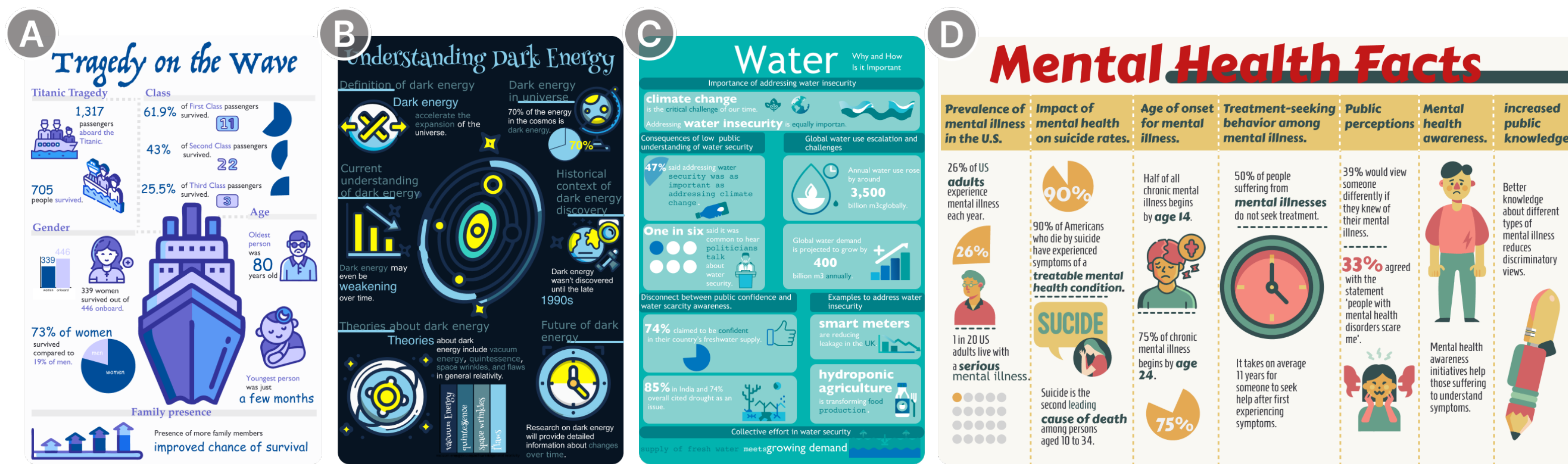


# CHI'26



# InfoAlign: A Human-AI Co-Creation System for Storytelling with Infographics



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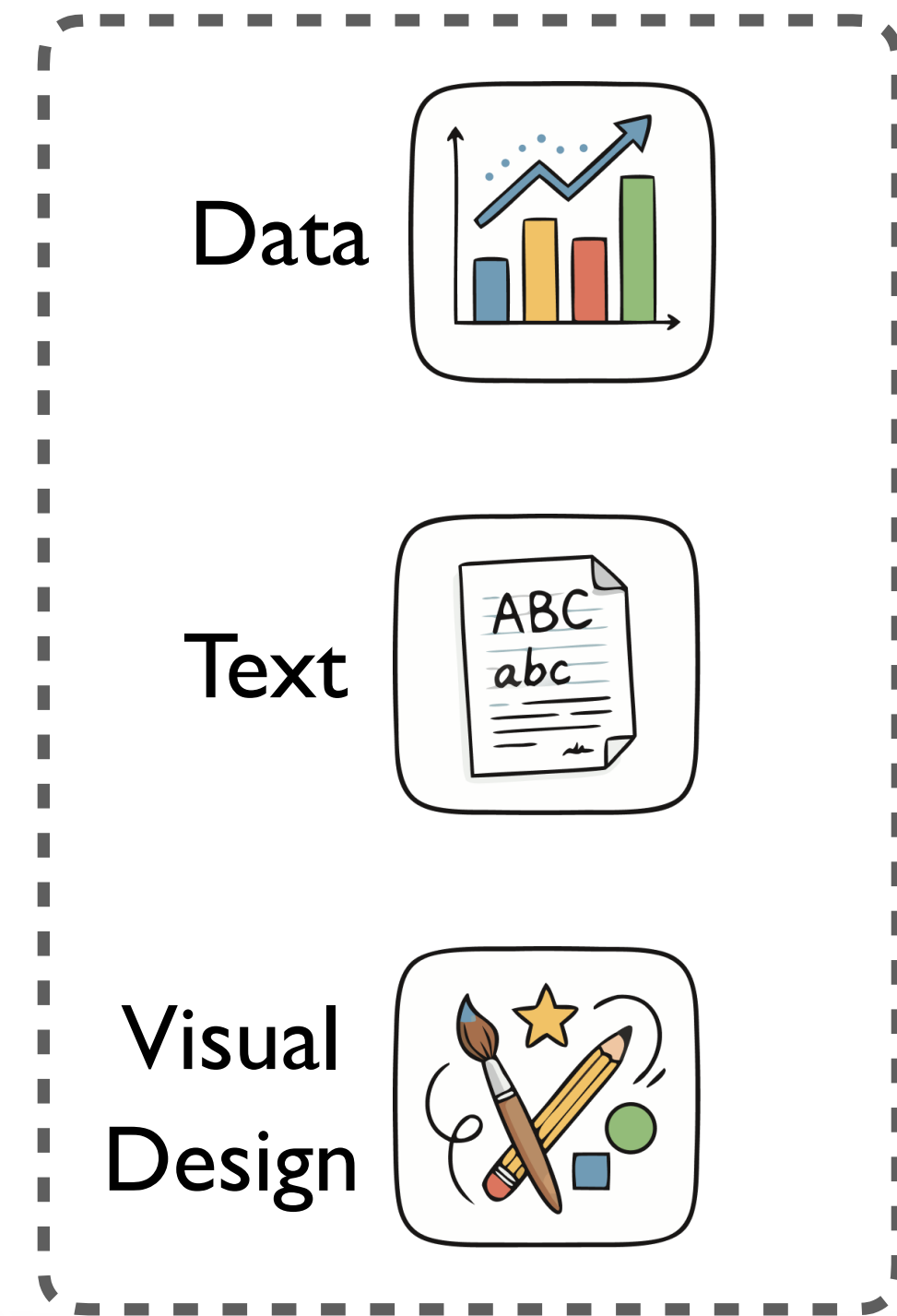
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# Background

