

Consumer Value-Aware Enterprise Architecture

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Abstract. To improve the alignment between business and IT, this paper explores how to make Enterprise Architecture (EA) aware of consumer values. Current proposals in enterprise modeling recognize the need for modeling user needs, or values. However they do not classify them nor do they provide means to obtain them. In our study, these are first introduced as basic values captured via Schwartz's Value Survey, a cross-culturally applicable tool from the world of psychology, which are mapped onto Holbrook's Typology of Consumer Values. Additionally, because formal models require inputs that are more concrete than abstract, and through this proposal, the indistinct values of consumers can be transformed and formalized to be incorporated into enterprise architecture, represented here by ISO/IEC 42010. The novelty of this work is found in the method for operationalizing consumer values for their alignment and utilization within information systems.

Keywords: Value, Consumer Value, Business-IT Alignment, Enterprise Modeling, Enterprise Architecture.

1 Introduction

An enterprise exists to fulfill both a business mission and a vision [1], and a key element necessary to complete those tasks is deemed the value proposition. This clarifies how the enterprise will create differentiated, sustainable value to specific customers [2].

The value proposition is part of a business's strategy and as such it is ultimately linked to the infrastructure that enables the business to provide value to its customers. Such support systems are often larger-scale enterprise systems that allow for provisioning of goods and services to customers as promised by the value proposition. What the value proposition generally addresses is an amount in goods, products, services or money, considered as a suitable equivalent for something else—a fair price or return for an investment [3] focusing primarily on the economic value exchanged. In counterpoise how a good, product, or service is delivered to, or perceived by, the consumer is described by consumer values [4].

Although how economic values relate and influence business IT systems is an area that has been addressed [5, 6, 7], it is not clear whether and how consumer values do so, in particular where they fit within the design of enterprise systems. However, perhaps more critical to this research is whether this is an important area to study at all.

Kotler [8] acknowledged the crucial role consumer values play in all marketing activity; as the key motivator behind, and the primary driver within, value exchanges, they both induce the consumer to seek solutions to fulfill their needs as well as catalyze their exposure to the marketing information presented to them. Therefore, enterprise systems should reflect consumer values as well.

But beyond the simple transfer of value objects, what is the relevance of consumer values and how does this affect enterprise systems? Using book selling as an example, one can illustrate the impact of consumer values on enterprise systems. Borders was the largest book store in the United States, but they missed the shift of the book selling business to e-sales. Shopping online became appealing to consumers in different ways than shopping at physical bookstores, for reasons such as convenience, while the core economic value involved remained money for books. However, a brick-and-mortar competitor, Barnes & Noble, did not overlook this shift in consumer values and extended its business online while preserving its book stores. Amazon set up its entire business around this shift and soon dominated online book sales, while Borders recently went out of business [9]. Additionally, to better compete with Amazon and Barnes & Noble, Apple's move into e-book sales necessitated either improving on the value of convenience or choosing other consumer values to attract consumers. As a consequence, Apple recently put forward the idea of providing books to consumers directly from the authors via its online delivery platform iTunes, aiming to attract consumers based on how acquiring books directly from the authors is perceived, thus aiming at consumer values different than convenience [10].

In both cases, aiming at particular consumer values suggested that the enterprise (re)designed their systems to support the provision of these consumer values. For example, to support different consumer values surrounding convenience, Amazon developed entirely new capabilities to purchase and deliver e-books, something for which its infrastructure for processing and shipping physical goods would not have been designed, leading Amazon to the top of book and e-book sales online. Similarly, to be capable to support their e-publishing idea, Apple had to not only leverage the wide popularity of their authoring tools among authors to allow them to publish and sell to their readers directly via iTunes, but also to undertake all the necessary changes in its existing products, as well as to introduce new ones. All of this necessitated changes to the underlying architecture of their online delivery platform.

Although the core value exchange remains money for books, the consumer values driving this vary greatly. These bookseller examples highlight that variability and show how it directly influences the success of the value proposition via the attendant value exchange. Success depends on an enterprise's capability to set up its IT systems to efficiently marshal and align its resources to aid in effectively presenting, and delivering upon, its value proposition to consumers.

