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INFORMS to Officially Join Analytics Movement

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INFORMS leadership in 2010 has taken concrete steps to understand and address the burgeoning analytics marketplace. The Board of Directors at its winter 2010 meeting commissioned a comprehensive strategic report on the analytics market to be delivered by an independent consulting company. The Board received this report at its summer 2010 meeting. The report recommended that INFORMS enter this market. The Board fully vetted and discussed the report, accepted the findings and unanimously agreed to begin taking steps to serve this market. See below for more on the findings of the study and next steps. But first, the background.

Why Did INFORMS Commission This Study?

- Membership is not growing. INFORMS membership has been holding steady at about the 10,000-member mark for the past few years. In 1994, shortly before the merger of ORSA and TIMS, membership stood at nearly 15,000.
- Of the estimated 75,000-100,000 operations researchers practicing in the United States, according to the Bureau of Labor Statistics, INFORMS can count about 2,500 practitioners among its members – less than 4 percent. How to attract and serve practitioners has been a vexing problem for INFORMS virtually since its beginning. Indeed, most see INFORMS as an academic society.
- Management science is not being taught in U.S. business schools at a level that can sustain strong academic and student member growth. (INFORMS is taking steps to help rectify this.)
- The student members we do have leave INFORMS at a high rate. Moreover, those who go on to a career in industry leave INFORMS at a higher rate than those who go on to a career in academia.
- Though financially very strong with excellent long-term reserves, INFORMS has not been able to meet its annual operating expense budget in recent years. Institutional journal subscriptions, which pay a disproportionate amount of the freight around INFORMS and allows us to do all those things we love to do, have been declining in recent years.
- And, finally, if INFORMS truly wants to help improve and transform organizational decision-making at all levels of business and government and thereby further its mission, then it needs to spread its wings to where the market has gone. There is ample evidence to suggest the market has moved toward analytics and not operations research.
Why Analytics Now for Business?

The short answer is that the use of data and data analysis to drive business decisions cannot be ignored any more – not if a business wants to be successful. Contributing factors include the growing availability of business data to analyze, the high velocity and complexity of needed business decisions, technological improvements in data collection and analysis, and increased global competition. All these factors have driven the need and desire for business to base decision-making on more than gut feel. Businesses large and small are embracing the movement, and, according to Gartner, high performing businesses are five times more likely to embrace analytics than low performers.

Where is Analytics Headed?

Through the roof … probably. IDT says that analytics software as a service (SaaS) is predicted to grow three times the rate of other business segments in upcoming years. Further, Accenture says that two-thirds of large U.S. companies believe they need to improve their analytics capabilities while only half believe they are spending enough on analytics. Gartner says that business in general has now reached the point in the improvement of performance and costs that companies can now afford to perform analytics and simulation for each and every action taken in business. Not only will data center systems be able to do this, but mobile devices will have access to data and enough capability to perform analytics themselves, potentially enabling the use of simulation everywhere and every time.

Both Accenture and Gartner have named the use of analytics as one of the top 10 business trends for 2010. Accenture also reports from a recent survey that 60 percent of decisions in business are now based on analytic output, and most managers believe that they will need to increase their analytic resources in the future. Finally, International Institute of Business Analysis (IIBA) has grown to more than 10,000 members in just five years. Its goal is to reach 30,000 members by 2012.

Preparing for the Study

Even though these trends are widely reported and seem to make intuitive sense, INFORMS leadership wanted answers to several crucial questions pertinent to us: Are Gartner and Accenture right and is analytics more than just the latest business buzz word? Isn’t O.R. the same as analytics? If it is different, how is it different? Why hasn’t this movement naturally gravitated toward INFORMS? If analytics is different (read, somewhat ‘lesser’) than O.R., does INFORMS truly want to support this field? Do we want to define and lead this field? INFORMS did launch the very successful digital magazine Analytics in 2008 that now has more than 4,000
registered non-member subscribers, receives about 10,000 views every time we post a new issue, and is clearly growing in acceptance and popularity. This is just one example, but is *Analytics* magazine truly serving the informational needs of this market or is there a dearth of solid, available information? What other products and services are needed by practitioners of analytics?

