*1. Pick* ***two*** *of these models: Component-based, Unified Process, or Agile. Using the web, for each model you picked find a real-world example software project that was implemented using the model. For each project:*

*a. provide a summary of the project*

*b. explain why the chosen process model was appropriate by highlighting the benefits of the chosen process model and its impact on the project*

*c. discuss the impact to the project if a different process model (any we discussed in class) had been used with the project.*

**Component Based Model – real world example – Microsoft’s COM:**

**A. Summary of the project**:

It is a platform-independent object-oriented system, used for creating binary software components. These components are created in such a way that they can be interacted with each other. It is not an object-oriented language; it is a standard. This specifies an object model and programming requirements that can be used to create component objects.

The COM objects can be created with a variety of object-oriented programming languages like C++. The created objects can be within a single process, multiple processes, or remote systems. COM is the foundation for many Microsoft based frameworks such as Windows Shell.

**B**. **Why the chosen process model was appropriate:**

The Component-based model is appropriate for this project as it allowed the development team to divide the complex system into smaller components. It also allowed the team to maintain and manage the components. This not only makes the team develop all the individual components separately, but also reduces the risk and complexity of the process involved.

One more advantage of using this model for this project is that it allows re-using the preexisting software instead of requiring the team to create the same functionality from the scratch multiple times. For example, using COM model COM+, an extension of COM has been developed. COM allows the reuse of objects without the knowledge of their implementation. Component based model has five major characteristics – Reusability, replaceability, extensibility, encapsulation, and independence. Microsoft’s COM takes advantage of these features and gives an essence of language-neutral manner of implementing objects which can be used in a variety of environments, even that are different from one another allowing the cross communication.

**C. The impact to the project if a different process model had been used with the project:**

For this project, the development team would have emphasized on delivering smaller and incremental versions of the product by worrying about delivering the project in less time if an alternative process model, such the Agile model, had been employed. Although this might have assisted in adapting to shifting client needs, it might not have been suitable for a complicated system like the Microsoft’s COM. This would have required the team to focus on providing smaller components first and then integrating them. The Agile methodology would have led to a lengthier development cycle, increasing development costs, and lowering user satisfaction, which is the exact contrary of its implementation in software engineering. Likewise, the project would have taken longer to build if the Unified Process—a more organized and staged method to software development—had been utilized. Because of this, COM might have been published later than other products, losing market share. The Unified Process also emphasizes detailed documentation, which might have slowed down software development and made it more challenging to incorporate modifications.

**Agile Based Model – real world example – Apple’s MacBook**

**A. Summary of the project:**

The MacBook is a line of laptops designed and marketed by Apple Inc. The first MacBook was introduced in 2006 and has since become one of the most popular notebook computers in the world. The current lineup consists of MacBook Air and MacBook Pro with several specifications, features, and upgrades from previously released ones.

**B. Why the chosen model was appropriate:**

The Agile process flow allows for a more flexible and adaptive development approach, making it suitable for the creation of the MacBook. A more effective and user-centered development process was made possible by the Agile approach, which places a strong emphasis on cooperation between developers, designers, and product owners. The Mac’s user experience was enhanced, and the device's competitiveness was preserved. This is because of the Agile model's rapid updates and enhancements based on user feedback. The use of the Agile process paradigm contributed significantly to the MacBook’s success by enabling a quicker and more effective development process and enhancing the user experience as a whole.

**C. The impact to the project if a different process model had been used with the project:**

The Mac may have taken longer to build if an alternative process model, such as the component-based model, had been employed. This is because the component-based approach stresses the creation of individual components, which could have slowed down the development process. Additionally, the development process may not have been as flexible or adaptable using the component-based methodology, which would have led to a less user-focused end product.

2*. Working remotely has affected software development especially agile development. Review these links (HERE, HERE) and find additional resources for your research and share your observations on ‘How remote environments have affected Agile Development.’ Also discuss a list of best practices to make agile development more effective for remote environments.*