

# Part 1: How requirements can greatly improve the selection and integration of Commercial-off-the-shelf (COTS) products

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## ***The COTS Conundrum***

### **The History of COTS**



Over the past years, companies have been purchasing *Commercial off-the-shelf* (COTS) products and integrating them into their business operations in place of developing custom software for these applications. These ready-made solutions help to accelerate the implementation and automate functionality by using industry-accepted business rules, processes, and workflow engines.

The advantages of using these products are measured in terms of development cost, time to market, and overall system reliability. Using COTS products also transfers much of the project risk to the vendor for that part of the overall system.

For example, many vendors have Business Suite applications which allow organizations to install, configure, and use standard functionality to automate the workflow and provide functionality for key business processes such as financial, procurement, and human resources. These applications have been developed to be robust and flexible and will support many companies' needs.

### **So why do we need to write requirements for “out of the box” solutions?**

Regardless of which type of COTS product selected, these ready-made solutions do not always align with an organization's business processes and/or existing systems (see Table 1), and business users are often disappointed when functionality or advertised benefits of these products do not meet their needs.

Table 1. COTS Challenges

Challenge	Description
<b>Business Process Disruption</b>	Installing a COTS product without proper realignment of the people doing the work and/or restructuring of their business processes can severely affect the productivity and affectivity of the business
<b>Missing/incompatible functionality</b>	COTS products don't always perform the same functions as the business was used to.
<b>Sensitivity to vendor modifications</b>	Vendors control the functional roadmap and release schedule for their products. Consequently, customers must be prepared to deal with new releases, patches, and functional changes.
<b>Vendor lock-in (entanglement)</b>	Unless they're extremely careful in developing their system architectures, customers can become tightly dependent on a particular vendor's product or component (for example, billing engines).
<b>Installation and configuration complexity</b>	Installation of COTS products can involve significant deployment and configuration issues that must be considered early in the product selection process.

COTS products are a more efficient way of implementing business functionality; however they do not replace the need for defining requirements to ensure the product is right for the business application, and the product is configured and integrated correctly.

One of the best ways to avoid disrupting the organizational processes is to use a systematic approach to a) define the business needs, b) select the “right” COTS product, and c) define requirements so that the product can be configured or customized properly and aligned with the business processes and/or interfacing systems.

### ***Understanding how a COTS product will benefit the business needs***

#### **Decide on must haves and nice to haves**



Before an organization decides to purchase a COTS product, an initial study should be performed to determine what high-level requirements or features the new product should have (i.e., must haves and nice to haves). This activity is done by each stakeholder or group who potentially will benefit by the new product; and then all inputs are combined, organized, and prioritized.

## Perform a Cost-Benefit Analysis



An organization should perform a Cost/Benefit Analysis (CBA) to determine the amount of money they are willing to invest to avoid or reduce the costs of the current processes vs. incurring the benefits of a new COTS product. There are many factors which go into determining the costs and benefits associated with a COTS product (See Table 2), however performing this CBA will help determine the total cost of ownership and the “true” value of the COTS benefits, thus determining its return on investment (ROI).

Table 2. Costs and benefits to consider

Costs	Benefits
License cost and first year maintenance	Increased revenue to the business
Second and third year maintenance costs	Cost reduction
Hardware costs (servers, workstations, memory upgrades)	Improved customer satisfaction
Infrastructure costs (bandwidth, network upgrades)	Increased profitability
Core implementation team costs	Increased market share
Ancillary resource costs (network administrators, DBAs, etc.)	Increased productivity
Training costs	Reduction in staff
Mentoring costs	Reduction in software maintenance
Consultant costs	Better accountability/reporting
Administrative costs	Ease of maintenance
Learning curve	
Support/help desk costs	

## Create the Request for Proposal (RFP)



A request for proposal (RFP) is created to invite the COTS vendors to view the needs of the organization and respond with their offerings, approach, or solutions. At a minimum, the RFP needs to contain a list of high-level requirements or features that the organization has determined they need, and to allow the vendors to respond on how their products will meet those specified needs.

## Evaluate the vendor's offerings



After the proposals are received from each COTS vendor, analysis is performed to compare each vendor's responses to how well they align with the needs of the business. A simple comparison chart can be created listing each vendor's response to each of the high-level requirements outlined in the must have/nice to have list. A weighted-rating (typically 1 to 5) can be assigned to how well each vendor's response satisfies each business requirement. The assessment should also include other criteria such as, price, performance, quality, additional capabilities, compliance status, etc. for each vendor.

## Defining requirements for COTS products

### Use a "fast-track" approach for defining requirements for minor modifications



Requirements should be defined for any changes to the COTS product which affect; report layouts, screen views, business rule variations, workflow routing, or database modifications.

To capture these minor requirements, the COTS vendor can demonstrate (or walkthrough) the functionality of their product with key stakeholders in the room (sometimes called a conference room pilot) using test or real data. During this demonstration, changes to the product should be documented as a bulletized list, so that the vendor can make the necessary changes to the COTS product to ensure the product meets the business needs.

### Use a more rigorous approach for defining new functionality



When the COTS product is missing major functionality that the business requires, a more formal approach is needed to define requirements more accurately, so that the new functionality can be developed and/or integrated. Techniques such as Use Cases, User Stories, and/or Prototyping can be used to more completely analyze, document, and validate these requirements. The approach taken and the amount of effort to capture requirements for new functionality will be determined by the scope and complexity of the required functionality.

## Summary

### Avoid COTS Integration issues with proper requirements definition

Costly mistakes regarding the selection and integration of COTS products can be avoided by simply defining requirements prior to purchasing or installing these products. The effort and time required to write these requirements depends on whether the COTS product needs minor reconfigurations or major customization.