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MEASURING END-USER DELIGHT: IS SUCCESS IN PROJECT DESIGN AND DELIVERY ENOUGH?

Muath Abu Arqoub, Prof Craig Langston & Greg Skulmoski, Bond University

ABSTRACT

This paper explores a new approach for measuring project success, and makes the case that end-user delight is a necessary part of performance review. Regardless of project type, there are three generic phases that all successful projects must navigate: initiate, implement and influence. These are translated into their primary goals of design, deliver and delight. Evaluation of any project can be undertaken using the lenses of its financial, social, political and environmental context. The aim in this paper is to unpack the method for measuring delight via satisfaction surveys of project customers, such as client, end-users and local community. Two 5-point Likert scales, with scores multiplied together, are recommended to assess opinions, enabling a four-quadrant model to be produced reflecting 'wants' and 'needs'. Successful projects, therefore, can be described by the percentage of respondents who have a positive view that their wants and needs have been largely achieved.

Four specific success factors for measuring end-user delight are proposed in this paper, and comprise desirable (i.e. attractiveness), adaptable (i.e. flexibility), practicable (i.e. fit for purpose) and serviceable (i.e. enduring). They too are generic. These factors form part of a larger framework, known as *i3d3*, which can assess and rank project success and provide an opportunity for feedback that closes the loop between designer intent and customer effect. This paper sets out a possible way forward to compare future projects in a consistent and objective manner, with particular emphasis on the post-delivery phase.

Keywords: *adaptable, desirable, practicable, project success, serviceable*

INTRODUCTION

In the project management literature, projects typically end at the point of delivery (or handover) to the project sponsor (Serrador and Pinto, 2015; Serrador and Turner, 2015), marking the commencement of its operationalization. This is clearly recounted in the well-respected *PMBOK® Guide* (PMI, 2017). Jugdev and Muller (2005) further posit that project success is typically and prematurely evaluated at the end of the implementation phase because of the availability and indeed convenience of traditional outcome measurements based on actions to date.

However, success ought to be evaluated over a longer time horizon (Anbari et al., 2008; Davis, 2016). The introduction of operational success, including the satisfaction of project end-users/customers is gaining momentum among some researchers (e.g. Ghanbaripour et al., 2017). In recent times, the importance of extending project management and the measurement of its success into the post-delivery period has appeal, as it enables financial, social, political and environmental impacts to be properly considered (Williams et al., 2015). Such extension underpins the importance of formally evaluating benefit realization on projects (Serra and Kunc, 2015), although this evaluation is rarely evidenced in practice at the moment.

The post-delivery period presents an opportunity to assess whether the project actually meets its intended purpose, and supports design feedback and proof of concept. Anbari et al. (2008) highlighted that the post-delivery phase should explore lessons learned, an explanation of what went well and what didn't, and ensure that future projects benefit from this feedback. This implies that project evaluation does not end at handover. Post-occupancy evaluation (POE), which is widely advocated for building projects, is another example of the need to wait – in this case, typically a full year (four seasons).

Design cannot be divorced from usage. For example, sustainability performance is not validated by design modelling, but rather should be demonstrated convincingly in practice. Emphasizing this, Marcelino-Sádaba et al. (2015) explained that the policies of local, national and regional governments are usually of importance in meeting the challenge of sustainability as widely demanded by society. They implied that project testing is critical, and even after approval there are elements that need to be validated objectively. Any project that is ratified by a government authority or affects the safety of members of the community carries the promise of ongoing compliance with statutory requirements (Pope et al., 2004).

Sustainability is only one aspect of success that should be measured after project delivery and handover. According to Joslin and Müller (2015), the dimensions of project success may also include its efficiency, organizational benefits, satisfaction of stakeholders and the project's future potential. From this list, efficiency (including success in schedule, budget, and delivery of objectives) is best measured at the time of implementation (Serra and Kunc, 2015). Other dimensions are not fully understandable until further time has elapsed (Aarseth et al., 2017), and although they can be theoretically stated, are best quantified in the context of actual utilization. Therefore, while project delivery may have come to an end, the level of success of the project (as evidenced by sales, end-user experiences, reflection, product performance, testing, customer feedback, etc.) takes time to manifest.

