PRACTICE PAPER

Management System Design for Sustainable Excellence: Framework, Practices and Considerations

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Building on practice, action research, and theory, this paper presents a framework and approach for the design of management systems that create sustainable value for multiple stakeholders. This positive approach to design builds on a foundation of Baldrige-based performance excellence concepts and principles and integrates aspects of systems theory, design thinking, appreciative inquiry, and sustainability to design management systems that integrate the perspectives of economic, environmental, and social stakeholders. The design framework, practices, and considerations originally emerged from practice and action research and were refined at the Monfort Institute applications lab using action research methods enhanced with selected case study practices. The purpose of this paper is to provide new insights on the process and practices of management system design to help practitioners design custom leadership and management systems, as well as provide new insights for academic researchers interested in advancing the theory of management by design. Examples and experiences are included to illustrate key concepts related to the "art and science" of management system design.

Key words: Baldrige award, collaborative design, criteria for performance excellence, design thinking, design principles, management system design, managerial practices, managerial processes, positive deviance, stakeholders, stakeholder-centered design, sustainability, sustainable value, system integration, systems theory, systems thinking

INTRODUCTION

Successful leaders in the future will have to become architects of enduring organizations by designing systems that create sustainable results for multiple stakeholders. There are numerous system failures, such as the recent "meltdown" of the U.S. mortgage finance system (Zipkin 2009; Latham 2009). Over the last several decades, leaders have tried to improve organization performance using a variety of models, tools, and techniques. While some of these methods have proved useful, many attempts have met with varying degrees of success. As Avital et al. (2006, 537) point out, some organizations have experienced disappointing results using many of these approaches, including activity-based costing (ABC), total quality management (TQM), earned value analysis, and balanced scorecard. In addition, in the last two decades there have been more than 1000 applicants for the Baldrige award, yet fewer than 10 percent have received the award. Part of the reason the other 90 percent did not receive the award is due to the design of their management systems. More than half of the points used to determine Baldrige award recipients are derived from an assessment of the organization's systematic approaches (management systems) in six categories including: leadership; strategic planning; customer focus; measurement, analysis, and knowledge management; workforce focus; and operations focus. The remaining points are derived from actual

results produced by these systems. Unfortunately, many of these approaches to improvement were either narrowly focused on "fixing" near-term problems in the organization or were focused on individual components and opportunities for improvement (OFIs) without the benefit of a systems perspective or consideration of the needs of diverse stakeholders, or both. However, organizations and management systems are human created and consequently can be recreated. It may be time to take a design approach to improving management systems; unfortunately, "the idea of applying design approaches to management is new and, as yet, largely undeveloped" (Dunne and Martin 2006, 512).

The stakeholder-centered design framework, practices, and considerations presented in this paper build on the foundation of the Malcolm Baldrige National Quality Award (MBNQA) Criteria for Performance Excellence (CPE) framework (NIST 2011). While the CPE provide a management systems framework, nonprescriptive questions, core values, and concepts, along with a maturity model style scoring scale, they do not provide any advice or guidance on how to use these components to design high-performing management systems. This paper provides a framework for using these CPE components to design management systems. In addition, this framework integrates four additional concepts including appreciative inquiry, systems thinking, design thinking, and sustainability into the approach to enhance the design of management systems that create sustainable value for key stakeholders. The design framework incorporates appreciative inquiry (AI) and intelligence in a positive approach to address the design challenges of systems that serve multiple stakeholders. Instead of focusing on simply "fixing" problems, this approach to system design incorporates an appreciative approach using a positive "lens."

