

*An article centered on a new mind-set and on the large opportunities it brings.
Dedicated to managers and entrepreneurs who have the courage to pursue them.*

Learning-based reengineering: a radically different way of pursuing opportunities

Alfredo Bregni

With all the "noise" surrounding business process reengineering, it is hard to gain acceptance for a basic yet radical proposal, namely that new ways of thinking should be introduced not during or after change, but *before* change is initiated: indeed, an early shift to new thinking is a prerequisite to launch the change and give it strength.

This article describes the theoretical and practical aspects of pursuing the improvement opportunities in an organization through an indirect two-pronged approach:

- Preliminary flexibilization and even radical modification of the existing cognitive and operating schemes . . .
- . . . obtained through an accelerated group-learning process.

In the following paragraphs the features of a reengineering project, the management approach to the hypothesis of launching one, the benefits of a learning-orientation and its three major components are considered: setting-up, developing new ideas and involving the Company.

1. THE FEATURES OF A REENGINEERING PROJECT

Reengineering a Company, partially or totally, aims at achieving a profound change in the way of thinking, acting and working.

Reengineering was invented, millions of years ago, *by complex life forms.*

Instead of generating immortal beings, *they start all over again*, with children re-learning from scratch through their own and their parents' experiences, adding innovation along the path.

Reengineering has very high potential, since it can yield significant benefits on more dimensions (time, cost, quality), allowing a Company to stay in business, improve its position, or leave competitors behind.

The fundamental features of a reengineering project are:

- Stimulation and development, in a protected environment, of a new way of thinking.
- Involvement, on the field, of the whole Company.

Stimulation and development of a new way of thinking is an articulated activity, performed by a qualified, diverse and highly motivated team:

- Stimulation is the task entrusted to the person in charge of catalyzing the intellectual, interpersonal and interfunctional chemistry of the team; it is based on curiosity and willingness-to-do of the members, and on the "exploring" attitude of the leader.
- Development is an activity performed with rotating leadership, and it is essentially based on the energy required to successfully tackle the stress of rethinking everything from the ground up.

Involvement of the Company is the parallel, "socio-managerial" activity which provides critical mass to the change and is the key of its success:

- Team members who hold staff positions promote renewal in their areas, coherently with the new way of thinking.
- Personnel outside the team with line responsibilities participate in the idea generation by exchanging stimulations and suggestions, in the meantime learning new attitudes and working approach.
- Sponsors and Top managers - who, well before Company performance, are responsible for Company culture - encourage and promote change even before the project yields results.

2. THE MANAGEMENT APPROACH

Reengineering is a too-much-talked-about subject: the theoretical likelihood of tackling it is therefore well established in the minds of managers and entrepreneurs. Quite a different thing is *actually undertaking* a reengineering project: evaluating its business need/opportunity; considering its economic and cultural value; estimating time, risks and implications; having the courage and determination to decide its launch; showing a real willingness to participate in it; living it daily.

Reengineering thus remains an hypothesis for somebody, becomes a topic of discussion for others and is perceived by most people just as the "last resort":

the difficult choice to make when other, less radical solutions do not provide positive results any longer.

In these conditions it is likely that the project starts with the wrong mind-set; change is undertaken as a need rather than an opportunity and, due to the importance of the subject and the amount of money at stake, the frenzy to obtain results quickly and with limited investments takes over^[2]:

- An external consultant is called on, perceived as "the" solution (instead of considering him/her as a way to open new horizons).
- Strong reassurances are requested - brand, proven experiences - and in the end the decision is made on a trust base (instead of adopting better choice criteria, like innovation in content and methodology, capability of "breaking the rules" and drive for improvement).
- The project is set-up in a "conservative" way, with cost-benefit analysis filtered by fear (instead of figuring out the true risk-return ratio of a reengineering project, which is indeed different from the more traditional ones).
- The minimum number of human resources is involved in the project (instead of exposing most departments to the possibility of learning).

3. THE BENEFITS OF A LEARNING-ORIENTATION

Learning-based reengineering will not be comfortable for everybody, but it allows those who have the courage to pursue the opportunity to achieve extraordinary results; it mainly requires to openly face a strategic, managerial or technical discontinuity, with a strong drive towards the future, relying on design and on relentless determination to implement. In practice, one needs to:

- *Immediately take the cultural aspects of discontinuity into account*, trusting that costs and risks are less than benefits (the decision to start implies a month of work and the risk of "not taking-off"; the choice to proceed brings so many opportunities that one risks to pursue only some of them).
- *Follow up by bringing the results of learning into the field*, involving everybody in the process and monitoring people's energy as the critical variable (great energy is needed to start, and in the course of the project more can be generated or lost, according to the friendliness of the environment).

In case of success, business benefits are significant (short project time; large and multi-dimensional advantages; inherent capability to generate further

^[2] A limited investment is indeed possible in terms of money (through the learning-oriented approach described below), but not in terms of number and quality of human resources involved.

improvement cycles - learning is like riding a bicycle: you never forget how to do it - Exhibit 1) and frequently the initial expectations are largely outclassed by results.

In a primary Italian food Company, redesigning the operations allowed to: -

- Generate *about \$ 200 million of economic value for each month of reengineering* (discounting future cash flows at 10% rate).
- Obtain an investment payback time *lower than 5 months*.

In a medium-to-large Italian bank, the integrated redesign of teller operations (operating sequences, account entries, information system support) allowed to:

- *Reduce by 40%* the personnel cost per unit of product.
- Achieve an investment payback time of only *8 months* (considering both hardware and software) or even *one month* (considering only the software investment, since hardware replacement was required anyway, for obsolescence).
- Estimate the cost of the replacement of all the software applications and get a figure *ten times lower* than the amount spent for a similar investment by another Italian bank.

4. SETTING-UP

A learning-oriented set-up addresses directly the cultural discontinuity problems, avoids recourse to "engineering" methods, necessarily undertakes reengineering as an opportunity and involves most people into the game.

Is good reengineering:

- Analytical thinking?
- Continuous improvement?
- A predetermined course?

