Convergence

Technological convergence:

- Technological convergence is the tendency that as technology changes, different technological systems sometimes evolve toward performing similar tasks.
- Digital convergence refers to the convergence of four industries into one conglomerate, ITTCE (Information Technologies, Telecommunication, Consumer Electronics, and Entertainment).Previously separate technologies such as voice data and productivity applications, and video can now share resources and interact with each other synergistically.
- Telecommunications convergence, network convergence or simply convergence are broad terms used to describe emerging telecommunications technologies, and network architecture used to migrate multiple communications services into a single network.
- Convergence in this instance is defined as the interlinking of computing and other information technologies, media content, and communication networks that has arisen as the result of the evolution and popularization of the Internet as well as the activities, products and services that have emerged in the digital media space.
- Convergent services, such as VoIP, IPTV, Mobile TV, Smart TV, and others, tend to replace the older technologies and thus can disrupt markets. IP-based convergence is inevitable and will result in new service and new demand in the market.

Technology Implications:

Convergent solutions include both fixed-line and mobile technologies. Recent examples of new, convergent services include:

- Using the Internet for voice telephony
- Video on demand
- Fixed-mobile convergence
- Mobile-to-mobile convergence
- Location-based services
- Integrated products and bundles

Convergent technologies can integrate the fixed-line with mobile to deliver convergent solutions. Convergent technologies include:

- IP Multimedia Subsystem
- Session Initiation Protocol
- IPTV
- Voice over IP
- Voice call continuity
- Digital video broadcasting - handheld

Collaborative Product Development:

- CPD is a business strategy, work process and collection of software applications that facilitates different organizations to work together on the development of a product. It is also known as collaborative product definition management (cPDM).
- Collaborative Product Development helps individual users and companies manage, share and view your CAD projects without the cost and complexity of purchasing an entire PDM or PLM solution. CPD comes in the form of a Software as a service delivery model, which allows for rapid iterations and little or no downloads and installs.
- Exactly what technology comes under this title does vary depending on whom one asks; however, it usually consists of the Product Lifecycle Management (PLM) areas of: Product Data Management (PDM); Product visualization; team collaboration and conferencing tools; and supplier sourcing software. It is generally accepted as not including CAD geometry tools, but does include data translation technology.

Technologies and methods used:

Clearly general collaborative software such as email and chat (instant messaging) is used within the CPD process. One important technology is application and desktop sharing, allowing one person to view what another person is doing on a remote machine. For CAD and product visualization applications an 'appshare' product that supports OpenGL graphics is required. Another common application is Data sharing via Web based portals.

Specific to product data

With product data an important addition is the handling of high volumes of geometry and metadata. Exactly what techniques and technology is required depends on the level of collaboration being carried out and the commonality (or lack thereof) of the partner sites' systems.

Specific to PLM and CAx collaboration

Collaboration using PLM and CAx tools requires technology to support the needs of:

1. People: Personnel of different disciplines and skill levels;
2. Organizations: Organizations throughout an enterprise or extended enterprise with different rules, processes and objectives;
3. Data: Data from different sources in different formats.

Appropriate technologies are required to support collaboration across these boundaries.

- **People**

  Effective PLM collaboration will typically require the participation of people who do not have high level CAD skills. This requires improved user interfaces including tailorable user interfaces that can be tailored to the skill level and specialty of the user.

  Improved visualization capabilities, especially those that provide a meaningful view of complex information such as the results of a fluid flow analysis will leverage the value of all participants in the collaboration process. Effective collaboration requires that a participant be freed from the burden of knowing the intent history typically imbedded within and constricting the use of parametric models.

- **Organizations**

  Community collaboration requires that companies, suppliers, and customers share information in a secure environment, ensure compliance with enterprise and regulatory rules and enforce the process management rules of the community as well as the individual organizations.

- **Data**

  The most basic collaboration data need is the ability to operate in a MultiCAD environment. That is, however, only the beginning. Models from multiple CAD sources must be assembled into an active digital mockup allowing change and/or design in context.

Content Management System:

- A content management system (CMS) is a computer application that allows publishing, editing and modifying content, organizing, deleting as well as maintenance from a central

interface. Such systems of content management provide procedures to manage workflow in a collaborative environment.

- CMSs are often used to run websites containing blogs, news, and shopping. Many corporate and marketing websites use CMSs. CMSs typically aim to avoid the need for hand coding, but may support it for specific elements or entire pages.

Main features of CMS:

- The function and use of content management systems is to store and organize files, and provide version-controlled access to their data. CMS features vary widely. Simple systems showcase a handful of features, while other releases, notably enterprise systems, offer more complex and powerful functions. Most CMS include Web-based publishing, format management, revision control (version control), indexing, search, and retrieval. The CMS increments the version number when new updates are added to an already-existing file. Some content management systems also support the separation of content and presentation.
- A CMS may serve as a central repository containing documents, movies, pictures, phone numbers, scientific data. CMSs can be used for storing, controlling, revising, semantically enriching and publishing documentation.

