



Disease Registry Portal Development

SITUATION OVERVIEW

The customer is a SEI CMMI level 3-appraised, SBA 8(a)-certified, Small Disadvantaged Business (SDB) Information Technology firm that offers innovative computer services, informatics and enterprise solutions to research centers and healthcare organizations around the globe. With experts in software engineering and bioinformatics, they focus on developing and applying IT tools and techniques in empowering decision making and accelerating the discovery of biotherapeutics. They help local and global enterprises focused primarily in the healthcare and national security domains. They help these customers adopt emerging technologies to make the workplace more productive and efficient. They offer solutions and services to both government contracting and commercial clients.

The clients intended to build a disease registry which meets all the health regulatory compliances and suffices all role-based access & workflow requirements. Disease registries are mainly used to record the natural history of a disease comprising its characteristics, its management and outcomes with or without treatment. Eventually, this information is primarily used by companies involved in drug development, clinical trials and Public Health agencies, in serving larger purposes of determining clinical and/or cost effectiveness, assessing safety or harm, and measuring or improving the quality of care.

The customer planned to build a registry for the rare disease Lysosomal Storage Disorders (LSD), having the natural history of the disease changing after the introduction of certain therapies, in which patients who did not survive previously to their twenties, may now be entering their fourth and fifth decades of life. The need for this web registry was to capture and maintain the profiles of the patients, their case history, person and organization details with different sites registered (place of occurrence) for the disease.

