Metrics and Measures for Agility

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The Agile enterprise has been defined as one that is proficient at change, and Agility defined as change proficiency. Very interesting word, this proficiency -- Webster says it means "highly competent".

Competency is one of those umbrella words that we often use to encompass qualities that are hard to quantify. Nevertheless, a practical measure of Agility is needed before we can talk meaningfully about getting more of it, or even getting some of it.

Naive discussions of Agility often confuse it with quickness -- which reduces simply to cycle-time reduction. Time, as the metric for Agility, shows its inadequacy when we test it and other candidates against extreme conditions.

Would you call it Agile if a short-notice change was completed in the time required, but at a cost that eventually bankrupted the company? Or if the changed environment thereafter required the special wizardry and constant attention of a specific employee to keep it operational? Is it Agile if the change is virtually free and painless, but out-of-synch with market opportunity timing? Is it Agile if it can readily accommodate a broad latitude of change that is no longer needed, or too narrow for the latest tricks thrown at us by the business environment?

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These questions help us tease apart this thing called Agility into four change-proficiency metrics: time, cost, robustness, and scope. Exploring the interrelations of these four shows a need to score sufficiently well in each.

Completing a change in a timely manner is the only effective way to respond at all in an environment of continuous and unrelenting change. After all, we do need some time in-between changes for a little value-added work. But the **time** of change alone does not provide a metric for agility.

You can change virtually anything if **cost** is no object. However, if your cost of change is too much relative to your competitor's costs, there will be a steady erosion of working capital, or at least a higher tax on shareholder profits. Change at any cost is not viable, else we need not restructure anything ever - we can simply throw out the old and buy a new capability; assuming, of course, that we can bring something new to the operational level quick enough.

Quick, economical change, however, is still not a sufficient profile for proficiency. If after a change the result is balanced on the head of a pin and requires 24-hour-a-day baby-sitting to remain functional, the change process was insufficiently **robust**. If we cut corners in the process of changing in order to do it quickly and economically, we end up with a fragile, spit-and-bailing-wire result.

Finally, something is considered Agile precisely because it is prepared to thrive on unpredictable change. This unpredictability might be with when a known change will occur, or with what an unknown change will look like. Change is a transitional term that implies a starting point and some new ending point. How far away can the ending point be from the starting point? The dimension of **scope** addresses this question.

Are we Agile if we can accommodate any change that comes our way so long as it is within 10% of where we already are?

Scope is the principal difference between flexibility and agility. Flexibility is that characteristic you fix at specification time. It is the planned response to anticipated contingencies. Agility, on the other hand, repostures the fundamental approach in order to minimize the inhibitions to change in any direction. The frequency and unpredictable nature of required change has reached the point where contingency lists are outdated virtually as soon as the ink dries.
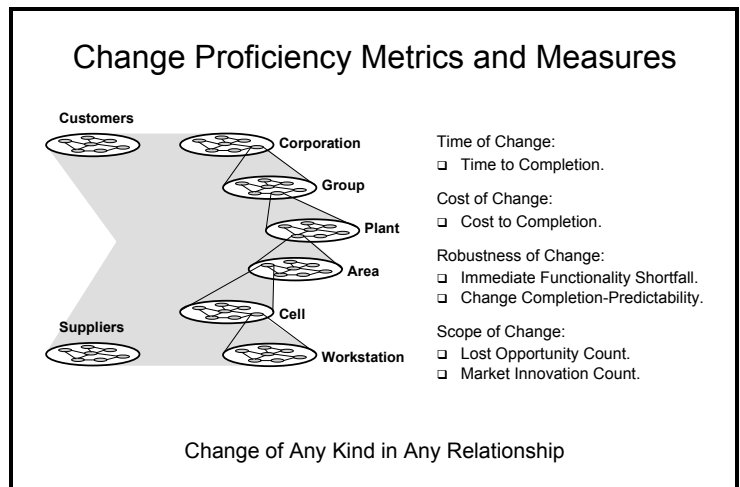
At the heart of scope is the architectural issue: rather than design something that anticipates a defined range of requirements, or ten or twelve contingencies, design it so it can be deconstructed and reconstructed as needed. Design it with a reusable, reconfigurable, scalable strategy.

Scope captures so much of the essence of Agility that it would appear to be the principle differentiation of this concept from others, and be a sufficient metric for change proficiency. But we must remember that scope is only a statement about the magnitude of change that can be accommodated. The amount of change that can be accommodated is useless if it can't be done in time to matter, at a cost that is reasonable, and with a surety of robustness.

Thus, for any element to be truly proficient at change, it must have a balanced capability across all four dimensions of time, cost, robustness, and scope.

To measure proficiency at change we need quantified statements for each of the four proficiency metrics. Ideally, in order to analyze existing situations, we want to find quantities that are already in our books, or can be constructed from historical records.

