Durga Prasad Rangavajjala – 300123236
Yamuna Satheesh Kumar – 300115516
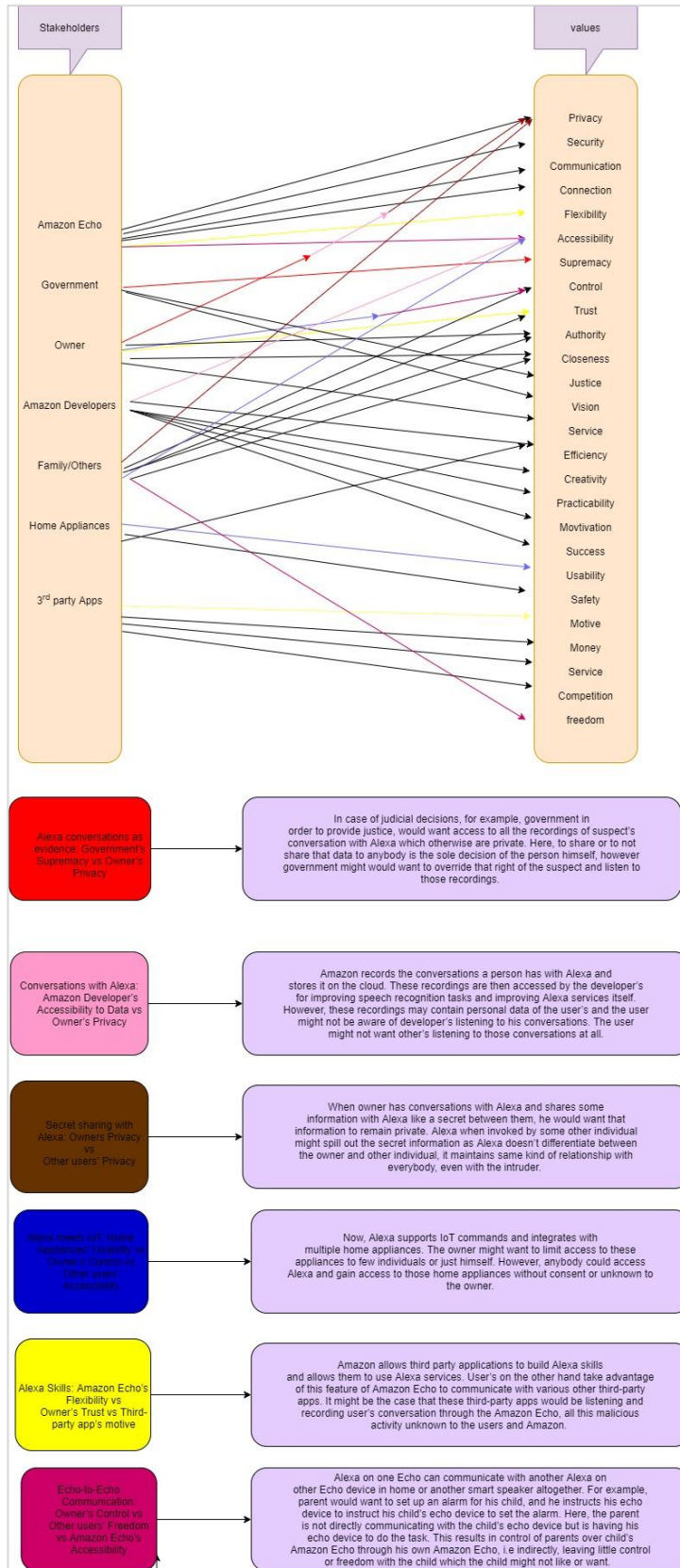Vidhi Mistry – 300101658

