

Memorandum

Software Technology

April 8, 2022

To: Members of the Board
From: Josh R. Williams, Senior Analyst
Thru: Monica R. Valentine, Executive Director
Subject: **Software Technology Guidance Updates** (Topic D)

INTRODUCTION

At the February 2022 meeting, staff presented an issues paper that recommended a scope and project plan for developing reporting guidance updates for software technology assets. Specifically, the issues paper proposed addressing four major scope categories in the following order: (1) cloud service arrangements, (2) shared services, (3) internal use software updates, and (4) other software technology.

The attached issues paper for this session discusses characteristics of cloud service arrangements and an asset guidance framework for which to apply the characteristics. The framework analyzes previous asset guidance decisions that will assist the Board when deliberating whether cloud service arrangements can represent assets in the federal government. For this session, staff is only requesting the Board's feedback on the cloud characteristics and the proposed framework. Staff is not requesting the Board to make an official decision at this time on whether cloud service arrangements are assets in the federal government.

REQUEST FOR FEEDBACK BY April 21, 2022

Prior to the Board's April meeting, please review the attached staff recommendations and analyses and respond to the questions by April 21, 2022.

Please submit responses to Josh Williams at WilliamsJR@fasab.gov with a cc to Monica Valentine at ValentineM@fasab.gov.

NEXT STEPS

Pending Board feedback, staff will continue to research and engage with the working group to provide the Board with relevant information so that members can ultimately make an informed decision on whether cloud service arrangements can represent assets for financial reporting purposes. Staff views this as a critical decision that will influence reporting guidance development for cloud service arrangements.

ATTACHMENTS

1. Staff Recommendations and Analyses
2. FASAB Software Technology Definitions
3. Intangible Assets Project Plan

Staff Analysis

Software Technology

April 8, 2022

CONTEXT

Background

At the February meeting, staff presented an issues paper that provided a framework for developing reporting guidance updates for software technology assets. Specifically, the issues paper recommended a scope and project plan for developing updates for software guidance based on specific needs identified during research. The scope consists of four major categories of software resources that staff plans to address individually in the following order:

1. Cloud service arrangements
2. Shared services
3. Internal use software updates
4. Other software technology

The Board overwhelmingly supported staff's recommended scope and planned approach. Additionally, members supported staff's approach of addressing each scope category separately but noted that the categories would ultimately overlap and relate with one another. Some members emphasized that it is important to establish first a framework depicting how the Board generally identifies assets in the federal environment. The members stated that an established asset guidance framework would serve as a useful reference for deliberating reporting guidance for the scope categories in the future.

This issues paper discusses characteristics of cloud service arrangements and an asset guidance framework for which to apply the characteristics. The framework provides insight into how the Board has identified and categorized federal assets in the past and will assist the Board when deliberating whether cloud service arrangements represent assets in the federal government. For this session, staff is only requesting the Board's feedback on the cloud characteristics and the proposed framework. Staff is not requesting the Board to make an official decision at this time on whether cloud service arrangements are assets in the federal government.

Research

After the February meeting, a task force volunteer provided staff many useful research sources on the characteristics associated with cloud service arrangements. For this issues paper, staff primarily used the following sources:

- National Institute of Standards and Technology, *The NIST Definition of Cloud Computing, Special Publication 800-145, September 2011*
- Congressional Research Service, *Cloud Computing: Background, Status of Adoption by Federal Agencies, and Congressional Action, R46119, March 25, 2020*
- General Services Administration, GSA Cloud Information Center, *Cloud Basics*, <https://cic.gsa.gov/basics/cloud-basics>

Additionally, staff researched the following FASAB handbook sources for the asset guidance framework:

- SFFAC 5, *Definitions of Elements and Basic Recognition Criteria for Accrual-Basis Financial Statements*
- SFFAS 6, *Accounting for Property, Plant, and Equipment*
- SFFAS 10, *Accounting for Internal Use Software*
- SFFAS 54, *Leases: An Amendment of Statement of Federal Financial Accounting Standards (SFFAS) 5, Accounting for Liabilities of the Federal Government, and SFFAS 6, Accounting for Property, Plant, and Equipment*
- TR 16, *Implementation Guidance For Internal Use Software*

Staff also held multiple round table discussions with accounting and information technology (IT) professionals from different federal entities as well as a private cloud service provider to better understand the characteristics of cloud service arrangements. Additionally, staff gathered initial thoughts from federal entities on whether cloud service arrangements constitute assets in the federal government.

Finally, staff researched the following documents from the Governmental Accounting Standards Board (GASB) and the Financial Accounting Standards Board (FASB) to gain insight into how each Board decided whether cloud service arrangements represent assets:

- GASB Statement No. 96, *Subscription-Based Information Technology Arrangements*
- FASB ASU No. 2015-05, *Intangibles—Goodwill and Other— Internal-Use Software (Subtopic 350-40)*

- FASB ASU No. 2016-02, *Leases (Topic 842)*
- FASB ASU No. 2018-15, *Intangibles—Goodwill and Other— Internal-Use Software (Subtopic 350-40)*

Staff also met with GASB and FASB staff representatives to discuss the primary factors and decision points that contributed to their Board decisions on whether cloud service arrangements represent assets in their respective environments.

RECOMMENDATIONS AND ANALYSES

Staff believes it is important to first consider and understand the characteristics of cloud service arrangements before making any guidance decisions. Additionally, it was evident to staff during the February meeting that several members wanted to first consider a framework of past asset identification decisions before getting too deep into the cloud service arrangement scope. Staff agrees with this notion and thinks that it is important that the Board compare the characteristics of cloud service arrangements to existing asset guidance. Therefore, the primary objectives of this issues paper are to:

- Discuss essential characteristics of cloud service arrangements in the federal government
- Discuss an asset identification framework for the Board to follow when deliberating whether cloud service arrangements represent assets for financial reporting purposes

The purpose of this session is to introduce the Board to cloud service arrangements and spark deliberations on how they fit into a framework of already established asset guidance. Staff is not asking the Board to make any official decisions on cloud service arrangements at this time.

RECOMMENDATION

Cloud service arrangement characteristics

Based on research and input from the working group, staff is recommending a list of essential characteristics of cloud service arrangements for the Board to consider for future reporting guidance deliberations. This analysis will explain each identified characteristic of cloud service arrangement in further detail using multiple sources. Staff requests that members provide feedback on the characteristics in the following analysis.

