STETSON UNIVERSITY
School of Business Administration

## Center for Business Intelligence and Analytics

# Topics for Industry Research Project and Partnership

## Introduction

The Center for Business Intelligence and Analytics (http://cbia.stetson.edu/) at Stetson University's School of Business Administration actively seeks to partner with industry experts to advance the research, curriculum development and practice of data analytics and management. This document presents background, research topics, and grant and partnership opportunities to stakeholders who are interested in collaborating with the center.

## Background

As human beings experience the convenience and flexibility of an increasingly connected world enabled by information technology (IT), organizations are challenged by the needs for managing a rapidly growing amount of data and for gaining meaningful insights from the data. The ability to make sense of large amount of data and to derive business value from these data often provides a competitive edge in today's market.

The challenges facing today's organizations include (Figure 1):

- **Information overload problem** – The large volume of data makes it difficult to analyze and to understand users' concerns in organizations' data. The use of diverse languages and different terminologies to convey different ideas further aggravates the difficulty in analyzing the data.
- **Difficulty managing growing social media** – To gauge consumer opinion, company managers rely extensively on networks of human contacts and focused groups to obtain information. Traditionally, this information is obtained through various media, news agencies, and social channels. Social media has expanded the information channels significantly by enabling customer discussions and opinion expression. Yet many companies lack capability to manage and to derive value from a growing volume of social media.
- **Rapid changes in consumer sentiment** – The large volumes and variety of expressions on social media have challenged traditional information collection and sentiment assessment. For example, more than 100 million users post over 230

million "tweets" (text messages with up to 140 characters) on the social media website Twitter.com every day. Opinion leaders, authorities, and activists who share their ideas on Twitter are often followed closely by hundreds or thousands of users. These leaders provide valuable content as well as linkage information that can offer insights for decision-making.

- **Lack of qualified workers** – It is estimated that the U.S. will need over 1.5 million workers who are skilled at business analytics function – an area where the demand from business far outpaces the supply of qualified workers. This mismatch between demand and supply of analytics workers calls for a stronger partnership between academic institutions and companies to produce qualified workers to meet the needs.

In addition, the State of Florida faces enormous challenges in data analytics as it is one of the most vulnerable U.S. states suffering from natural disasters such as hurricane and from man-made problems such as foreclosure or real estate properties. Changing demographics due to immigration and population ageing add to the volume of data that organizations must store and process. Data produced from such sectors as healthcare, insurance, retailing, and real estate property management all contribute to increased opportunities of expanding strategic capabilities for business.

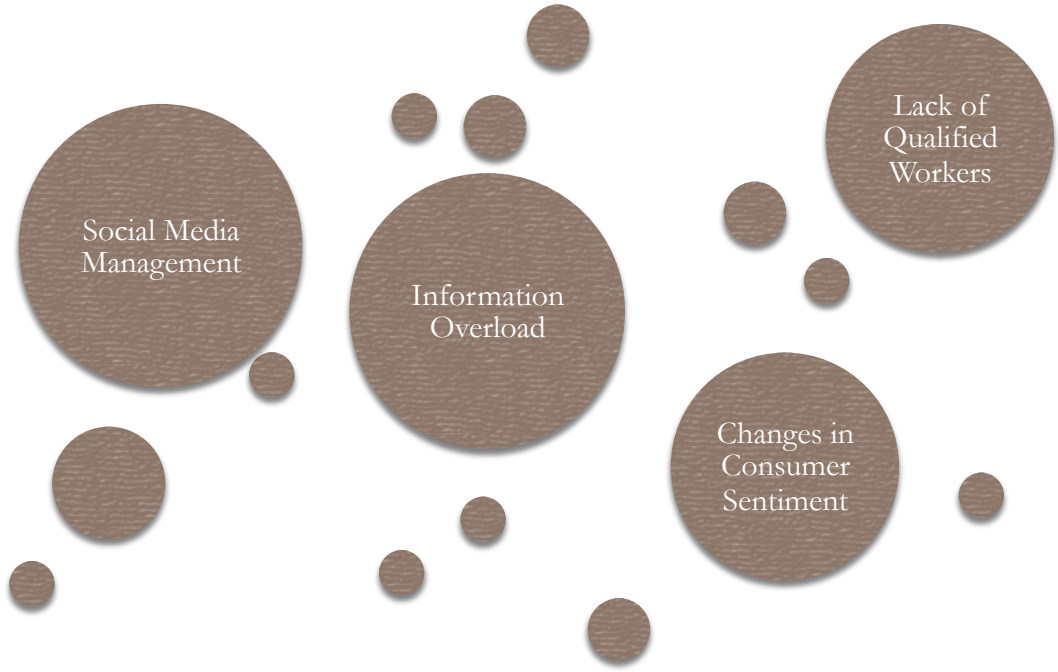


**Figure 1. Challenges Facing Today's Organizations**

## Proposed Research Project Area and Partnership

Exciting opportunities exist for conducting joint research projects and building partnerships between Stetson University and stakeholders in several data analytics areas as described below (see Figure 2). Partnership and grant opportunities are presented as well.