Ethics in AI : Design Assignment 1

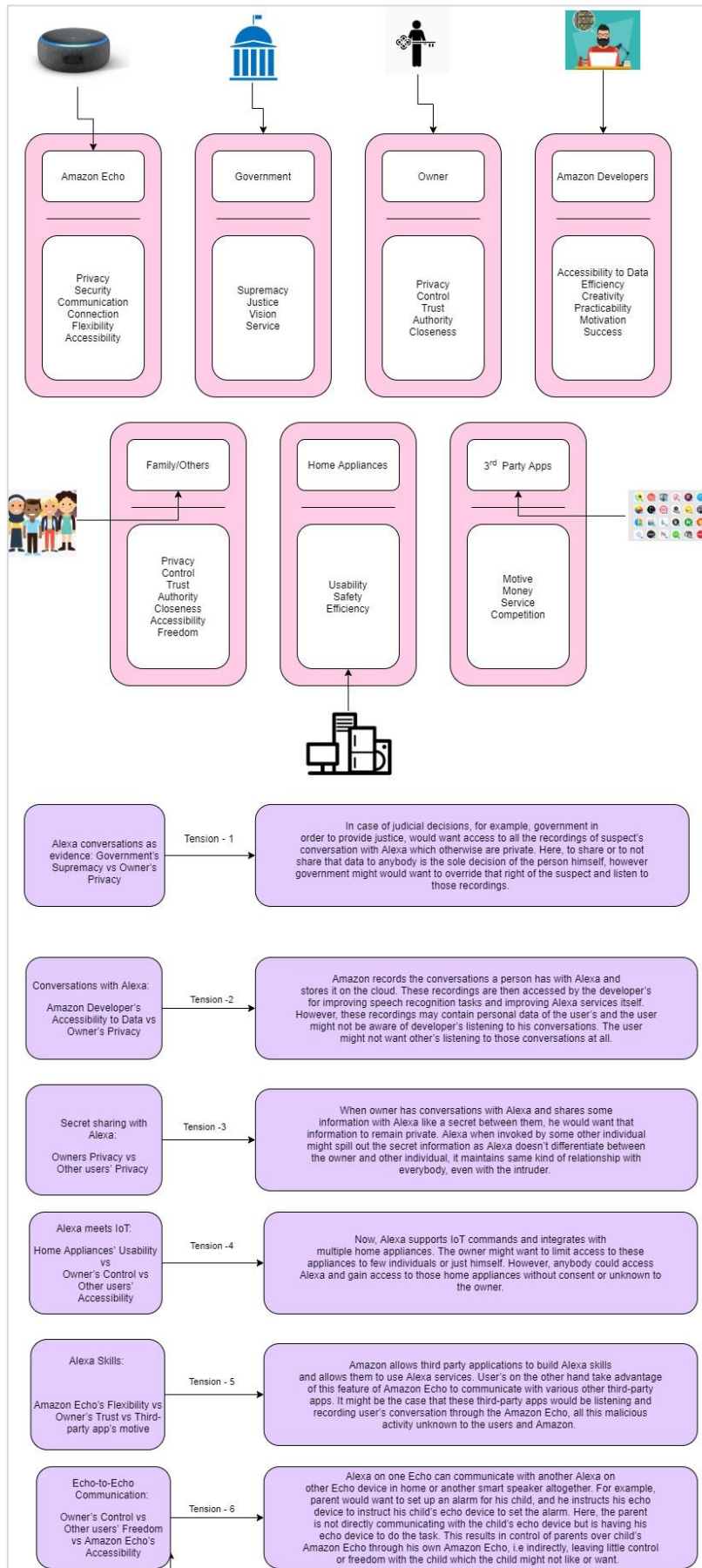**Design Topic :** Amazon Echo Smart Speaker

- **Iteration 1:**

Pros:

1. Ease of mapping from stakeholders to their corresponding values.

2. There is a clear separation between the stakeholders and the values.

Cons:

1. When there are more than one mapping to a value, it becomes clumsy.

Alexa conversations as evidence: Government's Supremacy vs Owner's Privacy

In case of judicial decisions, for example, government in order to provide justice, would want access to all the recordings of suspect's conversation with Alexa which otherwise are private. Here, to share or to not share that data to anybody is the sole decision of the person himself, however government might would want to override that right of the suspect and listen to those recordings.

Conversations with Alexa: Amazon Developer's Accessibility to Data vs Owner's Privacy

Amazon records the conversations a person has with Alexa and stores it on the cloud. These recordings are then accessed by the developer's for improving speech recognition tasks and improving Alexa services itself. However, these recordings may contain personal data of the user's and the user might not be aware of developer's listening to his conversations. The user might not want other's listening to those conversations at all.

Secret sharing with Alexa: Owners Privacy vs Other users' Privacy

When owner has conversations with Alexa and shares some information with Alexa like a secret between them, he would want that information to remain private. Alexa when invoked by some other individual might spill out the secret information as Alexa doesn't differentiate between the owner and other individual, it maintains same kind of relationship with everybody, even with the intruder.