Reengineering means to radically reconsider the traditional ways of thinking, acting and working, *to begin with the way change and risk are conceived*.

Good reengineering confronts immediately the unconscious assumptions which are at the root of the present situation and may compromise the course toward the future: their surfacing, discussion and revision constitute the ground on which *to start* the change.

Some people think they can *improve* without *changing*.

Many think they can *change* without *learning*.

Too many think they are *learning* but they *don't put their own ideas up to review*.

Good reengineering puts *learning* - even before *change* - at the core of the Company *improvement* and deliberately follows an accelerated learning curve, radically different from a traditional "linear" project. This learning curve is closely related to the known concept of "experience curve" (opportunity of learning by doing), but it develops differently; in fact, it takes place:

- In a *protected environment*, instead of in the field.
- In an *interfunctional group*, instead of in a single function.
- With a *clear focus on willingness and capacity to learn*, instead of on the amount of cumulated work.
- In an *explicitly recursive way*: not only learning, but *learning how to learn*, and *ever faster*.
- Through *interpersonal and interfunctional dynamics based on confrontation* (as means to make unconscious assumptions surface) and *on common redesign from the ground up* (as means to build team unity).

A learning-based project allows to achieve, in spite of an initial lower productivity, better results in a shorter time (See Exhibit 1); it needs however decisive management - and the awareness of dealing with counterintuitive dynamics - since it can be a "breath-taking" experience:

- It shows alternating and stressing success-and-failure cycles (Exhibit 2).
- It ends positively with a dramatic final acceleration, which provides 80% of results with the *last 20%* of the effort (Exhibit 3).
- It "blindly" relies on this final acceleration, which cannot be granted and planned in advance.
- It is subjected to heavy pressures during the final phase, aimed at removing resources from the design activity to start the implementation as soon as possible.

The learning developed "in a protected environment" is followed by a timely involvement "on the field" of the Company organization: *key condition for success is the willingness and capability of management to push themselves and the Company through the learning process, by putting themselves-first in question.*

Good reengineering is:

- Learning first.
- Deep renewal.
- Passionate course.
- Extensive participation.

(See box on the side).

5. DEVELOPING NEW IDEAS

Optimum design sequence

There is an optimum sequence to perform a full reengineering project in a Company. Indicatively classifying the main business issues into four areas, the best sequence appears the following:

1. *Operating activities*: from client request to product delivery.

Objective = *flexible response* = product range/delivery time ratio.

- 2a. *Market relationship*: from client needs and technological capabilities to product range definition and sales.

Objective = *client satisfaction* = product range-quality positioning.

- 2b. *Technological contents*: from product range and client pool to actual delivery system.

Objective = *efficiency* = quality/cost ratio.

3. *Coordination & support*: stimulation and service of the above processes.

Objective = *shared targets* = open communication + joint problem solving + mutual help.

This sequence optimizes the time and content of the learning process of the team: their work starts on the more tangible and common areas, likely to aggregate different functional cultures (like the operating activities), and then deals with more specialized and/or more controversial issues.

In reality, the four areas indicated above are often tackled according to managerial, rather than design-oriented priorities (e.g.: the market relationship is taken into account before the operating activities, in order to improve the

Box on the side of page 6

Food Company operations

The operations of the primary Italian food Company mentioned in the text have been redesigned with an approach strongly based on learning: in five months spanning 1994 and 1995 a team of eleven people, working practically full time (4 days a week), assisted by a "provocative and energizing" consultant and supported in the quantitative assessments by a team enlargement to 50 people for a month, identified savings opportunities of \$ 100 million per year, with one-time investment of \$ 36 million. The implementation is ongoing and in good shape.

The need to realize the results quickly did not allow to pursue further opportunities: during the last month of work the team could not tackle two highly promising themes (flexible production technology; possible novel business), since it had to comply to the management request to realize the identified savings as soon as possible.

response to client needs). This different choice is correct only when it is deliberate and motivated, since it misses two fundamental opportunities:

- A significant operating improvement (large cost savings; dramatic reductions in response time; large improvements in service quality).
- The positive impact of a better understanding and a simpler design of the operating activities on a deeper rethinking and a more focused improvement of the other Company processes.

Unbounded scope

Good reengineering cannot be performed in a too limited or constrained way: a zero-based redesign must define the boundaries of its design domain coherently with the pursuing of the identified opportunities; thereby the need of entrusting the design team the definition of its scope, and of posticipating tactical choices to the implementation phase.

A too narrow definition of the design domain, *limited to problem description and diagnosis*, may result in inconsistent solution approaches and even antithetical design choices; from a wider definition of the same domain, *oriented towards exploring and finding new design criteria*, a unitary and more effective approach can ensue.

The search for coherent solutions in the design of organization and information systems is a very good example of how differently one can interpret the boundaries of a reengineering project.

Usually, the information systems issue is approached according to the following logic:

- Reengineering is performed to improve the value provided by processes.
- Value production and delivery within processes is governed, at the operational and decisional level, by information flows.
- Thereby the critical importance of the technical means to transfer, store and process this information.

In this logic - which does not choose broad design boundaries and limits itself to problem identification - the role of the information system in relation to a business opportunity can be characterized very differently ("constraint", "support", "fundamental tool", "intrinsic component") and very diverse design alternatives may find consideration and approval (from searching to avoid any impact on information technology, up to redesigning from scratch the organization and its information support, in a coherent and integrated way).

An alternative logic - which deliberately adopts broader design boundaries and designs novel solutions from scratch - opens unforeseen opportunities for the

role, the use, the definition and the implementation of the information support. Indeed, the Information Systems Department may start a positive "revolution":

- *Aiming at preventing "the crystallization into code lines" of the operational and decisional set-ups defined by the users* (therefore allowing easy modifications, with rapid introduction of new products and fast change of organizational set-ups).
- *Relinquishing its "proprietary" control of technology* (which brings the Department to measure its performance in terms of fulfillment of users' requests and definitely condemns it to the role of the "chronically late" function).
- *Becoming the architect of a new "parallel" method to design information systems* (capable to provide better and much more flexible supports to users' needs - Exhibit 4).
- *"Forcing itself out" of the implementation process* (completely left into the user's hands by the new support, which enables the user to implement a prototype or an application directly from specs definition).

