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## Evolution of Groupware: A Boon for Business in Group Environment

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### **Abstract:**

*Most business activities are performed in group environment. In business organizations, we find number of groups operating with specific objective for each group and all together contributing in achieving organizational objectives. Each group has its members who have common goals to be achieved through group performance. To make the group effective, there is a requirement of collaboration and coordination among group members and their activities. Development in IT (Information Technology) has paved the way for better management of business activities. Groupware is a term used to mean the technology that supports group activities. In today's environment, business cannot be thought of developing without using any kind of automated tool that supports group activities. In present dynamic environment, the successful business organizations are those who are able to identify and utilize effectively the tools provided by IT. Groupware provides tools such as computer conferencing software, meeting systems, co-authoring tools, process coordination tools, communication tools and many other tools that can support activities in group environment. In many business situations, group members are geographically dispersed but they can effectively achieve the group goals if groupware tools are used by the group members. In some situations, members do not have time to respond on some message but the groupware tools can be used to respond later on some message.*

**Keywords:** Groupware, collaboration, coordination, information technology

### **1. Introduction**

Business is a set of complex activities which is performed by coordinating the tasks of different persons of the same group or people of different groups. The intelligent execution of business needs accurate and timely information for decision making. Business activities involve meeting, discussion, scheduling of tasks, communication, managing work flow etc. There is traditional way of doing these activities in business which is time consuming and in situations where members are situated at different locations cannot be performed. Information Technology has extended its help and support in doing these complex activities efficiently and always possible even when people are not physically available at the central place of execution or at the time of execution of the particular activity. Groupware is the term used to denote a type of software that supports group tasks. The commercially available Groupware are the set of software tools having capability to support many group activities. Our research reveals that the Lotus Notes was the first commercially available groupware. Today, we have large number of groupware and some of them are available as open source. The application of Groupware in group environment has improved the quality of group tasks in terms of time saving, efficiency, effective communication and coordination.

The present paper is an effort to trace the evolution of groupware and its early use in group work environment. This paper includes defining the Groupware (the digital collaborative tool), evolution of various tools, Groupware as part of CSCW (Computer Supported Cooperative Work) research. Scope of Groupware current status of groupware in groupware, findings and suggestions.

Literature has been reviewed to find the initial efforts that has resulted in development of groupware technology. The paper tried to scan the literature to reveal the process of development in the technology and its application in business process improvement. Important tools of groupware have evolved over the years to meet the increasing requirement in group work environment.

### **2. Defining the Groupware**

The term groupware was used for the first time by Peter and Trudy Johnson-Lenz as they claim while responding to an enquiry from Oxford English Dictionary in April 1994 "We first coined the term "groupware" in our research notes on October 4, 1978 during our work with Murray Turoff and S. Roxanne Hiltz on the Electronic Information Exchange System (EIES) at the New Jersey Institute of Technology."<sup>1</sup> They also claim to have given the oldest definition of groupware as "Intentional group processes plus software to support them."<sup>2</sup> They further extended their definition to include cultural factors such as myth, values and norms as they say "The computer software should reflect and support a group's purpose, process, and culture."<sup>3</sup> Ellis C.A. et al defines "We propose a somewhat broader view, suggesting that groupware be viewed as the class of applications, for small groups and for organizations,

arising from the merging of computers and large information bases and communications technology. These applications may or may not specifically support cooperation.”<sup>4</sup>“Groupware is distinguished from normal software by the basic assumption it makes: Groupware makes the user aware that he is part of a group, while most other software seeks to hide and protect users from each other (...) Groupware (...) software that accentuates the multiple user environment, coordinating and orchestrating things so that users can “see” each other, yet do not conflict with each other.”<sup>5</sup> Thus, groupware can be understood as the software that collaborates the group work such as coordination of activities, sharing of information and effective communication among the team members. It includes functions for messaging, conferencing, scheduling, monitoring and supporting each other in terms of timely communication & sharing of information. This helps the group to better collaborate.

Groupware arranges the activities of group members in such a way that each member is well aware about each other member and their roles in the group. In this way it maintains the social structure of the groups. It has integration of social requirements with the technological support. “Awareness support is an essential part of Groupware”<sup>6</sup> says Tom Gross in his paper “Supporting Effortless Coordination: 25 Years of Awareness Research”.

