Department of Medical Informatics and Clinical Epidemiology
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Capstone/Internship Project Agreement

The ***Project Agreement*** and ***Project Plan*** draft should be ***typed***, ***signed*** on page 2, and submitted to the OHSU Internship Coordinator no later than the midterm of the quarter prior to the Capstone/Internship.
Please attach the Project Plan draft to a copy of this contract.

Student Name:	Kenneth Gridley	Date:	03/4/2016
Location (City, State):	Lake Oswego, Oregon		
Phone:			
Email address:			
OHSU Faculty Advisor:	Justin Fletcher	Capstone/Internship Start Term:	Spring 2016
Sponsoring Organization Name:	Vynca		
Sponsor/Mentor Name:	Ryan Van Wert and Rush Bartlett		
Title:	Rush Bartlett, PhD MBA Chief of Operations Ryan Van Wert, MD Chief Medical Officer Co-Founder Vynca, Inc.		
Address:	Palo Alto, California USA		
Phone:			
Address:			

☐ **Project Plan attached**:

- Submit to Internship Coordinator **4 weeks prior to** start of Capstone/Internship

Capstone/Internship Project Plan (to be attached) - *Please address the following in 2-3 double spaced pages*:

1) Overall description of planned involvement
2) Specific objectives to be accomplished
3) List of activities required of student (indicate deadline after each item)
4) Deliverables (a training manual, research summary, etc.) and metrics for assessment
5) Description of how your education, experience, and interests align with the proposed project
6) Description of how the proposed project relates to your job role
7) Frequency of meetings with Sponsoring Organization mentor
8) Frequency of other meetings with other Sponsoring Organization staff (if applicable)
9) Any additional requirements the Sponsoring Organization or Faculty Advisor may have for the student

Please check each box below to acknowledge awareness of the Capstone/Internship requirements:

- [x] I will meet with my sponsor/mentor on the frequencies listed in the Project Plan.
- [x] I will complete semi-monthly evaluations about Capstone/Internship progress, using E-Value's auto-generated, electronic evaluation reporting system. The first evaluation report is due the second Friday after the Capstone/Internship begins and continues every other week subsequently.
- [x] I will write a 10-15 page report to be submitted to the Faculty Advisor and Internship Coordinator no later than **one week prior** to the end of the second quarter of my Capstone/Internship.
- [x] Along with the report, I will submit a log of hours kept and project plan activities to the Faculty Advisor and Internship Coordinator no later than one week prior to the end of the quarter of my internship.
- [x] I will attend a minimum of 3 of the 4 discussion group classes, in person or via video conference. Attendance at three of the meetings is required, classes as determined by the course instructor. Video conference attendance is limited to students located outside of Portland, OR.
- [x] I will complete a 20-minute presentation of my Capstone/Internship experience at the culmination of the internship.

Paperwork required to initiate the Capstone/Internship:

- [x] Interest Form
- [x] Project Agreement
- [x] Project Plan (Send to Internship Coordinator, who will forward to Faculty Advisor for review and approval.)
- [x] SOM Grad Studies Master's Program Assignment Form: http://www.ohsu.edu/xd/education/schools/school-of-medicine/academic-programs/graduate-studies/students/upload/Masters-MentorAdvisor-Form-3-2011.pdf

Your signature below indicates that you have read and agree to abide by all of the processes and role responsibilities as outlined in the OHSU Capstone/Internship.

Student Signature Kenneth Gridley Date 3/4/2016

Sponsor Signature Justin Flectcher Date _____

Faculty Advisor Signature _____ Date _____

Internship Coordinator Signature _____ Date _____

Capstone/Internship Project Plan - ***Please address the following in 2-3 double spaced pages***:

1) **Overall description of planned involvement**

Work with vendor to define and possibly develop provider identification and authentication technology for MyHealth portal. The MyHealth portal is a provider and patient facing portal that can be connected to an Electronic Health Record for information exchange. However, the portal needs to have the ability to properly identify and authenticate users to prevent improper access or use of the system. System will be evaluated in context of integrating with an Electronic Health Record.

2) **Specific objectives to be accomplished.**

- Become familiar with overall functionality and capabilities of MyHealth System.
- Understand available identification and authentication technology and techniques.
- Analyze business, technical, and operational requirements for MyHealth Use cases.
- Integration to allow authentication and communication with MyHealth application.

3) **List of activities required of student (indicate deadline after each item)**

- Study functionality of MyHealth System. – Spring Term 2016
- Work with vendor to determine desired functionality for technical solution. – Spring Term 2016
- Review available authentication protocols and technical options. – Spring Term 2016
- Produce written assessment of technical alternatives with a recommended approach. – Spring Term 2016
- Produce project plan and other project documentation as needed. – Spring Term 2016
- Participate in prototype development or proof of concept. Not to include implementation of live production system. – Spring Term 2016

4) **Deliverables (a training manual, research summary, etc.) and metrics for assessment.**

- Detailed technical assessment and summary.
- Implementation plan and timeline for MyHealth connectivity.
- Technical requirements for integration i.e. interfaces.
- Conceptual model for integration with MyHealth system.
- Provide references to appropriate vendor documentation and guidelines. Technical documentation regarding vendor systems cannot be included due to copyright and intellectual property protection for existing products.

5) **Description of how your education, experience, and interests align with the proposed project**

I currently work in the HIM department at OHSU as a project lead for release of information and other HIM related applications. I have always been interested in security and control over privacy and access to records. I am not an application developer so I would see my role more in the research and design aspects of this project than actually writing the code behind it.

6) **Description of how the proposed project relates to your job role**

My selected job role was related to privacy and security.

I am interested in researching user authentication design and best practices in order to help the vendor develop this piece of their application and help them securely deliver their solution to customers

Related project the vendor is working on: "We are looking at building out the product offerings to include advance directives and other documents and information (DPA/Living Will/Patient Education etc.). One question that has continually come up is how we can authenticate the individuals logging into the system and also make sure it integrates with the existing workflow."

7) **Frequency of meetings with Sponsoring Organization mentor**

Weekly meetings scheduled Wednesday 4 to 4:30 PM for duration of the project. 6 Months

How actual work time project. How much is related to term paper.

8) **Frequency of other meetings with other Sponsoring Organization staff (if applicable)**

Coffee with Jack.

To be determined dependent upon project plan details and resource availability.

