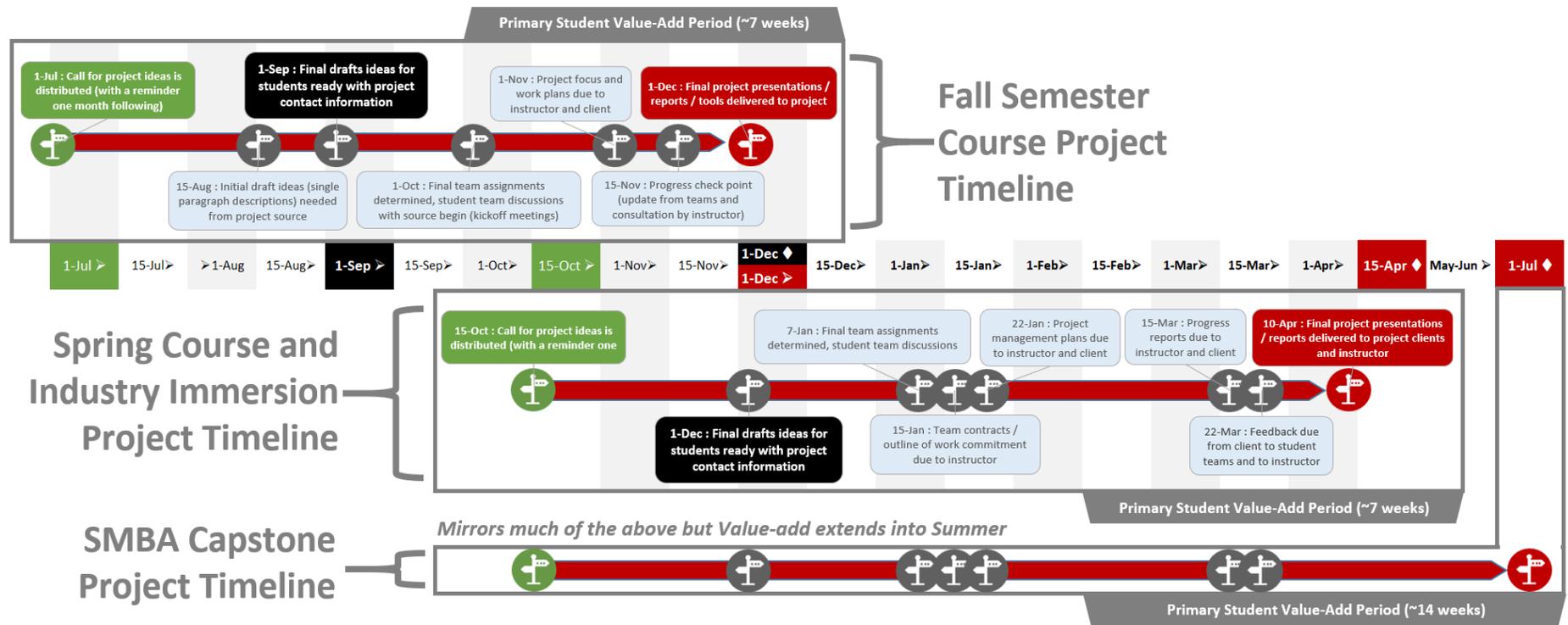


# Supplemental Project Information Packet



## Example of specific dates: Fall 2020 Project timelines (example 3331 projects at: [www.blackbelt-apps.com](http://www.blackbelt-apps.com))

- August 25<sup>th</sup> – 1<sup>st</sup> day of class. Project Options are provided to students
- September 22<sup>nd</sup> – Project groups are determined, and project preferences stated
- October 6<sup>th</sup> – Student individually present their own concepts of tool design to instructor
- October 21<sup>st</sup> – Student groups provide converged upon project outline to instructor for feedback
- November 17<sup>th</sup>, 19<sup>th</sup>, 24<sup>th</sup> – Instructor-informed project specific consultation labs with instructor
- December 1<sup>st</sup>, 3<sup>rd</sup> – In-class project presentations and final deliverables of tools

## A Note on Project options presented by external organizational sources

Student teams will always be free to select their own projects, within the scope outlines in the syllabus. However, given the ready availability of vetted organizational projects, associated data, and industry contacts, they are encouraged to work with the on-going number of projects submitted by external organizations. In all cases, a single student will serve as the communication point-person (liaison) for the group. All group members are encouraged to meet with the organization, if the organization volunteers this option (not a requirement), in person or via conference call at least once.

## Fall 2020 – Project options presented by external partners

### Ideas 1A & 1B (from Honda Market Information team):



In the Honda of America Mfg - Market Information team, we focus on creating actionable information from raw data related to the manufacture and servicing of Honda and Acura vehicles. This is done through collaboration with our analysis team to give a better view of present and emerging market problems. Our environment is data centric and uses information to drive activity to improve the quality of our vehicles.

We present two separate ideas for projects, to be tackled separately by independent student groups.

#### Idea 1A: Market Action Relate Warranty- Process Enhancement

*Purpose:* To quickly recognize defects that are caused at dealerships as their technicians perform repairs associated with a specific Market Action. Often these repairs involve the removal of multiple surrounding automotive parts as the defective part is repaired or replaced.

*Project Expectation:* Develop a process to identify each recall and the dates each individual vehicle received that repair. Then monitor and report the top warranty claims by quantity received for these vehicles related to any future visits to our dealerships for service. This new information will allow the Market Information team to more quickly visualize and address problems caused during repairs related to a recall. This process will help identify these unnecessary repairs and avoid additional irritation to customers who otherwise would need to return for secondary repairs.

*This project will require working and consulting with Honda of America Mfg., North American Market Quality Coordinator of Market Information, XXXXX ([XXX@XXX](mailto:XXX@XXX)).*

#### Idea1B: Identification of Common Part Application across multiple models - Process Enhancement

*Purpose:* To develop a method to summarize and report quality problems by recognizing defects related to common parts that are shared across multiple models. Automotive manufacturers regularly adopt the same part design and supplier across multiple models in their fleet. This reduces tooling costs, along with the risks associated with having hundreds of slightly different designs for the same part. The current reporting methods used by the Market Information team summarizes problems in individual models. When there is an inherent problem with the design or manufacturing of a part, failing across multiple vehicle types, we are often slow to recognize this due to sales and production variability at a model level.