ANALYSIS

During the February meeting, staff pointed out that many federal entities use different terms to describe cloud-based IT resources in the federal government. Staff

recommended using the working term “cloud service arrangement” and provided the following working definition for the term:

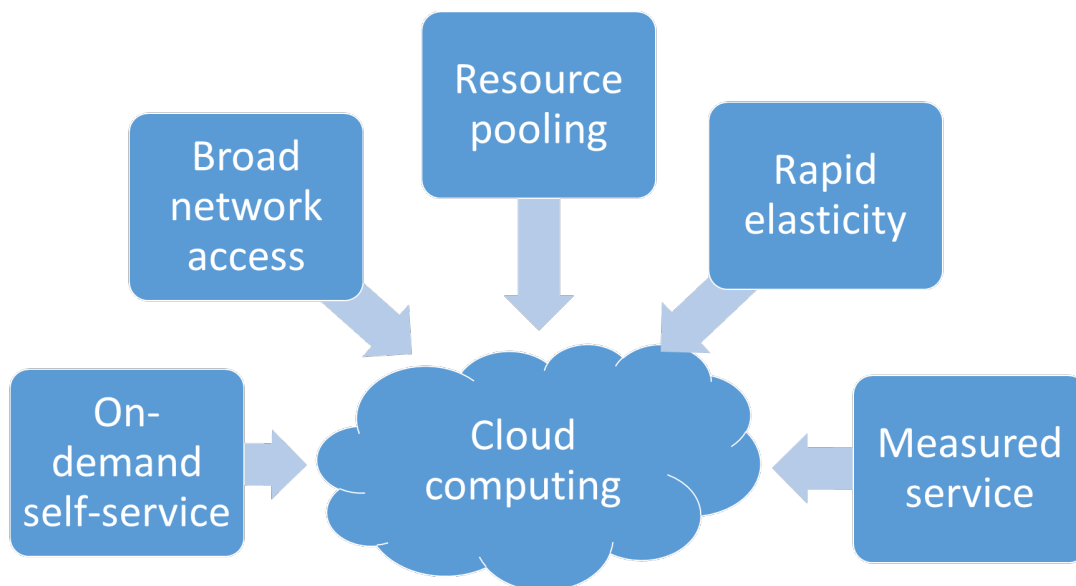
- A cloud service arrangement is a contract or agreement in which the customer has the right to access and use information technology resources provided and managed by a vendor on demand. These arrangements often occur on a subscription or term basis over the internet without the customer taking possession of the resource on its systems. Common types of cloud service arrangements include software as a service, platform as a service, and infrastructure as a service.

Staff indicated that establishing an agreed upon term would enable the Board and working group to have effective guidance update discussions by ensuring everyone is using the same term to deliberate a significant resource throughout the federal IT environment.

This analysis will refer to sources that use different terms, such as cloud computing, hosting arrangement, and subscription based information technology arrangement (SBITA). However, the issues paper refers to all of the different terms as synonymous with the cloud service arrangement scope.

Staff found that when explaining cloud computing, several federal entities refer to five essential characteristics of cloud computing that the National Institute of Standards and Technology (NIST) established in a report from 2011¹. The following diagram depicts the five NIST cloud computing characteristics.

NIST Essential Characteristics of Cloud Computing



¹ The NIST Definition of Cloud Computing, September 2011, <https://csrc.nist.gov/publications/detail/sp/800-145/final>

During round table discussions, several IT professionals from different federal entities confirmed that the NIST characteristics were well known and accepted in the federal environment as essential elements of cloud computing. In the following sections, staff will provide analysis from the NIST report and other sources to explain each characteristic.

On-demand self-service

- The NIST explains that cloud computing consists of on-demand self-service, which means, “A consumer can unilaterally provision computing capabilities, such as server time and network storage, as needed automatically without requiring human interaction with each service provider.”
- The Congressional Research Service² adds, “A user can directly access the needed computing capabilities from the source, no matter what specific resource is required.”

Broad network access

- The NIST explains that broad network access means that cloud computing “Capabilities are available over the network and accessed through standard mechanisms that promote use by heterogeneous thin or thick client platforms (e.g., mobile phones, tablets, laptops, and workstations).”
- The Congressional Research Service further explains that in cloud computing, “A user is not tied to one location but can access resources from anywhere the network (typically the internet) is available.”

Resource pooling

- The NIST explains that resource pooling means “The provider’s computing resources are pooled to serve multiple consumers using a multi-tenant model, with different physical and virtual resources dynamically assigned and reassigned according to consumer demand. There is a sense of location independence in that the customer generally has no control or knowledge over the exact location of the provided resources but may be able to specify location at a higher level of abstraction (e.g., country, state, or datacenter). Examples of resources include storage, processing, memory, and network bandwidth.”
- The Congressional Research service adds, “Many users share the same overall set of resources from a provider, using what they need, without having to concern themselves with where those resources originate.”

² Congressional Research Service, *Cloud Computing: Background, Status of Adoption by Federal Agencies, and Congressional Action*, March 25, 2020, <https://crsreports.congress.gov/product/details?prodcode=R46119>

Rapid elasticity

- The NIST explains, “Capabilities can be elastically provisioned and released, in some cases automatically, to scale rapidly outward and inward commensurate with demand. To the consumer, the capabilities available for provisioning often appear to be unlimited and can be appropriated in any quantity at any time.”
- The Congressional Research service states that rapid elasticity means, “Users can quickly increase or decrease their use of a computing resource in response to their immediate needs.”

Measured service

- The NIST states “Cloud systems automatically control and optimize resource use by leveraging a metering capability at some level of abstraction appropriate to the type of service (e.g., storage, processing, bandwidth, and active user accounts). Resource usage can be monitored, controlled, and reported, providing transparency for both the provider and consumer of the utilized service.”
- The Congressional Research Service adds, “The amount of usage by a customer is monitored by the provider and can be used for billing or other purposes.”

These five characteristics particularly represent how cloud computing models differ from traditional internal use software that is developed and operated on a federal entity’s own systems. Working group volunteers generally agreed with using the five NIST characteristics to describe cloud service arrangements.

Staff initially considered adding additional characteristics for the Board material if the working group identified any additional characteristics that are essential to cloud service arrangements. However, the working group generally favored only using the NIST characteristics to describe cloud service arrangements because they are accepted and prevalent in the federal IT community.

Staff is only requesting the Board’s thoughts and feedback on the recommended characteristics for cloud service arrangements. Pending the Board’s feedback, staff will continue to work with the working group and reach out to private cloud providers to gather more information on cloud service arrangements as necessary. Then at a later Board meeting, members can make an informed decision on whether cloud service arrangements represent assets in accordance with the asset identification framework that staff will discuss in the next recommendation.

Question for the Board:

1. Do members have any feedback on the proposed essential characteristics for cloud service arrangements?

RECOMMENDATION**ASSET GUIDANCE FRAMEWORK**

During the February meeting, some members stated that it would be beneficial to have a good understanding of how the Board identifies other common assets and how cloud service arrangements relate to the other assets. The members emphasized the importance of using previous asset guidance decisions in order to make the most informed decisions about cloud service arrangements. Staff agreed and stated that they would first provide the Board with an asset guidance framework before getting too deep into discussions about cloud service arrangements.

Therefore, staff is recommending a framework of previously issued asset guidance for the Board to consider in future deliberations on whether cloud service arrangements represent as assets in the federal government. This analysis will discuss the framework and will provide initial thoughts on how cloud service arrangements fit into the framework.

