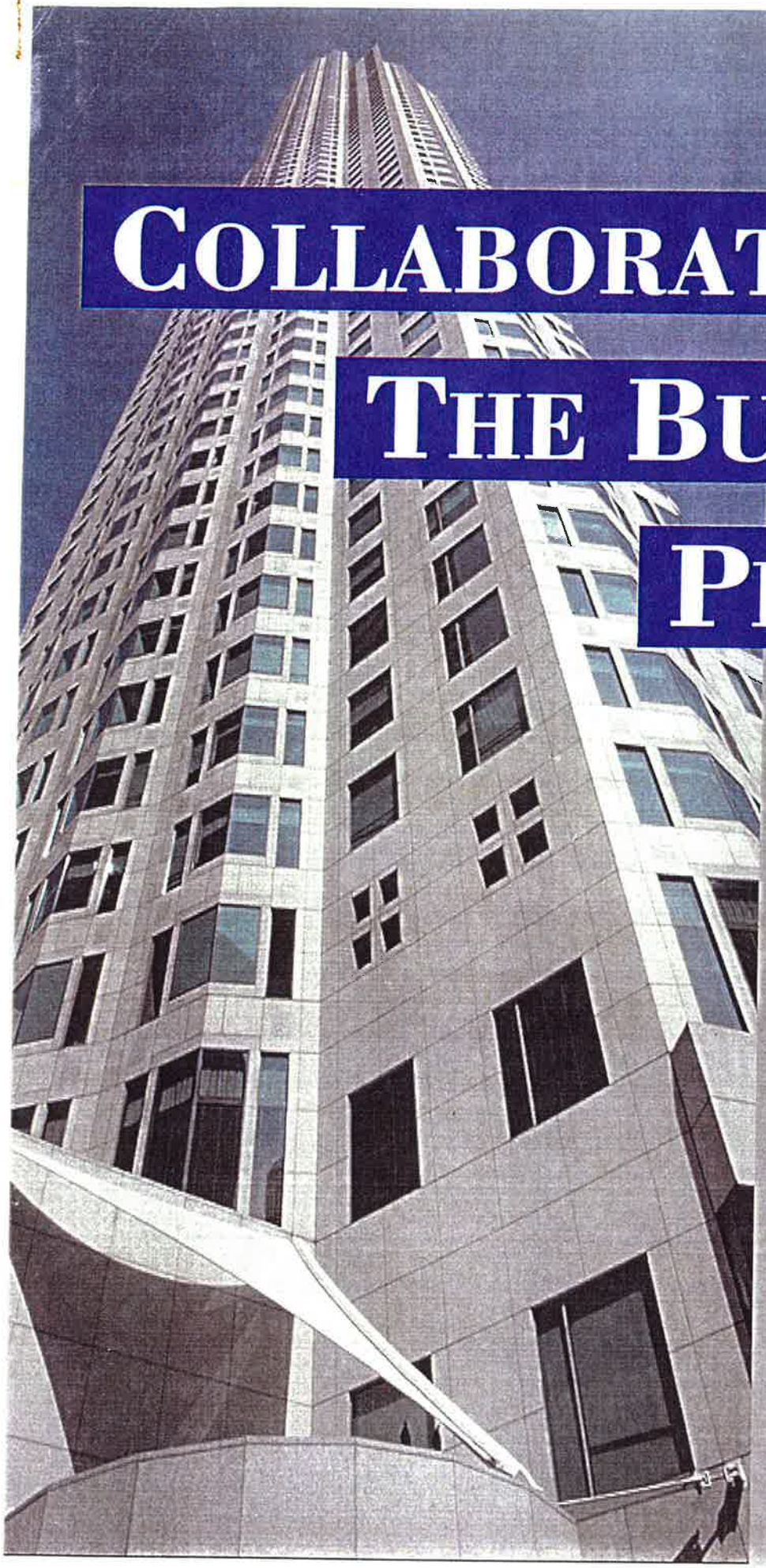

COLLABORATION IN THE BUILDING PROCESS

THE COLLABORATIVE PROCESS GROUP

OCTOBER 8, 1996

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Foreword

We are the Collaborative Process Group: a diverse group of owners, designers, and builders committed to achieving extraordinary outcomes – outcomes which exceed the expectations of everyone involved in the project – through the use of collaboration in the building process. We have all, individually and collectively, designed and built projects which have used some, if not all, of the principles of The Collaborative Process. As a result of these principles, we have experienced extraordinary outcomes on our building projects.

Now, having experienced the remarkable benefits which flow from true collaboration, we want to capture those benefits for our clients, our organizations, and ourselves on a more regular basis. **Our mission is to revolutionize the building industry by establishing collaboration as the cornerstone of the building process.**

We believe that it is possible, in fact *imperative*, to recreate a spirit of collaboration among participants in the building process, a spirit which was once an integral part of the building process. Enormous amounts of money are wasted each year in direct costs associated with conflict among owners, designers, and builders. Even more significantly, the lack of collaboration in our industry leads to missed opportunities for value creation, a "hidden" cost which impacts all participants. These costs are a massive drain on our economy, and represent an opportunity for competitive advantage in the global marketplace.

To achieve our mission, we have undertaken to define a collaborative process model to be used as a new paradigm in the building industry. This model is at once traditional and innovative, drawing from our industry's collaborative past while utilizing modern research and technology. The Collaborative Process promotes a balanced blend of people and systems to help participants in the building process achieve extraordinary outcomes.

Declaration

Historical Background

Building projects were once collaborative undertakings between owners, designers, and builders. Practically all of the great facilities in the world were programmed, designed, and built by teams of skilled specialists working together toward a common goal with a shared sense of ethics, responsibility, and respect.

Early in the Twentieth Century, this system began to come unraveled in the United States. Arguably, builders were the first group to systematically breach the unwritten code by which the industry operated. In many cases, relationships were exploited for unfair advantage, creating large profits for the builders at the expense of the owners and the public at large.

To counteract these abuses, virtually every state in the U.S. adopted "competitive bidding" regulations requiring all publicly funded projects to be lump-sum bid to interested general contractors from complete design documents. This "design-bid-build" approach was also widely adopted in the private sector. While these changes made enormous progress in stamping out the widespread abuses in the industry, the collaborative relationship between builders, designers, and owners was dealt a mortal blow.

