DEPLOYING ANALYTICS CERTIFICATE

(Big Data, Internet-of-Things, Business Intelligence, Knowledge Management)

After successful completion of this program, candidates will also receive ICCP Certification!!!

As described in GIIMs **Managing Data as an Asset Certificate**, Business Analytics/Intelligence has remained the top application/technology (a clear standout) since 2003. Companies value the ability to analyze data/information to gain insights as they compete to rapidly and accurately advise internal and external decision-makers. With the **future of IT** being driven by these technologies (in marketing, R&D, HR, legal...), every organization should be obtaining demonstrable value from implementing an effective data driven innovation strategy where big data means bigger and better decisions. Every organization needs to have a team of efective data scientists.

In addition to formidable process improvements, the focus is now on revenue generating initiatives. IBM CEO Virginia Rometty said that information will be to the

21st century what steam, electricity, and fossil fuel were to prior centuries. A recent IBM MIT Sloan Management report found that companies that harness the power of big data and analytics outperform those that do not by 220%. To be successful in deploying BI, candidates require enriched expertise in data management, statistics, modeling techniques and tools, and the industry they are working in; they need to understand how to move from Big Data to Smart Data.

Addressing the 4-V's of Big Data have become fundamental for data scientists:
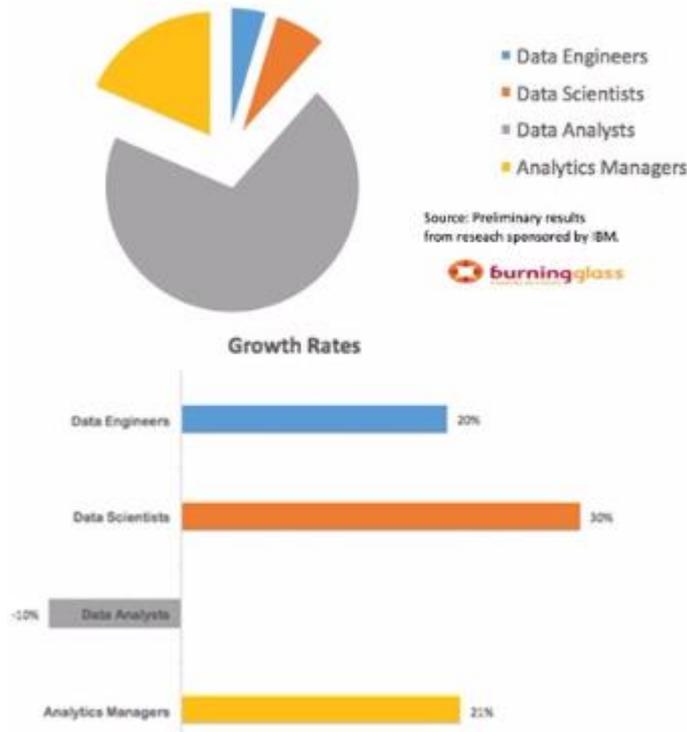

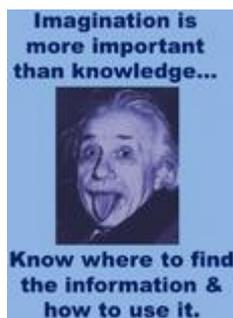Managing Data as an Asset Certificate

- Volume: The integration of existing enterprise
            data with Social, Mobile, Cloud, and
            Internet of Things is driving the data
            explosion
- Variety: Capturing all of the structured and
            unstructured data that pertains to the
            enterprise decision making processes
- Velocity: The rate at which data arrives and the
            time required to process and
            understand it
- Veracity: The quality and trustworthiness of the data

Furthermore, IT for all companies has traditionally focused on building reports about events that happened in the past. Big data and business analytics is now shifting the focus of IT. Instead of just looking backward, IT can develop (and the business can leverage) the capabilities for looking forward. To be able to take advantage of these new capabilities, organizations must recognize that the conventional model requiring data in the warehouse to be 'clean' and 'structured' must change. Organizations have to get comfortable with the idea that data can (and will be) 'messy' and unstructured', and that they will have to use external data sources (which have typically not been pulled into enterprise data warehouses) in new innovative ways. The complexity of this requirement is compounded by the traditional exponential growth of data in concert the growth of data brought by the internet of things.

