

Shaping the Future Of Industry with Data And Analytics

**2019 DATA SUMMIT
EXTRACTS**

INTRODUCTION

Like oil, data holds the promise of creating wealth if it is extracted, refined and safely distributed. Yet data has its own intrinsic specificities that require our practices, knowledge and approaches to evolve. Notably, unlike oil, it can be reused repeatedly, meaning that its value depends on its present and future usages. At Air Liquide, we believe that data is a positive new force for industry to be put to work in ecosystems to maximise the value it can create.

The 2019 Data Summit was a unique opportunity to gather business leaders and technology experts from across industry with the goal of sharing experiences and exchanging ideas. The lineup of invited speakers came from different countries and backgrounds, small start-ups and big companies, including data scientists, salespeople, operations managers and HR executives.

“DATA IS A GROWTH ENGINE FOR BOTH OUR OPERATIONS AND OUR CUSTOMER KNOWLEDGE.”

The open discussion focused on a wide range of topics: how to ease access to data in order to boost production and sales, mastering AI in operations and customer service, addressing new privacy issues in R&D as well as HR.

No matter where you work, the right data strategy is essential to improving management of assets, keeping them running longer, functioning better and making them more environmentally friendly. Ultimately, data is crucial for companies to put both their customers and employees at the center of their decisions, while facilitating stronger links with public and private sector partners.

Like other industrial leaders, Air Liquide has experienced great changes thanks to digital transformation. Yet even more can be done on the path to data-driven business. We hope the Summit inspires the community to engage further in this exciting journey.

Organisers of Air Liquide Data Summit



**ATHANASIOS
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**Computational & Data
Science Scientific
Director, R&D**



BRUNO AIDAN

**Group Chief Data
Officer & Head of
La Factory**



EDITH LEMIEUX

**Head of Air Liquide
University & HR
Transformation Projects**



FRANÇOIS DARCHIS

**MEMBER OF AIR LIQUIDE EXECUTIVE COMMITTEE,
SENIOR VP, SUPERVISING INNOVATION & DEVELOPMENT**

“We have discovered, some years ago, that we’re really a data-generating company, and need to leverage it for our customers and patients in the fields of our operational excellence and new offers. In the frame of our Open Innovation strategy, we develop our connection to the relevant ecosystems. So, it’s about learning from others: from the start-ups, the ‘data natives,’ but also from all those who are trying to give value to data, including our customers, suppliers and partners.”