IoT stuff: Owner's Control vs Other users' Accessibility

Now, Alexa supports IoT commands and integrates with multiple home appliances. The owner might want to limit access to these appliances to few individuals or just himself. However, anybody could access Alexa and gain access to those home appliances without consent or unknown to the owner.

Alexa Skills: Amazon Echo's Flexibility vs Owner's Trust vs Third-party app's motive

Amazon allows third party applications to build Alexa skills and allows them to use Alexa services. User's on the other hand take advantage of this feature of Amazon Echo to communicate with various other third-party apps. It might be the case that these third-party apps would be listening and recording user's conversation through the Amazon Echo, all this malicious activity unknown to the users and Amazon.

Echo-to-Echo Communication: Owner's Control vs Other users' Freedom vs Amazon Echo's Accessibility

Alexa on one Echo can communicate with another Alexa on other Echo device in home or another smart speaker altogether. For example, parent would want to set up an alarm for his child, and he instructs his echo device to instruct his child's echo device to set the alarm. Here, the parent is not directly communicating with the child's echo device but is having his echo device to do the task. This results in control of parents over child's Amazon Echo through his own Amazon Echo, i.e indirectly, leaving little control or freedom with the child which the child might not like or want.

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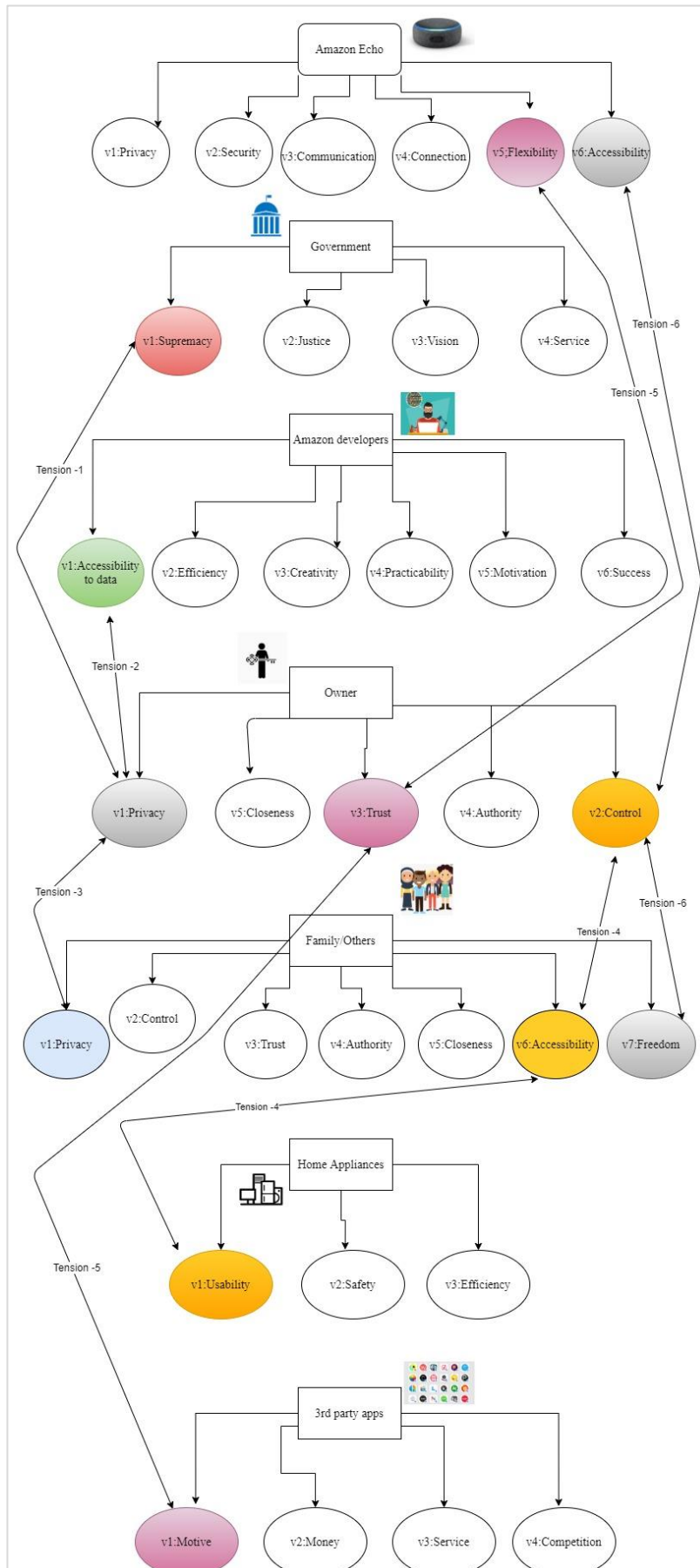
▪ **Iteration 2:**