Consequently, the aim of this study is to explore how consumer values fit within the design of enterprise systems. Attaining this goal relies on relating consumer values to enterprise systems. To accomplish this, there needs to be a means for obtaining and classifying consumer values on a common level, such that they can be related to enterprise systems. The proposal below describes just such a means—relating basic values captured through Schwartz's Value Survey [11] to Holbrook's Typology of Consumer Values [4]. For enterprise systems, the present work addresses them holistically through Enterprise Architectures (EA), these being the fundamental

conception of an enterprise as captured by a set of elements, their relationships to each other and to the environment [12]. For the scope of this study a standard for architectures—ISO/IEC 42010, Architecture Description [12]—is used upon which the aforementioned value frameworks are mapped. This allows the extension of the proposed mappings towards EAs rooted in this standard, and thus constitutes mappings agnostic of any particular EA approach.

The paper is structured as follows: Section 2 presents a discussion on values, basic values, and consumer values, Section 3 presents the integrated consumer value framework that was developed, Section 4 presents how the integrated consumer value framework fits within enterprise architecture, and Section 5 presents the conclusions and directions for future research.

2 Conceptions of Value

The concept of value has a wide variety of accepted meanings, with the choice of usage primarily one of context. In business it is most commonly used in an economic sense to mean an object that can be offered by one actor to another [13] often where the worth or desirability of something is expressed as an amount of money [14]. In the Business-IT alignment discipline, a value object (also called a resource) is considered as something that is of economic value for at least one actor, e.g., a car, a book, Internet access, or a stream of music [15]. Henkel et.al. state that values can be psychological and social in nature, such as beauty, pleasure, health state, honor, and a feeling of safety [5]. According to Gordijn [6], a user experience is also recognized as having a value. To distinguish between these different kinds of values, Ilayperuma et.al. identified two categories of values—economic and internal [7] — where internal value could be a certain property attached to an actor, such as their beauty or health, or it could be a property of some enabling service, such as speedy delivery. In contrast to the present proposal, none of these works from Business-IT alignment attempt to capture such values, nor do they relate it to EA. The term for these adopted within this work is consumer values, as defined by Holbrook [4] (see discussion in §2.2).

2.1 Basic Values

Schwartz's Value Theory (SVT) adopts the definition of value from Rokeach, summarized as a belief that a specific mode of conduct or end-state is personally or socially preferable to its opposite [16]. Values serve as criteria for judgment, preferences, choice and decisions as they underlie the person's knowledge, beliefs, and attitudes [17]. According to Schwartz, all the items found in earlier value theories, in value questionnaires from different cultures, as well as religious and philosophical discussions of values, can be classified virtually into one of the following motivationally distinct basic values [11] (Table 1): Power, Universalism, Achievement, Benevolence, Hedonism, Tradition, Stimulation, Conformity, Self-direction, and Security.

SVT emphasizes the profound nature of values, but at the same time offers a new consumer research approach by concretely combining these value structures with an analysis of human motivation [18]. This integrated structure of values can be summarized with two orthogonal dimensions: Self-enhancement (the pursuit of self-interests) vs. Self-transcendence (concern for the welfare and interest of others); and Openness to Change (independence of action, thought, and feeling, and a readiness for new experiences) vs. Conservation (self-restriction, order, and resistance to change).

Table 1. Schwartz's Basic Values as per their Classifying Dimensions, with examples [11]

Dimension	Basic Value	Dimension	Basic Value
Openness to Change	Self-direction (Creativity, Freedom)	Self-transcendence	Universalism (Equality, Justice)
	Stimulation (An exciting life)		Benevolence (Helpfulness)
	Hedonism ¹ (Pleasure)		Hedonism (Pleasure)
Self-enhancement	Achievement (Success, Ambition)	Conservation	Conformity (Obedience)
	Power (Authority, Wealth)		Tradition (Humility, Devotion) Security (Social order)

Thereafter, Schwartz developed the Value Survey (SVS) to measure the basic values [11]. SVS focuses on a universally applicable method for capturing and describing values across cultures and it has been applied in numerous places [19], including business strategy development support [20]. The Value Survey operationalizes the ten basic values with a set of 56 items, 30 of which were originally used in the work of Rokeach. The answers from the questionnaire can then be converted into a set of numerical results that can be used directly, or visualized via a value structure.

2.2 Consumer Values

Holbrook refines the value concept, focusing on those held by individuals during a value exchange, referring to them as consumer values and classifying them into a Typology of Consumer Values.

