

Data, Decision-Making and AI

A Roundtable Overview
European Chapter Discussion



Roundtable
on Digital Strategies

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Thought Leadership Roundtable on Digital Strategies *An executive roundtable series of the Center for Digital Strategies at the Tuck School of Business*

The Roundtable on Digital Strategies first discussed big data and its potential consequences in 2012. Since then, digital technologies have merged with the physical world to such an extent that in 2012 the World Economic Forum gave this process a name: the 4th Industrial Revolution. Big data, advanced analytics, machine learning and AI are now critical and inescapable foundations of business — which doesn't necessarily make them any easier to manage.

The European chapter of the Roundtable gathered at the Swarovski Group's headquarters in Wattens, Austria to spend a full day discussing the opportunities and challenges created by the ongoing data deluge: new business approaches and technologies; responsible use and data governance; and how all these factors combine to influence decision-making in organizations. Participants included CIOs and chief data scientists from Airbus, Hilti, the International Committee of the Red Cross, LafargeHolcim, and Swarovski, as well as representatives of consultancy Deloitte, the Fraunhofer Institute for Software and Systems Engineering, and the Center for Digital Strategies of the Tuck School of Business at Dartmouth College.

Key Insights Discussed in this Article:

- **Data needs to be managed with the same discipline and skill as physical goods.** With data-enabled products and services becoming commonplace, companies need to invest in developing and improving the same processes for data as they have for physical goods, including R&D and product management. **Pages 1-2, 4, 6-7**
- **All parties in the data chain need to benefit.** Many of the new data-based products and business models rely on data owned by multiple parties: Without economic benefits to each of them, these businesses cannot scale **Pages 3, 6-7**
- **Data governance and data regulation bring more benefit than cost.** As difficult as they are to implement, GDPR and similar requirements force structure and enable simplification – which are critical to business agility, responsiveness, and growth **Pages 1, 3-4, 9-11**
- **The digital safety conversation is shifting from “privacy” to “trust.”** The twin genies of data transparency and data sharing cannot be put back into the bottle: Companies will win and keep customers by demonstrating they can be trusted with how the use and protect personal information **Pages 6, 8-9, 11**
- **The biggest obstacle to artificial intelligence may be human emotion.** Automating physical processes and data mining through machine learning have had success, but higher-level AI is feared as a replacement by workers and not yet trusted by executives. **Pages 3, 11-13**

Data Takes Center Stage

Moderator Hans Brechbühl, the Executive Director of the Center for Digital Studies, started the discussion by asking what's changed recently for the members of the Roundtable in terms of how they are using and dealing with data.

“Companies’ awareness of data has increased dramatically,” began Tuck alumnus Markus Koch, Head of Strategic Development, Consumer & Industrial Products for Deloitte Switzerland.

Awareness in the sense of opportunities for new business models, for new customer insights, but also in terms of governance, GDPR, ethics, reputational risk. Before data was kind of “just there,” and it “enabled things.” Now there’s much more attention on the power of the data itself: Data has moved to the center of the stage in many respects.

“Data was something that everyone was quite happy to ignore until a few years ago,” acknowledged Charlotte Lindsey-Curtet, the Director of Communication and Information Management for the International Committee of the Red Cross (ICRC).

It was an enabler, but not necessarily the bit that you invested in. What we’ve now recognized is, the more organizational agility we want to build, the more important data is for our ability to respond.

The International Institute for Management Development has developed a definition for agility that includes hyperawareness about data, informed decision-making, and fast execution. This helped us understand where agility actually comes from, that it was something that we *could* control, and something that we *needed* to manage. We recognized that to achieve agility through data, we had to invest in the bit that we wanted to ignore. What we used to think of as a sort of byproduct is actually the core of what can help us do better and faster execution.

“Data has always had an enabler role, because it is a representation of what’s going on in the real world,” explained Boris Otto, Managing Director of the Fraunhofer Institute for Software and Systems Engineering.

Data was enabling processes — but there is a duality in the role of data. Data is now increasingly enabling *products*, or even product/service systems. Data has also become a product in its own right. That brings completely new requirements about how to deal with data, and it creates a major challenge in how to develop a consistent approach. Companies are struggling to get a grip on what data actually is, and how to approach managing it.

