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Moderator: Hello. Welcome, everyone, and thank you for joining us today for the IBM webcast, "Building Advanced Analytics Skills for a Smarter Planet."

You can submit your questions at any time during the presentation by using the Q&A tab at the bottom of your screen. All questions will be answered at the end of our session.

Our presenter today is Thomas Dong, Senior Product Marketing Manager, ILOG Optimization & Analytical Decision Support Solutions. Tom has been with IBM since 2001 via the ILOG acquisition and currently leads the worldwide ILOG Optimization & Analytical Decision Support Solutions product marketing team. Mr. Dong is a volunteer on the INFORMS Science of Better PIC Subcommittee and is a past member of the INFORMS Practice Conference Advisory Council. Mr. Dong holds an MSE in Operations Research from Princeton University.

At this time I will hand the presentation over to Mr. Dong so we can get started.

Thomas Dong: All right. Thank you, Wendy. Can everybody hear me fine? Wendy, is my sound volume okay?

Moderator: Yes, you sound great.

Thomas Dong: Okay, perfect. Okay, welcome, all, to today's webcast on IBM Academic Initiative and specifically the inclusion of ILOG optimization products in this program. Please note that this program is available only to faculty members or research professionals from accredited academic institutions or to qualifying members of standards organizations. As such, this talk will only be relevant to the academics who teach or engage in noncommercial research.

Now, although I know some of you on the live webcast today, I will assume that many of you listening live today or to the recording later are relatively new to the Academic Initiative, or what I'll refer to as AI for the rest of this presentation. So I'll spend some time first describing the program's charter and details, and then I'll focus the second half of the presentation on the availability of ILOG optimization products through AI, a move which, coincidentally, aligns ILOG's longstanding commitments to the academic community with IBM's innovative academic strategy.

And from a greater IBM perspective this move is one that expands the reach of AI to engineering programs in business schools in addition to its primary focuses in the past years around computer science. And so, importantly, it forms a basis of IBM's vision for a smarter planet, and one in which business analytics and optimization as a focus area is expected to become a core technology and investment area in years to come. In fact, IBM is predicting an entire market potential for hardware, software and services this year alone in business analytics and optimization technologies in the order of $105 billion, also with a pretty impressive compound annual growth rate of 8 percent, so obviously an area in which IBM is very interested in

exploiting. And with this move IBM hopes to facilitate the development of the next generation workforce in this area and hopefully removing the barriers that might be associated with accessibility of these types of technologies.

Now, the addition of ILOG optimization in the AI program means that we are now making available both commercial software and courseware for the fields of operations research, or management science in some programs, and this is very consistent with our philosophies as IBM ever since our founding in 1896. In particular, IBM believes in innovation and relies very strongly on academia for those types of innovations. In fact, a couple of interesting facts here. IBM holds more patents than any other U.S.-based technology company and has eight research laboratories worldwide, and within our ranks IBM has now contributed five Nobel Prizes, four Turing Awards, nine National Medals of Technology and five National Medals of Science. And so, just as computer science came into its own as a discipline in the 1960s through IBM's involvement with universities, today we hope to do the same for the field of OR/MS. And so here's how.

So, the IBM Academic Initiative has actually been around for about six years, announced back in July of 2004, and it came about when many of the university ambassadors of IBM recognized a dramatic drop in enrollment in STEM disciplines, so STEM stands for science, technology, engineering and math. And, as a technology company, IBM became quite concerned about skills being the major inhibitor to industry growth. And this was just happening at a time when we as a commercial entity were seeing an increased demand for IT and technical-related jobs and as such were troubled by this drop in the number of students enrolling. So, as IBM noticed this dilemma, IBM decided to make a move and created the IBM Academic Initiative.

At the same time, as a commercial entity, we're very close to what businesses are asking for, and in recent years, as I mentioned earlier, with the business analytics and optimization trend, IBM wanted to stay ahead of these shifts in the skills that are required. And so let me spend a moment here on explaining how IBM came to some of these conclusions.

So, these trends that we've noticed come in the form of three key aspects. So, as the world continues to evolve, we definitely see the need for a changing workforce. And the three major global trends that IBM has identified are the following.