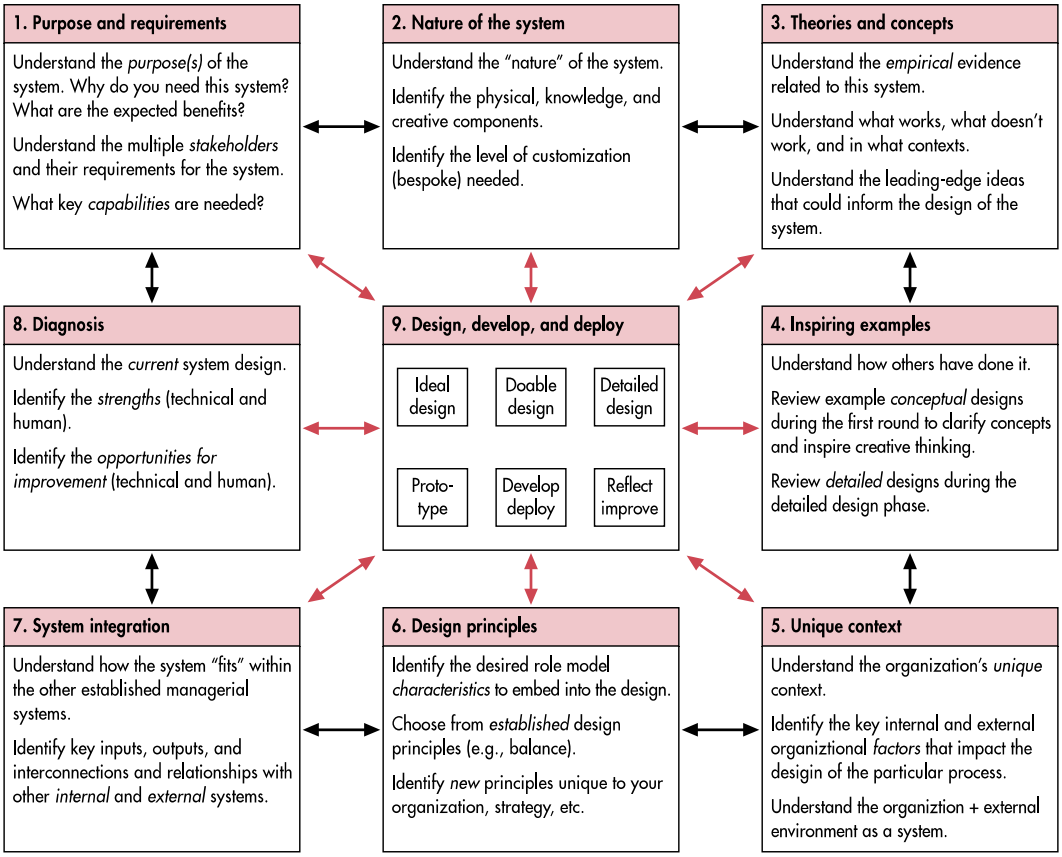
This positive approach is also informed by systems theory and thinking to ensure the system design is internally congruent and coordinated with the larger internal and external systems such as incentive systems and scorecards, just to name a few. Systems theory is integrated in the design process to facilitate the development of generative solutions that take advantage of leverage points to create sustainable value for stakeholders. In addition, this approach incorporates design thinking and shifts the senior leader's role from a focus on decision making and "operator" of the existing system to that of "architect" of new organization systems and integrates design thinking throughout the process (Boland et al. 2008). The framework is also informed by approaches used in product and service design such as Moggridge (2007). Finally, the design framework incorporates sustainability concepts including the needs and perspectives of diverse stakeholders (economic, societal, and environmental) to create a sustainable stakeholder-centered design (Elkington, Emerson, and Beloe 2006).

The focus of this paper is on the collaborative design of management systems. Management systems are coherent combinations of managerial processes, practices, and activities to achieve a particular purpose or function within the organization such as strategic planning. According to NIST (2011, 63), systematic approaches "are well-ordered, are repeatable, and use data and information so learning is possible. In other words, approaches are systematic if they build in the opportunity for evaluation, improvement, and sharing, thereby permitting a gain in maturity."

The concept of management systems is not new and dates back to at least 500 BCE when the Chinese philosopher Mo-Tze (a.k.a. Miscius) noted:

> "Whoever pursues a business in this world must have a system. A business which has attained success without a system does not exist. From ministers and generals down to the hundreds of craftsmen, every one of them has a system. The craftsmen employ the ruler to make a square and the compass to make a circle. All of them, both skilled and unskilled, use this system. The skilled may at times accomplish a circle and a square by their own dexterity. But with a system, even the unskilled may achieve the same result, though dexterity they have none. Hence, every craftsman possesses a system as a model. Now, if we govern the empire, or a large state, without a system as a model, are we not even less intelligent than a common craftsman?" (Wu 1928, 226)

Figure 1 Design framework.



Source: Adapted from Latham and Vinyard (2011)

Unfortunately, many organizations rely on intelligent executives to lead and manage the organization without the benefit of an explicit system. In addition, the design of management systems is often narrowly focused on the needs of a few key stakeholders such as investors and customers with little regard for the needs of the other multiple stakeholders such as employees, suppliers and partners, society, and the environment. Both of these issues result in an unsustainable approach to leading and managing organizations.

The design framework presented in this paper (see Figure 1) provides a structured approach to the design and development of management systems to meet the needs of multiple stakeholders. This framework is composed of nine separate but related components. The first eight components, system purpose through diagnosis, are the "springboard" to component nine, a creative system design, development, and deployment process. While this paper presents the design framework in a series of linear "steps," in practice, it is an iterative process of "give and take" among the various design components.

FRAMEWORK DEVELOPMENT

The design framework (see Figure 1) was developed from practice using action research methods enhanced by selected case study practices. The design framework originally emerged from action research as described by McNiff and Whitehead (2006). Numerous design projects were planned and conducted over a period of several years to design a wide variety of management systems, from strategic management

systems to managerial processes associated with enterprise resource planning (ERP) systems to workforce development systems. An action-reflection cycle including observation, reflection, action, evaluation, and modification was used to learn from and improve the practice of management system design (McNiff and Whitehead 2006, 9). After each project was conducted and the process and outcomes (new design artifacts) were observed, a systematic process of reflection and learning was used to identify the methods and practices that worked well and those that needed improvement. Changes were made to the design framework and practices, and these changes were tested in subsequent design projects. Over time many design components and concepts were added, tested, modified, and sometimes excluded, resulting in the original design framework. While the purpose of this action research approach was to improve practice and contribute to the development of design knowledge and theory, there were many threats to bias and validity and limitations associated with this approach.

