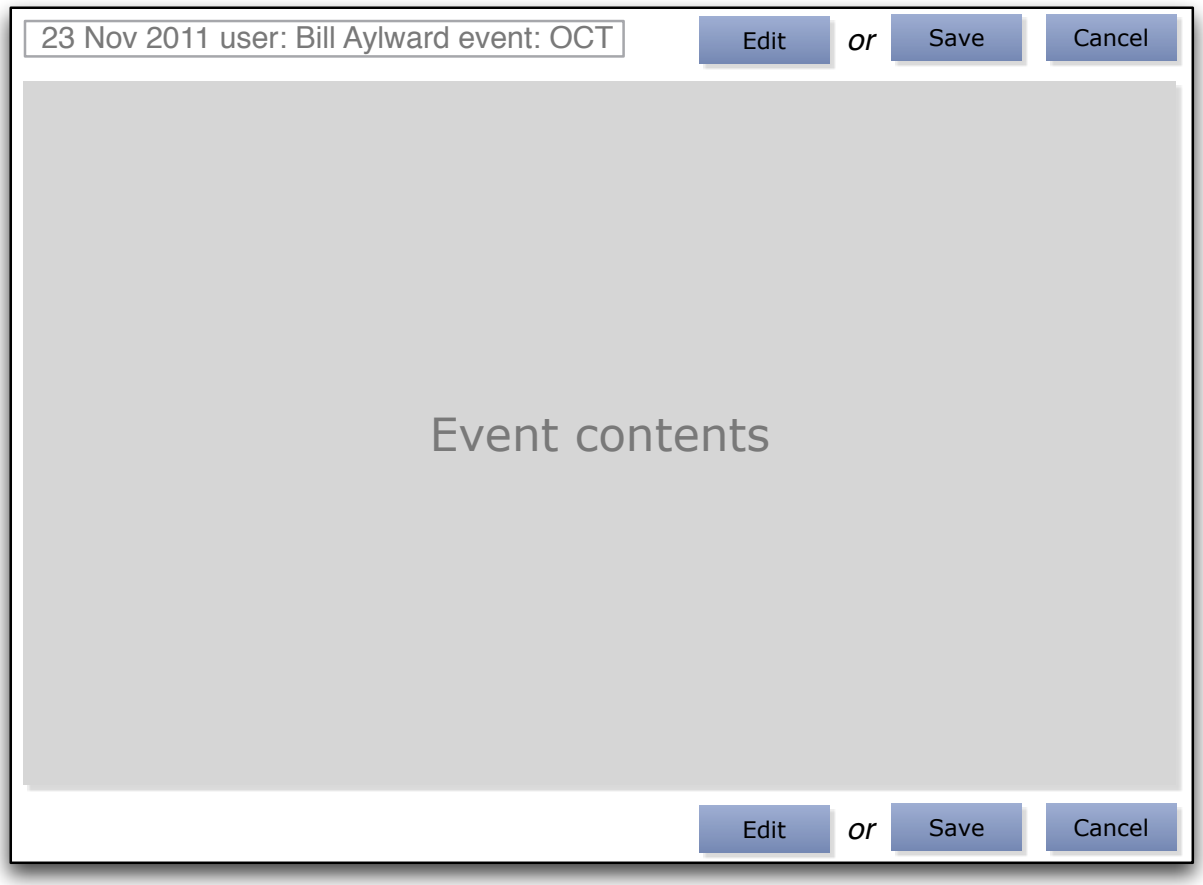
Diagnoses in OpenEyes are coded using SnoMed CT and appear in a number of different parts of the system as described in the following table;

Location	Notes
Event level	For example, a diagnosis associated with this particular booking
Episode level	The principal diagnosis for the episode. This may change during the course of the episode
Patient level	For example systemic diagnoses such as Diabetes.

When collecting systemic diagnoses, such as diabetes, patients are very often vague about the date of onset. While the exact date is not necessarily important, it is useful to be able to store a date without the prevision implied from a full date field. For this reason OpenEyes introduces the concept of ‘Fuzzy dates’. A fuzzy date allows entry of as much detail as is available, which may just be the year the diagnosis was made. Should the month and day be available as well, then a full date can be stored.

Event Layout

The clinical event is the heart of OpenEyes, and is the part of the system that clinicians will spend 90% of their time. It is vital that interacting with events is a consistent experience regardless of the type of event. The following diagram illustrates the key areas of the event display.



Header

The header area contains three items of information"

- Date. The date that the event was created, or last edited.
- User. The name of the user who created or last edited the event.
- Event. The type of event (eg Clinical examination, booking).

It also contains control buttons that are identical to those in the footer (see below) which appears according to a set of business rules depending on the user's role and the type of event.

Body

The body of the event area contains information pertaining only to the event, and has two forms of display.

1) View mode. This mode displays only saved information relating to the event, and is presented in a form that is as quick and easy to READ as possible. No empty fields should be displayed.

2) Edit mode. This mode displays all possible fields with associated editing widgets in a form that is as easy to EDIT as possible.

Some event types will be quite long, requiring scrolling to see the bottom of the screen. It is useful to provide a visual clue to the type of event with a subtle background colour. This mirrors systems with paper notes that clinicians will already be familiar with. For example clinical examinations are written on white paper, and operation notes on yellow paper. There are approximately ten broad categories of event.

Footer

The footer displays control buttons identical to those in the header

Control buttons

The following table shows the three controls required for each event. In order to maximise the user's ability to exert control even in long documents, the buttons are repeated in the header and the footer. In addition, keyboard shortcuts are employed to allowing control over each event even when neither the header or footer are visible (eg when scrolled to the middle of a long event).

Button	Shortcut	Display	Action
Edit	CTRL-ALT-E	View mode	Switches to Edit mode
Save	CTRL-ALT-E	Edit mode	Saves any edits made to the event, returns to view mode
Cancel	CTRL-ALT-E	Edit mode	Cancels any edits made to the event, returns to edit mode