9) **Any additional requirements the Sponsoring Organization or Faculty Advisor may have for the student**

Travel to vendor site will not be required.

Vynca Integration Project

Kenneth Gridley

BMI 590 Spring/Summer Internship 2016

Introduction

My internship involved working with Vynca on making Advance Care Planning systems and resources more available to patients. Vynca was looking to integrate their resources directly with an enterprise level Electronic Health Record (EHR) system such as Epic. They have experience in providing utilities and educational resources to patients and providers via their Vynca.org portal today. They enlisted my help to provide them with the technical knowledge and project planning for the integration effort required to link into an EHR.

Work with Vynca started the term prior to the actual internship practicum that was scheduled to take place during spring and summer term 2016. Approximately three months were spent working through contract negotiations and preparation required to participate in the internship project. Intellectual property rights were a point of contention that delayed the contract completion up until one week after the Internship was scheduled to start during spring term. We met initially via virtual meeting to discuss options for the internship project. All meetings were conducted via phone call and or virtual meetings. Weekly calls were scheduled on Wednesdays to review project status and next steps. Calls were also scheduled as needed to work through design discussions and during the scope revision that occurred in mid project.

My work schedule consisted of a regular two-hour period during weekdays from 9 PM to 11PM with time spend during the weekend as needed. Detailed time sheets for both terms will be handed in with this paper. The assumption for this project was that we would have access to system resources and personnel with all systems involved in the project. Although I did not have direct access to the Epic EHR and patient portal services, I did have access to the systems analyst responsible for maintaining the systems on the OHSU side for Epic. Our Initial plan was as follows.

Capstone / Internship Project Plan -

1) **Project Description**

Work with vendor to define and possibly develop provider identification and authentication technology for Vynca portal. The Vynca portal is a provider and patient facing portal that can be connected to an Electronic Health Record for information exchange. However, the portal needs to have the ability to properly identify and authenticate users to prevent improper access or use of the system. System will be evaluated in context of integrating with an Electronic Health Record.

2) **Objectives**

- ÿ Become familiar with overall functionality and capabilities of Vynca System.
- ÿ Understand available identification and authentication technology and techniques.
- ÿ Analyze business, technical, and operational requirements for Vynca Use cases.
- ÿ Integration to allow authentication and communication with Vynca application.

3) **Activities**

- ÿ Study functionality of Vynca System. – Spring Term 2016
- ÿ Work with vendor to determine desired functionality for technical solution. – Spring Term 2016
- ÿ Review available authentication protocols and technical options. – Spring Term 2016

- ÿ Produce written assessment of technical alternatives with a recommended approach. – Spring Term 2016
- ÿ Produce project plan and other project documentation as needed. – Spring Term 2016
- ÿ Participate in prototype development or proof of concept. Not to include implementation of live production system. – Spring Term 2016

4) Deliverables

- ÿ Detailed technical assessment and summary.
- ÿ Implementation plan and timeline for Vynca connectivity.
- ÿ Technical requirements for integration i.e. interfaces.
- ÿ Conceptual model for integration with Vynca system.
- ÿ Provide references to appropriate vendor documentation and guidelines. Technical documentation regarding vendor systems cannot be included due to copyright and intellectual property protection for existing products.

Description of Time with Internship

We conducted weekly status check meetings during the entire project. Our first few meetings involved connecting with the team participating on the Vynca and OHSU side of the project. We spent a few meetings becoming familiar with the overall goals for the project and working through administrative details. I also spent considerable time trying to understand the requirements and documentation for the class versus the deliverables I would be handing over to Vynca for the finished product.

The first phase of the project involved requirements gathering and scope definition. I reviewed several existing internet resources and systems related to advanced care planning in order to gain a better understanding of the process and perspective of the patient in regards to end of life planning. I also spoke with Vynca and reviewed their existing patient resources to understand the solution and tools they were trying to deliver to patients and providers. Unfortunately, some of my own personal experience with a terminally ill family member contributed to my understanding of the process. The personal experience solidified my understanding of the patient's experience in the planning process. After about three weeks of

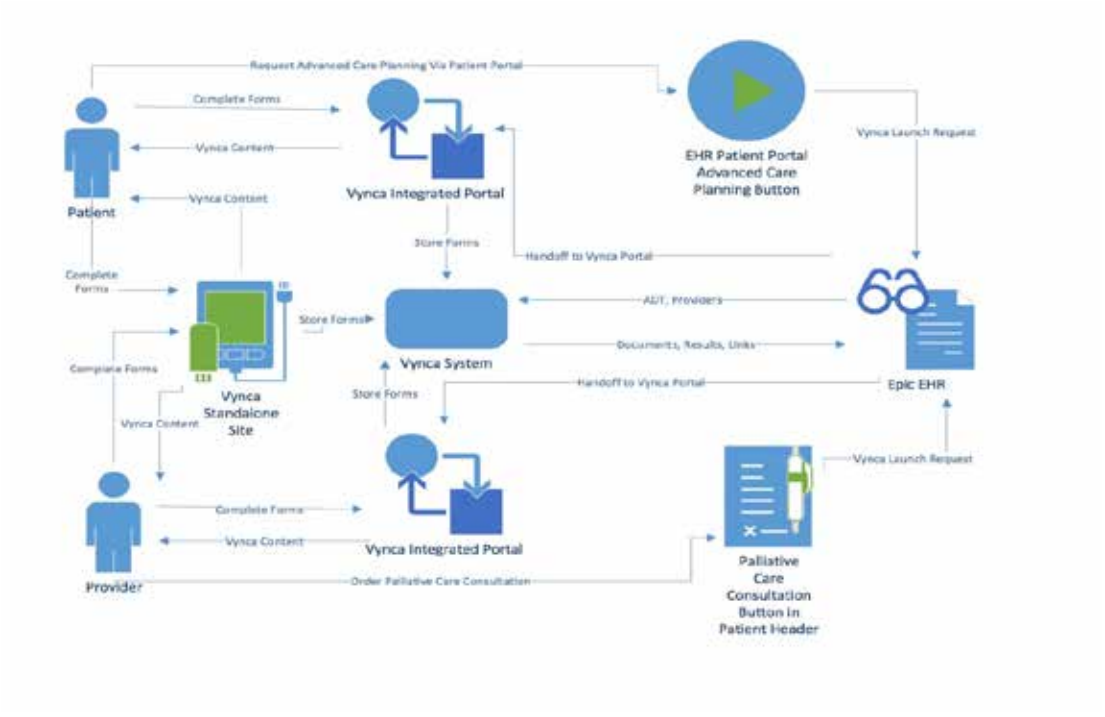
research on my part, we discussed the project scope and settled on what we thought would be a meaningful integration solution connecting the Vynca system to an Epic Electronic Health Record via the patient portal application. The integration with Epic's patient portal would allow the patient and caregivers the ability to access all of Vynca's patient planning resources and electronic forms in the context of care at a specified facility. Patients would also have the ability to access the Vynca system via a stand-alone portal utilizing any web browser.

