MSBA CAPSTONE SPONSORSHIP

PROVIDING MSBA STUDENTS OPPORTUNITIES TO TACKLE YOUR BIG DATA-DRIVEN, BUSINESS ANALYTICS CHALLENGES
The STEM-credentialed MSBA program culminates with a spring capstone project building on students’ foundational training in the areas of **Data Science**, **Managing Big Data**, **Machine Learning**, and **Data Visualization**. Student teams apply these skills to solve sponsor firms’ business problems using the firm’s proprietary data, possibly integrating with public datasets. Deliverables include a robust technical handover package with empirical models, code and cleansed data, a business deck explaining the benefits and methodology, and an executive dashboard developed on a visualization platform such as Tableau.

"As a Capstone Sponsor I was able to work first-hand with very talented MSBA candidates while also gaining opportunities to network with other analytics leaders to share ideas on talent recruitment & retention, analytics organization, and strategies for building data science capability."

---

"The interaction between students and the client is a critical success factor for both sides. We ensure the students have solid consulting and project management processes to follow, but having a passionate, engaged client is the most critical element in the equation. It provides the students with the right learning environment and also gives them the required domain knowledge to generate real outcomes from their code and recommendations."

---

**WHAT IS THE CAPSTONE PROJECT?**

- 1 business and 1 technical resource – business context, problem clarification, data support
- Students use the industry standard CRISP-DM methodology for data mining integrated with Goizueta’s proprietary COMPASS methodology for consulting projects
- "The interaction between students and the client is a critical success factor for both sides. We ensure the students have solid consulting and project management processes to follow, but having a passionate, engaged client is the most critical element in the equation. It provides the students with the right learning environment and also gives them the required domain knowledge to generate real outcomes from their code and recommendations."

---

**CLIENT TEAM**

**CLIENT-CONSULTANT INTERACTION**

**STUDENT TEAM**

- 4-5 students work as a consulting team directly with the client

**SUPPORT**

**FACULTY**

Academic

**COACHES**

Professional

---

**ERIC SCHMIDT, DIRECTOR, GLOBAL REVENUE MANAGEMENT, IHG**
WHY MSBA?

Emory University Goizueta Business School’s Master of Science in Business Analytics (MSBA) program imparts strong technical and quantitative training plus comprehensive business acumen, all within a top 20 business school.

“This intense program is purposefully designed to produce a business data scientist, one who can speak the language of business, technology, and data! We developed the program keeping in mind data-analytic needs across different functions in an organization as well as heterogeneity in sector-specific requirements. Our students will excel in any organization and in any function!”

PROF. RAMNATH K. CHELLAPPA, ASSOCIATE DEAN & ACADEMIC DIRECTOR, MSBA
**HOW THE PROJECT WORKS:**

**Diamond SPONSORS PROVIDE:**

» A business problem requiring a combination of technical, business, and data science skills to solve

» Access to the firm’s data relevant to the business problem

» Commitment in the form of a business mentor and a technical resource to work closely with student groups and faculty advisor(s)

» A tax deductible sponsorship as a gift to support the academic objectives of the MSBA Program to support student/faculty engagement and project deliverable

**Diamond SPONSORS RECEIVE:**

<table>
<thead>
<tr>
<th>Recruiting Access</th>
<th>Access for recruitment of MSBA students through our dedicated MSBA Career Center</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capstone Project</td>
<td>Opportunity to provide a data-based project for MSBA student teams using company-specific data and defined parameters for deliverables</td>
</tr>
<tr>
<td>Annual MSBA Conference</td>
<td>Event-focused on enhancing the dialogue around analytics in business (tentative Spring 2019)</td>
</tr>
<tr>
<td>Logo Usage</td>
<td>Mutually provided ability for sponsors and program to feature written and graphic logos, wordmarks, and trademarks in collateral.</td>
</tr>
</tbody>
</table>

**KEY DATES**

**NOVEMBER 29**  “Client Pitch Day,” Sponsors present projects to students

**DECEMBER 31**  PII removed from data as needed and data made accessible

**JANUARY 17**  Initial client meeting day with student teams

**FEBRUARY 25-26**  Formal mid-point reviews

**APRIL 22-28**  Final presentations and deliverables due
EMORY HEALTHCARE: Mining Free-Form Notes in Electronic Medical Records to Detect Infection

Business Problem:
Surgical procedures can result in infection and through manual efforts of professional abstractors, post-operative infections are detected. This manual approach is cost-prohibitive, so only 10% of the cases examined. Can infection detection be potentially automated from rich but unstructured free-form EMR notes?

Technical Approach & Outcome:
With the help of hospital staff, the student team mapped the data generation process. Employed bag-of-words for data preparation with refinements using TF-IDF, N-GRAM and Phrase Detection. Built an ensemble classifier from 6 different Machine Learning (ML) algorithms (XGboost, random forest, decision tree, logistic regression, support vector machine). The best ML approach (out-of-sample performance) produced an AUC=0.86 that met the requisite sensitivity and specificity standards.

Business Outcome:
The students automated an expensive manual process to improve processing time from weeks to days and importantly allowed for an examination of ALL (100%) surgical cases from a previous 10% sample. Significant long-term cost savings likely, with a potential for improved quality of care from dynamic monitoring of infection.

COX AUTOMOTIVE: Predicting Auction Arbitrations with Transactional Data

Business Problem:
Manheim, a Cox Automotive Brand, is the world’s largest used vehicle marketplace. Sometimes used vehicle transactions go into arbitration which decreases buyer and seller satisfaction and increases transactional costs. Can transactions with high probability of arbitration be identified earlier in the business process?

Technical Approach & Outcome:
The team visited an auction site to understand the business and data ecosystem. They dove into terabytes of data utilizing AWS big data tools and used ensemble machine learning techniques including light gradient boosted trees to build, train, and tune three predictive models in Python on 13 million observations. They created profit curves based on the expected results of implementing their predictive models and business solutions. Their models achieved AUC values ranging from 0.80-0.95 and yielded net expected monetary benefits which exceeded client expectations.

Business Outcome:
The students provided a phased recommendation with over $10M in annualized savings. Manheim decided to immediately implement the code for Phase I, and planned Phase II in the next fiscal year.

"This capstone project was a resounding success on all sides. Working with our business leaders, students had the opportunity to apply their technical skills to solve a real-world business problem, and we gained unique solutions to an industry challenge. We’re looking forward to piloting their model at one of our locations later this year."

MATT TRAPP, MARKET VICE PRESIDENT, MANHEIM
"The Capstone project is an opportunity to have the broad base of talent in the MSBA program add valuable insights to real life business scenarios. Our relationship with Goizueta offers outside in perspectives that continue to validate a solid return on investment from this FedEx/ Goizueta relationship."

DONALD COMER, STAFF VICE PRESIDENT, OPERATIONS ANALYSIS, FEDEX

"The capstone experience really prepared me to handle real world, end-to-end analytics projects. The data mining and business communication methodologies I practiced during the capstone have enabled me to solve the right problems and deliver actionable results using my technical and analytical skills in my current job."

WEN ZHANG, 1BMBSA, DATA ANALYST, INVENTORY ANALYTICS, THE HOME DEPOT

FOR OPPORTUNITIES, CONTACT:
MSBA Program | msba@emory.edu