The consideration of project success beyond implementation, while not a new concept, is a largely unpractised one. Such time extension enables a more complete evaluation of project performance and connects design intent to perceived value (Serra and Kunc, 2015). This includes the contribution of the project to business strategy and stakeholder value. Williams et al. (2015) suggested that the creation of a generic model for the assessment of project value – beyond the usual success factors of scope, time, cost and risk – needs development.

Langston et al. (2018) first proposed a method for measuring success over time suitable for use on any type of project regardless of size or location. Their model, known as *i3d3*, comprised three generic phases that underpin the life of all projects: pre-delivery, delivery, and post-delivery. Although there is a range of labels used in different contexts, they share a common sequence of (1) develop/plan, (2) execute/control and (3) operate/utilize. End of life is part of post-delivery. However, we do not need to wait that long to finalize our opinions on success. The *i3d3* framework with its focus on design, delivery and delight is shown in Figure 1.

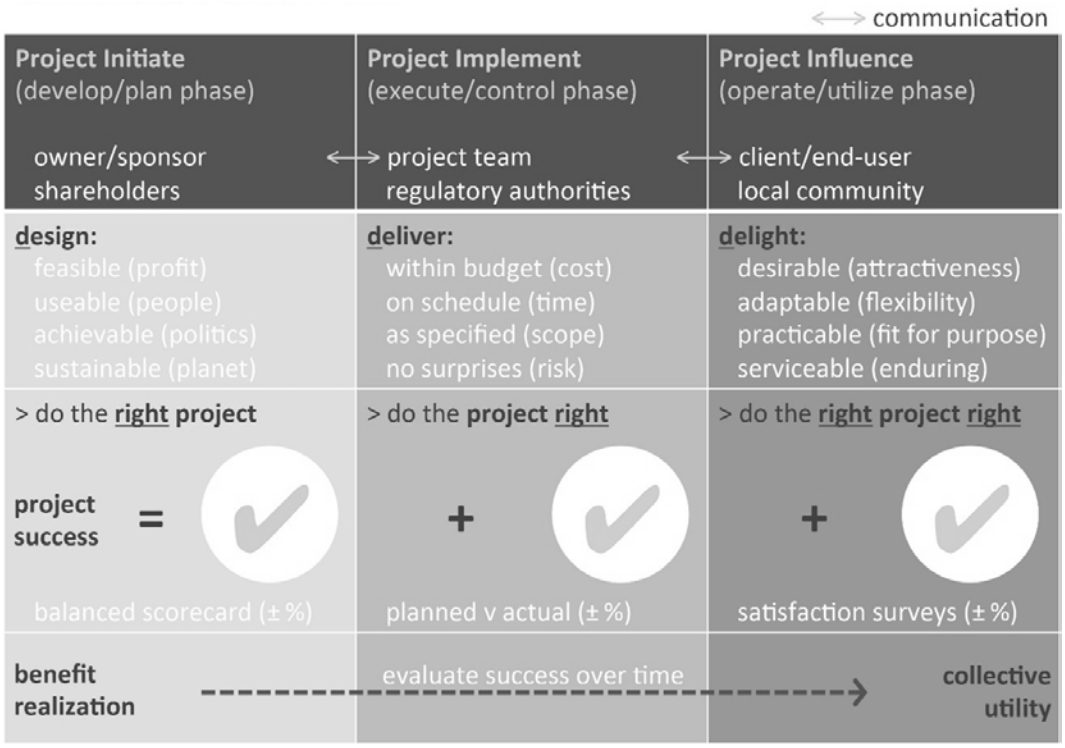

Figure 1 The *i3d3* framework (source: Langston et al., 2018)

During each phase, different sets of stakeholders have higher power and interest than others in regard to the evaluation of project success. For example, the opinion of project recipients (such as end-users or customers), can only be collected after handover. Any measure of success must surely take account of how well projects are able to realize the initial vision from the perspective of their target audience. There is an overarching focus on measuring benefit realization that leads to positive collective utility. It should be noted that stakeholder communication across each phase is critical in ensuring that common purpose and vision are maintained. The passage of time is clearly necessary to draw an informed and reliable conclusion.