ANALYSIS**Framework - review of existing asset guidance**

Staff researched the FASAB handbook to identify standards and concepts that address major asset identification decisions from the Board. The ensuing sections will address each major area that staff believes is important to reference for future deliberations on determining whether cloud service arrangements represent assets.

Essential characteristics of assets

This section identifies the essential characteristics of an asset that the Board issued in SFFAC 5, *Definitions of Elements and Basic Recognition Criteria for Accrual-Basis Financial Statements*. These characteristics are non-authoritative concepts. However, they still serve as essential and foundational elements of an asset in the federal government for which the Board to develop authoritative guidance. Staff believes these concepts represent the most critical requirements of an asset. See pertinent excerpts from SFFAC 5 below.

- *SFFAC 5, par 22 - To be an asset of the federal government, a resource must possess two characteristics. First, it embodies economic benefits or services that can be used in the future. Second, the government controls access to the economic benefits or services and, therefore, can obtain them and deny or regulate the access of other entities.*
- *SFFAC 5, par 26 - A characteristic possessed by all assets is the ability to provide economic benefits or services. Some sources use the terms economic benefits and services (or service potential) interchangeably. However, as used in this Statement, economic benefits may result in inflows of cash, cash equivalents, goods, or services to the federal government, whereas the services embodied in an asset may benefit the government in other ways. For example, assets such as public parks, museums, and art galleries often provide recreational, educational, and research opportunities to the public at no charge or for a reduced fee or voluntary contribution, thereby assisting the federal government to achieve its objectives and meet its mission to provide public services.*
- *SFFAC 5, par 27 - The economic benefits or services that a property can provide can be distinguished from the property itself, whether it is tangible or intangible, such as a right. Not all properties embody economic benefits or services and the assumption that a particular type of property will always be an asset is not justified. For example, whereas equipment normally is expected to provide economic benefits or services, sometimes it has become unusable and has no scrap value. If so, it no longer embodies economic benefits or services and does not meet the definition of an asset.*
- *SFFAC 5, par 28 - The economic benefits or services embodied in resources may be shared by the government and another entity through specific arrangements. For example, the government and another entity may enter into a joint venture and share an interest in the resources committed to the joint venture. If so, each party may possess assets comprising its respective share of the benefits or services. Similarly, lease agreements unbundle the economic benefits or services embodied in leased property and may, for example, give the lessee the right to hold and use the property and the lessor the right to receive rentals and any residual value. Thus, both parties may have assets corresponding to their respective rights.*
- *SFFAC 5, par 29 - The second essential characteristic of an asset is control, which refers to the ability of the federal government to obtain the economic benefits or services embodied in a resource and to deny or regulate the access of others. It is possible that the government does not actively exercise control. Nevertheless, as long as the government currently has the ability to exercise control, the item is an asset of the government. In exercising control of the economic benefits or services, the government may, depending on the nature of the resource, hold the resource; exchange it; use it to obtain cash,*

cash equivalents, goods, or services; exact a price for other entities' use of the economic benefits or services; or use it to settle liabilities. Many resources are subject to certain legal or other external constraints, such as public land subject to preservation requirements. Such restrictions on the use of a resource do not negate the government's control of the economic benefits or services embodied in the resource.

- *SFFAC 5, par 31 - Possession or ownership of a resource normally entails control of access to the economic benefits or services embodied in it, but that is not always the case. Whereas control of access is an essential characteristic of an asset, possession or ownership is not. For example, the government may grant another entity, acting as an agent of the government, physical possession of goods for sale and retain the right to receive the proceeds of sale. The goods are assets of the government because it controls access to the economic benefits embodied in the goods. The agent has physical possession of the goods, but they are not the agent's assets because it does not control access to the economic benefits. Also, as discussed in paragraph 27, through a lease arrangement the government may control access to the economic benefits or services embodied in a resource that it does not own.*
- *SFFAC 5, par 32 - Sometimes the federal government cannot control the economic benefits or services that it obtains from a resource because it cannot deny or regulate the access of other entities. In those circumstances, the resource does not meet the definition of an asset of the federal government. Public goods are an example. Public highways provide economic benefits to the entities that use them. However, they are assets only of the entity that has the capacity to control their use or regulate other entities' access to them by, for example, the use of tolls or other restrictions. Similarly, natural resources, such as air and water do not qualify as assets of the federal government when it has only general access to them along with all other entities, even if the government has incurred costs to help clean the environment.*

Staff believes it is crucial for the Board to consider these concepts when deciding if cloud service arrangements are in fact assets in the federal government. Staff will address this notion more in a later section of this issues paper.

Property, plant, and equipment (PP&E)

This section and the next few sections provide excerpts from authoritative reporting guidance that is relevant to the Board's decisions on asset identification. This section identifies asset guidance from SFFAS 6, *Accounting for Property, Plant, and Equipment*.

- *SFFAS 6, par 17 - Property, plant, and equipment consists of tangible assets, including land, that meet the following criteria:*

- *they have estimated useful lives of 2 years or more;*
- *they are not intended for sale in the ordinary course of operations; and*
- *they have been acquired or constructed with the intention of being used, or being available for use by the entity.*
- *SFFAS 6, par 20 - Capital leases are leases that transfer substantially all the benefits and risks of ownership to the lessee. If, at its inception, a lease meets one or more of the following four criteria, the lease should be classified as a capital lease by the lessee. Otherwise, it should be classified as an operating lease.*
 - *The lease transfers ownership of the property to the lessee by the end of the lease term.*
 - *The lease contains an option to purchase the leased property at a bargain price.*
 - *The lease term is equal to or greater than 75 percent of the estimated economic life of the leased property.*
 - *The present value of rental and other minimum lease payments, excluding that portion of the payments representing executory cost, equals or exceeds 90 percent of the fair value of the leased property.*

The last two criteria are not applicable when the beginning of the lease term falls within the last 25 percent of the total estimated economic life of the leased property.

- *SFFAS 6, par 23 - General property, plant, and equipment is any property, plant, and equipment used in providing goods or services. General PP&E typically has one or more of the following characteristics:*
 - *it could be used for alternative purposes (e.g., by other Federal programs, state or local governments, or non-governmental entities) but is used to produce goods or services, or to support the mission of the entity, or*
 - *it is used in business-type activities, or*
 - *it is used by entities in activities whose costs can be compared to those of other entities performing similar activities (e.g., Federal hospital services in comparison to other hospitals).*

Note that the capital lease guidance above has been replaced by new lease asset guidance in SFFAS 54, effective FY 24. However, staff decided to include the old lease

asset guidance in this framework because it relates to cloud computing arrangement guidance in TR 16 below and provides the Board insight into past asset determinations.

