Communicating Project Drift Through Cost/Benefit Scenarios

David McComb
First Principles, Inc.

Jill Smith Slater
University of Denver

Software risk-management practices acknowledge the vital, albeit difficult imperative of communicating the status of project risk to stakeholders while attempting to mitigate and/or control risk manifestations. The problem is that risks are typically dynamic, unpredictable, and may be outside the purview and control of the project manager. This article presents a communication mechanism to explain the phenomenon of “project drift” through a series of abstract cost/benefit scenarios. The scenarios may be used either separately or in various combinations to continually reassess risk both at project inception and in light of project history to date. Three important aspects of the cost/benefit scenarios are that they are (1) conceptually simple, (2) useful in assessing and validating some decisions that might not be apparent in the absence of this type of evaluative model, and (3) politically neutral in that they may be used to explain project drift without affixing blame.

Change is perceived as difference, and difference is sometimes unnoticeable when it is continuous and fluid.
— Gilbreath (1986), Winning at Project Management

Like the growth of one’s own children, change in the status of a software project may occur so slowly as to go undetected on a day-to-day basis. Yet it is clear that something is astir in most major software undertakings. Late schedules, excessive costs, unacceptable performance, and user dissatisfaction are often cited ailments. Difficulty of specifying initial requirements, commercial pressures with accompanying tight deadlines, and/or the expansion of requirements after project initiation often drive change requests (Joch & Sharp, 1995).

Distributed computing intensifies problems. For example, distributed computing may lead to (1) duplication of resources, (2) decrease in standardization, (3) difficulty in meshing user needs with those of the overall organization, and (4) minimal transfer of learning from one project to another (Jenkins, 1994). Because distributed computing projects are more widespread, emergent risk problems become exposed to increased managerial scrutiny.

Software process improvement (SPI) efforts in general, and a subset of SPI, risk management, in particular, attempt to improve the software development process in the face of these obstacles. This paper addresses risk management issues and offers a series of conceptual cost/benefit scenarios useful in understanding risk dynamics and in conversing with external management about the cause and consequence of unfolding risks.

Risk Management and Communication.

The Risk Management Program sponsored by Carnegie Mellon’s Software Engineering Institute (SEI) affirms three objectives: risk prevention, risk mitigation and correction, and ensuring safe system failure if the project aborts. Recognizing the difficulty of predicting all risks in advance, the overriding objective of SEI is risk mitigation and correction (Higuera & Haimes, 1996):

The goal of SEI Risk Program is to enable engineers, managers, and other decision makers to identify, suffi-
ciently early, the risks associated with software acquisi-
tion, development, integration, and deployment so that
appropriate management and mitigation strategies can
be developed on a timely basis. Time is critical and the
goal is to act early before a source of risk evolves into a
major crisis. In other words, being mainly reactive in
risk mitigation and control rather than proactive in risk
prevention and control is at the heart of good risk
management [italics in the original] (p. 2).

The uncertainties associated with software development
require effective communication. This means speaking openly
and sharing concerns on the part of everyone involved both
within the domain of the project and with external stakeholders
including user management and end users (if different).
The SEI Risk Program recognizes the pervasiveness and
importance of internal and external communication of risk
management by placing communication as an integral compo-
nent of every risk activity rather than as a supplemental action
(Higuera & Haimes, 1996):

… In order to be analyzed and managed correctly, risks
must be communicated to and between the appropriate
organizational levels. This includes levels within the
development project and organization, within the cus-
tomer organization, and most especially, across that
threshold between the developer, the customer, and
where different, the user (p. 20).

However, speaking openly with stakeholders outside the
project team is often a significant problem because of dispar-
ate goals. Understandably, these stakeholders (particularly
line managers) are subject to pressures of a different kind than
quality software processes. Practitioner literature stresses the
difficulty of convincing managers outside the project that time
spent improving the development process (including acting
promptly on risk mitigation) is important (Strehlo 1996,
August 5, 19, 26); Jenkins, 1994; Joch & Sharp, 1995). Used
to basing corporate direction on financial arguments, some
managers disregard software process improvement efforts
because it is difficult to forecast costs (Computer Finance,
1995).

More effective communication structures are needed to
meet objectives of risk management and control. One struc-
ture is introduced here. The structure offers a generic set of
abstract systems diagrams based on cost/benefit analysis dia-
gramming conventions.

**Communication by Abstraction**

High-level abstraction permits a project manager to
convey general risk direction based on archetypes, or general-
ized stories. Peter Senge modeled the use of archetype
diagrams in the *Fifth Discipline* to portray organizational
events in terms of broader system implications (Senge, 1990).

Archetype diagrams serve as a template to describe events
specific to an organization.

The motivation for high-level abstraction is that one may
present arguments with less chance of political repercussions.
An example from another field is a recent practice in organi-
izational development called the Search Conference. This is a
forum for all organizational stakeholders (or a deep, represen-
tative slice) to create a common vision and action plans based
on that vision. Facilitators suggest that if a diverse group can
address issues at a high level, removed from political agendas,
they are more likely to achieve agreement on principles
(Emery, 1995; Emery & Purser, 1996). The cost/benefit
diagrams adhere to this reasoning.

**Cost/benefit Diagrams**

Cost/benefit analysis is common business language.
The diagrams remove the quantification of costs and benefits
to provide a conceptual method to explain and manage project
drift. Project drift is the tendency of a project to move across
its predetermined cost/benefit zone due to changes occurring
during the process of project management. Three important
aspects of the cost/benefit scenarios are that they are (1)
conceptually simple, (2) useful in assessing and validating
some decisions that might not be apparent in the absence of
this type of evaluative model, and (3) politically neutral in that
they are may be used to explain project drift without affixing
blame.

The following diagrams provide a lens through which
project drift may be explained and managed. The fundamental
principle is to reduce the entire project funding decision (or
continuation of funding) to a simple cost/benefit equation.
Simply defined, a successful project is one that is worth more
than it costs.

A very real issue is that many systems being developed
or contemplated currently rely extensively on intangible ben-
efits or tangible benefits that are difficult to quantify. Never-
theless, management has the job of determining the overall
value and benefit of systems projects and weighing the ben-
efits against their total expected cost. Thus the diagrams
assume that any strategic or non-quantified reasons for pro-
ceeding with the project are included in the benefit equation.
Total expected costs include all planning, design, implement-
ation, conversion, and training costs. Figure 1 is a very simple
abstract representation of the context against which to mark
changes in a project’s economics. The figure illustrates the
total expected benefit of a project, total expected cost, and a
diagonal line representing possible break-even points.

Each project has a position within this decision space.
Figure 2 positions a typical project. In this case Project A has
some moderate cost and some benefit in excess of its cost,
giving it a favorable cost/benefit ratio. In the typical justifica-
tion section of a project plan, the cost/benefit analysis would
eventually boil down to being the vertical distance that this
project is above the break-even line. In other words, to what
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