



AI, ML & Automation: the Future of Energy, Mining & Utilities



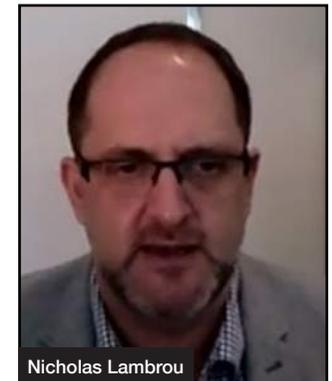
Chief technology decision makers from leading utilities, mining and energy companies attended a virtual roundtable to hear high-level insights on how AI, IoT and emerging technologies can open new competitive opportunities – even in the backdrop of a pandemic. Guest Speaker was Australia’s “Data Whisperer” – Prof. Matt Kuperholz, Partner and Chief Data Scientist at PwC, who was voted the top analytics leader in the country by peak body, IAPA; and ranked among the top 100 Knowledge Workers by the office of the Chief Scientist and the Prime Minister.

Top row: Jackie Montado, CIO, Papuan Oil Search; John Taylor, GM Cust. Markets Tech, AGL; Dan Hodgson, CTO, Oil Search; Matthew Foste, Dir. Bus. & Operations Improvement – Digital, Worley Parsons. **Second row:** Jean-Francois Floury, BMS & IT Integration Dir., Downer; Tanya Graham, CTO, Alinta Energy; Gary Peel, CIO, Synergy; Aidan Bradley, Head of Data, Analytics & Emerging Tech, Viva Energy. **Third row:** Matt Mueller, CIO, Iluka Resources; Daniel Friedman, CIO, Upowr; Mark O’Brien, GM Digital Tech & Innovation, CITIC Pacific Mining; Bill Le Blanc, Head of Technology, Electranet. **Fourth row:** Ian Robinson, CIO, WaterNSW; Brad Howarth, Journalist/Moderator; Chris Eriksen, GM Tech & Innovation, Roy Hill; Hugh Bannister, CIO, Beach Energy.



The energy, mining, and utilities sector has not been immune from the crises of 2020, but as industry CXOs can attest, disruptive change is nothing new. The mining sector for instance has long been buffeted by global pricing cycles; energy companies are contending with an influx of renewable alternatives; and utilities are having to satisfy consumers who are more demanding than ever before.

And for all of them, the pressure to reduce costs without compromising safety and security remains constant. In the past decade, however, a new set of disruptions have emerged for energy, mining, and utilities





businesses, in the form of emerging technologies such as automation, AI/ML, IoT and Blockchain. Each holds the potential to bring positive change – but learning to harness their potential presents a significant challenge for CXOs.

When wielded effectively, these technologies provide enormous benefits through improving and streamlining processes, such as adopting AI/ML to create predictive maintenance schedules that take cost out of operations. These technologies also hold out the promise of creating entirely new operating models generating new sources of revenue.

But for many organisations, the hard work lies not with integrating these new capabilities into their operations, but in integrating the tools and resources they already possess.

Navigating the Technology Landscape

How to make the most of these new capabilities was a key theme of a virtual discussion hosted by Boomi and 6 Degrees Media. Featuring PwC’s Partner and Chief Data Scientist, Professor Matt Kuperholz, as special guest, along with Boomi’s Managing Director for ANZ, Nicholas Lambrou, the discussion brought together

leading CXOs from some of Australia’s most prominent energy, mining, and utility companies. Together, they discussed the impact of emerging technologies and explored ways they can deliver tangible benefits to their organisations in the short and long term.

According to Kuperholz, the plethora of emerging technology options now available often work to reinforce each other’s benefits. For example, the fast growth in IoT capability is based on the equally rapid progress being made in the development of battery technology and the deployment of wireless networks. Meanwhile, the huge volumes of data that they produce is fuelling the interest in AI/ML technology to turn that data into actionable insights.

At the same time, these technologies are also changing the expectations of customers, who now demand an experience that is more mobile and personally tailored to their needs.

According to Kuperholz, this poses a critical question that all leaders must be pondering.

“How do you deal with this and turn this into an advantage when everything is changing so rapidly?” he asks. “And the very simple solution to getting value from all of this is to ensure we have a

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standardised process that we always apply, regardless of the fast moving technology underneath us. It starts with a real problem and ends with deployment of a solution.”