The Board issued SFFAS 6 prior to SFFAC 5. This could explain why SFFAS 6 does not appear to consider the essential characteristics of an asset when identifying PP&E as assets. Nevertheless, staff believes that SFFAS 6 offers insight into how the Board previously identified a major asset category in the federal government. Particularly regarding the statement that general PP&E is used to produce goods or services, or to support the mission of the entity. Staff believes that this characteristic could apply to cloud service arrangements.

Internal Use Software

This section identifies asset reporting guidance from SFFAS 10, *Accounting for Internal Use Software*.

- *SFFAS 10, par 2 - This statement establishes accounting standards for the cost of software developed or obtained for internal use. These include the cost of*
 - *software used to operate an entity's programs (e.g., financial and administrative software, including that used for project management),*
 - *software used to produce the entity's goods and to provide services (e.g., air traffic control and loan servicing), and*
 - *software that is developed or obtained for internal use and subsequently provided to other federal entities with or without reimbursement.*
- *SFFAS 10, par 15 - Entities should capitalize the cost of software when such software meets the criteria for general property, plant, and equipment (PP&E). General PP&E is any property, plant, and equipment used in providing goods and services.*
- *SFFAS 10, par 47 (Basis for Conclusions) - Notwithstanding these objections, the Board continues to believe that internal use software is similar to other general PP&E and should be accounted for accordingly. Internal use software and other information technology products and services are important resources for government operations. They are subject to similar risks of impairment and write-off and, otherwise, have general PP&E characteristics. Moreover, some respondents said they were already capitalizing their COTS software, which represents a large and growing percentage of their software portfolio.*

- *SFFAS 10, par 67 (Basis for Conclusions) - The Board believes that it would be appropriate for the federal entity to apply lease accounting concepts and the entity's existing policy for capitalization thresholds and for bulk purchases to licenses. Immaterial costs would be expensed, but the entity should consider whether period costs would be distorted by expensing the license.*

Staff believes an important takeaway from SFFAS 10 is that the Board determined that internal use software guidance should utilize the already established asset guidance for general PP&E from SFFAS 6. Another important takeaway is that, in the Basis for Conclusions, the Board indicated that it is appropriate to apply lease related guidance to software licenses.

Leases

This section identifies asset reporting guidance from SFFAS 54, *An Amendment of Statement of Federal Financial Accounting Standards (SFFAS) 5, Accounting for Liabilities of the Federal Government*, and SFFAS 6, *Accounting for Property, Plant, and Equipment*.

- *SFFAS 54, par 2 - For purposes of applying this Statement, a lease is defined as a contract or agreement whereby one entity (lessor) conveys the right to control the use of property, plant, and equipment (PP&E) (the underlying asset) to another entity (lessee) for a period of time as specified in the contract or agreement in exchange for consideration. To qualify as a lease, the underlying asset typically should be identified by being explicitly specified in a contract or agreement. However, an asset also can be identified by being implicitly specified at the time that the asset is made available for use by the lessee. Leases include contracts or agreements that, although not explicitly identified as leases, meet the definition of a lease.*
- *SFFAS 54, par 3 - To determine whether a contract or agreement conveys the right to control the use of the underlying asset, a federal entity should assess whether the contract or agreement gives the lessee both of the following:*
 - a. The right to obtain economic benefits or services from use of the underlying asset as specified in the contract or agreement*
 - b. The right to control access to the economic benefits or services of the underlying asset as specified in the contract or agreement*
- *SFFAS 54, par 4 - The lease definition excludes contracts or agreements for services, except those contracts or agreements that contain both a lease component and a service component. A service contract is a contract that directly engages the time and effort of a contractor whose primary purpose is to perform an identifiable task rather than to provide a tangible asset.*

- *SFFAS 54, par 5 - This Statement does not apply to*
 - a. *leases of assets under construction or*
 - b. *leases (licenses) of internal use software (SFFAS 10, Accounting for Internal Use Software, as amended).*

Staff believes that SFFAS 54 is significant because in establishing leases as federal assets, it is clear that the Board considered how leases meet the essential characteristics of assets from SFFAC 5. Additionally, staff believes that SFFAS 54 is pertinent to cloud service arrangements because it addresses federal assets that the user accesses but does not own, which is implied as an element in the NIST cloud computing characteristics.

Cloud computing arrangements

This section identifies asset reporting guidance, specific to cloud computing arrangements from TR 16, *Implementation Guidance for Internal Use Software*.

- *TR 16, par 26 - Software License: If the term of software license(s) is 2 years or more with periodic payments, the license should be evaluated against lease criteria as stated in SFFAS 5 paragraphs 43-46 and SFFAS 6 paragraph 20 to determine if it is a capital or operating lease. If the license(s) is perpetual with an upfront cost to use the software for its entire lifetime, then the entity is purchasing IUS and should apply its existing policy for capitalization thresholds to determine if the license should be capitalized or expensed.*
- *TR 16, par 28 - A cloud computing service is a resource provided over the Internet that has the following essential characteristics: on-demand self-service, broad network access, resource pooling, rapid elasticity, and measured service. The most common cloud service resources are: software as a service, platform as a service, and infrastructure as a service.*
- *TR 16, par 29 - If a cloud computing arrangement includes a software license, the customer should account for the software license element of the arrangement consistent with the acquisition of other software licenses in accordance with the lease criteria stated in SFFAS 5 and SFFAS 6, and as discussed in paragraph 26 of this TR. SFFAS 10 is not applicable to a cloud computing arrangement that does not convey a contractual right to the IUS or to ones that do not include an IUS license. The entity that develops and owns the software, platform, or infrastructure that is used in the cloud computing arrangement would account for the software development in accordance with SFFAS 10. If the funding to develop cloud computing is shared among entities without clear ownership, the service provider entity that receives funding and is responsible for maintaining the software, platform, or*

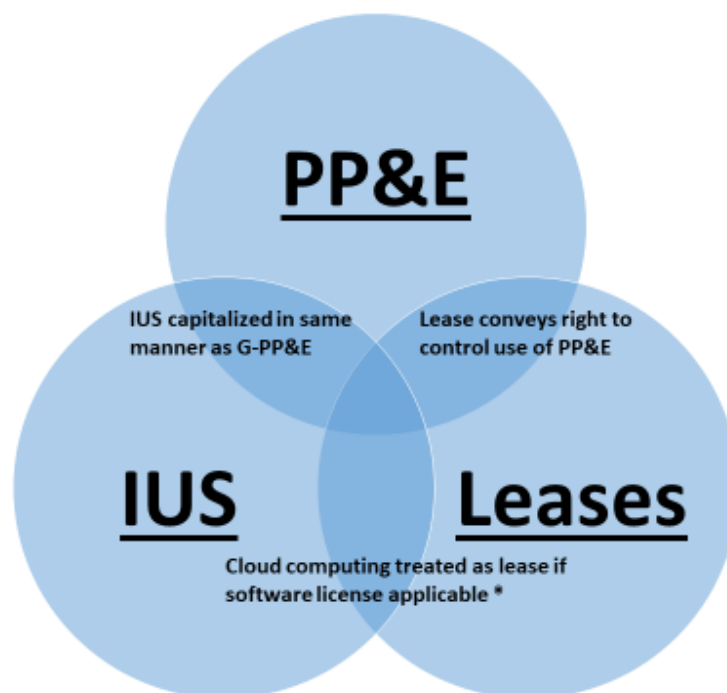
infrastructure should account for the software in accordance with SFFAS 10 and the full cost/inter-entity cost requirements of SFFAS 4.