My assignment at this point in the project was to review Epic system documentation in order to determine the technical requirements for integrating external resources, in this case Vynca, with the Epic patient portal. I focused on reading technical manuals for a few weeks while also holding meetings with the systems analyst responsible for maintaining the patient portal at OHSU. When I was comfortable with my understanding of the Epic patient portal and integration options I submitted a formal project request to secure programming resources for the Epic portion of the integration effort. Vynca already had technical resources standing by waiting to begin work on the project. As it turns out, the patient portal development both at OHSU and Epic had not started gaining traction until fairly recently. There was a long list of enhancements requests and development work queued up for prioritization related to patient portal development. OHSU did not have adequate resources to handle the backlog of requests. In addition, Epic had not rolled out many of the available enhancements for the patient portal to customers until recently. A patient portal steering committee was formed at OHSU to help prioritize the influx of requests setting strategic guidelines around the change request process. Unfortunately, our project did not receive priority and was placed on the back burner for future development discussions. This effectively removed the patient portal resource I had been working with from the equation. It quickly became obvious that we would not be able to implement a functional prototype for integration with the Epic portal. The functional prototype was removed from our project scope.

Efforts at this stage were now focused on redefining the project scope and my deliverables to Vynca. Vynca also wanted to explore expanding the integration opportunities beyond the limited connection with a patient portal. I moved back into analysis and design discussions to determine the ideal integration strategy and design for a more robust connection to the EHR. Fortunately, I was able to find a couple of system projects that had historically integrated third-party systems with Epic successfully in a similar manner. I was able to review the technical functionality and work flows utilized in those systems to gain a better understanding

of how we might apply their learning and success to the Vynca project. A few weeks during the middle of the term I felt like there wasn't a clear direction or path to move toward a viable solution. We continued to meet and discuss various concepts for direction of the project. Vynca was very flexible and understanding during this period of uncertainty. I spent approximately three weeks in exploration of a new direction for the project. The nice part about being a student and a professional in the informatics field simultaneously is exposure to practical applications for my education on a daily basis. I happened to become involved in helping a team in my office work through a problem they were having with an emergency department system known as EDIE. My exposure to that system gave me a better understanding of how the Vynca scope of integration could be broadened making it a more robust solution. After several design meetings with Vynca I came up with the following concept for Vynca integration with Epic. Instead of simply connecting the patient to Vynca resources via a link from the patient portal I decided it would be more beneficial if we could offer a complete advanced care planning solution for providers, patients, families, and Medical Records staff.

A high-level concept diagram for the current integration plan is included below:



The following is a description intended to provide an overview for the concept diagram.

Patients will interact with the Vynca system via independent web browser to connect directly with Vynca resources or by utilizing a link provided within the patient portal. Either route will launch the same Vynca portal granting access to advanced care planning resources with the ability to complete electronic forms on the Vynca System directly. Vynca will send a documentation notification to the EHR when the patient has completed and signed documentation in Vynca. Patients will return to the Vynca portal as needed to review resources and previously completed documentation. As plans change patients will have the option to update documentation via the Vynca portal as needed.

Providers will access the Vynca portal either directly through an independent web browser or via links inserted into various clinical workflows in the EHR. Specific patient populations will be flagged for palliative care consultation which serves to notify providers that palliative care orders or consultation may be warranted for this visit. Providers will be able to review advanced care planning documentation with patients and families during clinical visits directly from the EHR.

If documentation is completed by patients or providers utilizing an integrated connection from the facilities EHR, then documentation links are sent from Vynca via interface and stored in the patient chart as hyperlinks. In this case there is no need to verify the patient identity between Vynca and the facilities medical record because the user is directly accessing the correct patient record already. Users are then able to click on the document hyperlink in the EHR to retrieve the completed document from Vynca for display as needed. Completed documentation will also be available by accessing the Vynca portal directly.

On the other hand, documentation that is completed directly in Vynca or by connection with Vynca outside of the home facility will be stored in Vynca. Vynca will then send a result message regarding the patient to participating facilities when a patient match is found across sites. The result message will display as a Palliative Care Consultation indicator in the receiving facilities EHR. Users will be prompted to verify the patient identity upon review of the Palliative Care Consultation message. The original result message status will be changed to 'Final' when the patient identify is confirmed. All completed documentation will be available to the user if the patient identity is confirmed to match and Vynca will send appropriate document records to be stored as links to become part of the medical record at the receiving site.

In Summary, Vynca will act as a single repository for Advanced Care Planning documentation and resources. Any documentation completed from any participating healthcare organization or via the Vynca portal will be housed in Vynca. Vynca will determine patient matching and notification of available documentation to participating provider organizations. Hyperlinks and various integration links within the EHR will provide access to the centrally located Vynca resources and Advanced Care Planning documentation. Documentation will be available for review and modification either form the Vynca system directly or by the integrated Vynca portal connection within the EHR. A 'Palliative Care Consultation' button will be available for providers to start documentation from Epic. Additionally, an 'Advanced Care Planning' button is available for patients to start documentation or review from the patient portal. Document hyperlinks are only available in the EHR when documentation exists and said documentation was created by current facility. For example, OHSU will only see documentation for their patients who have completed electronic forms. A result message exists for potential matching patient records and providers need to confirm patient identity before documentation from an external facility is incorporated in to the EHR. The result message will be removed if no matching patient is found and the provider will be given the option to start new documentation. The result message status will change from preliminary to final once the patient match is confirmed and documentation is complete.