Emerging Technologies in Action

Kuperholz discussed his own experience in the creation of a virtual power plant which was built by aggregating and optimising a large portfolio of distributed energy resources. This project brought together devices ranging from pool pumps and air conditioners through to industrial power generators, as well as locally stored batteries and solar generation, into an optimised IoT network connected to a cloud-based computing environment.

“That was looking in real time at local energy prices, weather, local network and constraints, and what the customer was prepared to allow it to ‘do’ in their house,” Kuperholz says. “It was optimised for all those things to smooth the demand for power and create savings that all the participants got to enjoy in a decentralised way, secured and proven by blockchain technology.”

So successful was that model that Kuperholz says the project covered its own costs of design and deployment in just one day's operation.

“It's a great example of data and analytics solving a real problem, which is ‘how to do we optimise investments and distribute energy resources using the power of data and analytics?’,” he says.

Kuperholz listed various examples of energy, mining and utilities organisations using emerging technologies to create new capabilities, such as creating predictive safety solutions by monitoring environments in real time and combining that with data from multiple sources.

He described the example of a drill head project, where a well head is reporting data on the medium it is

moving through; HR systems reporting on the amount of overtime being worked; personal wearable devices reporting workers' fatigue levels; and social data that provides insights into which teams have worked together previously.

“When you put all of this data together you actually see a very clear indicator when an employee or a workplace is becoming less safe,” Kuperholz says. “The operational environment of the well head – the temperature, the weather, the financial pressure, the training, the familiarity of the team with each other – leaves patterns.”

By bringing all of this data together, Kuperholz says it is possible to find causation in safety events and use this as the basis for preventing future problems.

Simulating Cost Reductions

This approach can also be used to pull costs out of operations, such as through the deployment of IoT sensors and remote drones as part of an intelligent network to gather data for predictive analytics.

Cost can also be taken out of operations through the introduction of process automation. Kuperholz says there is significant opportunity to go beyond the basic robotic process automation being implemented today by including AI/ML technologies in the mix. This can lead to the creation of ‘digital twins’ that mimic the performance of real-world infrastructure, and can be used to test different scenarios, setting organisations on the path to becoming truly-connected digital enterprises.

“This starts by examining your most costly or relevant processes; to mine the data that is generated and look at opportunities to replace components of it with intelligent automation, and to use tools like digital twinning simulation in concert with this process mining,” Kuperholz says. “You aren't crossing your fingers hoping to get this right, you are actually

simulating this new world and optimising it and redesigning your processes and intelligently automating the whole thing. This can strip out a whole heap of costs quickly and sets out a process to tackle more and more processes.”

This can also lead to the automation of critical functions – such as demand management systems in electricity distributors or scheduling systems in water utilities – where it assists human operators by providing analytical data that shows them the real-world situation and provides guidance on how to respond.

“Those complex environments, where we are collecting so much data, is where we need to shatter the myth that one person knows how to do it and no one else does,” Kuperholz says. “We can mine that data and find what is successful and then automate that.”

Kuperholz says that these kind of investments will become increasingly necessary as sector players strive to overcome emerging challenges.

“Prescriptive analytics represents the best way to use scarce resources to get an outcome,” he says. “I think there is enormous value on the table for any company that sees these as optimisation challenges.”

Embracing the AI-Powered Customer Channel

Further opportunities exist for the sector through embracing the changing needs of customers, and then using analytics technologies to deliver more personalised experiences.

“There are great opportunities to modify your channels to improve the way you service your customers by being AI-first or digital-first, and at the same time being super-efficient on costs across your asset base,” he says.

Kuperholz says numerous companies are investing in AI-powered customer-facing systems, including the use of ‘digital humans’ that mimic contact centre operators.

“The next time you talk to this digital human they remember exactly where you left off, and they are hooked into automation, so they are managing your provisions or billing changes,” Kuperholz says.

Investing for Future Flexibility

By embracing these new technologies to solve defined business problems, mining, energy and utilities companies begin to equip themselves with systems that are more flexible and adaptable than what they might have possessed previously.

This means they would be well suited for organisations who have seen their plans for 2020 disrupted by the COVID-19 outbreak and resulting social distancing requirements.

According to Boomi’s managing director for ANZ, Nicholas Lambrou, organisations that have invested most in digital technologies have demonstrated themselves to be most adaptable in the face of the crisis.

“If you look back at when the reality first hit all of us around the pandemic, every business and every sector was forced to step up,” Lambrou says. “They were forced into making life- changing decisions at a speed that we have never seen before.