Staff notes that the cloud computing arrangement guidance from TR 16 applies to the old capital lease guidance from SFFAS 6. Additionally, SFFAS 54 specifically scopes out software licenses from lease guidance and will essentially make the cloud computing guidance in TR 16 obsolete when the guidance becomes effective in FY 24. However, staff believes that including this TR 16 guidance in the asset guidance framework is still beneficial for the Board because it provides insight into how the Board previously associated cloud service arrangements with leases guidance.

Analysis of asset guidance

Staff analyzed the guidance excerpts from the previous section and identified relationships between the PP&E, internal use software (IUS), and leases guidance that provide a useful reference for the Board when considering where cloud service arrangements fit into the overall framework of federal assets. The following Venn diagram depicts a conceptual relationship between these assets.

Asset Guidance Relationships



* The cloud computing arrangement guidance was applicable to the old capital lease guidance from SFFAS 5 and 6. Effective FY 24, SFFAS 54 scopes out software licenses from leases guidance, which will essentially make the TR 16 cloud computing arrangement guidance obsolete.

The diagram shows that PP&E and IUS asset guidance overlap in the sense that IUS guidance requires capitalization if the IUS meets the criteria for general PP&E as they

are both utilized by federal entities to provide goods and services, or support the mission of the entity. The Basis for Conclusions in SFFAS 10 states that IUS shares many of the same characteristics of general PP&E and indicates that the Board ultimately decided that IUS was similar to general PP&E for reporting guidance purposes.

The diagram also shows that PP&E and lease asset guidance overlap in the sense that a lease conveys the right to control the use of property, plant, and equipment (PP&E) (the underlying asset) to another entity for a period of time. In other words, lease assets embody the SFFAC 5 asset concept that the government can control access to the economic benefits or services inherent in a resource that it does not own.

Finally, the diagram shows that IUS and lease asset guidance overlap in the sense that the Board previously determined in IUS implementation guidance that cloud service arrangements should follow lease reporting guidance if a license is associated with the agreement. As indicated previously, this guidance was applied to the old capital lease reporting guidance from SFFAS 6 and the new SFFAS 54 lease guidance specifically scopes out software licenses. Additionally, several federal entities have indicated that software licenses are not typically associated with cloud service arrangements anyway. Nevertheless, the diagram offers insight into how the Board previously determined how cloud service arrangements fit into the asset framework as a type of IUS that shares similarities to lease transactions.

Staff believes the primary takeaway from the asset guidance diagram is that previously issued guidance, in certain circumstances, considered a cloud service arrangement as a lease of another entity's software assets. Additionally, the NIST cloud computing characteristics imply that cloud service arrangements provide the user the capability to access computing capabilities from a provider's IT resources. This denotes a form of asset that an entity does not own but accesses from another entity, similar to a lease. Additionally, GASB has already issued reporting guidance for cloud service arrangement-type assets that utilizes a lease asset guidance framework because they determined that leases and cloud service arrangements share key characteristics³.

Multiple working group members stated that it was reasonable to view cloud service arrangements similar to leases of tangible property at a high level. Some working group members indicated that cloud service arrangements often include both fixed and variable cost components, similar to leases. However, it is important to note that cloud service arrangements are not exactly like leases of tangible property. The fact that the underlying resource is intangible in nature makes the control characteristic more complicated to assess. Additionally, working group members stated that there is a wide array of service and payment terms associated with cloud service agreements. For example, agreements can span multiple years, apply as a pay-as-you-go approach from month-to-month, and can include purchasing "cloud tokens or credits" upfront for the user to apply to service as they see fit based on current need.

³ GASB Statement No. 96, par B2

Ultimately, staff believes it is most appropriate to approach cloud service arrangements as lease-type transactions that provide a federal entity access to another entity's software related resources for the federal entity to use as IUS⁴ for a specified period. However, before that, it is crucial that the Board first determine whether cloud service arrangements should be characterized as assets in the federal government because that will significantly dictate ensuing reporting guidance. Staff recommends that the Board initially focus on whether cloud service arrangements meet the essential characteristics of an asset in SFFAC 5. Staff provides analysis for this approach in the next section.

Framework - essential characteristics of an asset

As stated previously, SFFAC 5 discusses the essential characteristics of assets⁵ for the Board to consider when making reporting guidance decisions. Just as the Board appears to have considered whether leases could meet the asset characteristics in SFFAS 54⁶, staff believes it is appropriate for the Board to first consider whether cloud service arrangements can meet the asset characteristics before considering reporting guidance. Additionally, it appears that GASB considered whether SBITAs met their asset characteristics⁷. The decision on whether cloud service arrangements should be characterized as assets will heavily influence subsequent development of reporting guidance.

Paragraph 18 of SFFAC 5 states, "An asset is a resource that embodies economic benefits or services that the federal government controls." If the definition is broken down to the essential asset characteristics, the concepts essentially state that to be an asset of the federal government, a resource needs to possess the following two characteristics:

- The resource embodies economic benefits and services
- The federal government controls the economic benefits and services of the resource

Staff developed the following diagram to summarize the concepts of each asset characteristic from SFFAC 5.

(Diagram on next page)

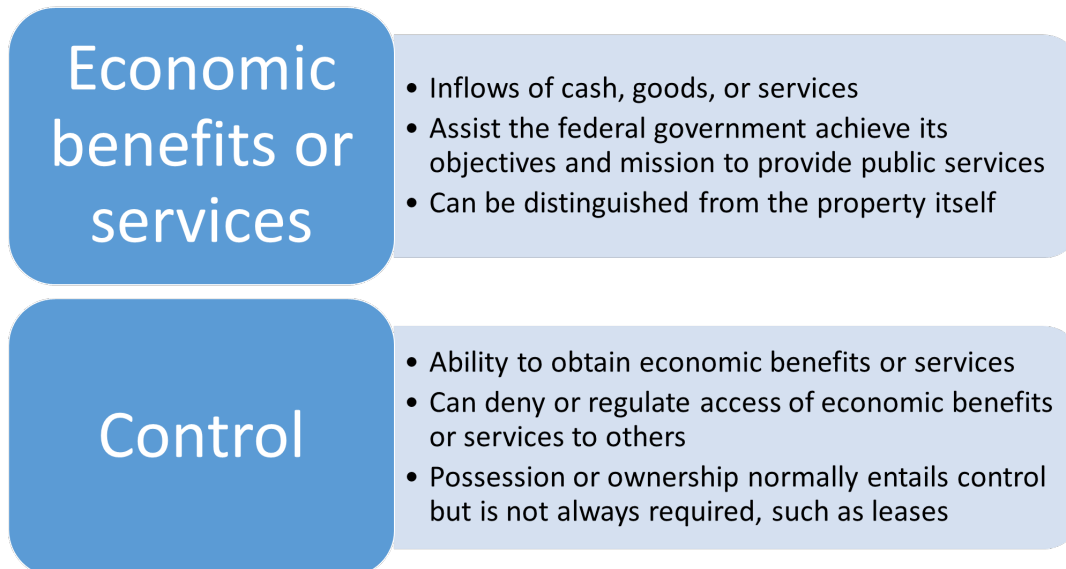
⁴ SFFAS 10, par 2 indicates that internally developed or purchased internal use software is used to operate an entity's programs (e.g. financial and administrative software, including that used for project management) and is used to produce the entity's goods and services (e.g. air traffic control and loan servicing).

