Chapter 1. Collaboration Tools

Introduction

1.1. Collaborative work platforms
   1.1.1 Apple iCloud
   1.1.2 Box
   1.1.3 Dropbox
   1.1.4 Google Drive (© 2012 Google Inc. All rights reserved. Google Drive is a trademark of Google Inc.)
   1.1.5 Microsoft OneDrive

1.2. Types of collaborative documents and sharing options
   1.2.1 Word processing
   1.2.2 Presentations
   1.2.3 Spreadsheet

1.3. Mobile and computer applications
   1.3.1 Basic characteristics
   1.3.2 Apple iCloud
   1.3.3 Google Drive (© 2012 Google Inc. All rights reserved. Google Drive is a trademark of Google Inc)
   1.3.4 Microsoft OneDrive
   1.3.5 Third-party applications

Chapter 1 Integrative Exercise
Chapter 1. Conclusion

Chapter 2. Ethics in the Use of Information

Introduction

2.1 Freedom of speech
2.2 The concept of plagiarism
2.3 Legislation against plagiarism
   2.3.1 Contracts and licenses of collaborative work platforms
   2.3.2 Legislation of streaming

Chapter 2 Integrative Exercise
Chapter 2. Conclusion

Chapter 3. Creativity
Introduction

3.1 Becoming aware of creativity

3.2 What is creativity?
   3.2.1 Confluence model of creativity
   3.2.2 Component model of creativity

Chapter 3 Integrative Exercise
Chapter 3. Conclusion

Chapter 4. Creativity Tools

Introduction
4.1 Lateral thinking
4.2 Criteria to assess creative value
4.3 How to evaluate the best ideas
4.4 Generation of alternatives and concept extraction
4.5 Techniques for the stimulation of creativity
   4.5.1 The Six Hats Technique
   4.5.2 Visual methods. The Swiss Army Knife Technique

Chapter 4 Integrative Exercise
Chapter 4. Conclusion

Chapter 5. Elements of Design

Introduction
5.1 Message
5.2 Color
5.3 Line
5.4 Form
   5.4.1 Structure from forms
5.5 Texture
5.6 Space
5.7 Audio
Chapter 5 Integrative Exercise
Chapter 5. Conclusion

Chapter 6. Principles of Art

Introduction
6.1 What is art?
   6.1.1 Functions of art
   6.1.2 Meaning in art
6.2 The principles of art
6.2.1 Movement
6.2.2 Balance
6.2.3 Rhythm
6.2.4 Harmony
6.2.5 Proportion
6.2.6 Emphasis
6.2.7 Variety
6.2.8 Gradation

Chapter 6 Integrative Exercise
Chapter 6. Conclusion

Chapter 7. The Design Process
Introduction
7.1. Pre-production
7.2. Production
7.3 Post-production

7.3.1 Post-production of video products
7.3.2 Post-production of printed material
7.4 Presentation

7.4.1 Important aspects of oral communication

Chapter 7 Integrative Exercise
Chapter 7. Conclusion

8. Communication
Introduction
8.1 The evolution of communication

8.1.1 Creativity in communication
8.1.2 Levels of communication

8.2 Usability
8.3 Accessibility
8.4 Immersion
8.5 Context

8.5.1 Intercultural communication

8.5.2 Artistic expression as context

Chapter 8 Integrative Exercise
Chapter 8. Conclusion

To know more...
Creativity and Digital Design
Eusebio Ayala • Sebastián García • Virna Gil
Edith Lozano • Octavio Muñoz • Roberto Sobrado

Tecnológico de Monterrey is proud to present its collection of eBooks for high school, undergraduate, and graduate levels. Every book contains knowledge and skills that use various technologies to support learning.

The main objective of this signature is to spread the knowledge and teaching experience of faculty at Tecnológico de Monterrey through innovative resources. It also aims to contribute to the development of a publishing model that integrates the eBook format with the many possibilities that digital technologies offer.

Along with Editorial Digital, Tecnológico de Monterrey reaffirms its entrepreneurial vocation, and its commitment to educational and technological innovation, for the benefit of learning both inside and outside of Tecnológico de Monterrey.

All rights reserved © Instituto Tecnológico y de Estudios Superiores de Monterrey, México, 2016.
About the Authors
Tap below to see the welcome video.
A little bit about Eusebio

He teaches at Tecnológico de Monterrey High School (Valle Alto).