(See box on the side).

Exploration course

When the Company issue to be dealt with has been defined, there is an optimum path to explore its improvement opportunities.

The problem area is usually identified by two dominant dimensions, *integration along the process* (the various process steps must be integrated into one another, with unitary logic and adequately designed connections) and *variation among processes* (the different product/client combinations must all be taken into account).

The solution path most frequently adopted analyzes first the variation dimension ("problem determination") and then strives to provide integration ("problem solution"), with a basically "descriptive/diagnostic" approach which first evaluates the size of the problem and then provides a professional solution (Exhibit 5).

Both in the bank and in the food Company, a different solution path emerged as better suited; it operates first on integration, and then on variation, with an approach more clearly "exploration- and design-oriented" which aims at identifying the core of the problem and searches for a non traditional solution (Exhibit 6):

- A preliminary, "most uniform" solution to the problem is found in an artificially simplified situation (e.g. when dealing with a reduced set of products and a limited pool of customers: "produce and market on the base of the same decision parameters", and "deal with products of class A, B and C in the same way").

Bank teller operations

The teller operations of a medium-large Italian bank was redesigned with a novel integration of the information system into the work organization, both in operational and design terms. In six month spanning 1988 and 1989, a team of eight people, with the assistance of three consultants, jointly redesigned the teller operations, the account entries and the design logic of the information system.

For the bank, the new approach resulted in a remarkably effective and efficient solution, with reduced implementation time, costs and risks, and enhanced flexibility: *the project was carried out in a short period* (14 months to open the first redesigned branch), *required a limited software investment* (2 million dollars, with 14 million invested in hardware, to be replaced anyway), *caused few problems in the testing phase, and was immediately highly productive* (on the first day of activity of the first redesigned branch, 4000 operations were performed vs. an average of 600; on the second day of activity, while the other branches were unable to operate due to a malfunction of the host computer, the new branch operated regularly); *once the new design was applied to all branches, the cost of teller personnel was reduced by 40%* (the number of branches was increased by 50%, with no increase in manpower), *the client service improved* (the number of forms required for normal teller operations was reduced to only two: "debit" and "credit"), *the time to introduce new products was reduced* (from three to ten times) and *an excellent payback time of total software and hardware investment was recorded* (about 8 months).

- The problem is complicated by taking into account a larger part of variation and the solution is redrawn to include the new variation elements into the integration previously reached (e.g.: "place stocks of class A, B and C products in different locations of the logistic chain").
- The new solution is verified on the overall variation and the decision is made whether to adopt a single general solution, or several different solutions, specific to variation subsets.

In problem solving, the "exploration- and design-oriented approach with priority on integration" is preferable to the "descriptive/diagnostic approach with priority on variation", because of the different possibility of ensuring learning and consequently defining novel solutions^[3]:

- The "descriptive/diagnostic" approach considers as a fundamental step the analysis of the existing situation, therefore limiting learning possibilities and creative thoughts: the team is submerged by the complexity of the problem before having "learned to swim", finds as closest "life-saver" the existing solution, and convinces itself that there are few possible alternatives; practically, it wastes its energy on a massive and badly targeted effort, while constraining its imagination.
- The "exploration- and design-oriented" approach - particularly when deliberately focused on the preliminary definition of an ideal reference scheme (Exhibit 7) - starts from the premise that the fundamental step is rethinking from scratch without constraints, in order to increase the chances of coming to truly new comprehensions and solutions. The team "learns to swim" in less difficult conditions (the artificially simplified situation), progressively enters deeper waters (the gradually increasing variation), has the time and means of finding a swimming style (a solution capable to conciliate variation and integration) and in the end masters, with one or more solutions, the entire complexity of the problem.

A second reason, linked to the previous one, for preferring the "design-oriented" approach to problem solving, is its possibility of analyzing the existing situation in a more efficient and better focused way: the analysis is targeted to evaluating the obstacles to the implementation of the ideal reference scheme and to devise means to remove or circumvent them. In this way, the team not only uses its creative resources at best (in rethinking from the ground up), but also it is capable to apply its analytical capacity directly to design objectives.

Introspective approach

Choosing an exploring approach, it is possible to find even the most innovative solutions directly in ourselves. In fact, an interfunctional team of competent people knows "almost everything that is needed to redesign the Company"; to

^[3] See the previous discussion on the information system design.

this respect, taken-for-granted premises and other cognitive biases are more negative than a lack of specialised competences (which can be more readily identified and overcome).

In order to cause the "hidden knowledge" to surface - and to identify the unconscious biases to be reconsidered - *a single team perspective* must be built, by activating "cross-fertilisation" among the team members and identifying synergies between different points of view. To this end, we recommend to:

- *Ensure that everybody* (not only the one who acquires knowledge, but the one who imparts it, too) *takes the attitude of the "amateur"* (open curiosity and attention), *rather than the one of the "professional"* (more selective and specialised interest).
This facilitates the removal of barriers to learning and the identification of unconscious biases.
- *Arouse the highest level of energy and spontaneity possible*, on the premise that intuition born out of daily life and change desire - much more than analysis born out of education and repeated experience - are the keys to the solution that is being sought.
This further removes the barriers to learning (although it requires careful management).
- *Help the creativity of the team to emerge, by paying special attention to "weak" ideas* (the ones normally not mentioned, since they are not in line with common thinking).
This enables a profound innovation and becomes a habit for the team, whose members learn also to provide personal help and support (a *true* team has a common and shared performance objective, in which all members are equally involved and mutually committed; *an excellent team is motivated also by interpersonal objectives of growth and success* ^[4]).

An example of the introspective component is the "iterative" approach used by a reengineering team in problem solving . . .