First, as we see global integration happening, we are noticing how the world is becoming flatter. With the major innovations in communications technology we're seeing how the world is becoming much more interconnected, and as such the world becomes much smaller. And, finally, for those of us on the call involved with the field of OR and MS, we're definitely seeing how the world is becoming much smarter.

And so, more precisely, IBM has recognized that the world is becoming much more intelligent, much more instrumented and more interconnected on day-to-day operations. And with these three major changes come many amazing opportunities. And what all this means is that the digital and physical infrastructure of the world are converging. And almost anything, any object, any person, any process or any service for any organization, large or small, is becoming much more digitally aware and networked.

So let's just think a bit about what that means. We've consolidated that into the following view. As we become much more instrumented, interconnected and intelligent, you'll notice that fundamentally there's technology everywhere. There's a billion transistors for each person. There's 30 billion RFID tags embedded into our world. And 2 billion people will be on Internet by next year. And so what are the opportunities with such amazing technologies out there?

The common theme that we are seeing is that today there is tremendous inefficiency in the world -- a great deal of waste. With all this information that's available to us it's much more easy to identify and recognize these problems. And in a recent IBM study done by the IBM Institute for Business Value we as IBM have actually been able to compute -- there's about $4 trillion of inefficiencies in the world today. And we as a field in operations research are poised to be the ones to address those problems, given that OR is very much focused on removing inefficiency and waste in systems.

So as the world becomes much more focused on green and becoming generally more efficient in the way it does business, the prominence and thus demand for OR and advanced analytics is poised to explode. And so here's just a few interesting areas which obviously fund both commercial opportunities and opportunities for leading-edge research in OR.

U.S. companies and retailers today lose $40 billion annually due to inefficient supply chains. This comes from a recent study from A.T. Kearney. In North America, up to 22 percent of total port volume is empty containers, and that translates to about $200 million in waste at the Port of New Jersey alone. That's pretty amazing numbers.

Here's another very interesting statistic. In the United States a typical carrot has traveled 1,600 miles, a potato 1,200 miles, a chuck roast 600 miles -- that's from its source -- before it actually ends up on your kitchen table. That's some pretty interesting numbers, and pretty troubling, to some extent, as well. That actually comes from a textbook that was, or, sorry, a book that was written by James E. McWilliams published in 2007 called "Food That Travels Well," interesting read that I'd recommend.

And, finally, the final interesting stat or case of inefficiency is the following. Congested roadways cost $78 billion annually in the form of 4.2 billion lost hours and 2.9 billion gallons of wasted gasoline. Pretty amazing, considering all the cars that we see on the streets today and how much more we could do if we were more efficient about managing our transportation.

So this all leads to what IBM is calling Smarter Planet. This is IBM's vision on how we as a company can bring focus to the world in the form of becoming more efficient and more productive. And as this campaign generates awareness for the possibilities of more intelligent systems we certainly feel that corporate demand for skilled resources to deliver on the promise of improved efficiency and productivity will grow faster than schools today can produce, and, as such, we have created Academic Initiative to remove those accessibility issues for technology.

So let me now move into the overview of AI, and in a moment I will talk about ILOG products in AI.

So, in 2004, as I mentioned, AI was formed, and it was formed as a partnership between academia and IBM, and today it impacts about a million students each year. From our records we show that there's over 4,000 faculty now using IBM products, touching over 3,000 institutions and impacting about 10,000 courses. So the Academic Initiative is specifically focused on promoting skills around open standards-based software, together with new skills for the 21st century.

The benefits to academic institutions and students are many. First, it provides easy access to open standards-based technologies and supporting resources; supports ongoing staff development; provides an increase in student placement as a result of the former; and, finally, it ensures that academia and students have the most current, relevant curricula that map to the kinds of jobs that are expected, so schools can be attractive for enrollment, funding and growth.

Today, AI is supported by a worldwide community of IBM volunteers, which includes about 2,200 volunteer IBM University ambassadors as well as an on-demand community of over 40,000 IBMers and 5,000 retirees. Let me spend a few moments, then, on describing what's available as part of IBM Academic Initiative.

First and foremost it's all about online resources. So faculty have access to full-version software free of charge for teaching and noncommercial research. Now, many questions arise in terms of distribution of that software as a faculty member primarily to students. So, as part of your agreement that you would sign to become a registered member of AI you will be free to provide the software to your students. So you're able to make copies of the software that you can distribute on physical media or you can put it on a central server to disseminate to your students.

