

RESEARCH NOTE

IBP and Analytics: an essential combination for true enterprise management in a changing environment

By:

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INTRODUCTION

The ID&AL (Interactive Design & Automation Execution Loop) architecture proposed by CXP (Fig.1) represents the ultimate approach in agile and high-performance information systems, primarily for manufacturing and distribution companies, but also for other vertical industries (for more, read *"IT Solutions in Manufacturing: Differentiating with the Interactive Design & Automation Execution Loop (ID&AL)"* – published June 2021)

Not only does the tight integration of the ID&AL architecture allow the user to access reliable information thanks to an integrated data model, but above all the arrangement itself, of the application bricks between them gives the whole system a strong functional added value - and therefore a real value for the business. All pieces can interact seamlessly, when something changes.

All events - external and internal - affecting demand and resources can thus be applied, analyzed and fed back into the planning loop, giving the result a real relevance between planning and execution.

This interactivity is achieved through the notion of a loop. In this note, we focus on the loop that links IBP (Integrated Business Planning) and Analytics. Both are inseparable from an efficient management of the enterprise, but they are still too often treated in an unconnected way, and with very different tools.

Resource planning tools are often part of ERP (Enterprise Resource Planning), SCM (Supply Chain Management) or HCM (Human Capital Management) applications, complemented by dedicated EPM (Enterprise Planning Management) tools for purely financial management. As for the tools commonly referred to as "Analytics", they are still often technological tools in the hands of IT, used to provide dashboards by activity or department.

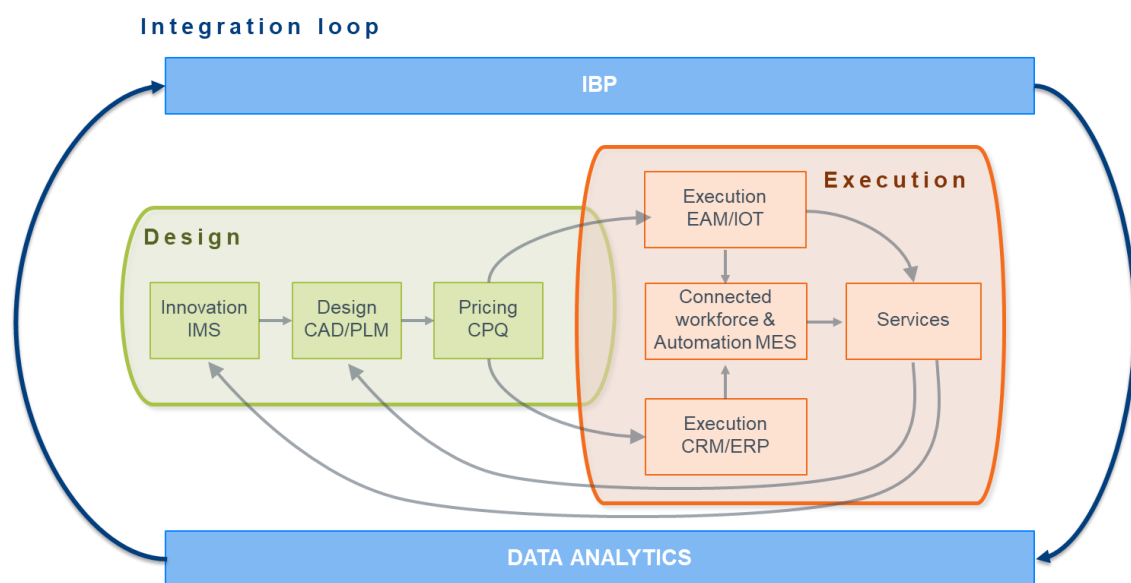


Fig. 1: ID&AL – Interactive Design & Automation Executive Loop – Source CXP



WHY IS THERE SO MUCH INTEREST IN IBP (INTEGRATED BUSINESS PLANNING)?

The main idea behind an IBP (Integrated Business Planning) approach is to be able to define a single business plan considering the needs of all operational and financial resources defined in order to meet the demand; to reach the objectives of turnover and result, while optimizing the financial and cash flows. And that this planning can easily be tuned any time one of the elements that feed it undergoes a change.

