Speech Recognition Project Plan

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HCIN 542: Systems Analysis and Design for Health Care Informatics

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Speech Recognition
Project Charter Template

A.   General Information

Information to be provided in this section is general in nature and provides the necessary information about the organization of the project and project participants.

Project Sponsor: Charisse Lyn Tabotabo

Project Manager: James Ritter

Prepared by: Olena Petrenko, Stephen Nevelik, Ariel Norton, Julian Romero, James Ritter

Date: 2/16/2021

The leadership team at Idyllwild Clinic have contracted with your company to implement a new medical device or program to improve their clinic. Due to quick turnover, the current leadership team has no prior experience implementing a new device or program, but they feel assured they can accomplish a successful rollout using the skill of their staff and providers.

The following is baseline information on the hospital and project resource allocation:

- Necessary hardware is provided
- The clinic received a sizable loan from the CARES Act and the Paycheck Protection Program and Healthcare Enhancement Act. The leadership team has allocated $50,000.00 for the entire project. This includes all startup costs, labor, hardware, and "unforeseen costs."

Key staff members:

- Dr. Grant, clinic owner and medical director (*Key stakeholder)
- Dr. Montague, physician and clinic partner (*Key stakeholder)
- Mrs. Miller, physician's assistant (will function as project team member)
- Mrs. Vallejo, MSN, NP (project team member)
- Mrs. Jones, clinic director (*Key stakeholder)
- Ms. Hillock, front office clerk (project team member)
- Mr. Dupont, back office medical assistant (project team member)
- Mr. DelaCruz, clinic accounts and billing (project team member with IT experience)

B.   Purpose

Information in this section discusses the purpose of the project, goals, and overall what the project is intended to accomplish. If you are addressing a business problem or implementing technology you would indicate what it is. You should be succinct in this section and provide adequate detail for the reader to understand the project.

Purpose
The Speech Recognition (NLP/ML) system allows physicians to use their voice to document into the EHR at the bedside to alleviate the manual, time consuming, and error-prone documentation process in place currently. The solution will automate and transform the current documentation process to the NLP/ML-enabled process following the best practices to facilitate user adoption.

Goals
- Utilize NLP/ML solution to improve accuracy, speed of clinical documentation
- Increase reimbursement by more accurate coding and billing practices
- Improve patient satisfaction by increasing the amount of time providers can spend with the patient
- Improve clinician workflow by reducing time spent documenting

Metrics: How to measure each of the goals?
- Track the amount of time clinicians spend with patients
- How many patients a clinician can see in a day
- Track clinic reimbursement rates
- Increase patients' retention

What it is intended to accomplish
The outcome of the project will include the functioning and effective speech recognition system solutions for clinical documentation at the bedside that leverages appropriate NLP/ML techniques. The solution has the potential to be updated and improved in future implementations.

C.   Constraints and Assumptions

List all known constraints and assumptions pertaining to this project that may impact scope. A constraint is an applicable restriction or limitation, either internal or external to the project that will affect the performance of the project or a process. Assumptions are factors that, for planning purposes, are considered to be true, real, or certain without proof or demonstration. Assumptions generally involve a degree of risk.

Constraints and limitations that must be taken into consideration prior to the project's initiation.
1. Internal:
    a. Project's staff complete the required tasks within normal working hours to avoid unbudgeted overtime expenses.
    b. The project must operate within the allocated resources and funding.
    c. Buy-in by clinical staff
    d. Little IT support

2. External:
    a. Limitations of the technology
    b. Need for support from vendor for unforeseen issues
    c. Patient acceptance of use and potential privacy concerns

Assumptions (degree of risk)

    a. Time and budget estimates were prepared with the assumption that required personnel, systems, equipment, and other resources will be reasonably available when needed. Delays caused by personnel, systems, or equipment that are not reasonably available may affect the cost and duration of the project.
    b. Project team will meet regularly to discuss project progress, identify and successfully resolve issues that arise throughout the course of the project.
    c. Staff members will comply with new workflow and implemented technology
    d. The technology will adequately fill the role of accurate note taking

D. Project Scope Statement

The Preliminary Scope Statement is a narrative description of products, services, or results to be developed and implemented. The project goal statement needs always to address three specific critical success factors: 1) what is being done, 2) when will it be done by and 3) how much is it going to cost? Please be descriptive.