Pros:

1. The stakeholders and their values are mapped into a single card like form.

2. It provides a clear separation between the stakeholders and their values.

3. It provides clear separation between different stakeholders.

Cons:

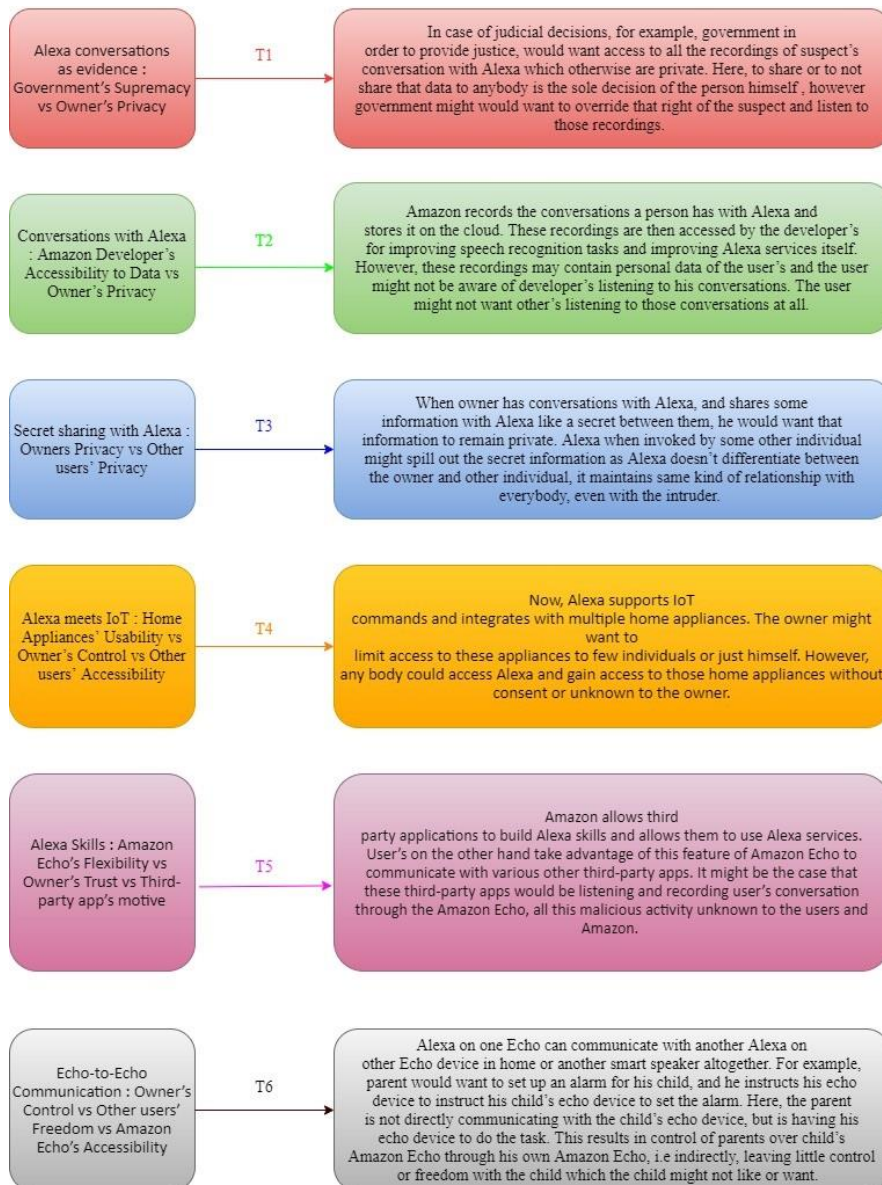1. Doesn't offer much insights about the value tensions.