LITERATURE REVIEW

The importance of the influence phase

Considering the differing dimensions of project success, it is possible that successful projects at the initiate and implement phases may fail to be successful at the influence phase. Therefore, a project may not be assumed to be successful simply because it was well designed and delivered according to expectations (Zidanea et al., 2015). Achieving project success goes beyond delivering the project to the satisfaction of the project sponsor (Williams, et al., 2015). Most projects need to satisfy requirements pertinent to a range of stakeholders (Davis, 2016), including the client/end-user and/or the local community. Effective project management involves the integration of all stakeholder needs from the beginning to the end of the project (Heravi et al., 2015), and in order to incorporate the opinions of those who are tasked to use the deliverables that arise from this endeavour, the end point needs to extend into the operate/utilize phase. So a wider view of project duration is essential.

Time is a significant criterion when gathering information and when making informed opinions about projects. Turner and Zolin (2012) developed a model for predicting performance indicators for managers to study success perception by stakeholders. They showed that this perception changes over time. Their conclusion was that in order to gain an understanding of project success, one must take into account the opinions of various stakeholders over multiple time frames.

Most managers perceive that when a project reaches the beginning of the operate/utilize phase, it has reached maturity. But maturity may take much longer to emerge, particularly if benefits are expected to be realized over a long time horizon. Benefit realization is an important aspect of success (Laursen and Svejvig, 2016). There is also evidence to suggest validation of benefits is not handled very well in practice (Musawir et al., 2017).

Stakeholder analysis

Stakeholders are groups or individuals who may have an impact on or be impacted by the outcomes, processes and contexts of a project (Eskerod et al., 2015). They are of importance to the success of projects because of their financial and non-financial contributions, their potential for resistance (which may have a negative impact on the project) or because the stakeholders in many cases come up with their own criteria for the evaluation of project success. This view calls for the need to perform stakeholder analysis in order to gather sufficient resources to drive the success of the project and to enable an understanding of the concerns and interests of these stakeholders (Missonier and Loufrani-Fedida, 2014).

Stakeholder analysis would particularly be of help in enhancing the probability of the success of project management in terms of product performance, sustainability and risk management (Sánchez, 2015; Yang and Zou, 2014). Project influence requires stakeholders other than those already considered in design and delivery to be heard.

Initial research considered stakeholders as having dyadic relationships with the project and the project management firm, meaning that each individual stakeholder group should be considered in the context of project deliverables. Using this perspective, some of the factors that were considered in the analysis of stakeholders were their power, urgency and legitimacy (Mitchell et al., 1997). Further, stakeholders are grouped into primary and secondary categories. Primary stakeholders are often those who play an important role in the survival and well-being of the organization. Such groupings enable the consideration of stakeholders in a hierarchical manner according to characteristics like power and interest.

Social network theory

When applying social network theory to explain stakeholder relationships, it is possible to create a description of the manner in which aspects of the stakeholder network for an organization (such as centrality and network density) impact on the response of the organization to the demands of their shareholders (Missonier and Loufrani-Fedida, 2014). Density is an attribute that is present for the whole network and is a measure of the approximate number of ties that provide a link to actors within a network, while centrality is defined as the position of an actor in the network relative to other actors (Ribeiro et al., 2017). An increase in the network density leads to an increase in the number of ties between members, which ultimately results in increased efficiency of communication within networks. This enables the diffusion of values and norms as well as shared expectations. Aside from that,

stakeholders with the highest level of network density are considered to be the most important, and ought to attract attention in order to increase the probability of project success (Haverila and Fehr, 2016).

The sponsor is central in project management because of the need to initiate and accept the project, pay for it, and commission it. However, Haverila and Fehr (2016) argued that customer/beneficiary satisfaction is also critical, although often not assigned an appropriate level of importance. Unfortunately, their narrative of project phases does not include an operational perspective. Stakeholders are networks of individuals and organizations within a project setting, and may include authorities, customers or end-users, the project management team, shareholders, owner or project sponsor, the local community and other actors (Davis, 2016).

In the *i3d3* framework, there is an important change in primary stakeholder during each of the project phases. In the initiation phase, the stakeholders include the owner/sponsor and shareholders. In the implement phase, the stakeholders are the project team as well as regulatory authorities. However, in the influence phase, the stakeholder base broadens to include the client/end-user of the project and the local community.

Stakeholder view of success

The acknowledgement of success is often a result of the realignment between the expectation of stakeholders and the final outcome as described by cognitive dissonance theory (Henoekl, 2015). Davis (2016) reported on an earlier study that attempted to measure success using multiple stakeholders. Although this view of success was based on traditional cost, time and scope parameters, the contractor was an added stakeholder in the measure of success. She stated that not many studies have been carried out that pertain to the stakeholder view of success, with themes such as the relationship of the customer with the organization, acceptance of the project by the customer, appreciation and collaboration, and benefits of the project to the organization and customer. These require further empirical work.