He is an engineer in systems management, from Universidad Autónoma de Nuevo León, and he has a Master’s degree in Information Technologies from the Universidad Virtual del Tecnológico de Monterrey.

He has participated in the redesign and teaching of several classes: Introduction to Information Technologies, Development of Multimedia Applications, Computational Logical Thinking, and Introduction to Software Applications Development. He is a joint author of the eBooks Digital Expression (Editorial Digital del Tecnológico de Monterrey). He is currently director of the Department of Computer Services.
A little bit about Jesús

He teaches at Tecnológico de Monterrey High School (Guadalajara), and at the Graduate School of Humanities and Social Sciences.

His Bachelor degree is in Biology, from Universidad Autónoma Metropolitana, Xochimilco Campus. He also has two Master’s degrees from the Tecnológico de Monterrey: one in Education, in Cognitive Design, and one in Engineering, in Quality and Productivity.

Since 1992 he has taught and coordinated several courses in natural sciences, arts and education at the high school, undergraduate, and graduate programs.

He has been academic coordinator in the above-mentioned areas. He has been director of three departments at Tecnológico de Monterrey, Guadalajara Campus: Natural Sciences, Computing, and Human Development. He has also collaborated in the design and publishing of several courses for Tecnológico de Monterrey. He published the practice manuals Biology I and II and Anatomy and Physiology, and the book Ciencias de la vida. He is a joint author of the eBooks Introducción a las tecnologías de información and Digital Expression (Editorial Digital del Tecnológico de Monterrey).
A little bit about Virna

She teaches at Tecnológico de Monterrey High School (Sinaloa).

She studied Computer Systems Engineering in the same institution, and she has two Master’s degrees, in Educational Technology, and Information Sciences, from Universidad Virtual del Tecnológico de Monterrey.

Her interests are teaching information technologies and their innovative application, information sciences, and librarianship. She is a joint author of the book ¡Comunícate con multimedia! (Limusa, 2010), and the eBooks Fundamentos de tecnologías de información: viviendo en una sociedad tecnológica (volumes 1 and 2), and Digital Expression (Editorial Digital del Tecnológico de Monterrey).

She currently teaches technology classes in high school, and she is director of support services at Sinaloa Campus.
A little bit about Edith

She teaches at Tecnológico de Monterrey High School (Guadalajara) since August 1997.

She studied Biomedical Engineering at Universidad Autónoma Metropolitana, and she has a Master’s degree in Management of Information Technologies, from the Tecnológico de Monterrey.

She has taught computing in the two high school programs at Tecnológico de Monterrey: the bicultural and multicultural ones. She has taught university classes as well. She is a joint author of the book Introducción a las tecnologías de información (Limusa, 2007), and the eBooks Introducción a las tecnologías de información and Digital Expression (Editorial Digital del Tecnológico de Monterrey).

She has participated in the redesign of the following courses: Computing, Information Systems, Basic Programming, and Development of Multimedia Presentations for various technological platforms. She is the current director of the Science and Computer Department at the Guadalajara Campus.
Octavio Augusto Muñoz Román
A little bit about Octavio

He teaches at Tecnológico de Monterrey High School (Estado de México).

He majored in Computing and Management Systems, and he has a Master’s degree in Educational Technology from Universidad Virtual del Tecnológico de Monterrey.

He has worked as a coordinator of the collaborative tools, and as a developer of applications in the Computer Science Directorate at the Estado de México Campus.

In high school, he has taught the following courses: Introduction to Information Technologies, Development of Multimedia Applications, and Math I, II and III. In 2001 he was awarded the Quality Work Award.

A little bit about Roberto

He teaches at Tecnológico de Monterrey High School (Estado de México).

His major is in Computing Systems, from Universidad Mexicana. His Master’s degree is in Management of Information Technologies, from Tecnológico de Monterrey.

His thirty-year long career has been in the area of computer sciences. He has been consultant and systems developer for multinational companies and government institutions. He is a joint author of the book *Introduction to Information Technologies* (Jet Press, 2014), and the eBook *Digital Expression* (Editorial Digital del Tecnológico de Monterrey). He teaches the high school courses Introduction to Information Technologies, and Development of Multimedia Applications.
Introduction

Collaboration tools facilitate communication among people involved in team-based work. These tools enable the team members to contribute their individual efforts toward achieving the goals set out by the team.