The groupware can be classified as synchronous and asynchronous according to the support in real time or non-real time situations. It is clear from the Johansen’s Time Space Matrix as mentioned below:

	Same Time	Different Time
Same Place	Face to Face interaction	Asynchronous Interaction
Different Place	Synchronous Distributed interaction	Asynchronous Distributed Interaction

Table 1: Johansen’s Time space Matrix Source: (Johansen, 2007)

### 3. Evolution of Groupware

The origin of digital collaboration concept can be traced to Douglas Engelbart who published a paper “Augmenting Human Intellect: A Conceptual Framework” in October 1962 as a document for the Director of Information Sciences of the U.S. Air Force office of Scientific Research. He had a vision for people to work together in complex and urgent situations in vast information space with computers. He writes as “Our culture has evolved means for us to organize the little things we can do with our basic capabilities so that we can derive comprehension from truly complex situations, and accomplish the processes of deriving and implementing problem solutions. The ways in which human capabilities are thus extended are here called augmentation means.”<sup>8</sup> Douglas Engelbart in 1968 presented a live demonstration of a kind of tool which can be termed as Groupware. “Far ahead of his time, Douglas Engelbart flabbergasted his audience in a special session at the 1968 Fall Joint Computer Conference in San Francisco with a live demonstration of NLS (oNLine System; later commercially available as Augment), an integrated prototype that featured on-screen video teleconferencing, shared-screen collaboration and telepointing between Engelbart on the podium at the conference and Bill Paxton from the SRI lab in Menlo Park.”<sup>9</sup> He is considered as the father of Groupware. It is evident in these words “Engelbart’s many innovations include the computer mouse, multiple on screen windows, groupware and linked hypermedia, as well as on line publishing.”<sup>10</sup>

Another dimension in tracing the origin of Groupware starts with the development of ‘Plato’ in 1960 for the purpose of education at University of Illinois. Professor Don Bitzer of Computer-based Education Research Laboratory (CERL) along with other engineers developed a system called the PLATO. Later on, it was developed as “PLATO NOTES” which was released on 07 August 1973 and in 1976 as “PLATO Group Notes” which remained popular upto 1982. With the development of IBM PC and MS DOS the continuation of Plato Notes became a costly affair to continue as it was based on mainframe architecture. This created a need for the development of another system. Therefore, ‘Lotus Notes’ was developed and it became the first organized commercial Groupware.

‘Lotus Notes’ was released in 1989<sup>11</sup> by the Lotus Development Corporation. It was Ray Ozzie who pioneered the development of Lotus Notes. Ray Ozzie founded Iris Associates Inc. for the development of Lotus Notes under the contract and funded by Mitch Kapur, the founder of Lotus Development Corporation. Apart from Ray Ozzie the other developers were Tim Halvorsen, Len Kawell, and Steven Bekhardt<sup>12</sup>.

### 4. Evolution of Common Groupware Tools

There are various tools that can be termed as groupware were developed at different times as per need and interest of developers.

- i. Computer Conferencing Systems: Murray Turoff in 1976 developed EMISARI (The Emergency Management Information Systems and Reference Index). It is considered as the earliest conferencing system. Other popular systems are Usenet, GIBIS etc. GIBIS supports four type of messages: Issue, Positio, Argument and other and relations between messages such as questions, suggestions, objection etc.
- ii. Chat Systems: It is a groupware facility which now available in all kinds of groupware and messaging systems. UNIX ‘Talk’ is the one of the earliest known chat systems.
- iii. Workflow Management Systems: Some of the earliest workflow management systems are COSMOS, AMIGO, GRACE, DOMINO, Staffware, InConcert, FlowMark.
- iv. Electronic Meeting systems: Electronic meeting systems are the groupware tools that helps in arranging meeting when participants are not located at the same place. Group Systems and COLAB were early systems developed by the Xerox.
- v. Application Sharing Systems: NLS/Augment developed by Douglas C Angelbart was the first application sharing system. It was the first system which could be called as groupware.

- vi. Group Scheduling Systems: Some early and well known systems are RTCAL, PCAL, Microsoft Schedule+, Lotus calendar and Novell Groupwise Calendar.

