

INSIGHTSPACE

BROADENING INCLUSIVE
EDUCATION HORIZONS
FOR VISION IMPAIRMENT

November 2023

Rojin Moghadam

Agenda

Presentation

16:30

16:50

Q & A

16:50

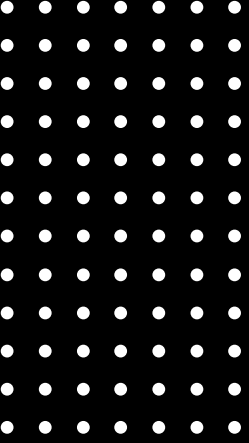
17:10

Assesment

17:10

17:30

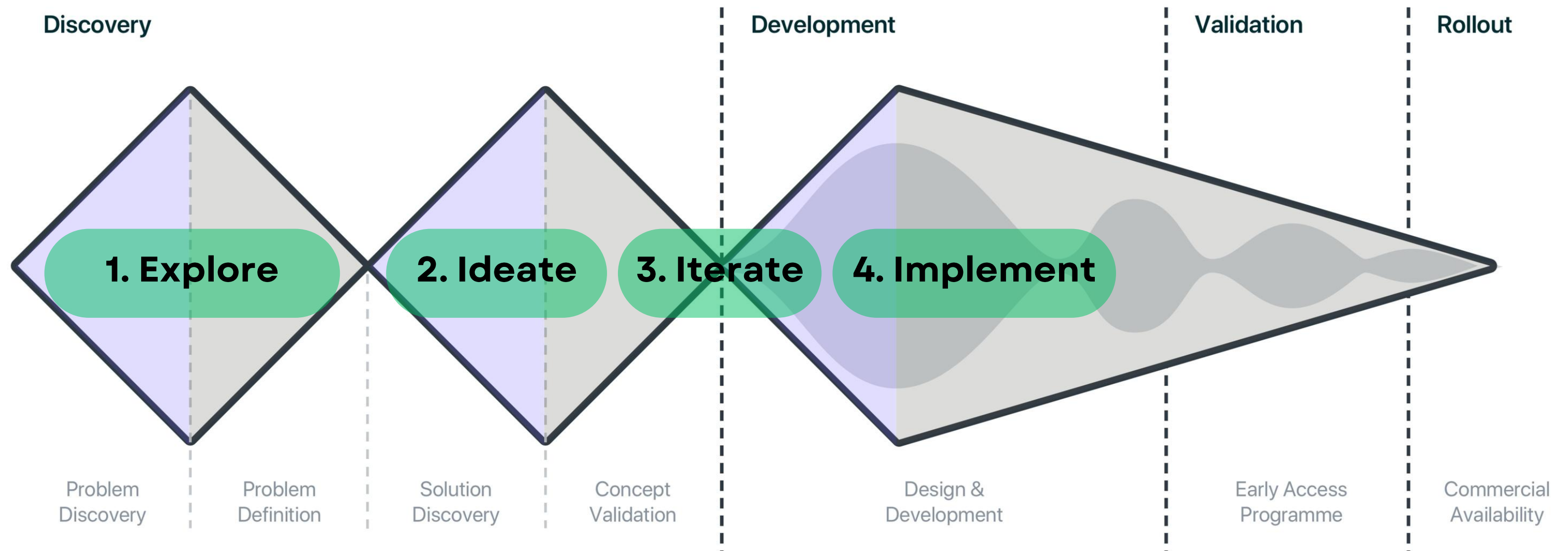




Abstract

- Exploring the development of 'InsightSpace,' an AI-powered educational tool for visually impaired students.
- Focused on user values and needs, resulting in inclusive, multisensory learning.
- It integrates with Brightspace LMS, offering features like AI narration and a collaborative community portal.

Overview



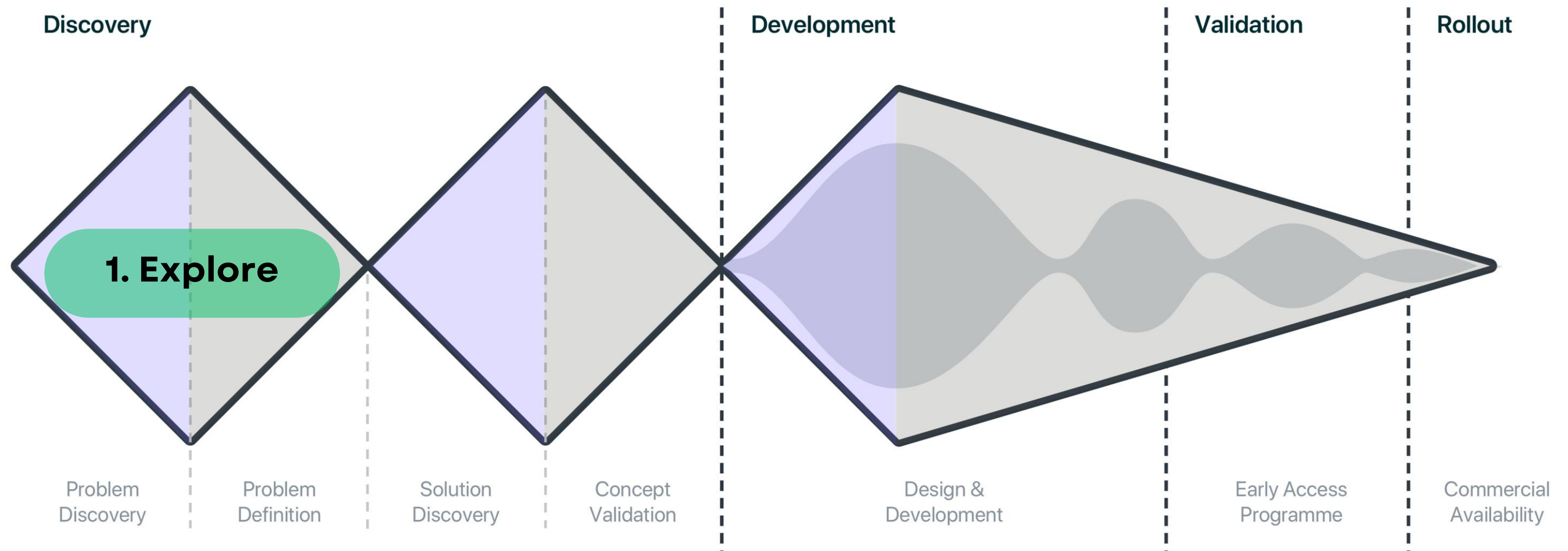
Design Goal

“Designing a tool that improves the **sense of inclusivity** for students with visual impairment”

How visually impaired students can feel more included at university?