As you can see, IBM is very much about the proliferation of our software in academia as long as you are the primary junction for that software. And as part of your agreement we have faith in the system, and besides the notion of providing a nice audit trail and records of who you provide it to, this program is very much about ensuring that there are no limits to accessibility of our software to you as a professor or to your students who are taking your courses.

Secondly, we have a cloud offering. And this is something that's relatively new, and so it's still a program in the works, but important to note that IBM has its own cloud initiative from a commercial standpoint, and the Academic Initiative is leveraging that to some extent now, and we're continuing to build what's made available as part of that. But for the most part it's about providing a virtual environment not only for software but also for storage, and we support Amazon's Elastic Cloud Compute so that you have remote access to IBM's mainframes as well as, you see on this slide that's going to be rendering here shortly, a number of images to IBM software.

What's been put into the program so far as part of the pilot program are primarily products from our WebSphere portfolio as well as our Rational portfolio. And, as I said, as a pilot it still is very much in the earliest stages, and we anticipate that many more IBM products will become available to you from a teaching perspective through the cloud.

All right. And, finally, as part of the AI program, we understand that providing software oftentimes isn't enough, and that as part of the Academic Initiative we also need to support professors and provide faculty with the means to build our products into your curriculum. And, as such, we have been for years now been making our professional-developed courseware and materials and training programs that we typically charge for from a commercial standpoint, we make those available for free to academics to include into their curriculum.

And so, while we provide our own professional collateral as part of the courseware program, it's important to note that professors themselves are creating coursewares and oftentimes are the best source of curriculums, and so we've created also an Open Courseware Exchange, where we invite professors and faculty to share their materials with others and at the same time promote their own programs as part of this initiative.

And, okay, I didn't have the link to this. I think I provided it somewhere in this presentation, as well. And so the final aspect of this program -- so far, everything that I've been saying has been focused on academic employees, so faculties and research professionals -- the other side to the equation obviously is the students, as well. And as evidenced by the way I described softwares distributed to students, AI must be recognized as it's a portal for professors only. It's not for students. So we've set up a separate portal for students. It doesn't provide access to software, per se, from IBM, but it does provide a number of resources for students to not only promote themselves and their resumes, but there are certain materials and a limited set of courseware that's also available to students through the Student Resource Center.

Okay, so that was my quick summary of the AI program. Now let's get to the meat of the presentation, which is to describe the inclusion of ILOG software as part of this program. And we've actually been involved with this program since 2009, and for those of you on the call who are long-time ILOG users, you'll remember that it was in late 2008 that it was announced that IBM acquired us, and the deal was not officially consummated until early January of 2009. So, actually, it was within six to seven months of that timing that we were able to leverage the IBM Academic Initiative.

And, granted, the first initial inclusion of our products was only for some limited teaching editions of our products, so back in 2009 what we had put in limited the use of our technologies to really only teaching problems, or instructional-level problems is how we positioned it. But earlier this year, in February of 2010, we decided to fast-track the inclusions of our full-version products into the Academic Initiative. So all former components of OPL Studio, CPLEX and CP Optimizer have been included now in its newly packaged form, CPLEX Optimization Studio. And these are full versions, fully functional in terms of all features that are available in those products.

But I should note that there is one subtle difference between that commercial -- between that teaching -- the academic offering and the commercial version, and that's in terms of licensing. Otherwise, in terms of all features, this is equivalent to the commercial version. Okay? And so with this full commercial version effectively being now available through the Academic Initiative, we are targeting the full range of teaching as well as all noncommercial research, which otherwise the teaching editions were somewhat limiting.

Okay, so, as I mentioned, for those of you who are very familiar with our products, we went through a major repackaging of our products under CPLEX Optimization Studio in the latest release of our products. That, as I said, is now the main offering within AI. And so targeting linear/quadratic and integer programming we have the IBM ILOG CPLEX Optimization Studio. So if you are doing research or teaching for these classes of problems we recommend the CPLEX Optimization Studio, in particular the CPLEX Studio IDE and the Optimization Programming Language. However, all interfaces to CPLEX Optimization Studio are available, so if you prefer to teach using either Microsoft Excel or MATLAB these are, obviously, very popular modeling interfaces that within some programs are actually the interface of choice. You may thus be able to access CPLEX Optimizer as well as the CPLEX CP Optimizer where relevant through these other third-party interfaces.