Some may say that they have already heard this definition during the advent of APS (Advanced Planning & Scheduling) tools two decades ago. However, IBP is part of a broader framework since it is not just supply chain-centric but also strongly integrates all the economic and financial aspects of the planning.

IBP is also increasingly represented as the successor to S&OP / MPS (Sales & Operations Planning / Master Production Scheduling), whose primary functions were to balance, in the more or less long term, the company's operational functions according to demand, over the budgetary period.

The operational aspect remains important, but IBP applies the financial dimension in a strong way and confers to the whole an integrity that makes the projections much more relevant and the piloting easier, because it responds unequivocally to the combination of the views of marketing and commerce, production and finance.

However, IBP is not only a strategic management tool. Following the S&OP / MPS relationship, IBP also introduces the tactical side of the production program. The most daring and innovative organizations go so far as to include the MPS within an "extended IBP".

IBP enables management to drive their business by aligning strategic and tactical visions through the proper use of all their internal and external resources (manpower, equipment, inventory, materials, time and money) to meet customer demand in a coordinated manner.

In this case, establishing strategic projections on the basis of product families and then tactical projections on the basis of individual product references, where applicable, and considering the use of resources whose costs are themselves directly related, provides management a certain piece of mind.

The IBP concept is therefore not a revolution in the sense of introducing a totally original management methodology, as its principle is based on obvious common sense. However, the limitations of information systems had until recently made it necessary to segment the data and the management layers.

The IBP review will then consist of a review:

- **Business Plan / Sales Revenue Planning**
 - Introduction and retiring products from the catalog
 - Introduction and removal of clients from the portfolio
 - Review of business opportunities
 - Review of sales, margins
 - Etc.
- **Customer Demand Management**
 - Demand forecasts
 - Commercial actions
 - Impacts of the evolution of the product range
 - Etc.
- **Sourcing & Procurement, Supply Chain Management**
 - Criticality of supply
 - Load/Capacity Matching
 - Impacts of the evolution of the product range
 - Etc.
- **Profit Based Supply & Demand Balancing Review**
 - Economic and financial impacts of product developments
 - Economic and financial impacts of changes in demand
 - Economic and financial impacts of supply chain changes
 - Balancing the activity plan with the company's resources

Integration makes sense as IBP will make it possible to consider all the components of the ID&AL system.



ANALYTICS

The use of data and its analysis have always been at the heart of companies' management needs in order to measure and detect areas of loss and profit. This search for areas of improvement is enhanced by the potential of so-called "Business Analytics" solutions.

For a long time, companies were content with an end-of-month balance sheet as a basis for management. But modern companies, faced with globalization and the digitalization of products and services, can no longer ignore the changes and economic variations of a world in perpetual motion, subject to accelerations (Fast Food, Fast Fashion, instant messaging, Speed Dating, etc.) and slowdowns (pandemics, Brexit, climate change, logistical failures, etc.).

This situation, coupled with the digital transformation of companies, generates an exponentially growing volume of data (internal and external). It is therefore necessary to capture and exploit the maximum of this data to enable the company to anticipate and win.

From reporting to analytics...

While reporting consists of aggregating data in a static representation, analytics provides a dynamic vision through algorithmic and statistical processing.

In this case, it is a matter of detecting and interpreting data models that allow us to establish future behaviors. We then enter a predictive dimension whose goal is to reduce uncertainty.

It is therefore easy to understand that the greater the volume of data processed, the more limited the "side effects", in the sense of their lesser representativeness, will be. This need for data "consistency" has led to the emergence of Big Data, which collects a large amount of multi-source information.

To do this, Analytics solutions use the following technologies:

- Exploratory Data Analysis, which allows the discovery of new patterns in the data
- Confirmatory Data Analysis, which allows us to verify whether or not previously hypothesized relationships are confirmed.

Once the relationships between data have been established, it is a matter of establishing the laws of behavior according to the factors of evolution. This is the domain of "data scientists" who will be able to develop predictive models for a given field of application. Artificial intelligence will also be used to enrich this predictive system according to the data acquired and the facts observed. Based on the Bayesian inference method, the system calculates refined probabilities as known events are observed. This is called self-learning in the sense that the model improves itself according to its capacity to integrate the collected data (Machine Learning).