Stakeholder	Values
Amazon Echo	Privacy, Security, Communication, Connection, Flexibility, Accessibility
Government	Supremacy, Justice, Vision, Service
Owner	Privacy, Control, Trust, Authority, Closeness
Amazon Developers	Accessibility to Data, Efficiency, Creativity, Practicability, Motivation, Success
Family/Others	Privacy, Control, Trust, Authority, Closeness, Accessibility, Freedom
Home Appliances	Usability, Safety, Efficiency
3rd Party Apps	Motive, Money, Service, Competition

Tension - 1

Alexa conversations as evidence: Government's Supremacy vs Owner's Privacy

In case of judicial decisions, for example, government in order to provide justice, would want access to all the recordings of suspect's conversation with Alexa which otherwise are private. Here, to share or to not share that data to anybody is the sole decision of the person himself, however government might would want to override that right of the suspect and listen to those recordings.

Tension -2

Conversations with Alexa:

Amazon Developer's Accessibility to Data vs Owner's Privacy

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Tension -3

Secret sharing with Alexa:

Owners Privacy vs Other users' Privacy

When owner has conversations with Alexa and shares some information with Alexa like a secret between them, he would want that information to remain private. Alexa when invoked by some other individual might spill out the secret information as Alexa doesn't differentiate between the owner and other individual, it maintains same kind of relationship with everybody, even with the intruder.

Tension -4

Alexa meets IoT:

Home Appliances' Usability vs Owner's Control vs Other users' Accessibility

Now, Alexa supports IoT commands and integrates with multiple home appliances. The owner might want to limit access to these appliances to few individuals or just himself. However, anybody could access Alexa and gain access to those home appliances without consent or unknown to the owner.

Tension - 5

Alexa Skills:

Amazon Echo's Flexibility vs Owner's Trust vs Third-party app's motive

Amazon allows third party applications to build Alexa skills and allows them to use Alexa services. User's on the other hand take advantage of this feature of Amazon Echo to communicate with various other third-party apps. It might be the case that these third-party apps would be listening and recording user's conversation through the Amazon Echo, all this malicious activity unknown to the users and Amazon.

Tension - 6

Echo-to-Echo Communication:

Owner's Control vs Other users' Freedom vs Amazon Echo's Accessibility

Alexa on one Echo can communicate with another Alexa on other Echo device in home or another smart speaker altogether. For example, parent would want to set up an alarm for his child, and he instructs his echo device to instruct his child's echo device to set the alarm. Here, the parent is not directly communicating with the child's echo device but is having his echo device to do the task. This results in control of parents over child's Amazon Echo through his own Amazon Echo, i.e indirectly, leaving little control or freedom with the child which the child might not like or want.
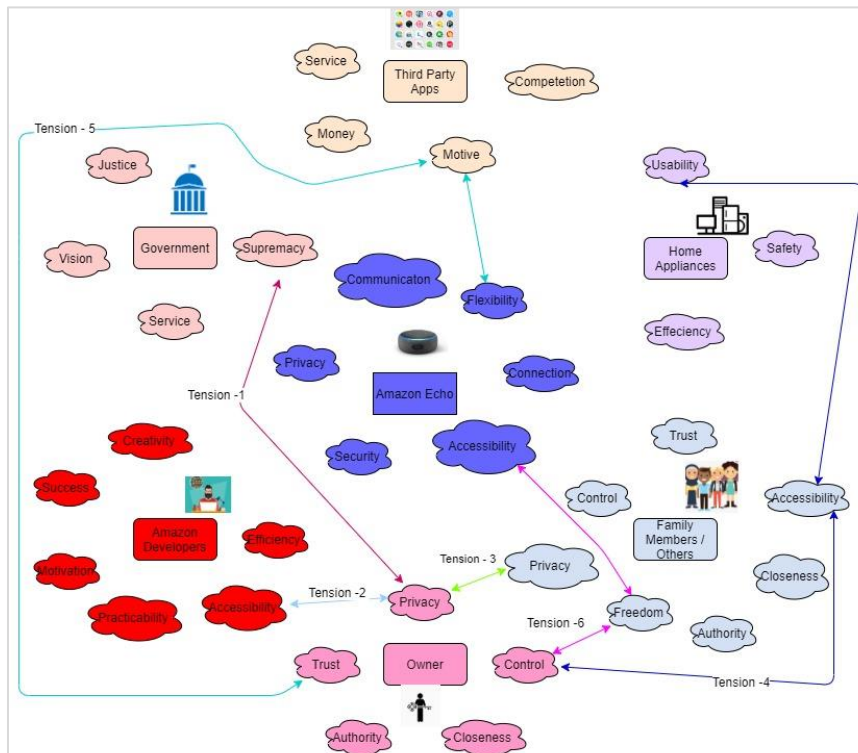
- **Iteration 3:**