Finally, if you do prefer to use the C, C++ or Java APIs, the full APIs are also now available as part of this offering. Now, naturally, research will typically be involved here, but if you do have teaching programs where your students are adept at programming, then this obviously becomes your interface of choice. Final note here, then, is that the academic research editions are available on all commercially supported platforms, so there are no limits to that end.

All right, and then, finally, the other area of teaching that we -- and research that we focus on is around the area of constraint programming, and here we have two offerings, first, again, CPLEX Optimization Studio as we have included it for many years now. The constraint programming technologies are now available. So CPLEX CP Optimizer is available through the APIs as well as through the CPLEX Studio IDE and supported by the Optimization Programming Language, or OPL.

And, finally, we have the first-generation constraint programming offering, which, for the most part, is the primary offering that we have made available to researchers, and so as part of AI now obviously not limited only to research but to teaching. If you would prefer to leverage our legacy Solver, Schedular and Dispatcher technologies, that, again, is also available through the Academic Initiative.

So, how would you go about getting this software? I have provided here a link, and these slides will be shared with all attendees once the webcast is over. You can also access this by searching, very simply, for the Academic Initiative and linking -- finding the links and navigating through to find the Download Software link. Now, you must be a registered member to access the software, and I did want to make one point here, that immediately when you apply you will be given provisional membership, so just within seconds you can begin going to the catalog and downloading software.

Now, there is an actual review process to ensure your academic credentials do match our database of accredited universities in the world, and unless this is a fraudulent registration you will continue to be given access. In the case that fraudulent access is attempted, within a few days your access would be rejected.

So, as I mentioned, there are multiple ways to get here. This link is pretty long, but if you go to Academic Initiative website you can also click on the Software and Hardware links and find the Get Software and access link in the right-hand side.

Okay, and then once you click there you'll end up at a software catalog search page, and on that page, then, depending if you're going to be teaching LP or CP, you will invariably be looking for CPLEX Optimization Studio, and for the special cases of those of you who are still doing very detailed research and constraint programming you can also search for the former ILOG CP product. Once you enter that in the text search you will get a list of a number of eAssemblies by platform, so you'll need to select a platform on which you will be installing. Once you download that you simply click the installer and follow the instructions.

Now, it's important to note that, as I mentioned, the one difference between the commercial offering and the academic offering is that you will need to still install a set of license keys. And to get those license keys I provide a link here. You can also go to the Support tab on the left of the Academic Initiative page and select ILOG, and there you'll get the ILOG-specific installation instructions as well as a link to the page to request the license keys.

Now, these license keys are not the same ILM license keys you might have been used to as part of the former ILOG commercial products. ILM is actually not required, and what is being enforced here is simply a time limit. It's a time limit of roughly 12 to 15 months, depending when in the quarter you're downloading your keys. So you'll get at least one full year if you're downloading at the end of the quarter, and if you're downloading at the start of the quarter you'll get up to 15 months' time before you'll need to come back to this very same location to download a new set of license keys.

Now, we will provide an email reminder the quarter in which your keys will expire. So we recognize that academics are very busy, but we also don't want to have you one day run into an issue and the software stops working. We want to make sure that you're on top of that. And we will be maintaining a list of those who download the key, so that we can provide you with a reminder.

Okay. And the other thing to note when it comes to installing license keys, obviously it's not as easy as just simply installing the software. But because you do need to install some license keys I'd like to point to a quick-start guide that you can find also on that same page where you find the link to download your keys. So please follow that guide.

I know that many academics have multiple installations of CPLEX on their machine for benchmarking purposes, or you have many students coming through and installing different versions, so sometimes environment variables sometimes get a little messed up. So all sorts of guidance I've provided in this document on both default installations as well as custom installations, where you may need to put your license keys in different directories.

A few notes on these license keys, then, we get a lot of questions in terms of how many license keys do I need? Well, it's a single license key regardless if you're using CPLEX Optimization Studio or if you're using CP. You do need to install these license keys on each machine, so it is

tied to each machine. There's no notion of a node or a site license associated with these products. And, as I mentioned earlier, these keys will expire in 12 to 15 months, and you will need to come back to the website to request another key in a year's time.

