FROST & SULLIVAN

C_V—The Velocity of Collaboration
Selecting an Appropriate Collaboration Solution

A Frost & Sullivan White Paper

TABLE OF CONTENTS

ABSTRACT

This paper considers the challenges organizations face when selecting the most appropriate products and services to support successful team collaboration. We assume the reader is already familiar with the main types of remote collaboration solutions in the market today—audio conferencing, web conferencing, shared workspaces, videoconferencing and telepresence. Our aim is to look beyond the more obvious return on investment calculation a company may make before investing in these tools, such as the cost of operating the solution against savings derived from travel avoidance. Here, we take a broader approach to the method of evaluating one collaboration solution over another by developing and applying a model for certain aspects of their effectiveness and usability.

To help create a truer picture of the value derived from the use of collaboration, companies should consider a range of factors, such as the availability of the solution to a worker needing it—at any given time–or how well a particular solution meets the collaboration needs of a team.

In constructing this wider view of the suitability of collaboration products and services, we arrive at a concept that we call the Velocity of Collaboration (Cv), which incorporates several different measures of collaboration effectiveness and appropriateness to a given task in a single, comparable value.

WORK TOGETHER SUCCESSFULLY AND AT A DISTANCE

Increasingly, organizations of all sizes are being challenged by the communications needs of dispersed teams of workers, as well as the need to communicate with remotely located suppliers, partners and customers. Today's workplace is evolving into a demanding environment characterized by an intricate web of complex interactions between people at a distance. Many of these interactions occur in the context of a business meeting that may or may not take place in a traditional office. Often the business of these meetings is highly ambiguous, requiring participants to rely on experience, make adjustments on the fly, and exercise high levels of judgment during the course of their exchanges. McKinsey's 2005 study of U.S. business activities[1] labels these situations tacit interactions, where decisions are made based on knowledge, judgment, experience and instinct.

Collaboration, which is distinct from communication, is at the core of these tacit interactions. Simply communicating in meetings is not enough, as communication is essentially an exchange of information. Collaboration involves taking the information exchanged and working with it to achieve a shared goal. The more tools that can be brought to bear on the work, and the more involved the meeting participants are in doing the work to achieve the goal, the higher the degree of collaboration in that meeting.

The choices to be made on the mix of the collaboration products and services best suited to an individual company's needs are a significant challenge in themselves—and one which

[1] Bradford C. Johnson, James M. Manyika, and Lareina A. Yee. "The Next Revolution in Interactions." The McKinsey Quarterly, 2005, Number 4, pages 20-33.

very few organizations approach with a holistic strategy. Whereas it is relatively easy to compare the operating costs of collaboration solutions, getting to the deeper value each can deliver to the organization for tacit interactions and meetings is intrinsically harder.

COMPONENTS OF SUCCESSFUL COLLABORATION

In an ideal world, it would be easy to bring people together for a meeting. The meeting could be arranged and started quickly, almost ad hoc. Participants would come armed with all of the information they need, including facts and opinions, and they would have access to data inherent to the tacit interaction, such as participants' reactions and the "feel" of the meeting. Participants would also have all the tools they need to discuss and manipulate the information and arrive at a clear understanding about it. The tools would include software applications, files and objects. In this ideal meeting, the information would be discussed and manipulated, and decisions would be made and recorded. All participants would leave the meeting knowing exactly what was done, what actions needed to be taken, and when any follow-up was needed.

However, the dispersed nature of today's business means that natural meetings such as those described above are not always practical or possible. So, businesses must have frameworks, structures and an appropriate range of technologies to support ongoing productive and efficient collaboration.

The industry to facilitate collaborative meetings between remotely located participants has been developing for more than 40 years, with a growing range of products and services that aim to approximate the natural meeting experience. Most people today are familiar with audio conferencing, and most have at least participated in web conferences. Videoconferencing tends to be less familiar, and telepresence, which is considered by some to be the state-of-the-art collaboration technology, is not in the mainstream.

Collaboration technologies take an "engineered approach" to arranging collaborative interactions by attempting to approximate the richness and spontaneity of natural meetings. They all enable participants to meet to exchange information and make decisions, but their collaboration is bounded by the limits of the technology. For instance, information presented on an audio conference is limited to verbal descriptions. Web conferences enable a richer set of information to be exchanged, but that information is limited to what is on a presenter's computer. Telepresence supports rich visual exchanges, but the expense and relative complexity of creating telepresence suites mean that they are not widely available. All of these collaboration technologies serve to advance users' ability to collaborate effectively, but they can only approximate the ideal state of collaboration in a natural meeting.