It was necessary to change the project scope and definition during the course of the internship. Originally we had planned for focusing on the provider identification and authentication. Unfortunately, we had limited access to the Epic patient portal and an analyst resource who could help us with the technical details. I did have access to an Epic test system and all available system documentation. It turned out that the authentication was pretty easy to implement technically and wouldn't require enough time or energy to make it a focus for the entire project. The connection simply requires launching a third-party application, Vynca in this case, and passing the user ID over an encrypted URL for authentication. Internet Explorer is the tool Epic chose to utilize for this type of connectivity. Vynca is really just connecting via a secured portal and offering application functionality in a Software as a Service (SaaS) model.

All of the original objectives laid out for this project were met with the exception of the prototype system. The identification and authentication technology was much simpler than initially anticipated. It did not require that much time or effort so I had to expand the project

to cover additional details and fill-in the require time for the internship. I planned on covering the authentication for providers but was not aware that I would also need authentication for patients as well. Authentication turned out to be surprisingly easy for both the provider and the patient user roles. Epic connected to the Vynca portal with an encrypted URL using 256 AES encryption. Provider and patient user identity was passed from epic to Vynca in order to match with existing patient or provider records in their system. Access to features and functionality was controlled strictly by the Vynca system and not by epic.

A detailed technical assessment and summary was completed for this project though due to the proprietary nature of the material I will not be providing it in this report. Both Epic and Vynca have strict copyright and privacy restrictions regarding use of technical details involving their systems.

Lessons Learned

One of the most important lessons learned during this project is one that I am very familiar with and somehow seem to overlook frequently. Never make assumptions that resources will be available even if the project is approved and the resources are committed up front. Soon after the project started the key resources who had access to the Epic portions of the system became unavailable. Those resources were required for any technical build for prototype and proof of concept work that we needed to perform. It also became much more complicated to obtain information on the technical capabilities for the system as the knowledgeable person we depended upon was pulled from participation in the project. I was able to access system documentation provided me with the opportunity to learn the system during the project. However, starting from scratch with limited knowledge of the system was very time consuming. I was able to learn what I needed to though it took a considerable amount of research and learning in order to so.

Another lesson I learned was that contract negotiation and legal review can sometimes take more time than the actual design and build time for the technical pieces of the system. Contract review also occurs during the entire project as designs or requirements change the contract language must be adapted as well. For example, requirements gathering, research, and design development consumed about as much time as the legal review process. Additionally, contract requirements were running all the way up until two weeks after the project was already scheduled to start. It is essential to begin the contract negotiations and

business agreement well in advance of any planned project work. Plan for the negotiations to consume a substantial amount of time and be prepared for delays in this part of the project. Contracts will also need to be changed as the team learns more about the design in terms of feasibility or capability. You may need to rewrite the contract if the design changes are substantial enough.

Intellectual property rights are a tricky part of the project as well. You need to two different vendors were involved in this case so it wasn't as simple as it would have been working with one vendor. Usually the customer and the vendor have a business agreement in place to cover relations and intellectual property rights. However, when two or more vendors are involved with a customer in the middle, the relations become more complicated. In some cases, it may be possible to establish a business agreement between all parties involved. We did not have such an agreement in this project and I had to be very careful with how much detail and information I provided to either company. It was a delicate balancing act between providing just enough information to communicate technical requirements and overstepping intellectual property right boundaries. It was up to me to ensure that I did not share too much information while sharing just enough to make the design successful.

I did not have administrator access to the Epic patient portal allowing for testing or prototyping. It is much easier to learn a new system when you can get hands on experience working with a test environment. Reading documentation only gets you so far in really understanding the material you are studying. It would be similar to reading a text book on programming, but never actually writing any code. You may be able to understand the concepts involved in writing code. However, you won't truly understand how to successfully write code until you can get hands on experience. With that being said I believe the integration model that we developed in this project could be feasibly implemented given my understanding of the technical aspects of the system in addition to the integration I researched with other similar systems in production today. My project plan will need to be adjusted adding time for prototype and issue resolution assuming one were to actually implement this system.

Operational environments can change drastically even with carefully laid plans. I took time to confirm resource availability and commitment prior to initiating the project in this internship. What I discovered about two weeks into the project was that the Epic portal was underdeveloped both at OHSU and with Epic development. Much of the code available from

Epic did not work as intended and had to be modified to perform the most basic of functions. Apparently Epic was in the initial stages of development for their patient portal. Epic plans to implement many changes to increase usability and functionality of the portal over the next few years. Much of the documentation stated capabilities that simply don't exist or function properly at present. OHSU also implemented only the most basic features of the portal. Resources simply weren't assigned or available for improving portal functionality. Both OHSU and Epic are assigning resources for development of the patient portal over the next few months. A roadmap has been established for updating the portal to make it fully functional for the patient. Many new features are going to be integrated into the portal in coming months. Unfortunately, none of the planned functionality will be rolled out during the course of my internship. Additionally, OHSU is currently hiring resources to meet their needs for patient portal development.

The following few pages provide a detailed use case analysis for the Vynca system including the roles for providers, patients, health care agents, and Health Information Management staff. Use case analysis was an important exercise to determine all the potential needs for users of this system. Developing a technical solution without first considering the use cases is the best way to fail in system design from the beginning. I found the team frequently going to a technical solution prior to completely understanding the nature of how users would need to interact with the system and what they hope to accomplish by using the system.

Use Cases

Use Case #	Actor	Task	Context	Form	Narrative

1	Care Providers	Review Documentation	Office Visit/Hospital Visit	POLST/Advance Directive	Assuming use of enterprise EHR. Notified of status for documentation via patient header that indicates whether documentation exists. Yes/No indicator. Provider clicks on field in patient header to launch Vynca portal. Document presented to user for viewing.
2	Care Providers	Review Documentation	Office Visit/Hospital Visit	Power of Attorney/Living Will/Patient Care Instructions	Assuming use of enterprise EHR. Link to document available in Patient Summary report and in Chart under Media tab. Hyperlink launches Vynca portal and displays document.
3	Care Providers	Review Documentation	Office Visit/Hospital Visit	Palliative Care Consultation	Provider is alerted to the existence of documentation on a patient via patient list indicating that palliative care results are available. Provider clicks on results icon to launch Vynca portal and review documentation. If the patient is not a direct match or results are from another facility, provider is asked to verify patient identity prior to viewing documentation.
4	Care Providers	Review Documentation	Nursing Home/ Skilled Nursing Facility	POLST/Advance Directive/Power of Attorney/Living Will/Patient Care Instructions	Assuming no connection to enterprise EHR. Connect directly to Vynca portal via browser to complete and review documentation.

