



# Customization, Configuration, or Modification? A Taxonomy for Information System Specialization

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Two key characteristics of Enterprise Systems (ES) - and many other types of packaged information systems (IS) - are: (1) ES are generic systems that may be used by a large number of organizations and (2) ES usually offer multiple mechanisms to make changes to the system to adapt the generic system to the specific requirements of an organization<sup>1</sup>. It is presumed that the goal of any changes - whether appropriate and successful or not - is to satisfy requirements that are specific to the organization implementing the ES.

To describe the nature of changes made to a system, practitioners and academics alike use a variety of terms. Most commonly the terms configuration, modification, and customization are used in this context. Unfortunately these terms are often used inconsistently across software vendors (i.e., SAP vs. Oracle) and articles discussing the issue. One software company (or article), for instance, may use the term customization for change activities that another software company (or article) describes as configuration. The problem is that there appears to be no commonly accepted framework that defines the terms and relates them to each other. This article first discusses the key dimensions that can be used to describe changes to a generic software system and then presents a proposal for a taxonomy that defines the key terms, and relates them to each other.

A change to a generic software system can be described from several viewpoints. One key dimension is the technical activity that is performed to accomplish the change. This includes, for example, setting software switches that enable or disable certain functionality, setting values in tables that drive business processes, or writing new source code that is added to the system. These technical activities vary in time and skill that is required to perform the change. Consequently there is also a cost dimension that differentiates the different change activities. But both of the above dimensions do not provide a base to categorize change activities into configuration, customization, or modification in general. For instance, changing a table entry can be considered a configuration activity or a modification depending on which kind of table is involved. Also the cost for the same type of activity may vary significantly from one organization to the other depending on the existing IS resources at the organization which is implementing the ES. For an IT department with an experienced group of Java programmers, adding a few lines of code may be as costly or even cheaper than hiring a consultant to make the right changes in the right tables of a complex database.

There is, however, a third important dimension: the support, which a software vendor provides for changes, made to a packaged system. The term configuration is generally used to describe activities, whether this is setting a software switch or changing a table entry, that lead to changes that are (or at least promised to be) supported in future releases and by the software vendor support facilities. If a change on the other hand is not supported at all it is usually described as a modification. The term customization is arguably the most ambiguous term. Sometimes it includes both configuration and modification, at other times just refers to either modification or configuration. Despite the existing inconsistency with which the terms are used, the dimension that leads to a clear and meaningful distinction between configuration, modification, or customization is the software vendor support. The support is important since it has significant implications for the development and maintenance

costs of a system. This is particularly important in the context of ES, for which the cost of making and maintaining changes are a substantial part of the overall project costs.

Software vendor support is not always an all or nothing matter. A software vendor can decide that only certain parts of a change are supported or that there are cost and time limits to the support. User exits for instance are defined interfaces to an ES. If functionality is added to a system by exploiting a user exit the interface is supported while the code that implements this functionality is not. Therefore user exits would be placed in the middle of the continuum that exists for software vendor support.

The taxonomy proposed in this article relates the following concepts: specialization, selection, customization, configuration, user exits, and modification.

The term specialization is used to describe any activity to achieve a better fit of the IS with the specific requirements of the organization. This may be achieved in two ways: (1) by selection and (2) by customization. The selection determines the initial specialization of an IS solution. A system, developed according to the requirements of a particular organization would have a high degree of specialization, while a generic ES "out-of-the-box" would have a low degree of specialization. A generic solution, however, may be further specialized by customization (see Figure 1).

Customization includes any activity that leads to a change of a process or data definition in a generic system. These activities may have varying support by the software vendor. Depending on the level of support three main categories are distinguished. Configurations, which have high level of support, user exits, which are partially supported, and modifications, which have a low level of support (see Figure 2).

Figure 1

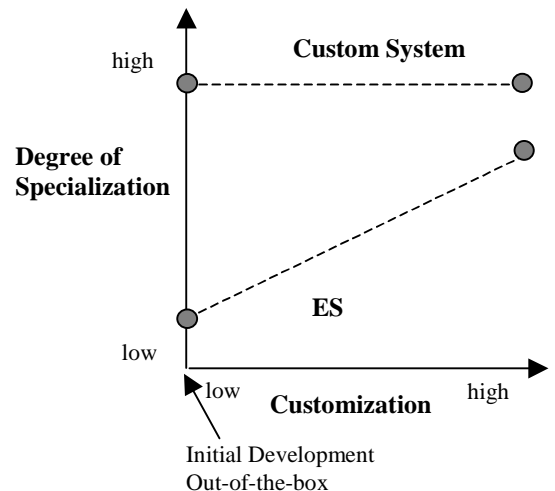
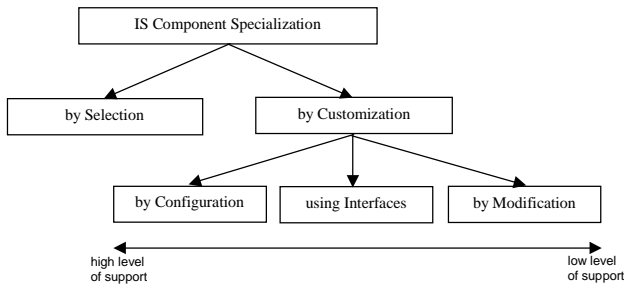


Figure 2



This taxonomy may provide helpful guidance in further research or practical applications. It could also be used to identify effective approaches to IS specialization in conjunction with other IS theories. For instance, the specialization for individual components of an ES may be examined by combining this framework with theories related to general asset specialization (asset specificity) and/or the resource-based view of the firm to determine the alignment of customization efforts with IS strategy.

**ENDNOTES**

<sup>1</sup> Note: This article does not discuss or make a judgement about the merits of a particular type of change applied to an actual system.

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