1. What is being done?
Adapt new software that will allow for accurate note taking at a significantly faster rate than the previous systems and workflows. Train our staff in the use of that software to improve their efficiency of their current workflow so that they will be able to spend more time with the patients and therefore provide better care.

2. When will it be done?
6 months

3. How much is it going to cost?
$50,000

Phase	Description	Timeline	Budget
Phase 1 – Project Initiation	• Create an outline of the project's purpose, expected goals and key deliverables, benefits, risks, and costs estimation • Provide justification for the Speech Recognition system • List key personnel • Identify key constraints, risks, and assumptions with level of impact on the project	**Month 1**	**$10,000**
Phase 2 – Project Planning	• Define detailed project activities, budget, success metrics, progress indicators • Develop a project timeline (create WEB (Work Breakdown Structure) and Gantt Chart) • List project's team responsibilities • Define regulatory requirements • Project's requirements approval	**Month 2-4**	**$25,000**
Phase 3 – Project Execution	• Speech Recognition system implementation (system's designing, building, and testing) • Continuously measure the project's progress • Monitor changes and conformance to the project's plan and requirements	**Month 5**	**$10,000**
Phase 4 – Project Closure	• Create project's closure report with outcomes and deliverables • Document lessons learned • Provide future recommendations	**Month 6**	**$5,000**
TOTAL			**$50,000**

List all known required resources. Resources may be money, people, technology, etc.

<u>Resources</u>

Money

Total project cost for the defined scope is $50,000.

<u>People</u>

Role
Physician's assistant - Mrs. Miller
MSN, NP - Mrs. Vallejo
Front office clerk - Ms. Hillock
Back office medical assistant – Mr. Dupont
Clinic accounts and billing (with IT experience) - Mr. DelaCruz
Project Implementation Team

<u>Technology</u>

The speech recognition client must be integrated into the clinic's existing, cloud-based Electronic Health Record (EHR) system. Vendors range from established software companies like Nuance Communications™—which offers speech recognition products for various professional fields—to Artificial Intelligence startups, like Deep Scribe™, which focuses entirely on speech recognition in clinical settings. Speech recognition clients are either cloud-based or locally installed.

Speech Recognition Client Types
- Cloud-Based Speech Recognition Client
    - A cloud-based client model allows for easy installation and helps to increase mobility between devices. Changes to clinical data are updated in the cloud (in real-time) and can be accessed by all users.
    - Cloud-based clients are often priced using a subscription model, reducing software costs.
    - These models offer significant advantages over locally-installed clients.
- Locally Installed Speech Recognition Client
    - Software-based clients must be installed on each device, individually, increasing downtime during implementation. Updates must also be manually installed, on each device, when they are released.
    - Local speech recognition clients do not utilize a cloud-based storage system and are unable to share data between devices or users, efficiently.
    - Local clients are also unable to connect to a practitioner's smartphone and require a wired microphone for dictation.
- Cloud-based and locally-installed speech recognition clients offer differing and unique cybersecurity concerns, which must be assessed by each product
- Overall, cloud-based speech recognition clients are more cost-efficient and user-friendly than their locally-installed counterparts.

