Project Elevate
Walmart STEM Challenge

OVERVIEW OF PROJECT ELEVATE
The Walmart STEM Challenge, Project Elevate is a project-based, multi-disciplinary, team project for graduate college students wherein you will combine subject matter expertise with STEM skills and mindsets to address a real Walmart business challenge. Walmart employees will serve as advisors to your team. In this challenge, you will act as consultants who are brought in to help Walmart expand their autonomous delivery program.

BACKGROUND OF CHALLENGE
Walmart serves over 200 million customers with over 11,000 stores. Nine out of ten people in the US live within 30 miles of a Walmart. With the advent of COVID-19, home delivery became a major factor in feeding the nation. Prior to COVID-19, 81% of consumers had never bought groceries online. Today, only 20% of US consumers have not purchased groceries online. Walmart has the infrastructure in place to bring fresh food to its stores across the nation. Although stores are opening up, many consumers are electing to continue to purchase items without physically visiting a store. There are many reasons why home delivery will remain in force in a post-pandemic world.

PROBLEM STATEMENT: Design an autonomous delivery program using a drone delivery program for Walmart in a location of your choice that could be used to (A) deliver groceries to customers living in food deserts, or (B) provide no-contact delivery of medications and other pharmacy essentials to elderly patients in low-income areas. Your solution should take into account the following:
- Based on their choice of problem A or B, each student team will need to choose a community in the United States that fits the criteria and can be served with drone deliveries. Teams will need to explain/justify their choice during final presentations.
- Need to meet certain parameters:
    - Need to be able to serve an average of 100 customers per day.
        - Min: 75
    - Cost no more than $ 10 per delivery on average
        - Min: 5
        - Max: 15
    - Take no more than 75min per delivery
        - Min: 30min
        - Max: 120min
    - Delivery weights are, on average, 5 lbs.
        - Min 3 lbs
        - Max 10lbs
    - Delivery volumes are, on average 500 cubic inches. Drones cannot deliver

packages that weigh more than 10lbs
- box sizes: 500 cubic inches (consider ± 10% of each box size)
  - 3 Walmart staff are dedicated to drone delivery per store location
  - The range of delivery should be an average of 5 miles
    - Min 1 mile
    - Max 8 miles

DATA TO CONSIDER (all publicly available)
- Walmart location data
- Data set (Provided by Dr. Giri)
- TIGER (census data),
- Kaggle

PROPOSAL PROCESS

You'll place yourselves into teams of 3-5 students. Based on the reference materials provided, select the option that you want to solve for. As a team, you will conduct additional research to find a solution to the problem you selected. The research you choose to incorporate must be reliable, scholarly sources! Some places to start are research journal sites or even Google Scholar; make sure to cite each of your sources in a document in or attached to your presentation. If you're unsure if a source is reputable, check in with Dr. Giri. The additional research can be whatever your team deems appropriate, some examples are research focused on apps, software and emerging technology.

All team members must participate in the final presentation, so make sure every person on the team has an equal part in presenting. Be sure you are prepared to answer questions regarding your solution at the end of your presentation. Try to think of any holes in your solution, possible new issues that may arise, and why you believe your solution is better than other possible solutions.

PRESENTATION REQUIREMENTS

All solutions must be given via a presentation. In most business environments you will be expected to follow a company style guide. You will have access to a Walmart style guide to create your presentation. Presentations should be no longer than 7 min. Practice your presentation plenty beforehand with all team members so you stay within the time constraints!

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FEEDBACK PROCESS

Proposals will be evaluated by a Walmart professional based on the following criteria: (Feedback from Walmart associates will not constitute as a grade for the class)
- How creative is the solution?
- How plausible is the solution?
- How relevant to Walmart is the solution?
- How well did the team present their ideas?
- How aware is the team of implications or concerns surrounding their solution? How well do they justify their solution in the question-asking portion?

WALMART SUPPLY CHAIN

At Walmart, we're a team of 15,000+ software engineers, data scientists, and service professionals within Walmart, the world's largest retailer, delivering innovations that improve how our customers shop and empower our 2.2 million associates. We build experiences for 265 million customers and members across Walmart, Sam's Club, and Walmart International – innovations like pickup and delivery of groceries and all the other things people buy, Walmart Pay, and Express Delivery.

A core philosophy at Walmart is operating with everyday low cost (EDLC). We use technology to operate smarter and deliver everyday low prices (EDLP) to customers and members. This includes building reusable technology and products to drive differentiated experiences for our customers, manage our extensive catalog, and power our supply chain. We build and manage the foundational technologies on which the tech organization is built – including **cloud**, **data**, **enterprise architecture**, **DevOps**, **infrastructure**, and **security**.

Walmart's supply chain moves products to 200 million customers through more than 11,000 stores. As Walmart's customers move to digital, they are moving with them. Walmart has embraced technology and automation: they've innovated their supply chain so we can track inventory and seamless restock inventory, while also passing on savings to their customers. By fine-tuning the way it handles inventory, from the purchase process all the way to its spot on the shelf, Walmart has enabled itself to not only become a highly profitable business, but one that others strive to emulate. Though Walmart is large company with many moving parts, that can result in some complex issues.

We need your help!

Click here to read more about Walmart's drone program

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Appendix A: Interview Guide

Timeline *If any date or deadlines do not match Dr. Giri's calendar, adhere to Dr. Giri's calendar.*	**Tentative - Subject to Change** ● Each week, teams must meet at least once. ● Meet with your Advisors every other week.
9/7-9/10	Informational session
9/7	Registration opens
9/12	Registration closes* 12:00am EST
9/13	Announcement: Final list of teams, assigned advisor, unique ID, survey link
9/15	Review Challenge Material (requirements, support materials, help with navigating competition website)
9/17	Survey completion due by midnight
9/20 - 9/24	**Week 1**: Research the problem
9/27 - 10/1	**Week 2**: Brainstorm possible solutions
10/4 - 10/8	**Week 3**: Narrow down your ideas, pick a solution!
10/11 - 10/15	**Week 4**: Continue work on your solution,
10/18 - 10/22	**Week 5**: Work as a team to finalize the idea
10/22	Deadline - Define project solution
10/25 - 10/29	**Week 6**: Gather additional research
10/29	Deadline - Identify and finalize additional research that will be used/presented
11/1 - 11/5	**Week 7**: Work on Presentation Slides
11/8 - 11/12	**Week 8**: Revise project and presentation as necessary
11/15 - 11/19	**Final Presentation**

Appendix B: Interview Guide

How to Interact with your Advisor

As part of the challenge, Walmart will be allowing teams to have access to a Walmart associate to guide teams through the competition. The advisor is there to provide guidance as an expert in the field about any possible revisions, additions or considerations the team should keep in mind prior to presenting. They are an aide to teams, and should not be taking over the project at any point.

The time you have with the associate can be used to your team's discretion. Below are some sample questions to get you thinking about what you'd like to discuss with the associate that is specific to your project. You only have a limited amount of time, so make sure you are organized prior to the interview. You should write out your questions and have someone on your team designated to take notes to ensure all the associate's advice is recorded.

Sample questions:
- The problem that our team is taking on is x, how would you tackle the issue?
  - Our solution is y, what would you do differently?
- Is our solution feasible? Unfeasible? Why?
- What are some potential revisions you would make to our solution if you had to implement it as is?
- What should we consider moving forward?
- If you were a judge, where would you dock points on our presentation?