Obviously, the value of these models will be all the more important for a company as it will have a better understanding of its environment in order to prepare action plans that will enable it to fully benefit from them. Some solution providers go so far as to offer real-time analysis, enabling them to measure the impact of data changes in the very short term, which can be particularly useful for companies subject to very strong operational constraints.

When it comes to managing a company, one can imagine the extreme attention that will be paid to this, as it is then possible to define a macroeconomy (IBP) based on a microeconomy (Analytics).



AN IBP DOPED WITH ANALYTICS!

IBP can be made even more relevant and interesting by feeding it with external data which, combined with internal company data, will make the decision models even more relevant.

As far as the company's own data is concerned, we must ensure its total integrity, thereby minimizing the risk of error in its interpretation. This requires an information system (IS) with a unified and homogeneous data model across the entire management perimeter, as well as the ability to access this linked data at any time without degrading the tool's operational performance. To meet this need, a data warehouse is often used. But the data warehouse appears to be a second-best solution.

In a fast-paced world where many hazards disrupt established plans, it is necessary to have a reliable database on which analysis tools can quickly establish correlations between cause and effect. In this sense, the ERP principle still fully fulfills its role. As for external data, it is essential to obtain them in formats that facilitate their analysis and determine models, hence the advent of the Data Lakes principle.

If IBP is first and foremost used for the strategic and tactical management of the company, it will be easier to use Analytics to have an operational vision, the whole system being reactive and coherent.

This demarcation between the two types of software packages is not, however, an absolute truth in the sense that Analytics tools also have a predictive vocation with a capacity for data aggregation leading to a strategic vision. But why deprive yourself of the facilities offered by an IBP module that already establishes the relationship between volumes and costs?

IBP is not only for the management of industrial companies, as it will obviously provide the same level of service for trading and distribution companies, as both sectors share a supply chain at the heart of their activity. But it can also be applied very well to professional services insofar as it links service volumes with the costs inherent in their execution. The service supply chain is a reality that is in many cases similar to the physical supply chain.

Let's take a closer look at the possible relationships between the IBP function and the Analytics function, presented below, still within the ID&AL model.