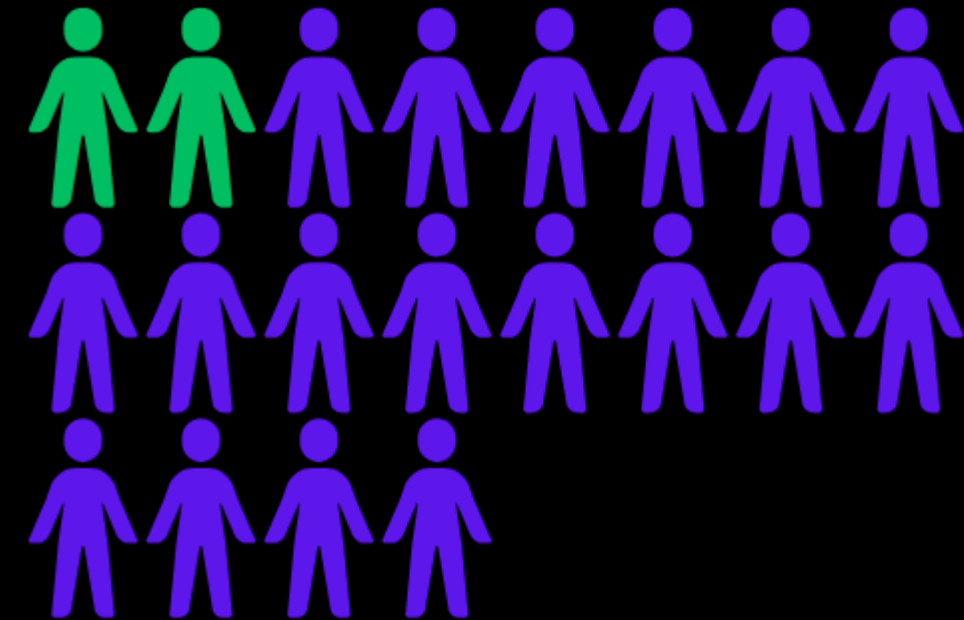


Exploitation Phase



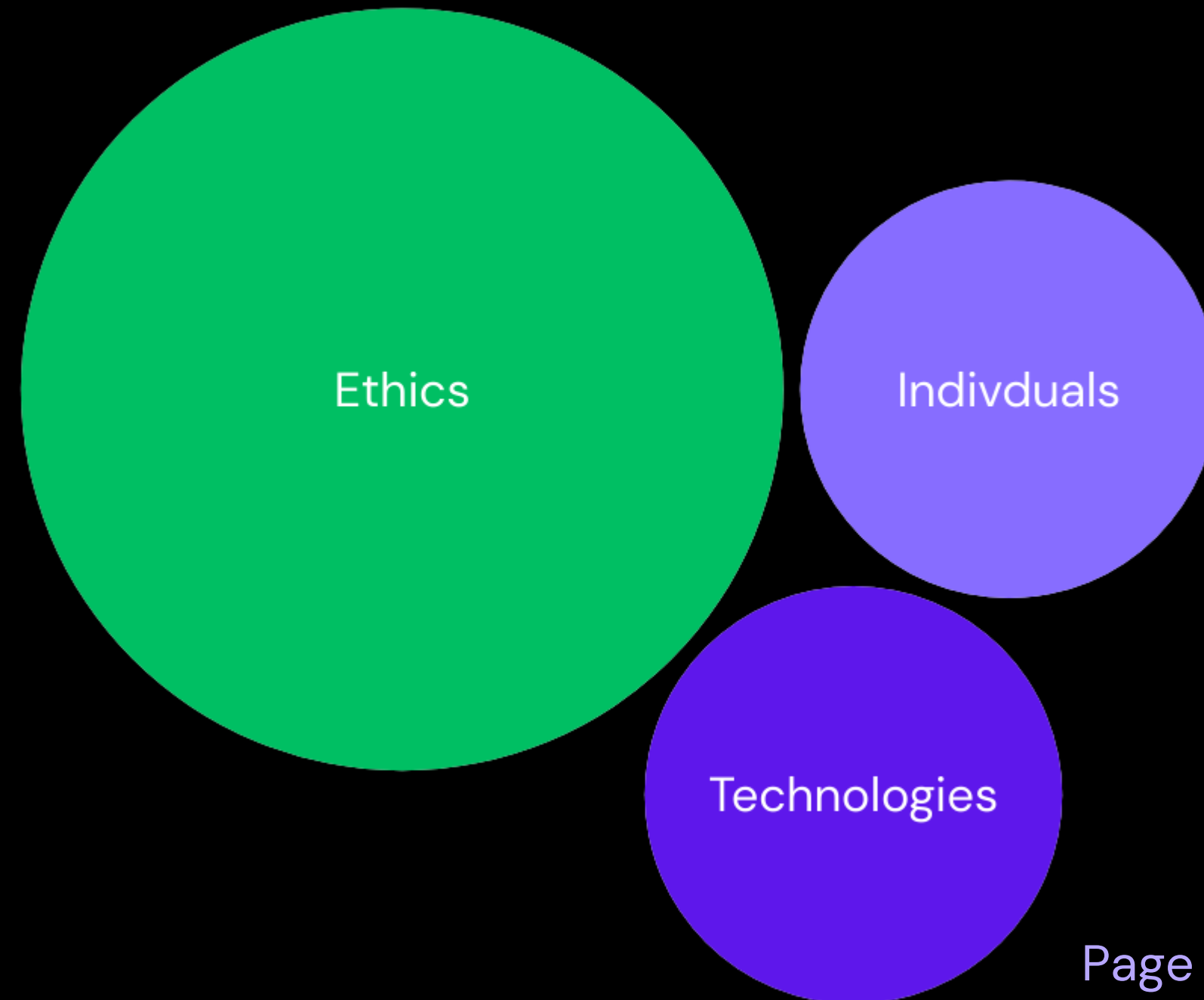
Exploration

- Interview
- survey
- secondary research



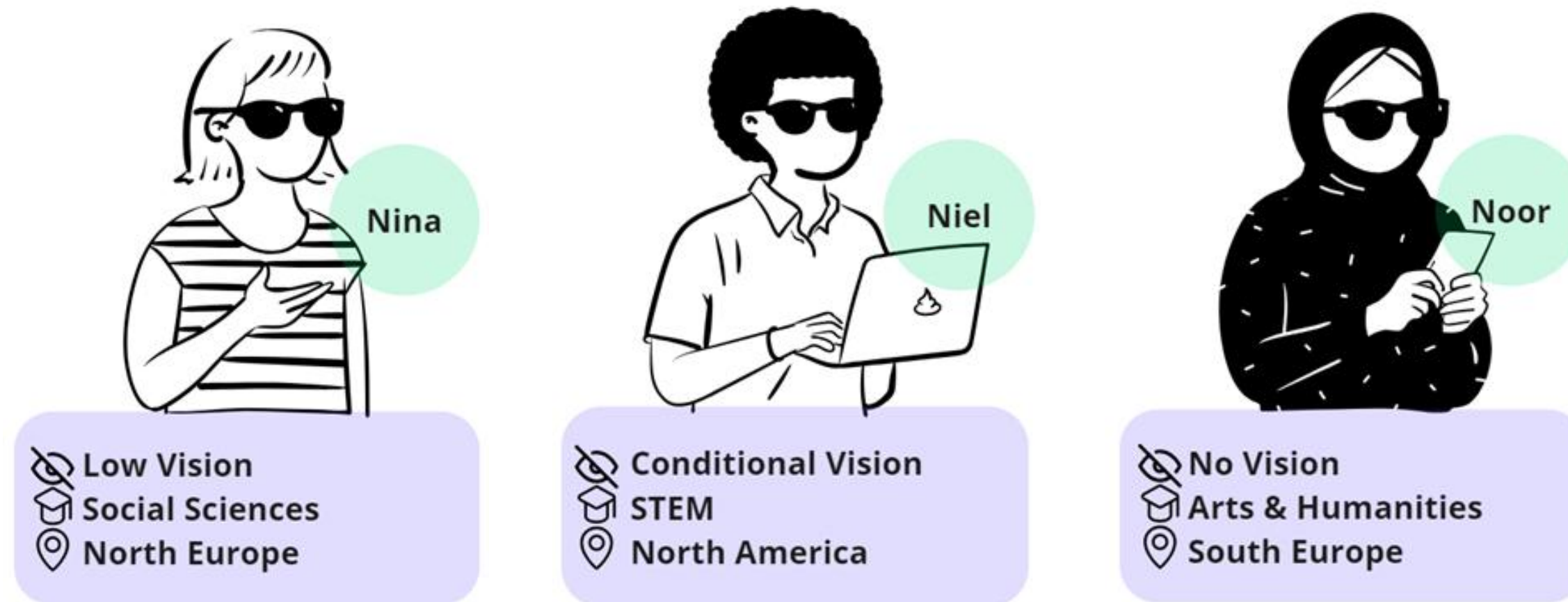
Literature Review

- 1 Inclusive design**
- 2 Design thinking**
- 3 Product-Service Systems**
- 4 Assistive technologies**



Synthesis

Interviews, surveys, and secondary research, leading to user values and design implications.