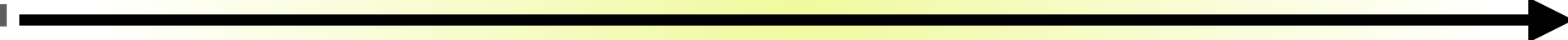


Infographics

Storytelling

*Transforming dense information into visual narratives*

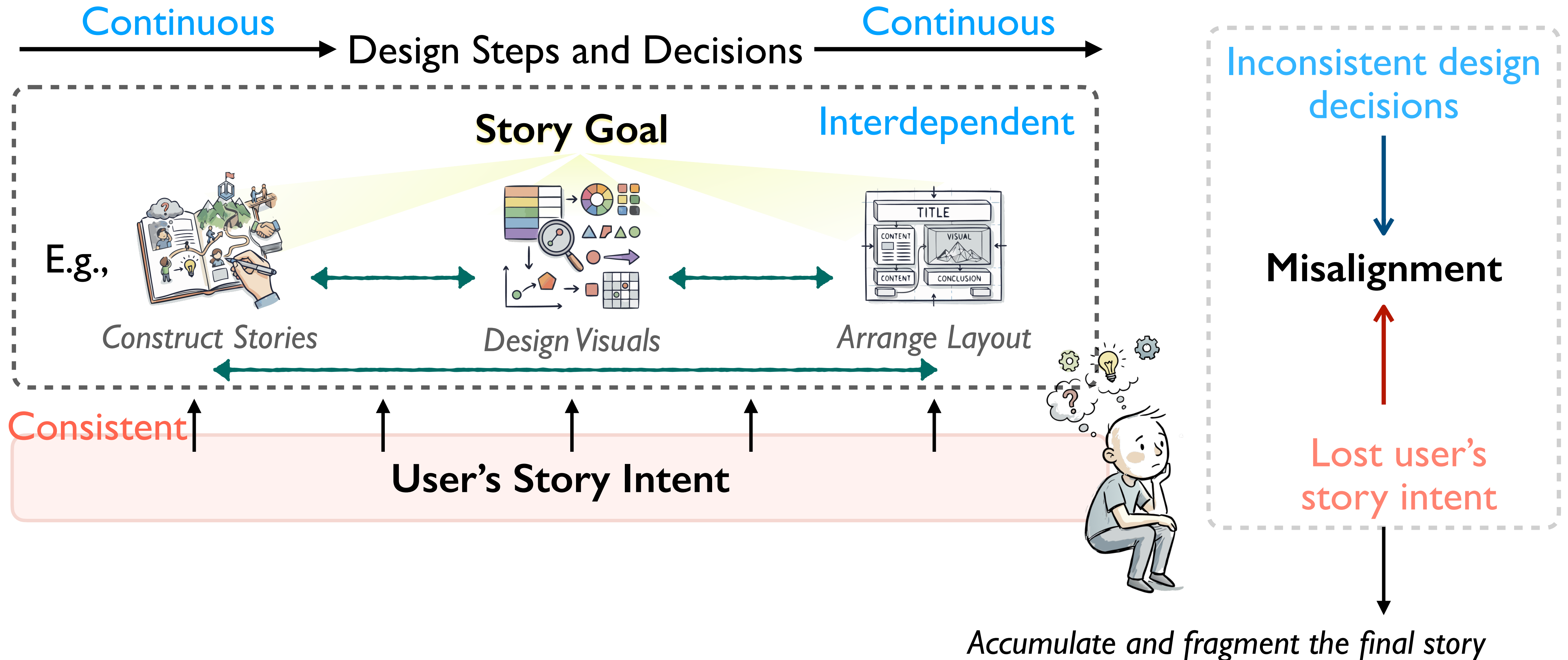
- + Accessible
- + Memorable
- + Persuasive