For a while, designers and owners continued to work collaboratively. However, with a legal wedge driven between designers and builders, it was only a matter of time until designers would be forced to choose between their own success and that of their clients, a dilemma which would be faced by many owners as well. Under pressure from competitive contractors, designers and owners often fought over responsibility and liability, eventually undermining the trust necessary for collaboration.

The economic pressures on the industry during the 1980's brought this tension to a head. Faced with rapidly falling real estate values and project backlogs, the courts were often viewed as a means of surviving the downturn. The entire industry – owners, designers, builders alike – became engulfed in a tidal wave of litigation. The building industry had completed its transformation: what was once widely viewed as a paradigm of cooperation had now degenerated into one of the most adversarial sectors of the economy.

The consequences of this degeneration are now familiar to everyone in the building industry. Here's how an OWNER might describe the current state of affairs:

> "I always end a project tired and disappointed in some way. Getting to the finish line always seems like pulling teeth. During the whole process, I feel like a referee in a boxing match. The architect and contractor fight paper wars, and I'm in the middle. Every problem, most not of my making, lands on my desk, usually to solve, and always to pay for. Then, when we finally get to the end, everyone disappears. The architect is off on the next project and is never willing to spend the time to help solve problems. The contractor is only interested in getting change orders approved and retainage paid, then they are gone too. No one cares anymore about client service. And no matter how hard we try, we always end up paying for something we don't need and needing something we didn't get."

Here's what a DESIGNER might say:

> "Being an architect is not much fun. Owners are more demanding and often unreasonable, but they don't want to pay what it takes to deliver the service they desire. As they bid down our fees, they're pushing more risk and responsibility off on us. Selection processes are usually arbitrary and often capricious; if owners don't pick an architect on fee alone, they pick based on fashion and image. Contractors are no longer builders; they're claims specialists. They crank out hundreds of RFI's, which aren't so much Requests For Information as Requests

> for Income. And on top of all that, it's almost impossible to make a decent living. I still love to design, but I'll tell you, this business is no longer about creativity; it's about protecting yourself from being sued."

Here's what a BUILDER might say:

> "Being a contractor isn't what it used to be. Owners constantly gripe about quality and change orders. But as far as quality goes, well you get what you pay for. We always end up providing alternates and re-designs to save money because many times that's what gets you the job. Even more frustrating, I'm often told to build details which make no sense, details I could improve upon if someone would just ask me, or would simply listen when I make a suggestion. And as for change orders, we have to try to get as much as we can on changes, since everything is bid out and if you don't play the change order game, someone else will and soon you'll be out of business. Now, this game wouldn't be as much of problem if the architect could just produce a decent set of documents. But nowadays, it seems like they get to 90% CD's and quit drawing. When we submit an RFI, it takes forever to get a response. So then we have to make our best guess, but if we're wrong the owner hangs us out to dry. Then they act surprised when we file a claim. What do they think we are? A non-profit organization? Well, plenty of times it looks that way to me."

None of these people paints a very rosy picture of the building industry. But the picture is essentially accurate, and it illustrates why many owners, designers, and builders are dissatisfied with the adversarial design-bid-build process.

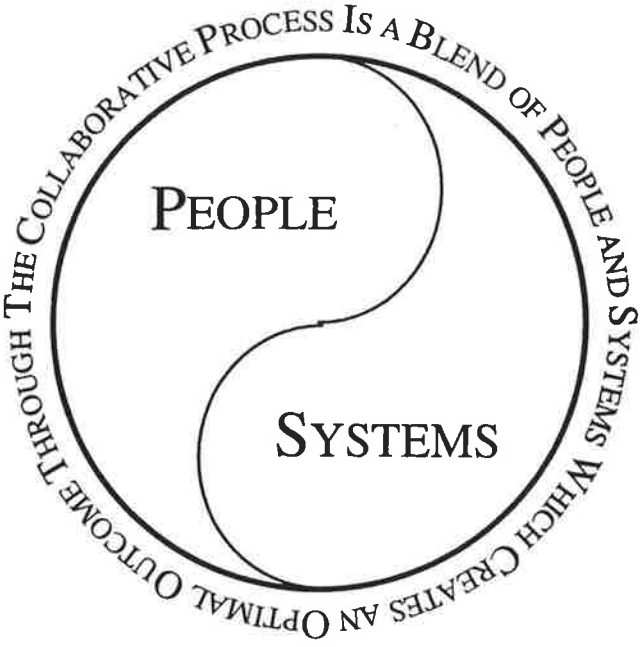
The Pendulum Begins to Swing Back

There have been several attempts to recapture the lost spirit of collaboration in the building process. Some have attempted to "rehabilitate" old project delivery methods such as design-build; others have tried to adapt existing methods by layering on a collaborative event such as partnering; some have allocated responsibility differently between designers and builders like bridging; still others have tried to create new roles in the building process such as construction management or program management.

To date, however, none of these proposed solutions has been a consistent success, for a variety of reasons: they have focused too much on systems, while ignoring the people who actually make these systems work; they have focused on specific elements of the process, rather than analyzing the entire process as a whole; they have tried to treat the symptoms while failing to address the disease itself. We know of many projects where collaboration has led to extraordinary outcomes, but we are lacking an alternative paradigm which can serve as the basis for a radical restructuring of the building industry. The time has come to define a new paradigm, a new approach, a new *standard* which revives, nurtures, and propagates the spirit of collaboration in the building process. The soil is fertile, the climate is right: the seeds of true collaboration must be planted and encouraged to grow.

The Collaborative Process

The Collaborative Process strives to achieve the optimal combination of cost, quality, function, scope, and time as defined by the unique needs of the client and the project.



In order to achieve an optimal outcome, a myriad of factors must be weighed against one another. In the past, this optimization process was performed by a single master builder. Today, however, such a role is impractical for a single person; the industry is simply too vast and complex for any one person to have sufficient knowledge to optimize a building project of any significant size within the time and budget constraints of the global marketplace.

Consequently, a *team* of participants is required, each bringing a particular skill and capability to the project. Changing from an individual to a group process, however, changes the complexity of the management task, and requires new and different types of people and systems in order to be a consistent success.

