Industry Perspective Video Transcript

Hi, my name is Miguel Encarnação. In my day job, I am the Chief Innovation Officer of ACT, and while you might not know ACT as a company, you're probably familiar with one of our main products: the college entrance exam, called ACT. So that means I am in the emerging space of *learning analytics* and innovating around learning analytics, which poses known but also completely new challenges to the computer graphics and visualization community.

As we all know, one big issue in analyzing data is data access. We have the same issue: we have many legacy systems with a lot of different data and many different data sources, and to really benefit from data analysis we need to integrate those data sources in order to create a holistic picture of something we're trying to analyze.

So what type of data are we talking about? From our assessments we are collecting a lot of data about students, their performance, their progression throughout the school system and educational system, the various skills that they have, what they are aspiring for, their interests, as well as some of the more - - what you would call "soft skills" or behaviors that together would enable us to create a holistic picture of a student. Then, with that information, help them create insights around how to best improve upon their weaknesses, how to strengthen their strengths -- but then beyond that, in the transition to post-secondary education, what's the best college or track to pick? And then at the transition to the workforce or job market: What are the right careers to aspire for and, therefore, what type of college track might be required? Or alternative career track? (Not always do you have to immediately go from high school into college). We have a lot of constituents that go into post-secondary education after first pursuing a career in the workforce. And so, you have a lot of variety out there, a lot of diversity, lots and lots and lots of data that you can also then enrich with other data about people out there, their preferences, their lifestyle; and that's what we are trying to pursue.

Now, in addition to data access, we have other challenges there, as well. One is, in order to really help our constituents, which are students, learners, and their influencers or the people that are trying to help them – whether it be parents or counselors or teachers -- most of those audiences have no formal education in data analysis. So, they are not data scientists, they are not data miners and, therefore, we need to come up with new tools and techniques that allow them actually to take control of their own data and create insights in context, play with what-if scenarios, compare their data with other people's data etc., etc. So, that is a departure from traditional data analysis that was really tailored towards the subject matter expert -- the data scientist that had a formal education -- and so we really need to come up with new ways of presenting that information and then allow for people to effectively communicate with information.

And you can tell already there are technological challenges here. There are skills challenges, so that on the technology side, do we have all the right, easy-to-use, drag-and-drop, real-time data analysis and visualization tools so that general audiences can benefit from that?

Secondly, on the literacy side, how can we, by introducing those types of techniques and technologies, create a more general analytics literacy out there in the wild? Because data is becoming more and more ubiquitous, and therefore, the skills to interpret data effectively and to effectively communicate with

data becomes more and more important – almost as in the past reading and writing became important -- and now data analysis and effectively communicating with data is becoming increasingly important, no matter which career you're pursuing. And so, what are the technologies and tools we need to develop in order to support these large general audiences is another challenge for our community.

And last but not least, people are starting to increasingly measure and trying to analyze all kinds of data about their daily life, personal life. You see that a lot in fitness and in healthcare. People are wearing pedometers and other types of biometrics sensors to understand more about themselves. The same type of data could be very relevant also to learning analytics to understand the context in which people learn.

We know that kids that don't get a good breakfast don't learn as efficiently as the kids that do, and we know that some students are more anxious in school -- especially at taking assessments -- than other kids. Think about students working together in groups. The whole space of formative assessment where you don't have a large end-of-course test but you rather measure students' comprehension and progression in the skills over time throughout the day while they are in the classroom would benefit from many of the same technologies that are already used – either voluntarily out there in the market or are being introduced for healthcare purposes or for fitness purposes or other purposes. And so, just imagine combining this type of (what I would like to call just here for lack of a better term) "lifestyle data," with the formally assessed data we are providing in order to create a better understanding of how do students learn, how do learners learn, no matter how old they are, and what influences learning in order then to also inform how to create better technologies for learning in general.

So, many interesting challenges here related to data analysis and how visualization (like so often) can make analysis more consumable, more effective, especially for general audiences that often need to see what they are dealing with in order to understand.

Thank you for your attention.