**Achieve communication goals**



# Challenges



# Research Goal

## Commercial Tools

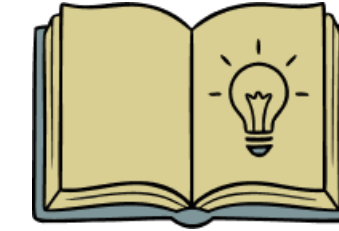


Template-Driven

Highly Automated

Limited User Control

## Recent Researches



Isolated Tasks

Single Design Stage

Limited Cross-stage Support



*Infographic generation system that enables the creation of infographics **presenting consistent stories aligned with the user's story intent***

**RQ1: What design steps are necessary for an infographic to convey a story?**

# Formative Interview

*What design steps are necessary for an infographic to convey a story?*

8

Infographic  
Creators

Understanding of Infographic:

Conceptualizing infographic design as a storytelling process

Input requirement:

Long & Unstructured text + User Query

7

Questions

Design requirements:

**Constructing stories** Visual designs aligned with story and user intent

Layout that guide story reading flow

Collaboration requirement:

Human-AI Collaboration with flexible control



# Layout Design-Space

## Data Preparation & Coding Process

268 Infographic examples collected

6 Criteria

70 Storytelling infographics filtered

**Story Piece**

**Story Unit**

70-90% of coral reefs could be lost if temperatures rise by 1.5-2°C

60% of coral reef fish stocks globally are overfished

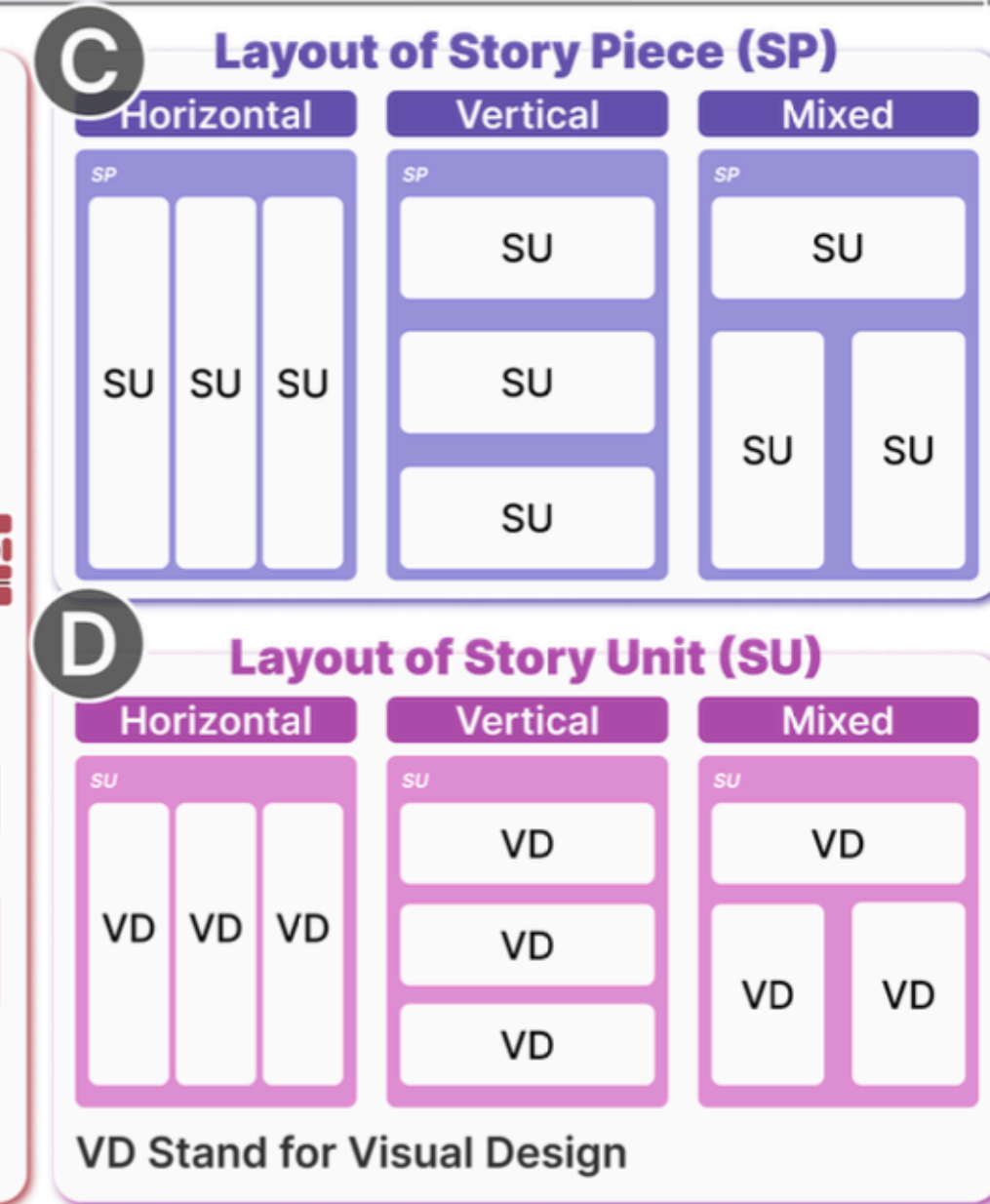
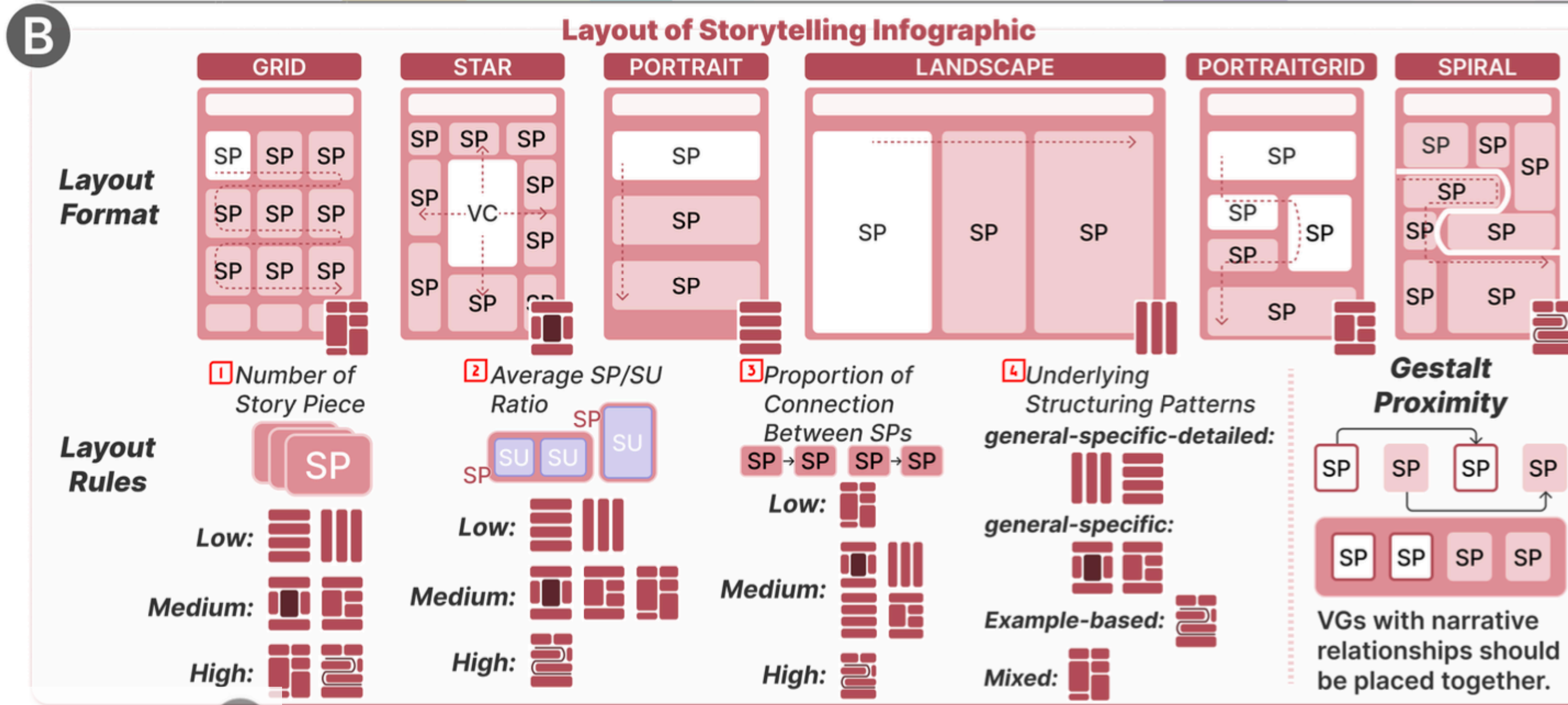
80% of ocean pollution comes from land-based activities