People and systems are what make up The Collaborative Process. But it is not an arbitrary mix of these two elements. The Collaborative Process is designed to assure that people and systems are synergistic and self-reinforcing, not dissonant and destructive.

The Collaborative Process is *not* a project delivery method. Rather, it is a comprehensive set of practices, tools, and systems that enable project teams to achieve extraordinary outcomes at each phase of the building process.

While the tools and techniques of The Collaborative Process may be used to supplement all project delivery systems, the full benefit of collaboration can only be achieved when:

- ◊ Both the Architect and General Contractor are selected and in place during the initial phase of defining the project scope, budget, and schedule
- ◊ Contracts are negotiated on an open-book, win-win basis
- ◊ Senior management of all participants is committed to support the process throughout the definition, design, construction, commissioning, and close-out phases of the project.

People and Systems

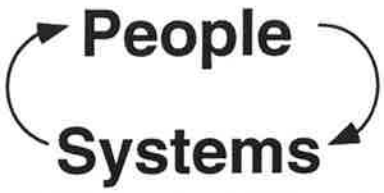
To understand the philosophy behind The Collaborative Process' concept of "blending people and systems," it is helpful to examine two alternative philosophies — one which focuses on systems and ignores people, and one which focuses on people and ignores systems.

The first of these philosophies is often identified with Frederick Taylor, the founder of "scientific management." Taylor believed that people were sources of uncertainty and error, and the best way to structure a process was to severely limit the amount of freedom and autonomy that workers were allowed to exercise. Efficiency, in the eyes of Taylor, is achieved through an exhaustive analysis of a problem, culminating in a very detailed specification of each and every activity to be undertaken. Systems, from time-motion studies to strict work rules, were used to constrain the ability of workers to influence the creative process, since people only rarely improved the outcome — generally, they just made it worse. People are the problem; systems are the solution.

In the building industry, this philosophy is often the basis for public sector design-bid-build projects. Very precise plans and specifications are developed, and strict adherence is religiously enforced. Inspections are used to ensure rigid conformance, and transgressions are dealt with punitively, regardless of their value in achieving the overall goals of the project. There is generally tremendous distrust among the parties, leading to defensive practices which discourage innovation and improvement.

The second philosophy is often identified with the modernist movement, of which Friedrich Nietzsche was the intellectual father. This movement holds that traditional social systems are corrupt and devoid of a creative spirit. What is needed to achieve greatness was a rejection of the status quo under the guidance of an *Ubermensche*, or Superman. Extraordinary outcomes were achieved by giving control to a visionary, and allowing that person to completely control the process. This authority and control was then used to break down the old paradigms, replacing them with superior ideas which flowed from the creative mind of a "great man." Such an approach was necessary because traditional approaches rarely yielded extraordinary results — generally, they resulted in watered-down mediocrity. Systems are the problem; people are the solution.

In the building industry, this philosophy is often the basis for so-called "high-end design" projects. The designer, in the role of Superman, is given total autonomy, so the project becomes the expression of the will of the designer. Budgets and schedules take a back-seat to achieving the "design intent." As a result, such projects, while often striking and beautiful, are rarely accomplished within budget and schedule constraints, and so often end up economic, operational, or programmatic failures.



In contrast to Taylor and Nietzsche, the philosophy underlying The Collaborative Process seeks an integration of people and systems. People are recognized as a vital resource, and the key to long-term success and economic survival. Systems are recognized as important for establishing the right incentives, assuring a rational decision-making process, and achieving optimal outcomes. Neither people nor systems can be dealt with in isolation; rather, both need to be chosen and developed in ways which are congruent and self-reinforcing.

Maxims of The Collaborative Process

There are a number of maxims which underpin The Collaborative Process:

- **Integrity and trust are essential for true collaboration.** Integrity (you will do what you say) and trust (I believe what you say) are the cornerstones of any collaborative relationship. If you break your promises or I question your credibility, our relationship will eventually become adversarial.

- **The long run is more important than the short run.** Everyone faces trade-offs between the short and long run. In order for collaboration to be effective, all participants must have a fundamental concern for the long term implications of their actions.

- **Teams make better choices than individuals.** Teams, which are diverse groups of individuals organized for a common purpose, are good at achieving optimal outcomes for three reasons. First, they enlarge the set of possible solutions; second, they have more capabilities than one individual; third, they are more likely to identify the best solution from among the possible options. Creative thinking and extraordinary outcomes are more likely to occur in a team setting.

- **In building a team, pre-qualify firms and select people.** It is tempting to select team members by picking the organization on the basis of size, experience, financial strength, fee, etc. However, a team is not made up of organizations; it is made up of *people.* While some organizations foster collaboration more than others, personal chemistry, individual capabilities, and teamwork skills are, in general, better determinants of team performance than organizational factors.

- **True creativity focuses on option generation.** Bad design is not the result of selecting the wrong item from a list of possible solutions, but rather from starting with too short a list. The "great idea" is generally found only after examining a multitude of options. And it takes enormous dedication to continue the search for greatness after finding two or three "pretty good" solutions.

- **Change is inevitable: be prepared for it.** As a project progresses, market conditions change, user requirements evolve, and new ideas and technology emerge. The Collaborative Process minimizes the effects of change through better planning and analysis, but the unforeseen, by definition, cannot be fully anticipated. However, The Collaborative Process treats change as an opportunity, not for windfall profits, but rather for exploring solutions which were unachievable under previous conditions.