The difficulty of managing and measuring the expectations of stakeholders has resulted in the problem of coming up with an appropriate model. In many cases, the expectations of stakeholders are usually regarded as unmet and particularly because different stakeholders have varied definitions of project success. This is reiterated by Mir and Pinnington (2014) who stated that project success may be variously interpreted by different stakeholders. Conflict of interest between stakeholders is also a potential problem.

The objective of the *i3d3* framework is to eliminate the controversy that has guided the success of a project in the past by proposing use of better criteria to reach an overall opinion of success recognizing that different stakeholder groups will act as judges at different times. Further, the model proposes techniques through which success can be measured at each phase, including project influence, and still remain generically applicable to all projects. The extension of the traditional project life cycle to include operational 'testing' is necessary if appropriate conclusions about success are to form. Communication between phases is also critical to the adoption of this approach in practice. Effective communication, interestingly, is generally regarded as fundamental to successful outcomes and underpinning stakeholder relationships. It is no surprise that the project manager/team sits between sponsor and end-user in regard to communication flow.

MEASURING END-USER DELIGHT: A WAY FORWARD

The operational phase in *i3d3* is represented as 'influence'. Here, the major stakeholders include clients, end-users and the local community who may benefit directly or indirectly from the project's impact. Although projects usually end at the point of delivery, their success can only be ascertained through examining whether the project brought 'delight'. Torbica and Stroh (2001) asserted that if end-users are satisfied, then the project should be considered successful. However, success should be evidenced across all three phases if benefit realization is to be translated into collective utility. At the project influence (operate/utilize) phase, the objective is simplified as: 'do the right project right'.

In this phase, factors of success are evaluated according to whether the project is desirable, adaptable, practicable and serviceable. These factors are considered to be generic across all project types, and form the basis of a questionnaire to assess the level of agreement by customers/beneficiaries. Questions will vary according to the context within which the project is located.

For each of the factors, 10 context-specific questions are raised to collect satisfaction feedback. The feedback ought to be collected after sufficient time has elapsed to make an informed comment, enabling users to gain familiarity with the project, explore its full functionality and overcome the initial fears or possible resistance to change. Time is also of importance because it allows any delivery frustrations to dissipate.

Table 1 describes the collection of user opinion for each question using a central 5-point Likert scale (ranging from -2 to +2). Table 2 describes user relevance for each question using a linear 5-point Likert scale (ranging from 1 to 5). Opinion and relevance are multiplied together to obtain a weighted satisfaction score between -10 and +10. Across all questions pertaining to each of the four success factors, and across all respondents to the questionnaire, a positive mean score is good. A high score suggests a strong level of satisfaction with the project in its operate/utilize phase, while a negative score suggests dissatisfaction.

Table 1 Respondent opinion scale (-2 to +2)

Personal Opinion	Score
Strongly agree	+2
Agree	+1
No opinion	0
Disagree	-1
Strongly disagree	-2

Table 2 Respondent relevance scale (1-5)

Personal Relevance	Score
Very important	5
Slightly important	4
Neutral	3
Slightly unimportant	2
Not important	1

Desirable is a generic success factor that addresses the attractiveness of the project and speaks of the fundamental value to the client/end-users or local community. It involves the determination of whether the stakeholders are willing to associate with it and whether they are proud of it or seek ownership of it. This is crucial as it determines the willingness and the enthusiasm to adopt the project and use it. Qualities contributing to the fascination of a project by the client/end-users or local community include elegance, beauty, aesthetics, quality, plus other insubstantial attributes that bring delight and pleasure.

In regard to the *adaptable* success factor, it relates to the elasticity of the project and its ability to be subject to change without having too much disorder or churn. Some of the qualities of this factor are the change of purpose and avoidance of becoming precipitately old-fashioned, and the ability to customize the project to their individual circumstances. For instance, in an information technology project, adaptability would mean that the project can accommodate minor changes to the way the system is programmed for it to be aligned with organizational culture, systems and processes. Flexibility involves the ability to modify the project to suit changes in market demand, technology and organizational dynamics.