*Project Expectation:* Develop a process to summarize warranty claim data by “Complete Part Numbers” irrespective of the model it is applied to. Then create a report that allows the Market Information team to visualize the volume of failures for each common part along with the affected models the part is applied to. An innovative approach is needed to reduce the noise caused by dealers occasionally applying incorrect part information on a claim. This will enable the Market Information team to recognize problems with common parts, affecting several models and have our engineers address these problems faster.

*This project will require working and consulting with Honda of America, Mfg. North American Market Quality Coordinator of Market Information, XXXXX ([XX@XXX](mailto:XX@XXX)).*

## Idea 2: Visual Dashboard for Resource Planning



Honda R&D Americas – The role of Honda’s Development Administration Division is to ‘deliver the required spec and quality test parts and vehicles at the optimum cost according to the schedule’. To accomplish this goal, previously all departments in this division managed their own KPI reporting and charting, which sometimes led to duplicated efforts or mismatching visualizations. Due to a recent Organization Change, some departments have been merged and reporting responsibilities within this division have been centralized under the Project & Resource Control team. This presents an opportunity to align division reports and create new visualizations to support management in resource planning.

Purpose: Create impactful data visualizations within a dashboard that shows recent trends in spending, manpower, and part deliveries to understand workload and recognize potential problem areas.

- Dashboard in Excel using exported SAP data for prototype part ordering and deliveries
- Display any deviation from forecasted plan or historical averages
- Dashboard should be able to slice/drill-down by several variables (department, fiscal period, buyer, supplier, etc.)

Deliverable: This dashboard should be created within Excel with the expectation being that the dashboard’s visualization and logic will be later imported into a cloud-based system within Honda to automatically feed live data.

*This project will required working with XXXXX (XXX@XX). Historical part ordering data will be provided {Up to two groups can work on this independently}. Non-disclosure agreements will be signed, videos will not be posted to YouTube.*

## Idea 3: Fleet Management and GPS Benefits

At the Ohio Office of Budget and Management it is our mission to provide policy analysis, fiscal research and financial management services to the Governor and agencies of state government, helping to ensure the proper and responsible use of state resources. The state of Ohio has a significant fleet of vehicles across the many state agencies including DAS, DNR, and DOT to name a few. How could the installation of GPS devices in all state-owned vehicles help Ohio better manage its fleet? In addition, in connection with Governor DeWine’s efforts to reduce distracted driving, does any data support that the use of GPS devices reduces distracted driving?

The final tool should inform some of the following questions, time permitting:

1. What are the top 5 benefits of an all-state vehicle GPS install?
2. What barriers does Ohio face in implementation?
3. What is the one-time cost and ongoing costs associated?
4. What risks does the state face if implemented?
5. Are there certain segments of the state’s vehicle population that should be excluded from having GPS devices installed? Which ones and why?
6. Does the Ohio have sufficient staffing currently in the agencies decentralized fleet offices to effectively leverage the benefits of this technology? If not, what additional staffing resources would be necessary by agency?



*This project will require working / consulting with XXXXX (XXXXX), Office of Fleet Management {Only one group can work on this independently}*

#### Idea 4: Accelerator Awards metrics tracking

The Accelerator Awards programs is an annual grant program that is funded by the university, with a match from the Ohio Third Frontier Technology Validation and Start-Up Fund. The program funds provide Ohio State inventors with specifically-targeted funds to develop and validate their early-state technologies, with the prospect of bringing them to market through licensing to an Ohio based startup company. The Accelerator Awards were established in 2015 and a variety of metrics are collected each grant cycle from the application stage through to follow-oncomes for previously funded projects. The recorded data is used for internal monitoring, and also to communicate to external interests. However, the data is historically stored across multiple files and must be retrieved and combined manually to fulfill each specific data request.



Create a visual ‘dashboard’ or summary sheet that can filter and pull relevant data so that we can more easily capture an overview of program metrics and use this to communicate metrics. Use excel to categorize and compile metrics data on Accelerator Award Grant cycles from 2015-2019 and have it presented in a dashboard to a quick visual view of program metrics for the program as a whole, or by grant cycle, and can be filtered to show specific data.

Data metrics to include

- Grant number and cycle year
- Amount of funds available
- Funds Awarded
- Awardees by college
- Applications by college
- Average project timeline
- Number of applications submitted
- Number of applications that received award
- Technology sector
- Project outcome i.e. Licensed vs not pursued.
- (proportion/% of funds spent at end of cycle?)

*This project will require working / consulting with XXXXX, (XX@XXX ), New Ventures Manager, Corporate Engagement Office. {Up to two groups can work on this independently}*

#### Idea 5: Accelerator Award Selection Committee Scoring Rubric dashboard

Applications to the Accelerator Awards are reviewed by an external selection committee on two separate occasions (written application and pitch presentation. For the written application, each committee member is provided an excel document listing the application details and are required to input scores and comments on the application, based on defined review criteria. Each committee members’ Excel score sheet is emailed in and manually compiled into a master scoring rubric excel file. Averages of total scores are then calculated to create a ranked list of proposals. For the pitch presentations, committee members complete a scoring sheet by hand, these are then entered manually into Excel and the average scores are then calculated to created a ranked list of proposals (at the conclusion pitch presentations), which are then reviewed and discussed immediately to inform award decisions.



Create a central/accessible document (google document or other) where each committee member can record their application review scores. This could then be used to create a visual ‘dashboard’ or summary sheet that can automatically show final scoring data. Can a ranked list/dashboard be generated to automate compilation of selection committee scoring rubrics (rather than by manual calculation)? Can selection committee comments/feedback on each proposal be collated into a summary/report that provides the ranked scoring and feedback? Can analytics be performed to better understand the scoring data? For example, large variance in scores for a particular applicant, weighted scores based on number of applicants in that technology sector? Score relationship to amount of \$ funds requested.

*This project will require working / consulting with XXXXX, (XXXXX), New Ventures Manager, Corporate Engagement Office.  
{Up to two groups can work on this independently}*

## **Idea 6: New Model Development Project Health Analysis**



Honda Engineering develops and regularly modifies manufacturing equipment and processes that assist our Honda factories in achieving this recurring herculean task. New model development is multifaceted and sometimes difficult due to the interdisciplinary nature and cross-functionality of the teams. Every model is a different journey for us as a company. Reflecting on this journey has led us to reach out and entertain the idea of how we could see each model's schedule and overall project health (0 – 100%) the same even though the schedule, budget and deliverables can be drastically different throughout the development process.