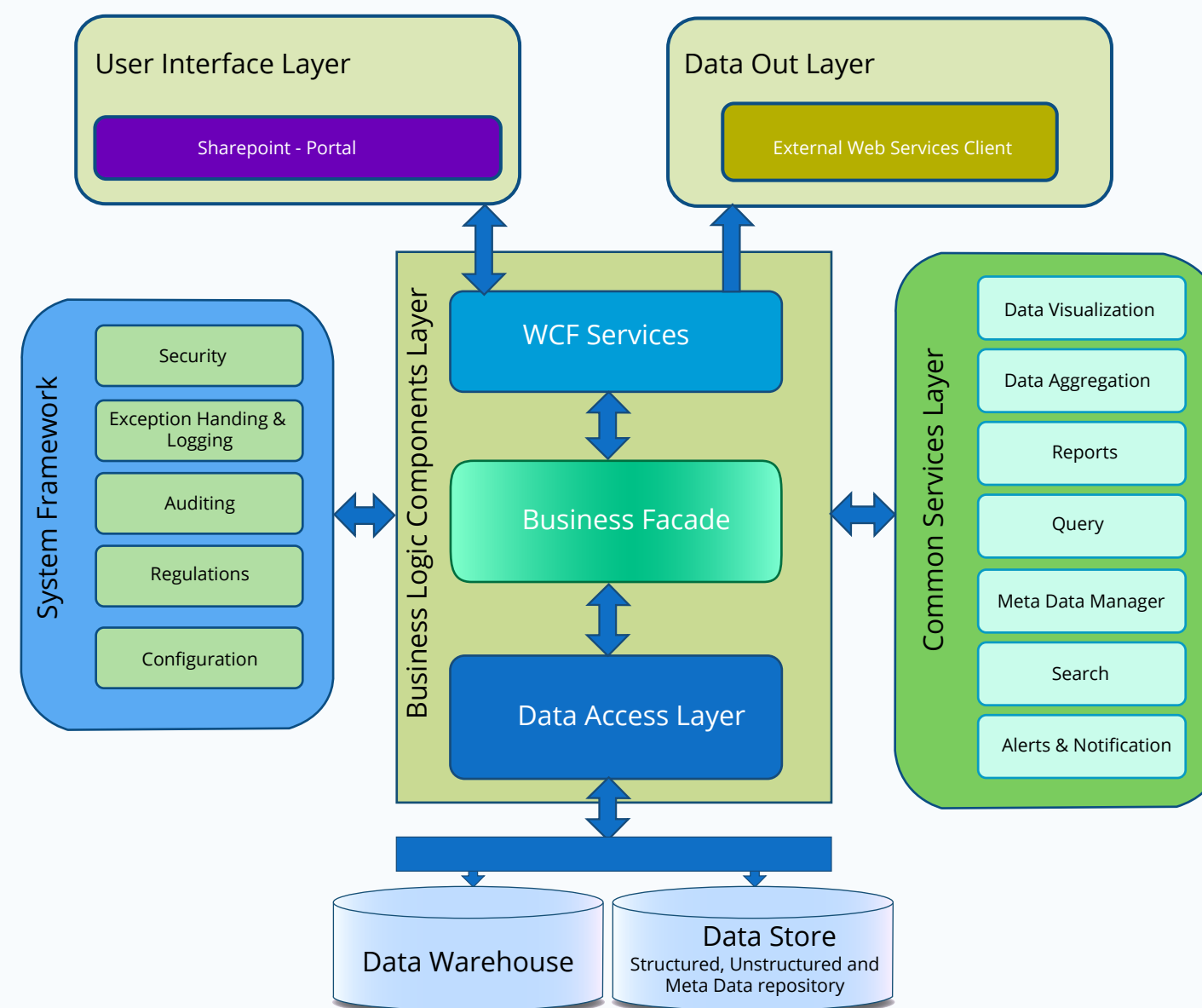
NOUS SOLUTION

The primary requirement was to centralize all the data with regard to patient details, consulting doctor's information and data about the site members in association with the patients. The system was required to maintain the enrollment of all users based on the user type category - internal users or external users. Once the enrollment is

completed, the information about the internal users should be alerted. Also, the enrolled user should get a notification on approval of enrollment.

Furthermore, the system allows internal users to modify data and display visuals in the form of charts and graphs of the patients' treatment and progress over a period of time. Also, it should permit the patients, to view their profile and the progress of their treatment. The solution that was rendered with Microsoft SharePoint, helped them search and the document library features allowed users to share and upload the documents within the system.

- The solution to the requirement was to have an N tier architecture which comprises of a UI, service, DAO layer and the actual Database Layer. The UI would be launched on the SharePoint portal. Customization of the SharePoint publishing portal with master pages and web part pages, where the web parts are developed to integrate on the web part pages in order to suit the existing look and feel of the portal



(Fig. 1 Framework Diagram)

- Enterprise Search in Microsoft Office SharePoint Server 2007 is a shared service that provides extensive and extensible content gat-



Domain - Healthcare

Platform – Entity Framework 4, Microsoft Silverlight 4

Technologies - Net 4.0, SQL Server, 2008, Visual studio 2010, MOSS 2007, WCF

Deployment – Web-based

Browser support – IE 8.0, Firefox 3.5

- Enterprise Search in Microsoft Office SharePoint Server 2007 is a shared service that provides extensive and extensible content gathering, indexing, and querying. This service supports full-text searching using Structured Query Language (SQL)-based query syntax, and provides new keyword syntax to support keyword searches. Enterprise Search provides several types of content sources by default, so it is easy to configure crawls through different types of data, both internal and external.

- Listed below are the content source types included in Enterprise Search:

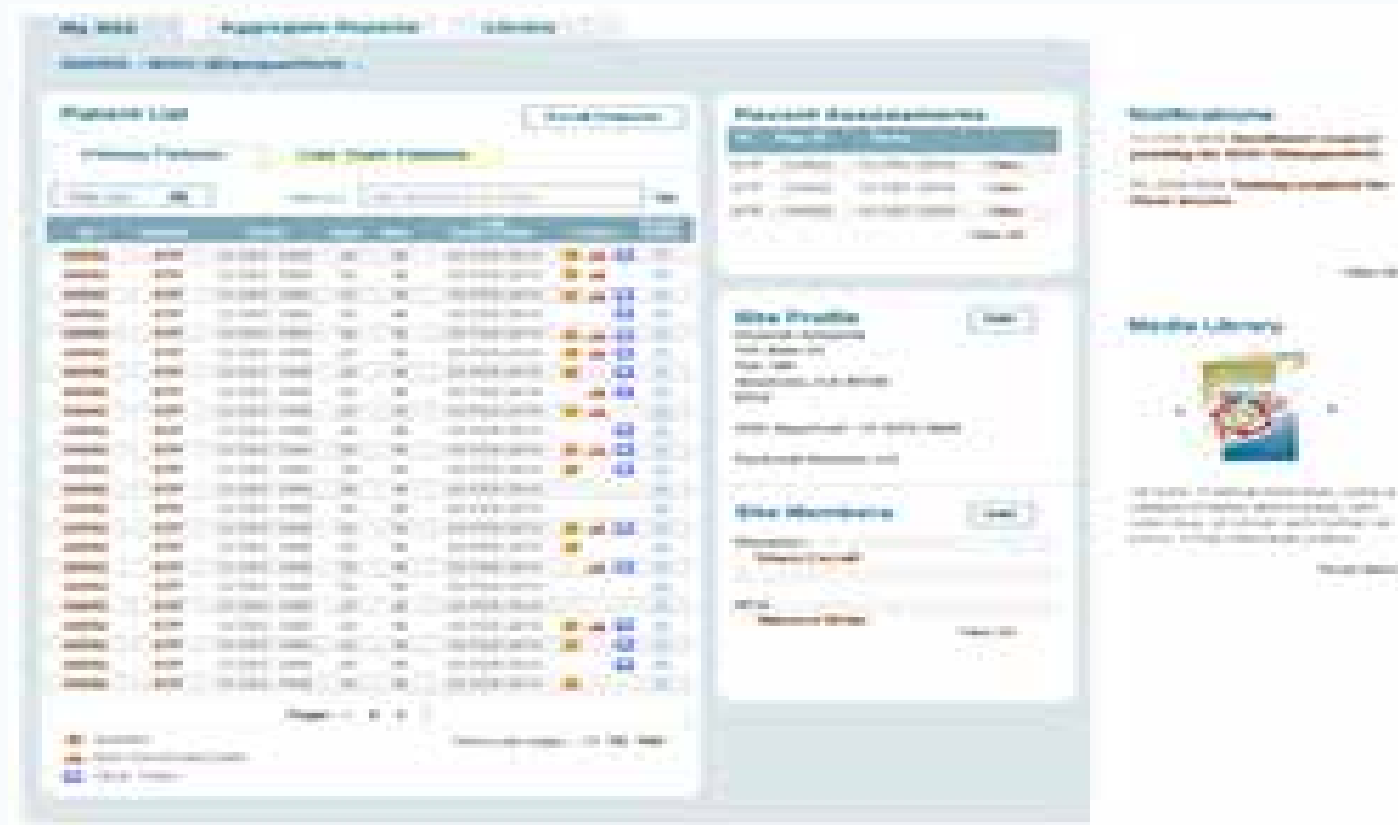
- o SharePoint content
- o Web content
- o File Share content
- o Exchange Folder content
- o Business data content

- Code generating tool is developed to automate service layer
- CodeGen tool reads the EDMX schema and splits the service layer over the data access layer and Common Service Framework (CSF)
- CSF is a unified solution for all application needs like logging, exception handling, and data access layer (Entity Framework 4). MSMQ is used to route the logging information to different storages

- LINQ and lambda to query object collection and SQL data
- Single sign-on mechanism is adapted for user authentication and authorization to iMediData and Rave websites for patient clinical data entry

- Using Unity framework, Dependency Injection is introduced to reduce dependencies between the components in the software
- The ECM system of SharePoint has the ability to provide the data stored, where the user can embed rich text, images, flash on a library and list. A centralized image gallery is set up to make it easier for the users to identify and preview the images on the portal before publishing it with minimal effort

- ECM provides a versioning control feature where the user can track the change details



(Fig -2: Screen showing the media library and notifications alongside the list of patients.)

- Custom web parts and web part pages were used for all application pages.
- SharePoint auditing is enabled to audit all the SharePoint actions performed.



(Fig - 3: Screen showing graphs of the

- Document libraries are collections of files that you can share with team members on the web through Microsoft Windows and Share Point Services. Additionally, the SharePoint Event Listener feature is also used.
- Business Data Catalog (BDC), a new feature has been introduced in