5	Care Providers	Order	Office Visit/Hospital Visit	Palliative Care Consultation	Provider clicks on palliative care order button to launch Vynca portal from within EHR where they can begin documentation.
6	Care Providers	Order	Nursing Home/ Skilled Nursing Facility	Palliative Care Consultation	Provider connects directly to the Vynca portal via web browser independent from EHR to begin reviewing/documenting.
7	Care Providers	Document	Office Visit/Hospital Visit	POLST/Advance Directive/Power of Attorney/Living Will/Patient Care Instructions	Provider clicks on palliative care order button to launch Vynca portal from within EHR where they can begin documentation.
8	Care Providers	Document	Nursing Home/ Skilled Nursing Facility	POLST/Advance Directive/Power of Attorney/Living Will/Patient Care Instructions	Provider connects directly to the Vynca portal via web browser independent from EHR to begin reviewing/documenting.
9	Care Providers	Charge	Office Visit/Hospital Visit	Palliative Care Consultation	Provider documents in patient chart and charges are automatically captured based upon EHR specific configuration/guidelines. Vynca does not generate charges for the visit.
10	Care Providers	Charge	Nursing Home/ Skilled Nursing Facility	Palliative Care Consultation	Provider documents in patient chart and charges are automatically captured based upon facilities specific system configuration/guidelines. Vynca does not generate charges for the visit.

11	Patient	Document	Office Visit/Hospital Visit	Advanced Care Planning Discussion	Patient is presented with Advance Care Planning button in EHR patient portal. The button launches Vynca portal directly from the patient portal page. Vynca patient resources and forms are available hosted from the Vynca system via the Vynca portal. Any forms completed and signed by the patient during the session are sent to the EHR as document records (hyperlinks). See use case number 2 above for provider review.
12	Patient	Document/Review Documentation	Nursing Home/ Skilled Nursing Facility	POLST/Advance Directive/Power of Attorney/Living Will/Patient Care Instructions	Patient connects directly to Vynca portal via web browser to review patient resources and complete forms. As an alternative, the patient can interact with the Vynca system as described in case #11 above.
13	Patient	Document/Review Documentation	In Home	Advanced Care Planning Discussion	Patient connects directly to Vynca portal via web browser to review patient resources and complete forms. As an alternative, the patient can interact with the Vynca system as described in case #11 above.

14	Health Care Agent	Review Documentation	In Home/Nursing Home/ Skilled Nursing Facility/Office Visit/Hospital Visit	Advanced Care Planning Discussion	Patient connects directly to Vynca portal via web browser to review patient resources and complete forms. As an alternative, the patient can interact with the Vynca system as described in case #11 above.
15	HIM Staff	Upload Existing Paper Documentation	HIM Document Imaging Operations	POLST/Advance Directive/Power of Attorney/Living Will/Patient Care Instructions	User connects to Vynca portal by clicking on HIM Upload button directly from EHR. User identifies patient then uploads PDF file using portal interface. File is stored directly in Vynca systems and document links are sent to EHR as described in case #11 above (hyperlinks).

ADVANCED CARE PLANNING

- Integrate Advanced Care Planning and Palliative Care Resources with Electronic Health Record (EHR).
- Vynca Patient and Provider Resources.
- Epic EHR - Patient Portal & Provider Navigator.
- Resources and Electronic Documentation.