**Value of Coral Reefs**

Coral reefs provide critical coastal protection for millions of people and generate significant economic value through tourism, fisheries, and related industries.

**A**

Layout	Count	Average SP	Average SU	SP vs SU							Narrative Logic between SP and Story Goal						Narrative Logic Between SPs
				1 vs 1	1 vs 2	1 vs 3	1 vs 4	1 vs 5	1 vs 6	1 vs 7	Elaboration	Example	Attribution	Generalization	Temporal	Cause-Effect	
Grid	15	9.13	12.6	102	25	5	4	0	1	0	76	16	3	6	2	2	28%
Spiral	14	9.14	10.5	113	11	4	0	0	0	0	4	90	4	8	20	3	72%
Portrait	15	3.13	8.42	9	17	9	7	3	1	1	20	14	0	12	1	0	52%
Star	14	7.64	11.9	72	22	7	3	1	1	0	77	3	2	12	1	0	59%
PortraitGrid	12	6.83	9.75	63	11	3	3	1	1	0	57	14	1	10	4	13	55%

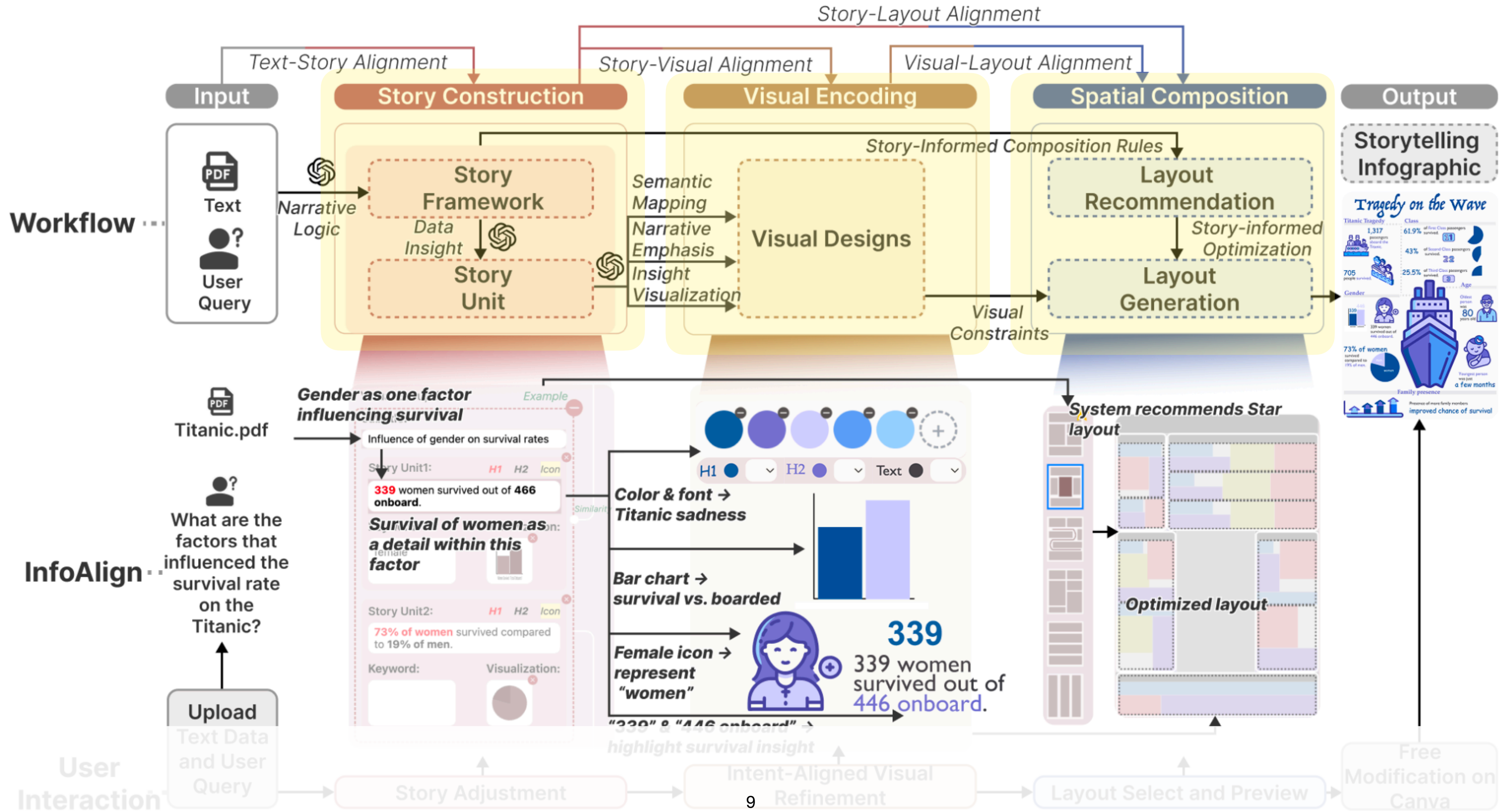


How layout support story flow?

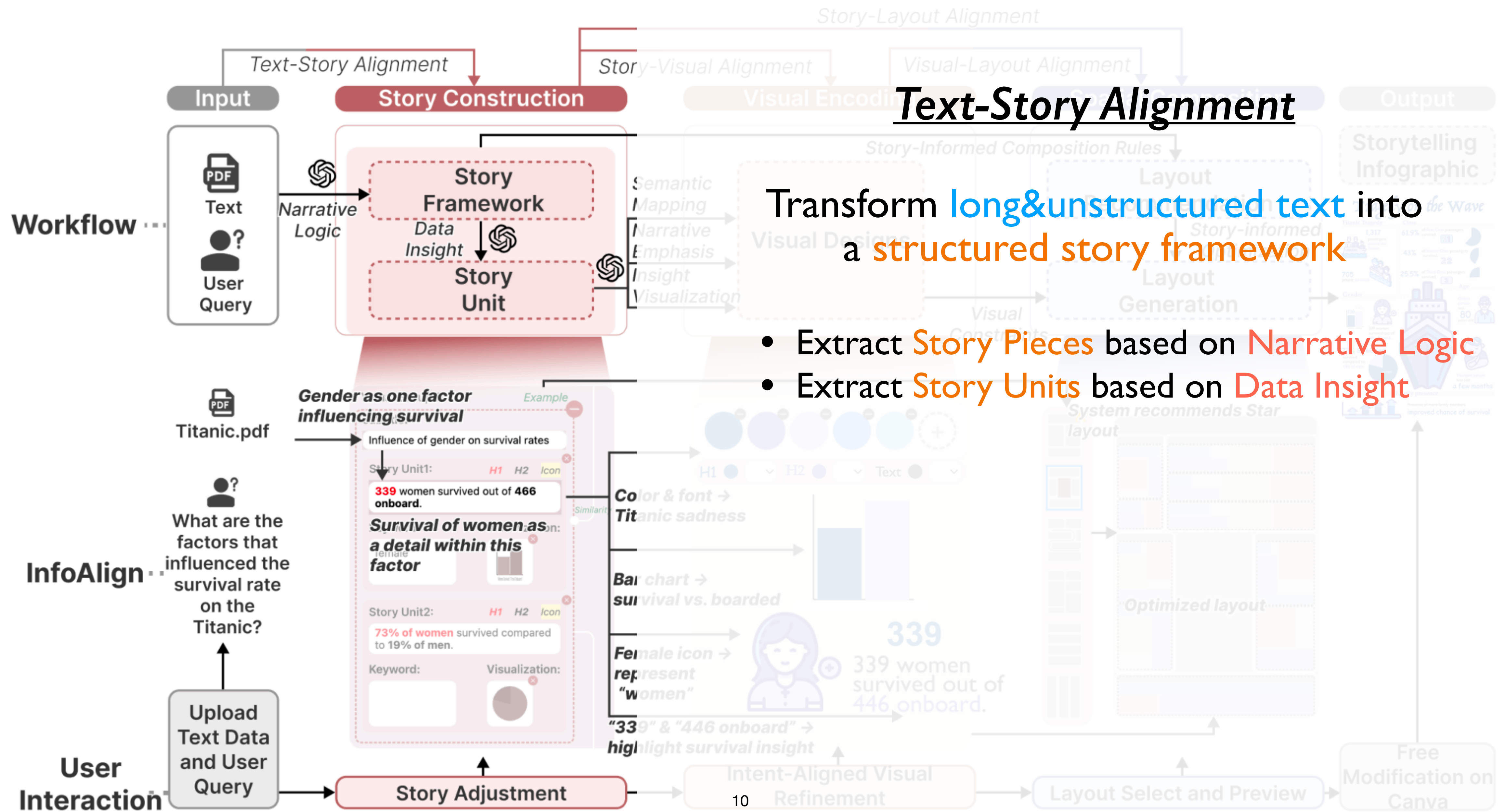
- Story Piece Count
- Story Unit Density
- Narrative Connections
- Story Structure
- Gestalt Proximity