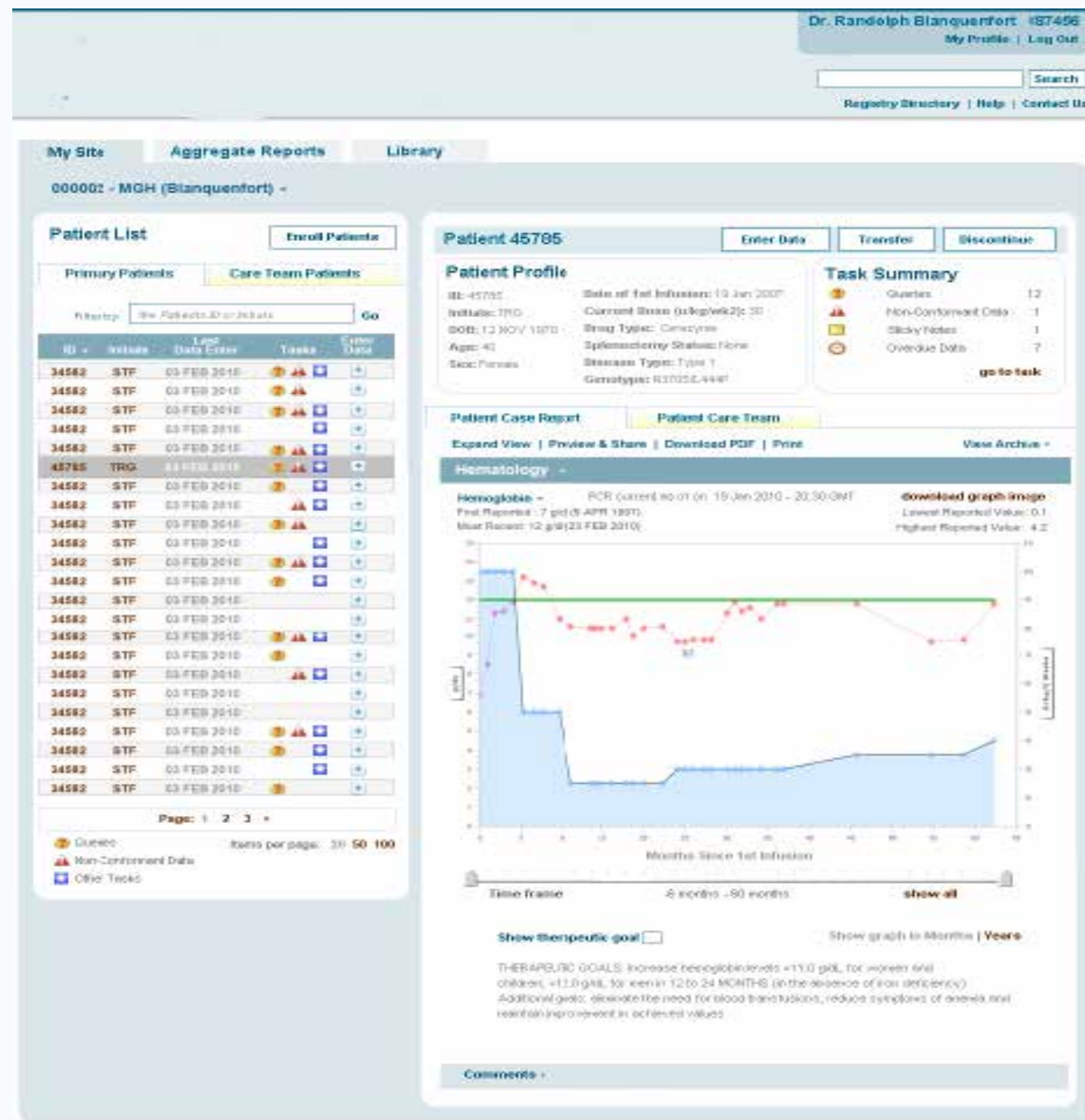
Microsoft Office SharePoint Server 2007, which provides an easy way to integrate business data from back-end server applications, such as SAP or Siebel, within Office SharePoint Server 2007 without writing any code. With the BDC, this structured data can be exposed through web parts; it can be indexed and searched; it can be merged with data found in lists. With the BDC connections to the back-end systems, we can find and consume both structured and unstructured data assets that exist in our organization.

- Integration with ASP.Net Ajax provides the ease of exploring data on a web page with minimum requirement of refreshing the page. Features like graphs and charts, and site member popup were achieved as per the standard requirement of the customer. Integration of the rich images and Microsoft Silverlight made the portal visually more appealing.

CUSTOMER BENEFITS

The migrated and restructured code had the following key benefits:

- Centralized location where all the information is stored and easily maintained
- Content is easily maintained by the non-technical users, without much help of the technical team
- Better user interface and easy exploration of the data on a web page with rich images, notifications and alerts
- Visual display of treatment progress in the form of charts and graphs
- Highly role based workflow system
- Form based authentication
- Custom role membership is used for user authorization
- Intuitive user interface and extensive search capabilities to access data



(Fig - 4: Screen showing patient background and their corresponding reports/ data)



Copyright© Nous Infosystems. All rights reserved. No part of this document may be reproduced, stored in a retrieval system, transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without written permission by Nous Infosystems. All other trademarks mentioned herein are the property of their respective owners.

CONTACT US

New Jersey, USA
Tel: +1 732 985 9533

Sharjah, UAE
Tel: +971 526264954

Brentford, UK
Tel: +44 208 587 1411

Bangalore, India
Tel: +91 80 41939400

Toronto, Canada
Tel: +1 905 402 9943

Coimbatore, India
Tel: +91 422 3058800

Mainz, Germany
Tel: +49 6131 28910 31

For more information, Please visit - www.nousinfosystems.com or mail us at info@nousinfo.com