A consumer value is “an interactive, relativistic preference experience” [4] (Table 2); interactive entails an interchange between some subject and an object, relativistic refers to consumer values being comparative, preferential refers to consumer values embodying the outcome of an evaluative judgment, and experience refers to consumer

¹ Hedonism shares elements of both Openness and Self-enhancement [25].

values not residing in the product/service acquired but rather in the consumption experience. Holbrook’s definition allows for a rather expansive view of value, because all products provide services in their capacity to create need- or want-satisfying experiences.

Holbrook identifies three dimensions in consumer values that are used as the basis for developing his typology [4]: Extrinsic vs. Intrinsic, Self-oriented vs. Other-oriented, and Active vs. Reactive.

Extrinsic is a means/end relationship wherein consumption is prized for its functional, utilitarian ability to serve as a means to accomplish some further purpose, aim, goal or objective, for example, purchasing from an online bookseller solely because it has the lowest prices. Intrinsic occurs when some consumption experience is appreciated as an end in itself—for its own sake, such as choosing to shop at a book store rather than an online retailer due to its comfortable reading room and pleasant ambience.

Self-oriented refers to occasions where some aspect of consumption is cherished, either selfishly or prudently, for the individual’s sake; an efficient online book store saves time and effort when purchasing books. Other-oriented refers to occasions where the consumption experience or the product on which it depends is valued by others, either beyond the subject, for its own sake, for how they react to it, or for the effect it has on them. A consumer may be driven to buy a book from a local book store instead of Amazon in order to support the local economy.

Active entails a physical or mental manipulation of some tangible or intangible object, involving things done by a consumer to or with a product as part of some consumption experience: the experience of reading from a paper book versus an electronic one has great appeal to many people. Reactive results from apprehending, appreciating, admiring, or otherwise responding to an object, when the object acts upon the subject. Similar to the example given for intrinsic, the dream of reading in a book-filled space also be reactive, when the primary force behind the consumption experience is the object of consumption (the book) and not the subject (the consumer).

Based on these three dimensions, Holbrook’s Typology of Consumer Values identifies eight archetypes that represent distinct types of value in the consumption experience [4] (Table 2): Efficiency, Excellence, Status, Esteem, Play, Aesthetics, Ethics, and Spirituality.

Table 2. Holbrook’s Typology of Consumer Values, with examples [4]

		Extrinsic	Intrinsic
Self-oriented	Active	Efficiency (Convenience)	Play (Fun)
	Reactive	Excellence (Quality)	Aesthetics (Beauty)
Other-oriented	Active	Status (Success)	Ethics (Virtue, Justice)
	Reactive	Esteem (Reputation)	Spirituality (Faith, Sacred)

A final set of key concepts from Holbrook begins with Market Space Dimension. This represents those characteristics, attributes, or features of brands in the product

class that provide consumer value. It contains within it the concept of Ideal Point, which indicates a position of maximum consumer value for the customer segment of interest. Taken together, these frame Transactions, or the exchange of interest, a process between two parties in which each party gives up something of value in return for something of greater value.

3 Mapping Basic Values onto Consumer Values

While various conceptual frameworks such as Holbrook's Typology, Maslow's Hierarchy of Needs [21] or McClelland's Trichotomy of Needs [22] can function as means for understanding consumers, they lack a method for the values' instrumentalization and operationalization. Beyond mapping such values to existing approaches to business strategy [23] or remaking another tool that contains the necessary functionality, such as SERVQUAL [24], there have been very few attempts for working directly within this field.

3.1 Mapping Schwartz's Basic Values onto Holbrook's Consumer Values

Schwartz claims his values are universal and are not designed for a particular application, but rather for broader, more general tasks. To provide them with a specific orientation—in this case consumer values—it is therefore necessary to map them to an applicable framework. While it is possible to relate both Schwartz and Holbrook individually to EA, such a solution would be lacking: applying Schwartz to EA provides only a means for capturing higher level values, and by introducing Holbrook's Typology into EA development one is given a framework for understanding consumer values without any means to obtain them. While in either approach a necessary side of the process is missing, in combination, Schwartz and Holbrook provide a way to capture and understand consumer values allowing them to be related with EA.

Values serve as criteria for judgment, preferences, choice and decisions as they underlie the person's knowledge, beliefs, and attitudes [17]. Schwartz applies this definition directly, basing his Value Theory on the fact that these values are desirable, trans-situational goals of variable importance that are applied as broader guiding principles by a person or social entity [11].