**RQ2: How can story consistency be maintained across the design steps of an infographic?**

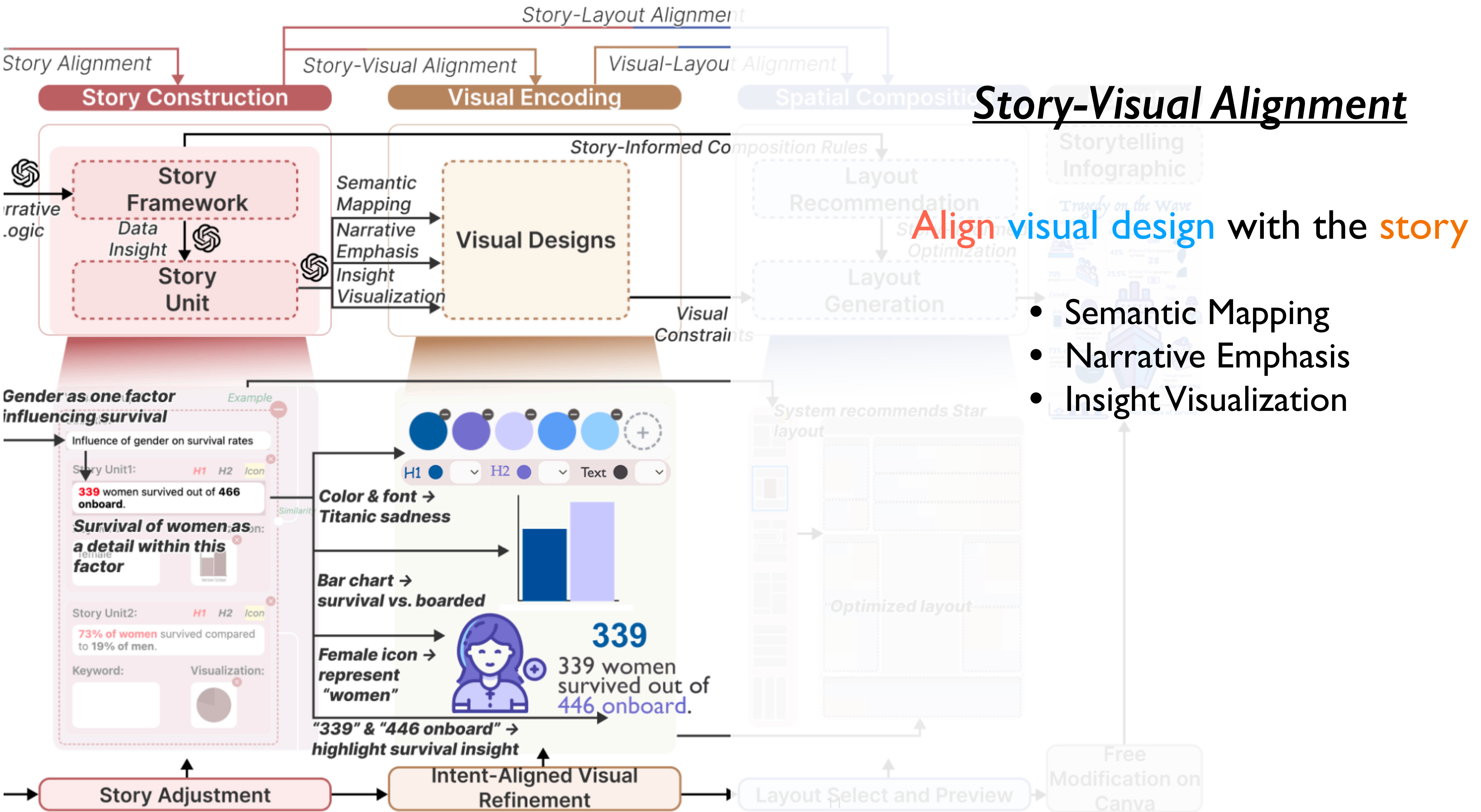