Speech Recognition Client Vendors
- Nuance Communications™ – Dragon® Medical Speech Recognition Clients
    - Nuance's Dragon® series of speech recognition platforms offer a wide range of cloud-based and software products to serve medical practices with varying needs.
        - Dragon® Medical One is a cloud-based speech recognition client that can be integrated into existing EHRs.
            - Dragon® Medical One's speech recognition client allows practitioners to dictate documentation, using the wireless microphone app, PowerMic Mobile®, available on Apple and Android smartphone devices.
            - The Dragon® Medical One software client uses a subscription-based pricing model, with monthly licensing charges of $99 per user, per month. Longer subscriptions are offered at discounts of up to $20 per user, per month.
                - 2-year subscriptions are assessed at $89 per user, per month, totaling $2,136, per user.
                - 3-year subscriptions are assessed at $79 per user, per month, totaling $2,844, per user.
                - An implementation charge of $525 will also be assessed, initially.
            - Assuming 12 user licenses

Subscription Length	Monthly Cost	Total per License	Total Cost
6 months	$ 99	$ 594	$ 7,653
1 year	$ 99	$ 1,188	$ 14,781
2 years	$ 89	$ 2,136	$ 26,157
3 years	$79	$ 2,844	$ 34,653

- Dragon® Medical Practice Edition 4 is a local, software-based speech recognition client
    - Software-based clients must be installed on each device, individually, and offer significant drawbacks, as compared to cloud-based clients.

- Pricing for the local client uses a Pay-per-Use model, which allows users to install the Dragon® Medical Practice software locally, on each device.
  - The software is priced at $1600, per device.
  - Upgrades to newer versions cost $600.
- Since Dragon MP® has to be installed on each device, the software-based client is significantly more expensive than its cloud-based counterpart.

# of Devices	Licensing	Total Cost
12	$ 1600	$ 19,200
14	$ 1600	$ 22,400
16	$ 1600	$ 25,600
18	$ 1600	$ 38,400

  - Given the technical and budgetary limitations of the project, the clinic should consider purchasing enough year-long subscriptions for each member of the staff to Nuance's Dragon® Medical One's cloud-based speech recognition client.

F.   Risks

List uncertain events or conditions that, if occur, have a positive or negative impact on the success of the project. This may be resource issues, budget, physical plant etc.

Risk Category	Risk Description	Risk Impact (H/M/L)	Risk Probability (H/M/L)	Risk Mitigation
Resource Risks	Hours spent training	High	Low	Training staff to highest level of understanding and competency
Technology Risk	Software not functioning to a standard/as designed	High	Low	Evaluate alternative vendors and technologies Backup (disaster recovery)
Financial Risks	Coding accuracy is not achieved with NLP technology	High	Low	Manually check billing prior to submitting until technology is proven effective

G.   Success Metrics: Criteria for Evaluating Project Success and Milestones

This section allows you to define what the metrics of success or project success are. Be concrete but realistic based upon available resources. This section will also define the project milestones. The milestones are time dependent activities that reflect project goals with defined delivery dates.

Success Metrics

The project will be considered successful if all the following factors are met:
1. > 95% utilization of documentation tool
2. > 75% reduction in transcription costs within 6 months
3. > 40% improved accuracy of clinical documentation
4. > 75% end-users satisfaction improved

Project Milestone	Estimated Completion Timeframe
Approval of project	1 Month
Purchase of software	2 Weeks
Validation and Testing	2 Months
End user training	1 Month
Go Live	1 Month
Post Project Evaluation Review	2 Weeks

F.   Key Stakeholders

List the names and titles of the key stakeholders. These are critical for the success of any project. Often it is not clear who the key stakeholders are so it may require you interview your sponsor to help identify those individuals. If they are already identified, make sure you list them with their title and relationship to the project.

Key stakeholders

Title	Name	Estimated influence on the project
Clinic owner and medical director	Dr. Grant	High
Physician and clinic partner	Dr. Montague	High
Clinic director	Mrs. Jones	High (responsible for supervision and regulation)

F.   Executive Summary

For your final project management plan you will take this entire document and distill it into an executive summary. The executive summary will be inserted in the PMP with this document placed in the appendix of the plan.