In summary, to Schwartz:

- Values are beliefs tied inextricably to emotion, not objective, cold ideas.
- Values are a motivational construct: they refer to the desirable goals people strive to attain.
- Values transcend specific actions and situations, and this abstract nature distinguishes them from concepts like norms and attitudes, which usually refer to specific actions, objects, or situations.
- Values guide the selection or evaluation of actions, policies, people, and events. That is, values serve as standards or criteria.
- Values are ordered by importance relative to one another. Peoples' values form an ordered system of value priorities that characterize them as individuals [25].

By extension, a customer’s purchasing behavior reflects those actions which are based on a relationship between their values, desires, and actions. Recalling Holbrook’s definition of consumer value as being “an interactive, relativistic preference experience” [4], it is apparent that there is significant overlap with Schwartz’s Value Theory.

Schwartz’s Value Survey (SVS) measures the ten basic values [11] found in the Value Theory with a set of 56 items. These results can then be mapped to the conceptual framework of Holbrook’s Typology. Thus a tool widely used in the psychology community can provide quantitative data that can express formerly solely qualitative concepts. The converse—mapping Holbrook to Schwartz—would not provide any means to obtain and operationalize the values (Table 3).

To understand the mapping, it is necessary to reintroduce both the dimensions that Holbrook uses to define his archetypical consumer values (Self-Oriented vs. Other Oriented, Extrinsic vs. Intrinsic, and Active vs. Reactive) as well as those of Schwartz (Openness to Change, Self-Enhancement, Self-Transcendence, and Conservation).

These can in turn be mapped, with Holbrook’s Self-oriented and Schwartz’s Self-enhancement and Holbrook’s Other-oriented relating to Schwartz’s Self-transcendence due to their intended focus: the individual in the former or others in the latter. Holbrook’s Active and Extrinsic relates to Schwartz’s Openness to Change and Holbrook’s Reactive and Intrinsic to Schwartz’s Conservation. This also relates to intentional direction; Active, Extrinsic, and Openness to Change are directed outside the self while Reactive, Intrinsic, and Conservation entail processes internal to the individual.

Because these are the underlying concepts for each of the values, it is necessary to first relate them to each other before proceeding further. No direct, one-to-one relationships exist, and further complicating matters is the fact that the terms have similar names, but not definitions.

Table 3. Mapping Schwartz’s Value Dimensions and Holbrook’s Value Dimensions

Schwartz’s Value Dimensions	Holbrook’s Value Dimensions		
Openness to Change	Self-oriented	Active	Intrinsic
Self-Transcendence	Other-oriented	Active	Intrinsic
Conservation	Self-oriented	Reactive	Extrinsic
Self-Enhancement	Other-oriented	Active	Extrinsic

3.2 Reasoning Behind the Mapping

Now that the relationships between the dimensions have been established, mappings relating Schwartz’s Basic Values onto Holbrook’s Consumer Values (Table 4) are introduced and the reasoning behind them presented and explained.

Table 4. Schwartz's Basic Values Mapped onto Holbrook's Consumer Values [4]

		Extrinsic	Intrinsic
Self-oriented	Active	Efficiency (Conformity, Security)	Play (Self-direction, Stimulation)
	Reactive	Excellence (Achievement)	Aesthetics (Hedonism)
Other-oriented	Active	Status (Power)	Ethics (Universalism)
	Reactive	Esteem (Power, Achievement)	Spirituality (Benevolence, Tradition)

(Italics=Schwartz's Basic Values)

Conformity and Security to Efficiency. Schwartz's Conformity promotes cooperation in order to avoid negative outcomes for the self, and not necessarily out of altruism (self-orientation). Furthermore, it establishes and maintains such cooperation through actions unlikely to upset others or violate social norms, a classic means/end relationship which is the hallmark of the Extrinsic dimension. Security is quite similar and is based on the safety and harmony of society, of relationships, and of self, for the benefit of the individual. Holbrook's Efficiency is a utilitarian value that results from the active use of a product or consumption experience as a means to achieve some self-oriented purpose. Another view of Efficiency—convenience—is often a measure of utility derived versus time or energy expended [26]. Using the bookseller as an example, a consumer being able to efficiently and securely purchase a book through a website that is easy to use and conforms to a set of well-promulgated standards would be an example containing all three values.

Achievement to Excellence. The Achievement value is an internal, personal appreciation of success achieved through the demonstration of competence according to social standards. With Excellence, one admires some object or prizes some experience for its capacity to accomplish some goal or to perform some function. The consumer reactively apprehends their purchase, viewing it as a wise decision within their social structure. In the example, the bookseller would be able to satisfy both values by having a well-designed website that allows customers to easily make purchases.