In this chapter, we’ll show you a number of tools that can help your working team to perform more efficiently, whether the team is local or geographically distant.

Ever since antiquity, humans have worked in teams to carry out tasks that could not be attained individually. As the old saying goes “two heads think better than one.” Integrating ideas can result in greater creativity and innovation. In addition, such an approach might help to save time.

However, a number of persons working together doesn’t ensure that the team’s goals will be achieved. For a team to be successful, the following elements ought to be present:

- Trust: Each team member must put in his or her best effort, knowing that the others will be doing the same.
- Communication and coordination: All team members must know the team-based objectives. They should also be aware of the set ups, the manner, and the time in which members should be contributing toward achieving these objectives.
• Flexibility: Diverse ways of thinking promotes teamwork efficiency. However, this requires cultivating an attitude of understanding that seeks agreement reaching. Such agreements ought to be beneficial to the team rather than to the individual members.

• Feedback: Team collaboration through time poses a number of challenges: (a) interaction among people is complex, (b) noise in communication is likely to occur through the processes, and (c) changes naturally occur through time. To address these challenges, it is important to build in ways to validate partial goal achievement as well as ways of reassessing the course of action being taken thus far whenever necessary.

The gamut of factors involved in executing a task is very broad. Nonetheless, we can classify these factors into three major categories: time, human resources, and budget. The tools-resources available in each category actually affect the ones from the other classes; in other words, the availability of tools-resources in one category affects what tools-resources are available under the other two factor classes. Additionally, the amount of available resources is always limited.

• Time refers to the maximum time span available to complete the task. When time is a limiting factor, human-resource and budget-based needs become rather crucial for reaching the goal.

• Human resources are the amount of people or man-hours one may count on to carry out a task. The more abundant the human resources, the larger the budget.

• The budget refers to money amounts allotted for materials and tools, and salaries, and all other expenses required to complete the assigned task satisfactorily.

Due to technological advances and the growth of the Internet, geographically dispersed people working together on the same task is now a possibility. Collaboration tools now exist that facilitate members of a team to interact remotely.

Collaboration tools should aid in optimizing the communication process as follows:

• Manage shared resources such as tools, facilities, technological infrastructure, and so on.

• Split the task into activities that need to be managed according to the specific activity design features:
  • Set the priorities so as to have the activities producing inputs that are required in subsequent activities come first.
  • Assess what activities can be done simultaneously whenever completing these depends on distinct resources.

• Support in decision making and in measuring achieved benchmarks.

The list of collaboration tools can be very long. Tools range from a note on the message board (used to coordinate local work teams) to a videoconferencing system, which can support real-time interaction among members on a distributed team.
The following are some of the tools that can help a work team increase its productivity:

Chart 1.1 List of collaboration tools.
The collaboration tools related to communication are those that facilitate the exchange of information among the members of a team.

The most important ones are:

1. **Address book**, or a directory of the team members, their contact information, including email address, instant messaging usernames, telephone numbers, address, and so on.

2. **Message board**, or a space to publish announcements or messages containing information that the entire team should be aware of.

3. **Web 2.0**, a term used by Dale Dougherty, and which became popular thanks to Tim O’Reilly. It refers to the paradigm shift that first-generation websites (with static content) eventually underwent. Originally, websites remained unchanged until a programmer or webmaster updated the information. Now websites are more dynamic. Their framework enables users to create and edit content, or update information in them. Some of the collaboration tools that belong in this category are:

   - **Chat room**, a forum that is organized according to categories and/or themes. The
The objective of a chat room is to present a thread and gather the opinions or posts of users. A moderator can administer a chat room, and is privileged to edit or delete information others post.

- A blog, the space in which one or more authors publish chronologically and periodically. It is also known as an electronic logbook or journal. A blog usually allows readers to post comments on the content published by the author, but this is an optional feature.

- Wikis are collaborative spaces in which any user can play the role of author, editor, or just reader. Unlike blogs, in which only the author can modify the content, this interface allows the users to contribute or even modify the contributions that other users have made.

4. Electronic mail, or email, is a communication service through the Internet that allows its users to send and receive electronic messages. Once sent, these messages are filed in an electronic mailbox and delivered to the user when he or she is connected. The message can be sent to one or more recipients. It also features the option of a blind (carbon) copy, which means that the individual recipients won’t know other recipients. Communication through this means tends to be formal, and agreements are considered official.