As previously noted, the INFORMS Board of Directors approved a substantial outlay of funds to engage consultants to perform a strategic market study to help us truly understand the definition and needs of the analytics field, how O.R. is different or the same, and to ascertain how and if INFORMS should support this field. The study also aimed to define the size and buying power of the market, its growth potential, the competitive landscape it resides in, and potential products and service that INFORMS could provide to this market in keeping with its overall mission and culture.

After considering several well-known consulting firms to lead this study, INFORMS leaders in early April 2010 selected Capgemini. Capgemini is a strategic management consulting firm headquartered in Paris and operating in more than 30 countries with more than 90,000 employees. Its capabilities include a Strategic Research Group that delivers industry points of view, impact analyses, market assessments, survey research, business case validation, competitive profiling, best practice identification and benchmarking. One of the deciding factors in choosing Capgemini was the existence of its Global O.R. and MS Center of Excellence in the United Kingdom. The Center provides O.R. solutions and services to clients around the world on behalf of Capgemini. Because of this capability, it was clear that Capgemini truly knew about INFORMS and appreciated our need and desire to understand the analytics marketplace.

From the INFORMS side, the project was overseen by Anne Robinson of Cisco Systems (VP of Marketing, Communications and Outreach at INFORMS), Jack Levis of UPS (VP of Practice Activities at INFORMS) and Gary Bennett (director of Marketing and Member Services on INFORMS staff). A steering committee of INFORMS members provided guidance and direction during and after the study. The Analytics Market Study Steering Committee includes: Miguel Anjos, Allen Butler, Manoj Chari, Terry Cryan, Rocky Gay, Steve Gaskin, Terry Harrison, Colin Kessinger, Erica Klampfl, Bob Klein, Barry List, Irv Lustig, Vijay Mehrotra, Doug Mohr, John Osborn, Joel Steckel, Radhika Kulkarni and Thomas Olavson. Don Kleinmuntz, Susan Albin and Rina Schneur, INFORMS past, present and future presidents, respectively, served as ex officio members of the committee. Members and leaders of other committees and groups such as the Roundtable, CPMS, Practice Meeting Organizing Committee and Practitioner and Practice Activities Committee also provided input and guidance.

**Study Gets Underway**

The study was officially launched in early April 2010. The study design included a first phase that gathered information from INFORMS members through an intensive
set of one-on-one interviews and group workshops held at the INFORMS Practice Conference in Orlando, April 17-20. In total, Capgemini gathered opinions and input from more than 50 INFORMS members in Orlando.

Next, Capgemini completed a market scan assessment that included a thorough analysis of all available existing research done on the analytics field, including information gathered by their own O.R. and MS Center of Excellence and available information from clients. Next, Capgemini conducted more than 30 in depth interviews across multiple market sectors to validate and enrich existing research. Finally, INFORMS asked Capgemini to do cost-benefit analyses on a selected group of potential products and services that showed long-term promise. All of Capgemini’s findings were vetted and validated by their O.R. and MS Center of Excellence, as well as multiple INFORMS thought leaders and stakeholders including the Board of Directors and the study steering committee. The study was completed on June 16 and presented to the Board of Directors at its July 30 meeting.

The over-arching objective of the study was to receive an independent recommendation based on research and not just conjecture or opinion on whether INFORMS should attempt to serve the analytics market or segments of this market. Other objectives included receiving a workable and understandable definition of analytics, how businesses use it and who in business conducts it, how it differs from O.R., what are the needs of this market, what products and services can potentially satisfy those needs, and a cost-benefit analysis for each of the most promising products. Capgemini delivered solid information and recommendations on all these counts.