In today's complex business environment of tacit interactions and sophisticated, sometimes ambiguous meetings, a new form of collaboration is emerging to make meetings better, more effective and more efficient. It strives to accommodate verbal and non-verbal communication, support application sharing and the use of non-electronic media, and facilitate the subtleties of tacit interactions. This new, advanced collaboration is called telecollaboration, which is a form of visual collaboration.

VISUAL COLLABORATION MATTERS

Effective meetings happen when the quality of the interaction between participants is high. Collaboration solutions that add a dynamic, visual element to meetings enable a far richer interaction than static, non-visual meetings. In addition to the basic visual presentation of graphics, the visual component contributes greatly to the fluency of human communications and to the overall fidelity of the collaborative activity. In other words, we can think of visual collaboration solutions as enabling individuals who are physically separated to conduct tacit interactions with ease, adding to the richness of their meetings.

The power of visual collaboration lies not only in being able to "read" another person's facial expressions and body language, but it also greatly enhances the audible cues participants receive in a meeting, including intonation and nuance. Further, the visual component can strengthen communications between participants that are not sharing a common language, and who could therefore lose vital meaning and clues in a voice-only meeting.

Of all the standard collaboration types—instant messaging, audio conferencing, web conferencing, videoconferencing and telepresence—only immersive telepresence can begin to support visual collaboration. Now a new solution, telecollaboration, has recently been introduced, and it is an important contribution to supporting visual collaboration.

Telecollaboration is a form of visual collaboration in which participants can see, control and edit shared files, documents and applications in real time. It combines audio and visual modes of communication and adds elements of file and application sharing and editing. In addition, participants can independently control their visual experience to their own needs and preferences by choosing how to see the information on both point-to-point (two locations) and multi-point calls (three or more locations). These capabilities allow the participants to conduct working collaboration sessions in which they make decisions and produce results during the meeting. By adding visual elements to the audio ones, as well as file manipulation and the ability to introduce non-electronic data (e.g., a white board in the background can become a focal point to any user if they choose), telecollaboration brings a highly immersive quality to remote meetings, making them closer to the ideal, natural meeting benchmark.

With this array of collaboration solutions on the market, choosing a solution to fit an organization's needs can be a daunting task. We have developed a new metric to enable comparisons between various collaboration solutions and to help guide technology choices and investments.

THE VELOCITY OF COLLABORATION: C_V

The central goal of this paper is to present a metric that can demonstrate the relative merits of different collaboration solutions in supporting information flow and decision-making in everyday work situations. Such a metric would help enterprise IT decision-makers evaluate which solutions are most appropriate for their collaboration technology needs.

This metric, which we call the Velocity of Collaboration (Cv), is a gauge of the efficacy of a collaboration solution in supporting the achievement of collaboration goals.

The Velocity of Collaboration is a practical and intuitive assessment of the usefulness and applicability of a collaboration product or service. In addition, used as an index, it can be a method for comparing different types of collaboration solutions. It can help a prospective buyer or user consider the ways that collaborative activities seek to achieve business goals and the choices they will need to make in acquiring the appropriate solution.

We identify two key attributes of this efficacy as the **Richness** and the **Accessibility** of collaboration solutions.

Collaboration Richness

We define richness as a set of the core properties of a collaboration solution; for example, the ability to chat, speak to one another, or see expressions on peoples' faces. Richness contributes directly to the effectiveness with which people can collaborate as it supports more forms of communications, which provides for greater clarity and accuracy of information exchange.

Ideally, a hypothetical "richest" solution would enable collaboration between unlimited numbers of remote participants, seamlessly supporting the exchange of their expertise and knowledge to reach the objective of the collaboration—and all done within the planned timescales. In reality, collaboration solutions are practically limited by the technologies available at the endpoint, in the network, or at the service platform, if used.

A simple and pragmatic way of assessing the comparative richness of a collaboration solution is to count the number of core properties it delivers. This can provide a reference that links closely with user experiences and with an intuitive sense of the power of one collaboration tool over another.

A basic list of properties of collaboration solution richness has seven key components, corresponding to the most fundamental capabilities found in collaborations products and services today:

Chat—A text-based conversation supported by a dedicated instant messaging client, or a function within a unified messaging or communications application.