⁵ SFFAC 5, paragraphs 16 - 35

⁶ SFFAS 54, paragraphs 3 - 4

⁷ GASB 96, paragraph 7

Essential Characteristics of an Asset



Staff believes that the criteria for each characteristic in the diagram represent the most important factors that the Board should reference to determine whether cloud service arrangements represent assets in the federal government. In the following sections, staff will provide initial thoughts on how cloud service arrangements meet the asset characteristics.

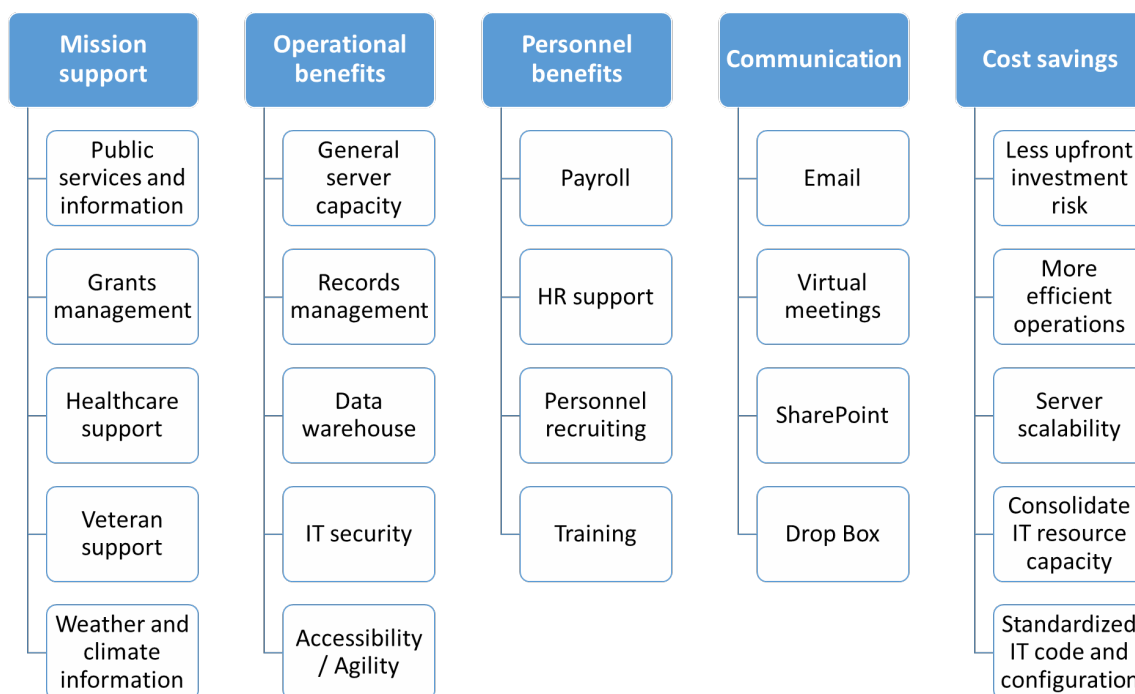
Economic benefits and services

To consider a resource an asset, the resource must provide economic benefits and services that the federal government can use in the future. Paragraph 26 of SFFAC 5 describes economic benefits as inflows of cash, cash equivalents, goods, or services to the federal government. Additionally, paragraph 26 also describes services as asset qualities that assist the federal government to achieve its objectives and meet its mission to provide public services, such as providing research, educational, or other services to the public.

Due to research and discussions with federal entities, staff strongly believes that cloud service arrangements provide the federal government both economic benefits and services in many different ways, similar to the economic benefits and services that internally developed and purchased software provide. Furthermore, several federal entities have indicated that cloud service arrangements are replacing internally developed and purchased software in their operations. The diagram below portrays some examples of economic benefits and services that cloud service arrangements provide to federal entities.

(Diagram on next page)

Economic benefits and services of cloud service arrangements



Staff developed this list based on research⁸ and correspondence with federal entities from the working group. The list is not exhaustive and represents economic benefits and services throughout the federal government. Not all of the items in the list necessarily apply to every federal entity.

The diagram depicts the economic benefits and services into categories. For example, cloud service arrangements can provide mission support to a federal entity by providing information and/or support to the public in a more efficient and effective manner. This often comes in the form of web-based public services.

Cloud service arrangements can also provide operational, personnel, and communication services to a federal entity's internal operations. For example, common everyday job functions are performed using cloud-based resources, including email, virtual meeting platforms, contract management, payroll, timesheets, personnel recruiting, etc.

Additionally, federal entities can achieve operational benefits by accessing general server capacity quickly through cloud networks that the entity can then develop platforms or applications with and use for various purposes⁹. This allows federal entities to operate in a more agile manner because the entity can quickly scale up and scale

⁸ GAO-19-58, Cloud Computing, Appendix V, April 2019 (<https://www.gao.gov/products/gao-19-58>) lists several types of cloud services that various federal entities reported investing in as of 2018.

⁹ Research indicates that cloud service arrangements typically provide benefits in three distinct models: infrastructure as a service, platform as a service, and software as a service. Staff will provide more information and analysis about these models in the future.

down a desired amount of server capacity to meet current needs without having to spend significant time and resources to develop the required computing capabilities upfront. One working group member stated that cloud service arrangements can also benefit a federal entity by allowing personnel to easily access IT applications anytime and anywhere over the internet, such as through a laptop, tablet, or phone.

Federal entities can also achieve economic benefits in the form of cost savings when using cloud service arrangements. For example, working group members stated that the ability of a federal entity to access cloud-based IT resources on demand when needed allows for more efficient and cost effective operations that do not require the same upfront investment risk that internally developed software requires. Additionally, one working group member stated that cloud service arrangements allow a federal entity to consolidate and utilize IT resources across the whole organization while minimizing duplicative resources and efforts that is often required for internally developed software. Another working group member indicated that some cloud service arrangements provide IT platforms to federal entities that allow for standardized configuration and coding. This enables federal entities to quickly provide IT solutions that are less costly to develop and maintain due to less complex coding and fewer skill set requirements.