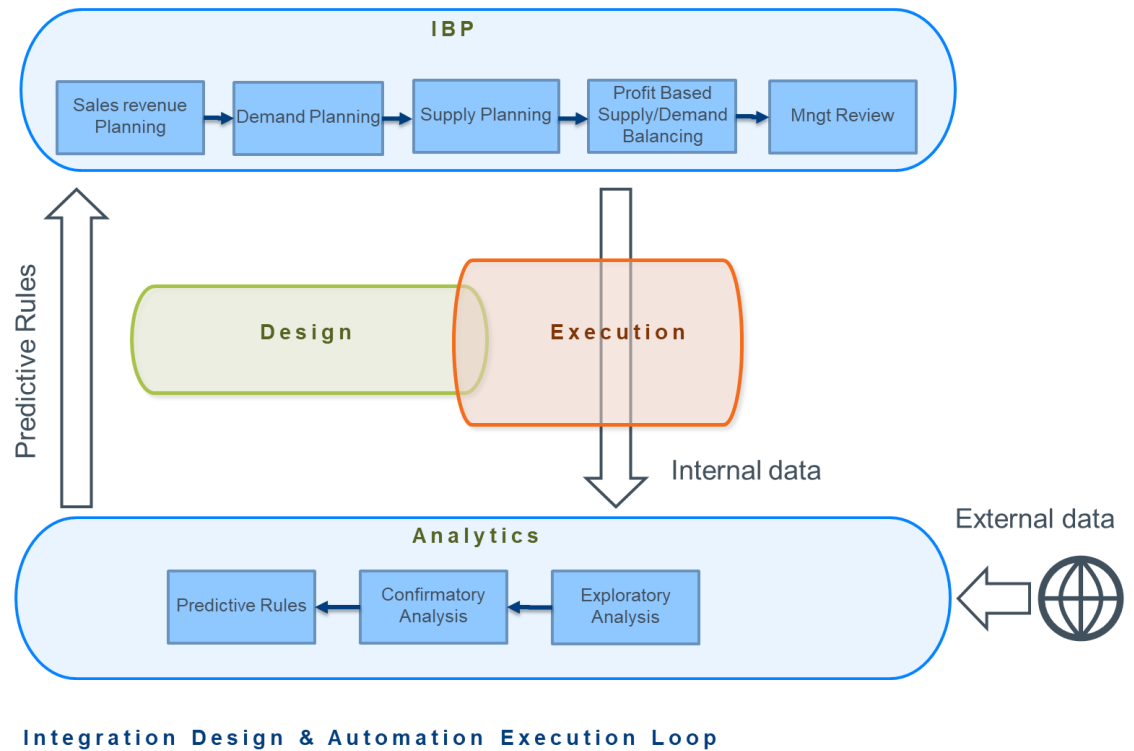


Fig. 2: Source: CXP

SOLUTIONS CLAIMING IBP

A growing number of software providers, aware of the benefits that this management model brings to companies, claim to offer an IBP solution in their product catalog. Including (listed in alphabetical order) Adexa, Anaplan, Blue Yonder, Infor, Kinaxis, Logility, O9, Oracle, SAP, and many others, Are these solutions acceptable with regard to the contributions of IBP?

We have positioned these solutions in relation to our *IBP Solution Map* below.