Across the US in 2015, what data skills were in demand?

- Data Engineers
- Data Scientists
- Data Analysts
- Analytics Managers

Source: Preliminary results
from reseach sponsored by IBM.

burningglass

Growth Rates

Role	Growth
Data Engineers	20%
Data Scientists	30%
Data Analysts	-10%
Analytics Managers	21%

Many studies (like the one on the left) forecast a significant global shortfall in the big data skills necessary to deploy these new capabilities. In the United States alone, McKinsey projects a shortfall of 140,000 to 190,000 by 2018. The lack of these skilled professionals is limiting the ability of business to derive value from big data. This talent shortfall is largely due to the shortage of effective university, professional, and executive education programs designed to produce the talent necessary to fill the growing demand for every type of big data professional.

Imagination is more important than knowledge... Know where to find the information & how to use it. Managing Data as an Asset Certificate

Recognizing that these initiatives demand more than just technical skills is imperative. Bad data leads to bad decisions. This has been most recently demonstrated in the dramatically missed projections for the 2016 U.S. Presidential election. Other simplistic examples include sports teams that have used "faulty data" in selecting new players or in deciding what plays to call or in the placement of players for a play. What erroneous decisions has your organization made; you might not even be aware until it is too late???

Successful use of these complex tools requires expertise in more than just technologies and data; they require the convergence of technology, data, statistics,

business, industry, tools/products, and the ability to work in a team (IT and non-IT). The purpose of this certificate is to prepare candidates with the technology management skills necessary to meet the challenges and deliver valuable results.

While it is important to understand how to leverage your organizations data/information assets (from marketing to research to talent analytics), IT and business partners must effectively work together to recognize what questions need to be asked. This certificate combines the technical, managerial, and industry skills necessary to deploy this important new technology. Based on the candidates background and anticipated engagement in BI, this program can help prepare the novice or expand the knowledge of an experienced BI professional; as well as the non-IT executive interested in understanding how to leverage this important technology.

This Certificate will address the integration of the information technologies that are required to have a successful big data/business analytics/knowledge management strategy across the enterprise including **robotics process automation** (Cognitive Computing), IoT **(internet of things)**, Bring-Your-Own-Infrastructure, and SMAC (**Social, Mobile**, **Business Analytics**, and **Cloud**).

The Global Institute for IT Management (GIIM) has developed two 4-course certificate programs to address these important considerations. One, Deploying Analytics (described here) is similar to many university IT analytics programs that are being offered; albeit with a stronger focus on industry and practical considerations. The second, **Managing Data as an Asset Certificate**, focuses on the leadership, management, and industry skills necessary to leverage this important new technology; how to derive value from data.

Candidates should have completed the course **The Essentials of Data Management** or have the equivalent experience prior to taking this certificate. Candidates should also consider courses from the **Managing Data as an Asset Certificate**, **IT in Industry Certificates, IT Security Management Certificate**, and **IT in Marketing Certificate**.

The 4 Certificate courses are described below and (marked with an *) are also available asynchronously via the web.

1. Building the Data/Analytics Organization *
This course addresses the organizational elements of the Data and Business Analytics (including cognitive computing and robotics process automation) functions by focusing on the management, structural/reporting, and human resource/skills considerations of data and business analytics. Topics such as determining where the group(s) should report, how they are assessed/measured, the necessary skills and how to source them, key data/analytics/cognitive computing processes, data governance, how to lead data-driven innovation in