Control of economic benefits and services

According to SFFAC 5, paragraph 29, in order for a resource to be considered an asset, the federal government must also have control over the economic benefits and services of the resource. Paragraph 29 goes on to explain that control means the federal government has the ability to obtain the economic benefits or services embodied in a resource and deny or regulate the access of others.

Staff has researched and discussed the concept of control as it applies to cloud service arrangements with several federal entities, as well as GASB and FASB. At this point, staff believes that more research and outreach is needed to develop an informed opinion on whether federal entities can have control over the economic benefits and services of cloud service arrangements in accordance with SFFAC 5. It is apparent to staff that there are two primary issues at hand regarding federal control of cloud service arrangements.

- Is the user of the cloud service arrangement able to deny or regulate access of the economic benefits and services to others?
- Do cloud service arrangements provide the user a specific agreed upon service or do they provide the user access to an underlying IT asset?

From the research and outreach conducted so far, it is apparent to staff that there are differing opinions whether cloud service arrangements meet the control criteria of a federal asset. Some working group members think that federal entities can exert control over the economic benefits and services of cloud service arrangements in a similar way as lease assets. However, some other working group members stated that they do not think that cloud service arrangements represent assets and likened them more to a

utility or service contract. Additionally, some working group members pointed out that it is likely that some cloud service arrangements offer control of the benefits of an underlying IT resource while other arrangements do not, depending on the specifics of the agreement and model¹⁰ of cloud service arrangement.

This issue over control is further complicated by the fact that FASB and GASB currently differ on whether they consider cloud service arrangements as assets. Paragraph 350-40-15-4A of FASB ASU 2015-05 generally states that a hosting arrangement is a service contract and expensed as incurred unless it allows the customer to take possession of the software during the contract period and if the customer can run the software on its own hardware. Alternatively, Paragraph B24 of GASB 96 indicates that GASB determined that a SBITA could meet their control criteria of an asset because “Within the confines of the contract, it is at the discretion of the government to decide whether, and to what extent, it will use the SBITA vendor’s IT assets. In other words, the government has control over the nature and manner of the right to use the underlying IT assets, despite the SBITA vendor owning the IT assets.”

It appears that FASB guidance does not consider a cloud service arrangement as an asset unless the customer can possess and use the underlying software on their own system¹¹. However, it appears that GASB guidance is more akin to lease asset guidance and generally considers cloud service arrangements as assets if the agreement gives the user the right to control the nature and manner of the right to use the underlying IT assets, regardless of whether the user can possess the underlying IT asset on their system.

The current cloud computing arrangement guidance from FASAB’s TR 16 is somewhat similar to FASB’s guidance in that TR 16 does not consider cloud service arrangements as lease-type assets unless they include a temporary license to the underlying IT resource. Nor does it consider cloud computing arrangements as IUS unless the federal entity purchases a perpetual software license or develops the underlying software on its own system.

Again, the TR 16 cloud guidance will become obsolete in FY24 due to the issuance of SFFAS 54. However, several working group members have stated that the guidance is not very applicable anyway because cloud service arrangements typically do not include a software license and do not allow the customer the ability to download and possess the underlying IT resource on their own systems. Therefore, staff believes that it is important for the Board to reconsider whether cloud service agreements can represent assets in the federal government, regardless if they allow the user to possess the underlying software on their own systems. Staff believes that SFFAS 54 and GASB 96 offer good models for future deliberations.

¹⁰ Research indicates that there are different levels of control depending on whether the cloud service arrangement presents as infrastructure as a service, platform as a service, or software as a service. Staff will explore this notion further for a future meeting.

¹¹ FASB ASU 2018-15, par 350-40-25-18 does appear to require capitalization for implementation costs of hosting arrangements that are service contracts in accordance with internal use software guidance.

Final thoughts and next steps

There are three primary takeaways from this issues paper.

- The NIST established characteristics of cloud computing
- Cloud service arrangements appear to fall between internal use software and lease guidance on the asset guidance framework
- More research and outreach is needed to develop an informed decision on whether cloud service arrangements can meet all of the SFFAC 5 essential characteristics of an asset in the federal government

Regarding the third takeaway, staff is confident that cloud service arrangements provide economic benefits and services to federal entities. However, more research is needed to understand the extent that federal entities are able to control the economic benefits and services of cloud service arrangements. It is very possible that guidance will need to leave some judgement to management to determine if individual cloud service arrangements meet the asset characteristics. However, staff believes it is important to determine if cloud service arrangements can generally meet the asset characteristics in the federal environment in order to justify developing asset reporting guidance.

For the next steps, staff plans to further engage various federal reporting entities that use cloud services and companies that provide cloud services in order to understand typical requirements, payment terms, and performance criteria of cloud service arrangements. This will provide more insight into what kind of control federal entities possess in cloud service arrangements. Additionally, staff will consider the SFFAC 1, *Objectives of Financial Reporting* to analyze potential benefits and preparer burdens of reporting cloud service arrangements as assets.

Staff is also coordinating with a federal entity to provide the Board an educational session on cloud service arrangements during the June meeting. Staff will then provide the Board a deep dive analysis on whether cloud service arrangements can meet all of the essential characteristics of an asset and present potential financial reporting benefits and burdens of reporting cloud service arrangements as assets. At that point, staff will ask the Board to decide whether cloud service arrangements can meet the definition of an asset as defined in SFFAC 5. This decision will influence subsequent development of reporting guidance.

Question for the Board:

2. Do members have any feedback on the asset guidance framework or the next steps?

Disclaimer: This material is presented for discussion purposes only; it is not intended to reflect authoritative views of the FASAB or its staff. Official positions of the FASAB are determined only after extensive due process and deliberations.

Software Technology Definitions

Agile development – an umbrella term used to describe software development methods that incrementally deliver working segments of a product in short iterative cycles instead of delivering a usable product only once at the end of a sequential process. This typically involves cross-functional collaboration among development, operational, and security interests to leverage constant feedback from the end-user in order to improve the functionality of the product through multiple iterations and provide constant support.

Application programming interface (API) - a set of definitions and protocols for building and integrating application software that enables applications to exchange data and functionality

Application software – a type of computer program that performs a specific function for an end-user

Blockchain - refers to the technological infrastructure and protocols that allow simultaneous access, validation, and record updating across a network in a decentralized manner. Blockchain technology is used with cryptocurrency and smart contracts, among other things

Bundled IT products and services - services offered as part of acquiring commercial off the shelf software (COTS), licenses, or cloud services that is separate but complementary to the acquired resource (e.g., training, maintenance, data conversion, reengineering, and rights to future upgrades and enhancements)

Cloud service arrangements – a contract or agreement in which the customer has the right to access and use information technology resources provided and managed by a vendor on demand. These arrangements often occur on a subscription or term basis over the internet without the customer taking possession of the resource on its systems. Common types of cloud service arrangements include software as a service, platform as a service, and infrastructure as a service.

