Augmented Business Intelligence: the massive adoption of edge data technologies

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Introduction

The idea of collecting data and generating information and KPIs to monitor businesses and measure impacts of strategies, process optimizations and project implementations is not new to anyone who works in companies oriented to maximize their results. In fact, the connection between KPI monitoring and business management is far well known and eternized in expressions like “what can’t be measured, can’t be managed”, but, as most of these managerial statement clichés, it’s not always trivial to collect the right data, to perform consistent data cleansing and to calculate certified KPIs in order to analyse business performance and to make correct and timely decisions based on data.

The challenge scales-up when talking about big and complex enterprises in which data is generated everywhere, where different areas have their own perspectives about process performances and business trends, considering different data-sources, performing different data cleansing procedures and using different formulas to calculate the ‘same KPIs’.

It’s in this context that Business Intelligence (BI) solutions became relevant in ICT budgets more than a decade ago: ‘why not centralize data management and KPI calculation in ICT teams, to ensure a Single Source of Truth and reduce the effort of business users on data manipulation activities, making them responsible just for analysing business-ready data?’ We all know where this story ended: decentralized data in excel spreadsheets across the company.

Though (or should we say ‘because’?) this story has failed, in recent years BI solutions matured dramatically, finding their space in the so-called edge data technologies, together with the Artificial Intelligence, Advanced Analytics, Cloud solutions, and so on. As a result, Gartner confirmed the trend from previous years and pointed to BI as one of priorities of big enterprises CIOs for 2021.

BI lives again, long live BI!

What is old is new again

It seems Business Intelligence has really returned to stay (and grow). If at its debut it was all about centralized and enterprise-level reporting to better organize data across the company, reducing business teams’ ability to analyze data due to ICT-limited capacity to quickly respond to their needs, the modern BI solutions brought self-service ad-hoc capabilities to the masses, improving their front-end features to provide pixel-perfect reports, enabling easy data integration through hundreds of connectors and improving their data manipulation capabilities for data transformation and KPI calculation, all in an ICT manageable way.

But beyond these features, that definitely improved platform capabilities to respond to the previous objective (“monitor-to-manage”), the most innovative BI solutions captured their raison-d’être in the edge data technologies environment: the turning-point is the massive adoption of edge techs by business users.
According to Gartner, “Augmented Intelligence is a design pattern for a human-centered partnership model of people and artificial intelligence (AI) working together to enhance cognitive performance, including learning, decision-making and new experiences”. In other words, Augmented Intelligence is oriented to improve, not to substitute, professionals in their jobs and decision-making processes through the facilitation of understanding and usage of AI while playing their roles.

Although modern Analytics & Business Intelligence platforms have implemented several new features of Augmented Analytics, in this article we highlight some key innovations that will dramatically impact the way companies consider BI platforms in their ICT strategies:
Figure 2 ABI Key Innovations

Infrastructure

Identified as one of the challenges for BI platform implementation and enhancement in several companies, modern ABI solutions have to be up to date with data and technology trends, dealing with requirements for storage capacity, computational power and a variety of enterprise IT architectural blueprints.

Cloud Native BI

Cloud is already a reality. In Q3 2020, AWS, Azure and Google Cloud reported a year-over-year growth (YoY) of 29%, 20% and 45%, respectively and, according to Forbes and Dresner Advisory Services in the study “2020 Cloud Computing and Business Intelligence Market Study”, a record percentage of enterprises, 54%, say that Cloud BI is either critical or very important to their current and future initiatives.

DEEPENING

Positive sentiment towards Cloud BI saw a sharp upturn in 2018 and it has since risen both in 2019 and 2020, when it climbed from 3.22 to 3.4 (well above the level of “important”). Compared to the early years of their focused study, it appears that Cloud BI conquered skepticism and crossed a threshold of credibility. Dresner’s research team expects that Cloud BI adoption will continue to rise.

Cloud Native BI brings strong capabilities to companies thanks to public cloud providers no longer requiring capital expenditure (CAPEX) on storage and computing and enabling a pay-per-use logic based on operational expenditure (OPEX) – the more storage and processing you use the more you pay. Besides, Cloud Native BI easily integrates with Cloud Services to tackle real-time data, non-structured data, natural language challenges, denormalized data and SQL querying.

Software as a Service (SaaS)

Aware of companies’ needs, ABI platforms develop several alternatives of deployment for their solutions in different enterprise IT architectures, to the point of providing a full-managed service in which users just buy their SaaS licenses and then are ready to play.
**Analytics**

This topic may be considered as one of the **most important capabilities** of Augmented BI platforms once it enables business users to deal with data and obtain insights autonomously.