The Idyllwild Clinic is implementing an optimization project for physician documentation that includes NLP speech recognition technology that allows physicians to use their voice to document into the EHR at the bedside to alleviate the manual, time consuming, and error-prone documentation process in place currently. The solution will automate and transform the current documentation process to the NLP/ML-enabled process following the best practices to facilitate user adoption.

This project is funded by CARES Act and the Paycheck Protection Program and Healthcare Enhancement Act.

Key stakeholders include the medical director, clinic physician and partner, and the clinic director.

The goals of the project include:
-   Utilize NLP/ML solution to improve accuracy, speed of clinical documentation
-   Increase reimbursement by more accurate coding and billing practices
-   Improve patient satisfaction by increasing the amount of time providers can spend with the patient
-   Improve clinician workflow by reducing time spent documenting

The outcomes of this project include:
-   Track the amount of time clinicians spend with patients
-   How many patients a clinician can see in a day
-   Track clinic reimbursement rates
-   Increase patients' retention

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PROJECT STAKEHOLDER ANALYSIS

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PURPOSE

The purpose of stakeholder analysis is to inform the Project team who the stakeholders are, how those stakeholders should contribute to the project, where barriers might be to project success (from the stakeholder's perspective and their potential impact) and the actions that need to be taken to ensure stakeholders needs are met. Depending on your project the stakeholder analysis could be performed informally but more complex projects that involve: multiple departments, agencies, or disciplines may require an extensive analysis. Keep in mind that stakeholders are not always obvious and require interviewing and discovery. Taking time to understand the stakeholders and how they can contribute to the success of the project warrants a formal analysis.

The identification of stakeholders will also assist in determining if an advisory board for the project is necessary (this is not always the case) and what the concerns of the stakeholders are.

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STAKEHOLDER ANALYSIS

Identify the key stakeholders (both internal and external) in your project and determine their interests or requirements from the project; what the project needs from them, any perceived attitudes and/or risks the stakeholders may have and the actions to be taken to achieve this.

This may require a series of meetings or workshops in order to complete the Interview Sheet below.

From your list of stakeholders you may determine more easily how they fit into your Project Organization. The majority of whom will fit into the Advisory Board or Business Community.

Stakeholder Interview

Category	Name	Objectives/Questions
		Topics to Cover (adjust as necessary): ☐ Special Interests ☐ Influence ☐ Dependencies ☐ Critical Timelines / Risks

		☐ Actions required
Non clinical Staff (could be listed by department or agency)	● Ms. Hillock (Front Office Clerk)	- low influence – don't have a direct influence on the project decision-making process; monitor but don't overwhelm with excessive information - low interest - responsible for communication and administration tasks;
Clinical staff (could be listed by department or agency)	● Mrs. Miller (Physician Assistant) ● Mrs. Vallejo (MSN, NP) ● Mr. Dupont, back office medical assistant (project team member) ● Dr. Montague (Physician and Clinic Partner)	- high influence - responsible for the usage and adopting new technology; have to be fully engaged in all activities and changes; keep informed and satisfied as they have major influence on the project - high interest - help to provide better patient care; new technology concern about received training and disruption to their workload; make an effort to satisfy them
Admin staff(this might include your practice manager and medical director)	● Dr. Grant (Clinic owner and medical director) ● Mrs. Jones (Clinic Director)	- high influence - key stakeholders, they have the ultimate say over the project - low interest - they can approve projects, budgets, make suggestions, but they do not have time to do the implementation of the project. Only need to update them periodically.
Vendors	● Nuance Communications™ – Dragon® Medical One Speech Recognition Clients	- high interest - need to ensure customer satisfaction to make sure their products continue to sell - medium influence - responsible for configuring and installing the software
Finance	● Mr. DelaCruz (Clinic Accounts and Billing)	- low influence - not a direct decision maker - low interest - has interest only in the financial part of the project; concern about increased workload

INFLUENCE / INTEREST GRID

Once the <u>key</u> stakeholders are identified, plot their position on the grid below. Please refer to the 'Guidance Notes' below for reference.