**Findings of the Study**

The study delivered a concise definition of analytics:

**Analytics facilitates realization of business objectives through reporting of data to analyze trends, creating predictive models for forecasting and optimizing business processes for enhanced performance.** Of course it can be argued that O.R. facilitates the same objectives and has pretty much the same definition. However, a key finding from the study is that analytics is seen as a core function of businesses that use it and spans many departments and functions within organizations and – in mature organizations – the entire business. O.R. on the other hand is seen as a toolbox of highly specialized techniques that are used only under special circumstances to solve only certain business problems. Analytics is seen as driving business value in addition to the academic integrity that O.R. affords. Perhaps the reason that INFORMS has been unable to gain much traction with practitioners, whether they consider themselves O.R. or analytics practitioners, is that analytics seems to speak the language of business while O.R. in most cases does not. The Science of Better campaign had many successes, of course, but was largely unsuccessful in getting business to widely embrace O.R. and speak our language.
The study helped our understanding of the field by uncovering three main categories of business analytics that are clearly hierarchical but sometimes overlap: descriptive, predictive and prescriptive analytics.

Most businesses start with descriptive analytics – the use of data to figure out what happened in the past. Descriptive analytics prepares and analyzes historical data and identifies patterns from samples for reporting of trends. Techniques such as data modeling, visualization and regression analysis largely reside in this space.

Predictive analytics uses data to find out what could happen in the future. Naturally it is a more refined and higher level usage of analytics. One can argue that some parts of O.R. reside in the predictive analytics category. Predictive analytics predicts future probabilities and trends and finds relationships in data not readily apparent with traditional analysis. Techniques such as data mining and predictive modeling reside in this space.

Prescriptive analytics uses data to prescribe the best course of action to increase the chances of realizing the best outcome. Prescriptive analytics evaluates and determines new ways to operate, targets business objectives and balances all constraints. Techniques such as optimization and simulation reside in this space. Most of us would probably agree that in fact most O.R. techniques reside in this space.

Businesses, as they strive to become more analytically mature, have indicated a goal to move up the analytics hierarchy to optimize their business or operational processes. They see the prescriptive use of analytics as a differentiating factor for their business that will allow them to break away from the competition. Clearly, analytics leads to optimization where much of O.R. resides. But it is also clear that optimization is dependent on the analytics process.

The analytics process spans: project initiation – problem identification and process analysis; planning – requirements gathering and data needs/analysis; execution – data visualization, assessment analysis, predictions and trends and optimization/simulation; and finally, conclusions. Whether right or wrong, business largely sees O.R. residing only in the execution phase (and only in part of that phase.)

Further, there seems to be a stronger vertical industry alignment for analytics professionals than for O.R. professionals. For example, analytics professionals working in health care see themselves as health care professionals who happen to use analytics to help drive business decisions. Conversely, business seems to hold the view that operations research professionals, no matter the industry, tend to see themselves as operations researchers first and an industry professional second.

The study also made it clear that the needs of analytics professionals depend on the analytical maturity of the firm. Highly mature firms have a structured analytics team that is centralized and headed by an analytics expert. Less mature firms tend to have no clear structure – analysts are usually dispersed across the firm. Highly mature firms have well-defined recruitment processes; they know where to find analytics
talent. Less mature firms have an ad hoc recruitment process and don’t really know where to find analytics talent. Mature firms have robust training programs for their analytics professionals. Less mature firms have very little or no training. Mature firms use techniques spanning the most basic to highly advanced. Less mature firms depend on basic data modeling and descriptive statistics.

**Study Recommendations**

After helping INFORMS to define the analytics market and the opportunities to serve this market and further INFORMS mission and goals, Capgemini issued its official, but not surprising, recommendation:

**INFORMS should pursue a strategy to expand their present business into the analytics market.** After completing the primary and secondary research, identifying the needs of the market and making their recommendation, Capgemini identified a long list of potential products and services that INFORMS could create that map very clearly to those needs. The needs of analytically mature and less mature firms are mostly quite different, as you would imagine, but in some cases, they are the same. Most of these products and services do indeed map to the needs of the more mature organizations but some apply equally as well to the less mature organizations. For some of these recommended products and services, INFORMS already has some experience by virtue of an entry in the O.R. market. For most, though, we do not.