“One example that springs to mind is an organisation that was forced to set up a workforce of 3000 to work from home in days, including everything around notebooks, internet and screens. But to add further complexity, this company had to ensure compliance around OH&S was still being met, given that the office was now sitting in thousands of people’s homes. This company had been leveraging Boomi’s platform previously and implemented an integration architecture linking all their critical systems using a master data management capability. This enabled them to synchronise data to know who everyone was. Digital transformation has been an overused buzz

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– Boomi’s Managing Director, Nicholas Lambrou

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word in the industry for so many years, but I think this crisis has celebrated the speed of how these things need to happen.”

Stabilising Data Foundations

Understanding where the real problems lie in modern businesses can be a complex undertaking, which requires modelling the interplay between customers, workforces, supply chains and financial realities. The market data that organisations might have once relied on to build these models may not prove to be so reliable.

“So how do you work in an environment that you don’t have a precedent to learn from?” Kuperholz asks. “We are turning to technology, in terms of digital twins or simulation and optimisation technologies, to simulate our clients’ current operations under a number of different scenarios, so we are able to work with a complex interaction of effects.”

However, many organisations still find themselves beset by issues of data accessibility, with a reliance on point-to-point integrations. Lambrou says connecting these different components will become critically important. “When I think about some of the growth we are seeing, it is because companies are sharing data across the whole digital ecosystem, and we are helping those businesses achieve outcomes a lot sooner,” Lambrou says.

Just Get Started!

Ultimately, while there are many places that an energy, mining and utilities business can start to invest in new capability. Kuperholz says the most important thing is that to start investing. Hence, he says the goal should not be to invest in a huge system that does everything – but to identify a problem that is worth solving.

“Start small, demonstrate the use case, and bring the rest of the business along for followership and belief,” Kuperholz says.

“Focus ruthlessly on delivering value through business problems. Your data is probably not perfect and not as clean or complete as it can be, but it is good enough to find the signal in the noise to bring to bear on your data problems.

“So don’t get obsessed about finding perfect data or having everything in place before you turn your mind to solving business problems – especially if you have had rising safety incidents, or rising maintenance costs, or you are under greater cost pressure to automate than ever before. Just get going.”

Best-Use Case Study #1

EPA Victoria Leverages Boomi for IoT-Driven Environmental Sustainability

Environment Protection Authority (EPA) Victoria is using Boomi to realize its cloud-first strategy, enabling the government agency to capitalize on the Internet of Things (IoT) by incorporating data from sensors, drones and satellites.



Environment Protection Authority Victoria

CUSTOMER SPOTLIGHT

Market: Environmental regulation

Headquarters: Melbourne, Australia

Founded: 2017

Key Integrations:

- CRM and HR platforms
- SAP Concur
- Kuali Financial System

Boomi gives us the technical foundation to support our organization’s transformation. **Its cloud-native architecture will let us respond quickly to incidents that impact our business and the state.**

Chris Moon
Chief Information Officer, EPA Victoria

BUSINESS GOALS

EPA, Victoria’s environmental regulator, works to prevent and reduce harm from pollution and waste.

In 2017, the organization kickstarted its transition to a cloud-first strategy, implementing a series of new, best-in-breed applications to replace its outdated “all-in-one” environment.

EPA’s IT transformation is part of a comprehensive AU\$182.4 million investment from the Victoria government to transform EPA into a world-class regulator equipped to address current and future challenges.

TECHNOLOGY CHALLENGES

EPA Victoria identified the need to move to a more responsive, scalable and modern technology base using best-of-breed cloud applications.

But with the shift to a cloud-first, fit-for-purpose model underway, it became increasingly apparent to the organization that it needed an efficient connecting mechanism. The bespoke, on-premise middleware connectors that were currently in place would not allow EPA to scale as required without straining IT resources.

HOW BOOMI HELPED

With Boomi, EPA Victoria can connect a vast number of systems with its customer relationship management (CRM) and human resources (HR) platforms, and therefore exchange data accurately and rapidly with government departments, emergency services and other parties the organization relies on.

This helps EPA Victoria make more proactive decisions and also provides the reliability and redundancy the organization needs to ensure its various geographically isolated systems can cope when environmental issues arise.

BUSINESS OUTCOMES & RESULTS

EPA Victoria will use Boomi to build a holistic picture of the state of the environment in Victoria. For example, when organizations are deploying smart lampposts or putting sensors into their buildings, EPA can combine data generated by these devices with satellite and drone feeds.

With this extensive visibility, the organization can assess hazards and develop the most appropriate solutions, such as waste removal strategies in the case of spills, or tailored advice to land managers and local councils.