- Can progress and overall efficiency of each unique effort be characterized by more than just a Gantt chart with some expenditure amounts showing plan versus actual?
- What are some additional concepts and metrics to gauge overall project health that you can envision?
- How can we spot trouble trends ahead of time?
- How can wildly diverse, yet simultaneously scheduled new model development efforts be looked at through a common lens of understanding (normalization of metrics) to quickly answer the question “Where should we focus our highest attention?”

One real world source to draw from is the way that stock indices ignore most details and let traders compare fundamental performance numbers like P/E, market capitalization, revenue history and forecast, etc. There are some parallels to technical analysis models that traders use as well. We want to look at new model project work like individual stocks that can go up or down depending on what the data says. These approaches work for every stock out there. There are probably other models that you might bring into the conversation that could be interesting and positively disruptive.

Task: Design a method to ingest 6 randomly generated (Honda supplies this data) new model projects from an excel sheet with a number of workbooks inside. You will receive random data for:

- A. A model name of the new model giving you an idea of what it is
- B. Schedule in months, with milestones set
- C. Expenditures on a per month basis
- D. Targets achieved and when they were achieved, what groups were responsible?
- E. What information would you add about project management that could enhance the health profile even more? This is your chance to add your unique perspective. Can you find some ideas in the investing world? Think about the daily routines of engineers or managers accessing and using information like this. How would it change things?

Deliverable: Give us a dashboard that lets us pick timeframes to plot project health of all loaded new model development projects. The user of the dashboard should be able to pick a time in months to “seek to” so that their picture of the data is updated. They should be able to at some level be able to pick metrics to use as well. They should be able to compare the health of all projects at the same time to see what one is in trouble at what time. Remember, while this is similar to our current processes, there is no need to have it be exactly what we are currently doing. So try new and creative things with your chosen approach!

*This project will require working and consulting with XXXXX (XXXXX). You will get a 2-3 slide deck and the example data in excel file(s) which you can change and manipulate to make your key points with your deliverable example. {We can accept one group to work on this particular endeavor independently}. Non-disclosure agreements will be signed. Any publishable material that mentions Honda would need to be approved by Honda before publishing.*

## Idea 7: Ohio State Portfolio Company Investment Analytics

The Keenan Center for Entrepreneurship works to advance Ohio State technologies to the market through the creation and support of startup companies. As of June 2020, Ohio State's startup portfolio contains approximately 100 active companies that have been spun out of university technology. The portfolio spans across many industries, including life sciences, information technology, materials, advanced manufacturing, agtech, and more. The Keenan team supports the startup company with access to a variety of capital sources to support the technologies' additional development. As of June 2020, Ohio State startups have raised more than \$585 million in outside capital.



Create an Excel-based tool to provide insights into Ohio State's portfolio company fundraising activities. Some of the questions this tool should address are:

- How many portfolio companies have raised investments of more than \$1 million? More than 10 million? How has this changed from 2015-2020?
- How much money has been raised by companies in different industries? What is the average investment size for a portfolio company in various verticals (e.g. pharmaceuticals vs medical devices vs healthcare IT)?
- Using financing stage (grants, seed, Series A, Series B, etc.), how has the portfolio matured from 2015-2020? How many portfolio companies raised a Series A investment in 2019?

Allow it to also provide insight into Ohio State portfolio company investor analytics. Some of the questions this tool should address are:

- Who are the investors in Ohio State portfolio companies by sector, firm, geography?
- Who are the top investors in a specific sector?

Lastly, apply some predictive analytics to facilitate startup company/investor matching. This tool should match an Ohio State portfolio company currently raising an investment round with the top potential investors that fit within their investment criteria. Factors that should be included in the match are sector, stage, amount raised, geography, relationship.

*This project will require working / consulting with XXXXX, (XX@XXX ), New Ventures Manager, Corporate Engagement Office. {Up to two groups can work on this independently}*

## Idea 8: Claims Communication Valuation

Ohio State Highway Patrol (OSHP) provides unbiased, professional public safety services through diversity, partnerships, and innovation. The division has collected health data for over 30 years on its uniform officers. With this historical data what correlations exist to establish or improve academy fitness program and recommendations for continued fitness.



OSHP wants to focus on the correlations between 30 years of historical fitness data and outcomes regarding fitness performance. To that end, the tool should work to categorize the historical data to ascertain the correlation between fitness level and time on the division along with fitness level.

*This project will require working / consulting with XXXX (XXX@XX), OHSP {Only one group can work on this independently}*

## Fall 2019 – Project options presented by external partners

### Idea 1: Decision Support in New Model Packaging

Honda of America – Supply Chain: At Honda, “Packaging” involves reusable containers that move parts efficiently and safely from Suppliers to Honda’s manufacturing location. Emptied containers are shipped back to suppliers to be filled with parts and returned to Honda. The process is repeated for the life of a model (roughly 5 years). Whenever the Packaging department must spend money in support of a business need based on market fluctuations, the department develops a proposal (case study) explaining that need for more packaging and its costs. The tool will provide an output based on loading specific conditions and inputs into the simulation. The simulation should be something that can be run multiple times to demonstrate the different supply chain scenarios, providing results for executives to review.



Purpose: Create an automated solution to analyze current Packaging Asset Quantity Verses Future Demand to understand plan vs actual (+/-) gaps.

Project Expectations:

- An all-encompassing tool that will work with New Model and Mass Production data.
- Display packaging gaps (+/-) between current quantity in the supply chain vs future requirements
- Allow for manual inputs after ran for unknown factors
- Able to store each revision in one central location for ease of comparison
- Must be read only protected but allow all associates to view, and pull data as needed.

Deliverable: The tool will automatically pull the data from various factors provided into one central location that will perform the calculations. It will then log the data to compare any fluctuations in the supply chain with easy identification for management.

This project will require working and consulting with Supply Chain Management – New Model and Mass Production Packaging.

*This project will require working and consulting with XXXX ([XXX@XXX](mailto:XXX@XXX)). A PPT deck / existing modeling available by the sponsor {Up to two groups can work on this independently}. A visit to the Marysville plant to talk to managers should be coordinated. Non-disclosure agreements will be signed, and videos will not be posted to YouTube in this case.*

### Idea 2: Honda Visual Workplace Management (Tooling)

During a new model tooling investigation period, Honda collects many data points from suppliers. Honda does not currently have systems or capabilities that allow our associates to leverage this information to make informed decisions for our current projects based on previous submitted data. Currently, understanding about tooling scenarios and lead times are passed through tribal knowledge and previous history on various projects. Tooling data from previous projects is not readily accessible or documented anywhere for reference and is not utilized to make informed decisions for future projects.