### 5. Groupware as part of CSCW Research

CSCW (Computer supported cooperative work) and the term Groupware are used as synonyms at many places. Although both are related but are different from each other. "Groupware is considered to be the enabling technology, be it hardware, software, services and/or techniques, which allow people to work in groups. CSCW, on the other hand, focuses on the study of tools and techniques of groupware as well as their psychological, social, and organizational impact."<sup>13</sup>

For the first time, the term CSCW was used by the Irene Grief and Paul Cashman in 1984 when they organized a workshop and invited participants<sup>14</sup>. The 18<sup>th</sup> ACM conference on CSCW, describes the term as "CSCW is the premier venue for presenting research in the design and use of technologies that affect groups, organizations, communities, and networks.....CSCW encompasses both the technical and social challenges encountered when supporting collaboration"<sup>15</sup>

The CSCW is the platform that is used for continuous development of tools and technologies such that the growing need of support to group work environment can be made available. "The field of CSCW aims to achieve a deep understanding of work and other types of social interaction and to develop adequate technical concepts and tools for social interaction in groups and communities."<sup>16</sup> Thus both terms are closely related to each other.

### 6. Scope of Groupware

The team/group work in all business activities is not only the most essential requirement but also it is the deciding factor for the success of any organisation in present complex business environment. The success of team/group work depends upon the proper collaboration among team members. The groupware tools are useful in all kinds of collaboration needs. Some important business activities and popular groupware tools are listed in the following table:

Sl. No.	Area of Groupware usage	Examples
01	Conferencing	Audio/Video Conferencing, Desktop Video conferencing
02	Scheduling	Group Scheduling and Calendaring
03	Meeting	Online Meeting systems
04	Discussion	Discussion Databases
05	Messaging	E-mail/ Electronic Messaging
06	Presentation	Collaborating Presentation Software
07	Authoring	Group Authoring
08	Knowledge Management	Knowledge Management systems
09	Project Management	Project Management Software
10	Work Flow	Work Flow Management Systems

Table 2: Important Collaborative Needs and Groupware use

Apart from the activities listed above, there are new areas being identified where the groupware as a tool may be helpful in improving group work environment. In fact, none of the activity in the business can be found where collaboration, coordination and effective communication are not considered as essentials. Hence the tools that supports such requirements have the widespread scope in the business administration.

### 7. Current status of Groupware in Group Environment

Today's business environment is known for quick and effective decision making. Due to lack of time and intensive competition there is need of smart collaboration among group members. Almost all organisations are using the groupware of some kind. The group activities are now being performed with the help of automated tools and all such tools can be termed as Groupware. Free group support systems are readily available by online companies such as Microsoft and Google. Even social media also helps in group performance by sharing the information among group members. There is a little difference between the Social media and the collaborative software. Both support group activities but both are different as the very purpose is different. There are organisations who have developed their own collaborative software through their experience and needs; such as Shuchita Prakashan Pvt. Ltd, Allahabad.

### 8. Suggestions

The business activity is a group activity which is better performed when an effective communication and collaboration is possible among the group members. The larger the team or group; the larger the need of collaboration. Moreover, the members of groups and teams are dispersed at different locations and this makes the collaboration difficult. The Groupware is a tool that can be useful in all such situations. Therefore, it suggested that organisations should utilize some kind of groupware tool. For the effective use of collaborative tools the following points are suggested:

- Requirement Analysis: There may be different needs of collaboration in different organisation thus the requirement analysis is also suggested before selecting and groupware tool.

- Effective Implementation: The implementation must include training of users and plan for systematic change into new tools.
- Up-gradation of system: The implementation must be followed by the monitoring of performance through the tools and up-gradation if needed.

## 9. Conclusion

The growing and physically dispersed organisations, need of urgent communication, coordination and sharing of information in group working environment has made the business a complex activity. It is the collaborative tools, popularly known as Groupware, which has helped the organisations in conducting smooth business activities by providing simple, easy but effective ways for collaboration. This has helped the organisation to grow their team size beyond the geographical boundaries. Today, there are different kinds of groupware tools available and many of them in free of cost. The organisations just need to understand their collaborative needs and get the collaboration tools implemented for group activities. Thus evolution of groupware is a boon for business in group environment.

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