5. Instant messaging or IM is a means of communication through the Internet. Messages tend to be shorter and less formal than email. At the beginning, communication history could not be stored, so it was necessary for both users to be connected at the same time. Now, some services store the conversation history and thus it is possible to send messages to users who are not logged in, making it possible to send messages to users who are not logged in. The use of IM has become very popular and agreements done through it are considered official.

6. Voice calling is similar to instant messaging. Both users have to be connected in order to establish real-time communication. Communication can be done through fixed telephone, mobile or through voice IP.

7. Video calling allows speakers to see (and listen) to each other in real time through a camera. Users can share their computer desktops, or work together on a shared note board.

8. Three or more users connect through voice or video in web conferencing. As the years have gone by, this type of communication has become more specialized, and it can offer users the option to control who talks and when.

9. There are several computer applications that allow you to capture, store, organize, analyze, and share documents. The information is processed and stored in a file or document, in a specific format, for future access or use. These apps aim to more efficiently carry out activities that were done manually, such as write texts, do mathematical operations, or present information graphically. These types of apps are called productivity software. These collaborative work platforms include spreadsheets, word processors, and presentations. These tools will be described in detail in Section 1.2: Types of Collaborative Documents and Sharing Options.

There are also collaboration tools that help manage time and human resources. Their objective is to optimize the time of each team member by informing and/or reminding them of key dates related to the project.

1. A calendar or agenda allows people to organize pending activities chronologically.
Nowadays, agendas can be shared. Members in a group share when their joint activities have been scheduled, and when all the members of the group may be free.

2. A task list refers to the list of pending activities. These can usually be ordered by priority status, person in charge, or development status.

3. When activities require coordinating resource availability, Gantt charts can visually show when resources overlap through a timeline.

The use of data networks, originally existing primarily within companies, allowed geographically distant persons to build teams and work together through the use of collaboration tools. As the combined use of these increased, information exchange became more complex. For this reason, it became necessary to group them within a common platform. This call groupware or collaborative work platforms. In them, people can exchange information, plan, and coordinate activities.

1.1 Collaborative work platforms

The grouping of different collaboration tools into platforms has been possible due to a few factors: the widespread use of data networks, wide access to the Internet, and the appearance of
Web 2.0 services. These platforms allow the users to work in teams and access their resources from any device connected to the Internet. Today, there is a large number of these collaborative platforms. Here are some of them, along with their main features:

**Collaborative work platforms**, also called collaborative software or groupware, refer to the software that allows multiple users joined by a common goal or task to exchange information and documents through a local or remote data network to plan and coordinate team activities.

The first collaborative network goes back to the 1960s, when Doug Engelbart, better known as the father of collaborative software, had the vision of people working together to solve complex and urgent problems supported by interactive computers.

According to the Doug Engelbart Institute (2014), in 1968 the computer system called oN-Line System (NLS), designed by Engelbart, allowed people to hold meetings and teleconferences, share files, have author signatures, and time marks in each line of the source code and in each documenting paragraph, digital libraries, electronic messages, and online communication.

**Did you know?**

You can find more information about Doug Engelbart and his work in the article “Mother of All Demos”. Do not forget to check out those interesting videos by clicking here.

At the beginning, interaction through collaborative platforms was **asynchronous**, meaning that a user would generate information, and once sent it would be stored to be delivered to the end user’s inbox. An example of this type of communication is email, in which even though the time lapse for delivery is very short, it is still unfinished until the end user checks his/her inbox and reads its contents.

As you know, there are now other platforms that allow **synchronous** communication, meaning that when a user is modifying a message, the other person can see it happen in real time. This happens with most electronic instant message services. With the massive use of the Internet, many companies have started to offer their services through websites that let work teams communicate and share files among each other no matter if they are geographically distant. From all this, the term Cloud computing arose.
Cloud computing refers to the collection of apps and computer resources through high availability servers connected to the Internet. This allows the users to utilize applications and manage their information from any computer or mobile device that has Web access. This paradigm change allows the efficient use of storing resources, processing, and bandwidth as well as providing the service suppliers with a faster product display.