To mitigate some of the bias and validity threats, the original design framework was then assessed and refined at the Monfort Institute applications lab using action research methods enhanced by practices from case study research and theory development (Eisenhardt 1989; Mintzberg 2005). Several design projects (cases) conducted at the institute were studied in-depth using the artifacts produced by the design team including flip charts, facilitator notes, post-project assessment lessons learned, formal project reports, and the actual designs developed by each project. These cases were explored individually (within case data analysis) to evaluate the nine framework components, and the results were then compared across the cases to identify cross-case patterns (Eisenhardt 1989). As Eisenhardt suggests, the framework components and practices were then compared to theories and concepts in the extant literature from a variety of disciplines, including product and service design, psychology, sustainability, performance excellence, and so forth. The remainder of this paper describes the results of this process, the nine components that comprise the current version of the framework (see Figure 1). Each of the nine design component descriptions is supported with selected theories and concepts from the extant literature as well as selected examples from the design project cases used to develop the framework.

PURPOSE AND REQUIREMENTS

What are the purposes and requirements of the particular system being designed? As McDonough (2009) proposes, "Design is the first signal of human intention." Consequently, the first step in design is to clearly define the intent or purpose of the particular managerial system being designed (see Figure 1). This primacy of purpose in system design is not a new idea, as the old saying goes, "form follows function." The purposes for a management system often come from a variety of sources and inputs, including users, customers (internal and external), regulations, industry standards, and so forth. Eventually, the purposes are translated into specific and often detailed requirements, and there are many tools and techniques to assist in this task.

The six CPE process categories (leadership; strategic planning; customer focus; measurement, analysis, and knowledge management; workforce focus; and process management) provide nonprescriptive questions that are ideally suited to guiding the design of custom leadership and managerial systems. As an example, a CPE leadership and workforce training and development system question is: "How do you evaluate the EFFECTIVENESS and efficiency of your LEARNING and development systems" (NIST 2011, 19)? If one removes the phrase "How do you," he or she is left with one purpose or function of a training and development system, which is to "evaluate the effectiveness and efficiency of the learning and development system." In addition, the CPE provide a brief description of the purpose for each subitem in each category (NIST 2011, 34-48). In one case, a design team at a Baldrige-recipient healthcare system used this approach to define the purposes of a new leader and employee development system (see Table 1). They began with the purposes identified in the CPE for that particular system and then developed their own list of purposes.

Table 1 Example purposes.

CPE (selected)	Organization specific (selected)
• Addresses core competencies, strategic challenges, and the accomplishment of action plans • Addresses the breadth of development opportunities, including education training, coaching, mentoring, and work-related experiences • Reinforces new knowledge and skills on the job	• Measures of effectiveness including immediate learning results as well as the impact of training on organization performance • Align leader and employee development with the organization's vision, mission, strategy, core competencies, and strategic challenges • Determine priorities for resource allocation • Incorporate learning-loops to continuously evaluate and improve the system

Addressing the needs of multiple stakeholders takes many forms depending on the particular system. Input from the various stakeholders can be gathered through research or by involving representatives from each stakeholder group in the design process. While the individual system has a specific purpose and requirements, there are also the larger purposes of the overall managerial system, the enterprise, and how the enterprise serves society (Gharajedaghi 2006). The role of a well-designed managerial system is to align the purposes of the individual organization members with the purposes of the enterprise and the larger society, including the environment. A stakeholder-centered approach enables the design of managerial systems that meet the needs and intentions of a variety of stakeholders including customers, employees, investors, partners and suppliers, society, and the natural environment. Once the purposes and requirements are known, the design team is able to identify the "nature" of the system to help inform design decisions.

NATURE OF THE SYSTEM

The next key input to the design process is for the design team to understand the "nature" of system (see step 2, Figure 1). Management systems come in a variety of shapes and sizes. There are four major dimensions that define the nature of a particular management system: a) physical (manufacturing, transportation, and so on); b) knowledge or information (loan processing, insurance claims, and so on); c) creative (strategy development, product development, and so on); and d) custom or bespoke systems to meet the variation in customer requirements. The combination of these dimensions found in the management system influences the design team by enabling and constraining the design options (see Table 2).

Work processes often include many physical components. These processes have historically been designed from an engineering perspective with humans as "machines." As NIST (2011, 61) points out, "In some situations, processes might require adherence to a specific sequence of steps, with documentation (sometimes formal) of procedures and requirements, including well-defined measurement and control steps." They go on to propose, "In many service situations, particularly when customers are directly involved in the service, process is used in a more general way (that is, to spell out what must be done, possibly including a preferred or expected sequence)." However, as Seaton (2010) notes, the degree of structure can negatively impact the level of creativity.

Creative processes often require just the right amount of structure to facilitate the creative process but not too much structure to inhibit creativity. As Ohly, Kase, and Škerlavaj (2010) propose, creativity is a "social" process. According to NIST (2011, 61), processes such as strategic planning, research, and development do "not necessarily imply formal sequences of steps. Rather, process implies general understandings regarding competent performance, such as timing, options to be included, evaluation, and reporting. Sequences might arise as part of these understandings." In other words, creative processes may consist of flexible frameworks and tools as opposed to specific procedures.

Table 2 Four Dimensions of nature.