- A reasonable preliminary solution is assumed.
- Consequences and implications are assessed.
- From these, the flaws of the solution are identified.
- The solution is redrawn and improved and the process starts over.

. . . with the explicit goal not "to quickly find a solution", but rather "to perfect the understanding of the issue".

Another example of the importance of the introspective component is the sequence of the evolution stages of a team, different in a conventional setting and in a reengineering team.

^[4] Jon R. Katzenbach, Douglas K. Smith, *The Wisdom of Teams* (HBS Press), 1993

A conventional team follows normally four stages (Exhibit 8) . . .

- Definition of objectives and selection of team members ("forming").
- Emergence of interpersonal and/or interfunctional problems ("storming").
- Definition of rules and procedures ("norming").
- Productive work ("performing").

. . . while a reengineering team follows a quite different path (Exhibit 9):

- Less precise definition of objectives, but more careful team building, in the "forming" phase.
- Anticipated and less structured "norming" phase.
- Repeated "storming" and "performing" phases, where the energy brought by the former helps to generate the innovative ideas to be structured in the latter.

This working approach requires the presence of a person (internal or external consultant) capable of synergetically managing the learning process and the socio-organizational aspects: in fact, the learning process takes off when it becomes *conscious, pleasant and shared*. In this situation, content and process fully merge:

- *The existence of a common solution is discovered* (through an adequate merge of the collective knowledge available).
- *Through the help of others, individual limits are overcome* (biases emerge, are corrected and eliminated).
- *The Company is redesigned together* (with a shared thought model, that allows to improve the design along the way without impairing its consistency).

6. INVOLVING THE COMPANY

Extensively involving the entire Company in the new way of thinking is the most delicate, crucial and fundamental step of the whole reengineering process.

While in the design phase in a protected environment some factors play a positive role (curiosity, motivation, energy), in the implementation phase on the field other factors enter the game with a definitely negative impact:

- Instinctively, change appears as facing the unknown.
- Deep down, very few people desire to change the balance they have worked hard to reach.

- From the organization standpoint, the complexity of formal and informal relations, on which rests the life of the Company, leaves little room for positive confrontation and/or honest research for overall better solutions (they are more frequent in small environments - as in the activity of a single department - or in truly extreme situations).
- In addition, in the event of reengineering, the middle managers are at the same time the supporting pole of the establishment, and the target most affected by change.

The contribution that a consultant can give at this point is limited: basically, counselling to top management and/or assistance to those who are in charge of implementation (more effective is helping the design team in the first place to find an attractive target, less easily dropped by managers and implementers for its promising business opportunities, likely to absorb the employee redundancy produced by cost cutting). Therefore, the levers of success of the on-the-field implementation are almost entirely dependent on the determination and "presence" of the Company leadership.

The most common types of leadership, however, are not the best fit to introduce in the field the opportunities devised in a protected environment:

- "Weak" leadership leaves change at the mercy of opposition.
- "Political" leadership lives on mediation when it would be necessary to start profound changes.
- "Authoritarian" leadership produces a change that is not the one intended: "dependent" culture.
- "Expert-based" leadership may encounter great difficulties, if too bound to past experience.

Only a determined, very open and "over-communicative" leadership can achieve the chosen goals: the entire Company must be involved in the new ideas with a domino effect, so that more new ideas can be produced and the renewal can reach a critical mass (Exhibit 10).

New and stable relations will emerge from a positive involvement:

- *Each individual will know his/her task in depth, in all its connections with the work of others:* his job will issue from a design he has contributed to define, rather than coming from a manual imposed top-down.
- *There will be much less room for carving niches and for using "defensive routines" to relate with others:* communication between people who do not listen to each other will end, and a time of understanding and mutual support will be introduced.
- *The supplier-customer relationship will be more easily oriented toward partnership than competition,* the goal being a "larger pie", rather than arguing about the slices of a smaller one.

- *A new perception of risk will arise: exploration will seem less risky than staying under shelter, with the understanding that it is better to take maximum chances in a protected environment in order to harvest the best opportunities later in the field.*
- *A new way of working will be established, oriented toward learning, taking and delegating responsibilities: everybody's contribution will be encouraged, supported, improved and applied.*

In this way, an "organic" working and learning environment will be established, where the strength of the individual is the strength of the group, and vice versa.

7. CONCLUSIONS

By resting the Company renewal on learning, it is possible to carry out a reengineering project according to the scheme drawn without too much difficulty; "putting oneself in question", "learning", "changing" and "improving" become the logical foundations of an effective path, made of:

- Immediate and direct attention to *cultural discontinuity*.
- Sowing in a protected environment a *seed of group-learning*.
- Effective "*presence*" of *Company management, which puts itself-first in question* (fundamental key to success).
- Deep *Company involvement* in the new way of thinking (the other fundamental key to success).
- Clear *openness to further contributions* (effect and symptom of true consensus and participation).
- Creation of an *organic capacity of "redesigning itself"*, common and shared by the whole Company.