**DEEPENING**

According to the 2020 Gartner Report[^6], the three market leaders, Power BI, Qlik and Tableau, already have their SaaS offerings, and new product launches reinforce this market tendency. Last year, for example, Qlik launched the Qlik Data Transfer[^7], a free service to transfer on-premise data to Qlik Cloud in order to boost the adoption of the SaaS version of Qlik Sense Enterprise.

**Machine Learning**

Modern ABI tools are looking for ways to **better integrate their platforms with machine learning models** to boost data analysis, **keeping a low-code approach and increasing ML adoption across companies**.

At the end of 2020, Qlik announced[^9] that they are on a journey to provide customers the **ability to use ML capabilities on their platform**, for purposes like optimizing supply chain, improving inventory management, preventing customer churn, etc.

**DEEPENING**

Tableau, in turn, **created the possibility to deploy ML models in Python using the TabPy library[^10]**, easing ML model output presentation and model deployment in Tableau and making it accessible to business users. At the end of 2020, in its annual conference, Tableau **announced its plan to bring together Tableau and Einstein Analytics[^11]**, both of Salesforce.

Planned for the first part of 2021, Einstein Discovery in Tableau enables **real-time predictive modelling and recommendation capabilities** across the Tableau platform[^11].

**DEEPENING**

According to the company, “Tableau and Einstein Analytics will come together through a set of product integrations that will provide a more seamless experience for joint customers”.

Einstein Discovery helps companies democratize data science across their organization with AI-powered analytics that enable business users to automatically discover relevant patterns based on their data.

In this context, Microsoft, the BI market leader, is **boosting ML capabilities** on Power BI through **native integration with Azure**. Still in 2019, Santosh Chandwani, Principal PM of Power BI, announced the preview of **Automated Machine Learning (AutoML) for Dataflows in Power BI**.
Aware of this other tendency, modern ABI tools are already integrating text analytics capabilities in their platforms, providing connectors to web and social media data and performing entity recognition and sentiment analysis.

**DEEPENING**
With AutoML, the data science behind the creation of ML models is automated by Power BI, with guardrails to ensure model quality, and visibility to ensure you have full insight into the steps used to create the ML model. Following the Cloud Native tendency, this functionality is only available on Power BI Premium and Embedded, both enterprise cloud-based licenses of Power BI.\(^{[13]}\)

**Cognitive BI**
Following the tendency of ML enhancements on ABI platforms and exploring Cloud Services, we can say that Cognitive BI solutions are like a young brother of the previous innovation with a still modest adoption.

**DEEPENING**
Gartner projects that, by 2025, AI for video, audio, vibration, text, emotion and other content analytics will trigger major innovations and transformations in 75% of Fortune 500 global enterprises.\(^{[8]}\)

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**DEEPENING**
In 2020, Power BI announced the inclusion of semantic search functionalities in its roadmap.\(^{[14]}\)

**Data Relationships**
First created by Qlik, the Associative Engine was designed specifically for interactive, free-form exploration and analysis, with the ability to fully combine large numbers of data sources and index them to understand the associations.

**DEEPENING**
With this characteristic, any user – at any skill level – can search and explore their data in any direction, following their curiosity wherever it leads. According to Qlik, “it’s like having peripheral vision, removing blind spots and uncovering hidden insights that aren’t available in query-based tools.”\(^{[15]}\)

Well, as with most successful innovations on the market, solutions oriented to automatically understanding connections between data were launched, like the Semantic Graph of Microstrategy that, together with the Hyperintelligence feature, put Microstrategy as a Challenger in Gartner’s 2019 Report on ABI.\(^{[16]}\)

**Insight Generator**
As previously mentioned, to succeed in their adoption across enterprises, ABI platforms had to be ready to provide self-service BI environments, enabling business users to perform their own analyses instead of being “locked” on pre-made dashboards. Recent studies highlight that users often don’t want to self-serve; they increasingly expect insights to come to them. AI will play a major role here, surfacing micro-insights and helping us move from scripted and people-oriented processes to more automated, low-code and no-code data preparation and analytics.\(^{[17]}\)
Regarding this, Thoughtspot provides an innovative solution based on the following pillars: Spot IQ and Search Engine. Spot IQ consists in an engine able to perform thousands of queries into underlying data and autonomously provide insights to users. The engine’s performance is improved by its ML model oriented to self-training, based on user evaluations of the generated insights. Finally, with its Search Engine, users no longer need to calculate KPIs manually, but they can simply ask the platform directly using natural language.