Dimension	Design considerations
Physical	• Typically many engineering and scientific knowledge constraints. • Often requires a high degree of standardization and focus on conformance (control) to reduce variation and ensure safety. • Often good candidates for automation. • Examples: nuclear power, aviation, space, etc.
Knowledge and information	• Typically requires humans to make decisions. • The portions of the system that do not require humans to make decisions are candidates for information technology automation. • Design to enable and engage human minds as a key component in the system. • Provide necessary and accurate information to the decision makers with the least amount of effort and cost. • Example: A loan process is an example of a process that includes components of information transfer that do not require a human decision and components that require decisions such as the decisions to loan, interest rate, etc.
Creative	• Requires creativity or innovation to be effective. • Most effective when the degree of process specificity and standardization are low. • Structure can enhance the level of creativity but only up to a point and then additional structure beyond that point impedes or reduces creativity. The challenge—just enough structure and no more. • Examples: strategy development, product development, custom services, etc.
Custom/bespoke	• Often requires some creativity or innovation to be effective. • Standards and structure are enough to gain efficiency and effectiveness but not so specific as to unduly constrain variation needed to satisfy the customer. • Needs assessment is a key element of the system. • Examples: tailored clothing, experience-based services, custom products and services, etc.

How much flexibility or "bespoke" is needed when executing the system? How flexible does this system or process need to be to effectively address variation in users, situations, purposes, and so forth? Physical processes tend to require less flexibility and are typically more standardized than knowledge or creative processes. "However, there are instances where the physical processes require flexibility in execution. Service industries [for example] often deal with physical components (food, hotel properties, and so on) that have to be either modified or combined in various ways to serve the various needs of a variety of customers. The trick is to determine early in the design process the need for customization in the process so that the right degree of flexibility can be designed into the system" (Latham and Vinyard 2011, 595-596).

These four dimensions are not mutually exclusive; managerial systems are often composed of combinations of two, three, or sometimes all four dimensions. Consequently, the design considerations can change depending on the particular system component. In addition, when a system combines several dimensions, the design team is often faced with competing considerations. If an innovative and elegant solution cannot be found to address these competing considerations, the team may have to choose to emphasize one consideration over another.

THEORIES AND CONCEPTS

As Pfeffer and Sutton (2006) note, it is not unusual for practitioners of management to ignore empirical evidence in the determination of their explicit and tacit management practices. There is, of course, plenty of blame to go around. Pfeffer and Fong (2002) note that academics often do not produce new theory and knowledge suitable for consumption by the practitioners. According to several executives, successful research is "not academic arcane language in some obscure journal" (Latham 2008, 20). It is not clear how things got to this point. It is

hard for one to imagine an architect not taking into consideration important scientific evidence such as metallurgy when designing a new building. Step 3 of the framework (see Figure 1) incorporates the latest theories and concepts into the management system design. The CPE identify 11 core values and concepts that are "embedded beliefs and behaviors found in high-performing organizations" (NIST 2011, 49). Evans and Ford (1997) analyze the relationships between these values and concepts and the management systems included in the CPE. These core values and concepts are a useful starting point, but more input is needed to avoid designing management systems that won't work.

It is impractical for a design team to begin from "scratch" and study all of the empirical evidence needed to inform the design of a particular management system. For many management systems, the literature spans several disciplines, including psychology, sociology, business, and systems theory, to name just a few. Consequently, IDEO assembles diverse teams that have respect for one another and what each brings to the table (Kelley and Littman 2001). When forming a design team, IDEO looks for "T-shaped" people—people with depth in a particular area relevant to the particular design project, but who also have the breadth in a variety of areas that enables them to work on cross-disciplinary projects. For example, according to Brown (2008, 86), one of IDEO's design teams included: "a strategist (formerly a nurse), an organizational-development specialist, a technology expert, a process designer, a union representative, and designers from IDEO. This group worked with innovation teams of front-line practitioners in each of the four hospitals." In another case, the design team at a Baldrige-recipient healthcare system included the various relevant subject-matter experts (SMEs) on the team when they designed a new leader and workforce training and development system. The team experienced the benefit of the detailed knowledge without deflating the energy of the group. While theories and concepts can be very useful for practitioners if communicated in ways that make them accessible, examples also help to illuminate new concepts.