Exhibit 1

EXPECTED BENEFITS

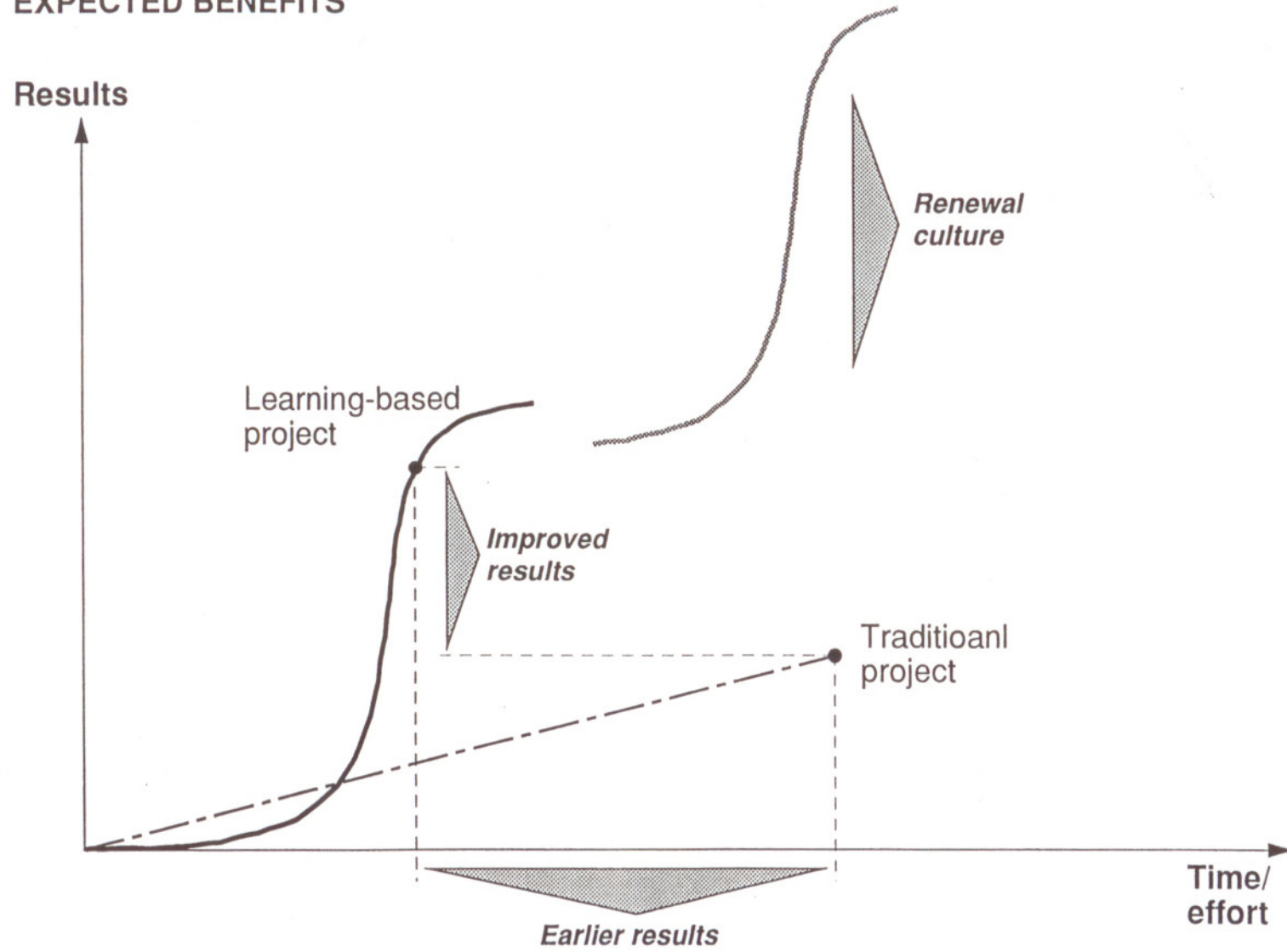


Exhibit 2

ALTERNATING SUCCESS-AND-FAILURE CYCLES

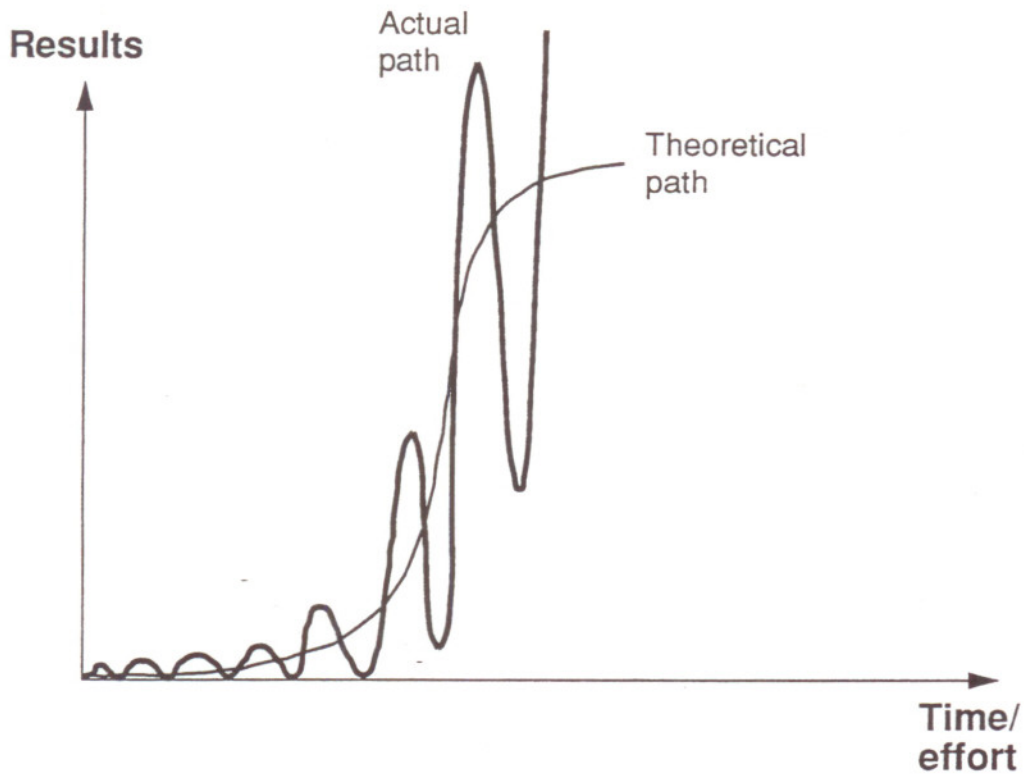


Exhibit 3