The content management system (CMS) has two elements:

- Content management application (CMA) is the front-end user interface that allows a user, even with limited expertise, to add, modify and remove content from a Web site without the intervention of a Webmaster.
- Content delivery application (CDA) compiles that information and updates the Web site.

Web Traffic:

Web traffic is the amount of data sent and received by visitors to a web site.
Web traffic is measured to see the popularity of web sites and individual pages or sections within a site. This can be done by viewing the traffic statistics found in the web server log file, an automatically generated list of all the pages served. A *hit* is generated when any file is served.

The following types of information are often collated when monitoring web traffic:

- The number of visitors.
- The average number of page views per visitor – a high number would indicate that the average visitors go deep inside the site, possibly because they like it or find it useful.
- Average visit duration – the total length of a user's visit. As a rule the more time they spend the more they're interested in your company and are more prone to contact.
- Average page duration – how long a page is viewed for. The more pages viewed, the better it is for your company.
- Domain classes – all levels of the IP Addressing information required to deliver Webpages and content.
- Busy times – the most popular viewing time of the site would show when would be the best time to do promotional campaigns and when would be the most ideal to perform maintenance
- Most requested pages – the most popular pages
- Most requested entry pages – the entry page is the first page viewed by a visitor and shows which are the pages most attracting visitors
- Most requested exit pages – the most requested exit pages could help find bad pages, broken links or the exit pages may have a popular external link
- Top paths – a path is the sequence of pages viewed by visitors from entry to exit, with the top paths identifying the way most customers go through the site
- Referrers; The host can track the (apparent) source of the links and determine which sites are generating the most traffic for a particular page.

Content marketing:

- Content marketing is any marketing that involves the creation and sharing of media and publishing content in order to acquire and retain customers.
- It is a strategic marketing approach focused on creating and distributing valuable, relevant, and consistent content to attract and retain a clearly-defined audience — and, ultimately, to drive profitable customer action.
- Basically, content marketing is the art of communicating with your customers and prospects without selling.
- It is non-interruption marketing. Instead of pitching your products or services, you are delivering information that makes your buyer more intelligent.

Collaborative Computing

The Merriam-Webster's Collegiate Dictionary defines "collaborate" as:

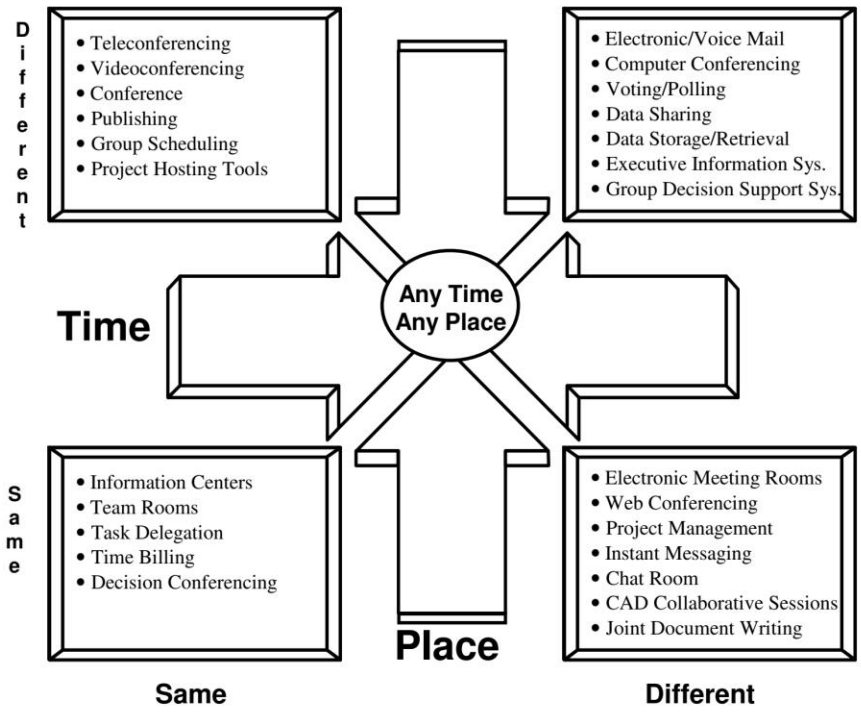
1. To work together, especially is a joint intellectual effort.
2. To cooperate treasonably, as with an enemy occupation force in one's country.

Successful collaboration, in the business sense, means that two or more companies are working jointly to:

- Share common information,
- Plan based on that shared information,
- Execute with greater success than when acting independently.