Voice (or Audio)—Interactive speech, from a basic quality delivered from a standard telephone or mobile handset, up to high-quality spatial sound.

Presentation—The capability to show pre-prepared material, such as a PowerPoint presentation, to other participants, with control over movement within the material, including page forward, etc.

Information Access—Having immediate access to data and other information stored locally by any meeting participant, and having the facility to show and share this information in real time.

Application Sharing—Having joint access to an application running at one location, with all participants seeing output, and taking it in turns to take control and make inputs.

Interactive Video—Two-way sharing of real-time video between all locations.

Immersion—The design and construction of the meeting environment to confer on users certain advantages, which improve the overall experience and outcome, such as eye-to-eye contact, life-sized images of participants, and high reliability through the use of added service elements.

Operationalizing Richness

Collaboration solutions all have some of these properties to assist the participants of a meeting to share their expertise and information, analyze and manipulate data, and then arrive at an outcome.

To help evaluate how different solutions may vary, the concept of richness can be operationalized as the number of the core properties that a collaboration solution provides to participants in a meeting, and the flexibility of participants to use or not use these tools as they see fit.

Figure 1: Richness Index Values Assessed for Standard Collaboration Solutions

Product Classes	Chat Client	Audio-conference	Standard Web Conferencing	Standard Video Conferencing	Telepresence	Tele-collaboration
Properties of Collaboration						
Immersive	—	—	—	—	✓	✓
Application Sharing				—	—	✓
Video	—	—	—	✓	✓	✓
Information Access	—	—	—	—	—	✓
Presentation	—	—	✓	✓	✓	✓
Audio	—	✓	✓	✓	✓	✓
Chat	✓	—	✓	—	—	✓
Richness Index	1	1	3	3	4	7

Source: Frost & Sullivan

The table in Figure 1 shows how an index value of richness can be assessed for each main type of collaboration product and service, using the seven properties listed earlier. A notionally "average," or most common, representative of each collaboration product category is scored with the number of properties it supports, and the total number of properties are summed to give a richness value for the product type.

For example, a basic instant messaging chat client can only support text-based chat as a means of communication between two or more remotely located workers. Similarly, a basic audio conferencing service only supports voice communications. Each of these product classes is assessed to have a richness value of 1.

There are more complex products on the market, such as a web-based software client that can support both text chat and voice conferencing. However, for the purposes of this analysis, we consider only the most commonly used product types to represent each class. Higher up the scale, telepresence can boast four properties, with the immersive property of the dedicated studio environment differentiating it from high-end videoconferencing. Telecollaboration, as defined above, can support all seven of the richness properties, and thus receives a score of 7. From this we conclude that of all the standard collaboration solutions currently on the market, telecollaboration is the "richest" of them.

Collaboration Accessibility a Function of Time

We use the term accessibility to describe the degree of ease with which a user can gain access to use a particular collaboration solution, relative to two considerations. First there is the ease of access referencing availability; a scarce resource takes longer to access than a ubiquitous one. Second, there is the speed of access, which references the average time it takes to start using a given collaboration resource and may range from instantly to half a day or more. That is, some collaboration solutions require a few quick steps to initiate a meeting, such as arranging a three-way call for an audio conference, whereas others require a slightly more complex set of sequential steps involving scheduling, uploading and initiating a meeting, as in a Web conference. All things being equal, a collaboration technology that involves a minimum of steps will be more accessible than one with more steps. Practically and intuitively it is understood that the usefulness of collaboration is partly defined by the time taken to successfully utilize the solution.

This time component is crystallized into accessibility and comprises both how available a particular solution is to the group (Ease of Access) and how long it takes to start using this solution productively once the need for a specific collaboration activity is identified (Speed of Access).

The accessibility of a given solution is an addition of these two time components, and can be given a notional value. Figure 2 outlines the operationalization of accessibility.

Figure 2: Accessibility Values Assessed for Standard Collaboration Solutions

Accessibility Scoring	Ease of Access	Speed of Access
1	Scarce across the whole organization	> 1 day
2	One per country/region	3–4 hours
3	One per office	About 1 hour
4	Several in office	10 minutes
5	Ubiquitous	Instant

Source: Frost & Sullivan

As illustrated in Figure 2, a user's ease of access to a collaboration solution is a measure of the availability of that product or services. The highest ranking of 5 is given to a solution that is immediately available—the cell phone in the pocket or the telephone on the desk. A high scoring for ease of access means there are many such devices or services available to the user, and this generally means that there are few restrictions or constraints on these being used as and when a team needs to collaborate. Collaboration devices such as the telephone or the Web browser on every PC do not typically need additional permissions for use in collaboration, so there is no administrative overhead associated with availability and access.

