

AQUA

Healthcare CRM Reference Application

The Making of Aqua: Highlights

Aqua Background

- Microsoft wants to inspire developers to build clients apps. easily and provide the community with a *deeper* experience via:
 - exposure to reference apps., code, and UI controls that illustrate key concepts and new technologies.
 - process documentation of best practices for design and development.

- Infragistics developed a reference application (Aqua) in WPF using the building blocks as Windows Azure services with a best practice chronicle of the design and development experience. Aqua illustrates:
 - the MVVM pattern & ADO.NET Data Services.
 - cloud-based data storage & processing via the Windows Azure Blob.
 - links between data services & Live Services to demo secure identity/authentication via Live.
 - manipulation of structured (orders, user interactions) and unstructured data (scanned images) via cloud-based data services.

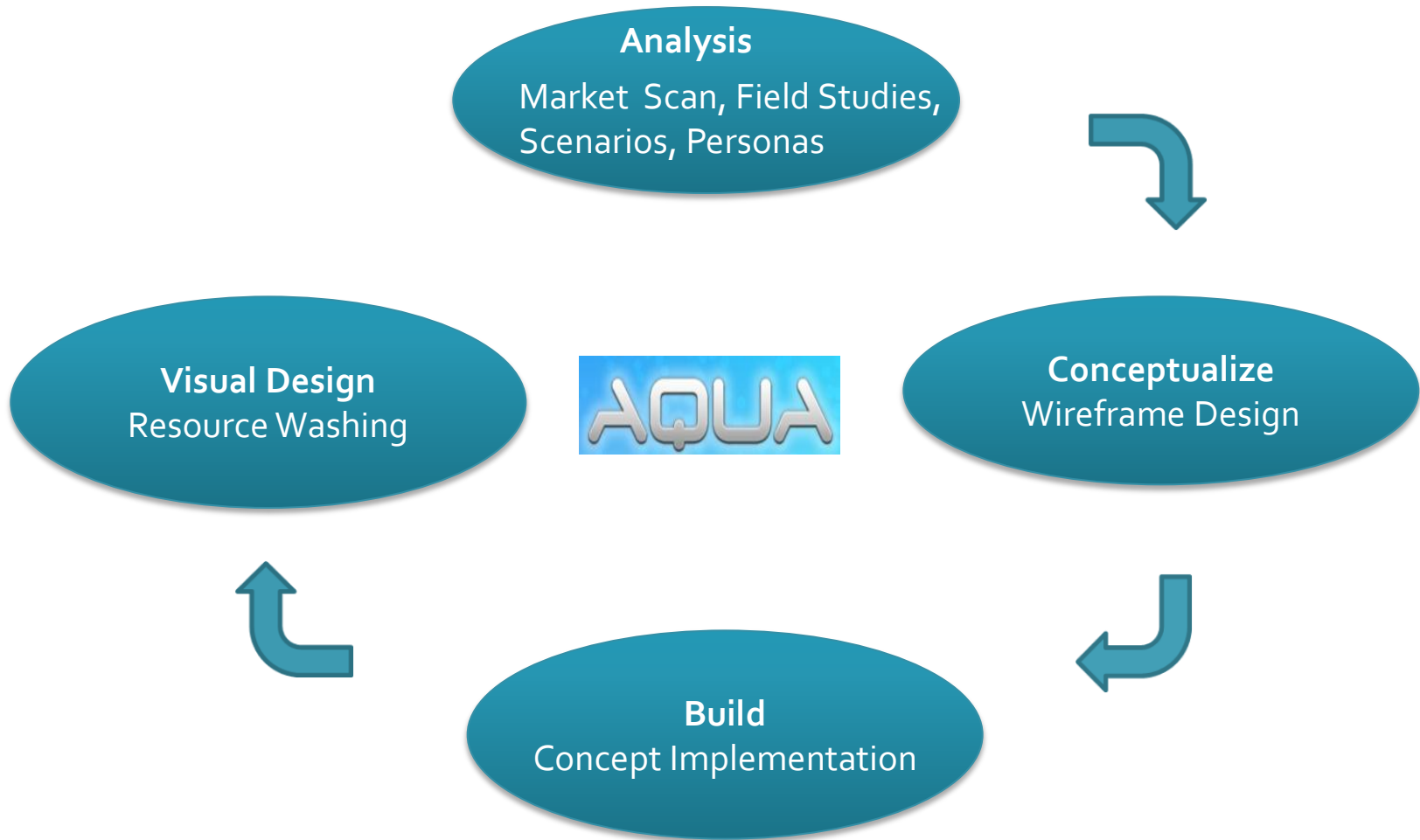
- Aqua is realistic; UI and data simulate a Health Information System.