Needs



Values

Self-actualization

(desire to become the most that one can be)

Esteem

(respect, self-esteem, status, recognition, strength, freedom)

Love and belonging

(friendship, intimacy, family, sense of connection)

Safety needs

(Personal security, employment, resources, health, property)

Physiological needs

(air, water, food, shelter, sleep, clothing, reproduction)

Design Implications



Psychological Need (Buttom up) ↓	Ethical Value ↓	Design Implication	Requirement	Measurement
Security and safety	Accessibility	Usability	The design should be easy to use and intuitive for visually impaired students.	• amount of time it takes to complete tasks • number of errors made during navigation • level of frustration expressed by the student
	Certainty	Safety	The design should prioritize safety and security for visually impaired students, especially in unfamiliar environments .	• number of incidents or accidents that occur • level of risk associated with different tasks • the effectiveness of safety features
		Affordability	The design should be affordable and cost-effective , especially given the limited resources of visually impaired students.	• cost of the product or service compared to alternative options • level of financial burden on students • impact of cost on student satisfaction
		Support	The design should provide support and assistance to visually impaired students, especially in navigating the challenges they face as students with disabilities.	• number of support requests received • level of satisfaction with the support provided • impact of support on student success
Love and belonging, sense of connection	Inclusiveness	Inclusiveness	The design should promote inclusiveness and provide a sense of belonging for visually impaired students.	• level of engagement and participation in class discussions • number of social interactions with peers • feedback received from students regarding their sense of belonging
		Integration	The design should integrate seamlessly with existing tools and technologies , to minimize friction and disruption to visually impaired students' daily routines.	• level of integration with other tools and technologies • number of errors or disruptions encountered during integration • impact of integration on task completion
	Equity	Accessibility	The design should provide easy access to educational resources and services for visually impaired students.	• time it takes to access course materials • number of steps required to complete a task • level of support required
Esteem, recognition, strength and freedom	Independence	Independence	The design should enable visually impaired students to navigate and interact with their environment independently.	• amount of assistance required to complete tasks • time it takes to navigate a new environment • level of confidence expressed by the student
	Flexibility	Customization Personalization	The design should allow for personalization and customization to meet the unique needs of visually impaired students.	• number of customizations made by each student • level of satisfaction with the customization options • impact of customization on task completion
Self-actualization (desire to become the most that one can be)	Empowerment Growth Creativity		The design should empower visually impaired students to be confident, competent , and capable , especially in their academic and professional pursuits.	• level of self-efficacy expressed by students • level of confidence in completing different tasks • the impact of the design on student success
	Quality		The design should be of high quality and durable , especially since visually impaired students may have to rely on it frequently .	• level of satisfaction with the quality of the product • number of repairs or replacements required • durability of the product over time

Problem

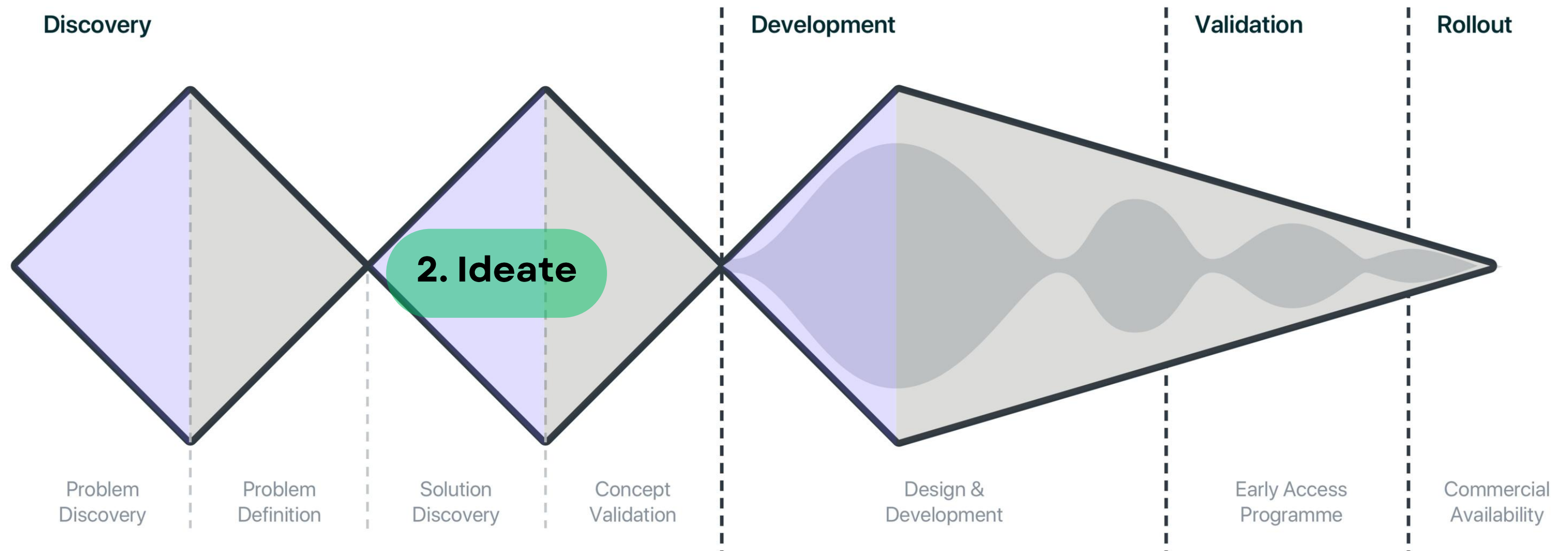


How to create a non-visualized version of a visual content?



“Designing a tool to enable **access to visual educational content** for students with vision impairment.”

Ideation Phase



Ideation

transforming insights into concepts for user needs, focusing on accessibility, independence, and personalization.

Idea Concept 1

Inclusive Infographic Narratives (IIN)

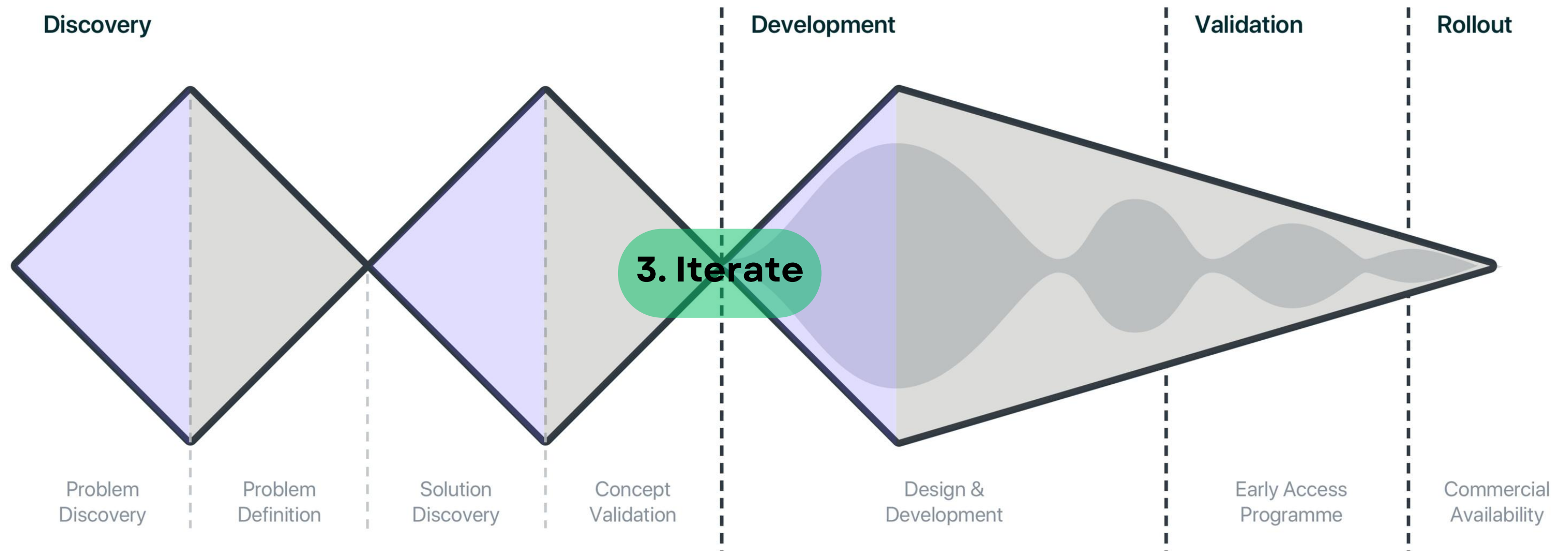
Idea Concept 2

Accessible Content Tags (ACT)

Idea Concept 3

AI-Enhanced Infographic Accessibility (AIIA)

Iteration Phase



Ideation

transforming insights into concepts for user needs, focusing on accessibility, independence, and personalization.