The term "collaborative computing" refers to products and services that foster collaboration and solve collaboration-oriented business problems. Collaboration can happen synchronously where all participants view information and/or meet at the same time or asynchronously where participants view information and provide feedback at different points in time. There are a variety of tools and technologies to facilitate communication and collaboration ranging from e-mail, group conferencing, task delegation, project management, data sharing, data storage/retrieval and time billing (see Figure 1).

Figure 1
Collaborative Computing Technology-What Does It Do?



Although there is no common definition and every vendor wants to label their products differently, at its most basic, collaborative computing software provides the following capabilities:

- Facilitates interactions among and between individuals and work groups.
- Enables synchronous communication in real time using chat rooms, video-conferencing, whiteboards, etc.
- Enables asynchronous communication in different time using calendaring and scheduling, e-mail, newsgroups, etc.
- Facilitates real time teamwork such as brainstorming, project management, and voting/polling between users located in different places.

The recent growth in collaborative computing technology is providing opportunities for small and medium sized business, or relatively independent departments within larger companies, to fully utilize the communication capabilities of the Net. It is also the right time for this kind of technology:

1. Enterprise applications have evolved from centralized and closed platform to distributed and collaborative platforms. Collaborative enterprise applications enable people and computers to work together more productively, pushing the traditional computation beyond the current abstraction of cyberspace to interact and collaborate directly with the real world.

2. Alliances and other methods of cross company coordination are becoming common- place in the current business environment. Information technology facilitates the prolific forming of cooperative efforts by enabling organizations to create linkage between suppliers, distributors and customers.

3. International collaboration in knowledge and learning organizations, joint ventures, and numerous other business arrangements are becoming commonplace today. There are increasingly more real-time collaborations between two or more

firms located in several countries. Face-to-face communication that was the appropriate medium is becoming an expensive option.

4. The combination of the Internet and the Intranet services allows a collaborative team effort from around the globe. This has given birth to a new way of doing business—the "virtual organization." Using a flexible structure, the company chooses the most qualified people for each task. By rotating the projects to different employees, the virtual company gets a broad range of perspectives and experiences from which to draw.

Benefits Gained

Collaborative Computing Technology enhances nearly every type of inter and intra organizational communication**.** It can improve internal communication among different departments, work groups, branches and individuals. External communication—contact to customers, vendors, suppliers, government agencies and even competitors, can also be greatly improved by the technology.

Following are some of the benefits of Collaborative Computing Technology to consider:

1. **Increased Efficiency** - By using Net meetings technology, you can speed up team formation, you will keep the group focused, enable everyone to contribute, and keep the "vocal few" from dominating the discussion.
2. **Improved Productivity** - As a result, the group can cut their meeting time by at least half, be more innovative, and achieve better decisions and solutions.
3. **Reduced Costs** – The improved meeting efficiency translates directly into reduced meeting costs.

4. **Improved Quality** - Net meetings have the added benefit of enabling the group to achieve superior decisions and solutions. Study has shown that electronic meeting tools to be a valuable contributor to both face-to-face and remote team meeting. It has accelerated team formation and led to better-designed meetings.

5. **Improved Team Relationships** – Remote team interactions through well-designed and facilitated electronic meetings contribute to positive, trusting team relationships.

The downside is that some employees resist technology because they fear it will take away from the human side. This could be resolved by providing a thorough introduction to the tool and clarifying the benefits before it is used.

Conclusion

As the competitive atmosphere of the business world continues to grow, information technology facilitates collaboration among distant workers easier than ever. Using web-based software, organizations can monitor the external operating environment by creating linkages between suppliers, distributors and customers through a company's centralized location. This would facilitate collaboration between those factors and enable organizations to observe their continually changing environment.

Up until recently, products and services that fostered collaboration were complicated and costly, which put them well out of reach for most small and mid-sized businesses. The Internet has been widely hailed as a great equalizer, an information technology that enables small businesses to compete against much larger rivals. Using the Internet as a platform, there is a new generation of collaborating software tools and services designed and priced for smaller businesses. The new of-the-shelf, Internet-friendly packages are designed for quick setup. They make synchronous and asynchronous communication through chat rooms, calendaring, whiteboards, project collaboration, videoconferencing, virtual meetings, etc., relatively trouble-free.

Collaborative Computing Technology enables a company to increase efficiency, improve productivity, reduce costs, and improve quality by enabling the group to achieve superior decisions and solutions. The technology encourages creative collaboration and often produces ideas that no one person could have arrived on their own.

As e-commerce increases, the demand for new collaborative computing applications is expected to grow. The convenience and advantage of programs that harness the collaborative power of the Internet are too compelling. Collaborative computing programs are becoming a viable option for most small and mid-sized businesses. They create a new structure for the way we interact. There is no turning back to the era of standard software.

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