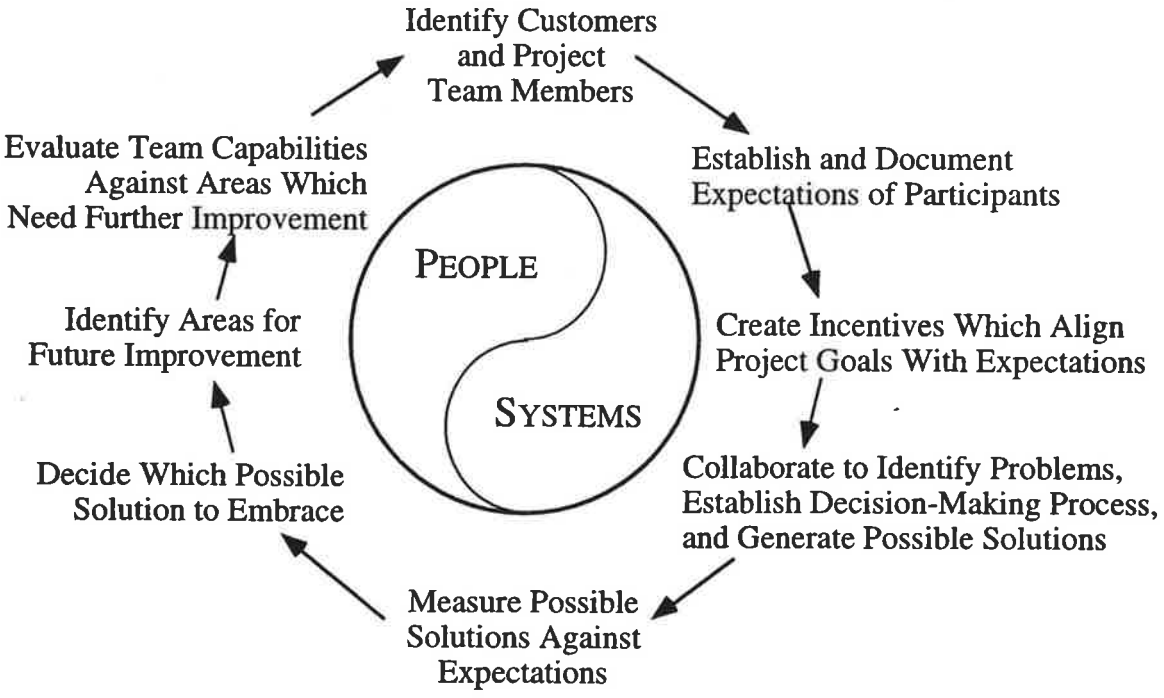
- **The basis for decision-making should be facts and reason, not opinions and emotion.** Since building projects involve large investments of other-people's resources, it is critical that project teams make rational decisions, rather than following the "conventional wisdom" or promoting their own personal biases.

Description of The Collaborative Process

So how can we achieve extraordinary outcomes? In this section, we will explore the key elements of The Collaborative Process:

- High-Performance Teams
- Optimization and Performance Measurement
- Communication
- Incentives and Risk-Sharing
- Problem Solving and Decision-Making

Overview of The Collaborative Process



The Collaborative Process is a congruent, self-reinforcing set of business structures and systems. While there is benefit to adopting any one of these elements, the best results are achieved when all of the elements are used in concert. These elements are not necessarily innovative taken individually; rather the special power of The Collaborative Process flows from the use of all elements in unison.

High-Performance Teams

The Collaborative Process relies on teamwork to be successful. Creation of a true team, as opposed to a group or collection of individuals, cannot be left to chance. Team building must be accomplished deliberately and systematically. If successful, the team becomes more than just a collection of individuals; it functions as a unit, with the whole being greater than the sum of the parts.

People

When organized into a High-Performance Team, people reach new heights of creativity and productivity. While High-Performance Teams vary widely from project to project, they do share a number of common characteristics, including:

- *Facilitative Leadership.* Team leadership is both participatory and facilitative. It does not revolve around command and control; rather, leadership guides and empowers team members in achieving goals and objectives. The traditional management style, which focuses on the team serving the leader, is replaced by a modern management style which emphasizes the leader serving the team.

- *Diversity.* Collaboration of team members with differences in cultural and professional backgrounds leads to idea generation, resulting in more creative, innovative solutions.

- *Common Purpose or Vision with Specific Performance Goals.* Teams develop direction, momentum and commitment while working to shape a meaningful purpose or vision. The purpose provides a context for decision making and motivation for excellence while performance goals help a team track progress and hold itself accountable.

- *Collective Work Products.* High-Performance Teams produce work products through the joint contributions of their members. This collective effort leads to performance levels greater than the sum of all the individual bests of team members.

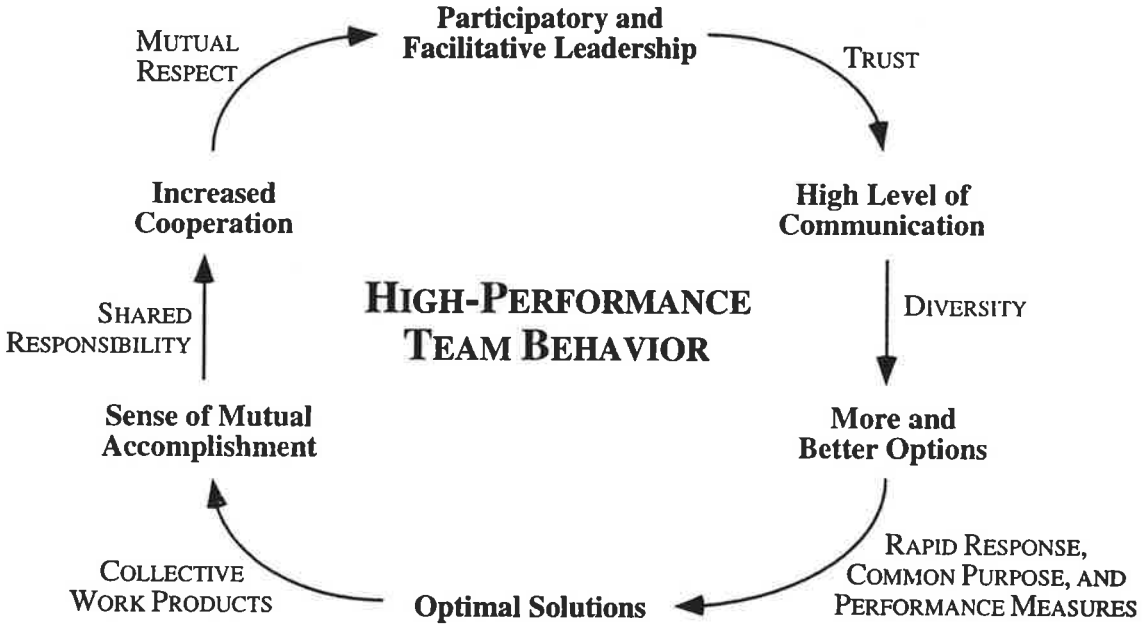
- *Shared Responsibility.* Team members shift from dependence or independence to interdependence, which requires each member to take responsibility for the success of the entire team. No team member will allow another team member to fail.