Pros :

1. The stakeholders and their values are represented in a tree like layered structure.

Cons :

1. Hard to visualize the value tensions.

2. The mapping are too long between stakeholders and their values.

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Alexa conversations as evidence : Government's Supremacy vs Owner's Privacy	T1	In case of judicial decisions, for example, government in order to provide justice, would want access to all the recordings of suspect's conversation with Alexa which otherwise are private. Here, to share or to not share that data to anybody is the sole decision of the person himself , however government might would want to override that right of the suspect and listen to those recordings.
Conversations with Alexa : Amazon Developer's Accessibility to Data vs Owner's Privacy	T2	Amazon records the conversations a person has with Alexa and stores it on the cloud. These recordings are then accessed by the developer's for improving speech recognition tasks and improving Alexa services itself. However, these recordings may contain personal data of the user's and the user might not be aware of developer's listening to his conversations. The user might not want other's listening to those conversations at all.
Secret sharing with Alexa : Owners Privacy vs Other users' Privacy	T3	When owner has conversations with Alexa, and shares some information with Alexa like a secret between them, he would want that information to remain private. Alexa when invoked by some other individual might spill out the secret information as Alexa doesn't differentiate between the owner and other individual, it maintains same kind of relationship with everybody, even with the intruder.
Alexa meets IoT : Home Appliances' Usability vs Owner's Control vs Other users' Accessibility	T4	Now, Alexa supports IoT commands and integrates with multiple home appliances. The owner might want to limit access to these appliances to few individuals or just himself. However, any body could access Alexa and gain access to those home appliances without consent or unknown to the owner.
Alexa Skills : Amazon Echo's Flexibility vs Owner's Trust vs Third-party app's motive	T5	Amazon allows third party applications to build Alexa skills and allows them to use Alexa services. User's on the other hand take advantage of this feature of Amazon Echo to communicate with various other third-party apps. It might be the case that these third-party apps would be listening and recording user's conversation through the Amazon Echo, all this malicious activity unknown to the users and Amazon.
Echo-to-Echo Communication : Owner's Control vs Other users' Freedom vs Amazon Echo's Accessibility	T6	Alexa on one Echo can communicate with another Alexa on other Echo device in home or another smart speaker altogether. For example, parent would want to set up an alarm for his child, and he instructs his echo device to instruct his child's echo device to set the alarm. Here, the parent is not directly communicating with the child's echo device, but is having his echo device to do the task. This results in control of parents over child's Amazon Echo through his own Amazon Echo, i.e indirectly, leaving little control or freedom with the child which the child might not like or want.

- **Iteration 4-a:**

Pros :

1. Easy to visualize the stakeholder and their values.

2. Clear separation between the stakeholders.

Cons :

1. As value tensions increase, overlapping and crossings between items increases.

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- **Final Value Map - Iteration 4-b:**

Values that don't correspond to any value tensions in 4-a are removed to simplify the diagram. It can be thought of as a simplified version of 4-a to bring out focus on value-tensions. When details are sought regarding stakeholders, one can switch back to the 4-a version

Tension -1

Alexa conversations as evidence

In case of judicial decisions, for example, government in order to provide justice, would want access to all the recordings of suspect's conversation with Alexa which otherwise are private. Here, to share or to not share that data to anybody is the sole decision of the person himself, however government might would want to override that right of the suspect and listen to those recordings.

Tension -2

Conversations with Alexa

Amazon records the conversations a person has with Alexa and stores it on the cloud. These recordings are then accessed by the developer's for improving speech recognition tasks and improving Alexa services itself. However, these recordings may contain personal data of the user's and the user might not be aware of developer's listening to his conversations. The user might not want other's listening to those conversations at all.

Tension -3

Secret sharing with Alexa

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Tension -4

Alexa meets IoT

Now, Alexa supports IoT commands and integrates with multiple home appliances. The owner might want to limit access to these appliances to few individuals or just himself. However, anybody could access Alexa and gain access to those home appliances without consent or unknown to the owner.

Tension -5

Alexa Skills

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Tension -6

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