Okay, and, as I mentioned, it's not --it's a fairly simple process, we feel, but invariably we do get questions for how do I install my keys, for those who don't read their instruction guides. So we have set up a few ways to handle this.

First, there is a discussion forum that we have set up, and this supports not only the academics but our commercial customers, as well. We like to point all product usage questions there. So if you have any questions about setting parameters or how you would port your code, for example, all these things should be directed and they will be answered through our forums.

We have set up also an email address that's monitored by volunteers in our marketing organization should you have any program-related questions or any basic installation questions. And the link is here. It's also available through the AI support page.

If you have any questions related to ILOG, those will be routed directly, as I said, to volunteers on the marketing team on the ILOG side.

Okay, and, finally, as in the earlier review of the AI program, we support fully all aspects of the AI program. So when it comes to courseware we have set up two programs. One is around linear and integer programming, and we've made available our product training tutorials, as well as our instructor workbooks for our commercial product trainings, as well as the user manuals and numerous white papers to support both teaching of our technologies in linear and integer programming disciplines as well as constraint programming with CP Optimizer.

Okay, and here is the link that I mentioned earlier, the Open Courseware Exchange. As we are relatively new in the AI program and IBM's reach into the OR/MS area is relatively new, we are somewhat relying on you as a community to help build our courseware. And so, while we provided a nice initial set of what I would call generic product materials, naturally, when you're teaching, you're going to be probably teaching with specific examples and case studies that are relevant to your institution or your areas of research, and we'd love to have you share those with us. So, on this link you can register, and I encourage you to share any curriculums that you've created that leverage the ILOG Optimization products. And obviously together that's really the only way we could build a strong community, and you can be part of that.

Okay, so that wraps up my presentation. I've given you an overview of where you can download the software and where you can download the courseware as well as some pretty intricate details on downloading license keys, which, for the most part, is really the only gotcha when it comes to downloading software in the Academic Initiative.

So, as you queue up your questions, here's just a few of the FAQs that we're hearing a lot of, so that we can address them even before you ask them.

So, one of the questions is why do academic research editions no longer require ILM? Well, that was really part of IBM's move into AI. It's really all about making software easily accessible. But by the nature of our products, because they are embeddable components, we still needed to have some measure of security when it came to our products. So we do require license keys, and, as I said, they will enforce a time limit, but unlike our former license keys they don't tie you to a specific machine. You are no longer required to provide detailed host ID information, for example.

Number two on the list of the most commonly asked questions is actually around AMPL. And we understand that AMPL is a very popular academic tool for teaching of linear and nonlinear solvers, and so IBM had been a major reseller, or ILOG formerly had been a major reseller of AMPL. That has actually changed, so as of a few months ago AMPL has set up their own distribution. As they've grown, they've decided that they wanted to also become actually a reseller of CPLEX. So in turn we have shifted the relationship and they are now a reseller of CPLEX. We no longer resell AMPL. And so, naturally, because of that, AMPL is not part of the Academic Initiative.

But for people who are into trivia out there, it should be noted that AMPL was actually never part of Academic Initiative. This has obviously been a program only for IBM software, and AMPL was a third-party product and so has actually never been part of the Academic Initiative.

I should note that as part of the latest release of CPLEX we're also including a CPLEX Connector that will ensure that the latest version of AMPL and the latest version of CPLEX will work together. So that helps solve a good number of cases that we have in terms of what I need to do. But this is about licensing now. If you send me a personal email, what I can do is I can actually get you a separate license now that will allow you to use whatever version of AMPL you have with the latest version of CPLEX. This will be something that we'll do special outside of the Academic Initiative, and it's for our legacy academic customers.

As part of the move into AI, the physical infrastructure we have to support academics has now moved there, and much of the back-end processing that we had around licensing has gone away. So I have a workaround for you. Please send me an email directly and I will get you a license, a special license key that will handle your situation.

Moderator: Thank you, Tom, and, to all the attendees on the call, we know you all have busy schedules, and we appreciate you spending the time with us today.

And this presentation has been recorded. You'll be received the URL that you can view it on demand in a follow-up email in the next 48 hours.

And this concludes our presentation for today. Thank you.