Task: Help develop our data analytics modeling to identify our outliers when data is provided to us from suppliers, using the following areas of focus:

- MIN/MAX/MEDIAN for tooling in commodity range
- Historical project comparison capabilities
- Develop a visual workplace management (VWM) solution that allows buyers to quickly investigate tooling lead time scenarios

The VWM solution should be easy to understand information presented. In addition, capability for an associate to input their lead time information for a quick, real time comparison of their data against the historical information.

*This project will require working and consulting with XXXX (XXXX@XXXX). Historical tooling information and example Tool Summary Sheets (TSS) to be available by the sponsor. A visit to the Honda Marysville campus should be coordinated. Non-disclosure agreements will be signed and videos will not be posted to YouTube in this case.*

### **Idea 3: Supplier-Problem Dashboard**

Honda of America Manufacturing: One of the biggest challenges in the manufacturing industry is ensuring that the plant has the parts they need to assemble vehicles in our frame plants. Analysis of our supply chain is at the forefront of our daily tasks and is our main responsibility on a day to day basis. Without all of the necessary parts, we cannot build units and can incur massive amounts of downtime which can be costly to our organization.



With a complex industry comes complex suppliers that are often hard to track due to various reasons. These can be ranging from the sheer volume of parts that they provide or in the manner that they ship those parts to our plants. The uniqueness of these suppliers can often times be hard to track and leaves the buyer team an unclear understanding of production coverage.

Task: With the background given from the Honda contacts, create a tool that will help track the production coverage for the suppliers listed and their parts on a daily basis. The production schedule, parts list, demand and other data will be provided. This tool will allow buyers to quickly analyze problem suppliers or suppliers that have unique circumstances.

Deliverable: The tool will allow users to analyze production coverage based on inventory in house as well as signify what is covered with the parts that are in transit. Additionally, the tool will provide a predictive analysis on production coverage (current week, following week, and 1 month) based on supplier constraints (which will be provided) compared to the production schedule.

*This project will require working and consulting with XXXX (XXXX@XX) and will require a NDA. The results of this project will not be shared after completion. Please reach out to Anthony once the teams have been decided to coordinate a meeting on campus to gain further background knowledge of the project.*

### **Idea 4: Innovation Equity Portfolio**

The Ohio State Innovation Foundation (OSIF) is a 501(c)(3) organization, formed in 2013 by Ohio State to manage the intellectual property developed at the university and to facilitate the commercialization of this intellectual property. OSIF may take equity in a startup company as part of the financial terms of the license agreement. In addition, the typical license agreement allows OSIF to exercise its preemptive rights for funding in future financing rounds through OSIF-affiliate, Carmen Innovations. To date, OSIF holds equity in approximately 75 portfolio companies and Carmen Innovations has made 12 follow-on investments.



The current portfolio monitoring process is to collect monthly, quarterly, annual and ad-hoc reports from the portfolio companies. This cumbersome process requires a significant amount of data entry with low company compliance leading to bottlenecks and fragmented information. The goal of this project is to optimize and streamline the flow of data from the portfolio companies to OSIF and to monitor and track key metrics of the portfolio companies.

Create dashboard the tracks and analyzes key metrics of equity portfolio (e.g. portfolio company financial information, cash burn, revenue, OSIF's and Carmen Innovation's ownership and valuations).

*This project will require working / consulting with XXXXX, (XXX@XX ), New Ventures Manager, Corporate Engagement Office. {Up to two groups can work on this independently}*

### **Idea 5: Viability Survey and Dashboard**

The New Ventures team within OSU's Corporate Engagement Office focuses on creating startup companies out of fresh ideas. The ideas we help grow into startup ventures come in the form of research from around campus (OSU spends roughly \$1B on research annually). Current challenge: Inventions from university research do not necessarily have commercial market applicability. We would like to develop a method to measure, report on, and track that commercial.



Task #1: Create a draft data collection mechanism using Google forms/sheets, which could be used to survey individuals and eventually feed into an analysis dashboard (Task #2). The focus of such a survey would not be at getting generalized market research data (e.g. from web articles), but rather on collecting information from targeted individuals, asking their opinions on commercial viability. Its questions should be broadly applicable across a wide range of innovations (from biomedical to commercial transport). The identification of customer segments will also be important. Info you may want to capture includes: type of customer, their industry, proximity to the problem the invention solves, how willing they would be to use it, to pay, how big of a problem they are having, etc..

Critically DO NOT spend much time actually collecting data (time sink). Instead, ahead of Task #2, simply create emblematic data representative of your survey, and use that for the Task #2 dashboarding.

Task #2: Develop a reporting approach that provides actionable insights (e.g. ranking) on which industries and job functions should be targeted for each research invention. Your approach should be easily legible for New Ventures executives to quickly discern which industry and job function should be targeted for each research invention

*This project will require working / consulting with XXXX (XXX@XXX ), New Ventures Xpert in Residence, Corporate Engagement Office. {Up to two groups can work on this independently}*

### **Idea 6: Tech Commercialization Benchmarking**

The New Ventures team at Ohio State facilitates the commercialization of the University's intellectual property through licensing to startup companies. Startups have emerged as an effective way to develop early stage technology from a university, as evidenced by the increase in licenses to startups across universities. In 2017, 1,080 start-ups based upon foundational university intellectual property were formed, an increase of 32 percent over the past five years (AUTM 2017 Licensing Activity Survey). The goal of this project is to monitor and analyze how other universities, hospitals and research institutions are commercializing technologies via startups and presenting themselves in the market.



Tasks:

1. Identify relevant competitors. With input from the New Ventures team, identify and prioritize top competitors. Capture key information (e.g. name, type, location, website).

2. Conduct online research to gather data on competitors. Utilize resources such as websites, social media, annual reports, press releases, and newsletters to gather data on competitor's online presence. Develop and pull this information into a news feed.
3. Develop system to track and visualize key startup metrics.
4. Create an analytical framework to compare programs, benefits and services offered by universities to create successful startups.
5. Analyze Ohio State's competitive positioning.

*This project will require working / consulting with XXXX (XXX@XXX ), New Ventures Manager, Corporate Engagement Office. {Up to two groups can work on this independently}*

### **Idea 7: Claims Communication Valuation**

Gallagher Bassett is a third-party Claims Administrator for commercial property and casualty claims. Claims administrator offices are mostly open Monday through Friday during business hours. However, many of the individuals making claims are experiencing damages during evenings and weekends. These individuals often need to wait until business hours resume before hearing back on their claims. This delay in communication can be worrisome for the damaged individual and may cause them to seek attorney representation or become adversarial during the claims process (more costly claims for clients).