The *practicable* success factor is related to the project being in a position of meeting the expectations of the client/end-user or local community in terms of functionality. This is the determination of whether the project solves the needs of the users. These needs may not be just technical performance specifications in nature, but include simplicity, ease and user-friendliness. It also underscores efficiency and effectiveness in the use of project deliverables.

Serviceable is a success factor that addresses how the project can endure the challenges that come along in the future. The project needs to be treasured in the years to come and is capable of upgrade when required. Serviceability may also include issues of sustainability, future-proofing and ongoing contributions to those it aims to serve.

While the four identified success factors are generic and share the same method of assessment and arrival of an overall satisfaction score, the necessarily contextual questions to assess them will need to be customized to the peculiarities of the project itself. For example, an office fit-out project might consider contextual questions for desirable, adaptable, practicable and serviceable criteria concerning issues such as décor, workstation configuration, secure storage space and energy star rating respectively, while a live concert project might consider the popularity of the headline act, provisions in case of inclement weather, sound and lighting innovation and safety of the crowd on the day of the event. Contextual questions cannot be generic, and may even need to be tailored to different groups of stakeholders (such as employees, local community, visitors, etc.).

Note that there are horizontal connections between the success factors listed in each phase of *i3d3*. These connections relate to financial, social, political and environmental attributes. For example, 'desirable' is largely a financial issue because it seeks to maximize satisfaction in the context of worth. In the initiate phase, financial is expressed as being 'feasible', and in the implement phase, financial is expressed as being 'within budget'. The application of these four overarching attributes is useful because all projects possess them to some extent or other.

DISCUSSION

The literature indicates that the stakeholders connected through a network have a profound impact on project success, even following the implementation period. This makes it of importance for project

managers to go beyond just the delivery of projects, to ensuring that projects succeed in realizing positive impact and value. A need for the development of a generic model for determining success at this level is clear.

In *i3d3*, the objective of the influence stage is to achieve 'delight'. This is anchored on four broad classifications of measures of user satisfaction: desirable, adaptable, practicable and serviceable. These attributes are derived from attempts to measure success in both product and service oriented projects. In software development, for example, measurements often involve variables such as perceived usefulness (Henoekl, 2015), which translates broadly in the assessment of practicable outcomes.

Since the relevant stakeholder group is customer-focused and is likely to have a wide range of opinion about the delivered project, the use of a Likert scale questionnaire is appropriate to find a consensus. More particularly, the 5-point Likert scale is ideal. However, not all questions are important to different groups, so a parallel 5-point scale focused on relevance enables weighting of opinion to be computed. Essentially each respondent will have their answer to each question recorded as a number between -10 and +10. It is proposed that the questions will be written in the first person so that responses based on their personal feelings are encouraged. The quantification of feelings into a numeric score via a questionnaire is a common method for measuring user satisfaction (Pinto and Prescott, 1988).

Jenkins and Ricketts (1979, cited in Henoekl, 2015) reported on a study in which stakeholder views were measured through a 7-point Likert scale of twenty bipolar adjectives. In Nzekwe-Excel (2010), project success was measured under a set of five determinants that are the same as those of the service industry (SERVQUAL). These were reliability (just do it), responsiveness (do it now), assurance (know what you are doing), empathy (show care and concern) and tangibles (look sharp). Other satisfaction models include KANO that employs a four-quadrant model comparing satisfaction of service with implementation of service (Nzekwe-Excel, 2010). Sánchez (2015) measured project success through the use of the balanced scorecard, while Henoekl (2015) conducted a study where evaluations were based on a holistic dimension of whether the project was ugly or beautiful, good or bad. All of these studies are attempts toward measuring project success using quantitative techniques.

In the case of *i3d3*, a four-quadrant approach is adapted from research on workplace ecology (Langston and Al-khawaja, 2018). They compared workplace ecology index (a form of satisfaction) with workplace performance index (a form of implementation). Each respondent to a set of questions about job satisfaction (organization), comfort (space), productivity (technology) and job complexity (expectation) was transformed into x and y coordinates each using a scale of -10 to +10. The quadrant represented by positive x and y values was used to measure the success of workplace change to a range of end-users including management, employees and visitors. The change was deemed successful if at least 75% of respondents were plotted in Quadrant 1. Al-khawaja (2015) found that 53.83% of respondents had a positive view of the change process. His target for a successful project was 75%. Using a scale from 0 to 100, the percentage of positive support (as shown within Quadrant 1) could be used to rank success. Figure 2 summarizes the combined findings for five reported case studies.