Power to Status. For Schwartz, Power speaks directly to social status, prestige, and dominance over people and resources, matching Holbrook's definition nearly identically. It also possesses a reactive quality, where self-apprehension of one attaining or preserving a dominant position within a more general social system. For Holbrook, Status is sought by adjusting consumption to affect those whom one wishes to influence: by consuming products or engaging in consumption experiences to project a particular type of image. Such values are most commonly met by offering exclusivity in some form, for example high-end products not available from other

retailers. In the example, a bookseller could differentiate itself by having a special section that offered rare books for sale.

Power and Achievement to Esteem. Recalling Power (social status, prestige) and Achievement (an internal, personal appreciation of success), to satisfy such values the bookseller could offer multiple product options, such as physical books and e-books. Holbrook's Esteem is the reactive appreciation of consumption or lifestyle in a somewhat passive way as a potential extrinsic means to enhance ones' other-oriented public image. A consumer could be motivated to choose the e-book because of its more environmentally friendly delivery method, relishing "saving the planet" while also exercising their independent choice over delivery options.

Stimulation and Self-direction to Play. Holbrook's consumer value Play is a self-oriented experience, actively sought and enjoyed for its own sake, and as such, typically involves having fun. Schwartz's value for Self-direction is about creativity, freedom, independence, and being able to choose ones' own goals, while his value Stimulation is based on excitement and novelty directly experienced is related to Play via Holbrook's Intrinsic and Active dimensions. In the example, a new media-enabled tablet could provide the bookseller an opportunity to provide the instantaneous gratification of new and unique content, beyond a simple black-and-white e-book. Building such a delivery infrastructure however would entail an entire configuration of their enterprise systems, which were most likely designed around the delivery of physical products.

Hedonism to Aesthetics. In Schwartz's value Hedonism, pleasure and sensuous gratification are directed towards oneself. Similarly Holbrook's Aesthetics refers to an appreciation of some consumption experience enjoyed for its own sake, without a need for external justification. Through Aesthetics—an Intrinsic and Reactive value—the consumer apprehends and internalizes the consumption experience, making this broader than generally understood where only external attributes catalyze reactions. Returning to the example, the development of e-book readers took into account a number of factors, among them the pleasure derived from reading a physical book. A centuries-old technology, the book has been perfected over time and is difficult to improve upon: a superior form factor with text optimized for reading.

Benevolence and Universalism to Ethics. Schwartz's Benevolence attempts to enhance and preserve the welfare of those within a person's social group, while Universalism seeks to understand, appreciate, tolerate, and protect the welfare of all people and nature. There are undercurrents of Holbrook's Reactivity (appreciating the experience personally) but the differentiating factor here is that there is an externalized locus of intention: the basis for the action is not self-satisfaction, but is focused on helping or pleasing others. Similarly, Holbrook's Ethics involves doing something for the sake of others—that is, with a concern for how it will affect them or how they will react to it—where such consumption experiences are valued as ends in themselves. A bookseller could satisfy these concerns by implementing practices for an ethical supply chain, focusing on smaller scale publishers who utilize recognized fair trade and labor practices.

Tradition to Spirituality. In Schwartz's basic values this is most closely related to Tradition, or respect commitment, and acceptance of customers and ideas that traditional culture or religion provides the self. Holbrook's consumer value Spirituality entails an experience that is sought not as a means to an ulterior end but rather prized for its own sake, specifically by accessing an external Other or greater power.

Spirituality can be difficult to address directly due to the many sensitivities that exist around it; explicitly making spirituality a focus of an enterprise entails a great deal of difficulty. However, it has many indirect responses, as found in an example from the United States. Many localities ban certain products, such as pornography and alcohol, based on "community standards". The example bookseller, being unable to ship such items to customers, must have systems in place to either block their display on the website or to block the transaction at the time of purchase.

4 Consumer Value-Aware Enterprise Architecture

ISO/IEC 42010 [12] describes software system architectures through a set of generic concepts and terms of reference constituting an architecture description. Linking concepts from this standard to consumer values allows for the extension of enterprise architectures that are based on this standard, such as TOGAF [27], ArchiMate [28], etc., towards consumer value-awareness. This section presents how EA can be extended towards consumer values; the linkage is illustrated with the previously explored example of consumer-awareness in selling of e-books. The section concludes with a brief discussion on the impact of those extensions being used for TOGAF to become consumer value-aware.

