

Commercial Off-The-Shelf Vs Custom



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Commercial Off-The-Shelf versus Custom

Haven't we been down this road before?

In my capacity as chair of MESA as well as in my day job at Brock Solutions, the question of COTS (Commercial off-the-Shelf) software versus building a custom solution often arises. As Yogi Berra once said, it feels like *deja vu* all over again.

Perhaps some background would help. I am experienced/old enough to go back to the late 1970s, early 1980s when the idea of developing software packages to address the needs of common commercial applications across industries started to take hold. Prior to that, only large scale enterprises could afford the cost of custom developing systems to support standard business applications. In those days small armies of computer programmers needed access to large data centers in order to deliver what is now standard business applications (I remember my first project as a new consultant at Deloitte was to build a custom payroll system for a mining company). Then, software packages for accounting/financial, inventory, purchasing, sales order entry, and other commercial applications were available on just about every mainframe or mini-computer out there. And the world changed – instead of custom development as the norm, the trend changed to buy versus build if the needs could be met. And as we saw before and since, marketplace rationalization took place and a company out of Germany founded by 5 former IBM Engineers called *Systemanalyse und Programmentwicklung* ("System Analysis and Program Development") – better known as SAP - became the market leader in enterprise software. Many, many other companies providing competing products have long since gone away or become a shadow of their former selves.

Let's fast forward to today and compare/contrast the Manufacturing Execution Systems (MES) space to the Enterprise Resource Planning (ERP) space. Perhaps the best way to illustrate some of the fundamental differences and therefore the challenges businesses face in choosing between a COTS MES solution or going the custom development path is with the following "As Is" manufacturing applications landscape from a large industrial organization:

Automation Lifecycle – As is

As Is Manufacturing Automation Application Inventory

Application Category	Plant																		
	Plant 1	Plant 2	Plant 3				Plant 4	Plant 5	Plant 6	Plant 7	Plant 8	Plant 9	Plant 10	Plant 11	Plant 12				Plant 13
			PA	PB	PC	PD	PE	PF							PG	PH	PI	PJ	
Internet/Intranet	No Manufacturing Applications Implemented (at this time)																		
Enterprise Resource Planning (ERP)	SAP ECC5.0																		
Advanced Planning and Scheduling (APS)	Aspentech MIMI																		
SQC/SPC and LIMS (Laboratory Information Management Systems)	Invensys Wonderware QI Analyst																		
Process Data Visualization and Analysis	Aspentech Process Explorer																		
Process Data Historian	Aspentech IP21																		
Asset Management	No Applications Implemented (at this time)																		
Loop Management (Conditionbased Control Loop Maintenance)	Matrikon Process Doctor																		
Alarm Management (Alarm Reduction and History)	Matrikon Process Guard																		
Recipe and Product Specification Management	Honeywell TotalPlant PSM																		
Transition Management	ABB																		
Advanced Process Control (APC) Application	Pavilion																		
Distributed Control System (DCS)	Honeywell TDC3000																		
On-Line Analyzers	Siemens Applied Automation																		
Programmable Logic Controllers (PLCs)	Modicon																		

I know it is an eye chart but the reason I show it is quite simple – this organization appears to have one of everything. There is a different solution – built or bought – for just about every manufacturing function. Reality is this is the norm for most industrial organizations. One all-encompassing automation and/or MES solution did not exist, and a colorful quilt of single-function products and/or millions of lines of custom code became the software landscape. The other reality was that unlike with SAP in the ERP space, there is no dominant player in the MES space which makes choices difficult and certainly not obvious. (By the way, in this example the “As Is” landscape for commercial functions is mainly SAP).

So when it comes to choosing between buying versus building an MES solution, the answer (as you would expect) is **it depends**. But on what? From my perspective it comes down to how an organization would respond to the following:

- What is your MES strategy? What is your Roadmap (e.g. single plant, multi-plant, multi-year, multi-lingual, etc.)? What is the timing for delivery?
- Is there an enterprise standard that the organization is following?
- Is the application under consideration strategic? Unique? If so are the resources (financial and people) available to provide support/enhancements over the long term?
- Are there collaboration opportunities with existing partners/vendors? If so do they see broader marketplace value?
- Are your requirements going to remain static or change in the future? Scalability, standardization and roll-out requirements need to factor into the decision.
- And I know it sounds simple but are there solutions commercially available and better yet are there choices?

In my experience, organizations that make their choices of suppliers/partners based on completeness of vision **and** overall commitment are experiencing success. They realize that COTS MES software is an evolution and is not fully baked. Influencing outcome is key. One of the fundamental differences between the MES and ERP space is that today’s MES solution providers are using acquisition of specialty/point solution providers to round out their offering. This was not the case in the ERP space where it has been largely a ‘built from within’ offering.

So where does this leave us? Should I go custom or COTS? My advice is to clearly understand what is available in the marketplace before embarking on a custom development effort. To me it boils down to a few basic criteria:

- Is what you are doing from an MES perspective truly unique, or do you achieve value on how the system is used as opposed to how you get it?
- Are you prepared to divert resources from your core business to the development and maintenance effort (and it isn’t just technology people – the business must be fully engaged)?
- Have you analyzed the total cost of ownership of custom vs. COTS? Take the time to plot out what’s required in terms of development, testing, support and maintenance of both options.
- Does building a custom solution give your organization a competitive advantage?

The answers to the above will help guide you and your organization in the right direction.

For many organizations, the decision will not be easy. Brock Solutions is currently working with a large industrial organization who for many years considered proprietary MES and controls solutions to be a competitive advantage. However, that recently changed for a variety of reasons, and it was hard to change direction after so many years of working in a custom environment. While the internal debate was exhaustive, productive and vigorous, the call for change boiled down to answering two questions:

1. Is building and maintaining MES and control systems a core competency that brings measurable value to the organization?
2. Can competitive advantage be achieved by applying COTS strategically?

The short answer to question #1 was **no** due to resource knowledge and availability, advances in technology, changes in corporate strategy/direction, total cost of ownership, and availability of commercial solutions. The short answer to question #2 was **yes** because the organization had successfully leveraged proprietary technology to drive business value and could do the same with COTS solutions. As every successful technology innovation has demonstrated, it’s not the technology itself but how it is used that creates sustainable value.

Be practical in your evaluation – although COTS MES is much further along than years past in terms of reliability and multi-functionality, products are still evolving. If COTS is the route you choose be prepared to stay engaged with your selected partner and to drive your program towards success. MES will never be implemented by checking a tick-box or through simple configuration; your manufacturing operation will still need to be modeled against your MES requirements and it’s important that you are committed to guiding the process with your partners.

All this said, my views are just that – my views. I welcome other/additional perspectives.

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John is a Co-CEO of Brock Solutions, a role he has held since 2006. Prior to joining Brock he was a partner at Deloitte Consulting where he held several executive leadership positions. He works directly with Brock's largest customers as a strategic advisor and executive sponsor, and directly participates on client steering committees for large-scale transformational real-time solution programs. John is active in many professional associations including the Manufacturing Enterprise Solutions Association (MESA) where he served as International Chair from 2011 - 2012, World Presidents Organization (WPO), and is an Advisory Board member at the Centre for Business, Entrepreneurship & Technology at the University of Waterloo.

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