Students will need to quantify the impact of delayed communication on claim outcomes. The students will then need to determine the cost to have a resource make contacts over nights and on weekends. Lastly, if cost effective for our clients, GB will need a way to charge for this resource.

Key Questions:

- 1) What is the impact of communication delay on the claim outcome?
- 2) Would it make sense to have a resource dedicated to making claim contacts to reduce this delay?
- 3) How much would this resource cost?
- 4) Would it be more cost effective to have this individual make contacts during weekday nights, or just during weekends?
- 5) What should Gallagher Bassett charge for this service?
- 6) What should be the workflow of this process?

*This project will require working / consulting with XXXX (XXX@XXX ), Gallagher Basset {Up to two groups can work on this independently}*

### **Idea 8: Risk Prediction and Mitigation**

Commercial Quality at Abbott Nutrition (AN) manages and oversees the quality system and infrastructure of 43 Affiliates globally. An affiliate is responsible for the marketing, selling and distribution of AN products locally. These 43 affiliates sell products within ~150 countries. The affiliate is a small business unit made of Regulatory, Marketing/sales, Quality Assurance, Supply Chain and the size of the affiliate can range from ~\$1MM in sales annually up to \$800MM in sales.



In 2016 the Affiliate Risk factors program was developed based on highest risk factors which are most predictive of potential risk to business continuity/customer safety. Factors included non-variable inputs such as country/region, products marketed, QA resources/activities performed and variable inputs such as affiliate quality performance. The program was not implemented for several reasons:

- Process was very manual and a "point in time". Does not establish performance over time in a dashboard format that is clear

- Performance factors/metrics have changed, and tool was not able to be easily modified
- A mitigation strategy was defined but not clear how to execute / communicate / maintain program
- Program was not 'systemized" (no procedures, training or ongoing sustainability plan)

Task for the groups:

- With data provided by Abbott, verify/confirm risk factors are most predictive of potential risk for customer safety and business continuity
- Develop tool that is sustainable to implement/manage including ease of data entry by affiliates
- Establish clear dashboard which includes monitoring over time to help with predicting changes
- Establish clear mitigation strategy and dashboard

*This project will require working / consulting with XXXX ([XXX@XXX](mailto:XXX@XXX)), Manager Commercial QA. {Up to two groups can work on this independently}*

### **Idea 9: Client & Timing Profiling**

A powerful resource in litigation for nearly 50 years, S-E-A is a multi-disciplined engineering, investigation and visualization services company specializing in failure analysis and vehicle testing. S-E-A's full-time staff consists of licensed/registered professionals who are experts in their respective fields. S-E-A offers a complete investigative and analytical service, including:



marine, mechanical, biomechanical, electrical, civil and materials engineering, as well as fire investigation, industrial hygiene services, visualization services, vehicle evaluation center and a fully equipped chemical laboratory. These disciplines interact to provide thorough and independent analysis that will support any subsequent litigation. Should animations, graphics or medical illustrations be needed, S-E-A's imaging sciences team can work closely with field staff to clearly depict what really happened.

Task for participating teams: The project would involve data analysis of invoice and payment terms for S-E-A's clients such that we could better understand the variation in payment times/terms and respond accordingly, and create clientele profiles for Accounts Receivable activity and concern. By better understanding the payment history/profile of clients, more efficient collection efforts can be made. Example: If a client consistently pays 100% of their invoice but doesn't do so until (average) 70 days, we don't need to be concerned until 70 days has lapsed without payment.

*This project will require working / consulting with XXXX ([XXX@XXX](mailto:XXX@XXX)), SEA Limited {Up to two groups can work on this independently}*

### **Idea 10: Special-case internship extension (already taken)**



### **Idea 11: Risk Trend Assessment**

Vouch is a Y-Combinator backed company that provides business insurance tailor-made for high-growth companies. Vouch has a seamless application process which only takes 10 minutes, and provides coverages that are most needed to help founders manage their risk and protect their company. The Vouch team has created a free Risk Assessment, which is a short survey evaluating startups' risk profile in



four key areas: product, finance, legal, and team. Vouch provides these startups with a set of recommendations based on their responses, as well as a checklist of key actions steps the business can take to lower their risk. Apart from helping the startups, Vouch also sees this Risk Assessment as an opportunity to gather data on potential customers and use that data for marketing and content creation purposes. To do this, the data from the Risk Assessment will need to be analyzed and compiled in a usable format.

The project objective is to analyze the data collected from the Risk Assessment and provide recommendations on ways the data could be used by Vouch.

#### Project Scope

- Analyze the Risk Assessment data to understand any key trends - examples include:
  - Common vendors / solutions used
  - Frequency of risk mitigation tactics
  - Trends by employee size
  - Trends by revenue
- Propose any additional risk areas we should include in the survey
- Create a clear and detailed summary of findings
- Provide recommendations for how to effectively use the data

*This project will require working / consulting with XXXX ([XXX@XXX](mailto:XXX@XXX)), Co-Founder & VP of Business Development, Vouch  
{Up to two groups can work on this independently}*

## Fall 2018 – Project options presented by external partners

### Idea 1: Decision Support in New Model Packaging

Honda of America: At Honda, “Packaging” involves reusable containers that move parts efficiently and safely from Suppliers to Honda’s manufacturing location. Emptied containers are shipped back to suppliers to be filled with parts and returned to Honda. The process is repeated for the life of a model (roughly 5 years).



Whenever the Packaging department must spend money in support of a business need, the department develops a proposal (case study) explaining that need and its costs. The proposal is reviewed by Honda’s executives in terms of value, cost-effectiveness, and fit to Honda’s broader strategies.

During the proposal’s evaluation, there is often a gulf separating the contextual understanding of the Packaging department and that of executives. This can hold back proposals. To overcome this inefficiency this project’s goal is to develop a visual simulation tool that mimics Honda’s returnable packaging supply chain. The tool will provide an output based on loading specific conditions and inputs into the simulation. The simulation should be something that can be run multiple times to demonstrate the different supply chain scenarios, providing results for executives to review.

Task: Physically review Honda’s Returnable supply chain for greater understanding of the conditions and inputs that drive packaging requirements. Build on and extend the existing ‘Base Model’ (which will be provided) that demonstrates the process and cost associations based on all major touch points in Honda’s returnable supply chain.