- *High Communication.* In High-Performance Teams, performance is directly linked to communication. Behaviors that encourage communication include equality, openness, problem orientation, positive intent and empathy.

- *Rapid Response.* Learning and using creative problem solving and decision making tools enables High-Performance Teams to quickly solve problems and exploit opportunities.

- *Trust.* Trust and respect begin to develop during the selection process and at initial team building events. They continue to grow with time as team members work together collaboratively.

All of these characteristics reinforce and build-upon each other, resulting in a cycle of behavior which achieves ever-higher levels of performance:



High-Performance Teams seldom happen by accident. The early identification of required team resources, selection of suitable team members, appropriate contracts, and strategic, well-planned team-building events are essential to creating the environment in which a group of individuals can be transformed into a High-Performance Team.

It is hard to overstate the importance of getting the team off on the right foot. A mistake made early in the team building process can lead to considerable problems downstream in a project. The Collaborative Process envisions spending enough time during the team building phase to assure that the dynamics of the group are healthy and self-supporting. We call this taking a "go slow to go fast" approach.

Systems

The systems required to build a High-Performance Team are mature and have been thoroughly researched. They include:

- *Identification and prioritization of required expertise.* To achieve a level of high performance, initial team members must define a preliminary project mission and goals, evaluate the expertise necessary to achieve these goals, and identify and prioritize the additional resources required to obtain that expertise, whether in-house or outside consultants.

- *Selection process.* The best mechanism for selecting the members of a High-Performance Team is self-selection. At each step of the team assembly process, the current members of the team develop selection criteria, identify potential additions, screen and interview them, and participate in the final selection. New members may only be added by unanimous consent of the existing team.

- *Contracts.* Since the formal relationships of the team members are codified in the contractual agreements, it is critical that they support collaboration and High-Performance Team concepts. Contracts should require open-book accounting, share success and risk, contain the proper incentives, and be structured to support the resolution of disputes in an innovative fashion.

- *Team building event(s).* At key points in the process (especially when one or more members are added to the team), an event is necessary to focus (or re-focus) the team's energy on a common vision. The emphasis should be on identification of shared goals, development of trust, establishment of decision-making and conflict resolution processes, and inculcation of group norms.

- *Continuous improvement of work processes.* Systems should be put in place to encourage and support the use of quality tools, continuous improvement, and innovation.

Optimization and Performance Measurement

The concept of an optimal outcome is clearly central to The Collaborative Process. But what does it mean? We define an optimal outcome as an outcome which has the best combination of cost, quality, function, scope, and time as defined by the unique needs of the client and the project. Not surprisingly, this definition reflects the dual nature of The Collaborative Process, with its focus on people and systems.

People

Motivating people and channeling their potential is key to achieving an optimal outcome with The Collaborative Process. Every team member comes to the project with their own

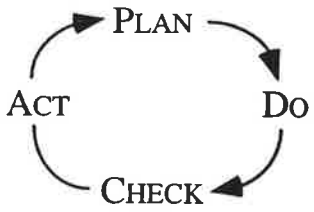
personal goals and constraints. These disparate agendas must be acknowledged and re-directed toward a shared set of objectives, and progress must be measured and communicated in order that the team can seek and find an optimal outcome.

Goal Setting is critical to the optimization process. Without establishing measurable goals early in the project and monitoring progress throughout, there can be a tendency to drift off on fruitless tangents, and individual agendas can undermine the spirit of collaboration.

Diversity has been proven to be of major importance to team performance. Research has shown that teams which are composed of people from different backgrounds and with different competencies are more likely to make better decisions than homogeneous groups.

Alternative Development is the key to achieving optimal outcomes. A solution will never be better than the set of options generated during the process, so developing a broad and relevant set of options increases the likelihood of finding an optimal outcome.

Self-Regulation is important for maintaining the right kind of team environment. When constraints are placed on a team by outsiders, creativity is stifled and optimal outcomes are difficult to achieve. Many of the best ideas come from people who have lower status in an organization. However, if external roles are allowed to influence the dynamics of team interaction, status will count for more than creativity, leading to missed opportunities and sub-optimal outcomes.



Feedback is essential to monitoring performance and evaluating the team's success in achieving project goals. Optimization theory tells us that optimal outcomes are achieved through iteration and iteration requires that interim results are measured and fed back to the team for further analysis and evaluation. This concept is the basis for the Plan-Do-Check-Act cycle, a cornerstone of the quality movement. Too often in the traditional building process, improvements are identified by one party but never communicated to the rest of the project team. Problems are viewed in their narrow, immediate context, rather than in the broad context of achieving the overall project goals. Worst of all, mistakes are repeated again and again, with new projects failing to take advantage of the learning which took place on previous projects.

Systems

In The Collaborative Process, the people involved in the process work together early on in the project to develop goals and measurement systems. These goals and measures then make up a "balanced scorecard" with which the outcome of the project is assessed. An optimal outcome will achieve the best mix of these factors for a given owner and project.

The Dials of Project Value

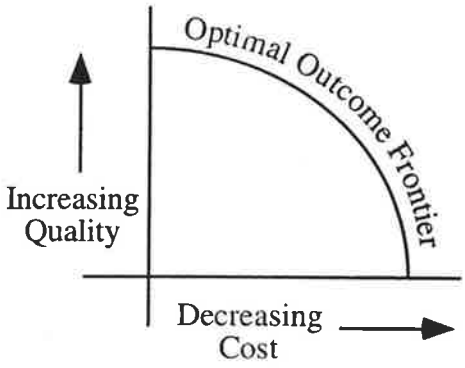
There are six "dials" with which to control the outcome of a project:

