Market Gap Assessment Tool

ELECOMP Capstone Design Project 2024-2025

Sponsoring Company:

Boston Scientific
300 Boston Scientific Way
Marlborough, MA 01752
Advancing Science for Life - US - Boston Scientific

Company Overview:

Boston Scientific Corporation (BSC), headquartered in Marlborough, Massachusetts, is a biomedical/biotechnology engineering firm and multinational manufacturer of medical devices used in various interventional medical specialties. These specialties include:

- Interventional radiology
- Interventional cardiology
- Peripheral interventions
- Neuromodulation
- Neurovascular intervention
- Electrophysiology
- Cardiac surgery
- Vascular surgery
- Endoscopy
- Oncology
- Urology

Boston Scientific is dedicated to transforming lives through innovative medical solutions that improve the health of patients around the world. Our core values of Caring, Meaningful Innovation, High Performance, Global Collaboration, and Diversity; guide our work, define our culture, and empower our employees.

With 48,000 employees worldwide, Boston Scientific invests significantly in research and development, with $1.4 billion allocated to R&D. We offer 15,000+ products that change lives and treat over 37 million patients each year across 140 countries.

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Project Motivation:

In today's an ever-evolving competitive market, staying ahead requires continuous assessment and adaptation to understanding market gaps to drive growth and innovation. Our Market Gap Assessment Tool aims to empower teams to bridge gaps, seize opportunities, and thrive in a dynamic environment. A market gap refers to an unmet need or an underserved segment within a market. Identifying and addressing these gaps can lead to strategic advantages, improved product development, and enhanced customer satisfaction.

Purpose of the Market Gap Assessment Tool

The primary purpose of our proposed **Market Gap Assessment Tool** is to provide businesses with a systematic approach to:

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1. **Identify Market Gaps**: The tool will help identify gaps by analyzing existing Gastro-Intestinal market data, competitive product on the market, customer feedback, and competitive landscapes. It will highlight areas where demand exceeds supply or where customer needs remain unaddressed. Final product would be a tool allowing the user to search the market for competitive product and other market data related to the Gastro-Intestinal space.

2. **Prioritize Opportunities**: Not all gaps are equally significant. The tool will allow the ability to prioritize market gaps based on factors such as market size, growth potential, and alignment with the company's strategic goals.

Anticipated Best Outcome:

The Anticipated Best Outcome (ABO) is in automation of our Margat gap assessment and standardization of the output dashboard so that it scrapes source articles and provides up-to-date information and actionable market intelligence to the user. This enhanced tool enables more extensive reporting options and actionable intelligence, adding further value to the user community. The intent is to have a tool that links current public information to actionable intelligence in the form of a usable dashboard/GUI.

Project Details:

Procedure Overview:
- An AI tool that allows a user to type in a market area (IE. Endoscopic Cold Snares), the tool searches the internet for competitive information, complies the information in to a standard format including links to source material.

- Sample information to be collected:
  - Product features (sizes, configurations….)
  - ASP
  - Market share
 - Procedural case numbers by region (US, EU, Japan, China, LATAM)

Overall system concept:

URI Capstone team and Boston Scientific Inc. team to work jointly to establish overall system concept, including:

● Scope of the initial effort
● Optimal approaches for coding, databases and networking
● System security approaches, User levels of access
● Web page structural design and capabilities
● Options and capabilities related to the sorting, categorizing and feeding of scraped and analyzed data to "Advanced Access" Users
● Potential future efforts

Block Diagram:
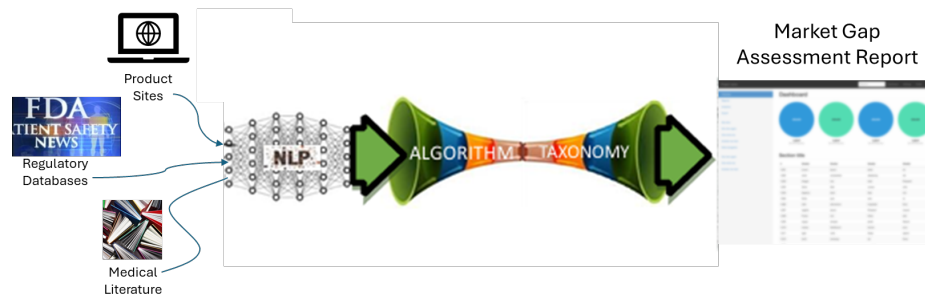
Initial list of tasks; URI Capstone team and Boston Scientific Inc. team to work jointly to develop further.

Hardware/Electrical Tasks:

● Investigate requirements for servers/databases/peripherals necessary to store and manage data

Firmware/Software/Computer Tasks:
● Draft Software that automates collection of open-source articles and information for Market Gap identification
● Taxonomy correlation script for merging cross organizational data categories
● Design a bot that utilizes machine learning for accurate source acquisition
● Develop metadata criteria for rapid article categorization and analytic data
● Advance dashboard UI that provides easy user navigation and information comprehension

Composition of Team:

2 Computer Engineers
- ELECOMP Capstone: Primarily Computer Engineers, but Electrical Engineers will be considered, if they have high computer engineering skills. (justify in detail) (Boston Scientific Inc: Fellow Engineer (team lead) and supporting Project Engineers and Product Manager)

Skills Required:

Computer Engineering Skills Required:
- Coding & Programming; including but not limited to some or all of the following - JavaScript, Python, Java, TypeScript & C#
- Knowledge and experience in the software development lifecycle (SDLC) – planning, prototyping, testing, deploying & maintaining
- Networking & network connectivity expertise
- Secure coding – knowledge of common vulnerabilities and countermeasures
- Cryptography – secure coding, common security techniques & methods
- Code reviewing – ability to review and understand existing coding
- Database knowledge – SQL, NoSQL, etc., query and effectively store big data
- Communication skills: Ability to perform and effectively communicate within a team
- Resilience – the ability to knuckle down, work under pressure and roll with the punches

Anticipated Best Outcome's Impact on Company's Business, and Economic Impact

Once accomplished, this software tool and dashboard will provide an actionable instrument for industry to identify and assess Market gaps within its portfolio, allowing targeted use of portfolio investment to drive revenue creation in a ever-evolving medical device market. The Dashboard/tool will be accessible through the Internet. Controls will be in place to allow for controlled access to reduce the likelihood of unauthorized persons from accessing and making use of the available information. Various levels of service/access can be provided. Preliminary thoughts regarding access levels include the following, but access requirements will evolve as the project progresses. The exact extent of the initial task will be determined as a result of the initial joint scoping effort between URI Capstone and Boston Scientific, Inc. team members.

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Broader Implications of the Best Outcome on the Company's Industry:

Boston Scientific's current vison of the Market Gap assessment tool will be broadly used across the various business Franchise teams to keep informed on market trends and competitive threats. Allowing the teams to rapidly response to changes in market competition with new product functionality. The consolidation of public content into an advanced and usable format in the Gap dashboard will allow for a better-informed community that can more quickly react to current trends and actionable intelligence which would otherwise not be achieved by relying on individual topics. This more advanced information is provided to the franchise teams in various forms, as simple as a weekly email of the information, or even the automatic feeding of scraped, sorted and categorized information into a portal.

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