FINAL ACCELERATION

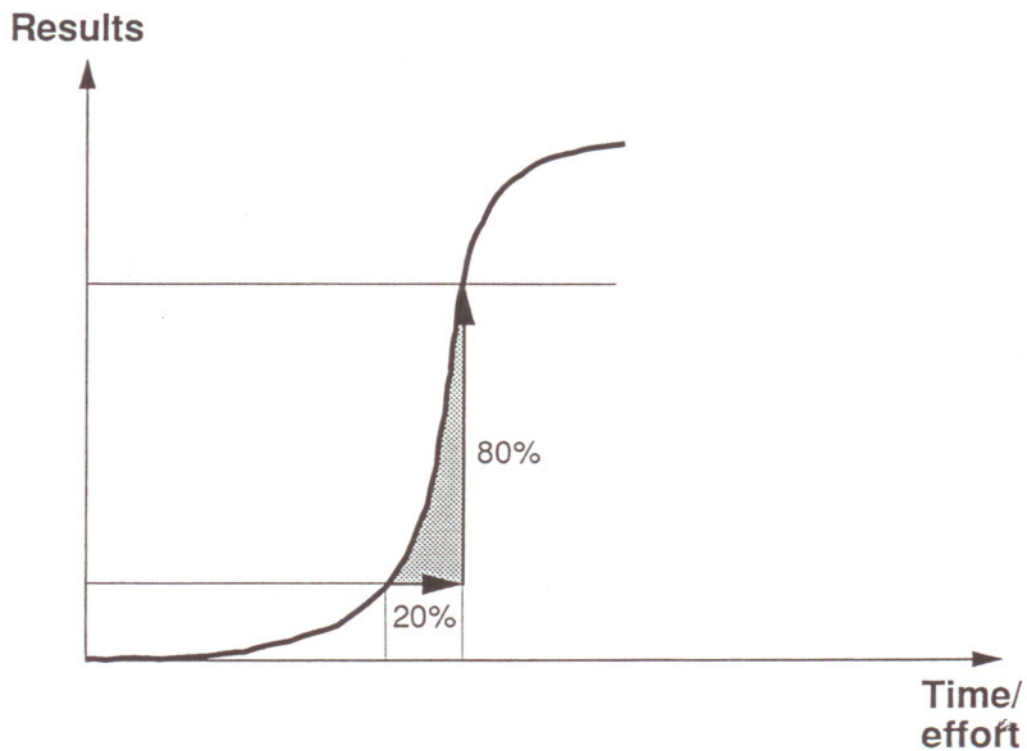


Exhibit 4

DESIGN OF IT APPLICATIONS

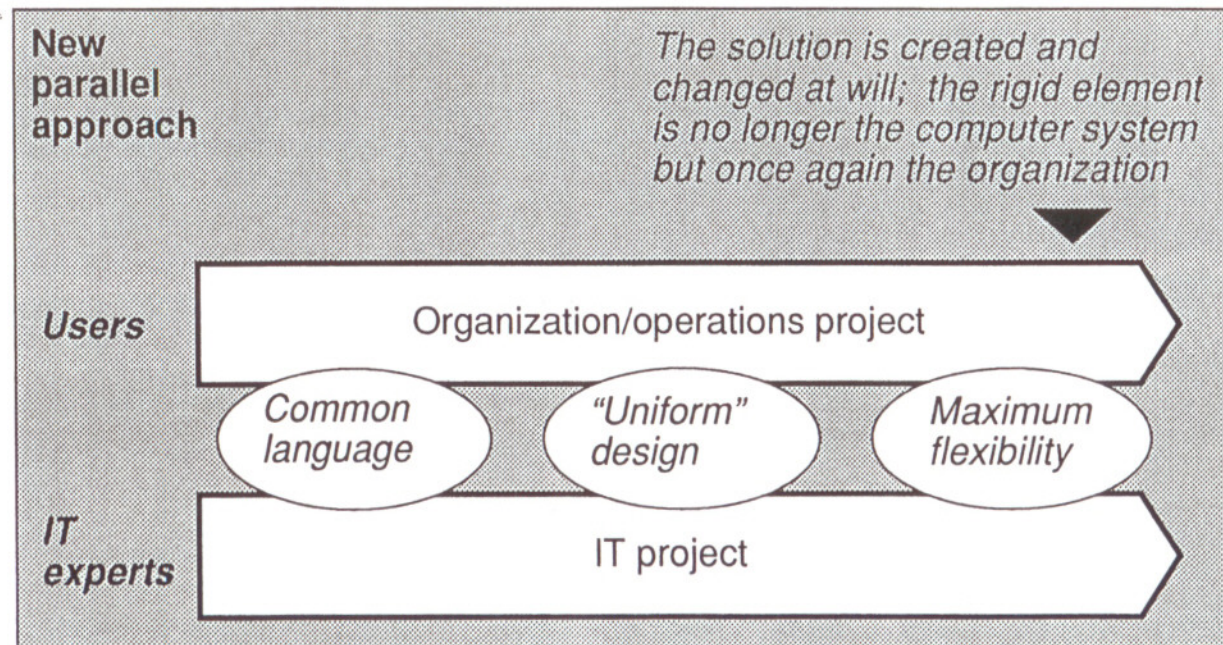
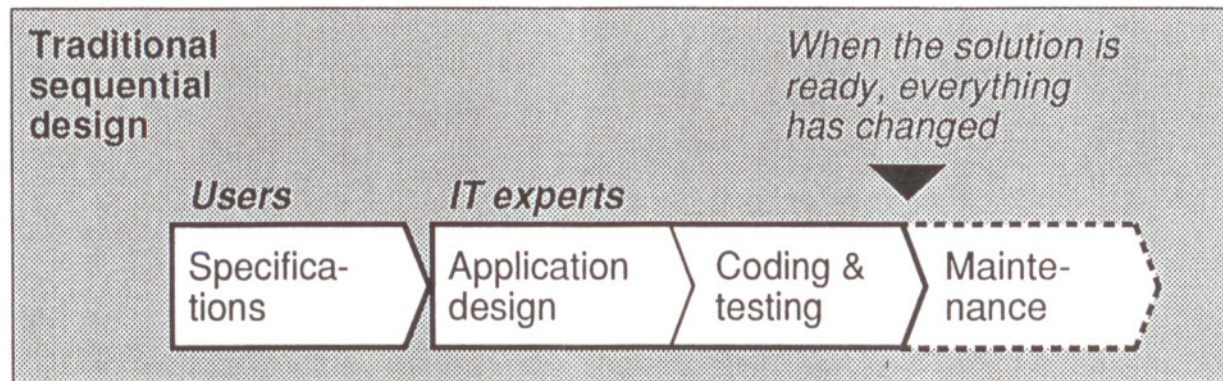