ARMELLE LEVIEUX

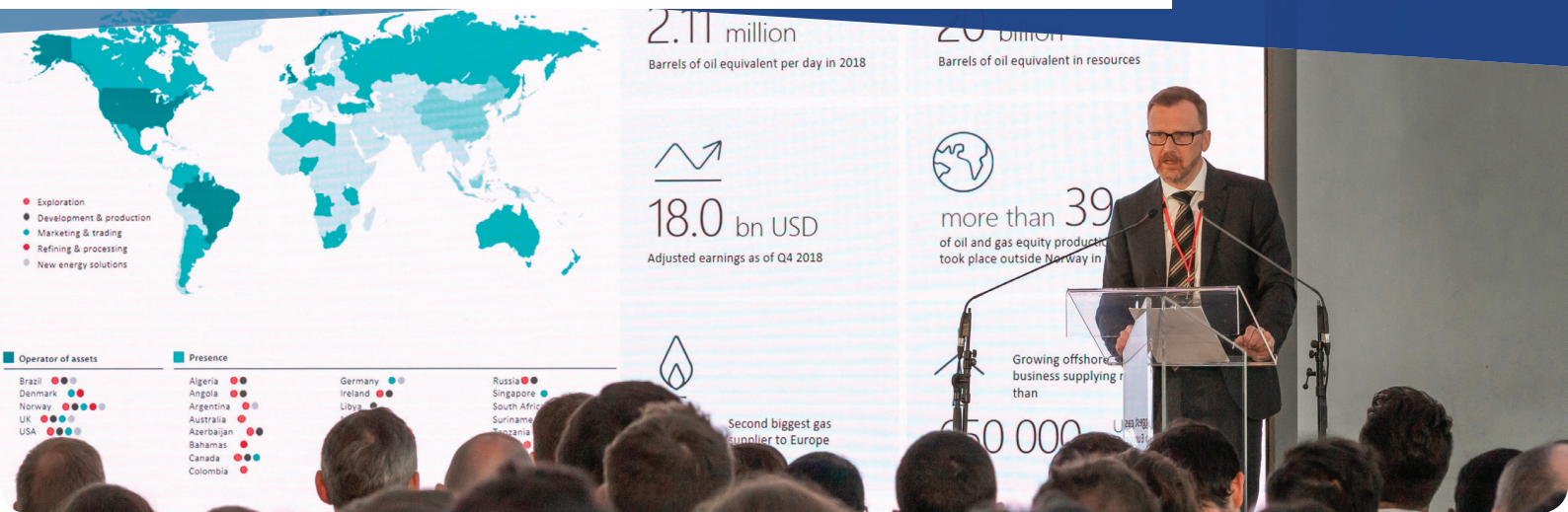
**MEMBER OF AIR LIQUIDE EXECUTIVE COMMITTEE,
VICE PRESIDENT, HR**



“I strongly believe that HR, like any other function, must leverage data to support the business and make better decisions. Data is an integral part of our HR strategy, we have several HR data projects underway that are promising. One of my key objectives and for the HR teams in 2019, is to improve our data quality.”

DATA & ASSETS

“DATA IS AN ESSENTIAL CURRENCY TO COMPETE WELL IN THE FUTURE, AS IS THE UTILIZATION OF NEW TECHNOLOGIES.” Bernt Tysseland



Data is not only a tool to leverage assets, but has become a vital strategic asset itself. In an age where information is king, the word “asset” now reaches beyond just factories, trucks or products, to include all data generated and managed by a company.

No matter the sector, leveraging data is a resource that allows for smoother operations, more sustainability, safer practices and better customer relations. Of course, these new opportunities also come with challenges that touch both the technical and human spheres. With transparency, communication and a focus on quality every step of the way, large and small companies can turn the complex transition to industry 4.0 into a major opportunity. Companies can turn the complex transition to industry 4.0 into a major opportunity.

Bernt Tysseland

Equinor Vice President - Operations and Head of the Integrated Operations Centre

Leading the new Integrated Operations Centre (IOC) for the second-largest gas supplier in Europe, Bernt Tysseland said the company is committed to digitalization. He explained that the industrial use of the Internet of Things, and therefore the IOC, is vital in delivering on Equinor’s key strategic message: “*always safe, high value, low carbon.*” The IOC and its multidisciplinary team has helped prevent shutdowns, ensure risk-free production, increase maximum production potential and minimize their carbon footprint.



“WHAT IS NEW TODAY IS THAT WE REALLY ARE EXPERIENCING SOME OF THE MOST FAST-PACED TECHNOLOGY DEVELOPMENT IN HISTORY.”

Bernt Tysseland noted that the company has been simulating big datasets from their reservoirs since the 1970s to extract resources from some of the world’s most challenging environments. But now the significant increase in connected devices, including industrial equipment, along with cloud technology, allows them to manage large data volumes in much smarter ways. Meanwhile advances in AI “*allow us to get insight from all of the data we have.*”



Alessandro Giassi

Saint-Gobain Research Paris, Head of Datalab

Created in 2015, the Datalab was a way to leverage digitalization across the company, a leader in the design and production of materials and solutions for construction, transportation, health and other sectors. Alessandro Giassi stressed connectivity as the first obstacle, meaning the ability to connect data from all their different plants in order to build a dataset that describes the story of the product during production – no easy feat with factories all over the world that look very different from one another.

“WHEN WE USE MACHINE LEARNING ON CUSTOMER DATA, LIKE TRANSACTIONS, THE GAINS ARE SPECTACULAR AND VERY QUICK. BUT WHEN WE APPLY DATA TO THE INDUSTRY SIDE, THE MUSIC CHANGES.”