In contrast, the lowest score is allocated for the very limited or even scarce collaborative resources. These are products and services that may be expensive, so the company is only able to buy a few of them, or they may be new on the market and are possibly still under trial by the organization.

Ease of access also captures the procedural hurdles a user may be required to leap in order to gain access. For instance, the corporate telepresence suite may be restricted by managerial level and probably also needs advance booking, typically days ahead.

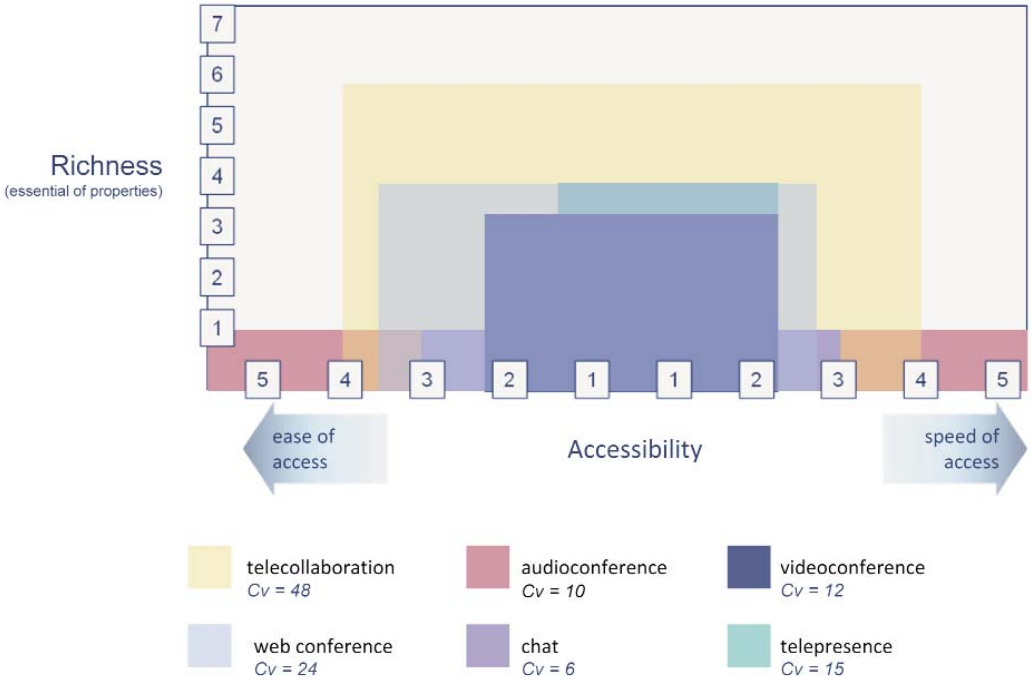
While still defined by time, the speed of access is quite different from ease of access and captures the time it takes to start collaborating, assuming a solution is available. For example, an audio conference call requires users to have access to only one telephone each, and a pre-programmed dial-in number and access code means the time taken to begin collaboration can be only a few seconds. This immediate or near instant access is scored the highest on the speed of access scale, whereas a solution that may require travelling across town, or even to another city, would score the lowest.

Generally, there is a close approximation between ease and speed of access, but this may not always be the case. For example, for the CEO with a telepresence suite located adjacent to the boardroom, in which speed of access may be nearly immediate by walking a few steps through the door, he or she may still need to go through a fairly lengthy reservation process to have the meeting booked.

COMBINING RICHNESS AND ACCESSIBILITY TO GIVE VELOCITY OF COLLABORATION

Having presented and described the concepts of both richness and accessibility, we next multiply these together to generate the value for the Velocity of Collaboration for a given solution.

Figure 3: The Velocity of Collaboration for Standard Collaboration Solutions



As shown in Figure 3, the richer a solution, the larger the vertical component of its Velocity of Collaboration. Similarly, higher values for ease and speed of access create a larger combined horizontal component. Velocity of Collaboration is therefore a function of the area of the rectangle created when plotting richness and accessibility. Thus, the larger the area, the higher the value of Cv.