KEEP SATISFIED Dr. Montague (Physician and Clinic Partner) Dr. Grant (Clinic owner and medical director) Mrs. Jones (Clinic Director)	**MANAGE CLOSELY** Mrs. Miller (Physician Assistant) Mrs. Vallejo (MSN, NP) Mr. Dupont, back office medical assistant (project team member)
MONITOR (MINIMUM EFFORT) Ms. Hillock (Front Office Clerk) Mr. DelaCruz (Clinic Accounts and Billing)	**KEEP INFORMED** Nuance Communications™ – Dragon® One Medical Speech Recognition Clients

INFLUENCE — High / Low

INTEREST — Low / High

2   Project Plan

2.1   Schedule(Gantt chart)

Provide a summarized schedule for each of the phases and activities within the project you have identified using the supplied Gantt chart

WBS	Task	Task Lead	Start Date	End Date	Duration (Days)
1	**Initiation Phase**	Dr. Grant	**5/3/21**	**6/1/21**	**29**
1.1	Develop scope for the Speech Recognition (SR) Client Integration project		5/3/21	5/9/21	6
1.2	Create implementation team and identify key stakeholders		5/6/21	5/9/21	3
1.3	Define project's key goals and expectations		5/10/21	5/13/21	3
1.4	Define regulatory requirements		5/14/21	5/16/21	2
1.5	Identify key constraints, risks, and assumptions		5/17/21	5/20/21	3
1.6	Provide justification for SR Client through cost-benefit analysis		5/21/21	5/25/21	4
1.7	*Deliverable: Formal Charter Document*		5/26/21	6/1/21	6
2	**Planning Phase**	Mr. DelaCruz	**6/2/21**	**8/30/21**	**89**
2.1	Define project activities: budget, progress indicators, and success metrics		6/2/21	6/15/21	13
2.2	*Deliverable: Work Breakdown Structure*		6/16/21	6/22/21	6
2.3	Obtain project activity approval		6/23/21	6/30/21	7
2.4	SR Client vendor approval and purchase		7/1/21	7/14/21	13
2.5	Develop and maintain log of issues		7/14/21	11/13/21	122
2.6	Conduct clinical workflow redesign		7/14/21	8/10/21	27
2.7	Upgrade/Update existing hardware and software		7/29/21	8/10/21	12
2.8	Develop downtime procedures in case of technical failure		8/7/21	8/12/21	5
2.9	Develop training plan		8/7/21	8/15/21	8
3	**Execution Phase**	Mr. DelaCruz & Mrs. Jones	**8/15/21**	**10/29/21**	**75**
3.1	Develop and maintain log of action items		8/15/21	10/29/21	75
3.2	SR Client Installation		8/15/21	8/30/21	15
3.3	SR Client testing and configuration		8/21/21	9/11/21	21
3.4	*Deliverable: Failure Mode Effect Analysis*		8/28/21	9/5/21	8
3.5	End-user training		9/5/21	10/15/21	40
3.6	Provide on-call IT support for end users		9/11/21	10/29/21	48
3.7	Go-Live: Big Bang Approach		9/27/21	10/29/21	32
3.8	Ongoing performance monitoring and evaluation		8/21/21	10/29/21	69
4	**Closure Phase**	Mrs. Jones	**10/30/21**	**11/12/21**	**13**
4.1	Close out of all vendor contracts and financial obligations		10/30/21	11/5/21	6
4.2	*Deliverable: Post-Implementation Evaluation*		11/1/21	11/5/21	4
4.3	Document lessons learned		11/3/21	11/10/21	7
4.4	Provide future recommendations		11/8/21	11/10/21	2
4.5	*Deliverable: Project Closure Report with outcomes and deliverables*		11/8/21	11/12/21	4