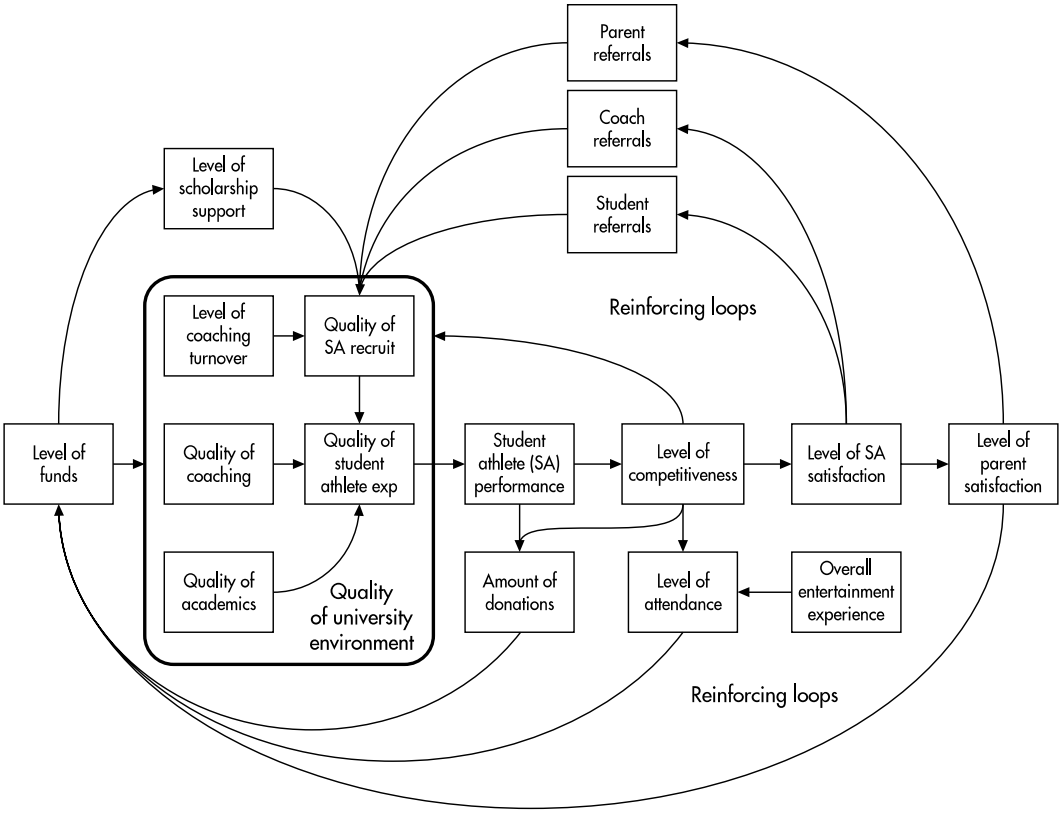
INSPIRING EXAMPLES

The next step is to expose the design team to examples that will help bring the concepts in the previous steps "alive" and inspire the creative adaptation of high-performing examples (see step 4, Figure 1). Benchmarking and the use of best practices to improve performance is not a new idea or concept. According to NIST (2011, 56), "The term 'benchmarks' refers to processes and results that represent best practices and performance for similar activities, inside or outside an organization's industry. Organizations engage in benchmarking to understand the current dimensions of world-class performance and to achieve discontinuous (non-incremental) or 'breakthrough' improvement." In addition, identifying good examples (usually within the organization) is a key practice of AI (Cooperrider, Whitney, and Stavros 2008). (For management system examples based on the CPE, see the application summaries found at: http://www.baldrige.nist.gov/Contacts_Profiles.htm and the annual Quest for Excellence Conferences).

Underlying this approach to looking for best practices is the concept of positive deviance. This concept proposes that in every organization there are certain processes or practices that produce superior results. Based on the work of Albert Bandura and others, positive deviance has successfully been used in a variety of situations, from eradicating the Guinea worm from villages in Africa to improving hospital patient satisfaction to improving the success of Six Sigma projects (Patterson et al. 2008). Inspiring examples can also be found in the literature, such as the examples on sustainable design found in Anderson (1998), Esty and Winston (2009), and Epstein (2008).

Experience suggests that in some circumstances, examples can be a "double-edged sword." There is a danger of allowing the examples to "short-circuit" the creative process. In one case, a government organization's design team saw an example they liked and simply changed a few words and adopted the system for their own use. While this seemed efficient at the time, it ended up not being very effective. The design team had not done the work of

Figure 2 Athletics department context "system" diagram.



exploring the organization's context prior to choosing the example as a model. This resulted in the design team with a relatively shallow understanding of the system they chose and why. As Boland et al. (2008, 17) point out, "Professional managers often resort to mimicking 'best practices' of their industry as a preferred course of action, citing the management maxim, 'Don't reinvent the wheel' even though reinventing the wheel might be precisely what a situation calls for." In order to successfully adapt practices to the unique context, the design team must first understand the context.

UNIQUE CONTEXT

In order for the team to design a management system that meets the unique needs of the organization, they must first understand the context of the organization (see step 5, Figure 1). In his 2009 BAWB keynote address, Bill McDonough proposed that understanding the context was the first step in the design process. Context is not a new concept, and contingency theory has been a topic of research and discussion for several decades (Fry and Smith 1987; Mealiea and Lee 1979). Others have applied the concept of context to system design (Papantonopoulos 2004). In addition, understanding the unique context of the organization and environment is a key element of design thinking. Cooperrider, Whitney, and Stavros (2008, 4) propose that context is one of two basic questions behind any AI initiative: "What, in this particular setting and context, gives life to this system—when it is most alive, healthy, and symbiotically related to its various communities?"

The CPE model is a nonprescriptive, context-dependent model based on key factors identified in an organizational profile. The CPE organization profile consists of key factors organized into five areas: a) organizational environment;

Table 3 Management system design principles.

Principle	Description
Balance	The principle of balance is the degree to which the system creates value for the multiple stakeholders. While the ideal is to develop a design that maximizes the value for all the key stakeholders, the designer often has to compromise and balance the needs of the various stakeholders.
Congruence	The principle of congruence is the degree to which the system components are aligned and consistent with each other and the other organizational systems, culture, plans, processes, information, resource decisions, and actions (Adapted from NIST 2011).
Convenience	The principle of convenience is the degree to which the system is designed to be as convenient as possible for the participants to implement (a.k.a. user friendly). System includes specific processes, procedures, and controls only when necessary.
Coordination	The principle of coordination is the degree to which the system components are interconnected and harmonized with the other (internal and external) components, systems, plans, processes, information, and resource decisions toward common action or effort. This is beyond congruence and is achieved when the individual components of a system operate as a fully interconnected unit (adapted from NIST 2011).
Elegance	The principle of elegance is the degree of system complexity vs. benefit. System includes only enough complexity as is necessary to meet the stakeholder's needs. In other words, keep the design as simple as possible and no more while delivering the desired benefits. It often requires looking at the system in new ways.
Human	The human principle is the degree to which the participants in the system are able to find joy, purpose and meaning in their work.
Learning	The principle of learning is the degree to which opportunities for reflection and learning (learning loops) are designed into the system. Reflection and learning are built into the system at key points to encourage single- and double-loop learning from experience to improve future implementation and to systematically evaluate the design of the system itself.
Sustainability	The sustainability principle is the degree to which the system effectively meets the near- and long-term needs of the current stakeholders without compromising the ability of future generations of stakeholders to meet their own needs. Dimensions include the economic, environmental, and societal needs related to the system (adapted from UN 1987).