The range of collaborative platforms on the Cloud is extensive. Here are the most popular ones, with the most relevant ones explored in detail:

1.1.1 Apple iCloud

You have surely heard of the term iCloud, and if you are a Mac user, you will know that through this tool you can synchronize the information among your devices. For Apple, this was the main purpose for this service. However, since it is possible to share information with other users, it became Apple’s proposal for a collaboration platform. However, today it is possible to share information with other users through iWorks, the version on the Cloud of the text processor...

Chart 1.2 Collaboration platforms.

» Adobe Acrobat workspace
» Apple iCloud*
» Atlassian Confluence
» Basecamp
» Box*
» Broadvision Clearvale
» Chatter
» Dropbox*
» Google Drive® © 2012 Google Inc. All rights reserved. Google Drive is a trademark of Google Inc.
» Huddle
» Microsoft One Drive*
» Socialcast
» Socialtext
» Tibbr
» Wiggio
» Yammer
» Zoho
Pages, the spreadsheet Numbers, and the software for presentations KeyNote.

Apart from the data synchronization among the user’s devices and iWorks, there are other services such as email, address book, calendars, reminders, note blocks, photo albums, password storage, and device location through GPS.

A limitation of this collaboration platform is that the files or documents are not stored in folders. They stay inside each application, making it hard to group all the files in the same location or order according to its importance. One thing to remember: Even though Apple also offers message services like iMessage or FaceTime video conferences, these can only work among Mac devices only.

1.1.2 Box

Box is a Cloud storage service that allows you to store all your documents and access them from any device connected to the Web. With this platform you can organize your files in folders, and you can also share a folder with other users and assign editing or read-only privileges.

Box lets you have version control, so it makes sure all the users have the latest copy of the file. It can also allow you to have access to the previous versions if necessary. Each time you modify a document, all the users that share that file will receive a notification. It is also possible to write quick notes, choose the people to send a notification to, and receive an answer from the users in the form of a conversation.

Another tool you can find in Box is task assignment. This lets you ask other people to check, approve, or update a file by assigning due dates.

It is important to mention that Box does not have its own editing applications, but it allows the use of third-party services that strengthen its infrastructure and permits the editing of documents, comments, electronic signature, and other functions.

A disadvantage of this tool is that it only handles asynchronous communication. It is impossible for two users to work at the same file at the same time. That is why a person needs to finish editing a file before another person can access it and modify it.

1.1.3 Dropbox
Dropbox also allows the storage of documents on the Cloud. It is one of the most popular ones, and it is very likely that you already know it. Dropbox lets you have access to your information from almost any device that is connected to the Internet. Just like Box, Dropbox only works in an asynchronous form.

You can also find version control in Dropbox. It handles a history of modifications, and it is possible to go back and modify the changes done previously and send notifications when a document is updated. The basic version of Dropbox lets you share folders and documents with some limitations. For instance, it is not possible to restrict access privileges like read-only, or if a folder is shared with some users, it is not possible to share the files that are inside of it in an isolated way. Dropbox does not have a tool to make comments about the documents, so there cannot be a conversation.

Just like Box, Dropbox does not have its own applications for users to edit documents. Third-party software is needed to access documents that are stored in this platform.

1.1.4 Google Drive

(© 2012 Google Inc. All rights reserved. Google Drive is a trademark of Google Inc.)
Drive is Google’s tool for storing. Along with other tools from the same creators, Drive makes one of the most complete collaboration platforms in the market. It lets you create, store, and share information with your contacts. It is also possible to access it from almost any device that is connected to Internet.

Inside the Google platform are other services, such as:

- **Docs**, consisting of word processing, spreadsheets, online presentations, and forms. These applications that are owned by the same brand let you create and edit documents through an Internet browser, as well as the possibility of incorporating third-party applications that allow you to edit images and video, signature, fax sending services, project administration, and flow diagram creation among others.

- **Sites** is a tool for the creation of interactive websites. Its templates permit you to create blogs and wikis very easily.

- **Maps and Earth** are geographic location services in which you can look up maps and instructions to go from one place to another. In 2007, Google sent cars equipped with cameras to photograph and map the most important cities in the world. Thanks to these applications, it is now possible to enjoy the satellite, 3D, or street views of almost any place on the planet.

- **Picasa** is a service in which you can search, store, and edit images. Google has incorporated Optical Character Recognition (OCR) technology to allow you to search among graphics.
YouTube lets you create, edit, and store videos as well as different ways of sharing this type of files with the rest of the world.