Exhibit 5

“DESCRIPTIVE/DIAGNOSTIC” PROBLEM SOLVING

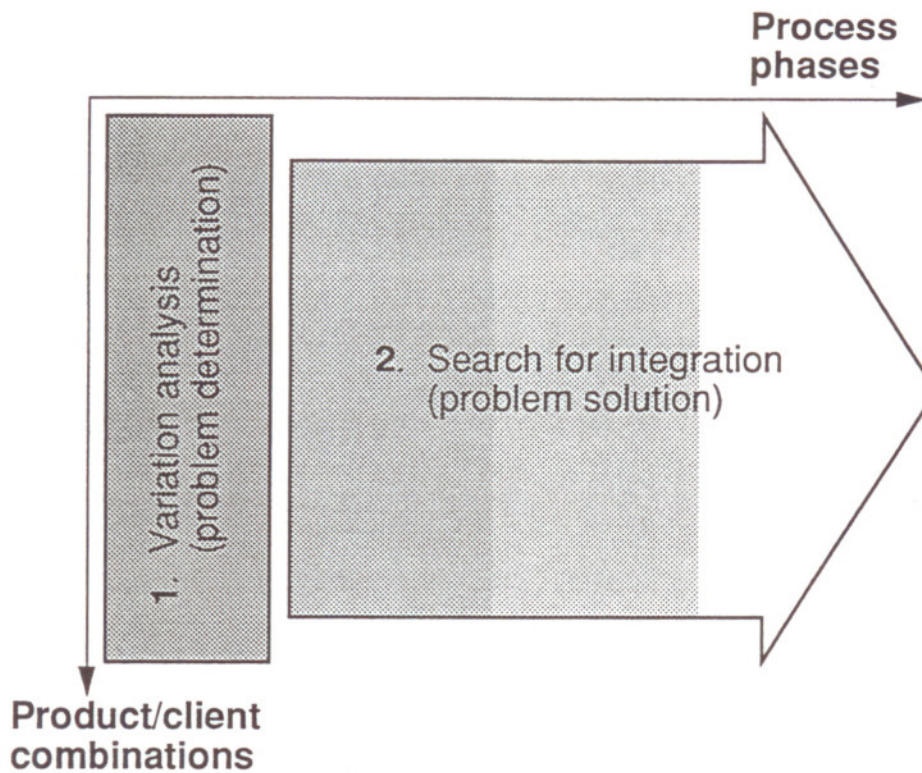


Exhibit 6

“EXPLORATION- & DESIGN-ORIENTED” PROBLEM SOLVING

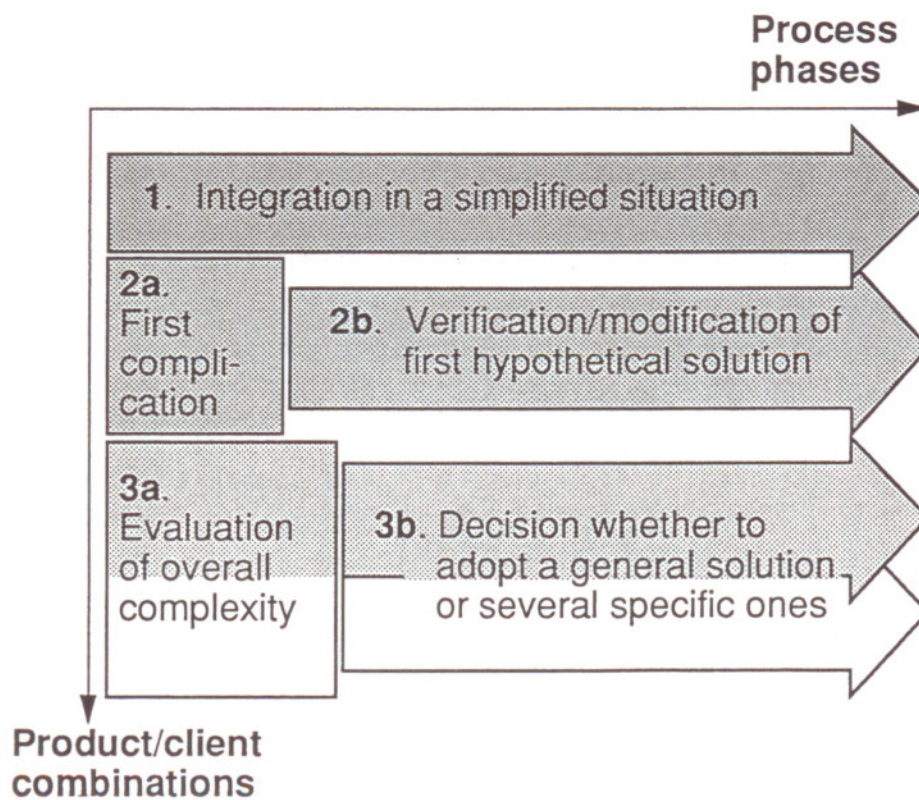


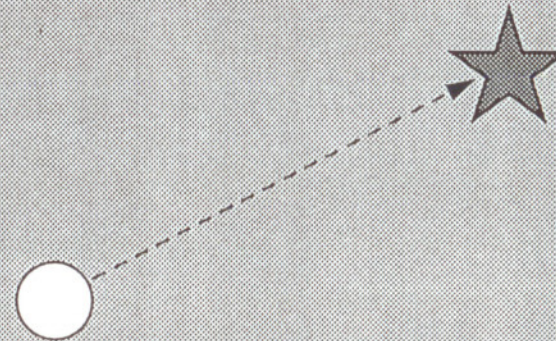
Exhibit 7

**“EXPLORATION- & DESIGN-ORIENTED” APPROACH CENTERED ON
THE PRELIMINARY DEFINITION OF AN IDEAL REFERENCE SCHEME**

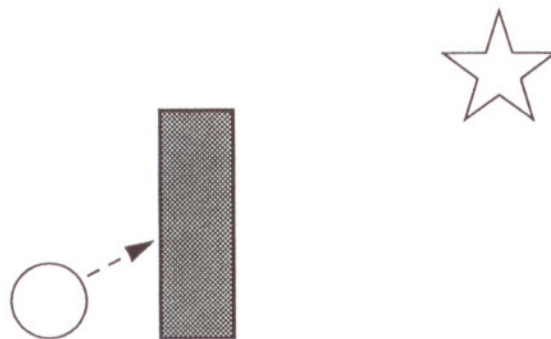
1. Brief assessment of existing situation