- *Cost.* Since all projects, ultimately, must serve an economic purpose, it is essential to predict and control what they cost. But it is not enough to minimize initial cost; often, life-cycle economic performance – the present value of all initial and future expenditures – is even more important than initial cost.. Costs are targeted and controlled by means of an estimate or budget, which tracks expenditures for various work items. In The Collaborative Process, it is essential to monitor costs at a high level of detail. Such detail is necessary to assess the trade-offs between cost and other factors. In the traditional building process, project cost is treated as a "black box." The Collaborative Process opens the black box and allows the entire team to assess the economic value of building components in detail.
- *Time.* As the saying goes, time is money. For many projects, the speed with which the building can be brought on line is more important than almost any other factor. For instance, when building a semiconductor facility, a month of lost revenue and market share can overwhelm the effect of saving a few percent of construction cost. Time is monitored and controlled by a detailed analysis of the component parts, the time required to specify, procure, manufacture, install, and activate each component, and the identification of interdependencies between components. Analytical tools such as critical path scheduling can be used to identify opportunities for improvement.
- *Scope.* The world is filled with buildings which fail to satisfy the needs of the user. An optimal outcome would be the best fit for the user's needs over the life of the building. Determining the optimal scope, then, requires an identification of the major drivers of capacity, and the matching of the facility with the strategic plan of the user organization. Scope is monitored and controlled by means of a program, which identifies the space needs and tracks compliance of the building design with those needs.
- *Function.* The Collaborative Process attempts to create a building which meets all of the functional requirements of the user community. An optimal outcome would satisfy their short and long term functional needs, allowing for sufficient flexibility to adapt to changes in the market. Function is monitored and controlled by means of process flow diagrams and capacity analyses, which document the processes which will utilize the completed building.
- *Safety.* No matter how valuable a facility may be, it is never more valuable than the health and welfare of the people who build and use the building. Care must always be taken to assure that the building process, and the building itself, do not create unacceptable hazards to workers or users. These hazards range from risks during the building process (e.g. falls, accidents, injury, death) to risks from the completed buildings

(e.g. toxic gases, biohazards, structural failure). Safety is best monitored and controlled proactively, by identifying potential risks and taking prudent steps to mitigate those risks. If safety is given the appropriate priority, zero-accident projects are achievable using The Collaborative Process.

- *Quality.* Quality is the grab-bag which covers all the other aspects of the building which are not addressed by the first five metrics, such as aesthetic impact, user perceptions, appropriateness of building materials, etc.. Quality is monitored and controlled by a variety of means, including specifications, punch lists, inspections, user surveys, etc. Special care must be taken to establish appropriate measures early in the project to focus attention and effort on the quality expectations of the team.

Selecting the best "position" for each dial is a very complex problem, since all the dials are interdependent. There are almost always trade-offs between them: for instance, more quality generally implies more cost. The same is also true of other measures (time vs. quality, cost vs. scope, time vs. safety, etc.). So, monitoring a single measure is not enough. Rather, it is the *combination of all dials* which must be considered when determining whether an optimal outcome has been achieved.



In theory, there are many "settings" of these dials which can be considered an optimal outcome. In fact, one definition of an optimal outcome is a setting in which none of the dials can be increased without decreasing one or more of the other dials.

However, The Collaborative Process doesn't seek just any optimum. Rather, it seeks the optimum which best fits the needs of the client and project, as expressed in the "balanced scorecard." As an example, consider a college dormitory. Completing a dorm 2 months before classes begin does not provide more value than completing it 1 week before students arrive on campus. Paying more for the project to complete earlier, while optimal in a theoretical sense, is not optimal given the needs of the client. On the other hand, extending the schedule to save money is a really bad idea if it means that the dorm will not be open when students start arriving.

In this case, a "balanced scorecard" would give more weight to completing before students arrive, but provide no incentive to finish significantly ahead of schedule. Of course, this is different from a manufacturing plant, which could derive significant benefit from early completion. The key is to assess the unique needs of the project, and set goals and measurements to encourage the best possible dial settings — an optimal combination of cost, time, scope, function, safety, and quality. In short, an extraordinary outcome.

Communication

Clear and consistent communication is a critical success factor for any project, but is especially critical for projects undertaken with The Collaborative Process. Because of the team-based nature of The Collaborative Process, traditional organizational forms (such as hierarchies) cannot be utilized to structure communications. Rather, new forms and systems must emerge which use the power of the team without causing the chaos which often follows from the breaking down of command-and-control hierarchies.

People

Developing good lines of communication does not come naturally to most workgroups. The Collaborative Process uses High-Performance Team principles to overcome the natural barriers to communication. These principles include equality, openness, problem-orientation, positive intent, empathy, and extensive use of technology. Common barriers include:

- *Status.* Research has shown that mixing high-status people with lower-status people on a team can create barriers to effective communication. By encouraging equality and openness, The Collaborative Process empowers all team members to contribute ideas, regardless of their status outside the team.
- *Ego.* Personal attachment often leads people to take personal affront to challenges to their ideas. By demanding problem-orientation, The Collaborative Process requires all team members to put aside their egos in favor of finding the optimal solution, regardless of who originated the idea.
- *Distance.* Communication is much easier with a next-door neighbor than with an associate on the other side of the world. Given the fact that it is difficult, if not impossible, to find all the intellectual resources in one location, special attention must be given to communicating over long distances. The Collaborative Process encourages the proactive use of communication technologies to overcome the limitations of physical proximity. These technologies range from the commonplace (fax, voice mail, e-mail) to the exotic (distributed client-server databases, Internet web pages, electronic data interchange).
- *Style.* Some people are simply more reluctant or less effective at expressing their thoughts. After identifying individual styles during team-building events, The Collaborative Process encourages empathy among team members and creates a framework of positive intent in which contribution is sought from and appreciated by all team members.

One of the keys to successful communication is being an effective listener. Communication is always a "two-way street." But in The Collaborative Process, team members not only listen, they listen as an ally. Ideas and feedback are considered with an open mind and criticism is handled constructively and professionally.

Systems

A variety of systems should be employed for robust and effective communication, including:

• *Meetings.* To be effective, The Collaborative Process, by its nature, requires frequent meetings of the entire project team. Sub-teams can conduct separate meetings as needed, but the frequent team meeting assures that key issues are communicated and understood by all team members. To assure effective meetings, clear behavioral ground-rules should be agreed upon early in the project. Each meeting should be facilitated by a team member. The facilitator's role should be to keep the team focused on the task at hand, monitor time, and guide the team in appropriate problem-solving tools.

• *Professional Facilitation.* There are critical meetings during a project when an intense level of communication is required. Examples of such meetings include when significant additions are made to the project team, or when deep divisions develop between team members, or when project goals dramatically change due to some external event. In these such critical meetings, professional facilitation should be considered.