This is the approach to be used for measuring delight in *i3d3*. As there are four success factors to be considered, two pairs will be formed and identified as 'wants' (the mean of desirable and adaptable scores) and 'needs' (the mean of practicable and serviceable scores). Values that fall outside of Quadrant 1 are used only for the purposes of calculating the satisfaction ratio. This method is applicable to any project type.

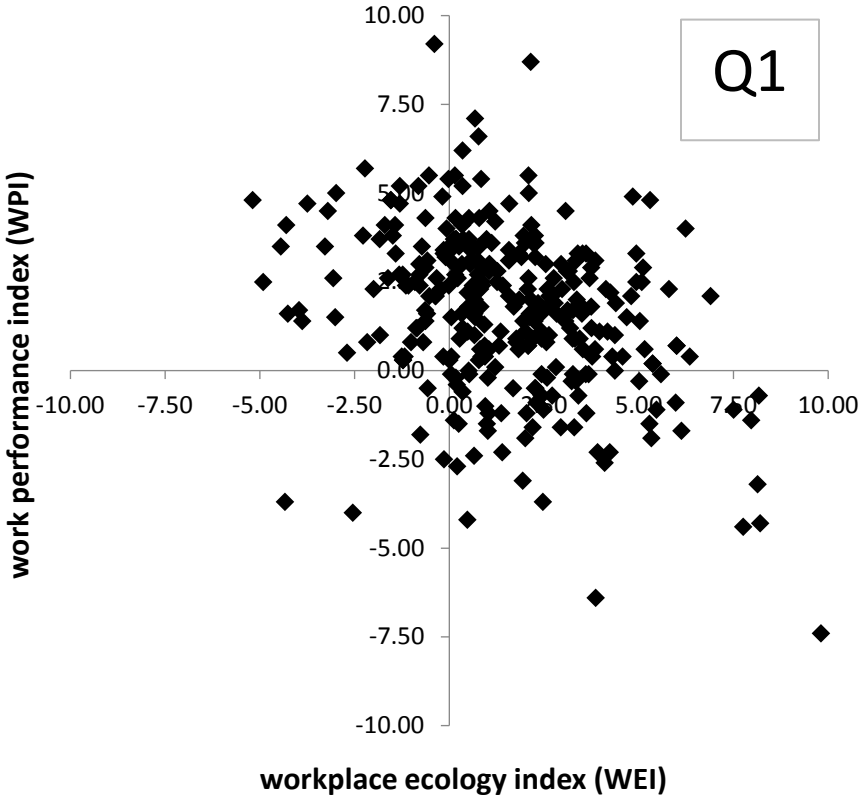

Figure 2 Workplace ecology assessment (adapted from Al-khawaja, 2015)

Sir Alexander John Gordon (1917-1999) served as President of the Royal Institute of British Architects (RIBA) from 1971-1973, and it was during this time he wrote a paper on the future shape of architecture. He argued that buildings should be designed for "long life, loose fit and low energy" (Gordon, 1972). While his peers did not immediately embrace this idea, over time it became a mantra that helps to define good architecture and its role in modern society. The idea of designing for permanence, yet incorporating flexibility to accommodate future change and minimizing environmental consequences (i.e. durable, adaptable and sustainable design objectives) is not necessarily limited to architecture. It arguably applies to any product, and perhaps to any project as well.

No one has ever demonstrated that long life, loose fit and low energy are mutually exclusive. Nor has it been proven that beauty and performance are incompatible. Cost is usually also an important factor in the sense that, all else being equal, people appreciate value for money or affordable outcomes. The technique of life cycle costing (LCC) is able to express costs over many years into a comparable figure today, enabling decisions concerning future value to be more objective. Once again, this technique can apply to any endeavour. Langston (2014; 2015) made the case that pursuit of long life, loose fit, low energy design for buildings, although possibly incurring higher construction costs, often leads to lower life cycle costs over a building's life. Hence 'least cost' might be added to Gordon's design trinity.

Long life, loose fit, low energy and least cost can act as a language that aids communication between designers and end-users. They reinforce the objective of the designer and the needs and wants of the end-user. This idea is summarized in Figure 3.