“Another challenge has been the past behavior of having siloed or isolated data,” added Dieter Schmidbaur, SVP and CIO of Airbus Defence & Space.

In the past, data belonged to specific functions, so we’ve never had accessibility into data from different organizational and process domains to create a view of end-to-end value flow and value generation. Two years ago we extracted the data from our transactional backbone systems and created a huge data lake in an Amazon Web Services cloud, with

both transactional data and customer-relevant data.

This was really an eye-opener for the power of what could be revealed: We already had this information and data in our backbone systems, but it had never been brought to the surface in an end-user consumable, analyzable, and processable manner. We're now getting leverage in operational excellence, productivity, non-conformities, production failures, and so on.

On the customer side, now we're using aircraft data in a completely different way. We have a data collection engine on every aircraft, and as soon as it lands, all that data goes into the data lake, and seconds later it's available around the globe.

"This is really important," Schmidbaur concluded. "It's a completely new dimension that we never had available before."

"These concepts are creating high expectations about what you can do with data, and what you should do," added Andreas Wagner, Head of Data Science and Data Architecture for Hilti.

Fifteen years ago, we had consolidated our SAP, and it was beautiful, and everyone was happy. But those past achievements don't count anymore. Expectation levels are much higher, and the gap between expectations and reality is widening. This gap is actually a bit dangerous: Companies are taking panic actions, even at the risk of destroying previous achievements of consolidation.

"More and more people are thinking in terms of end-to-end processes," explained Max Braun, CIO of Swarovski. "But they're also using data independently, beyond processes. The risk is that we build up new siloes. So the question is, what should be centralized, and what should be decentralized? Do we have one data lake, or several, to avoid re-building the siloes? What's the best approach for us to set up and run efficient processes?"

"Digitalization has mixed everything up again," Otto summarized.

Core data resources usually sit in SAP, but the ERP interface doesn't make it very easy or user-friendly to work with data — and we need to embark into the new world of bringing more data to more employees, so that it really can unfold its value to every single individual employee in the company.

With processes, and also with data lifecycles, many companies tend to define things in a deterministic and sequential way, and then hope that the world lives according to those steps. The time of these highly structured and deterministic processes may be over, because real-time feedback cycles enable us to improve and transform and develop our processes. We can't implement processes that last 5 or 8 or 10 years anymore. This is as true for data lifecycles as it is for business processes, and it's a fundamental change in how our systems are structured and in how end-users work with data.

"We have to combine the two different worlds," Otto finished. "We need to come up with management disciplines that apply what we learned in managing physical goods to thinking about the value chain for data."

Different Pairs of Shoes

“We have also seen a democratization of information, with a strong push to simplify it and consolidate it,” offered Thomas Bodé, Swarovski’s Director of Corporate Business Intelligence.

This is the major challenge: Agility requires simplicity. We can create data lakes, but without governance, or with different governance for each, then everyone is just re-building data siloes, but with much more information than before. The value is in bringing all of it together, including unstructured data from the outside world. This is where the complexity will rise dramatically.

Mario Tuta, Expert IT AS Business Analyst, described what happened as Swarovski’s data became democratized:

At first this led to a clash between traditional marketing and digital marketing, because suddenly we could analyze anything, and marketers started to see reports which didn’t make any sense to them. So we had a large shift there, and now the spillover effects pretty much every other area, from Finance to HR to procurement.

“Data is the new oil,” they say, but I don’t like this terminology. I say, “Data is the new soil,” because it has two aspects. The first is the potential for cost savings. But in the business units it creates a shift for new business opportunities or new products, as people open their minds to completely different approaches. . Companies can use this raw material of data to offer added value to their customers and strengthen their relationships.

“It depends on the culture of the company whether you have some burning question to answer, or whether you are using the data to find trends,” suggested Khushnud Irani, SVP & CIO of LafargeHolcim. “How do you choose? And if you add in machine learning, the business has to be ready to acknowledge the power and value of that. The technology exists, but sometimes I have the feeling that we don’t really know what questions we are trying to answer.”