• *Contractual Agreements.* Terms, conditions, and their associated documents define, in a precise way, the roles and responsibilities of each team member. These agreements should communicate the business relationships and technical requirements which are particular to the project. Because of the adversarial basis of the U.S. legal system, developing contracts which encourage true collaboration is a very difficult task. Agreements should be balanced, realistic, and written in simple prose. One-sided, idealized, or obfuscatory agreements will undermine The Collaborative Process, since they put individual incentives at odds with collective goals.

• *Informal Correspondence.* In addition to the various types of formal communication described above, a healthy project team will engage in substantial amounts of informal communication. To be effective, such communication should be intensive, task-focused, frequent, and open. Informal communication is also effective in surfacing issues, discussing problems and their root causes, and identifying and evaluating alternative solutions. Unlike formal communication, which is generally used to make and document decisions, informal communication is used to share information at greater depth, and may include discussions about not just *what* was decided, but *how and why* the decision was made.

Problem Solving and Decision-Making

The Collaborative Process does not use traditional, command-and-control organizational structures for problem solving and decision-making. Instead, by applying techniques founded in decision theory and research on group interaction, The Collaborative Process uses team dynamics to achieve optimal solutions.

People

In a hierarchy, it is generally easy to define clear decision-making responsibilities. The person at the top has the ultimate power to make decisions ("The Buck Stops Here"), and chooses to delegate clearly defined portions of their responsibility to subordinates. This model is widely identified with the military, and has traditionally been associated with large U.S. corporations. It has the advantage of clear and often rapid decision making. It's principal disadvantages are that optimal solutions are frequently overlooked, and carrying out decisions requires significantly more organizational discipline that can be sustained in most situations.

In a workgroup, who really makes the decision is much more ambiguous. The interaction of workgroup members, their relative competence on a given issue, their credibility to other members, their persuasiveness, etc. generally count more than status and authority. While many workgroups do have the advantage of generating better alternatives, they can find making the final decision painful and slow. Still, once the decision has been made, implementation is often much faster. This approach to decision-making is often identified with Japanese corporations and lean production techniques.

In The Collaborative Process, decision-making is undertaken by a workgroup transformed into a High-Performance Team, and pitfalls are avoided because The Collaborative Process:

Promotes Buy-In and Commitment. Since problems are solved and decisions are made with the participation of the entire team, the level of commitment is significantly greater than for a command-and-control hierarchy. Everyone feels ownership of the decision, and is eager to implement it.

Identifies Biases and "Agendas," Which Influence Individual Input. Because of the open communication which is a cornerstone of The Collaborative Process, team members understand theirs and other's motivations and biases. These "differing agendas" can then be examined relative to the common goals of the team, and dealt with proactively.

Emphasizes Trust and Cooperation. The Collaborative Process creates an environment of trust and cooperation by breaking down traditional barriers to understanding, aligning individual incentives with project goals, and encouraging empathy and interdependence among team members.

Seeks Consensus in a Context of Diversity. By establishing clear goals and setting behavioral norms, The Collaborative Process harnesses the power of diversity to generate better alternatives, foster creativity, and encourage open-minded analysis of problems. As a result, consensus is more likely to develop around an optimum solution.

Encourages Proactive Listening. Many workgroup members are often in a mode of not listening at all. Proactive listening not only means that you listen intently, as an ally, but check what you hear and see by asking questions and seeking needed clarifications.

Systems

Several systems come into play which enable teams to efficiently solve problems and make choices that lead to optimal solutions and extraordinary results. These include:

Common Measurement System. The team must work from a single, common mission statement, set of measurable goals, schedule, budget, etc. This common measurement system becomes the context for problem solving and decision-making throughout the project.

Agreement on How Decisions Are Made. Options for team decision-making range from the leader dictating the decision to the team delegating the decision. Decision-making by team consensus falls somewhere within this range, and is the preferred approach of The Collaborative Process. Of course, there are occasions when it is more efficient to select a different methodology. However, it is more important that the team understand and buy-into how decisions are made than it is to select the "right" decision-making approach.

Systematically Applied, Interactive Problem-Solving Approach. Interactive problem-solving and decision-making is a process that allows team members to work together productively to identify and resolve issues. Problem-solving tools are used to promote divergent then convergent thinking, creatively generate alternatives, and systematically evaluate those alternatives, build agreement on a final decision.

Team Members Skilled in the use of Interactive Problem Solving Tools . These tools include:

- *Brainstorming* - A method to identify a large number of alternatives in a short period of time, particularly useful when creativity is desired. Guidelines for effective brainstorming include: clearly identify topic; select facilitator and scribe(s); keep generation of ideas distinct from evaluation; be creative, encourage far out ideas; build on others ideas; go for quantity; write it down in full view; have fun.
- *Chip Voting* - Once alternatives have been generated and like ideas combined, chip voting is used to identify and prioritize ideas favored by the team. Each team member is given an equal number of "chips," usually 1/3 the total number of ideas, to vote for the ideas they favor. By adding up the number of "chips" voted for each idea, the team has a basis for reducing alternatives to a more manageable number.
- *Devil's Advocate* - By appointing a devil's advocate, whose responsibility it is to raise objections to potential solutions, "groupthink" can be avoided and implementation of decisions can move forward with the awareness of potential pitfalls.
- *Flow Diagrams & Decision Trees* - Often the interaction between various processes and decisions is complex. Flow diagrams and decision trees are methods for visually displaying the interactions in a way that simplifies analysis.

- *Action Planning* - As a team identifies the need for work to be done outside team meetings, action planning is used to reach and document clear agreement about expectations and who is going to do what by when.
- *Plus-Delta* - By regularly "brainstorming" what worked (+) and what didn't work (Δ) at the closure of a meeting or project phase, team members give direct feedback to the leader, facilitator and other team members about logistics and processes. This provides a continuing opportunity for improvement of work processes and relationships.
- *Issue Bins* – As the project progresses, many issues will surface which need to be addressed. These issues are kept "alive" by recording them on a common list for consideration at the appropriate time.
- *Decision Logs* – Decisions must be made clearly and tracked precisely. To facilitate this, decision logs must be maintained throughout the project. Not only do these logs clarify decisions, but they also allow new or adjunct team members to quickly learn how the iterative process has developed over the course of the project.

The form of these tools vary widely, but it is important that they be applied in a consistent, disciplined manner throughout the project.

