Steve,

Here are some comments to your "5%" study (see below).

Sincerely,

Tatyana



Here is a quick synopsis of the '5%' study I mentioned:

Attached is a graph representing phases of the concept, design, and construction of a Navy destroyer. We focus on the repeated patterns in the "Percentage of Cumulative Errors". First, we note that the cumulative curves are a series of logistic, or so-called "S-curves". That the curves are logistic- a common diffusion curve in nature, similar to the normal distribution curve - gives us a certain measure of pattern predictability. The logistic has proven reliable in projecting thousands of cases of technological and social change (including the identification of invariants in behavior that bound or cap technological function and performance). This quantitative modeling of technological and social change is my main research interest.

Looking at the last curve (~85-100%) we have the opportunity to predict, with some assurance based on the diffusion model, when in time the 'last 5%' of 'errors' will have been identified and corrected. If the ship is delivered too soon, those errors will occur at sea. The hypothesis then: Holding the ship in construction until the 'last' s-curve has completed its trajectory can better assure that the ship truly is ready for sea.

Revised

I think that the following may be included to add more dynamics:

- comparison between the number of people participating in the project and the number of employees in the company

Comments:

- human factor recruiting
- quality concepts have not been formulated
- at the same time shipbuilding industry is a self-organizing industry
- there is no curve "how it is supposed to be" at the number of recruiting 10/1000 and interchangeability of quality concepts 50/50
- competitiveness is excluded- control and analysis of its activities under the influence of recruiting and quality concepts

Considering these graphs without these comments, and in accordance with the poster I presented during ASNE Day 2012, I can offer the following:

- when the "Number of Design Changes" goes up



Figure 4. Balance of Interests: The Client

- Effect of artificiality of the problems

Revised



Diagram B. Decision making with the analytic hierarchy process

- to develop a goal
- mission
- strategy
- postulates
- algorithm

for introduction of human factor into the company

These graphs "Design effort" and "Number Design Changes" (Normalized) are associated with the motivation of the problems through the colloquium of the internal socio-cultural system with the external socio-cultural system. The external socio-cultural system does not equip the internal socio-cultural system. The internal socio-cultural system does not equip the external socio-cultural system. I. e. there is a dis-balance. The existing conflict at the present time is resolved through the balance of interests. In the future it may be addressed from the research work in both systems. Three questions come to mind reviewing these graphs:

- emerging of the principally new technical requirements
- lack of interconnection between the internal socio-cultural system and external socio-cultural system at the academic level research
- lack of mechanism for defending of the work through the live media. Lack of technical councils.

Classification of the understanding of the graphs is too broad. Because the graphs are so broad, the following understanding can be formulated:

Revised

- 1. Phases ("Concept", "Preliminary", "Contract" and "Detailed" phases) are specific to "Personnel Assigned to Project". No graph for justified numbers of personnel assigned to the project at different phases. Beginning from "0" = that this is a completely new project. A significant increase of personnel assigned to the project in the detailed phase may reflect the fact that the project is a completely new one without any previously established technologies, practices and experience of the specific plant that is working on this project. An increase in the number of errors is out of scale with the number of people assigned to the project.
- 2. If mission of quality management of the company is to accommodate any changes without the errors, with the accumulation of skills of working with high technologies since Liberty ships then the following strategy can be formulated:

- pay not for the errors, but pay for the leaders

Postulates: defending of the employee through the research work (each change is consulting with a specific employee responsible for this change incorporation)

Algorithm: joint work between an initiator of a change and a person that defending him/herself through a research work.

Self-regulatory principals are not a part of the interconnected system between internal socio-cultural system and external socio-cultural system. The dampening mechanisms in this system are underdeveloped.

Real situation: design changes goes up, number of people goes up, number of errors goes down to zero at "90 months" point.

with the postulate: engineers defend their work through research

Detailed phase is combined with a "mock-up"/prototype phase that will be used for the next project. When a "mock-up" phase as an instrument can be used?

At the beginning stage of the detailed phase. Then the system won't be a self-regulatory system and dampening mechanisms will be employed for localization of these 5%.