The time of a change can be likened to the time-

Change Proficiency Metrics and Measures

Customers
Corporation
Group
Plant
Area
Cell
Suppliers
Workstation

Time of Change:
- Time to Completion.

Cost of Change:
- Cost to Completion.

Robustness of Change:
- Immediate Functionality Shortfall.
- Change Completion-Predictability.

Scope of Change:
- Lost Opportunity Count.
- Market Innovation Count.

Change of Any Kind in Any Relationship

to-market of a new product. In this case we are talking about the change activity associated with creating a new cash-generating customer transaction. Time-to-market is that time associated with product and process design and implementation that results in a deliverable cash transaction with a customer, and includes the formation and management of effective customer and supplier relationships.

Similarly, cost-to-market of a change is the cost required for completion; or in our new product example, that first cash transaction.

Continuing with our new product metaphor, though new products may be rolling off the line, we all know that neither the product nor the process design is rock solid in the early days of delivery. There is some rework and scrap beyond our desired levels. During this early period we often have a functionality shortfall from our targets, and generally have a difficulty in quality-level predictability.

Robustness measures the strength and competency (quality) of our change process. It can be measured in the same ways that we measure quality of anything: by customer satisfaction polls, by degree/amount of shortfall, etc. Robustness is a statement about our ability to predict the satisfactory completion of a change activity. How often have we been on time, on budget, on spec? Or at least within acceptable variances of our original predictions. If we are generally correct then we probably have a high robustness to our change process.

Of course, we might have a good predictability record simply because we pass over anything that looks too difficult. Scope measurements will counter this effect as they measure both "opportunities lost" and "innovations". Scope is an indication of how much latitude for change we can competently accommodate. If it is too little, we are perhaps just flexible and have not really entered the realm of Agility. Scope can be difficult to measure precisely, especially if you have no history, as you never know where the edges really are.

Important Definitions

1. Change Proficiency - the competency in which an adaptive transformation occurs.
2. Change Proficiency Metric - the performance item(s) to be measured in order to assign a comparative competency value to change-proficiency: Time, Cost, Robustness, and Scope.
3. Change Proficiency Issue - the item that the metric will be applied to (eg formation of partnership).
4. Change Proficiency Measure - Time is measured in units of time, cost in units of money, robustness in predictability and shortfall, and scope in lost opportunities and market innovations.

Lost opportunities are those occasions when a change could have provided some useful advantage but was declined. Opportunities are presented to producers by prospective customers. An opportunity must fit within the producer's vision and mission to qualify as an opportunity. A refusal to go after the opportunity is akin to a no-bid. Going after the opportunity and failing to secure it is basically a bad-bid, and is considered equivalent to a no-bid, as the producer is unable to capitalize on the opportunity.

Opportunities exist independent of any action or recognition on the part of the producer - resulting in a growing score of bad points for any producer who simply ignores or is deaf to the realities of the market. Thus, opportunities require successful response or extract a point payment.

An innovation is a self-initiated change on the part of a producer, and is presented to the customer. It might be in the form of a new product, a lower cost product, a higher quality product, or a faster product. Some innovations are bigger than others - a 20% cost reduction is twice as big as a 10% cost reduction. The customer provides the "innovation points" according to how innovative they feel it is. There is no incentive to leak out three successive innovations that

are equivalent to one leaping innovation which encompasses all three if somewhere in the succession a competitor establishes a new benchmark. Catching up is not innovation - and should score as negative innovation points.

Making use of these metrics in practical situations requires the establishment of a set of accounting rules appropriate to the enterprise, to the organizational level within the enterprise, and to the nature of the functional unit that is being measured.

This general metric framework is applicable to any change in the relationship of interacting units: workstations in a production process, suppliers in a supply-chain network, talented personnel in an IPD team, even clauses in a partnership agreement.

For instance, a workstation is a producer with a customer up the line in the production area. When the workstation accepts an opportunity to make a change it will have a time- and cost-to-market for that change, and will exhibit the robustness of the change when it begins production again.

Outside of the production hardware category, a team of people defined by their collective task interest will undergo a change when they agree to accept a new team member with additional skills. There will be a period of turmoil as this new team member and skill set is absorbed and put to productive use. The Agility of an organization's teaming methods will figure importantly in its overall viability, but this is a subject for considerable discussion later.

As Agility increases, the turmoil caused by change-transition decreases, approaching an ideal where it takes no time, incurs no cost, is not artificially terminated, and is not an inhibiting factor on the latitude of opportunity and innovation we are willing to consider. Developing metrics for change proficiency has led right back to the key performance metrics of any corporation: the toll of change-transition is directly reflected in product cost, product quality, and market responsiveness.