2. Macro-design of ideal target



3. Evaluation of constraints to change



4. Choice of implementation path

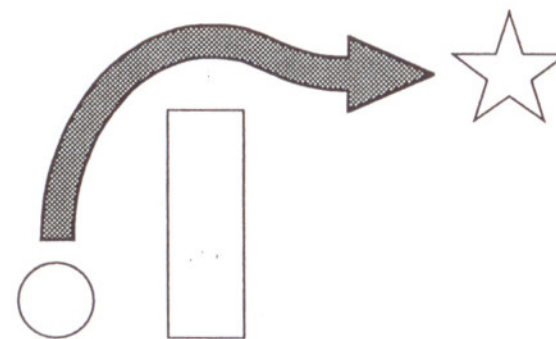


Exhibit 8

PATH FOLLOWED BY A CONVENTIONAL TEAM

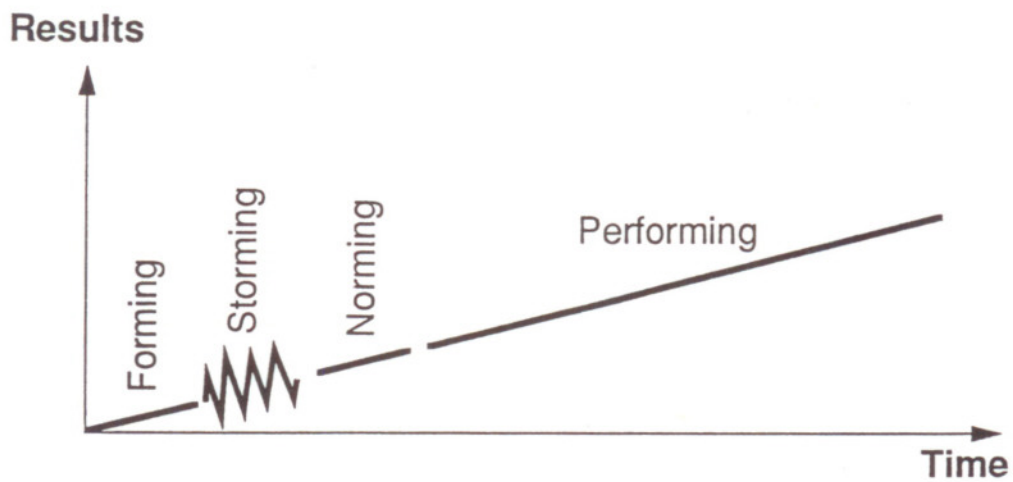


Exhibit 9

PATH FOLLOWED BY A REENGINEERING TEAM

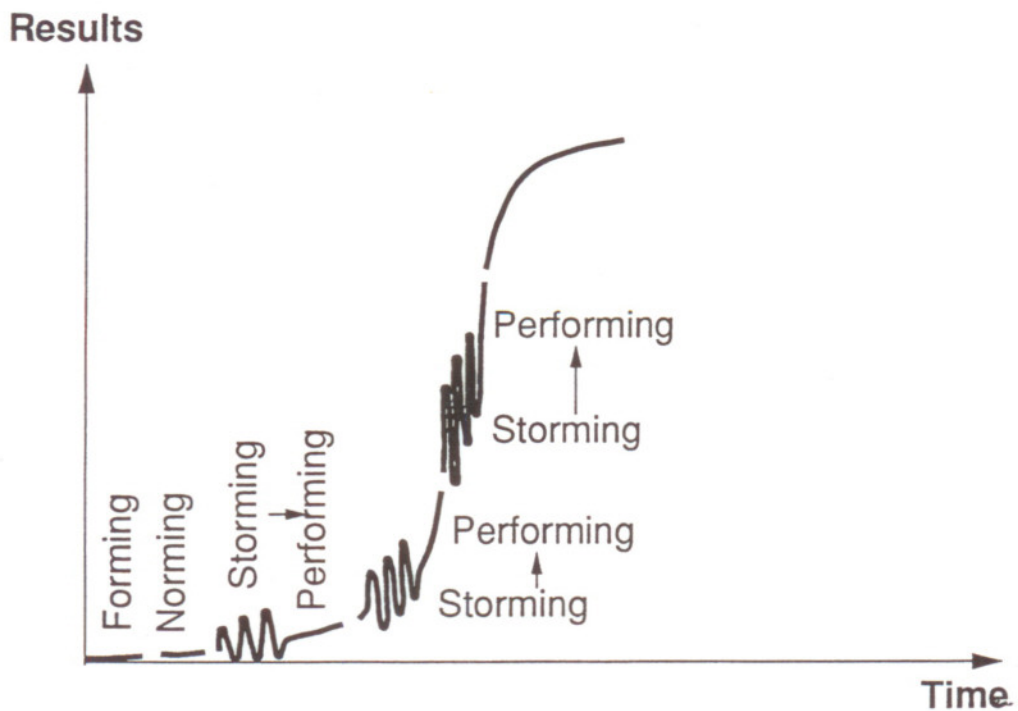


Exhibit 10

“DOMINO EFFECT” INVOLVEMENT OF THE WHOLE COMPANY

