GÖTEBORGS UNIVERSITET

STUDENT

0023-UUM

TENTAMEN

TIA315 Technology

Kurskod	TIA315
Bedömningsform	--
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Bedömningsfrist	--
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Skapad av	Golsa Nouri Hosseini

ⁱ HT25: Welcome to examination!

This examination consists of open questions, sometimes referred to as 'essay questions'. It includes **7 questions**, each rewarded with a maximum of 3 points. The examination is limited to **2 hours.** To pass it you need **13 points** (60%)

The grading will focus on the overall capability to explain and apply ideas. It will assess whether (1) answers are logically coherent, whether (2) they are grounded in readings, lectures, and discussions, and, when applicable, that (3) answers engage the key concepts of the course.

Advice:

Please, read the questions carefully! Each question normally consists of multiple requests, such as: "**Define**... and **explain**... **illustrate** ... with an example..."

If you feel unsure about how to respond or don't remember exactly what papers or lectures said, trust your instincts and stay focused on the question. Explain in your own words, to the best of your abilities. Do _not_ start to broadly talk about related things, to show you know other things.

It could be worth noting that longer answers are not necessarily better answers, since long texts increase the risk of ending up with inconsistencies.

¹ HT25, Question 1

Delegation and Prescription. Your colleague, Linda, argues that a digital artifact, like a password management app, only performs actions because humans program it. In that vein, she argues, it has no agency.

Latour introduces the concepts of *delegation* – the transferring of human action to non-human artifacts – and *prescription* – the capacity to impose behaviors back on human users. Use these concepts to explain how a digital password management app exercises material agency. Provide specific examples of:

1. what gets delegated to the app, and
2. how it prescribes behaviors back to users.

Skriv in ditt svar här

Agency can be defined as the capacity to act. And it is important to note that agency should be considered within a system and not as an isolated entity. And in this system, the password management app shapes or constraints how a user interacts with various other apps. So I would point out to Lisa that this app obviously has agency.

1. The process of remembering and typing out your password every time you need to log in to some app or authenticate is being delegated to the app. You no longer need to write down/ remember all of your passwords, which sometimes can be challenging with the number of apps that we use on a daily basis, and the consequence of forgetting a password can cost you more time and effort.

2. You dont have to remember all of your passwords anymore. You can just have the app fetch your password for you which enables you to seamlessly interact with other apps, which prevents the case of you forgetting a password and limiting your ability to interact with other apps. This makes the life of a user just a little bit more easier.

Ord: 194

Besvarad.

HT25, Question 2

Affordances. Maria is working on her thesis about digital design. Studying the literature, she learns that affordances emphasize meanings over specific, inherent attributes of artifacts. While a focus on what users can do with artifacts seems attractive, she becomes frustrated reading that affordances are defined in *relation* to an observer or user. If an affordance is something relative, it seems pointless to her. How can such a subjective concept be useful for design?

What is Maria overlooking about affordances? Address specifically:

1. Why affordances, despite being relational, can still describe and explain general aspects of material artifacts, and
2. How this relational quality actually makes affordances useful for understanding and designing digital artifacts.

Skriv in ditt svar här

Affordances are action possibilities of a material. It is dependent on the user to interact with it and give it meaning, i.e, it is defined in relation to an observer and what they can do with it. But it is important to understand that the affordance does not change according to the observer or irrespective of whether the user is present or not. Much like physical materials, you give them meaning when you interact with them; for example, how you interact with clay depends on your ability and the skill level, the clay affords you to mold it for pottery and it's properties do not change irrespective of the user. This relational quality makes affordances useful for understanding and designing digital artifacts by giving the users the ability to modify, recombine and redistribute it according to their skill levels. This helps with the reprogrammability and recombinability as different users interact with it and give them meaning, this relative nature allows for generativity among a diverse and uncoordinated audience that interact with it.

Ord: 172

Besvarad.

Digital Materiality. David sees no fundamental differences between physical products, like a car, and digital products, like a smartphone. To him, both are manufactured products. Explain to David why digital artifacts are inherently *unbounded*, *open-ended*, and *incomplete*, in ways that physical products are not. Specifically:

1. Explain what each of these three characteristics means in the context of digital artifacts, and
2. Resonate on the properties of digital technology that enable these characteristics. Use a concrete example, if helpful.

Skriv in ditt svar här

Physical products like cars are inscribed with a particular set of functions at the time of manufacturing and does not allow for new functions across its lifetime, while a smartphone has the ability to add new functions over it's lifetime after it is produced. It provides an open ended framework which affords reprogrammabilty and reproducability at almost no marginal cost.

Digital artifacts are open-ended in the sense that the end goal or what it should look like at the end is not defined. It is unbounded in the sense that the function of the artifact is not defined, the meaning associated to it can evolve and adapt over time. It is incomplete because due to the generative process, the end goal can constantly evolve and change and there is no predictable concrete end product.

Digital technology by its nature affords reprogrammability and reproducability. Reprogrammability means it allows for new functions after its produced so it's ever evolving. For example, a smartphone can have software updates and new functions after it is produced and distributed which is not possible for a physical object like a water bottle; it only affords the purpose of carrying water which was inscibed into it during its production. Reproducability is the ability to make copies of the original artifact at no marginal costs, it can be easily modified, recombined and redistributed with almost no/very little marginal costs which fosters generativity.

Ord: 234

Besvarad.

⁴ HT25, Question 4

Defining features of generative technology. During a product development meeting, Sarah argues that their company's new photo editing software is highly generative because it has many advanced features and can perform complex tasks efficiently. Her colleague responds that having sophisticated functionality doesn't necessarily make a system generative.