### Research Project Area

1. Social Media Analytics

   The use of social media is on the rise. Marketers leverage social media (online reviews, blogs, forums, etc.) to promote products and to appeal to customers. Customers who peruse these social media content are influenced in their purchase decisions due to new information obtained from other shoppers who posted their comments on these media. Similarly, financial institutions develop social media in the forms of forums, blogs, news releases, and financial documents to announce company movements and to create investor communities. Investor decisions are influenced heavily by the opinions expressed in news, company reports, and online forums. This stream of research develops new techniques and methods to harness the potential value of social media and to provide new insights to support decision making.

2. Consumer Analytics and Sentiment Extraction

   New trends in consumer taste, fashion, product popularity, spending propensity, and overall sentiment can often be found in online media, news, and published documents. BI analysts would then be able to segment customers into various groups that reflect not only their demographic characteristics but also their sentiment and preferences. Understanding consumer sentiment from voluminous data presents tremendous opportunities for companies to move ahead of competitors.

3. Risk, Intelligence and Security Informatics

   A vast amount of data have been collected and stored in companies in security and insurance businesses. Developing new predictive analytics methods and testing these methods in these companies could help identify new business opportunities and better serve their customers.

4. Curriculum and Pedagogical Developments

   New skills, concepts, and techniques are increasingly demanded by employers who manage growing volumes of data. Consequently, new curricula and pedagogies are needed to educate students. An important research area is to develop suitable

curricula and pedagogies to ensure effective education of next-generation data analytics workers.


**Figure 2. Research Project Areas**

## Partnership through Student Course Project

Selected business analytics courses offered at Stetson University have a course project requirement, in which groups of three or four students devote significant time and effort examining an organization's analytics needs and develop solutions to address the needs. Interested stakeholders are invited to partner with the center to arrange an assignment of a project group that will work with the stakeholder under the supervision of the course instructor. Faculty will mentor and supervise the groups while the industry partner provides practical expertise, data, and domain knowledge. An end-of-semester presentation and final report will be delivered to the partner. The partner also will have first-hand access to the students The project can serve as a pilot effort for larger, long-term research project to be conducted by faculty and industry experts. External funding and intellectual property can be developed based on the project.

One opportunity for the Fall 2013 semester is the **Predictive Analytics** course, where each group will address the predictive analytics needs of an organization and develop data-driven solutions to address the needs. Interested stakeholders should contact the course instructor, Dr. Wingyan Chung (wchung@stetson.edu), by 9/23/2013.

## Opportunities for External Funding and Intellectual Property Development

The following opportunities for external funding and intellectual property development are relevant to the aforementioned projects and potential partnerships.

1. Grant Opportunities for Academic Liaison with Industry (GOALI) (http://www.nsf.gov/pubs/2012/nsf12513/nsf12513.htm)
    - An extended faculty experience in industry
    - A faculty visit to industry
    - Visit of a leading engineer, scientist, or manager from industry to Stetson University
    - Support for one or two semesters of work in industry by a graduate or an undergraduate student

2. Transforming Undergraduate Education in Science, Technology, Engineering and Mathematics (TUES): Course, Curriculum, and Laboratory Improvement (CCLI), (http://www.nsf.gov/pubs/2010/nsf10544/nsf10544.htm)
    - Creating Learning Materials and Strategies, Developing Faculty Expertise in BIA
    - Assessing and Evaluating Student Achievement
    - Conducting Research on Undergraduate STEM Education
    - Implementing New Instructional Strategies

3. Campus Cyberinfrastructure – Network Infrastructure and Engineering Program (CC-NIE) (http://www.nsf.gov/pubs/2013/nsf13530/nsf13530.htm)
    - Network upgrades within a campus network to support a wide range of science data flows / BIA data management
    - Re-architecting a campus network to support large science data flows, for example by designing and building a "science DMZ"
    - Network connection upgrade for the campus connection to a regional optical exchange or point-of-presence that connects to Internet2 or National Lambda Rail