Alessandro Giassi explained that data in industrial use requires more special care than data extracted from customers. *“For example, to construct a predictive model for machine learning, the data needs to be transformed from time series to events.”* He compared the model of machine learning to a living object: *“In order for these living objects to stay alive and be effective they need to be fed by data and be regularly controlled by people who know how it works.”*

Frédéric Despréaux

Air Liquide VP of Large Industries WBL

In a branch that includes 400 plant assets with 1 billion industrial data points collected every day, Frédéric Despréaux sees a triple objective in leveraging such information: *“To better serve our customers, to reach the next level of Operations Excellence (such as looking at recurring manual tasks and automating them), and ensuring that what’s being put in place is sustainable.”*



“RELIABILITY IS THE HIGHEST PRIORITY FOR STAKEHOLDERS. THEY WANT EASY ACCESS TO DATA AND INFORMATION THAT WILL IMPACT THEIR DECISION MAKING.”

He also touched on how sharing data could change relationships with clients and form new partnerships. *“The goal is to open up and look at external data from suppliers and customers and push and develop new offers.”* As for the opportunities within any company, he introduced the revolutionary notion of a data quotient, or a DQ, as a job skill set. *“The data you generate is useful for someone else and how you make it accessible is very important. We need to think about that when recruiting. This shift in our company will change the jobs of over 4,000 people.”*

DATA & CUSTOMERS

“LET DATA TALK” Michèle Schwalbe



Some companies talk about being “data-driven,” others aim to be “customer-centric.” Even more valuable is figuring out how to use data to better serve customers. By amassing and analyzing a wide range of customer interactions, data can tell you what customers need and when without having to wait for them to say it. Providing new tools, interacting in data-driven ecosystems and equipping salespeople with the right information in human-to-human interactions can help build better customer service, while using the additionally generated data to further improve the client’s experience in whole new ways. The individual examples abound, but the real opportunity is to use data to devise the right (digital) products at a company-wide scale.



Virginie Reynaud

Air Liquide, Europe Digital Transformation Officer

Through constant interaction on different communication channels, Virginie Reynaud says data is at the heart of Air Liquide’s customer care. To some degree that has long been the case: *“We check the weather forecast because we know if it gets colder our refineries customers will consume more nitrogen. What’s changing now is we have a lot more data available. The opportunities for optimization and value creation are multiplied.”*

“WE LISTEN TO WHAT CUSTOMERS SAY BUT ALSO WHAT THEY DON’T SAY.”

Among the toughest challenges are convergence and integration, as well as allowing customers to have a transparent view of the data. *“We strive for simplicity, because that is what leads to efficiency,”* she said. *“Data is what enables us to become a customer-centric company. It is an enabler to improve customer experience. We want customers to have the choice to order online one day or to call by phone another day. We know some customers will prefer the human interaction.”*

Romain Melet

Air France, Artificial Intelligence Program Manager

Data is being constantly gathered on passengers, cargo and aircraft maintenance, with the goal of optimizing processes and creating AI solutions to improve the capacity of all of Air France's business lines. External customer data, for example, is being used to try to predict flight delays and provide better flight plans.



"THE MAIN ISSUE WE HAVE IS HOW WE GO FROM DIGITAL EXPERIMENTATION TO AI ON A BIG SCALE."

Chatbots are now used regularly in customer relations – for questions about luggage, flight bookings and arrival times. *"Over 50% of answers are now given by robots, but customer satisfaction is also increasing,"* says Romain Melet. Applying Natural Language Processing (NLP), the company is able to better understand what customers need and respond accordingly. *"Of course we need to improve performance and customer satisfaction,"* Romain Melet says. *"But the real challenge is how to build this at a company-wide scale."*



Michèle Schwalbe

BASF, Digital Project Coordinator, Data-to-Value

The world's largest chemical company is mostly B2B, but B2C is a growing portion of their work. *"Our vision of digitalization is to create an exciting customer experience, and data is needed for every digitalization project. A customer recently said, 'I want you to solve my problems before I am even aware of them.'"*

"WE ESTABLISHED A DATA STEWARD COMMUNITY IN BASF, RESPONSIBLE FOR OUR DATA INVENTORY AND DATA QUALITY. BUT THERE ARE NO DATA OWNERS ANYMORE – THE DATA BELONGS TO THE COMPANY."