“Isn’t the question what balance you need between those two?” Brechbühl asked.

My sense is that you have to enable both, or you’re either going to forego good efficiencies and immediate learnings in solving business problems, or you’re going to forego realizations you may never have seen before about where things might go in the future. With data lakes and breaking down siloes and breaking down industry boundaries, one of the possibilities is to open up “voyages of discovery.” But you can only afford so many of them — your whole business can’t go on a voyage of discovery.

“I agree,” Irani responded, “But I believe focus on the really tough questions that the business needs to get answered will create more value. Sometimes we get lost in trends, and on what kinds of things might happen in the future. That’s needed, but sometimes it gets in the way of asking the right questions.”

“The classical driver has been data for operational purposes,” observed Omer Trajman, Executive Fellow of the Center for Digital Strategies and the former CEO of Rocana. “But if you start to think of data as a product, then you need to allocate investment to data R&D. You have

product R&D for traditional products; if data is a product, then data discovery comes out of the data R&D investment.”

“Engineering-driven companies have huge buildings for R&D, but where are our data R&D teams sitting?” Otto asked, and then answered his own question: “Oh, that’s right, we don’t have them at all! These really should be in place, and then you would be able to think about what questions you want answered, what data you need to do so, and how much of that data is within your own company. More than you would probably believe, but not all!”

“You are completely right,” Schmidbaur declared. “We have to differentiate between R&D of digital services and data services from other things we are doing internally, because they are completely different pairs of shoes.”

Our competition is growing, and if we don’t disrupt our own 30-year-old platform business with additional offerings, they might have a realistic chance at taking a substantial part of it. Two years ago we understood the need to start to leverage the goldmine of information that we have available from data, and that started our digital transformation.

We have created two streams. One is called New Business Models, and it’s dedicated to data as a new product. The second stream, with its own distinct governance, is dedicated to operational excellence. New Business Models is designed to identify new digital offerings — products and services — that are on top of, in addition to, and complementary to our classical platform business. It has its own data governance, an idea generation phase, a PUC phase, and a decision-making phase.

“How do you transition from one model to the other?” Bodé asked. “Just the name ‘New’ means that it’s a top priority. So it has to become part of the core organization.”

“Sooner or later something becomes a regular product,” Schmidbaur answered.

But in the early stages, we ask if we are able to use the same foundation for both worlds. We can’t have too many foundation elements, but it would be completely illusory to force all the variety of our business into a centralized approach. Developing digital and data products onto the foundation platforms needs to be done in a distributed manner, under strong overarching governance. There’s just too much different domain knowledge between a cyberbusiness and satellite imagery, for example.

Other members of the Roundtable described their own use cases. For Swarovski, Tuta offered,

Our first pillar is predictive quality assurance and predictive maintenance. We have machines from the ‘70s and ‘80s all the way up to new robots, so the variety of data is huge. The cost savings could be enormous.

Our second pillar is image recognition, both for quality assurance and for repairs on the consumer-facing side. Social media is the third pillar, because if you start digging into the voice of the customer over different channels, you realize how much variety there is. It reveals trends in the market that we were not aware of.

All these data tell their own stories that we have to learn from. In many cases we start with a single question, but during the process the data tells us, “Please dig into this.”

From Image to Insight

“So with the realization that you can combine internal data with external data, what new data-driven products and services are you bringing to the table?” Brechbühl asked.

“We’ve been able to solve very tough logistics problems for some of our major customers,” responded Hock Chye Ong, Customer Excellence Project Manager at LafargeHolcim.

Everything our distributors order from us goes straight into our ERP, so we have 100 percent clarity on what they are selling. Combined with a little bit of marketing intelligence, we can actually see how much more potential we have to work with the same customers, and that’s powerful market information.

“We can even push alerts to our hundreds of thousands of retailers,” Ong’s colleague Irani continued. “If we are aware that certain projects are going on, we can tell them to go out and sell our cement. This is really picking up in emerging markets, but it takes a lot of change management and training.”

“A huge number of hours are spent by employees at a worksite looking for lost equipment,” added Faizal Ariffin, Head of Future Reporting for Hilti, “And 65 percent of our customers struggle with managing maintenance dates and calibration certificates.”