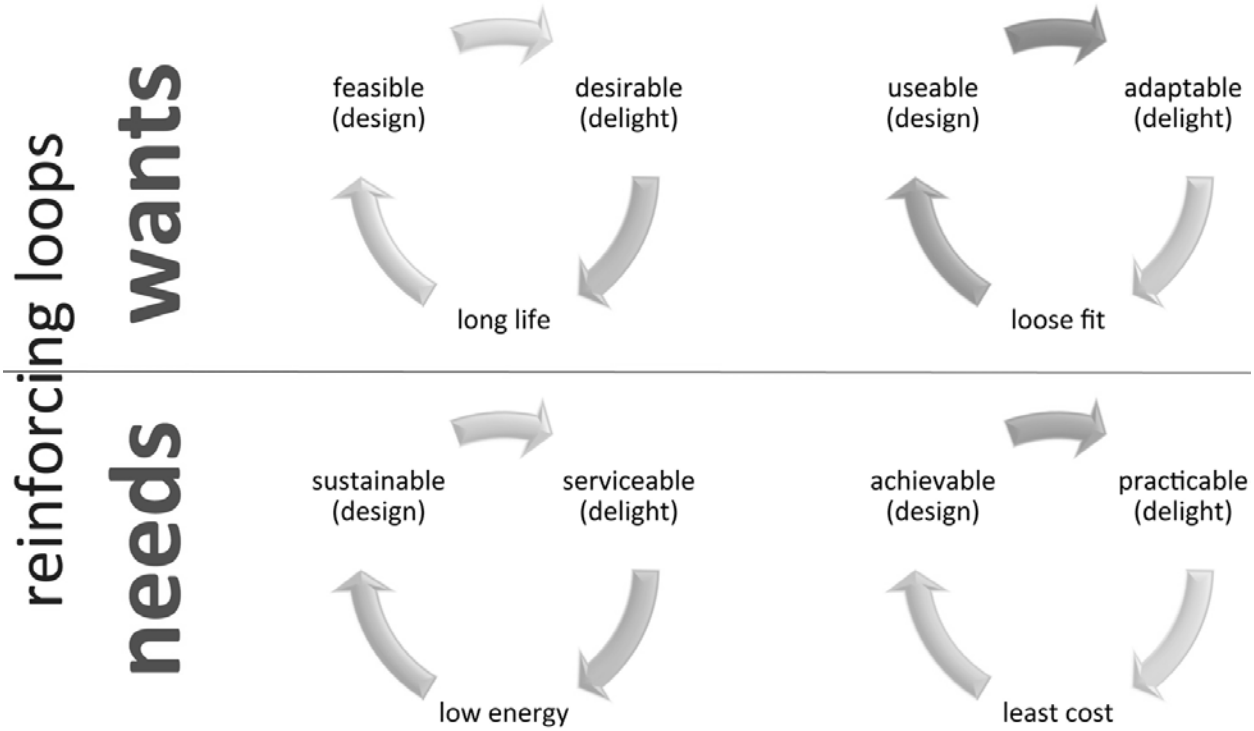

Figure 3 Reinforcing loops for end-user needs and wants

CONCLUSION

In response to the need for a generic model of measuring project success, and considering the differing views of stakeholders, this paper introduces a new model for analyzing project success from the perspective of customers (client, end-users, local community).

It is proposed that the measurement of success be based on satisfaction surveys concerning the four generic success factors of desirable, adaptable, practicable and serviceable. Satisfaction surveys, as confirmed in other studies, are more appropriate in bringing divergent opinions together to judge the extent of consensus. Furthermore, considering the larger *i3d3* framework, the measurement process is not an end in itself, as it can constitute feedback to earlier stages of the project, and thus provide an opportunity for learning lessons for the future. This can be achieved through reinforcing loops for each end-user success factor assisted by a common language of long life, loose fit, low energy and least cost adapted from the architecture profession. Success can ultimately be measured in terms of financial, social, political and environmental performance by different stakeholder groups, at different times, for any project type. It is concluded that success in project design and delivery are not sufficient to make a successful project.

One major weakness of the model is its practical application. Although the concepts are logical and well presented, the extension of project management beyond the implement phase needs to become normal practice. Currently, it is not. Project teams are often temporary and disband upon handover to work on new projects, so staying together into the influence phase and collecting data on satisfaction may have cost implications.

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