The area and positioning of the Velocity of Collaboration for the standard collaboration solutions on the market allows for a direct comparison to be made between them. Comparing the areas produced from richness and accessibility assessments for an instant messaging service and a basic audio conferencing service provides an insight into how strongly each solution might support complex collaboration needs in tacit interactions. Whereas each only has a single property on the vertical richness access (e.g., voice for audio conferencing and text chat for instant messaging), there is a significant difference in accessibility. Access to collaboration using audio conferencing requires a phone and service account; an instant messaging collaborative session requires the use of a PC, web browser, Internet access and possibly suitable corporate firewall configurations. This makes audio conferencing more accessible than instant messaging chat. Therefore, the former has a higher Cv than the latter, and the former is better able to support tacit interactions.

In contrast, a solution such as telepresence exhibits high levels of richness with a large vertical component, yet has a narrow profile because of relatively low accessibility. The positioning of the Cv for telepresence is typically skewed to the right on the chart, in favor of a slightly higher speed of access over ease of access, reflecting the relative scarceness of this solution. Thus, whereas it may be better able to support the subtleties of tacit interactions, the relatively low accessibility restricts its applicability across an organization.

Telecollaboration shows a high level of richness, owing to its ability to support the largest number of collaboration properties. It is also highly accessible, primarily due to a relatively fast speed of access. Note, however, that the ease of access would be restricted currently, as it is a new product class on the market and few units would typically be deployed today. This is a somewhat similar situation to telepresence suites, but its higher Cv indicates better overall suitability for supporting tacit interactions.

As a concept, Cv is useful in comparing collaboration solutions objectively. The utility of Cv for an IT decision-maker is that he or she can now evaluate collaboration solutions on the basis of richness and accessibility, which can be applied to the collaboration needs of an organization.

PRACTICAL APPLICATIONS OF C_V IN A BUSINESS ENVIRONMENT

By incorporating views of both the relative power of a collaboration solution—in the concept of richness—and the time it takes a user to gain access to this solution in a practical sense—through the concept of accessibility—the Velocity of Collaboration offers prospective buyers a quick reference point for solution selection.

It can be readily seen that although collaboration solutions may have widely different values of Cv, certain solutions may be more appropriate than others for a given collaboration activity. This is a crucial point, as it can lead directly to decision-making about the level of investment an organization may make in different types of collaboration products and services. Generally speaking, there are direct proportional relationships between the richness of a collaboration solution and their cost, as well as between the accessibility a solution and the numbers of such solutions an organization buys. The organization will attempt to optimize the investment in collaboration products and services to meet a broad range of different needs.

An IT decision-maker must balance these relationships against the collaboration needs of his or her organization. The key consideration revolves around which collaboration tasks are most common in the organization. One collaboration product with a higher Cv than a second product may offer both greater richness and accessibility, but this additional power may be wasted for many of the collaboration tasks in an organization. Figure 4 below shows a range of situations requiring substantially different collaboration solutions to support them.

Figure 4: An Array of Tasks Requiring Collaboration Solution Support

Source: Frost & Sullivan

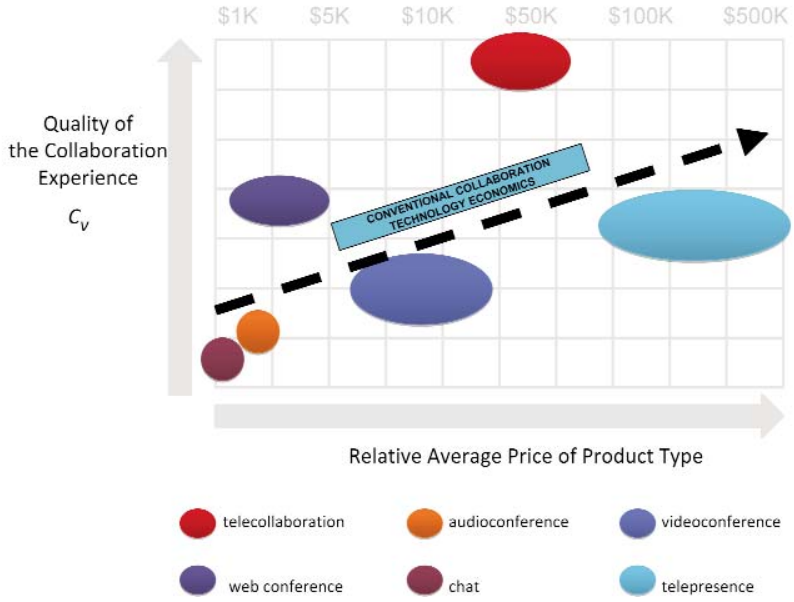
As Figure 4 shows, collaboration task scenarios can range from a straightforward need for an account executive, the customer support manager and the shipping clerk to confirm that a customer order has been shipped, to a complex multinational, multi-organization negotiation, such as a contract review in a merger and acquisition process. Clearly, the full capability of a telepresence solution, with its high Cv value, would be wasted on the first scenario. Not only would the three people conferring about the customer's order not need the immersive qualities the telepresence solution offers, the added time overhead of travelling to the telepresence suite, even if it is just down a corridor, is unnecessary. Similarly, the use of an audio conference call for the complex, multinational contract review would place restrictions on the scope and quality of the discussions between the participants. The limitations of the voice-only communications would create the potential for misunderstandings and the inaccurate transfer of information and meaning. It would also generate fatigue more quickly than other solutions. In this complex, tacit interaction, the solution with the highest Cv value would be the most appropriate.