On average six tools go missing per month from a worksite, at a cost of €7,000. So we implemented solutions to track every asset on a customer’s site. The value to the customer is knowing where the product is and who has it. Geofencing means that if a product goes outside the site, we trigger an alert. Customers can find out the status of the equipment they’re using, if it’s being maintained, and what help might be needed. This allows us to collect information on the utilization of our products within the customer’s worksite.

“No Hilti tool leaves Hilti anymore without an NFC tag,” Ariffin’s colleague Wagner continued. “Our app connects the tools, and how they’ve been used, which helps with predictive maintenance. Asset management is a major pain point for any customer: They’ve usually completely lost track of their tools inventory. When we help them with that, too, it’s a massive breakthrough for the industry.”

“We’re looking at how we can use external datasets to solve some very difficult problems and influence internal change,” Lindsey-Curtet volunteered.

For example, there are more than one million people believed missing due to the conflicts in Iraq. We have set ourselves the challenge of using algorithmic-based reading of publicly-available data to resolve three of these cases in the next year, because if we can resolve three cases, we can scale it. We’re using data mining, data fusion, and image

analytics, on which we've built algorithmic facial recognition. If we succeed, that will help build the case for internal change around reorganizing processes and datasets.

"Image processing, image recognition, and image analytics are foundation elements for future businesses that we have in mind," Schmidbaur echoed.

We've been doing satellite image processing for many years, for both public and commercial private customers — for example, many Google Earth pictures are from Airbus. In the very near future we will also have a fleet of high-altitude surveillance drones in selected areas, and they will generate a ton of information and pictures.

These will create new offerings for our traditional customers, and also address new markets for us. For example, we'll be able to show the farming industry how crops are growing, and where there are water problems. We will address the railway industry, by observation of railway track. We will address the oil and gas industry and the atomic power industry through observation of critical infrastructure.

We are offering an open-API construction for third parties to put additional analytics and applications on our platform. The beauty is that as our platform will grow to 900 satellites in the next two years, we will have a unique global ecosystem.

"Who owns the data?" Otto asked. "You are producing the flying objects, but you are not operating them."

"Some we operate," Schmidbaur answered, "and some we are negotiating with our customers for co-ownership. The image ownership is with the customer, but co-ownership enables us to use the data for our purposes. But if we use the data for our own purposes without benefitting the owner, it will never fly. It will only fly if the co-owner of the data benefits the more we scale the service up to others and the broader the usage of the information."

"Are you selling raw information, or the insights, so that your customers don't have to do their own analysis?" Koch asked.

"We are not interested in selling the raw data, because in the long-term raw data is not a differentiator, and then the value-add is not on our side," the Airbus CIO replied. "We analyze the pictures and sell insights out of that analysis."

Even the Moon Has a Dark Side

Airbus uses data from images owned by others to support ethical sourcing and sustainable agriculture, but Lindsey-Curtet of the Red Cross described the dark side of "shared" data:

It's a game-changer for what we term "digital repression," which is the use of your data to create a political or security problem for you. People have given up an enormous amount of privacy for convenience, but they do that because they're living in highly-secure environments. If you *don't* live in a highly secure environment, what you have given away becomes a major risk factor in your own security.

Even failed states have major telecommunications capacities: It's the one thing that doesn't stop working. So we are seeing more people detained in conflicts because of their digital presence. Who follows you, which you may have no choice over, can become a security risk. We have to inform populations about how to be careful of their own digital hygiene.

"Does the Red Cross have initiatives to protect the citizens in these areas, or to mess up the data in such a way that regimes cannot track individuals anymore?" Otto asked.

"Part of our digital transformation is around how we can help in that regard," she acknowledged.

But it's more about the secure platform we will provide to enable people to self-define when they see a protection challenge, rather than some moment that we define. Our value proposition is to be the trusted manager of data on individuals in highly insecure environments. That's actually *contrary* to what everyone else is doing, which is opening up the interoperability of data. Somebody is going to have to play that role, and we have a global mandate to do so under international law.