Deliverable: The tool interface will allow the user to load specific conditions and inputs to simulate a packaging scenario. The scenario will provide a visual step by step of the supply chain in action. Finally, the tool will provide easy to understand visual outputs that explain the results of the scenario and financial outcome based on the simulation ran. A secondary objective is the use of simulation optimization (which students will learn in BUSMGT 3331) to propose ideal input and condition selections to the Packaging department.

*This project will require working and consulting with Purchasing Operations – New Model Packaging, Honda of America Mfg. Xxxx Xxxx (XXX@XX). A PPT deck and existing modeling available by the sponsor {Up to two groups can work on this independently}. A visit to the Marysville plant to talk to managers should be coordinated. Non-disclosure agreements will be signed, and videos will not be posted to YouTube in this case.*

### Idea 2: Visualizing Risk and Risk Detection

Honda North America (“HNA”): In today’s business environment there is an ever-increasing level of consumer protections at the state and federal level. Honda strives to be compliant with these regulations at all times. To assist American Honda Finance Corp with its assessment of the risk of noncompliance, HNA audits the performance of those associates and contractors who are involved with credit approval/denial and loan servicing processes. The actions of confirming compliance involves a number of processes including a review of loan files to verify compliance with applicable state and federal consumer lending laws and regulations. Honda has identified certain risk factors that are utilized in its sample selection process that identify specific accounts that pose a higher chance of non-compliance in specific areas (Repossessions, Declined applications, Delinquencies & Extension/Deferrals).



- Task 1. Develop a descriptive analytics standardized report that provides a visualization for the risk based sample selection process / results for an executive level audience. If possible, provide the report in a template format to be used in additional data analytics reporting.

Currently HNA Audit utilizes a random selection process to select accounts for detailed testing of loan files. There are multiple types of risk to consider when analyzing the loan file for compliance with laws and Honda policies including , but not limited to; Default, Credit, Financial, Fraud and Legal Risk

- Task 2. Develop a model from the Customer loan data that highlights loans/dealers/credit buyers etc. with the greatest risk for potential non-compliance with consumer lending regulations and Honda policies in order to initiate preventive actions to reduce the likelihood of non-compliance.

*This project will require working and consulting with Xxxx Xxxx (XXX@XX). Xxxx Xxxx (XXX@XX), Audit Division, Honda of American Mfg. Data & existing risk criteria available by the sponsor {Up to two groups can work on this independently} A conference call with the Audit Division managers should be coordinated.*

*Non-disclosure agreements will be signed, and videos will not be posted to YouTube in this case.*

### **Idea 3: Pricing and Costing Interface**

Commercial Vehicle Group (CVG): CVG’s existing Pricing and Costing tool could use an upgrade in the form of a much more-friendly user interface. Currently the tool consists of a spreadsheet input that is loaded from ERP systems from around the globe. Because of licensing issues, CVG will pre-populate the spreadsheet (as if loaded from ERP) for the team and they can focus on an interface.



Fundamentally, as the title suggests, this tool is intended to be a pricing tool the CVG sales personnel can take with them to suppliers to give on-the-spot initial quotations. Hence two simultaneous audiences are the sale staff and the clientele. A detailed quotation of course will follow with a deeper dive into costs, but this tool will be the first step. Additionally, as it is cost based, it will serve as a cost monitor that should flag the CVG PLM team about significant cost changes.

*This project will require working and consulting with Xxxx Xxxx (XXX@XX). Commercial Vehicle Group, Inc. Pre-existing tool available by the sponsor {Up to two groups can work on this independently}*

### **Idea 4: FDA Quality Risk Scorecards**

OSU/Fisher: Fisher College of Business faculty are part of a major [grant from the FDA](#). The main goal of project is to develop quality risk scorecards for the FDA to use to allocate resources. The unit of analysis is the manufacturing plant, and the population of interest is all plans in the world that ship pharmaceutical products to the United States.



The students will be provided with the original approved grant proposal (submitted November 2017) to learn more about the objectives. The students can see our mock-up scorecard (below), which was included in the proposal. The students may be provided with some data if they wish, although they will likely not have all of the data they need to build a complete scorecard, as the project team is still in building the necessary databases (and some desired data will not be reliably available at all). And, we do not expect the teams to build predictive models based on the data – That’s the job of the faculty involved.

The faculty hope that the students, working somewhat independently, will use their training on visualization of data from the class (and the supplemental text) to develop a scorecard/dashboard that is most effective for the FDA.

*This project will require working and consulting with Xxxx Xxxx (XXX@XX). Associate Professor of Management Sciences, OSU Original grant proposal & data available by the sponsor {Up to two groups can work on this independently}*



### Idea 5: Resort Analytics Template

Minds On, Inc: There is a need to better understand public web-searchable information regarding the market size of resorts (beach, pool, golf course, casino, etc.) in the USA and Internationally. This project therefore focuses on the creation of a dynamic report that sizes up the resort market with respect to:



- Overall opportunity sizes for resorts in the USA and Internationally
- Category break down (beach, pool, golf course, casino, etc.)

This report should be open to the inclusion of additional information such as beach and pool reviews from resort sites, and travel sites such as Trip Advisor, Expedia, etc. It may also be designed to incorporate individual guest data. HOWEVER, student are NOT permitted to scrape social media, or without tap into proprietary sites without explicit permission. If students wish to incorporate place-holder data (emblematic data which is not scraped) that is acceptable for illustration purposes.

*This project will require working and consulting with Xxxx Xxxx (XXX@XX), Minds On, Inc. Students will be expected to collect public data for demonstration of tool {One group can work on this independently}*

### Idea 6: Cryptocurrency Dashboard

Former Student: The cryptocurrency phenomenon has proven particularly interesting due to the ease of access it seems to offer to markets. Generally, no other traded asset (applying a lose definition here) has been as easily accessed by investors before. Adding to its uniqueness, the rise of cryptocurrencies began in the technology space, rather than the financial industry.



Task for this Dashboard build:

- Pull historic cryptocurrency data from public database (e.g. coinmarketcap)
- Explore Google Analytics data to observe high level correlations between search terms and cryptocurrency market value as a function of time (e.g. Google Analytics: Bitcoin)
- Identify a third data set through public databases (e.g. Forbes or Github) that will provide aggregated demographic data as a function of time.
- Create a dashboard to observe the changes to the cryptocurrency market value over time.
- Add a dashboard element that allow you to add variables (e.g. from Google Analytics or a third database) and observe resulting correlation statistics.
- Add a dashboard element that will test variables and their ability to forecast cryptocurrency market values with current data on a daily basis.