Hangouts allows you to have conversation in groups in which you can share images and emoji to make your conversations more interactive. It also facilitates group interaction and integrates software tools for presentations and shared desktop with the video call function.

Translate is a service that lets you translate texts, web pages and files into more than 50 languages instantaneously, allowing people from different languages to interact easily.

### 1.1.5 Microsoft OneDrive

Microsoft OneDrive is the evolution of Windows Live Folder and Microsoft SkyDrive services. You can store files as part of your Microsoft account and store all kinds of documents on the Cloud to be able to access them from almost any Internet connected device.

OneDrive is part of other Microsoft services to provide a solid collaboration platform.

- **Outlook.com** is the email service that replaced Hotmail. It has a more modern look, with a simple, ad-free interface. Microsoft had agreements with some social networks such as Facebook and Twitter to be able to show the updates of your contacts from there.

- **People** is the contact administrator that is incorporated in Microsoft’s collaboration platform. There you can gather all information about or from your contacts.

- **In the calendar** in the collaboration platform of Microsoft, you can organize your time and share it with your contacts.

- **OneDrive** incorporated the Cloud version of the iconic applications of Microsoft Office: Word, Excel, PowerPoint, and OneNote. These apps let you edit your documents even when you don’t have them on your computer.

- **Skype** is a Microsoft tool for communication among people who are in different geographical locations. It has instant messaging, telephony, and video conferencing. You have the power to share your desktop or take control over the other user’s desktop.
Activity 1.1 Identify the tools available within each of the collaboration platforms. Download the document [here](#).

<table>
<thead>
<tr>
<th>Collaboration tools</th>
<th>Apple iCloud</th>
<th>Box</th>
<th>Dropbox</th>
<th>Google Drive</th>
<th>Microsoft OneDrive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage space</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Address book</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Message board</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Web 2.0 sites</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Email</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instant messaging</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voice calling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Video calling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Web conferencing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Documents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Word processor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spreadsheet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presentation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calendar/agenda</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task list</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Did you know?**

You can find more information on the platforms by accessing the help menu that is available in each one of them. Get to know each one of the sites.

- [Apple iCloud](#)
- [Box](#)
- [Dropbox](#)
1.2 Types of collaborative documents and sharing options

The term document comes from Latin *documentum*. It was used to refer to a letter or piece of written text in which the information was registered manually or mechanically to record a fact or situation. The term is now also used to refer to electronic files that gather or store information.

Many of the apps we see in the market today emulate processes used in the past. The difference is that now processes are more efficient. That’s why they are called *productivity tools*.

Composing documents, solving math operations, making graphical representations, gathering the opinion of different people, and organizing the information in a way it can be accessible later on are examples of the activities you can carry out with the help of these applications. Collaboration platforms also let you share the documents more easily, control changes in versions, or even let other people work and modify the same archive in real time.

To get the most out of these applications, it is important to choose the best tool according to the activity you will perform and the type of information that you will handle. In a general way you can classify the applications for document editing in three main types:

- **Word processing**
- **Presentations**
- **Spreadsheets**

### 1.2.1 Word Processing
The purpose of this software is to let the user write documents that are mainly text such as letters, reports, invitations, articles, and books. It also allows the user to format the text and enrich documents with charts, images, audio, and video. The main characteristics of the different kinds of software available for word processing vary a lot. Most allow the user to select font, style, size, and font color.
Word processors offer a wide range of options that gives the text some personality. Martínez (2009) classifies fonts in five categories:

- A serif font features elegant letters with small shifts in the width of the letter and curvy stroke style. This type of font transmits a sense of tranquility, authority, dignity, and determination. A curvy stroke style also aims to guide the eye through the reading line, making this font ideal for long texts.

- The words sans serif are derived from the French sans meaning “without” and serif, a small line attached to the end of a stroke. A sans serif font does not have a curvy stroke style, and the traces are straight. The style is modern, sober, elegant, and it transmits security. This typographic family is recommended for short texts. Its straight lines make it very legible but hard to follow in long texts.

- Italic font or scripts imitate italic or calligraphy writing. Their fine traces make legibility hard—one reason that they are exclusive for decorative texts that need to stand out.

- Exhibition fonts have their own style. They were created to represent an epoch, brand, or product. They are generally used to highlight titles.

- Symbols or images include characters that are not found in the traditional alphabets, such as ornamentations, phonetic symbols, math and scientific symbols and others.