There is an additional factor that will loom large in any IT investment decision, and that is the cost of the solution. For all of the benefit that a high Cv solution would bring to an organization, IT decision-makers need to consider the costs of collaboration solutions before making their choices. A solution that supports a high-quality (rich and accessible) collaborative experience that carries a high price tag may ultimately be rejected in favor of a solution that provides a lower-quality collaborative experience (less rich and accessible), but is more affordable to the organization.

Conventional collaboration technology economics suggest that higher quality experiences cost more, as shown in Figure 5 below. Although a TCO analysis is beyond the scope of this paper, it is safe to say that IT decision-makers are aware that there is a direct relationship between the practical costs of collaboration solutions and the quality (Cv) of the collaborative experience they support. IM chat clients and audio conferencing are relatively cheap, in the tens or at most hundreds of dollars per unit, encompassing both the equipment and the associated services, but their collaboration quality is low. On the other hand, telepresence suites provide a high level of quality, but they tend to cost in the mid-hundreds of thousands of dollars per unit and require high monthly operational charges.

However, we believe that telecollaboration solutions break the conventional curve shown in Figure 5. The quality of the collaborative experience delivered by telecollaboration was established earlier, indexed by the Cv value. Preliminary data indicates that telecollaboration solutions can cost in the $20,000 to $60,000 range for the equipment, and require only broadband access service costs on a recurring basis. Combined with its high Cv (quality), this represents a compelling alternative for the IT decision-maker seeking to balance collaboration solution quality, cost, and the collaboration needs of an organization.

Figure 5: The Relationship between Collaboration Solution Quality and Cost



Source: Frost & Sullivan

A formal total cost of ownership (TCO) analysis will be presented in a forthcoming paper from Frost & Sullivan. We expect the TCO to provide an additional level of detail on the cost components of the quality-cost relationship, which will give IT decision-makers a sharper sense with which to use Cv in collaboration solution evaluations.

CONCLUSIONS

In today's business environment, more and more decisions are made collaboratively, in meetings between geographically dispersed participants. These situations involve tacit interactions guided by knowledge, judgment, experience and instinct, rather than predetermined scripts. IT executives are tasked with making technology choices from an array of collaboration solutions to support these meetings, balancing the quality of the collaborative experienced delivered against the cost of the solutions. We have developed the Velocity of Collaboration (Cv) metric to help these executives make their investment choices.

The introduction of Cv elevates the evaluation of collaboration solution choice beyond mere travel avoidance. It gives decision-makers a tool to gauge solutions according to their richness and accessibility and how they support visual collaboration.

Our analysis of the main collaboration product types on the market suggests that telecollaboration, which is the most recent market entrant, seems to be the solution currently best suited to support visual collaboration. For collaborative situations where tacit interactions are prevalent, telecollaboration holds the promise to best meet the needs of better decision-making and better productivity during these meetings. The analysis recognizes that telecollaboration solutions' high Cv may not be appropriate for some types of business situations or tasks, yet it may indeed be right for a wide variety of business needs. Finally, our analysis using Cv suggests that telecollaboration has a cost advantage over other high Cv collaboration solutions, but this conclusion should be tested more thoroughly with a formal TCO analysis.

The Cv metric is new, and the application of it needs a rigorous program of development. Nonetheless, we believe that it enhances the collaboration technology industry by expanding the notions of the foundations of, and uses for, collaboration solutions.

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