Michèle Schwalbe outlines BASF's four pillars of data-to-value: Infrastructure, Data Stewardship, Data Monetization, Data Sharing Culture. Beyond generating efficiencies and growing existing business, data creates an array of new opportunities. But one of the biggest challenges is changing the culture. *"What to do? is relatively easy to answer,"* says Michèle Schwalbe. *"Everyone in the room agrees data is the new oil. But the key question is how do we do it. How to really engage our employees with the tools we provide. So it's all about data sharing."*

DATA & ECOSYSTEMS

“THE NEXT FRONTIER OF OPEN INNOVATION IS THE CAPACITY OF COMPANIES TO ORCHESTRATE ECOSYSTEMS.” Olivier Delabroy



Data is inescapable, in both the internal workings of a company and across its external business, client and legal relationships. Maximizing its value often requires us to understand how it all fits together – and how to best work together. While operations and decision-making differ between large companies and start-ups, both should see how data can drive their own business strategies and seek partners with similar goals and complementary expertises.

Olivier Delabroy

Air Liquide, VP Digital Transformation

Agile and robust ecosystems accelerate the transformation by bringing together new value and unique capabilities. The next frontier of open innovation is the capacity of companies to orchestrate ecosystems, of start-ups, customers, suppliers, freelancers and developers to create more value together.





Caroline Goulard

Dataveyes, Co-founder and CEO

Working with big companies to translate their data into innovative user experiences, Goulard expresses the need of her clients to contextualize their business needs with a global picture. For start-ups, a bigger challenge than budget is finding the time. *"We can't come to you with a tailored solution to your problems if you don't take the time to explain your needs to us."*

"PEOPLE ARE NOT DATA SCIENTISTS, THEY ARE NOT EXPERTS, SO IT'S VERY INTERESTING TO EXPLAIN TO THEM WHAT WE'RE DOING WITH THEIR DATA."

She is also attentive to questions of data privacy, even if it's not always easy to define. *"People have different definitions of what privacy means to them, but the interesting part of this new GDPR regulation is that it makes companies extract very clear agreements from the users, and that's difficult because you have to be sure the user understands everything."*

Héloïse Nonne

SNCF, Head of Data Science

Better knowledge of mobility provides better transportation services, which can come from users of the SNCF app and the trains themselves, but also through interactions with different entities.



"IN EVERY PROJECT WE START, WE MAKE SURE THE STAKEHOLDERS THINK OF THE FINAL USER, AND WE DON'T START A PROJECT WITHOUT THINKING ABOUT THE END USER."

Héloïse Nonne's team works with external partners and platforms to see what their data needs and problems are, and how to leverage the data. *"We've worked with start-ups with success on prototypes. Yet I get so many emails from start-ups rushing to offer me new platforms, but big corporations can't have a million platforms."*

Yann Lechelle
SNIPS COO



With a focus on privacy by design, Yann Lechelle is building a voice assistant solution that works on a device, not on the cloud. *"We secured access to the acoustic data so that we could be independent. Then we built an easy to use solution, focusing initially on the niche makers community. We then professionalized the solution to address industrial clients."*

"STARTUPS HAVE THE AGILITY THAT LARGER GROUPS LACK, AS THEY NEED TO STABILIZE AND PRESERVE THEIR CORE MARKET SHARE. THIS IS PRECISELY WHY LARGE COMPANIES NEED TO LEVERAGE THE WORK OF STARTUPS TO GAIN AGILITY WHILE REMAINING STABLE AT THE SAME TIME."

Speech recognition is a big data problem, Yann Lechelle explained. *"Data from a lot of speakers who speak many languages is required to build reliable acoustic models. This data is available but costly, and the deep learning that goes with it both hungry in terms of computing resources and AI expertise. Snips has managed to crush this barrier to entry with a little more than 100 man/years of R&D, at a cost of nearly 15 million euros. Only a handful of companies in the world have achieved the level of performance that the market now demands, and most of these companies are headquartered in Silicon Valley. Snips is one of the rare players to have built a proprietary stack to achieve proper Voice Assistant and Speech Recognition Technology."*



Sylvie Bothorel
Air Liquide Healthcare WBL, Technology VP

In creating highly-advanced medical solutions, she notes: *"Data is flowing everywhere in the system, and it means you need several companies working together."*

"BEING ABLE TO EXPLAIN TO PATIENTS THAT AI IS JUST ANOTHER TOOL IS IMPORTANT."