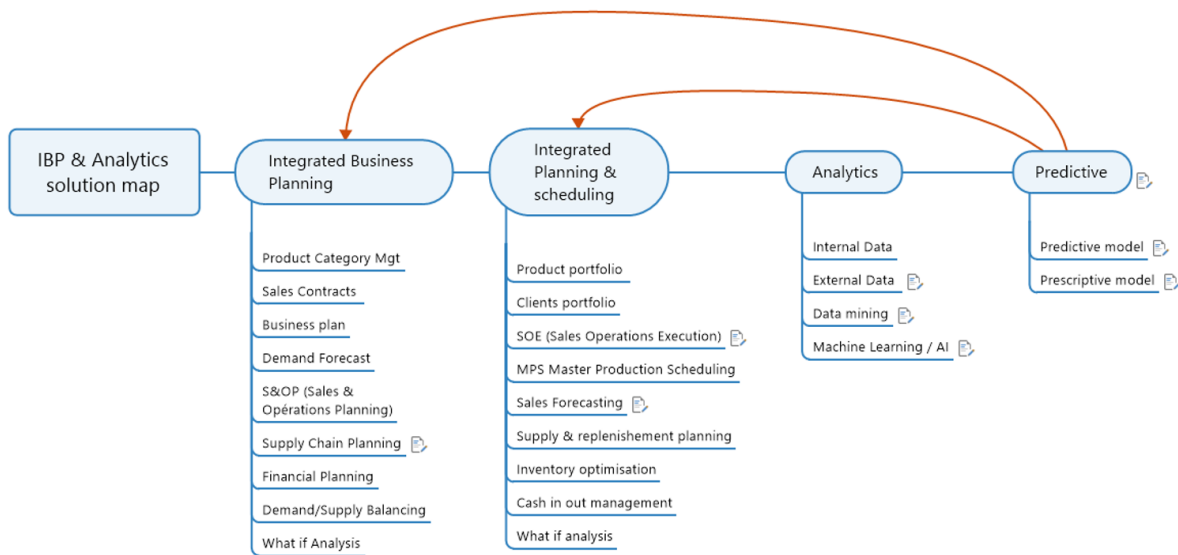


Fig. 3: IBMS Solution Map - June 2021 - Source: CXP

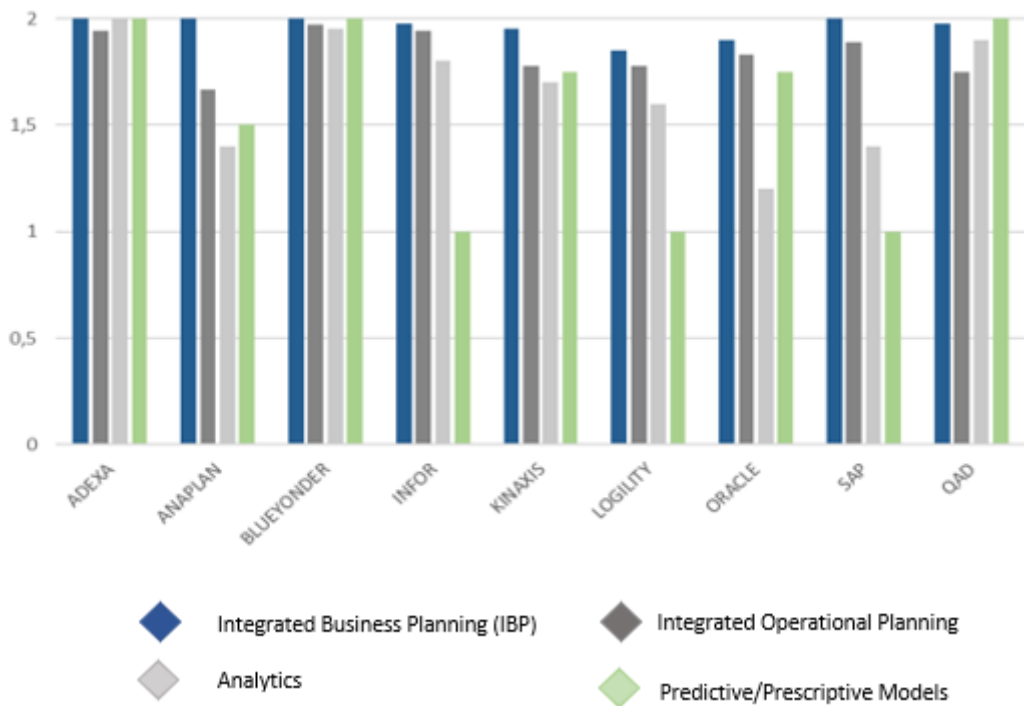


Fig. 4: Source: CXP

Competition is fierce and vendors specializing in financial planning and/or logistics want to position themselves as reference players, to the detriment of ERP vendors. However, the latter have nothing to be shy about their respective solutions. Oracle and SAP can demonstrate convincing know-how in this area, which is all the more interesting because they have full technological control of their solutions, unlike most smaller “specialists”.

SAP relies on its IBP for Supply Chain suite, developed with HANA technology, forming a real-time environment that is all the more attractive when associated with SAP Supply Chain Control Tower, meant to allow the visualization of the supply chain. The promising qualities of SAP IBP for Supply Chain are the result of a long development work which is still relatively recent. It is estimated that the solution became mature enough only in 2020 whereas its development was announced as started in 2012. The functional coverage of SAP IBP for Supply Chain corresponds to the original concept, i.e. for strategic planning. The operational planning layers are devolved to the S/4HANA ERP. In fact, this system will be accessible mainly to SAP customers, as it is difficult to imagine its use in other application environments due to its specificities and the necessity to also run the S/4HANA ERP to benefit from a complete footprint.

Oracle can pride itself on its IBPx solution, based on Oracle technology and applications, Oracle being an undisputed leader in data. Unlike SAP, IBPx is able to go all the way down to operational planning, making it one of the very few systems capable of providing end-to-end and, above all, integrated management. This quality is a major advance for Oracle, which for a long time had a portfolio of modules that were certainly capable of providing an answer to cover all the strata of planning, but unfortunately not fully integrated with each other.

As for Infor, its various solutions under the CloudSuite umbrella are based on AWS technology and offer a multi-product platform approach, to connect supply chain planning applications with their AI solutions and data lake.