- Code, videos, and hands-on-labs for Aqua can be found at **Healthcare.Codeplex.com**.

- Lots of learning opportunities - Best Practices in UX Design, and building WPF experiences using technologies like Windows Azure, ADO.NET, SQL Data Services, LiveID, and Infragistics UI controls are provided. You can learn by:
 - downloading the current release of Aqua.
 - reading blogs on how the UX design process was used and how the UI controls were built.
 - watching videos that illustrate the use of new controls that optimize Aqua's UX, and show how ADO.NET, Azure, Live and SQL Data Services were employed to simulate a realistic Health Information System.
 - Working through hands-on-labs that walk you through the coding process.

- Explore all of Aqua's features by manipulating the rich data displays, viewing the charting capabilities, paging through sets of X Rays and MRIs and engage in a simulated chat session with an expert clinician.

UX Design Process



powering the presentation layer.

Context of Use

Users - Doctors, Nurses



Equipment - Desktop & Tablet



Tasks – Medical Tasks



Environment – Hospital Emergency Department



Scenarios = narrative descriptions of what a user may do and experience during the work.

- **made it concrete:**

- ✓ a doctor works in the emergency room of a hospital.
- ✓ on shift, presented with list of patients.
- ✓ selects patient with severe symptoms, performs examination.



- **described specific application examples:**

- ✓ accesses clinical summary.
- ✓ reviews test results.
- ✓ uses expert diagnosis support.



- **described from the user's perspective what, how and why something was happening:**

- ✓ UI allows user overview of patient's condition.
- ✓ drill down available for detailed data view.
- ✓ user can easily access desired info.



- **Was fragmentary and leave room for alternatives:**

- ✓ allows for both doctor and nurse tasks.
- ✓ data views and access is customizable.

- **allowed deriving implications for the system design:**

- ✓ user interactions are understood and wireframe development possible.



Personas

Persona = Fictitious archetype of users, created to represent the different user types within a targeted user demographic. Is based on behavioral data gathered from many actual users.

- Helped team share a specific & consistent understanding of target groups
 - Guided our solutions by how well they meet the needs of individual user personas
 - Provide a human "face" to demographic data
- Used also as communication vehicle