Digital risk does not apply only to individuals, Lindsey-Curtet continued: "Some countries have almost total digital models. For example, country X hosts its data in Luxembourg, and that enables country X to continue to function in case of a crisis. Does that put Luxembourg at risk of attack? In the past, you had to have carried out a physical act to be considered as a party to conflict; now the association can be virtual."

"Estonia is a good example," Koch observed. "Every health practitioner there can access all health records: They're completely open. As a patient, you can also access the list of who has looked at your record, and you can file a lawsuit against a practitioner who didn't have a purpose. So sometimes data privacy is not the right way to constrain things: Sometimes it's important to be even *more* transparent."

"It definitely comes back to how transparent vendors and providers are about what they do," Lindsey-Curtet agreed.

The winner of the game will be whoever is the most trusted, and that will shift based on how the public domain focuses on privacy versus convenience. Are we forcing companies to make the right choices, or does it just fit the way they want to function? It's been convenient for people to not understand this trade-off, but what's happening in the public domain is pushing people to think about what happens on an individual level.

"In the US, those are two very separate topics and distinct conversations," observed Stephanie Yera, an MBA Fellow of the Center for Digital Strategies.

In similar conversations there, the flow starts with products and services and quickly moves to customer engagements and digital experiences as part of the customer journey, and then it gets into how we can reduce friction and increase conversion rates. Here, the conversation moved quickly to customer rights and privacy and the responsibilities of companies to communicate to customers what information the customer is giving up, and

what the retailer is going to do with that data.

“The awareness for privacy in Europe is extremely high, especially in the German-speaking countries,” Swarovski’s Braun explained. “We have to provide trust to consumers, *beyond* GDPR and regulation and so on. To fail at that would really be a mess.”

“But the awareness of the user experience should come first,” Otto countered. “Of course we need to have a very high awareness for data privacy — but if you don’t have a good user experience, you won’t buy from that vendor.”

“If you understand what drives trust in your organization, then you also understand what you need to leverage to maintain that trust,” Lindsey-Curtet proposed.

If you look at what drives our physical proximity-based trust, it is that we open ourselves up to vulnerability. In digital, trust comes from *not* being vulnerable. So it comes back to, how transparent are you about how vulnerable you are? What are the layers you’ve put in place to make sure you, and your clients, are not digitally vulnerable? This trust notion is going to increasingly dominate.”

“It also depends on the type of audience you’re talking with,” Irani pointed out.

We generalize about social media and individual consumers, but in a B2B environment, trust also depends on the kind of company you are. For example, in Mexico we want to get the details of all the sales by our dealers and retailers. The invoice is probably just a piece of paper. And they want to know if we’re giving the information to different authorities, and that we’re not an audit body or something. When you talk about B2B, the trust really depends on the brand itself.

“We really should shift the discussion from privacy, security, and all those negatively-associated terms towards positive terms like trust and sovereignty,” Otto observed. “Democratize the information and make it as transparent as possible, and by doing so ensure trust. This really is a paradigm shift.”

The Nature of the Beast

“Are there then opportunities in GDPR?” Brechbühl asked. “Or are there only constraints?”

“It’s a huge opportunity,” Schmidbaur declared.

GDPR gives crystal-clear boundary conditions, and it forces us to bring things into order which we have not ordered properly. It forces us to start documenting which kinds of data we are using for which purpose, which we have never done before.

GDPR will force us to think about how to track and cluster information, and at the end of the day, how we are going to *use* information — which is a prerequisite for proper data governance. I see it absolutely as an opportunity, and not as a constraint and a burden. It forces things to the surface that have been under the carpet.

“There are two sides to the coin,” Tuta agreed.

It’s a relief because now you have a standardized legal framework for the whole European Union. But where do you start? I called Legal and asked, “What do I do when a customer calls and says, ‘Delete all my data.’ They told me, “Then you delete all the data.” I asked, “What are you talking about? Do you even know where the data is stored? What should I delete?” It’s just ridiculous.

So we started with the core systems, and we’re working outwards. It’s still a massive beast, but it’s also an opportunity to consolidate, because in the future you won’t buy an application if you don’t know where things are stored or which APIs are connected to it.

