

## MILESTONE 1 – COVER PAGE

Team Number: 

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| 34 |
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Please list full names and MacID's of all *present* Team Members

| Full Name:   | MacID:   |
|--------------|----------|
| CJ Hughes    | hughes16 |
| Gigi Liang   | liangg11 |
| Qichen Nie   | nieq     |
| Rosalie Wang | wangr200 |

## MILESTONE 1 (STAGE 1) – FOCUS AND DEMOGRAPHIC

Team Number: 

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### Area of Focus

Indicate your team's chosen **area of focus** in the space below. There are two areas of focus you may choose from:

- Personal monitoring devices
- Technology for automating tasks in the home

|                              |                              |
|------------------------------|------------------------------|
| <b>Chosen Area of Focus:</b> | Personal monitoring devices. |
|------------------------------|------------------------------|

### Customer Demographic

Indicate the **customer demographic** your team will be targeting in the space below.

- Your customer demographic may be *broad* or *specific*, and may be described in terms of a group of individuals (e.g., patients recovering from at home from a surgery) or a segment of the population (e.g., elderly with a particular disability)

|                              |                                       |
|------------------------------|---------------------------------------|
| <b>Customer Demographic:</b> | Seniors who are at risk of wandering. |
|------------------------------|---------------------------------------|

## MILESTONE 1 (STAGE 2) – STATEMENTS OF FACTS

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As a team, list your **statements of facts** in the space below. As there is an expectation that you conduct some preliminary research and market analysis, each statement of fact should be supported by evidence. That is, it should be properly referenced (using IEEE standards) and should not be a made up 'fact'.

- The number of seniors (65+) with dementia have been increasing. In 2019, 47 million people worldwide have dementia, with a forecast amount of 135 million affected people in 2050 [1].
- Seniors with Alzheimer's and/or diseases that result in dementia are at risk of wandering from their home and becoming lost [2].
- Wandering is largely caused by boredom, loneliness, and memory problems [3].
- Wandering can be a matter of life and death because seniors are exiting a secure and controlled environment. This can lead the individual into harmful weather, unfamiliar areas, rough terrain and dangerous roadways [4].
- Diseases that result in dementia include Alzheimer's, Parkinson's, Huntington's, traumatic brain injuries, HIV, etc [5].

List any references from the statements you came up with as a team in the space below.

- [1]. G. Ricci, "Social Aspects of Dementia Prevention from a Worldwide to National Perspective: A Review on the International Situation and the Example of Italy," *Behavioural Neurology*, September, 2019. [Online serial]. Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6754867/>. [Accessed Jan. 21, 2021].
- [2]. J.Tilly, "Responding to Wandering and Exit-seeking Behaviors of People with Dementia," *U.S. Department of Health and Human Services, Administration for Community Living*, May, 2015. [Online serial]. [Accessed Jan. 21, 2021].
- [3] "Regional Dementia Management Strategy – Pathway Overview," *Loddon Mallee Regional Dementia Management Strategy*. [http://www.dementiamanagementstrategy.com/Pages/ABC\\_of\\_behaviour\\_management/Management\\_strategies/Wandering\\_behaviour.aspx](http://www.dementiamanagementstrategy.com/Pages/ABC_of_behaviour_management/Management_strategies/Wandering_behaviour.aspx) [Accessed Jan. 21, 2021].
- [4] "Why Do People With Dementia Wander?" *Senior Living Communities*. <https://senior-living-communities.com/blog/why-do-people-with-dementia-wander/> [Accessed Jan. 21, 2021].
- [5] J.M.Ellison, "What Causes Dementia?," *BrightFocus Foundation*, Aug. 21, 2017. [Online] <https://www.brightfocus.org/alzheimers/article/what-causes-dementia> [Accessed Jan. 21, 2021].

## MILESTONE 1 (STAGE 3) – LIST OF CRITERIA

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As a team, develop a list of criteria that your device is required to meet. List your criteria in the space below. These criteria are akin to *customer requirements*. As such, you should indicate whether each criteria is an objective, function, or constraint. As a reminder, requirements **can be more than one** of the three.

*List your criteria in this field. Bullet-point format is acceptable. For each criteria, indicate (in parentheses) whether it is an objective, function, or constraint.*

### Objectives

- Should be easy to use
- Should be accurate
- Should be reliable
- Should be lightweight
- Should be durable
- Should be discrete
- Should be comfortable for long-term wear

### Functions

- Must be portable
- Must measure/monitor distance
- Must notify a person when user has wandered too far from home
- Wearability must be versatile / able to attach onto various points of user's body

### Constraints

- Must be secure on the body when worn but easy to put on
- Must be difficult to remove for the patient but easy for caregivers
- Must be water resistant
- Must have a long battery life
- Must employ one sensor

## MILESTONE 1 (STAGE 4) – NEED STATEMENT

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Write your Need Statement in the space below. Recall that your need statement should:

- Have a clearly defined problem (what is the need?)
- Indicate your end-user (who has the need?)
- Have a clearly defined outcome (what do you hope to solve and why is it important?)

|                            |                                                                                                                                                                                                                                                                                            |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>NEED<br/>STATEMENT:</b> | Seniors at risk of wandering due to various dementia-inducing diseases need a wearable device that can monitor their distance away from home and alert for care.<br><br>This is necessary because wandering may leave seniors at risk of their environment and unable to return to safety. |
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