**Recommended Product and Service Categories to Consider for the Analytics Market:**

- Recruitment assistance programs such as professional job fairs or online portals and guides to recruiting
- Training and certification programs such as individual practitioner online or in-person training programs, boot camp programs for beginners, corporate training programs or a certification program that is either test-based or portfolio-based
- Content programs such as online knowledge databases, cases studies, practitioner-oriented journals, magazines, newsletters or original research reports
- Workshops and meetings such as a CXO/top executive networking event or meetings and conferences around special interest areas or vertical industries
- Online interactive initiatives such as private social networks, an online innovation platform (aka research networks) to hold business problem solving contests, or an online “Consumer Reports” on analytics tools
- Other hard-to-categorize initiatives such as analytics prizes and awards and e-mentoring programs

After compiling the above list, INFORMS leaders asked Capgemini to do cost-benefit analyses on a shorter list of six specific products and services that either seemed
financially promising or INFORMS had little experience with and needed to learn more.

**Specific Products and Service that Received a Cost-Benefit Analysis:**

- CXO/top executive networking event (with a maturity model or benchmarking report to entice executives to attend)
- Corporate and boot camp training programs
- Practitioner certifications
- Practitioner publications (journals, magazine, newsletters)
- Online interactive initiatives (private social networks and “Consumer Reports” on analytics tools)
- Online innovation platform (aka research networks) to hold business problem solving contests

For each of the these products and services, Capgemini analyzed how the product should be shaped for an analytics market, what features would get traction in the market, what it would take to break even in three years, and a very high-level proposed strategic action plan. Unfortunately there were no “can’t miss” products or services that rose to the top. Some would require a much higher initial outlay than others but would probably bring a higher return over time. Others seemed to differentiate INFORMS in the marketplace as a true analytics society while furthering our mission but seemed like riskier ventures.

For the record, Capgemini recommended that INFORMS pursue practitioner certifications and CXO engagement as the two services that would provide a strong unique value proposition for INFORMS over time and would have a good chance to make an acceptable financial return.

**Conclusions and Next Steps**

This is where we are now. The Board of Directors has been presented with this information, made their decision and provided helpful feedback to INFORMS leaders and stakeholders. All involved with this study agreed that we got our money’s worth from Capgemini and now have a much better understanding of the analytics market and our potential place in it. The Board unanimously agreed (as Capgemini recommended) that INFORMS should pursue the analytics marketplace both as a means to increase membership and strengthen our financial position but to also further our mission by serving a marketplace that we should serve.

The Analytics Market Study Steering Committee led by Anne Robinson and Jack Levis is also looking for some quick wins – adjusting some of our existing products and services to better serve the analytics market. Among the “quick win” ideas currently being discussed are:
• Create an INFORMS business analytics community (subdivision) as a first step to perhaps growing to a full-fledged sister society one day

• Modify the Practice Conference to include tracks on the analytics process, more soft skills training, more vertical tracks, and clearly label all sessions as covering descriptive, predictive or prescriptive analytics content

• Augment all INFORMS collateral including our vision and mission statements, Web site and print materials to include the words business analytics or advanced analytics

• Reorganize some existing products and services by vertical industry

• Introduce a premier analytics job fair for industry professionals at the Practice Conference

• Enhance the existing executive forum at the Practice Conference into more of a true product offering for executives

• Reach out to other organizations to talk about synergies, especially consulting firms in this space now and sister societies

• Create easy-to-understand case studies from competition entries

• Begin work on building an analytics maturity model

• Leverage the new health care conference as proof of vertical interest

• Create profiles of analytics professionals

At the fall Board of Directors meeting to be held at the Annual Meeting in Austin in early November, the Analytics Market Study Steering Committee led by Anne Robinson and Jack Levis will make their proposal. A draft roadmap to serve the analytics market will be created and presented. Substantial funds will be needed. A true culture shift within INFORMS will be called for.

We need your help. Do you see other possible quick wins? What do you see as the best long-term solutions? If you would like to help, please reach out to Anne, Jack or Gary. If you are coming to the Annual Meeting in Austin, plan to attend the session “Analytics – The Future of INFORMS?” This panel discussion featuring several INFORMS leaders and all of you will sound the call for your input and help.

Also, make plans to come to the Practice Conference in April 2011. We plan to take steps to re-program the conference so that it is more appealing to analytics professionals, and we will aggressively market the conference to them. You can also look forward to a rebranding of the conference that will be announced shortly.

Finally, if you would like to see the full study report, we would be happy to provide it to you.

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