“It sounds a bit like people in the US with Sarbanes-Oxley,” Brechbühl suggested. “On the one hand, it *was* a pain, but on the other hand they said, ‘Here are some things I’ve been wanting to do for a while; now I can use this to make them happen.’”

“It’s extremely powerful, because you will really have proper system governance and proper data governance, because you need to have your data glossary,” Bodé continued. “You need to have all your data items listed and your data flows documented, and how you collect the information and why. And for that you have full transparency. This is a huge enabler of simplicity, which then allows you to scale up.”

“GDPR is a good thing,” Otto agreed, “But I see lots of challenges for large corporates with application landscapes they cannot oversee. When they have 2,000 applications, how can they ever be in a position to make sure that they can comply with GDPR? And everybody is waiting until the very end of the deadline.”

“The common belief is that if they can demonstrate on May 28th that they’re doing *something*, that will be good enough,” Koch explained.

I have a provocative view on GDPR as well. There are all kinds of economic wars happening in the world: for natural resources, currency, IP-stealing. There has been an increasing discomfort in the EU against the dominance of US firms such as Google and Facebook about data, and they’re not paying taxes. I wouldn’t be surprised if the regulators had something like that in the back of their minds.

“Because data flows do not stop at borders, you have to think about where you can get the money!” Otto laughed. “And we all wonder which company will be first to pay the penalty,” Tuta added. “*Then* corporate GDPR activity will explode.”

“How do you reconcile the need that we discussed earlier for people to have a democratization of data to make better and faster decisions with the need for stronger protection?” Brechbühl asked.

“One aspect is to work out the information topology,” Lindsey-Curtet responded.

Over 70 percent of our data is sensitive, because it’s on individuals in war zones. We have to be very careful how we handle that, compared to some internal information that

might create a reputation issue for the organization, but won't affect our "clients" much.

That fact affects the decisions we make about where we host it, whether we can use the cloud or not, where the datacenter and backup datacenter are, whether our privileges and immunities are respected, and the sort of technical, legal and operational requirements that we have to have in order to be able to store data, or use any systems.

So we've become one of the founding members of the digital trust center at the Ecole Polytechnique Federale de Lausanne, with a view to working out how we can leverage their research and technical capacities around cryptology, blockchain, and encryption.

"That's interesting, because at present there's a black-or-white approach to data governance," Otto mused. "Either you have it under full governance, or you have no governance at all. There *should* be a continuum of your level of control depending on the nature of the data."

"As you can imagine, this subject is not new for the defense business," Schmidbaur indicated.

In the past, a server or some other device was brought under a certain physical, infrastructure-regulated environment. But this is not applicable anymore, because now we are talking about data and documents instead of infrastructure. In the digital age things like tagging and encryption come much more into play, as we start to separate the information from the infrastructure that is hosting it. This is a *huge* step: At the document level, it's actually rather simple, but not a single backbone system in the world is prepared for it, not by far.

"This Creates Wonders"

Ong from LafargeHolcim raised a question about how emerging technologies can help with data and decision-making:

One of our commercial managers told me, "I cannot wait for everyone to give me their data and insights to take a decision. Each decision would take me a week!" We need to enable faster, more agile decisions, and current processes don't really help. I'm wondering if AI could help make some of these decisions.

"It's great that the decisions are becoming data-driven on a foundation that's really fact-based," Wagner argued. "They're good recommendations, and no human interfered. And part of recent developments is that you're actually able to explain predictions. From a regulations perspective, you need to be able to explain your algorithms and your black-box models. And the black-box models are usually more powerful."

Brechbühl offered a structure for discussing AI: "A professor at Babson College named Tom Davenport argued in the Harvard Business Review that there are three business capabilities that AI supports:"

One is process automation of digital and physical tasks using robotic process automation. Examples are transferring data from email or call centers to update systems of record, or

replacing a lost credit card.

A second category he called “cognitive insight:” algorithms designed to detect patterns in vast volumes of data, and then interpret their meaning. For example, identifying credit card fraud in real-time, or analyzing warranty data for insights about safety or quality.

The third category he called “cognitive engagement:” employees or customers engage with natural-language chat-bots — intelligent agents that can increase personalization and engagement.