Dr. Max Carson
Hospitalist
37 years old

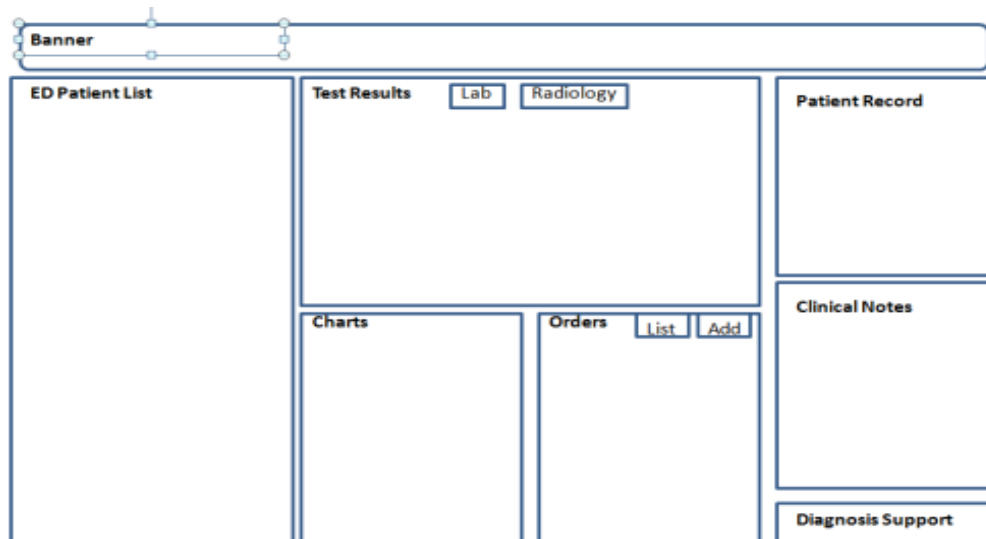
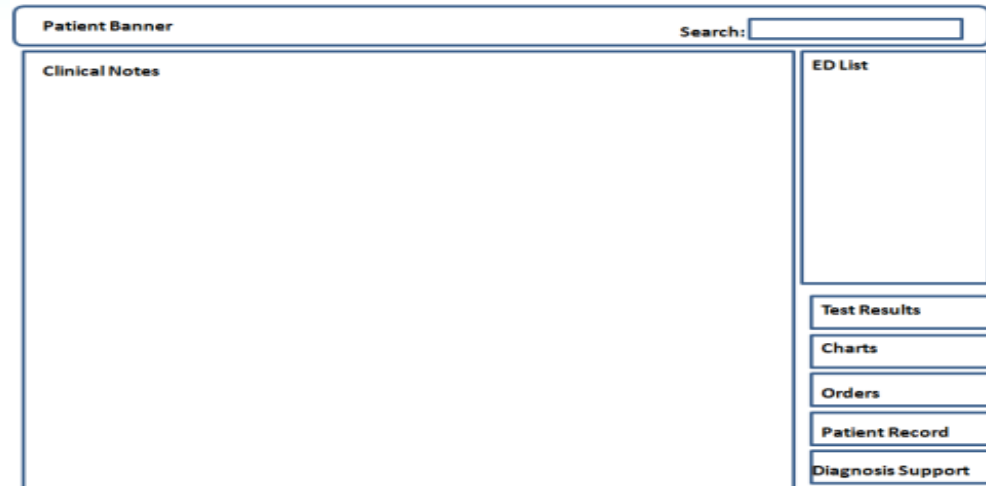
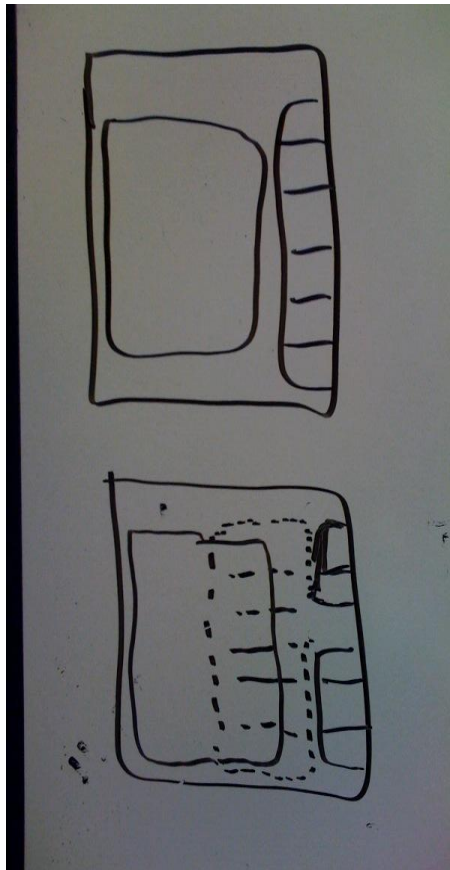


John Rizzo
Technical Writer
Iraq War Vet
44 years old



Mary Sanchez
Registered Nurse
29 years old

Scribbles to Simple Wireframes



powering the presentation layer.