Commercial-off-the-shelf software (COTS) – ready-made application software that is purchased or licensed from a vendor to utilize the software as intended for internal-use

Computer network – a set of computers that are connected for the purpose of communicating data electronically

Computer system – a combination of functional and related hardware and software components to perform a desired outcome

Computing infrastructure – consists of essential and foundational compute, storage, and networking resources required to operate and manage information technology environments. Examples include servers, data centers, and routers, operating systems and firewalls.

Computing platform - a group of technologies or that are used as a foundation upon which software applications are developed and implemented. Examples include coding language, middleware, database management systems, operating systems, application programming interface (API), and firewalls.

Cryptocurrency - a digital currency in which transactions are verified and records maintained by a decentralized system using blockchain technology, rather than by a centralized authority

Data conversion – the process of modifying and converting the format of data to transfer it to a more useful format based on a target system. Data conversion enables the data to be read, altered, and executed in an application or database other than that in which it was created

Data migration – the process of transferring data between formats or systems

Development, modernization, and enhancement (DME) - refers to projects and activities that lead to new IT assets/systems, or change or modify existing IT assets to substantively improve capability or performance

Enhancements – any modification that significantly increases computer system capabilities beyond its original functions

External-use software - software developed by an entity to be sold, licensed, or made publically available solely for the end user's needs

Hardware – refers to the tangible parts of computer systems that store and run instructions provided by software and makes the processing of data and supports baseline functions

Impairment - occurs when software or another IT asset no longer provides substantive service potential or a significant reduction occurs in the capabilities, functions, or uses of the asset prior to end of its estimated useful life

Information technology (IT) - the development, implementation, maintenance, and use of computer hardware, software, systems, cloud services, and networks to organize, communicate, and secure information electronically

Information technology security – a set of strategies, objectives, and methods used to prevent unauthorized access to an organization's IT resources, such as hardware, networks, software, and data

Infrastructure as a service – This cloud-based service allows the consumer to provision processing, storage, networks, and other fundamental computing resources where the consumer is able to deploy and run arbitrary software, which can include operating systems and applications.

Internet domain - An identification string that defines a realm of administrative autonomy, authority or control within the Internet (usually ending in a generic name such as .com, .org, or .gov)

Intranet – a network for sharing information, collaboration tools, operational systems, and other computing services within an organization, usually to the exclusion of access by outsiders

Internal-use software – acquired or developed software that is operated by an entity strictly for its own administrative, security, operational, or mission needs, with no intent of selling or licensing the software

Internally developed software - software that an entity is actively developing through internal employees, contractors, or a combination of both. This includes significant modifications that adds additional capabilities to new software and existing or purchased COTS software

Legacy modernization - rewriting or updating a legacy system to modern computer programming languages, architectures, data formats, software applications, or hardware platforms. Legacy systems are often modernized to maintain functionality, add features, or add security

Legacy system - an old technology, computer system, or application program relating to or being an outdated, inefficient, and/or incompatible computer system that is still in use and may pose inoperability and compatibility issues or risks to other systems without modernization

Maintenance and repair – the process of monitoring, updating, and preserving software applications and IT infrastructure currently in use to sustain computer system security and operability without adding new capabilities or functions.

Operating system – the software that supports a computer system's basic operations by communicating with hardware and directing the processing of programs. Also called system software

Platform as a service - This cloud-based service provides the consumer the ability to deploy onto the cloud infrastructure consumer-created or acquired applications created using programming languages, libraries, services, and tools supported by the provider

Prototyping – the activity of creating working models of software applications used to gather end-user feedback for further design and implementation considerations for the final product. Prototyping can be utilized as part of agile development methods

Robotic process automation – software automation technologies that imitate mundane rules-based business processes traditionally performed by humans, such as extracting data, filling in forms, and moving files

Shared service - a mission, operation, or administrative support function provided by a federal entity to other federal entities (interagency) or to separate components within the same entity (intra-agency)

Software - a set of instructions that tell a computer to operate and perform specific tasks. Software is often used to describe the intangible functional aspects of a computer and includes application and operating system programs, procedures, rules, and any associated instructions pertaining to the operation of a computer system or program

Software as a service – This cloud-based service provides the consumer the capability to use the provider’s applications running on a cloud infrastructure. The applications are accessible from various client devices through either a thin client interface, such as a web browser (e.g., web-based email), or a program interface.

Software-hardware integrated asset – application software that is integrated into and necessary to operate general PP&E and does not serve another purpose separate from the hardware. Also referred to as “integrated or embedded systems”

Software in development – the accumulated cost of developing an internal use software asset that is not yet complete. Similar to construction in process (CIP) for PP&E

Software license - a legal instrument governing permissions and restrictions for use of a software application, source code, or related product. Acquiring a license generally gives the licensee the right to possess and manage the software on their own systems. A license can apply to individuals or entire organizations and can provide perpetual or term-based rights through a prescription

Update – a way to fine-tune a product to keep it running in an optimal manner. Software updates usually consist of small and frequent changes to correct security issues or coding bugs

Upgrade – a new version of software that replaces the old product and is used for significant changes and/or major improvements

Waterfall development model – a non-iterative development method that breaks down activities into sequential and exclusive phases where each phase depends on the deliverables of the previous one and a usable product is produced after all phases occur. Also referred to as “Linear development model”

Web applications – an application software that is accessed through a website

Website - collection of internally or publicly accessible, interlinked Web pages that share a single domain name

Intangible Assets Project Plan																							
Activity	Status	Oct 20	Dec 20	Feb 21	Apr 21	Jun 21	Aug 21	Oct 21	Dec 21	Feb 22	Apr 22	Jun 22	Aug 22	Oct 22	Dec 22	Feb 23	Apr 23	Jun 23	Aug 23	Oct 23	Dec 23	Feb 24	Apr 24
Intangible Asset Research																							
Pre-Research	Complete																						
Technical Plan Approval	Complete																						
Form Task Force	Complete																						
Task Force Survey	Complete																						
Further Research	Complete																						
Present Research to Board	Complete																						
Software Guidance Update																							
Request Board Approve Project	Complete																						
Develop Scope and Project Plan	Complete																						
Develop Guidance Issues Papers/ED	Current																						
Issue ED for Comment	Scheduled																						
Issue Podcast on ED	Scheduled																						
Publish articles on ED	Scheduled																						
Apply Comments to ED	Scheduled																						
Final Edits	Scheduled																						
Publish and Issue Guidance	Scheduled																						
Issue Podcast on Guidance	Scheduled																						
Issue Articles on Guidance	Scheduled																						
Intangible Asset Working Definition																							
Request Board Approve Project	Complete																						
Develop Working Definition	Complete																						
Intangible Asset Guidance																							
Develop ITC or PV	Scheduled																						
Issue ITC or PV for Comment	Scheduled																						
Present Comments to Board	Scheduled																						