“I use the same categories, but I call them “Act, Think and Connect,” Koch said. “An interesting thing about AI is that once it’s here, it’s often no longer recognized as AI. Years ago optical character recognition would have been called ‘AI.’ Today it’s just there.”

“These are the right categories, and we have cases in all three,” Schmidbaur added. “The first is the easiest and the most promising, and we’re doing things in accounting, procurement and IT.”

I’ve already talked about AI in the second category, with image recognition and processing. AI plays a major role there already, because the algorithms are very efficient and effective. In category three we’ve had several attempts, and they’ve failed absolutely. We have to be able to leverage them to an acceptable level of effectiveness, efficiency, and cost.

“We’ve also done pilots in the second category with IBM Watson, and some of them were quite successful,” Irani commented. “We even won some awards.”

However, replicating this is a huge challenge. We talk about robotics and analytics, and the insights we’ll get and the efficiencies we’ll realize, and the automation that will probably work better on its own. But the people you have to go to with automation are not necessarily the most cooperative: These elements will have an impact on their roles. The whole organization has to fully support this kind of change, the culture behind it has to embrace the change.

“It’s far more of a strategic position than simply saying, ‘We’re going to apply this kind of analytic,’” Irani finished.

Otto dug into the details of the problem:

One point is that you can make better-informed decisions, and the reluctance to that is pretty low. But what might be more critical is that autonomous systems make decisions on their own, and their proliferation takes decisions away from humans. So trust needs to be achieved in these decisions, since they’re no longer being made by human beings. The difference with previous cycles of automation is that in the past we automated stupid functions with clear tasks that had to be performed. But now the systems come up with recommendations to act on, and no one really knows how the system come up with the recommendation. People on all levels, blue-collar and white-collar, need to get used to collaborating with and relying on those decision-making processes. It will be quite a hassle for many jobs.

“I *still* hold the strong conviction that we face a massive potential goldmine,” Schmidbaur asserted. “We have not yet even understood what we can do with the data we have at hand, even if we have already started something quite substantial. This is the case for many, many functions that I am supporting: They have no clue what they should do with the data. We need to start to focus our energy on fostering this goldmine.”

“We’re at the beginning of that journey,” Swarovski’s Tuta said,

With isolated teams of data scientists located in the business units for the domain expertise. But they are frustrated, because they have only the specific view of one business unit. They want a broader view of data science across the company. This a challenge at the beginning, but I like the concept of a Center of Excellence that is somehow virtualized. I don’t think a fully-centralized approach would be possible for us.

“The cultural change required to make that happen is imposing,” Wagner pointed out. “Data is power within an organization, so people often don’t like to share their data. But to become a data-enabled company, this cultural change of data-sharing has to happen.”

“And comprehensive organizational and cultural change is not possible within a reasonable time,” Koch observed.

It will change over time, as new generations of workers come in, but we cannot force it to happen faster. And that’s not fast enough in the digital world. We don’t have time to wait for it. Data science competencies have to be bolted onto existing businesses, and they have to have enough critical mass not to be destroyed by the traditional businesses. It’s not promising to *aim* to have organizational and cultural change, but only to protect those data science competencies enough that they can prosper. Then over time new businesses will grow big enough out of these competencies to replace part of the existing business.

“Pure data science gets better when you add domain understanding to it,” Wagner agreed. “It’s absolutely crucial: A data scientist just looking at data, with no clue about the domain, has no chance to generate value.”

“When data scientists just live in their little data science bubbles, they go crazy,” Trajman confirmed. “The data scientist has to be considered a member of the product team, a member of the process. Everyone eventually gets to a collaboration around embedded data science expertise. I can tell you from working with hundreds of companies, this is the only approach that succeeds.”

Irani from LafargeHolcim summed up the risk and opportunity of data science: “You have data scientists, and you have domain experts, and unless there is a very, very strong collaboration, it doesn’t function,” he warned. “One needs to have the patience to spend time with the data scientist to make the person understand what the business is all about, what the data is all about. The domain expert has the business know-how, and the data scientist looks at it from a completely different perspective.”

“When they work closely together,” Irani finished, “This creates wonders.”

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Data, Decision-Making and AI
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