products and services, IT and non-IT roles, and customer and competitor alignment, all driven by the demand to improve the quality and speed of business decisions, minimize the risks/challenges for implementing them, and how to leverage data as a strategic asset. By concentrating on IT's data, analytics, and cognitive computing responsibilities, in essence this course puts the candidate in the role of the CAO/CDO (Chief Analytics Officer/Chief Data Officer) as they define the vision, strategies, missions, and build the management processes and organization/skills necessary to deploy these data driven initiatives. The course focuses on the important organizational structure in terms of separate or combined organizations, and placement within the overall enterprise and IT organizational structures. This course is geared for managers and consultants engaged in building and growing this organization, including CIOs and non-IT executives to help prepare the enterprise to leverage their investment in Big Data/BA. It combines the optional Building & Managing the Analytics Organization and Building & Managing the Data Organization courses (E & F) below.

2. Managing the Data Transformation *

This course addresses the business digital transformation underway that are being driven/enabled by the changes in design and management of data for business intelligence/business analytics (BI/BA) and cognition systems as enterprises evolve to leveraging Big Data (and Internet of Things). It focuses on the emerging data sources (e.g., social, mobile, robotics process automation), data models, IT data management processes, and data integration considerations as they pertain to BI/BA and cognitive computing (from marketing to human resources).

The goal is to raise thought-provoking technical issues prompted by the rapid evolution of business and data technologies, as well as to provide practical information for immediate use. The course is organized around the following transformational themes:

- Data Sources
- Data Technologies
- Data Applications
- Infrastructure Considerations

The emphasis is on the industry considerations resulting from the emerging data/knowledge, analytics, and cognitive technologies.

3. Analytics, Applications & Techniques *

This course will focus on providing candidates with a well-grounded understanding and appreciation of the contemporary methods, tools and techniques used to make analytics an integral part of managerial decision making. It will concentrate on the approaches for realizing the hidden knowledge in corporate databases and will help participants make near-real time intelligent business and operation decisions. The course will introduce various types of analytics including: reporting/visualization, predictive/data mining, decision-making/prescriptive analytics, pattern recognition, and forecasting. Methodological and practical

aspects of knowledge discovery algorithms will also be covered including: data preprocessing, k-nearest neighborhood algorithm, machine learning (e.g. decision trees, artificial neural networks), predictive modeling, cognitive computing, clustering and market segmentation, association rule mining techniques, and time series forecasting. The focus of this course is on understanding the potential of these analytical techniques in various organizational settings.

4. Knowledge & Discovery Approaches *

This course follows the Analytics Applications and Techniques Course, and will focus on the hands-on application of data mining, text mining, and big data products/tools/software in solving real world business and operational problems. A variety of popular knowledge discovery software products (both professional/industrial and free/open source) will be used to demonstrate a wide range of interesting application scenarios. This course will provide participants with an in-depth understanding of the tradeoffs that exist in identifying, designing and implementing knowledge discovery projects. It concentrates on building hands-on skills to apply appropriate techniques to discover hidden knowledge in corporate and external databases (both structured and unstructured) to help managers make near-real time intelligent strategic and operational business decisions. The main goal of this course is to provide candidates with not only a well-grounded understanding and appreciation of the methods and methodologies but also help candidates develop hands-on experiences in applying them to real world problems and data sets.

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Additional/Optional Courses

(available synchronously only)

a. The Essentials of Data Management

This course addresses the organizational elements of the Data and Business Analytics functions by focusing on the management, structural/reporting, and human resource/skills considerations of data and business analytics. Topics such as determining where the group(s) should report, how they are assessed/measured, the necessary skills and how to source them, key data/analytics processes, data governance, how to lead data-driven innovation in products and services, IT and non-IT roles, and customer and competitor alignment, all driven by the demand to improve the quality and speed of business decisions, minimize the risks/challenges for implementing them, and how to leverage data as a strategic asset. By concentrating on IT's data and analytics responsibilities, in essence this course puts the candidate in the role of the CAO/CDO (Chief Analytics Officer/Chief Data Officer) as they define the vision, strategies, missions, and build the management processes and organization/skills necessary to deploy these data driven initiatives. The course focuses on the important organizational structure in terms of separate or combined organizations, and placement within the overall enterprise and IT organizational structures. This course is geared for managers and consultants engaged in building and growing this organization, including CIOs and non-IT executives to help prepare

the enterprise to leverage their investment in Big Data/BA.This course or the equivalent experience is a prerequisite for this certificate.