4.1 Description of ISO/IEC 42010 Meta-Model

In ISO/IEC 42010 Concerns are interests relevant to one or more Stakeholders that drive a System-of-Interest Concerns arise from requirements and can be shown for example as goals, needs, quality attributes, and architecture decisions. Stakeholders can be an individual, team, organization, or classes thereof, having an interest in a system. System-of-Interest is a facilitator of value exchange between enterprise and consumer. Architecture Description expresses the Architecture of a System-of-Interest related also to the stakeholder(s), and the concern. As the key artifact, it explains, on a high level the design components of the system-of-interest.

Architecture Rationale contains quantitative and qualitative evidence of the proposed architecture that records the reasoning behind chosen Concerns. Correspondence expresses relationships between elements of the Architecture Description and can be used to express, record, enforce, and analyze consistency and dependencies spanning more than a single model. Correspondence Rule, which enforces the application of Correspondences between elements of the Architecture Description. Architecture Viewpoint contains the conventions that frame an Architecture with respect to a set of Concerns. Architecture View expresses Architecture through a cohesive group of models, and is governed by an Architecture Viewpoint

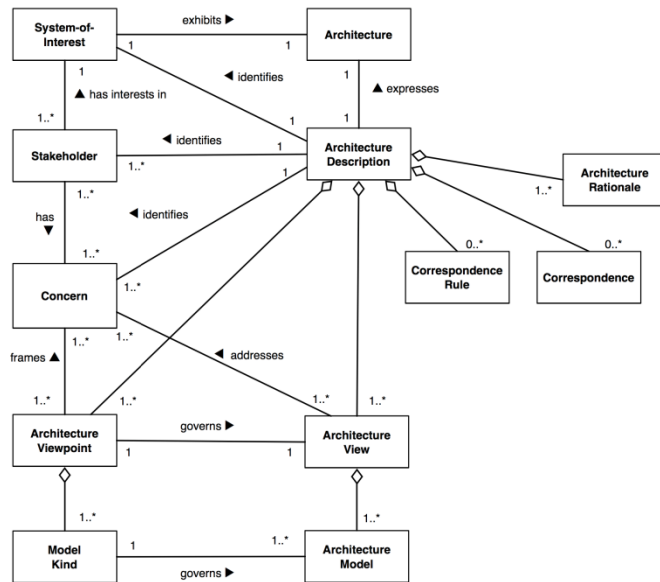


Fig. 1. Conceptual model of an architecture description within ISO/IEC 42010 [12]

4.2 Consumer Value- Awareness in ISO/IEC 42010

Below, consumer value awareness within ISO/IEC 42010 is demonstrated first by those consumer value concepts that relate directly to concepts found in ISO/IEC 42010’s meta-model. Following this, the bookseller example is used to elucidate each concept from the meta-model to highlight how consumer value-awareness can be achieved.

For Holbrook, consumer values are preferences in a value exchange, and thus they map directly to Concern (Figure 1). In the example, Schwartz’s ten basic values are quantified via his SVS, with one such value being Stimulation, which in turn maps to Holbrook’s consumer value Play. This then becomes a Concern.

ISO/IEC 42010’s System-of-Interest is the locus of a value exchange, in this example between the bookseller and the consumer. Recalling the concepts of Market Space Dimensions, and Ideal Points introduced in §2.2, System-of-Interest becomes where Holbrook’s Transaction occurs. As parties with interests in that system Stakeholders map to Consumers in Holbrook’s Typology.

Table 5. Concepts of ISO/IEC 42010 Related to Consumer Values

ISO Concept	Consumer Value
Concern	Consumer Value
Stakeholders	Consumers
System-of-interest	Transactions

Below in Table 6, concepts that lack a direct correspondence are grouped conceptually, and an example for each is provided.