Another characteristic of word processing software is the paragraph format; alignment, justification, indentation, space between the lines, space between the characters, and space between text blocks. These are some of the characteristics that allow the text to be modified. There are also numbered and bulleted lists to organize and highlight a group of ideas that are related. The use of tables allows us to organize the information into a scheme to be understood more rapidly by unifying it visually.

Spell-check is another tool in word processing software. Most software has an assistant that highlights the most common spelling mistakes. Unfortunately, many times the correct way of writing something depends on the context, and this makes spell-checking tools fallible. Lastly, the change control tool lets us see the last modifications done in the text. This characteristic is very useful.
when editing is done by a group of people. It is easier for people to see the changes made by another person.

1.2.2 Presentations

This software lets you show a synthesized and schemed version of the information to be interpreted quickly. Its main characteristic is the use of graphic elements that enrich content such as tables, numbered lists, bulleted lists, images, and multimedia elements such as audio and video. This type of document is normally used as a visual support in conferences.

In presentations, the information is organized in slides. A slide is the canvas that is shown
through a screen. Many pre-designed templates can be used to have a professional looking presentation with impeccable graphic design. You just need to add the information.

Graphic resources, audio, and video are optimized in a way that the size of the files is small without losing quality. For this reason, the format of a presentation tends to be very visual (the use of transitions and animations, for instance, makes the text so dynamic that it keeps the audience’s attention.)

1.2.3 Spreadsheet

The purpose of this software is to let the user capture, organize, and process information through tables, graphs, predefined formulas, and functions that range from basic arithmetic operations to much more complex operations that allow information to be searched and analyzed.

The information on the spreadsheet is organized vertically with columns that are labeled as letters (A, B, C…), and horizontally with rows that are labeled with numbers (1, 2, 3…). The intersection of a column and a row is called a cell. You can identify it by putting together the name of the column and the number of the row. This cell address is the element of the spreadsheet that stores the information. For instance, the conjunction of column C and row 4 is known as cell C4.

VisiCalc is considered the first electronic spreadsheet, and Dan Bricklin its author. He created it when he was a Harvard student in 1978, and Lotus acquired it later on. The idea was born when Bricklin started wondering how he could select different numbers on the computer and make an arithmetic operation with them. This is considered the beginning of spreadsheets.

It is true that a spreadsheet is able to make the basic arithmetic functions to organize and store information from a database. However, it lacks the mechanisms to ensure the integrity of
1.3 Mobile and computer applications

1.3.1 Basic characteristics

At the beginning, word processing, presentations, and spreadsheets software were used exclusively in computers. They had to be locally installed in the computer, and it had to be compatible with the operating system.

When mobile devices became popular, the application market for these devices started growing. To satisfy the demands of the users, it was necessary to rethink the interfaces of the applications because mobile devices were smaller, and it was hard to work on their screen and keyboard. They were redesigned, and they became a real choice for document creation. However, since users had both devices to work with, it became necessary to be able to synchronize them. If a person worked on a document while he waited for a doctor’s appointment, he would like to see those changes made on a computer when he got home.

Cloud computing was the solution to these problems. Now, documents are stored in a centralized server that contains the apps. This way the users only need an Internet connection, a web browser, and a device to have access to their documents anytime, anywhere.

Nowadays, collaboration platforms in the Cloud let you edit documents through three different mechanisms: personal computers, mobile devices, and Cloud computing. We will now take a look at the most popular options of collaboration platforms.

1.3.2 Apple iCloud

The Apple platform, called iCloud, allows the user to have all the information synchronized in different devices. Besides storing information, this platform offers other services such as access to the applications Pages, KeyNote, and Numbers through the Cloud. This way, the user can create, edit, and store documents. The detail in the platform design is typical of Apple, and thus it shows homogeneity among the versions of all the devices.

iWorks is Apple’s offering for productivity software. It is installed on a computer with Mac OS X operating system, and it is not compatible with MS Windows or Linux. This suite is perfectly integrated with iCloud since it replicates the modifications you make on your documents in the Cloud. To install it on your computer, you need to buy a license, but you don’t have to do this if you use the apps directly in the Cloud since they are free.

Pages, KeyNote, and Numbers have different versions to get the best out of the user’s multi-touch interface that is installed on the mobile devices that have iOS on them. Just like the computer version, the mobile device version merges with iCloud to keep the content synchronized. You can download these apps from the Apple Store at a cost. A big difference between the other collaboration platforms and this one is that iCloud organizes documents by application. They cannot be distributed in folders.