b. Industry Characteristics Courses:

While having experience with data management, statistics, modeling and BI tools is recognized as being fundamental, industry expertise is also considered essential in being able to have a successful career in Business Intelligence/Big Data. GIIM has courses in the following industries to help prepare candidates with the **requisite industry expertise: Finance, Pharmaceutical, Healthcare, Manufacturing, Hospitality, Government, Telecommunications, Petroleum, and Transportation**.

c. Advanced BI

Candidates that have experience (1-3 years) in BI/Big Data projects are often preparing for more arduous initiatives. This courses focusing on the more complex cutting edge approaches to BI/Big Data.

d. Statistics Fundamentals

The significant amount of corporate information available requires a systematic and analytical approach to selecting the most important information and anticipating major events. Statistical learning algorithms facilitate this process for understanding, modeling, and forecasting the behavior of major corporate variables. This course prepares candidates that do not have the important foundation of statistics.

This course introduces time series, and statistical and graphical models used for inference and prediction. The emphasis of the course is in the learning capability of the algorithms and their application to several business areas.
The course also provides an understanding of the basic methods underlying multivariate analysis through computer applications using regression/multivariate analysis.

Topics covered include principal components analysis, factor analysis, structural equation modeling, multidimensional scaling, correspondence analysis, cluster analysis, multivariate analysis of variance, discriminant function analysis, logistic regression, and other methods used for dimension reduction, pattern recognition, classification, and forecasting.

Participants should have a basic knowledge of probability theory, and linear algebra prior to taking this course.

e. Building & Managing the Analytics Organization

In essence it takes a similar perspective as course f below, but instead of focusing on the role of the CDO (Chief Data Officer), it focuses on the role of the CAO (Chief Analytics Officer).

This course addresses what the Analytics and Cognitive Computing functions should look like by focusing on the management, organizational, and human resource considerations for leveraging analytics. It addresses the emerging job roles of data governance, data stewards, data curators, data scientist, master data architects, data security & privacy, data engineers & architects, and data scientists, as well as centers of excellence/ competency. Managing data as an asset requires significant transformation at many companies. There are cultural issues that must be dealt with, and learning how to manage transformation is a critical skill. Topics such as where the group should report, how they are assessed, the necessary skills and how to source them, key data/analytics processes, integration strategies, data governance, data-driven innovation in products and services, data security/privacy and standards, IT and non-IT roles, customer and competitor drivers, and understanding how the preceding can be used to improve the quality and speed of business decisions and processes, and the risks/challenges for implementing them to leverage data as a strategic asset are fundamental. By concentrating on ITs data and analytics responsibilities, in essence this course puts the candidate in the role of the CAO (Chief Analytics Officer) as they build the management processes and organization/skills necessary to deploy these data driven strategies.

f. Building & Managing the Data Organization

In essence it takes a similar perspective as course e above, but instead of focusing on the role of the CAO, it focuses on the role of the CDO (Chief Data Officer).

This course addresses the role of a "Chief Data Officer" (CDO) in an enterprise. The course focuses on the management, organizational, and human resource considerations for data and analytics. It addresses how big data assets fits with other information assets of the firm, and the emerging job characteristics of data governance, data scientists, master data architects, and data security and privacy. The key is how organizations can leverage information assets to provide demonstrable business value.

Managing data as an asset frequently requires significant transformation at many enterprises including cultural and political considerations and learning how to manage the complexity of change. Topics include the alternatives for where the position should report, the necessary skills (executive and staff, IT and non-IT), governance processes, and defining an appropriate set of strategic, tactical, and operational objectives. By considering information assets from an organization-wide perspective, in essence this course puts the candidates in the role of Chief Data Officer as they build the management processes and organization/skills necessary to get the full advantage from data.