Using Zittrain's framework, address specifically:

1. What are the four characteristics that define generative technology, and
2. Apply each of these four characteristics to explain to Sarah what makes a product generative.

Skriv in ditt svar här

According to Zittrain's framework, the four characterstics of generative technology are:

1. **Capacity to leverage:** The capacity to leverage means it can be used as a lever for many different purposes. The more purposes it offers, the more generative it is.

2. **Ease of access:** It should be accessible to a large and varying audiences, meaning the entry barrier has to be low. It could mean low cost/ no cost entry, no strict regulations. The more people it reaches, the more generative capacity it possesses.

3. **Easy to master:** It should be easy to master; no particular education or information should be needed for the user to interact with it. Anyone should be able to interact with it regardless of their technical skill level.

4. **Adaptability:** It should possess the ability to adapt and evolve according to the evolving user needs and have the ability to add more features or functions according to the user demands.

So in short I would tell Sarah that these are the actual attributes that make a technology more generative and not just having the ability to perform complex tasks and advanced features. All of these characters are key to generativity and the the photo editing software lacks several of these characteristics. These 4 characteristics provide a framework on how to make a technology generative.

Ord: 220

Besvarad.

The Paradox of Control and Generativity. Liam believes that creative freedom and openness are the primary drivers of innovation. To him, any form of control will inevitably hamper creativity. He is therefore confused by the academic literature on *generative governance*, suggesting that control can actually reinforce (strengthen) generativity.

Explain this apparent paradox to Liam. Address specifically:

1. How can control mechanisms increase generativity and innovation in sociotechnical systems, and
2. What distinguishes generative control from traditional, restrictive control. Use a concrete example, if helpful.

Skriv in ditt svar här

Generative systems needs to have a fine balance between openness and control because too much openness can lead to chaos and undesirable outcomes while too much control and governance can shun the creativity and innovation. And this balance is an intricate dance between them and these two push back against each other and helps shape each other. Because the systems are generative, it forces the governance to be generative as well.

1. Control mechanisms increase generativity using certain boundary resources which nudge them in a direction which complies to the regulatory and governing bodies and by providing a generative architecture which affords generative outcomes. The impetus of governance is partially distributed to the ecosystem which enables generativity and has the ability to shape the governance. Generative architecture, generative governance and the generative community work in tandem to produce a generative fit which aligns the framework of the architecture with the generative potential of the community. This paves the way for combinatorial innovation and creates a feedback loop which forces all the parties to adapt and adjust over time.

2. Generative control is not something very concrete. Generative proccesses are emergent and thus it constantly evolves over time and to keep up with it, the boundary resources need to adapt as well or the sytem will fail. The ecosystem helps point out new paths of innovation and the generative control has to adapt to afford this innovation. An example could be Google holding annual meetings with the ecosystem, this helps them generate innovation by giving them certain tools which nudge complementors to coordinate and compete at the same time, thus fostering generativity. And they take in feedback and constantly add more resources so that the ecosystem is empowered and in turn becomes more generative.

Ord: 293

Besvarad.

HT25, Question 6

Resourcing and Securing. The company HomeEase has developed a new platform for the smart home. It aims to establish an open ecosystem, allowing third-party developers to create innovative applications. As the platform owner, HomeEase faces a key challenge: how to develop and deploy platform boundary resources (PBRs) that can both attract third-party developers and preserve platform control.

In the context of platform governance:

1. Explain what *resourcing* is and describe a scenario where HomeEase might engage in resourcing by designing new platform boundary resources.
2. Explain what *securing* is and describe a scenario where HomeEase might engage in securing through platform boundary resource (re)design.

Skriv in ditt svar här

1. Resourcing is the process of adding new resources to the PBRs which lead to diversity and innovation. This demonstrates the plastic nature of boundary objects, to adapt to local needs. HomeEase could do this by adding Individual PBRs, ex. a livechat or a hackathon, which would enable the complementors to experiment or successfully solve a very specific problem.

2. Securing is the process exercising platform control and influence. This demonstrates the robust nature of boundary objects, which helps maintain uniformity accross all apps. HomeEase could do this by adding standardized PBRs like APIs, SDKs, documentation and legal compliances, which would add to the growth of the platform and nudging generativity in a desired and designed direction and also make money from it.

Ord: 123

Besvarad.

HT25, Question 7

Ontological Reversal. Explain the basic idea behind ***ontological reversal*** and reflect on the consequences of ontological reversal for the design of digital systems.

Skriv in ditt svar här

Ontology refers to the perception of what is real. Earlier physical was perceived to be real and its digital counterpart was considered to be a copy or a reference of that physical artifact. But with digital transformation there has come about an ontological reversal across many disciplines that the line has now become blurry. Digital has now in any areas considered real and the physical counterparts are considered to be a copy or reference of that digital artifact. For example, before 2008, when you purchased a plane ticket, a physical printed out copy was the real artifact and the digitally stored artifact was considered to be the proof or copy of that ticket. But now with digitalization, the digital artifact is what is considered real and the physical copy is often considered to be its copy and only produced as evidence of that digital copy. Ontological reversal is a gradual process and its adoption is gradual and varies across different contexts. We should be careful while designing a digital system as it should afford this ontological reversal and be prepared to adapt for when this happens and make sure that it is done responsibly and ethically, keeping the best interests of society at the core. For example, the game Pokemon Go illustrates a good case of this ontological reversal where crowds of people gathered together to collect a pokemon which did not exist in the physical realm. This generated a crowd and created chaos, which disrupted many functions and caused a disturbance to the regular functioning of the society.

Ord: 259

Besvarad.