This platform offers 5 GB of free storage to its users to save documents, pictures, and backups of their devices. Until now, there are no Apple apps that give complete access to iCloud.
in mobile devices that can execute operating systems for Android or Windows. For these systems you can only find calendar, email, and address book on the Cloud.

1.3.3 Google Drive

Google’s collaboration platform shows maturity and integration in all its applications, even when their characteristics are basic. On Google’s Cloud, better known as Google Drive, you can find word processing, presentation software, spreadsheets, and other proprietary applications. Also, it allows you to transform created documents into versions of Microsoft Word, Excel, and Power Point, the most popular in the market. Finally, Google Drive lets you integrate modules that were developed by third parties to enhance its functionality.

Drive is organized in folders and the files can be put in order of importance by dragging them to the folder you choose. There is a special place called “Shared with Me” that contains the documents that someone else created and sent to you, but you have the choice of moving them to a folder that you have created. Besides, the computer version offers the option of installing an application that keeps your space with the one on the Cloud synchronized. However, if you want to edit documents, you will have to install third-party applications (Microsoft).

Google Drive offers 15 GB of storage for free for its users in general and 30 GB if you have an education account. Finally, it is important to mention that Google Drive has applications that let you see your documents on mobile devices with different operation systems (iOS, Android, Windows Mobile). Google-owned applications can be downloaded for free.

1.3.4 Microsoft OneDrive

Currently, Microsoft offers two collaboration tools: Office Online and Office365. The first one is on the Cloud for free; the other one is a commercial platform, so it is necessary to pay a yearly fee to be able to use it.

Office Online consists of email, calendar, a storage service, and an online version of Word, Excel, PowerPoint, and OneNote applications. OneDrive is the platform that storages documents on the Cloud, where you can have any kind of archives. The storage capacity is limited, however, because it is a free service.

On the other hand, Office365 offers enriched services. It includes the online version of the productivity applications and the license for the installation of Microsoft Office Suite in up to 5 devices, which allows you to work when there is no Internet connection. With an Office365 subscription, OneDrive’s storage capacity increases to 1 TB. In both platforms, the collaboration is made by the synchronization of the documents in a computer. To be able to edit them, the latest version of Microsoft Office must be installed on Windows or Apple devices.

1.3.5 Third-party applications

In the previous section, we have seen the proprietary applications of each one of the collaboration platforms and their availability for the different devices. In addition to these applications, there are other third-party developments that allow interaction with one or more platforms that support more devices.
The **XML** format (Extensible Markup Language) has become a standard for many applications because of the way it stores the documents created by them. When using this standard, the document can be seen on Web browsers and on other applications ruled under this standard. Another characteristic that many applications have adopted is letting the users export documents in **PDF** format. When converting documents, they keep the format, just as if they had been printed. This allows some interaction characteristics to function as hyperlinks or even audio and video. This is an open standard handled by the International Standardization Organization. Any software developer can use it.

A commercial strategy of developers is to distribute free versions of an application with some restrictions. Their purpose is to let the user know the application and get interested in it. Eventually users may pay for it if they want all functionalities. Another strategy is to give away demos with expiration date.
Activity 1.2 Identify the devices that are supported through a proprietary application for each one of the collaborative work platforms. Determine also if they offer editing capabilities or only visualization. Download the document [here](#).
Activity 1.3. Identify the sharing document mechanisms that each one of the collaborative work platforms offers. Download the document [here](#).
Chapter 1 Integrative Exercise

Question 1

What is the term used when you are referring to a group of applications that allow constant communication among members of a team in order to facilitate the achievement of a group objective?

A. Productivity applications.
B. Web 2.0 Sites.
C. Collaboration tools.
D. Mobile device applications.
Chapter 1 | Conclusion

The Internet has undoubtedly revolutionized the way we communicate to work with other people, and it has created new markets for products, goods, and services. Without the Internet, the use of mobile devices and collaboration platforms on the Cloud would not be possible.

We need to communicate and work collaboratively in all aspects of our lives: professional, personal, and educational. The range of platforms that support these tasks is wide and changing. For this reason, you, the final user, need to decide your favorite platform according to its characteristics, your budget needs, and the type of device and operating system you have.