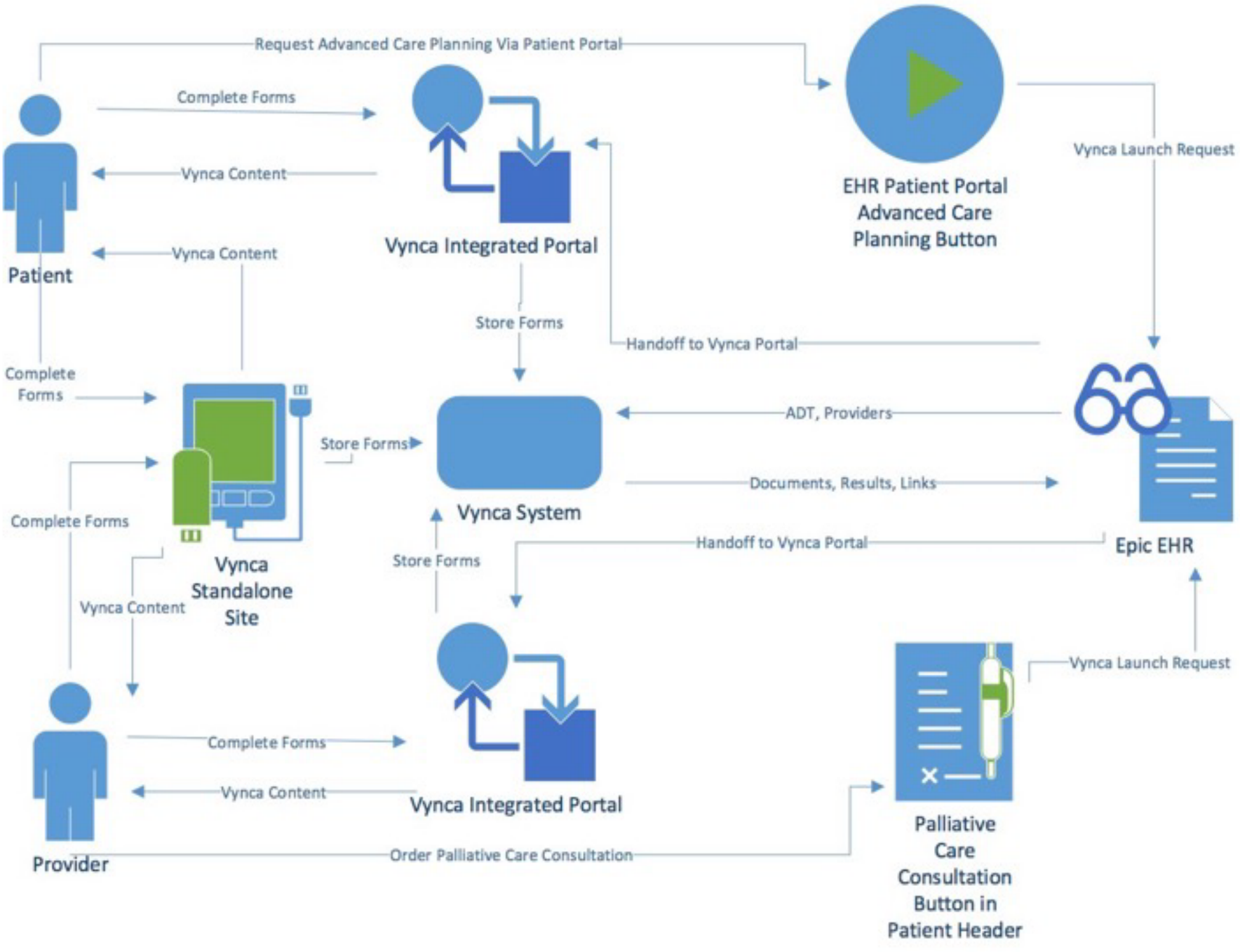
ACTIVITIES

- Become Familiar with Advanced Care Planning.
- Study Vynca System.
- Learn Technical Functionality of Epic EHR.
- Identify Integration Opportunities.
- Document Project Plan.
- Develop Proof of Concept System.

DELIVERABLES

- Detailed Technical Assessment and Recommendations.
- Documented Integration Requirements.
- Conceptual Integration Model.
- Implementation Plan and Timeline.

INTEGRATION MODEL



BARRIERS

- Limited Access to Technical Resources for EHR.
- Contract Negotiation between Vynca, Epic, OHSU.
- Lack of Access to Systems Involved.
- Limited Knowledge of Palliative Care and System.
- Operational Environment, Priorities, Stakeholders.

SCOPE CHANGE

- Provider Authentication was Too Easy.
- Increased to Include Patient Facing Content.
- Improved Capabilities for Integration.
- Removed Proof of Concept System.

LESSONS LEARNED

- Contingency Planning for Resource Availability.
- Contract Negotiations are Key.
- Clarify Intellectual Property Rights before Starting.
- Anticipate Organizational Change and Plan Accordingly.
- Understand Technical Roadmap for Systems Involved.

CONCLUSION

- Successful Delivering Revised Scope.
- Plan for Continued Development.
- Know Your Customers Needs - Use Cases.
- Deliver Something Meaningful, not for Technology Sake Alone.
- Continue Growth of Solution Incrementally.

RESOURCES

- vynca.org
- http://theconversationproject.org
- https://stanfordhealthcare.org
- https://www.nia.nih.gov/health/publication/advance-care-planning

Spring Term 2016 - Time Sheet

Kenneth G dley
Vynca|Rush Ba tlett

Period [3/28/16] - [6/17/16]

