**Unit 2 – Every Bit of the Internet**

**\*\*Instructions:** Please change the text color of your responses to red text.  Please organize the endings to each page.

Activity 2.2.1 The Internet and the Web: Explore Task 1

Step 1:

| **Innovation** | **Description** | **Does it include a program?** | **What does it do?** | **Can you classify it as a physical, non-physical, or non-physical concept?** | **Does it exist or is it theoretical?** |
| --- | --- | --- | --- | --- | --- |
| Wireless Router | A router is a layer 3 device on the OSI model, and connects its network of end devices to other networks of end devices. | Yes, routers contain programs to send data, such as the SPF algorithm to find the shortest path to a destination. | Connects its network of end devices, such as computers, to other networks, which may contain other computers, servers, or more. | Physical | Exists |
| Social Media Platform | A program that allows users to post and view messages to and from other peers. | Yes, as a social media platform itself is a program run on a company server. | Connects people together through communication. | Non-physical | Exists |
| The Internet | Every server or webpage that is publicly visible on the global network of computers. | Yes, as the internet uses protocols that use programs, such as the SSL protocol to secure connections. | Allows for the transfer of data between devices | Physical | Exists |
| Email | A protocol for sending and receiving encrypted messages over the internet. | Yes, as email programs must be used to send and receive messages. | Allows people to communicate over the internet | Non-physical | Exists |

Step 2: Of the following items above, which of these are computing innovations and why?

| Social media platforms and email are computing innovations, as they mostly revolve around a non-physical program, while wireless routers and the internet are based on infrastructure and physical creations, not a program, making them non-computing innovations. |
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Step 3: For the innovations you identified above as computational innovations, use the internet to research how many people were on the team who created each innovation.

| Innovation | Team Size |
| --- | --- |
| Wireless Router | An entire subsidiary of a company, led by Vic Hayes |
| Social Media Platform | One person |
| The Internet | Designed by 3 people, implemented by the US Government |
| Email | One person |

Step 4: Now that you are able to identify a computing innovation, you are ready to dive into a deep exploration of an innovation.

Obtain a topic from your teacher and type it in the space below.

| Graphical User Interfaces |
| --- |

Use your recently acquired skills to determine if your topic is a computing innovation.

* It includes a program.
* It's easy to see what the program does.
* It can be classified as physical, software, or computing concept.
* It exists.
* Yes, it is a computing innovation.
* No, it is not a computing innovation.

Step 5: Consider everything you know about the topic already. List what you know. What is your opinion on this topic?

| First one was on the Xerox Alto  Popular early ones include Microsoft Windows, Apple LISA and macOS, and Linux Desktop Environments (GNOME, KDE, XFCE)  Made computers more accessible to everyday users, who did not know how to use a terminal  Originally built off of text-based systems such as DOS, but grew to become their own product (e.g.: Windows NT) |
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Step 6: Use the internet to find answers to the following questions. Document where you found the answer by writing the website’s URL in the appropriate column.

Use the following table as a guide for documentation.

| Question | Notes | URL Source |
| --- | --- | --- |
| What is the innovation? | Graphical user interfaces allow a user to interact with a computer through a mouse and visual elements, instead of typing in a terminal. | <https://docs.microsoft.com/en-us/archive/blogs/mscom/the-gui-versus-the-command-line-which-is-better-part-1> |
| Why was it made? | Graphical user interfaces are easier for consumers to learn to use than text-based interfaces. | <https://docs.microsoft.com/en-us/archive/blogs/mscom/the-gui-versus-the-command-line-which-is-better-part-1> |
| When was it made? | The first computer to support graphical user interfaces was the Xerox Alto, in 1973. | <https://www.britannica.com/topic/Alto-computer> |
| How is it used? | A graphical user interface is interacted with with a mouse (and keyboard), and is used on almost every computer that is not a server, mainframe, or used in some other high-performance context. | <https://www.britannica.com/technology/graphical-user-interface> |

Step 7 - 9: Use the internet to discover what data is processed for your innovation and how it works.

How many people worked on your computing innovation?

| Many different people worked on creating the GUI. It was first theorized by Vannevar Bush, and the first demo was developed by Douglas Engelbart and the Augmentation Research Center at Stanford, which also invented the mouse. Eventually, Xerox released the Xerox Alto, the first consumer computer to use a graphical user interface, and it was developed by a branch of the company at PARC, or the Palo Alto Research Center. This led to the eventual widespread use of the GUI today, with countless other companies and people contributing to the uncountable number of implementations of the GUI. |
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What were the skills needed to make your computing innovation?

| Electrical engineering skills were needed to create and modify the original integrated circuits that the GUIs would run on, while programming skills, especially low-level programming, were needed to actually create the GUI. Additionally, skills in working with hardware were needed to create the mouse, which is the main way of interacting with a GUI, and was instrumental in its success. |
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Step 10: Use the internet to investigate the harmful effects of one computing innovation. Explain the harmful effects of that innovation.

| Graphical user interfaces could be considered harmful because they require a lot more processing power to run than compared with command-line interfaces, so this may have greatly increased the cost of computers and caused many to be inaccessible at first. For example, the Apple LISA, the first Apple product to have a GUI, was sold at an extremely high price point, and it failed in the industry. On the other hand, the Apple II, a command-line based computer, was sold at nearly an eighth of the cost of the LISA and was a success in the market, allowing computers to become more widespread than ever before, despite not having GUI. |
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Step 11: Create and Present

Now that you have a strong understanding of your innovation, it's time to showcase your computing innovation with a visual artifact—represent your innovation visually and with a presentation.

Your artifact should:

* Show what the computing innovation looks like.
* Provide a description of the computing innovation.
* Describe a program or part of a program that is an integral part of the computing innovation.
* List the size of the team that developed the computing innovation.
* Describe the process used to create the computing innovation.
* Create a visual artifact that describes your computing innovation.

Your artifacts will be posted in class. ☺

Artifact

<https://docs.google.com/drawings/d/13O6FsOMJfiYG1MJSFgZOUc2FDDBWpu0188hp0pIWPrs/edit>