Wireframes to Screen Designs

Aqua
Welcome Back Dr. William Johnson [Sign Out](#)

Rizzo, John ▼

ADMIT DATE: 6/25/2009
MPI: MPI
DOB: 1/20/1964

ALLERGIES: 2 Latex, Penicillin
DIAGNOSIS: On Going
GENDER: Male

LOCATION: NARA Hc

AQUA

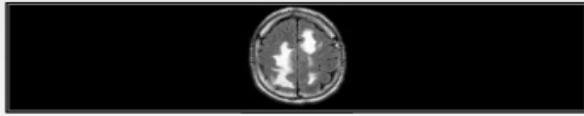
ED Patient List






Complaints	Sev	Patient
Severe headache	●●●	Rizzo, John
Leg Pain	●●●	Ropen, Marie
Urinary Retention	●●●	Seltone, June
Urinary Retention	●●●	Alton, Derek
Severe headache	●●●	Roberto, Donna
Chest pain, leg pain..	●●	Jeldree, Duncan
Shortness of Breath	●●	Randoli, Steven
Severe headache	●●	Bolden, Mari
Leg Pain	●●	Ventor, James
Leg Pain	●	Treater, Roseann
Chest Pain	●	Caldor, Mike
Fever, Sore Throat	●	Walderman, Larry
Stomach Pain	●	Cantor, Susan
Slurred Speech	●	Muldan, Jack
Dizziness	●	Undian, Arnie
Shortness of Breath	●	Dentor, Robert
Leg Pain	●	Peters, Moses