With Boomi we will be able to connect a vast number of systems into our CRM and HR platforms, **and therefore exchange data accurately and rapidly with government departments, emergency services and other parties we rely on.**

Chris Moon
Chief Information Officer, EPA Victoria



Best-Use Case Study #2



Transforming remote energy operations while savings millions



Challenges

- No dedicated integration platform
- Manual processes to capture and synchronize data
- Straining IT limited resources

Results

- Expansion of deployment across the entire integrated gas operation
- Integrated 15 systems, removed technical debt, strengthened data security, eliminated paper filing
- Dramatically improved productivity of thousands of field workers
- Very remote field workers able to work seamlessly offline

boomi

Legacy Systems | Cloud Infrastructure | IoT Edge Devices

Best-Use Case Study #3

Boomi Integration Drives Business Agility and Digital Transformation for ENGIE

Boomi’s integration cloud unites legacy and cloud applications, helping European energy giant ENGIE become more agile in a swiftly changing market.

Boomi is easy to use and has many advanced features. We can deal with most of the situations we encounter without having to resort to custom coding. This saves us a lot of time and expense.

Alain Abenhaim
Information Security and Systems Architect, ENGIE E&C

BUSINESS GOALS

ENGIE is committed to creating the energy environment of the future, addressing climate change and the changing ways in which people and organizations use energy.

ENGIE’s Enterprises & Collectives (E&C) business unit focuses on helping its commercial customers become more energy efficient with new technologies and energy management practices.

ENGIE E&C needed a way to rapidly respond to business requests for new cloud applications and data dashboards, and wanted an integration platform that would support its digital transformation efforts.

TECHNOLOGY CHALLENGES

ENGIE must be able to innovate and respond swiftly to changes in the market to achieve its goals. Digital transformation is key to ENGIE’s strategy. Without it the company would lack the speed and agility required to implement new services for improving energy management.

The company realized that a cloud-native, low-code development environment would bring far greater speed and efficiency to its integration projects and increase its ability to quickly respond to customers.

HOW BOOMI HELPED

Boomi’s flexible, scalable integration platform has tied all ENGIE’s workflows together, eliminating barriers among siloed business applications and data across cloud and legacy systems.

All ENGIE E&C’s applications are now connected via the Boomi platform, including its SAP invoicing system, several company and partner websites, its customer databases and its Salesforce CRM, which communicates with the rest of the information systems.

With Boomi, ENGIE has end-to-end visibility for each and every business process.

BUSINESS OUTCOMES & RESULTS

ENGIE’s integration projects resulted in implementation of 250 processes, ranging from the straightforward to the highly complex — completed in eight months by a three-person team. With Boomi, ENGIE was able to:

- Cut costs by a factor of 10
- Obtain end-to-end data flow visibility
- Roll out new services significantly faster
- Gain greater agility across IT and business operations

Thanks to the significant savings realized through Boomi, ENGIE can now invest in functional, strategic changes to its information systems.



CUSTOMER SPOTLIGHT

Market:	Energy
Headquarters:	Paris, France
Employees:	150,000 (parent company)
Revenues:	\$66 billion (parent company)
Key Integrations:	<ul style="list-style-type: none"> • Salesforce CRM • SAP invoicing system • Customer databases • Multiple websites

Because we can quickly and easily adjust our processes, we are in a far better position to manage change.

Alain Abenhaim
Information Security and Systems Architect,
ENGIE E&C



About Boomi

Boomi quickly, easily, and securely unites your digital ecosystem so you can connect everyone to everything. Our intelligent, flexible, and scalable cloud-based platform ensures always-on business continuity. Boomi accelerates and simplifies discovery, organization, and management of your data making it actionable across the business. By harnessing the power of the cloud to connect employees regardless of location to your applications, systems, processes, and customers, Boomi enables organizations to foster trust by maintaining human and business connections. Boomi liberates your organisation from fragile connections and legacy technology to maximize ROI from your investments, and drives better total economic impact.



About 6 Degrees Media

6 Degrees Media was established by Angela Horvat, former Editor and Publisher of award-winning publications including *Computerworld*, *Information Age*, *My Business*, *The Who's Who of Financial Services* and Founder of FST Media; and Emma Charter, one of Australia's most connected and respected media and events strategists with more than 15 years' experience in delivering C-Level engagement strategies for clients in Australia and the UK. Together, they lead a team of Australia's most talented and driven conference producers, technology and business journalists and event managers to create content-driven experiences across C-level roundtables, custom events and large-scale conferences.