*This project will require working and consulting with Xxxx Xxxx (XXX@XX), EY Advisory. Students will be expected to collect public data for demonstration of tool {One group can work on this independently}*

## Spring 2018 – Project options presented by external partners

### Idea 1: The Challenge for the Fleet Industry

City of Columbus: The age old question is, when do I replace my fleet? In an effort to answer that question one must have a *Replacement Standard* (RS), a schedule wherein management has determined the optimum time to replace a vehicle and/or piece of equipment based on the end users “duty cycle”. It requires understanding how much use is the unit getting over a certain period of time and how hard is the unit being used. Many factors go into establishing a **RS**, capitalized cost of the asset, total Life to date (LTD) repairs less fuel usage, residual value and life expectancy. Conceptually, there may be an optimum point at which to replace any vehicle/asset based the identification of diminishing returns; when further investments in a unit are less preferable to the acquisition of a new unit. Empirically, the RS therefore must account for both estimates of the value in reinvestments to a unit, as well as the cost of replacement.



Along with these considerations, are two typical challenges faced by fleet managers: The ability to estimate the value added through reinvestments in old units, and budgetary constraints at any particular point in time. Fleet managers would benefit from assistance in quantifying and supporting reinvestments. This in turn would provide for a much more reasonable development of planning timetables for new unit acquisitions, again with budgetary constraints in mind.

The Private sector and the Public sector handle their “books” and depreciation differently. The Project sponsor is willing to advise on these issues to facilitate the development of a tool for the Public sector to use.

*This project will require working and consulting with Xxxx Xxxx ([XXX@XX](#)).*

*Data may be made available by the sponsor {Up to two groups can work on this independently}*

### Idea 2: Social Media Location Analytics

Saama: The purpose of this project is to investigate the publicly available information from social media sites such as Twitter, Facebook and Yelp to analyze how the public information (accessed via APIs) can be used to determine a user’s probable location (at least at a city and state granularity). Various forms of data including profile and social content needs to be considered and weighted to predict/rank the individual’s possible location.



#### Task Outline:

- Investigate the available public data from the social media web sites and third-party social data aggregators.
- Categorize the public information available by type and importance as an indicator of location.
- Identify person identifiers which give the most reliable information about a person and their linkages to two or more social media web sites.
- Devise formulae based on data analysis to derive/compute possible user locations.
- Identify a set of candidate profiles from each social media source and manually (or programmatically) compute formula results. Present these results in an Excel, PowerPoint or dashboard format.
- Experiment with algorithm adjustments and identify situations where results are most/least reliable.

Outcomes: Produce a report which summarizes findings, possible algorithms and weight factors which can be used and devise formulae which can generate candidate locations. Manually or programmatically compute examples of real, public profiles and show the results of the algorithm. Identify ways in which formula results can be enhanced to increase accuracy.

*This project will require working / consulting with Xxxx Xxxx ([XXX@XX](#)).*

*You will be required to collect your own data as above {Up to two groups can work on this independently}*

### Idea 3 – Retailer Economic Evaluation

Saama: The purpose of this project evaluate and rank the relative buying power of consumers represented by grocery (fast-moving goods) retailers in regions across the United States. The results of this data will be used to find correlations between retailer/consumer buying power and to help predict future sales of products sold by those retailers.



Task Outline:

- For a set of 50 or so retailers across the United States, create a database of all regional store locations.
- Acquire regional demographic and economic data for the same regions across the United States.
- Identify and acquire any other datasets (such as store distances, Weather) which may influence regional consumer buying patterns.
- Determine the KPIs and measures and granularity that the resulting combined dataset needs to have in order for the resulting data usefulness to be maximized.
- Identify any formulae which should be utilized to determine relative buying power and retailer strength.
- Experiment with algorithm adjustments and identify situations where results are most/least reliable.

Outcomes: Produce a report or visualizations which provide findings, ideal algorithms and weight factors which can be used to effectively rank retailer-consumer buying power. Manually or programmatically compute examples rankings based upon data collected and algorithms defined.

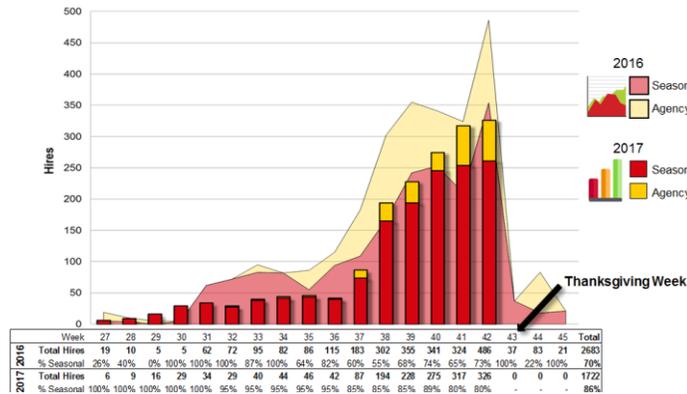
*This project will require working / consulting with Xxxx Xxxx ([XXX@XX](mailto:XXX@XX)).*

*You will be required to collect your own data as above {Up to two groups can work on this independently}*

## Fall 2017 – Project options presented by external partners

### Idea 1: Marketing Plan Optimization

DHL: At one of our large e-commerce retail sites, we experience a large ramp-up of seasonal associates in order to help us fulfill orders for holiday season (Thanksgiving through Christmas). We will hire anywhere from 1,700 – 3,000 seasonal associates depending on the amount of volume we are expected to ship to our customers. The graph below shows the 2016 actual hires and the 2017 hiring plan as it stands now.



Due to such a large ramp-up in a very short time period, we have an extensive marketing plan and budget. Our marketing plan uses many platforms – billboards, newspaper, radio, etc. When an applicant comes into our Recruiting Center and fills out an application, we capture a lot of information about them – basic personal information, where they live, how they heard about us, etc. The more associates that we hire through our Recruiting Center, the more cost effective it will be for us. If, for some reason, we cannot hire all of our associates through our Recruiting Center, then we have to hire associates through local temporary staffing agencies. This comes at an additional cost due to the fee that the agencies charge.

What we would like to understand:

1. Looking at the total applicants, we typically hire around 50% of them (called conversion rate).  
Is there a certain marketing platform that will help increase our conversion rate?
2. What is the most cost-effective marketing platform?
3. Combining these concepts, how do we optimize our marketing plan to maintain/reduce our marketing costs while increasing the number of people we hire through our Recruiting Center?