Concept Test 1

Infographic Typology

Concept Test 2

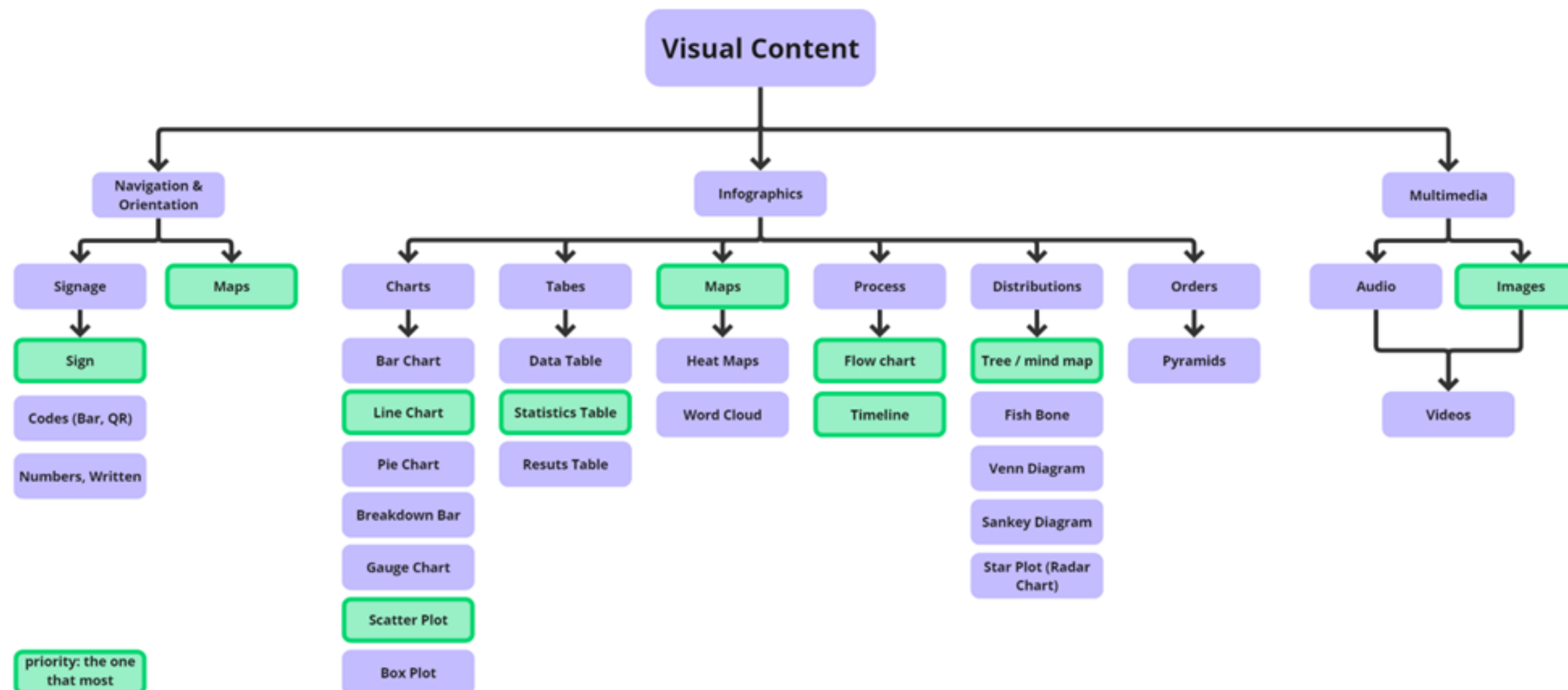
Analog Infographic Unvisualization

Concept Test 3

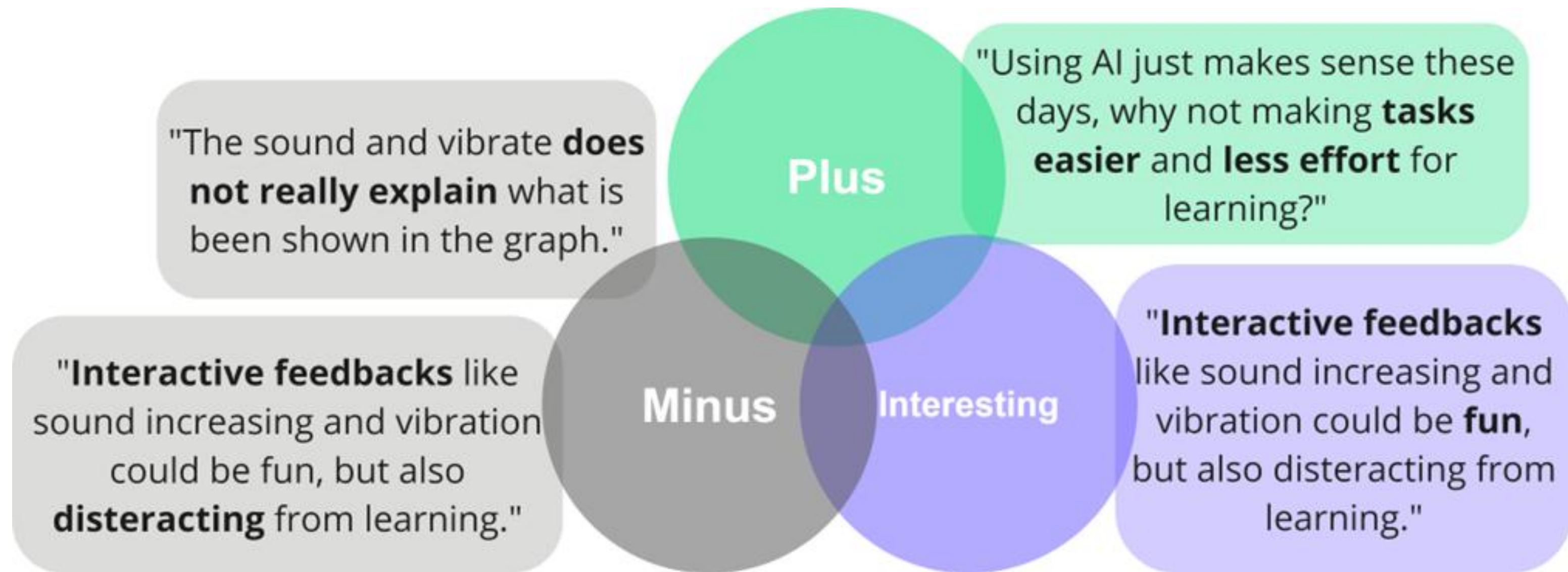
Digital Infographic Unvisualization

Synthesis

review on popular data visualization tools such as Qualtrics, Microsoft Power BI, and Tableau, educational resources like the "[Learning Infographic Design](#)" course by [Amy Balliett](#).