Hou s Wo ked
0.00

Date(s)	T me In	T me Out	Hou s Wo ked	Task
3/28/2016	4 00 PM	4 30 PM	0 30	In t t al meet ng
3/29/2016	8 00 PM	10 42 PM	2 42	D scuss p oject Scope
3/30/2016	4 00 PM	4 30 PM	0 30	Weekly Meet ng
3/31/2016	9 00 PM	11 00 PM	2 00	D scuss p oject scope
4/1/2016	8 50 PM	11 15 PM	2 25	Rev ew Pall at ve ca e concepts
4/2/2016	3 30 PM	6 45 PM	3 15	Requ ements gathe ng
4/3/2016	6 00 PM	9 50 PM	3 50	Requ ements gathe ng
4/4/2016	8 00 PM	10 30 PM	2 30	Resea ch pall at ve ca e esou ces
4/5/2016	8 00 PM	9 50 PM	1 50	esea ch pa l at ve ca e esou ces
4/6/2016	4 00 PM	4 30 PM	0 30	Weekly Meet ng
4/7/2016	9 00 PM	10 50 PM	1 50	Resea ch po tal funct onal ty
4/8/2016	9 07 PM	11 00 PM	1 53	Requ ements analys s
4/9/2016	8 30 PM	11 10 PM	2 40	Documentat on Rev ew
4/10/2016	4 50 PM	6 30 PM	1 40	Documentat on Rev ew
4/11/2016	3 30 PM	5 30 PM	2 00	Documentat on Rev ew
4/12/2016	9 00 PM	10 50 PM	1 50	Requ ements analys s
4/13/2016	4 00 PM	4 30 PM	0 30	Weekly Meet ng
4/14/2016	9 10 PM	11 00 PM	1 50	Rev ew advanced ca e plann ng esou ces
4/15/2016	8 40 PM	10 30 PM	1 50	Rev ew Ep c system documentat on ega d ng pat ent po tal funct onal ty
4/16/2016	9 05 PM	11 30 PM	2 25	Rev ew Ep c system documentat on ega d ng pat ent po tal funct onal ty
4/17/2016	3 30 PM	5 50 PM	2 20	Rev ew Ep c system documentat on ega d ng pat ent po tal funct onal ty
4/18/2016	2 40 PM	4 00 PM	1 20	D scuss on w th Vynca ega d ng p oduct plann ng
4/19/2016			0 00	
4/20/2016	4 00 PM	4 30 PM	0 30	weekly meet ng
4/21/2016	8 35 PM	9 55 PM	1 20	Rev ew bus ness equ ements fo planned system
4/22/2016	9 15 PM	11 00 PM	1 45	use case analys s
4/23/2016	9 00 PM	10 30 PM	1 30	Model p el m na y plan fo nteg at on
4/24/2016	8 00 PM	9 50 PM	1 50	Rev ew Ep c system documentat on
4/25/2016	9 30 PM	11 00 PM	1 30	D scuss on w th Vynca cla fy ng p ov de authent cat on
4/26/2016	5 00 PM	7 00 PM	2 00	D scuss on w th Vynca cla fy ng p ov de authent cat on
4/27/2016	4 00 PM	4 30 PM	0 30	weekly meet ng
4/28/2016	7 00 PM	9 45 PM	2 45	D scuss on w th Vynca cla fy ng p ov de authent cat on
4/29/2016	9 30 PM	10 55 PM	1 25	Pat ent k osk authent cat on d scuss on
4/30/2016	8 40 PM	10 04 PM	1 24	ev ew Ep c system documentat on
5/1/2016	9 30 PM	11 15 PM	1 45	Rev ew ep c k osk system documentat on
5/2/2016	6 00 PM	8 30 PM	2 30	Inte face analys s
5/3/2016	8 45 PM	11 00 PM	2 15	Inte face analys s
5/4/2016	4 00 PM	4 30 PM	0 30	Weekly meet ng
5/5/2016	8 44 PM	10 30 PM	1 46	Rev ew Vynca techn cal documentat on
5/6/2016	9 20 PM	10 45 PM	1 25	Rev ew vynca techn cal documentat on
5/7/2016	7 00 PM	11 25 PM	4 25	Rev ew vynca techn cal documentat on
5/8/2016	8 40 PM	10 00 PM	1 20	ev ew vynca techn cal documentat on
5/9/2016	8 55 PM	10 50 PM	1 55	nte face des gn documentat on
5/10/2016	9 00 PM	11 00 PM	2 00	nte face des gn documentat on
5/11/2016	4 00 PM	4 30 PM	0 30	weekly meet ng
5/12/2016	9 00 PM	10 50 PM	1 50	ev ew ep c techn cal documentat on
5/13/2016	8 45 PM	11 00 PM	2 15	ev ew ep c pat ent po tal documentat on
5/14/2016	9 15 PM	11 30 PM	2 15	ev ew ep c pat ent po tal documentat on
5/15/2016	8 00 PM	10 00 PM	2 00	document nte face equ ements
5/16/2016			0 00	
5/17/2016	7 00 PM	10 20 PM	3 20	ev s t p ov de authent cat on equ ements
5/18/2016	4 00 PM	4 30 PM	0 30	weekly meet ng
5/19/2016	9 10 PM	10 00 PM	0 50	ev ew p ov de authent cat on methods
5/20/2016	8 40 PM	10 30 PM	1 50	Study vynca system documentat on
5/21/2016	9 05 PM	11 30 PM	2 25	study vynca system documentat on
5/22/2016	5 00 PM	8 00 PM	3 00	study vynca system documentat on
5/23/2016	9 00 PM	10 00 PM	1 00	p el m na y des gn fo nte face spec f cat on pat ent authent cat on
5/24/2016	9 30 PM	10 30 PM	1 00	p el m na y des gn fo nte face spec f cat on pat ent authent cat on
5/25/2016	4 00 PM	4 30 PM	0 30	weekly meet ng
5/26/2016	9 00 PM	11 00 PM	2 00	Beg n documentat on of use case scena os
5/27/2016	8 30 PM	10 20 PM	1 50	d scuss use case scena os
5/28/2016	9 30 PM	11 00 PM	1 30	feas b l ty assessment fo pat ent po tal connect v ty
5/29/2016	5 00 PM	9 00 PM	4 00	subm t p oject equest fo Ep c techn cal esou ces f om OHSU
5/30/2016	8 40 PM	10 30 PM	1 50	Feas b l ty assessment fo pat ent po tal connect v ty
5/31/2016	7 00 PM	10 00 PM	3 00	feas b l ty assessment fo pat ent po tal connect v ty
6/1/2016	4 00 PM	4 30 PM	0 30	weekly meet ng
6/2/2016	8 40 PM	10 30 PM	1 50	document p oject fo ev ew by OHSU Pat ent po tal stee ng comm ttee
6/3/2016	9 00 PM	10 00 PM	1 00	Techn cal nteg at on documentat on
6/4/2016	8 00 PM	10 00 PM	2 00	ev ew ep c documentat on fo launch ng nteg ated th d pa ty appl cat ons.
6/5/2016	7 00 PM	9 00 PM	2 00	D scuss on w th OHSU techn cal esou ce ega d ng po tal connect v ty opt ons.
6/6/2016	8 00 PM	9 30 PM	1 30	Techn cal nteg at on documentat on
6/7/2016	9 00 PM	10 30 PM	1 30	Rev ew nteg at on concept w th Vynca Resou ces
6/8/2016	4 00 PM	4 30 PM	0 30	weekly meet ng
6/9/2016	8 40 PM	10 20 PM	1 40	D scuss des gn mpl cat ons w th OHSU techn cal esou ce.
6/10/2016	9 00 PM	11 00 PM	2 00	Sc ap the whole plan and sta t ove
6/11/2016	8 50 PM	10 00 PM	1 10	Rev ew des ed funct onal ty and techn cal opt ons.
6/12/2016	8 15 PM	11 15 PM	3 00	Rev ew des ed funct onal ty and techn cal opt ons.
6/13/2016	9 00 PM	10 00 PM	1 00	T ouble dete m n ng ght d ect on cons de ng.
6/14/2016	8 30 PM	10 00 PM	1 30	Mo e t ouble f gu ng out what d ect on to take when o g nal plan fa led.
6/15/2016	4 00 PM	4 30 PM	0 30	weekly meet ng
6/16/2016	9 30 PM	11 00 PM	1 30	ev ew techn cal opt ons fo po tal connect v ty
6/17/2016	9 00 PM	10 00 PM	1 00	Rev ew des ed funct onal ty and techn cal opt ons.

Summer Term 2016 - Time Sheet

Kenneth G dley
Vynca|Rush Ba tlett

Period [6/27/16] - [9/16/16]