*This project will require working and consulting with Xxxx Xxxx ([XXX@XX](mailto:XXX@XX)).*

*{Up to two groups can work on this independently}*

## Idea 2: Slotting Optimization

DHL: One of our customers provides us with a list of SKUs and their demand for a given month. The highest moving SKUs are the kits (i.e. multiple items per SKU that need to be assembled by our team prior to shipping) and the co-pack SKUs (an item that needs to be placed in a separate box or wrap). We need to slot these SKUs on our picking line strategically so that we maximize the output and limit the congestion. (For example: if we slot 4 of our highest moving SKUs in the same area on the line, we will create congestion and slow the rest of the line down.) The slotting process we currently have is a more manual process of slotting items to their lines and locations, but we would like this process to be automated and/or optimized. Given the below assumptions that we will have, how do we maximize the output of our lines to increase efficiency?

1. The number of kitting, co-pack, and production lines
2. The number of stations per line
3. How long it takes to pick an item, place an item in a carton, etc.
4. Speed of the lines
5. Assumed error %



*This project will require working and consulting with Xxxx Xxxx (XXX@XX).  
{Up to two groups can work on this independently}*

## Idea 3: National Economics Reference

I'm a minor investor and love to be informed about international economic conditions. Alas, I don't have all that much time to look up information. I do know there are some great places to gather data that would help me make more informed decisions. Imagine for example being able to see a countries growth, level of corruption and say maybe electric usage in one place (just some examples).

There is one great API (Application Programming Interface) for this. It's the World Bank API:

<https://datahelpdesk.worldbank.org/knowledgebase/articles/898581-api-basic-call-structure>

My thinking is that somewhere buried in the 16,000 time-series is gold or at least a cure for my ignorance. If I can cure that, maybe I can make better international investments.



A bit about the API:

You can get all countries data for a specific indicator (metric) by using a url like the below:

<http://api.worldbank.org/countries/all/indicators/SP.POP.TOTL?format=json>

The below looks up all countries (though you can indicate a 2-letter code for a specific one) and provides me the metrics for SP.POP.TOTAL in json format (default is XML). The question now is, what kinds of metrics exist. The following url provides the entire 16,000 + listing.

<http://api.worldbank.org/indicators/>

The country names are provided below.

<http://api.worldbank.org/countries/>

The bad news is!!! This involves quite a bit of JSON/XML parsing. The good news is that web requests aren't too hard to do it seems, based on this article:

<https://social.msdn.microsoft.com/Forums/en-US/16900c74-0ee3-469a-b44d-6c00bb58f7c0/web-service-calls-from-vba-excel?forum=exceldev>

There should be a great library just for processing either json or xml files, which you should be able to Google.

Now, let's say you can't handle the XML/JSON part, I think it would be acceptable to parse it into a database or possibly do it in EXCEL/VBA post processing. If you do decide to use a database, I'd recommend something like sqllite3, which I've noticed doesn't always require installation (at least not if you use python).

A good addition to this would be an Internet explorer browser object that provides you with the latest news about a specific country/countries or the world. There should be an API out there for that as well.

*This project will require working and consulting with be Xxxx Xxxx (XXX@XX).  
{Up to two groups can work on this independently}*

#### Idea 4: Forecasting Optimal Resource Distribution

HandsOn Central Ohio: The City of Columbus is experiencing major demographic shifts. By 2050, Greater Columbus is projected to add as many as one million more residents. As many as 250,000 of these residents will likely live in low/moderate income households. In addition, Columbus' major residential centers are shifting from the suburbs to urban centers. And, new Americans are becoming a larger share of the population, concentrating in neighborhoods that are becoming more and more defined by national origin and ethnic identity.



These changes are beginning to place pressure on Central Ohio's existing social serviced distribution systems. Providing access to basic needs like food, shelter, and household items, is an increasingly complex undertaking. We would like to have a model that allows us to use data from our resource and client databases, publicly available demographic and economic data, and other sources to forecast the best location in Columbus to provide access to resources. This access could come in the form of a new program or service to cover gaps, establishing a new physical location for an existing service or organization, and adding capacity through donations, volunteers, and/or financial investment to an existing entity that may be in the best location but lacks scalability.

We would like the final model to be reusable and include a heat mapping/hot spotting visualization to clearly identify the opportunities forecast by the model. We are able to share data to support the project.

*This project will require working and consulting with be Xxxx Xxxx ([XXX@XX](mailto:XXX@XX)).  
{Up to two groups can work on this independently}*

#### Idea 5: What If Costing Scenarios

Bamboo Rose: A retail company sources product globally and sells to markets all over the world. As the buyer builds their assortment, they decide the products to include by market based on the following factors:

- completeness of the offering (i.e. representation of products to interest potential buyers for sale at full price)
- profitability when buying from one country and selling into another (IMU% actual compared to target IMU%)
- risk of placing too much production in any single country, factory or supplier
- creating a blended assortment with product representation from domestic as well as global suppliers

To Do: Run What If Scenarios based on changes to the following variables:

1. Components (impact to supplier offer price)
2. Ship Dates (impact to freight cost, ELC)
3. Mode of Transport (impact to cost of freight, ELC, IMU%)
4. Country of Origin (impact to duty, ELC, IMU%)
5. Quantities (impact to blended roll-up – by Dept, Class, Sub-class, Program)
6. Where product is coming from (origin) and going to (Market – deliver to)



Goal – Achieve Target Margin (IMU%) profitability when selling an ideal assortment of product at the target price.

Visualizations:

What does the ideal product assortment look like within a Category/Program to hit target profitability when shipping to various Markets?

Produce Visualization and analysis of product assortments Cost and Margin (IMU%) with a goal of achieving improved Margin (meeting/exceeding Target Margin)

Risk related to cost/ELC/IMU% below target

Risk related to product placement (production volumes) by country, supplier, factory

Ability to segment/group by Dept, Class, Sub-class within a Product Category or Program

Definitions:

ELC – estimated landed cost (offer price plus additional costs for duty, freight, bank fee, brokerage fee)

Owned price - owned retail price used to calculate IMU% - (base price at which product should be sold)

**IMU%** - Initial Mark-up % ((Owned price – ELC)/Owned price) X 100 = % IMU

Data will be provided for analysis by Bamboo Rose

*This project will require working and consulting with be Xxxx Xxxx ([XXX@XX](mailto:XXX@XX)).  
{Up to two groups can work on this independently}*