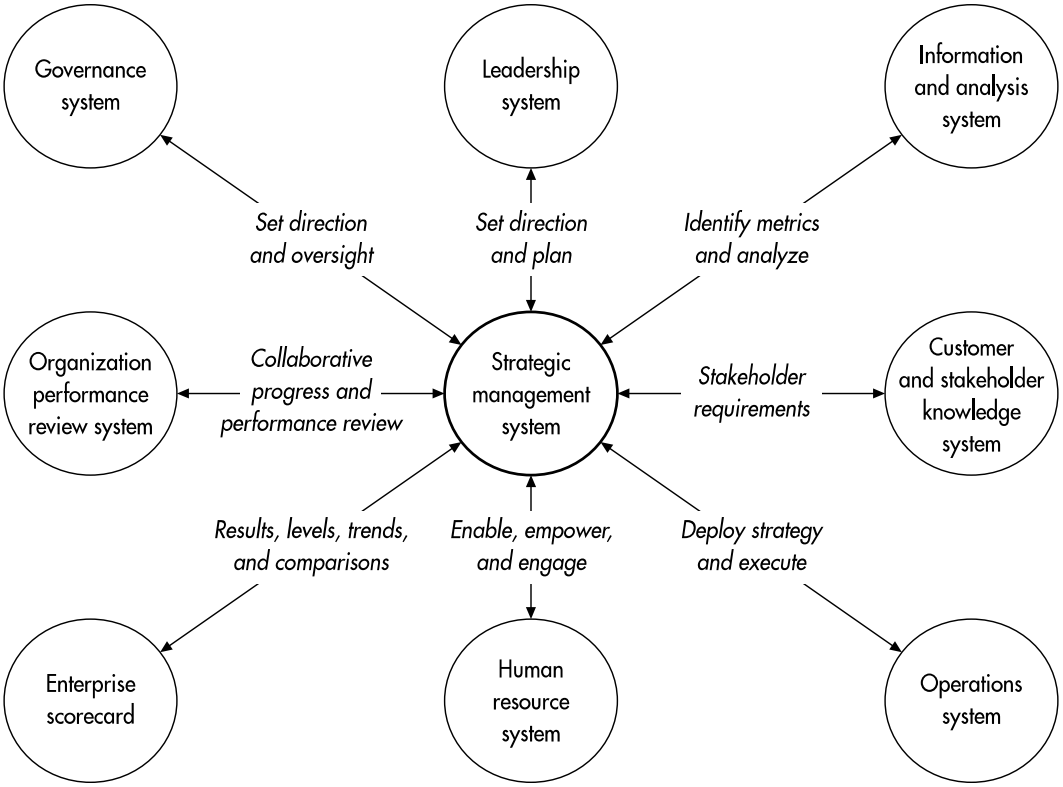
b) organizational relationships; c) competitive environment; d) strategic context; and e) performance improvement system (NIST 2011, 4-6). The output of this exercise is often an enterprise model that depicts the organization's value chain, key support, and managerial processes, along with the external environmental factors. "In other words, the appropriate approach to a particular aspect of the [CPE] model (for example, strategic planning) is dependent on the unique situation or context of the organization. For example, the appropriate strategy development and deployment process for the local 'Mom and Pop' grocery store is likely to be a bit different than a multinational Fortune 500 company with operations in over 40 countries" (Latham and Vinyard 2011, 23).

Using dynamic systems thinking techniques, as described in Senge (2006), a NCAA Division 1 athletics department explored their key stakeholders and relationships, resulting in a systems diagram (see Figure 2). The diagram emerged from the design team's exploration key activities and stakeholders and their relationships. This diagram provided new insights into the organization as a system (internal and external) and enabled the design and development of a strategy system that: a) included an environmental scan focused on the specific key stakeholders, key performance measures, and external competition; b) set priorities (goals and resources) based on the "leverage points" in the system; and c) enabled the identification and inclusion of key university stakeholders in the planning process.

DESIGN PRINCIPLES

In step 6 the design team identifies the key design principles and discusses how those principles should

Figure 3 System integration example (selected linkages).



influence the design (see Figure 1). Principles have long been a central part of the design process. McDonough (2009) proposes that a designer start with principles, then develop goals, strategies, and metrics. Cooperrider and Whitney (2005) note that AI follows the "form follows principle" approach rather than the "form follows function" approach. Instead of choosing one or the other, this approach to design uses both function (system purposes and requirements) and principles to inform the design of management systems (see Table 3). The CPE do not identify specific design principles. However, several CPE components, such as the scoring guidelines, core values and concepts, and glossary, inform and influence the management system design principles (NIST 2011).

