



Play 'smart'  
with integration



As Artificial Intelligence (AI) grows in sophistication, it is being used to identify missing data and information. This is a unique ability. And it is changing our ideas around integration.

System and data integration is already a rich science. Its practitioners have generated abundant knowledge and developed corresponding models, processes, tools and platforms to enable accurate and reliable outcomes. And yet, there are gaps in the stockpile of knowledge that, when bridged using cognitive capabilities, result in surprising gains. This is why the idea of cognitive integration is worth examining.

The idea of cognitive integration itself is not radical. But with the growth in the number of sensors and monitoring devices, in addition to the improvements in networks, it has become real and accessible to businesses across industries.

## Cognitive for functional elements

Today, sensors that make up the Internet of Things (IoT) are creating, assembling, transmitting and analyzing mountains of data. For example, wind turbines generate a continuous stream of operational metrics and map it against weather data to optimize their output. Sensors record the direction and speed of the wind, temperatures, voltage and vibrations produced by components like generators and rotor blades. Based on actual conditions – say if ambient temperature shows a continuous increase – the system can be trained to send and analyze data more frequently, perhaps from every hour to every 10 minutes. In essence, once this cognitive capability is integrated into the system, the system functions like the human brain: It recognizes changes and adjusts its operations accordingly.



## Cognitive for development

Cognitive integration has a remarkable role to play in development where middleware learns from the development of previous integration services.

Most organizations would have experienced hiccups when mapping data from source to an application - such as synchronizing customer records from SAP to Siebel.

Often, this may require developers to write data transformation rules repeatedly. This repeated activity impedes speed. Instead, with AI, the task of transforming data can be simplified. The AI learns the rules from previous iterations and maps them against use cases. It then shows the human operator the most likely processes that can be used for the data transformation.

If the AI engine comes across an error in data (like a change in the format of customer addresses), it can automatically apply an error-handling component to the process without any disruption. In fact, it is possible to go one step back. Let's assume that an adapter is being configured for an integration service. AI could, at this point, even suggest an error-handling component or a destination service. We can also move one step ahead of the data synchronization process. AI could analyze the nature of the process and deduce that the SAP to Siebel synchronization of customer records could also be used for synchronizing Salesforce records and suggest it.

## Cognitive in deployment

Among the more straightforward and immediate capabilities that can be unlocked through cognitive integration is workload

distribution. Here is an example applicable to every business: A smart system will use historical patterns to identify the approach of payday. It will automatically determine that payday results in an increase in workloads on servers, payroll APIs, interfaces and databases as SAP data gets synchronized with HR systems. Using this input, the system suggests a temporary increase in compute and network resources. When API usage goes down, it will recommend scaling down to a lower capacity. In effect, the system observes usage and learns from it.

The above example makes it easy to see how cognitive integration is adding 'mindfulness' to systems. Using this mindfulness, systems can take a variety of decisions that fine-tune performance, ensure just-in-time availability of resources and lower costs. A cognitive system could determine that APIs, CPUs and cycles allocated to execute processes are being under-utilized, or their cost is not justified as no one is invoking them (or the margins are low), leading to the suggestion to shut down resources.

Experts from the financial services sector will easily recognize the value of such intelligence. APIs used for the background verification of customers come at different price points. It would help if the system could determine the importance of a customer and control the use of an API accordingly without compromising business or user experience.

## Cognitive to keep enterprise architecture robust

With the rise in business users who are procuring infrastructure, data and applications independent of their IT function, the need for cognitive integration is perhaps

the most urgent. Citizen integrators, as these users are called, are critical - they help introduce new services faster and leave the IT function free to deal with core issues. In other words, citizen integrators are necessary. However, they also result in chaos. When these users integrate applications, they are unmindful of the underlying architecture. Their decisions lead to spaghetti architecture which the IT function must then invest time to straighten out. But cognitive systems can pre-empt the need for IT to roll into action. AI can observe integration patterns and ensure that citizen-created interfaces are mapped to standard Enterprise Application Integration (EAI) patterns.

These types of cognitive integration help develop seriously sophisticated capabilities for an enterprise.

Organizations spend a considerable amount of time and effort fixing interface failures or errors in data transformation. In each such instance, the system is designed to send an alert to a human user/operator and wait for a fix. With cognitive integration, these systems can quickly evolve into auto-correcting/self-fixing entities that don't need to invoke a human resource for simple issues.

Cognitive integration has a pivotal role to play at every user end-point. Moreover, given that end-points are growing, every business must examine how it can create happy users and customers using cognition.



## About the authors

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Danesh has over 19 years of experience in consulting, architecture, implementation and development. His core expertise is in Enterprise Integration covering API Management, Open Source Middleware, Integration Platforms as a Service (iPaaS) and SOA.

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