Table 6. Relationships between ISO/IEC 42010 meta-model and Consumer Value Concepts

ISO Concepts and Descriptions	Example
<p>Architecture Description expresses the Architecture of ISO's System-of-Interest/Holbrook's Transaction related to ISO Stakeholder/Holbrook's Consumer, as well as ISO's Concern/Holbrook's Consumer Value. As the key design artifact, it explains on a high level the design components of the system-of-interest. Architecture Rationale contains quantitative and qualitative evidence of the proposed architecture that records the reasoning behind chosen Concerns.</p>	<p>Summary results from Schwartz's Value Survey, mapped to Holbrook's Typology are populated here. It is because of this concept's constraints that, when deciding where to expend valuable resources, it would be important for the book seller to understand whether consumers valued efficiency in the form of cheaper prices and slower shipping times (Holbrook's Efficiency and Schwartz's Security), or higher prices and providing the product electronically for immediate gratification (Holbrook's Play and Schwartz's Stimulation).</p>
<p>To become consumer values-aware, the Correspondence Rule, which enforces the application of Correspondences between elements of the Architecture Description, should be handled similarly: each must utilize the results of the consumer-value aware survey based on Schwartz and Holbrook as found in the Architecture Rationale.</p>	<p>A rule could be that consumer interaction with a System-of-Interest (e-book reader) must implement the Concern, e.g., Holbrook's Play.</p>
<p>Architecture Viewpoint is captured as methods, heuristics, metrics, patterns, design rules or guidelines, and best practices. Architecture View expresses Architecture through a cohesive group of models, and is governed by an Architecture Viewpoint</p>	<p>As the Concern in the example, the consumer value Play dictates the methods and patterns which will facilitate its design. This focuses how a concern is expressed by the Architecture, and structures models grouped within the Architecture View.</p>

4.3 Consumer Value-Awareness in Other Enterprise Architectures

Enterprise architecture frameworks such as TOGAF [27], etc. are aligned with the concepts of the ISO/IEC 42010 architecture description model. Therefore, when considering an enterprise as a system-of-interest, thus aiming at an architecture description of an enterprise, relationships between consumer values and ISO/IEC/IEEE 42010 models can be identified for explicit consumer value-awareness within enterprise architectures.

For example, because TOGAF is closely related to ISO/IEC 42010 it carries forward concepts from that standard; for example, its definition of stakeholder is

nearly identical— “people who have key roles in, or concerns about, the system” [27]. They also share a problem: both lack an explicit consumer value-aware orientation. Certain EA standards do address this issue, though not explicitly, containing concepts which can contain consumer values but which do not explicitly call for them.

TOGAF is an excellent exemplar, as its content meta-model supports extensions that allow for more in-depth consideration of particular architecture concerns. For example, several TOGAF concepts relevant to this research are Motivation Extension which contains Drivers, or external or internal conditions that motivate an organization to define its goals; Goals, or high-level statements of intent or direction for an organization that are typically used to measure success; and Objectives, which are time-bounded milestones for an organization used to demonstrate progress towards a goal. The logical progression is that the Organization is motivated by the Driver, which creates the Goal, which is realized through the Objective.

The consumer value—Play in the book seller example—can be mapped directly to TOGAF’s Driver. Extending this, the book seller is motivated by Play to increase sales and develops a TOGAF Goal of increasing revenue derived from products intended to engage that consumer value. The TOGAF Objective supported by the TOGAF Driver and the TOGAF Goal is that within one fiscal year, revenues derived from the enhanced e-book reader will have increased 20% over previous levels.

5 Conclusions and Future Work

The aim of this study was to explore how consumer values can be linked to enterprise architecture to enrich business-IT alignment efforts. Its justification has been motivated using current, real-world examples about book selling, a consumer-value sensitive business where low profit margins and easy switching by consumers make for an extremely competitive environment. The value frameworks used in the study are Schwartz’s [11] and Holbrook’s [4], with Schwartz allowing for the elicitation of basic values while Holbrook allows for the classification of consumer values. The two frameworks have been integrated with a proposed set of mappings between the basic values of Schwartz, and the consumer values of Holbrook. The outcome is an integrated consumer value framework that includes both elicitation and classification of consumer values applicable to any line of business.

Enterprise Architecture provides the methods and models used to design and realize an enterprise’s organizational structure, processes, and information systems. As such, the proposed integrated consumer value framework has been linked to ISO/IEC 42010 [12] to illustrate the explicit introduction of consumer values into core concepts of architecture, thus providing the following benefits:

- Linking consumer values with distinct EA concepts allows for the identification of system requirements coming from particular consumer values.
- Standards-based and independence from any particular EA.
- Propagates consumer values into EA frameworks based on ISO/IEC 42010, such as TOGAF.

Future research directions will focus on shifting from the generic level of ISO/IEC 42010 into distinct EAs rooted in the standard to demonstrate the practical applicability of the proposal. Additionally, links to known RE approaches such as GORE will be explored.

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