Synthesis



Service Concept

**Eduvision: Accessible
Student Tools**
Manage your settings, upload documents, and
more.

Eduvision
Sign in

Log in

Username or student ID

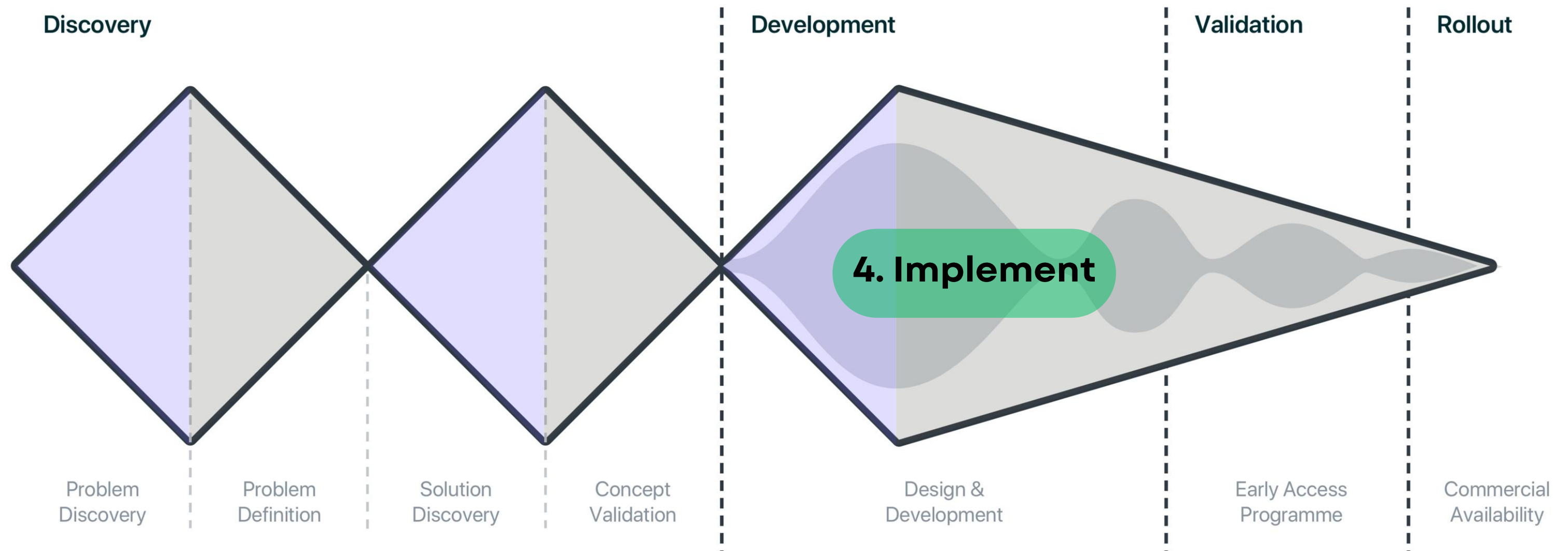
Password

Log in

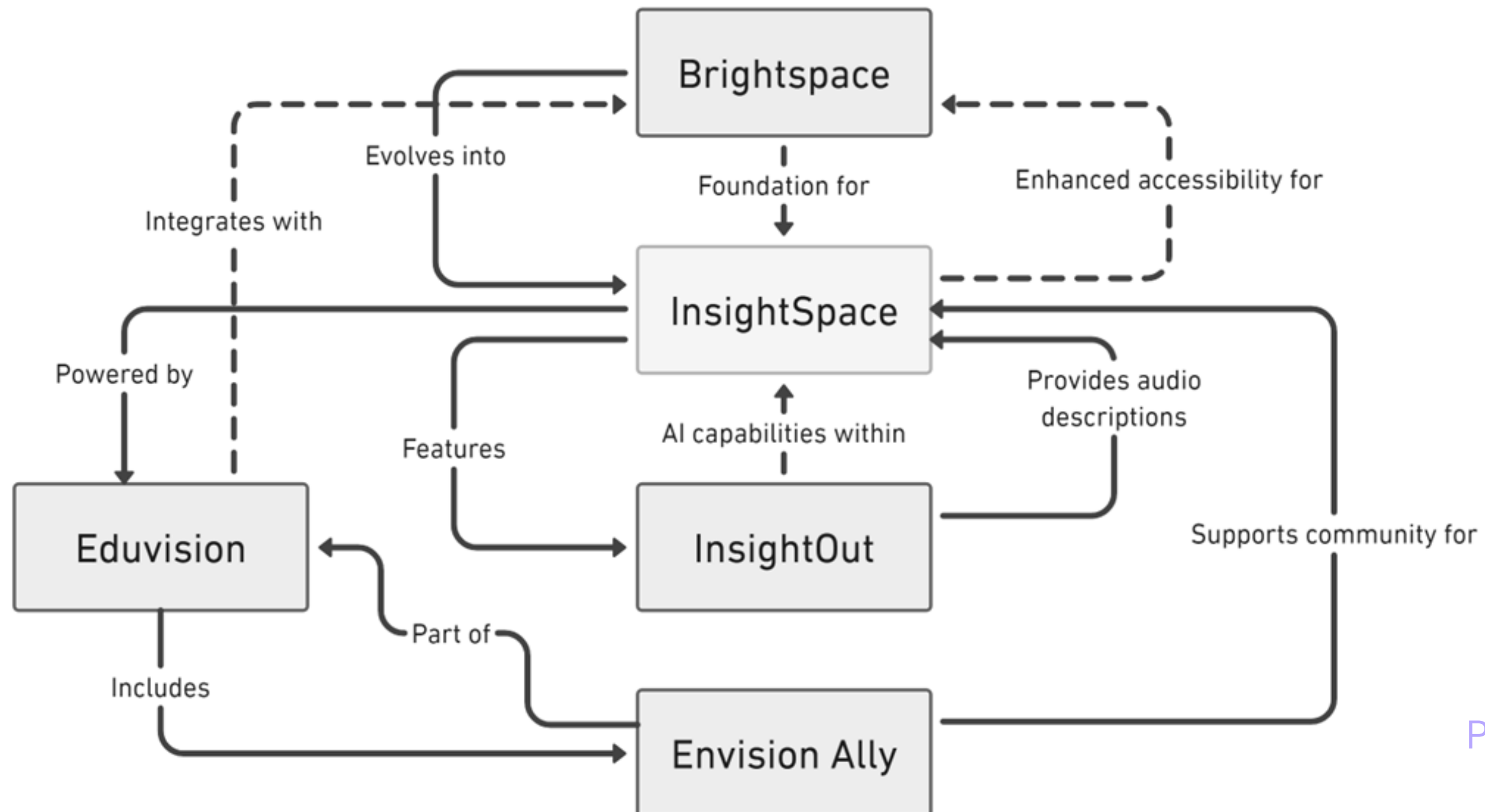
[Forgot your password?](#)



