**PROJECT CHARTER**

**1. General Project Information**

**Project Name:** TerumoBCT

**Executive Sponsors:** Jason Kehl

**Impact of project:** Create an evaluative framework to identify anomalous device behavior **2. Project Team**

**Name Department Telephone E-mail**

**Project Manager:** Sean Flood CU Capstone 720-276-4378 sean.flood@colorad.edu **Team Members:** Erik Pohle CU Capstone 425-894-2209 erik.pohle@colorado.edu Derek Thomas CU Capstone 603-275-5531 Derek.Thomas-1@Colorado.edu

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**3. Stakeholders *(e.g., those with a significant interest in or who will be significantly affected by this project)*** ● Terumo BCT has an internal group working on the same project, in parallel, who may use ideas that we generate.

● Rapid identification of unusual behavior in a device has the potential to be applied to other products that Terumo produces.

**4. Project Scope Statement**

**Project Purpose / Business Justification** *Describe the business need this project addresses*

Identify anomalous behavior in the Reveos device, such as:

● A device has deviated from standard behaviour

● A device is consistently deviating from standard behaviour, and the device needs to be identified as problematic ● Operator error is resulting in increased alarm frequency from the norm, and the operator may need training ● A manufactured batch of the single use parts used in the device is resulting in non standard behavior

The business value provided lies in reducing the timeframe to identify device issues, which will allow for faster trend identification. Additionally, analyst attention can be directed towards issues quickly, which will aid in the rapid development of a solution.

**Objectives (in business terms)** *Describe the measurable outcomes of the project, e.g., reduce cost by xxxx or increase quality to yyyy* The current strategy to monitor device performance and field issues is reactive, that is, issues are not identified until a notification is received from the customer. As such, days or weeks may elapse until the issue is identified. This project seeks to create an evaluative framework that rapidly identifies anomalous behavior and trends. This would have the following benefits:

● Resources could be proactively directed towards problematic areas much faster, and possibly before notification is received from the customer

● The quality of service provided will increase as a result of lowering the response time to field issues. ● Directing analyst attention to emerging trends will serve to reduce the time in finding a solution, which will in term increase the quality of service provided.

Measurable outcomes for the project include the following:

● Identification of trends and issues that were not found by manual data analysis methods. These items will be documented and shown to not be included in the manual data analysis

● A documented analysis indicating that trends and issues were discovered before notification from the customer, and before the issue is identified by manual data analysis.

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**Deliverables** *List the high-level “products” to be created (e.g., improved xxxx process, employee manual on yyyy)*

Date Phase Deliverables

10/10/2020 Planning Complete ● Signed contracts/billing arrangements

● Project Charter / Plan

11/15/2020 Research Complete ● Research summary ● Relevant Sql server cloned to

GCP

12/13/2020 Data Science I Complete ● Data Science Phase 1 Report ○ Documentation of

possible techniques

○ Documented current

findings

○ Documentation of

additional

information needed

to replicate results

1/20/2021 Data Science II Complete ● Exploratory analysis report ○ Techniques and

results

● Exploratory analysis detail

design document

○ Info to replicate the

analysis, including

any techniques used

4/29/2021 ML/AI Implementation Complete ● Final report ● Detail design document

○ Includes info to

replicate all results

**Scope** *List what the project will and will not address (e.g., this project addresses units that report into the Office of Executive Vice President. Units that report into the Provost's Office are not included)*

Identify techniques to locate patterns in the data that correspond to anomalous:

● Device behavior

● Operator behavior

● Limited / single use part behavior (such as blood bag)

That is, we seek to identify data science and AI / ML methods that can be used to find patterns that identify the aforementioned deviations from standard behavior. The primary distinction to be made is that we are not seeking to predict device failure, but instead identify behavior that warrants further attention by an analyst.

**Project Milestones** *Propose start and end dates for Project Phases (e.g., Inception, Planning, Construction, Delivery) and other major milestones*

- Planning Phase, 10/10/2020

- Research Phase, 11/15/2020

- Data Science Phase I (12/13/2020)

- CU Winter Break (12/13/2020 - 1/11/2021)

- Data Science Phase II (1/20/2021)

- ML/AI Implementation Phase (4/29/2021)

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**Major Known Risks (including significant Assumptions)** *Identify obstacles that may cause the project to fail.*

**Risk Risk Rating (Hi, Med, Lo)** Getting appropriate data into an accessible server Lo

Documentation is not sufficient for all results to be

Hi

replicated

Insights from data science do not generalize Hi

**Constraints** *List* a*ny conditions that may limit the project team’s options with respect to resources, personnel, or schedule (e.g., predetermined budget or project end date, limit on number of staff that may be assigned to the project).*

The pandemic has resulted in many activities taking longer than usual, as a result some of our personnel will have to take extra care in scheduling time.

**External Dependencies** *Will project success depend on coordination of efforts between the project team and one or more other individuals or groups? Has everyone involved agreed to this interaction?*

The primary external dependency is obtaining the data from the Terumo server. The plan is to attempt to migrate the data to GCP, and if that does not work we may export the data in a csv format. Terumo has offered access to a context expert, named Matt Long, whom we may need to ask questions of for the purpose of interpreting obscure data.

**5. Communication Strategy** *(specify how the project manager will communicate to the Executive Sponsor, Project Team members and Stakeholders, e.g., frequency of status reports, frequency of Project Team meetings, etc.*

Group Communication Method

Project Manager to Executive Sponsor Email

Team to Team Communication Slack and Zoom

Team Members to Stakeholders / sponsor MS Teams

**6. Sign-off**

**Name Signature Date**

**(MM/DD/YYYY)**

**Executive Sponsor Department Sponsor**

10/20/2020

**Project Manager** Sean Flood 10/5/2020 **7. Notes**

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