Incentives and Risk Sharing

Incentives are critical to assuring that all participants in The Collaborative Process have the proper motivation. Establishing a common set of objectives is one thing; setting up mechanisms to increase the likelihood of achieving those objectives is another. The Collaborative Process seeks to align the motivations of the team members with the goals of the team. Doing this effectively is not a simple task, but it is essential to achieving extraordinary outcomes.

People

Incentives are about motivating people. But everyone has different values, goals, concerns, and risk-tolerance. The key is to find the right incentive structure to create individual motivation to achieve shared goals.

To create an environment of true collaboration, it is important to understand, acknowledge, and deal with the various incentives which influence behavior of team members. These incentives can be identified by asking the following questions:

• *"How will my actions affect me?"* Personal incentives are powerful. The Collaborative Process harnesses these personal motivations and directs them toward project goals. Through team-building and open communications, team members buy into project goals early on in the process, and share in the accolades when extraordinary outcomes are achieved.

• *"How will my actions affect my organization?"* Most people feel loyalty to their organization. Instead of seeking to undermine this loyalty, The Collaborative Process structures contractual agreements between participant firms in a way which aligns organizational goals of profit and reputation with the project goals of achieving optimal results.

• *"How will my actions affect my profession?"* The Collaborative Process relies on a variety of professionals during the design and construction process. Trust, integrity, and skill are important both to the success of the project and the long-term health of the building professions. The Collaborative Process encourages adherence to the ethical and quality standards of professional societies, and establishes norms which are consistent with these standards.

• *"How will my actions affect my society?"* Building projects have a substantial impact on society. Participants in The Collaborative Process acknowledge this fact, and work hard to find the best way to use our limited resources to achieve project goals within the context of legal, ethical, and moral standards.

In order for The Collaborative Process to be successful, the project team must effectively identify the various incentives which affect team member behavior and make a concerted effort to avoid circumstances which put those incentives in conflict. The key to effective collaboration is to assure that all levels of incentives – individual, organizational, professional, societal – are aligned with the goals and mission of the project.

Systems

There are a number of systems which create incentives for participants in The Collaborative Process:

• *Reputation, References, and Repeat-Business.* When past performance enhances opportunities for future work, team members tend to be more motivated to achieve an extraordinary outcome. The Collaborative Process uses a selection methodology which puts emphasis on previous performance, particularly with respect to teamwork.
• *Contracts.* Agreements between the various team members always contain embedded incentives. One-sided contracts tend to undermine collaboration, since they place a disproportionate burden on one of the parties. The Collaborative Process uses contractual agreements which are balanced and utilize reciprocity whenever possible.
• *Compensation.* If one member of the team is making lots of money and another is losing money, collaboration is very difficult to maintain. Collaboration must be a win-win game. The Collaborative Process addresses this issue by linking compensation to project performance and allocation of risk.

• *Risk.* If risk is not shared in proportion to return, it undermines the spirit of cooperation upon which The Collaborative Process is built. The Collaborative Process allocates risk in a manner which is efficient (the team member best able to mitigate the risk assumes it) and equitable (team members which assume more risk receive more compensation).
• *Public Appreciation.* Research has shown that public appreciation is one of the most effective motivators. But it is also a de-motivator if only one team member is singled out for kudos. The Collaborative Process emphasizes team-based rewards and recognition, creating an environment of mutual trust and support.

In the final analysis, the key is to align organizational and individual incentives with the goals of the team and the project. Because of its importance, The Collaborative Process spends considerable time and effort establishing and maintaining an aligned incentive structure.

Future Directions in The Collaborative Process

While the individual elements in The Collaborative Process have been used on projects before, employing all of them together opens up possibilities for innovations which are almost impossible to implement in the traditional design-bid-build process. As The Collaborative Process matures, a number of these innovations are likely to emerge, including:

- *New Forms of Contractual Agreements.* Industry standard agreements, such as those provided by the American Institute of Architects, require massive surgery to be adapted to The Collaborative Process. As The Collaborative Process becomes accepted as an industry standard, a new set of contractual agreements are likely to developed and accepted by team members. A uniform, consistent set of agreements would greatly increase the rate at which The Collaborative Process is propagated.

- *New Building Technologies.* The adversarial nature of the traditional process inhibits the identification and acceptance of new building technologies. In the same way that the adoption of lean production techniques in the automobile industry has led to rapid technological innovation, the adoption of The Collaborative Process will speed the rate at which new building techniques will be embraced.

- *New Business Structures.* The Collaborative Process attempts to knit together a diverse group of specialists in the pursuit of a common goal. The logical extension of this concept is to transform the project organization into a bona fide corporation - the "Virtual Project." Each team member would make an investment of time and money, and would receive stock in return. The project would have its own accounting and management information system which all team members would utilize to monitor and control the progress. Every team member would share in the value created in proportion to their investment, so that profits (and losses) would be allocated appropriately.

- *New Information Systems.* The emergence of new information technologies has made possible shared databases ("Data Warehouses") which serves as the repository of all project information. All team members would have access to project status and historical information, taking open-book and high-communication practices to a new level. The emergence of the Internet and World Wide Web as the new standard of messaging and collaboration allows The Collaborative Process to leverage its existing techniques many-fold.

The Call For a New Standard

Today's successful businesses are driven to improve the quality of their products and services, to adapt to changing markets, and to keep pace with the technological revolution. The building industry has been a laggard in the "new economy," choosing instead to rely on outmoded delivery systems and costly conflict resolution. It is time for change. It is time to redirect the wasted energy into new, positive directions.

We, The Collaborative Process Group, have developed and successfully used The Collaborative Process as a means to enhance the positive impact of human interaction in the pursuit of extraordinary project outcomes. When people systematically work together toward common goals, the potential for improvement is virtually unlimited. We are excited about the dramatic results obtained using this method: buildings that truly function to serve both short- and long-term needs, buildings that are economically successful and timely, buildings that enrich the human community by improving the quality of daily life.

We believe that The Collaborative Process can channel the energies of owners, architects, and builders by using a systematic methodology to obtain extraordinary results. It is time to adopt this process as our new paradigm, a new standard which will change the way we do business for the better.

We look forward to your feedback and participation as we embark on this exciting journey. Together, we can revolutionize the way our environment is understood, designed, and constructed.

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