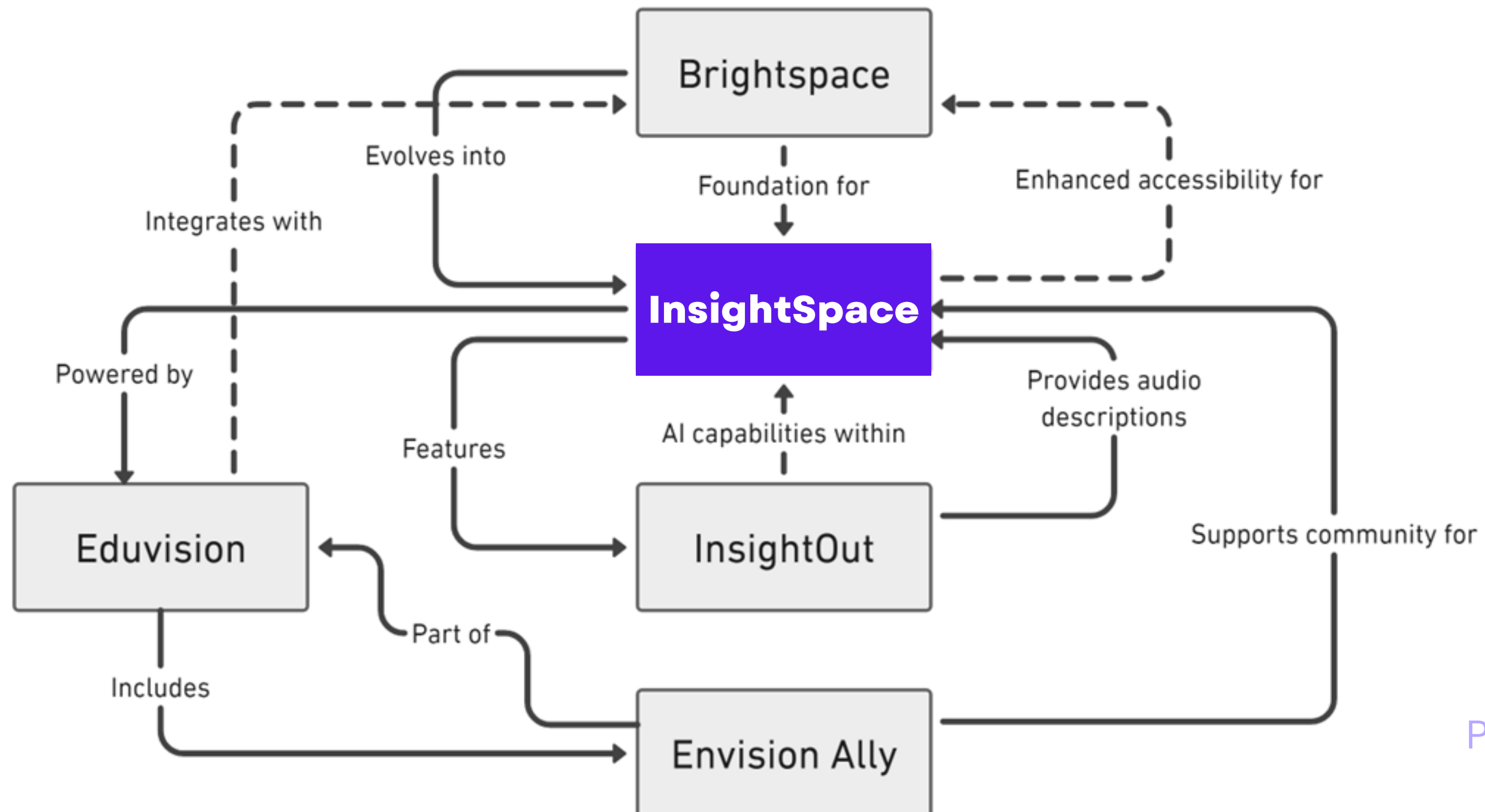
Implementation Phase



Service Overview

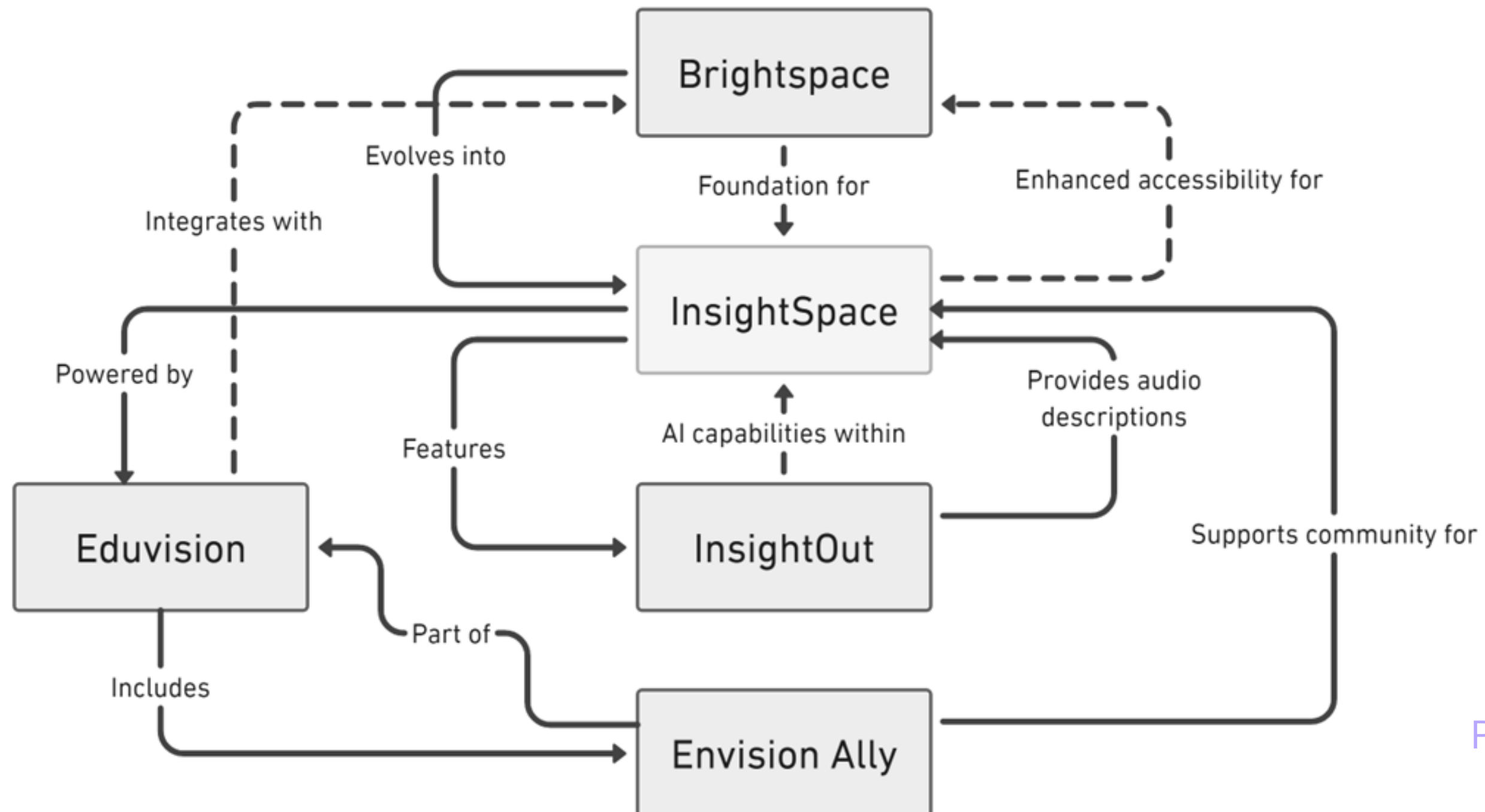


Service Overview

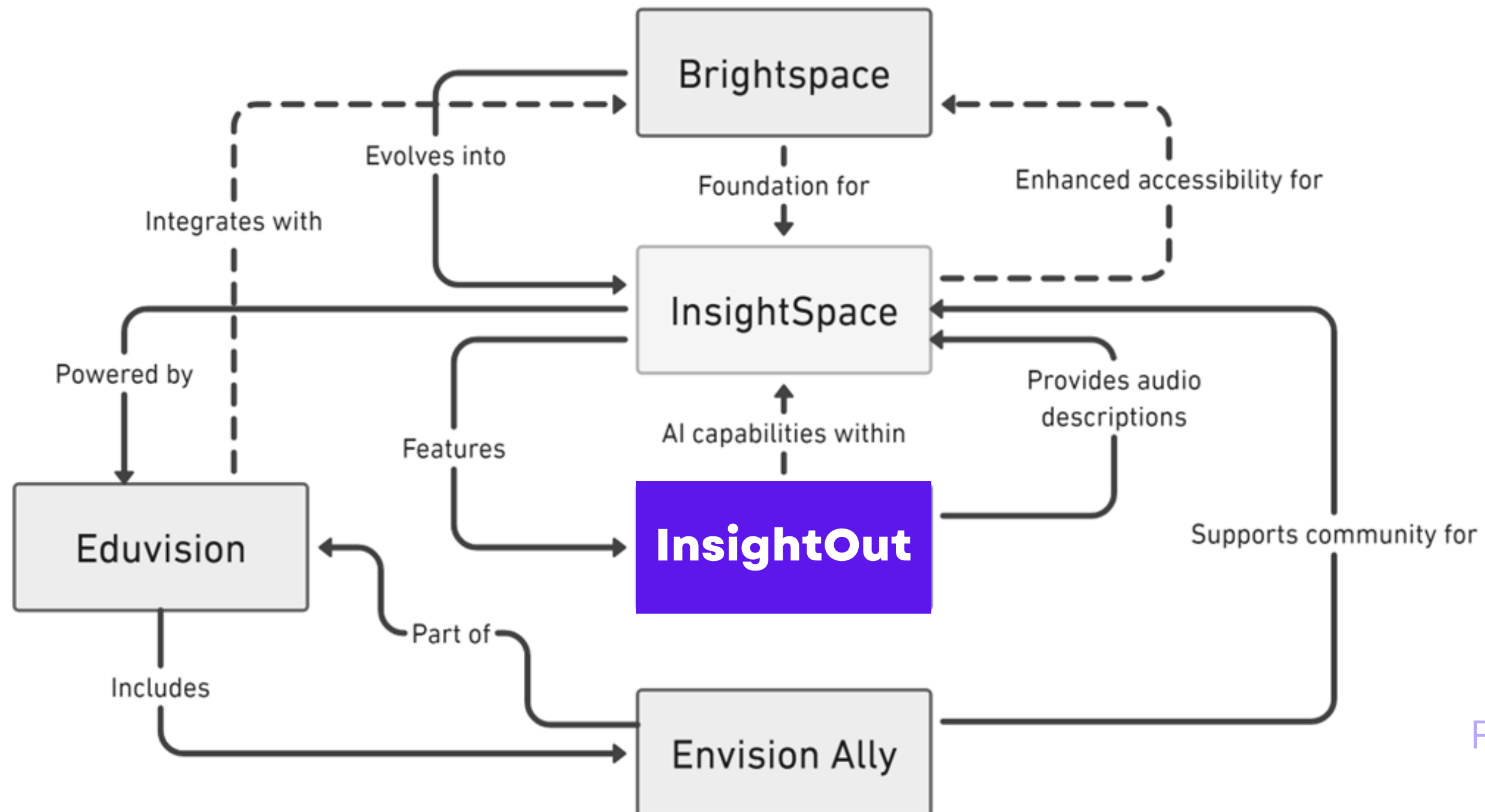


InsightSpace

Service Overview



Service Overview



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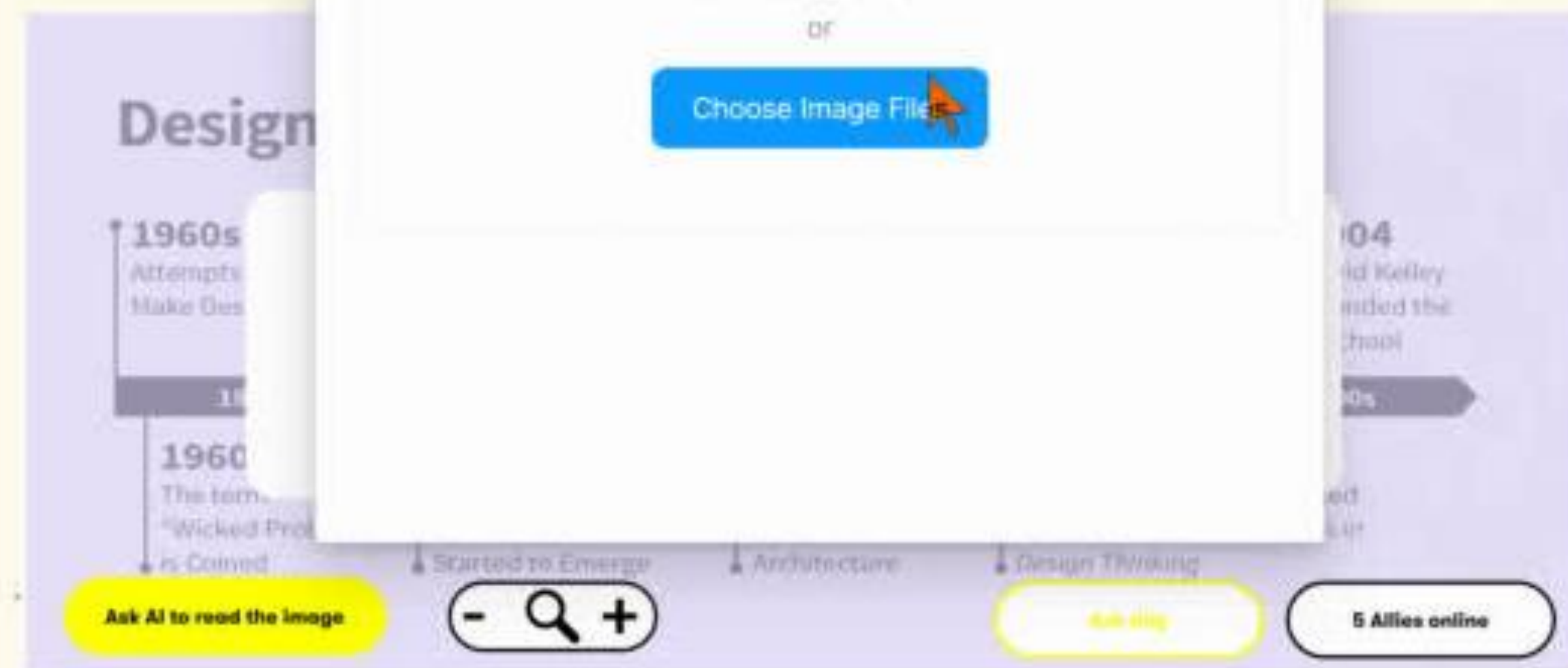
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Introduction: Design History 101 takes you on a captivating journey through the rich and diverse world of design, tracing its evolution from ancient civilizations to modern times. This comprehensive textbook provides a deep exploration of the historical, cultural, and technological factors that have shaped design disciplines, offering valuable insights into the power and significance of visual communication. Whether you're a student, designer, or simply curious about the history of design, this book is your gateway to understanding and appreciating the influential movements, styles, and individuals that have shaped the field.

Chapter 1: Origins of Design

- Prehistoric and Ancient
- Egyptian, Greek, and Roman
- Design in Eastern Civilizations



Chapter 2: Design in the Middle Ages

- Medieval Manuscripts and Illuminations

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The "Design" section is primarily focused on the history of design.

The timeline of design history is a key feature of the application.

Next, the application provides a detailed overview of the design process. This is followed by a section on design testing.

After providing feedback, the application offers a section on design feedback.

The timeline of design history is a key feature of the application.