Test Results

Lab Radiology Cardiology

MRI 6/25/2009



Patient Record

Body Timeline

06/25/2009

02/02/2007


09/09/2004

02/23/2009

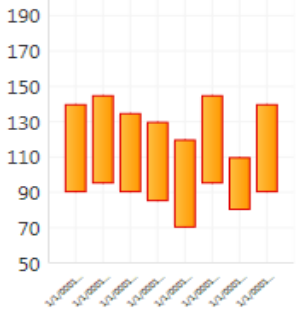
08/28/2008

02/25/2008

08/20/2007



Vital Signs



Orders

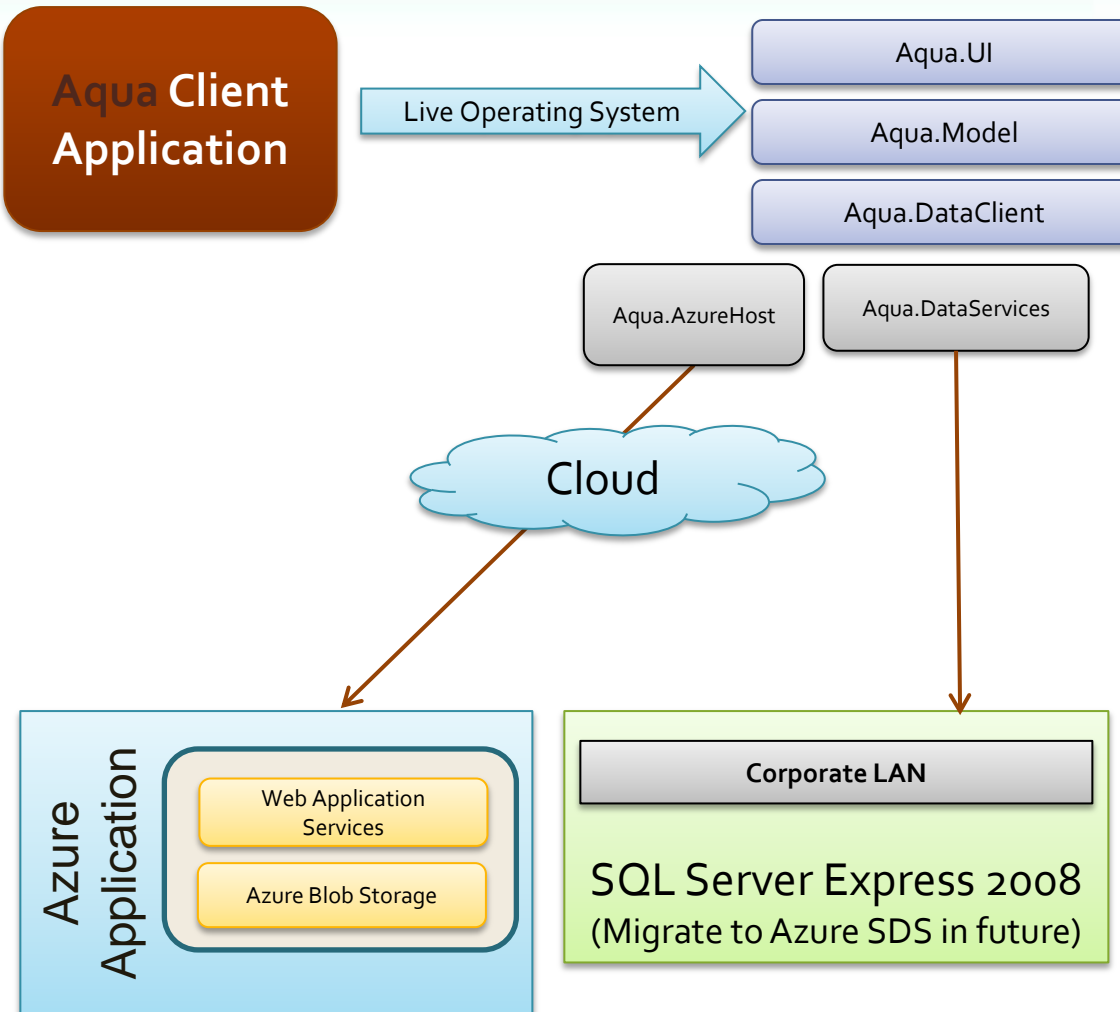
Med	D	U	F	Ir
Prozac	20	mç	PC	De
Buspiror	15	mç	PC	An
Depakot	50	mç	PC	An
Lopressc	50	mç	PC	Blc
Dilaudid	25	mç	PC	Pa

Clinical Notes

6/25/2009 12:00:00 AM
Admitted to ER01. Complains of

Diagnosis Support

Aqua Solution Architecture



Aqua Solution

Aqua.UI – client side executable, includes user controls, data binding.

Aqua.Model – Domain specific business logic for the application.

Aqua.DataClient – Command model, Interaction data mapping between View and Data.

Aqua.DataServices – WCF + Entity Framework services code.

Aqua.AzureHost – Azure application, includes REST wrappers for pulling in blob data.

- WPF
 - allowed rapid development of visually rich Windows client apps. with clear separation between the UI & business logic.
 - enabled easy integration of graphics, media and docs with extensible libraries for UI controls.
 - provided next generation of Windows UX, the right info delivered the right way, at the right time, ideal for Aqua and medical scenarios.
 - used in conjunction with Model-View-ViewModel (MVVM) pattern enhances separation of concerns among component layers (UI, Business, Data).

- Custom Workspace Panel Control (aka Tiles Panel)
 - primary interactive control in Aqua, developed by Infragistics.
 - arranges items based on a grid and allows users to size and swap items within a given view.
 - users can maximize one panel, other remain minimized and sizable.

Highlighted Technologies (continued)

➤ ADO.NET Data Services

- allowed asynchronous data access that fit well with UI design.
- supported REST-based data access model to allow easy switch between data services if required.

➤ Windows Azure

- foundation of MS cloud platform; allows anywhere, anytime, easy access from local apps.
- ideal for storage of large data concepts (blobs), such as images & scans used in Aqua.

➤ Windows Live

- provided easy integration of a robust security model.
- tapped wide variety of social experiences such as the Expert Chat illustrated in Aqua.

Video Summary

- Summary
- For more information on Aqua, visit: Healthcare.Codeplex.com.
- If you have questions or comments on Aqua, contact JasonB@infragistics.com.
- For general information on Infragistics, visit: www.Infragistics.com.