The application of the management system design principles varies depending on the purposes and requirements, nature, and context of the particular system as well as the applicable theories and concepts.

SYSTEM INTEGRATION

Eliel Saarinen proposes that designers, "always design a thing by considering it in its next larger context—a chair in a room, a room in a house, a house in an environment, an environment in a city plan." Most management systems do not operate in isolation and are part of a larger system of leadership and management systems that combine to manage the overall enterprise system. According to Skaržauskienė (2008, 108), "the major organization problem is actions that do not correspond to the whole." Consequently, management systems should be designed and described as both parts and as a whole. A system perspective of the larger enterprise management system helps design a particular management system that is aligned and integrated with the whole (see step 7, Figure 1). The concept of congruence is not new. Several studies have shown the positive impact of congruence on programs and

overall organization performance (Randolph and Dess 1984; Russo and Harrison 2005).

Evans (1997) and Latham and Vinyard (2011) identify numerous system integration points or linkages among the management systems included in the CPE. For example, a strategic management system interacts with several other systems, including: stakeholder requirements (including society and the natural environment), the enterprise scorecard, human resource systems, and so forth (see Figure 3). Ultimately, as Skaržauskienė (2008, 116) notes, "The basis of every successful system is a successful communication among separate parts."

The process of alignment and integration is iterative and often characterized by "give and take" between the system being designed and the existing designs of the other management systems. One way for the design team to fully understand how the particular management system works with other systems is to include representatives from the related systems on the design team. This promotes collaboration across functional boundaries and helps build the relationships necessary to implement the new system and make adjustments to existing systems. In the case of the Division 1 athletics department, they also identified a few additional processes that were essential linkages to their strategy system including the university budgeting, facilities planning, and student financial aid budgeting processes.

DIAGNOSIS

If there is an existing system in place, it is often useful for the design team to evaluate that system and identify the strengths and the opportunities for improvement (see step 8, Figure 1). The identification of what is already working well (best practices) and creating the desired experiences for the stakeholders is a core activity in the AI process (Cooperrider, Whitney, and Stavros 2008). However, as Avital et al. (2006, 535-536) point out, there is "a problem that is lurking behind all this positive talk and aspiration is the need for constructive criticism to move projects forward, because criticism is often a springboard for a needed reframing of our understandings." They go on to write, "Too much emphasis on positive affirmation may inhibit the productive role of criticism." Appreciative inquiry doesn't ignore or avoid problems; rather, it turns them around and handles them differently (Messerschmidt 2008). The conclusion—assessment can enhance the design process as long as it is used to enhance a positive approach to creative design.

To identify the strengths and opportunities for improvement of the current system, the design team addresses seven questions directly related to the first seven steps (see Figure 1):

1. How well does the current system fulfill the purposes of the system and meet the stakeholder requirements?
2. How congruent is the current design with the identified nature(s) of the system?
3. How consistent is the current design with the relevant theories and concepts?
4. How well does the current design creatively adapt characteristics and practices from the inspiring examples?
5. How well does the current design "fit" the unique context of the organization?
6. How well does the current design incorporate the design principles?
7. How well is the current design aligned and integrated with the other related management systems and activities?

According to NIST (2011, 30), the CPE "scoring guidelines address the maturity of your approaches, breadth of deployment, extent of learning, and integration with other elements of your performance management system." To inform the diagnosis, organizations that have completed a CPE assessment can build on the strengths and opportunities for improvement (OFIs) identified in the feedback report. For example, a healthcare system used their MBNQA feedback report to supplement the diagnosis of their existing leader and employee development system. The feedback report comments were integrated into the discussion of the characteristics that were needed beyond the strengths identified in the feedback report.

DESIGN, DEVELOP, AND DEPLOY

Informed by the previous eight design activities, designing a new system involves six related activities including: a) imagining the *ideal* conceptual design; b) developing a *doable* conceptual design; c) developing a *detailed* design; d) prototyping; e) developing and deploying the design; and f) continuous reflection and improvement (see step 9, Figure 1). Imagining the ideal system is a process of creating a vision of the future for that particular system and what it can do for the organization. Creating a vision has been identified by numerous researchers as a key ingredient for successful organizational change (Kotter 1995) and is consistent with Ackoff's notion of an "idealized design." In addition, creating a vision of the future system is consistent with the "dream" phase of AI (Cooperrider, Whitney, and Stavros 2008). When designing the ideal, it is useful for the design team to first understand the degree of change required in the redesign of an existing system.

Frantz (1998) identifies two types of change: the evolutionary approach, which he links to AI, and the discontinuous leap approach. The appropriate approach for management system design depends heavily on the current maturity level and number of strengths versus the number of additional characteristics needed to achieve the ideal design. Instances where the strengths are many compared to the additional characteristics needed and the maturity level is high, an evolutionary approach is likely to be the best fit. However, in many instances the organization does not have many strengths on which to build. In these instances, the breakthrough or discontinuous leap approach is likely to be the most appropriate. When the ideal design requires a discontinuous leap, the design team will need to go beyond simple inductive and deductive thinking and use what Martin (2007) calls "abductive" thinking. "Abductive logic seeks the best explanation—that is, it attempts to create the best model—in response to novel or interesting data that doesn't fit an extant model" (Martin 2007, 146). The focus in not on what should be but rather on what might be (Dunne and Martin 2006).