CXP MONITOR IBP

Monitor is CXP's representation to position the leading solutions of a given domain. The axes retained are:

Sustainability

- Proven technology due to its wide and ongoing distribution
- Functional coverage responding to the state of the art as defined in the Solution Map of the topic
- Structured eco system (ability to create value from its internal and external resources, partners for the development and distribution of products) - Positive EBITDA

Innovation

- Innovative technology providing differentiating value
- Functional breakthrough bringing a differentiating added value
- Selective eco system capable of supporting innovation with sufficient funding

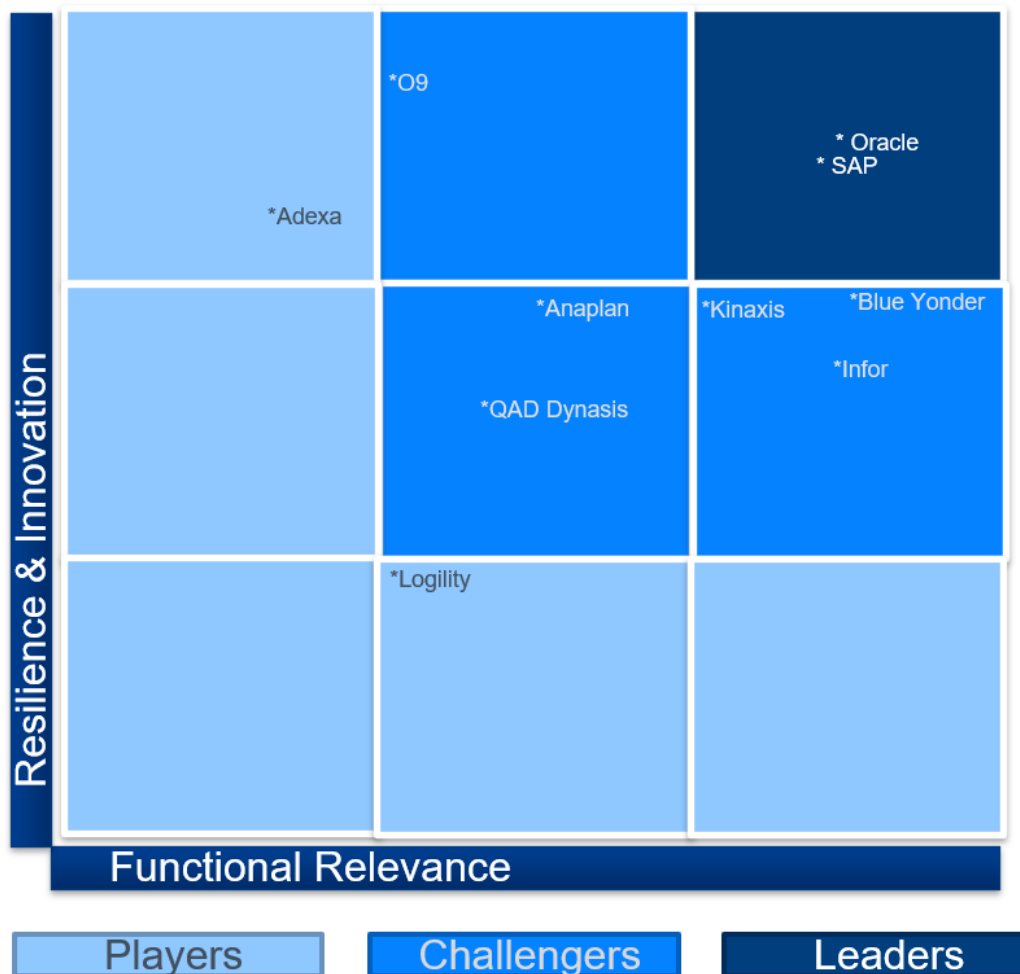


Fig. 5: CXP Monitor : Leading IBP Players



IN CONCLUSION

The IBP/Analytics tandem represents the quintessence of the management systems dreamed of by all companies. However, we believe that in a certain number of organizations this new category of solutions may still come up against a certain amount of suspicion from users, regarding the recommendations that result from the system's algorithms, due to their 'black box' nature. We remember the APS (Advanced Planning & Scheduling) precedent, and their failure to be adopted broadly. But the parallel stops there. The economic environment was very different twenty years ago and the computing power of cloud infrastructures and access to big data make much higher quality results possible, in a fast-moving world with multiple parameters constantly changing.

Of course, it is not a mundane project for any enterprise and the successful implementation of a complete integrated planning and execution system is a very strategic initiative, driven and sponsored from the top, and requiring the support and collaboration of all the company's stakeholders, internal and external, whether they are customers, suppliers or shareholders.

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