Hou s Wo ked
0.00

Date(s)	T me In	T me Out	Hou s Wo ked	Task
6/27/2016	4 00 PM	4 30 PM	0 30	Weekly p oject meet ng
6/28/2016	8 10 PM	10 30 PM	2 20	Rev se p oject scope
6/29/2016	4 00 PM	4 30 PM	0 30	Weekly p oject meet ng
6/30/2016	9 10 PM	11 15 PM	2 05	Develop p oject scope and t mel ne
7/1/2016	9 50 PM	11 15 PM	1 25	Document p oject scope
7/2/2016	4 30 PM	6 45 PM	2 15	Confe ence call des gn d scuss on
7/3/2016	7 00 PM	10 50 PM	3 50	Rev ew systems documentat on
7/4/2016	8 00 PM	10 20 PM	2 20	Rev ew systems documentat on
7/5/2016	7 30 PM	9 40 PM	2 10	Fo m concept d ag am
7/6/2016	4 00 PM	4 30 PM	0 30	Weekly p oject meet ng
7/7/2016	9 30 PM	9 50 PM	0 20	Check n call w th Vendo
7/8/2016	9 25 PM	10 00 PM	0 35	Fo low up call w th vendo
7/9/2016	9 30 PM	11 00 PM	1 30	Rev ew systems nteg at on concept w th vendo .
7/10/2016	4 50 PM	6 30 PM	1 40	Scope f nal zat on and concept ev ew
7/11/2016	5 30 PM	7 30 PM	2 00	P esent p o ect scope and t mel ne
7/12/2016	9 00 PM	9 50 PM	0 50	P esent nteg at on concept fo app oval
7/13/2016	4 00 PM	4 30 PM	0 30	Weekly p oject meet ng
7/14/2016	9 20 PM	11 00 PM	1 40	F nal ze nteg at on concept d ag am
7/15/2016	7 40 PM	10 30 PM	2 50	document f nal p oject scope
7/16/2016	9 05 PM	11 35 PM	2 30	document p oject plan
7/17/2016	3 30 PM	6 50 PM	3 20	document p oject t mel ne
7/18/2016	3 40 PM	4 30 PM	0 50	Rev ew completed documentat on w th vendo .
7/19/2016			0 00	
7/20/2016	4 00 PM	4 30 PM	0 30	Weekly p oject meet ng
7/21/2016	8 35 PM	9 40 PM	1 05	Web p esentat on fo nte face development
7/22/2016	8 30 PM	11 00 PM	2 30	Document nte face equ ements
7/23/2016	9 00 PM	10 30 PM	1 30	Fo low up w th Ep c ep esentat ve fo feas b l ty assessment.
7/24/2016	8 20 PM	9 50 PM	1 30	Develop use case scena os
7/25/2016	9 30 PM	11 00 PM	1 30	Develop use case scena os
7/26/2016	5 00 PM	7 45 PM	2 45	Develop use case scena os
7/27/2016	4 00 PM	4 30 PM	0 30	Weekly p oject meet ng
7/28/2016	7 00 PM	10 45 PM	3 45	develop use case scena os
7/29/2016	9 30 PM	10 50 PM	1 20	document use case scena os
7/30/2016	8 45 PM	10 04 PM	1 19	ev ew use case scena os w th vynca
7/31/2016	9 30 PM	11 15 PM	1 45	ev se use case scena os
8/1/2016	6 00 PM	8 30 PM	2 30	document use case scena os
8/2/2016	8 45 PM	10 00 PM	1 15	document use case scena os
8/3/2016	4 00 PM	4 30 PM	0 30	Weekly p oject meet ng
8/4/2016	8 44 PM	10 15 PM	1 31	p esent use case scena os to vynca
8/5/2016	9 30 PM	10 45 PM	1 15	Rev ew use case scena os w th ep c esou ces
8/6/2016	8 00 PM	10 25 PM	2 25	ev ew use case scena os w th p ov de champ on
8/7/2016	8 40 PM	10 00 PM	1 20	confe ence ca l to d scuss f nal zed concept
8/8/2016	8 55 PM	10 50 PM	1 55	mock up system n test env onment
8/9/2016	9 00 PM	11 15 PM	2 15	Bu ld system n test env onment
8/10/2016	4 00 PM	4 30 PM	0 30	Weekly p oject meet ng
8/11/2016	9 00 PM	10 30 PM	1 30	Beg n w t ng pape
8/12/2016	8 45 PM	10 00 PM	1 15	wo k ng on pape and suppo t ng documentat on
8/13/2016	9 15 PM	11 15 PM	2 00	wo k ng on pape and suppo t ng documentat on
8/14/2016	8 00 PM	10 15 PM	2 15	wo k ng on pape and suppo t ng documentat on
8/15/2016			0 00	
8/16/2016	7 00 PM	10 20 PM	3 20	p epa e system fo demonst at on
8/17/2016	4 00 PM	4 30 PM	0 30	Weekly p oject meet ng
8/18/2016	8 10 PM	10 10 PM	2 00	test use cases fo p ov de ole
8/19/2016	8 40 PM	10 30 PM	1 50	test use cases fo pat ent ole
8/20/2016	9 15 PM	11 30 PM	2 15	walk th ough mocked up system end to end
8/21/2016	5 00 PM	8 00 PM	3 00	Go to meet ng p esentat on ev ew w th vynca
8/22/2016	9 00 PM	10 00 PM	1 00	w t ng f nal pape
8/23/2016	9 30 PM	10 45 PM	1 15	w t ng f nal pape
8/24/2016	4 00 PM	4 30 PM	0 30	Weekly p oject meet ng
8/25/2016	9 00 PM	11 00 PM	2 00	updat ng p oject plan
8/26/2016	8 30 PM	10 20 PM	1 50	updat ng p oject plan
8/27/2016	9 30 PM	11 00 PM	1 30	W t ng f nal pape
8/28/2016	5 00 PM	9 00 PM	4 00	p epa ng p esentat on mate als.
8/29/2016	8 40 PM	10 30 PM	1 50	1 50
8/30/2016	8 00 PM	10 05 PM	2 05	2 05
8/31/2016	4 00 PM	4 30 PM	0 30	Weekly p oject meet ng
9/1/2016	8 40 PM	10 30 PM	1 50	1 50
9/2/2016	9 00 PM	10 15 PM	1 15	1 15
9/3/2016	8 00 PM	10 00 PM	2 00	2 00
9/4/2016	7 00 PM	9 00 PM	2 00	2 00
9/5/2016	8 00 PM	9 30 PM	1 30	1 30
9/6/2016	9 00 PM	10 30 PM	1 30	1 30
9/7/2016	4 00 PM	4 30 PM	0 30	Weekly p oject meet ng
9/8/2016	8 40 PM	10 20 PM	1 40	1 40
9/9/2016	9 15 PM	11 00 PM	1 45	1 45
9/10/2016	8 50 PM	10 20 PM	1 30	1 30
9/11/2016	8 15 PM	11 15 PM	3 00	3 00
9/12/2016	9 05 PM	10 00 PM	0 55	0 55
9/13/2016	8 30 PM	10 15 PM	1 45	1 45
9/14/2016	4 00 PM	4 30 PM	0 30	Weekly p oject meet ng
9/15/2016	9 30 PM	11 00 PM	1 30	1 30
9/16/2016	9 00 PM	10 00 PM	1 00	1 00