In one case, the senior leadership (design) team, composed of more than 20 people for a large unassisted living company, broke into four groups to develop potential conceptual designs for a new leadership system. They developed rich diagrams on flip charts that depicted their interpretation of a leadership system that fit the unique needs of their culture. Unlike the more formal "flowchart" style leadership systems developed by engineering-oriented firms, this group used metaphors and developed pictures of trees, cars traveling down roadways, and buildings. The group synthesized the various elements of each design into a consensus tree design with the organization's values as the roots, key behaviors as the soil, residents as the heart of the tree with relationships as the trunk, and the various leadership activities as the fruit. While the tree design was unlike any other leadership system seen to date, it fit the organization's unique context. System diagrams not only help users understand the key concepts, flows, relationships, and so forth, but also from a semiotic perspective are symbols that convey meaning in a particular culture.

Due to various constraints, the ideal design may include characteristics that are not "doable" in the foreseeable future. In these instances, the design team may have to once again get creative and refine their design into a more doable system. While constraints are often very useful for generating creative engineering solutions and solving "wicked" business problems (Vandenbosch and Gallagher 2004), experience suggests that when they are identified too early in the design of management systems, they are often inaccurate and result in doable designs that often fall short of what is actually possible. According to Cooperrider and Whitney (2005, 29), "During the design phase of AI, people are invited to challenge the status quo as well as the common assumptions underlying the design of their organization. In one case, a U.S.-based division of a large Asian conglomerate limited their ideal design based on their assumptions regarding the capabilities of the new ERP and CRM software system they were

implementing. These inaccurate assumptions were uncovered when one of the external consultants on the design team questioned some of their design decisions. Once the constraints and assumptions were "on the table," the design team examined and evaluated their validity. This enabled the team to move beyond several invalid constraints and create a truly ideal but doable design.

Once the doable design is created, a more detailed design is developed for testing within the organization. As Ackoff (1998, 28) points out, "The product of an idealized design is not an ideal system and, therefore, not utopian, because it is subject to continuous improvement. The design produced is the best ideal-seeking system that its designers can currently conceive." Consequently, the prototyping process is often an iterative process requiring several cycles of refinement prior to achieving a design that can be implemented throughout the organization. In addition, there are numerous, well-established tools and techniques to support the detailed design and prototyping process, such as quality function deployment. Once the system is developed, it is ready to be deployed throughout the appropriate areas of the organization. Once in place, periodic assessment of the results, along with reflection and improvement, are required to continuously improve the system and keep it current with changing internal and external environments.

APPLICATIONS, LIMITATIONS, AND RECOMMENDATIONS

Given the successful application and refinement of the framework, practices, and considerations in a variety of situations (business, healthcare, government, and so on), it appears that the design framework is applicable to many types of organizations and management systems. While the specific content and designs produced varied with the type of the organization and the particular management system being designed, the use of the framework and individual components did not. While the framework components are presented in sequence, the actual use of the framework does vary depending on the individual designer or design team thinking and the flow of ideas produced in each step. While most design projects begin with the first few steps in sequence, the "path" eventually becomes an unpredictable, iterative, and messy process as the team works to develop the various components. The framework is most effective when used as a structured but flexible guide for design thinking vs. a standardized process to be followed in sequence. In addition, while the Baldrige CPE were an integral part of many of the design cases used to develop the framework, the framework, practices, and considerations are applicable to situations and designs that are not based on the CPE. However, as with any model or practice there are limitations to what one knows and understands about this framework.

There are several limitations associated with the methods used to develop the design framework described in this paper. First, the development of this framework was based on a small sample of design projects led by only few design facilitators (participant-researchers). While it appears useful for designing management systems not included in the sample, it needs to be applied and tested on an even wider variety of management systems and contexts by a wider variety of design teams. Second, while some case study practices were used to enhance the action research process, complete case study research projects, as described by (Eisenhardt 1989; Eisenhardt and Graebner 2007), would further the development of the framework and the associated theories and concepts. Given the bias and validity threats associated with researcher as a participant in the design process, future case studies by more objective researchers would enhance the credibility of these studies. Formal academic case studies would also help further develop the connections to key theories that support the underlying concepts and components in the framework and further the understanding of how and why these components work the way they do. Finally, more research is needed on the application of the eight design principles (see Table 3). Specifically, how do

these principles apply to the various types of management systems, and how do the other components in the design framework, such as the nature of the system, influence the application of the design principles and so forth? It is hoped that practitioners will find the framework useful for improving their management system design efforts and researchers interested in advancing the theory of management by design will continue to develop the framework, practices, and considerations.

CONCLUSION

Leaders today operate in an increasingly complex and challenging environment. They face many difficult challenges, from economic recessions and high levels of government debt to social unrest and climate change. As these pressures continue to increase, leaders are faced with the task of rethinking the purpose and design of their management systems to create enduring organizations that create value not only for the current stakeholders, but value for the generations of stakeholders yet to come. Or, as Hamel (2007, 40) proposes "what is lacking is not insightful analysis, but truly bold and imaginative alternatives to the management status quo—and an army of innovators who have the stamina to reinvent management from the ground up." This is not just a practical business issue brought on by pressure from external stakeholders, but at its core, is an ethical and moral issue (for a summary of related literature see Grant 2008). The answer does not lie in the reallocation of scarce resources but rather in the positive design and redesign of management systems to create sustainable value for multiple stakeholders.

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