Ask AI

Chapter 2: Design in the Middle Ages

- Medieval Manuscripts and Illuminations

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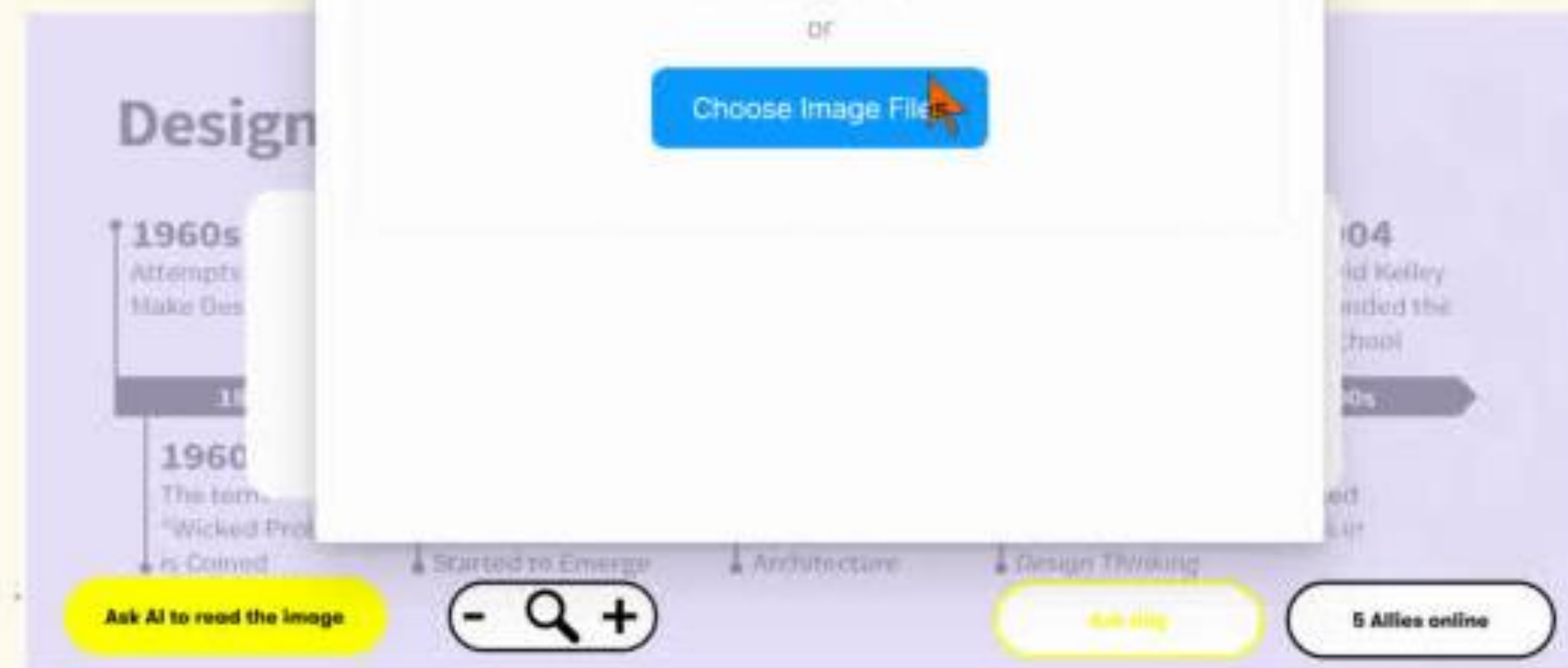
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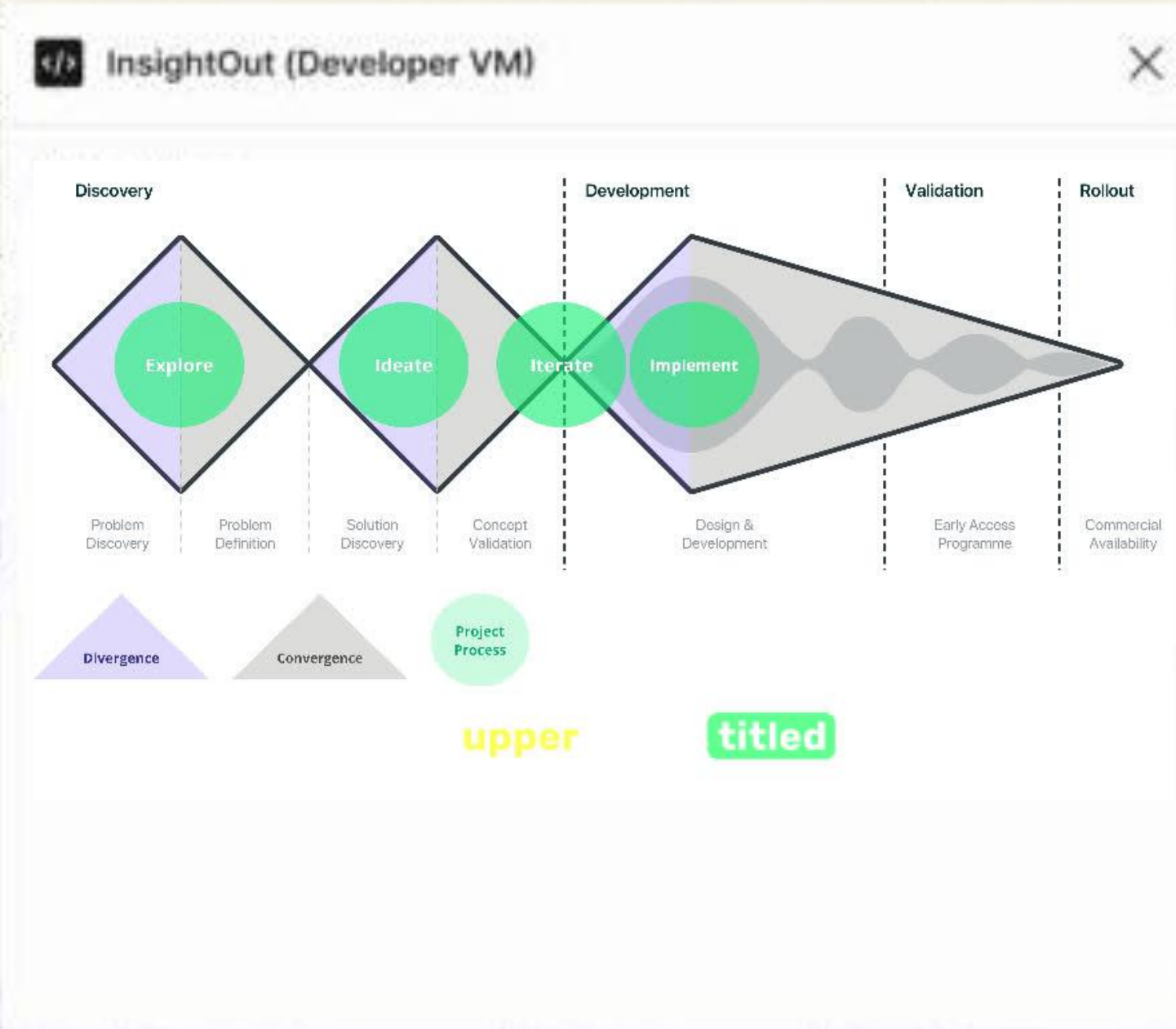
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Introduction
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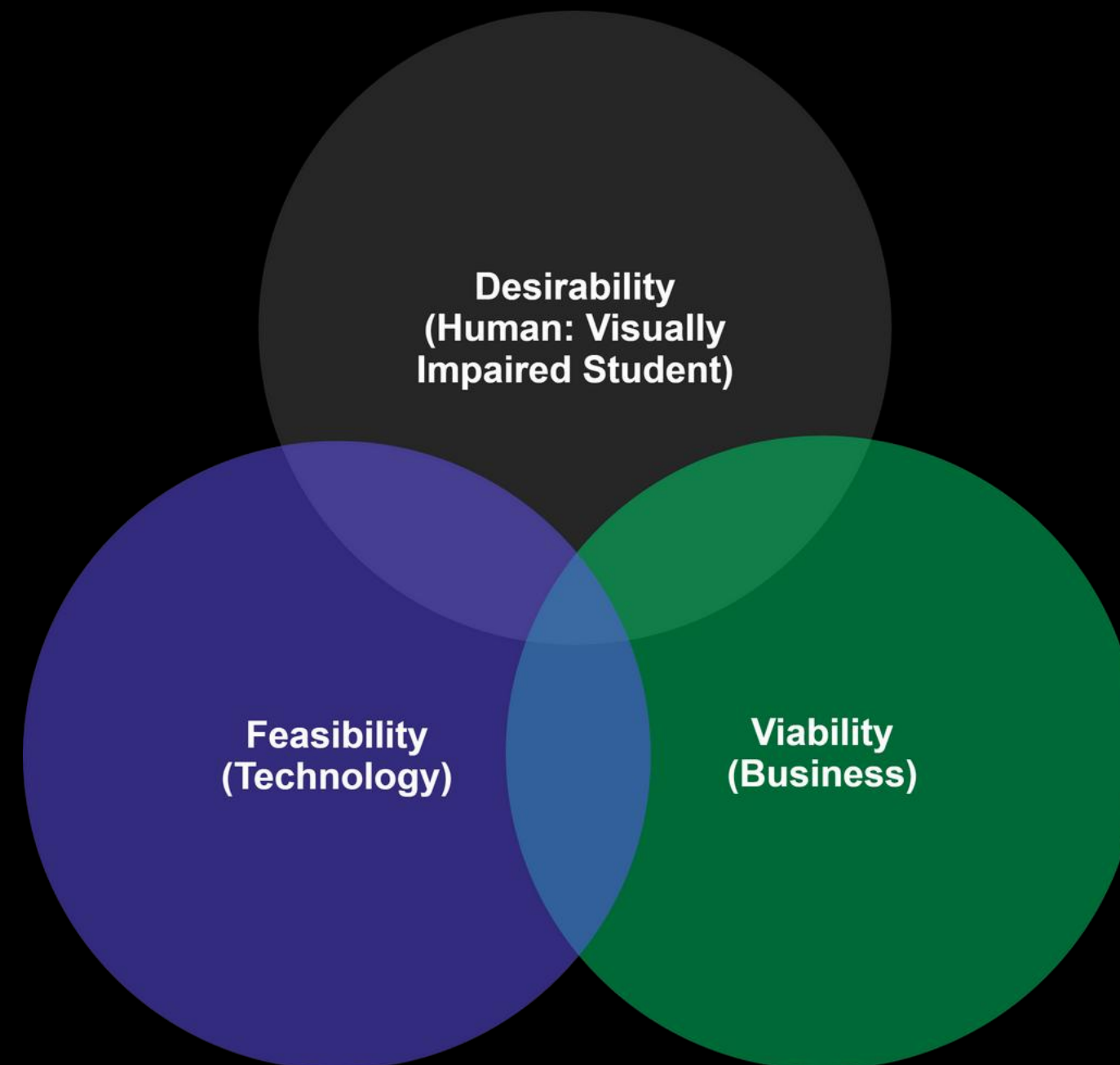
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The "Design History 101" course is a comprehensive introduction to the field of design, covering its evolution from ancient civilizations to modern times. The course is designed to provide students with a deep understanding of the historical, cultural, and technological factors that have shaped design disciplines. The course is divided into four main sections: Discovery, Development, Validation, and Rollout. The Discovery section focuses on the early stages of design, including problem discovery and problem definition. The Development section focuses on the process of ideation and solution discovery. The Validation section focuses on the process of concept validation and design development. The Rollout section focuses on the process of early access programming and commercial availability. The course is designed to be interactive and engaging, with a focus on practical application and critical thinking. The course is also designed to be accessible to students with varying levels of background knowledge and experience in design.

Chapter 2: Design in the Middle Ages

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Conclusion



Achievements

Desirability

Human-Centered Design Approach
address the real needs of
visually impaired
students in higher
education.

Desirability

alignment with design
values like accessibility,
inclusiveness,
personalization, and
community, as identified
through research

Feasibility

Development of
InsightSpace Service
Concept
and
InsightOut
image segmentation plugin

Challenges

Desirability

more User Feedback and
Iteration for validation

Feasibility

Refinement of
Technology Integration:

Viability

Financial and Practical
Barriers

Future Directions

Desirability

Expanding User Research: to include a broader demographic of students, possibly expanding beyond the 18–25 age range or exploring other types of visual impairments.

Feasibility

Technology Advancements: advancements in AI and assistive technologies for potential integration into InsightSpace.

Viability

Broader Application in Education: Considering the potential of adapting the platform for use in other educational contexts or for other types of disabilities.

Design Goal

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How visually impaired students can feel more included at university?

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“Designing a tool that improves **sense of inclusivity** for students with **visual impairment**”

Collaboration with sighted peers through eduvision ally

Problem



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Problem

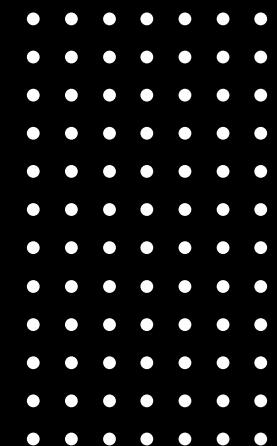


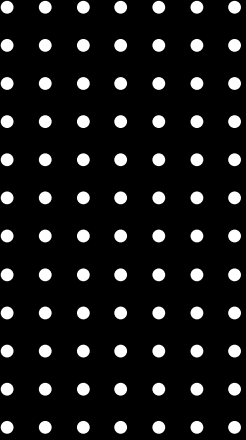
InsightSpace platform, with InsightOut AI image segmentation and audio narration



“Designing a tool to enable access to **visual educational content** for students with vision impairment”

NOT THE END





Q & A