In the medical field, there are extra privacy considerations beyond GDPR. *"And the rules are local – in Europe the data belongs to the patient, but that's not the case in the U.S. and China."* But Sylvie Bothorel says she's starting to see a shift in mindset. *"People get freaked out, and we need to show them the human aspect is still there."*

AI AND ITS POTENTIAL FOR INDUSTRY

“THE KEY TO AI APPLICATIONS USING MACHINE LEARNING IS GOOD, QUALITY DATA.” Bertrand Braunschweig

AI technology is already being used in many cases, and can be used by almost any company. It will continue to find its way into every human activity – including manufacturing. AI has many facets, but the key to AI applications using machine learning is good, quality data.

Olivier Letessier

Air Liquide, R&D Group, Vice President

“If I had mentioned the term ‘artificial intelligence’ in an executive boardroom 10 or 15 years ago, there’s a good chance I would have been laughed at. Now, we all recognize the potential of AI. At Air Liquide, we have data scientists, machine learning engineers, optimization experts and data engineers dedicated to building the foundations of AI. Many of the AI scientists are working in our new Innovation Campuses around the world, and are strongly connected to our business objectives,” says Olivier Letessier.



“AI IS AN APPLICATION AREA WITH TREMENDOUS UNTAPPED POTENTIAL. AND JUST AS WITH R&D, IT IS OUR ROLE TO ANTICIPATE AND PREPARE FOR HOW AI CAN DISRUPT INDUSTRY.”

Bertrand Braunschweig

AI Director at INRIA and Coordinator of the Research component of France’s AI Plan



The big change was AI’s application for the web in the 2000s, so it’s no surprise that big web players are now the big AI players. Deep learning has now taken the lead as the most popular technology for developing AI.

Machine learning is limited in two important aspects: they can process but they cannot understand, and they can learn correlation but not causality. AI also learns from millions of examples, but cannot learn from just a few examples, as humans do. It can propose decisions from data but it can’t explain the decisions it proposes. So your bank’s chatbot can deny you a loan, but it can’t tell you why the loan was denied.

“RIGHT NOW AI IS WEAK, DEDICATED TO A SPECIFIC USAGE, SUCH AS ASKING ALEXA TO TURN ON THE LIGHTS, BUT BUILDING A STRONG, GENERAL AI IS MUCH HARDER AND WILL NOT BE HAPPENING ANYTIME SOON.”

AI PRESENTS THE FOLLOWING CHALLENGES TO SOCIETY:

- TRUSTWORTHINESS
- THE DELEGATION OF DECISIONS TO MACHINES
- THE FUTURE OF WORK AND ECONOMIC IMPACTS
- INEQUALITY AND BIASES
- CYBERSECURITY AND PRIVACY
- DATA GOVERNANCE

CONCLUSION



With the variety and depth of our reflections on its potential powers of data, it is crucial to remember that data should never be an end in itself. Individuals, organizations and companies must have clear objectives for how the data they exploit can be used to improve their work and advance society.

For a global enterprise like Air Liquide, this starts by putting in place well-defined systems that ensure that every employee is properly informed about — and hopefully eager to contribute to — the company's growing efforts to reap the benefits of data.

“DATA IS ABOUT EMPOWERING PEOPLE TO MAKE BETTER DECISIONS.”
ARMELLE LEVIEUX, MEMBER OF AIR LIQUIDE EXECUTIVE COMMITTEE,
VICE PRESIDENT, HR

We are committed to be a leader on this front, helping to define best practices and protect employee and customer privacy. For any dataset, Air Liquide identifies its owner, confirms its veracity and establishes the necessary processes to make it sustainable over time. This goes alongside our commitment to train teams worldwide on how to survive (and thrive) in the digital age.

Once the people are on board, as the 2019 Data Summit has taught us, there is enormous potential for making the data work for us — especially if we fortify both the internal and external ecosystems where it moves. Data is indeed an asset, like and unlike others we know. If managed with intelligence, care and a forward-looking vision, data will continue to strengthen our core businesses, streamline supply chains, improve relationships with customers and partners and better respond to the needs of all our employees.