In the second semester of 2020, Qlik announced its Insight Bot, which is an AI-powered conversational analytics experience, oriented to giving everyone a faster and easier way to ask questions, get insights, and make data-driven decisions using natural language.

## Conversational BI

In the evolution to Natural Language, why not also consider the possibility of Conversational BI? crystal, an augmented analytics tool by Milan-based scaleup iGenius, allows users to submit questions via voice or text: crystal translates these into queries on a relational database and responds in real time. Responses will be served up via voice or charts, based on the data retrieved. crystal can understand concepts such as aggregation, averages, filters, data pivoting, depending on how questions are formulated.

The platform’s AI is able to recommend follow-up questions or NBQ (Next Best Questions) to users, based on history of use. Crystal can be configured quickly and in a way that is tailored around users’ specific needs, thanks to a “no-code low-code” configuration console. The product is currently available in English and Italian.

**Figure 3 crystal in action**

### Share

Regarding this topic, important changes are expected in the way professionals communicate results and insights. In a context of increased collaboration activities, professionals need more dynamicty to easily share information, receive feedbacks and improve.

### Data Stories

Data stories consists in the setup of a guided dynamic flow into a dashboard analysis to perform a storytelling that can be interactive and progressive, keeping the audience engaged.
without the need to create long presentations.

Currently, the main **ABI players already offer data stories** functionality, but its usage isn’t massive among business professionals. Rita Sallam, Gartner VP analyst, highlights that **data stories can help move organizations beyond the dashboard paradigm** to a new way of consuming insights and sharing them across the companies.

**DEEPENING**

“By 2025, data stories will be the most widespread way of consuming analytics,” Sallam said. “Seventy-five percent of those stories will be automatically generated using augmented analytics techniques.”

Decision Support Systems

Decision support systems (DSS) are solutions designed to enable data consolidation from different and heterogeneous source systems into a unique server providing users the ability to query and monitor these sources through data analysis, KPIs and video flows. The multi-touch tables, in turn, are one of potential channels in which DSS can be delivered and it consists mainly in a hardware component with adapted software based on the Natural User Interface (NUI) paradigm to enable interactive multi touch screen system as tables & walls with customized touchscreen software & object recognition technology.

**DEEPENING**

KeyBiz is one of the high-tech companies developing advanced DSS solutions integrated with IoT devices providing hardware components adapted with NUI software development paradigm. The company designed multi-touch tables proposed specifically to sales and operations monitoring, war-rooms and rooms for crisis management in which users need dynamicity to dive into data and KPIs to better analyse challenges from multiple points of view.

Below we present an example of Metamorphosis dashboard that is a KeyBiz DSS solution based on IoT devices and to monitor operations in real-time.

![Figure 4 Multi Touch Table Example](image1.png)

![Figure 5 KeyBiz Metamorphosis DSS](image2.png)

Currently designed for single users, with the large adoption of multi-touch tables by enterprises, the modern ABI platforms will have to include this capability in their range of products/functionalities to play an important role in the Next Generation of Decision Support Management, strongly based on data visualization and collaboration capabilities.
Where to start?

The old Business Intelligence has dramatically evolved in recent years, going beyond data monitoring in well-designed dashboards to enabling companies to boost adoption of edge data technologies across areas. The point here is whether people in companies are really ready to adopt edge data technologies and fully explore their capabilities in the Augmented Intelligence era.

At Bip, we understand that this readiness is not a starting point, but a result from a transformation program. Our approach to supporting companies towards ABI consists in the design of use-case-driven evolutionary roadmaps that will guide the enhancement of BI platforms, data infrastructure and Users’ culture and attitude. Bip xTech, our Center of Excellence in exponential technologies, can count on BI experts, data strategists, data scientists and other data professionals ready to support this evolutionary path, being able to help our clients from the standardization of reports and development of main corporate dashboards up to the governance of an ABI program and the development of enhanced ABI solutions through AI, ML and streaming analytics.

Disclaimer

In this article, some products/vendors have been mentioned as examples to illustrate some advanced functionalities. Bip, through our center of excellence in data technologies (Bip xTech), has partnerships with many of these vendors but, aligned with our vendor independence strategy, we maintain as technology agnostic and, therefore, we are able to recommend the best solution depending on the client need, leveraging on a group of experts certified in most of these technologies.

IF YOU NEED AN INSIGHT ON OUR END-TO-END OFFERING OR YOU WISH TO HAVE A CONVERSATION WITH ONE OF OUR EXPERTS, PLEASE FILL IN YOUR PERSONAL DATA AT THIS LINK, AND YOU WILL BE CONTACTED SOON.
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