# Narrative-Centric Workflow



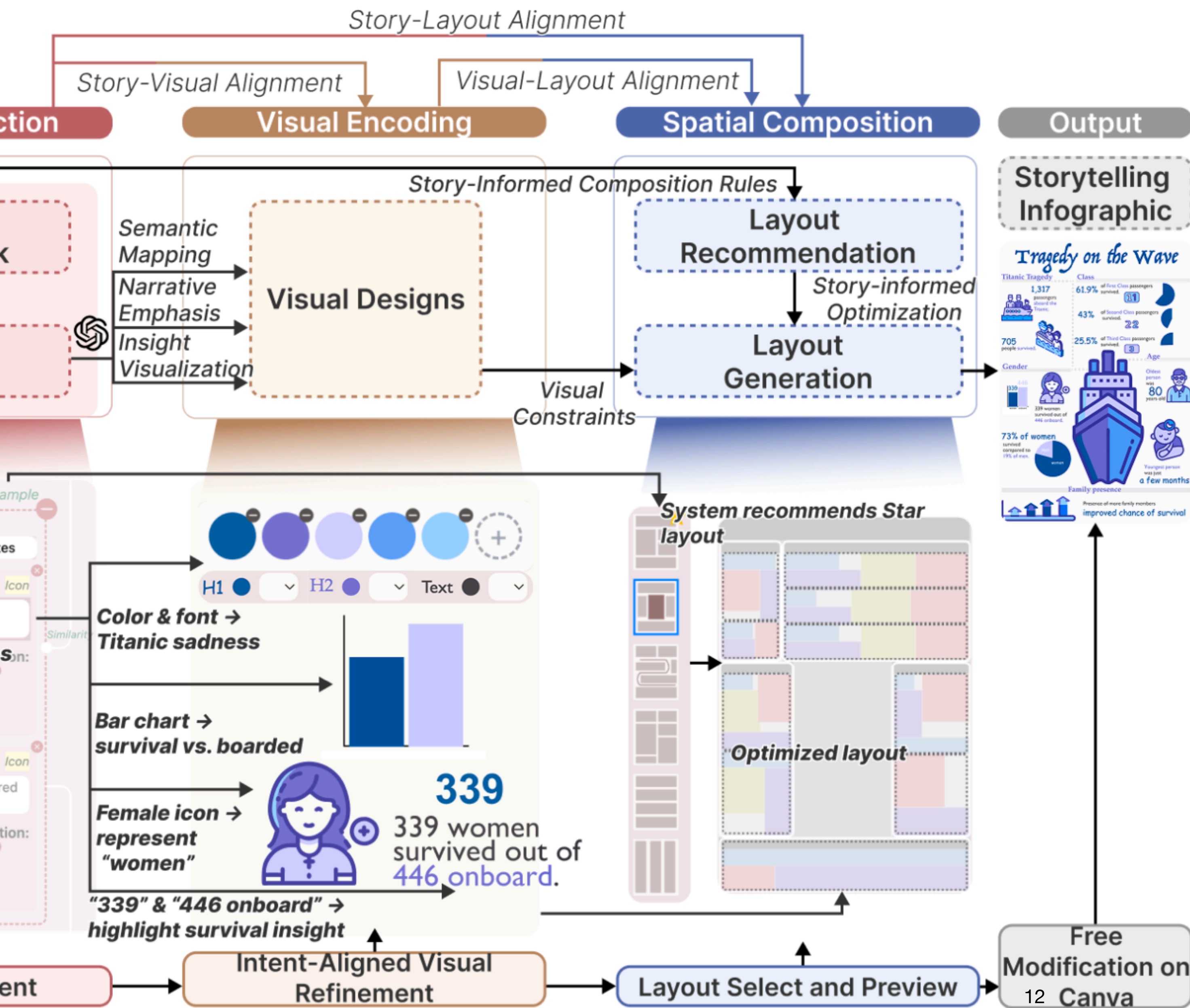
# Story Construction



# Visual Encoding



# Spatial Composition



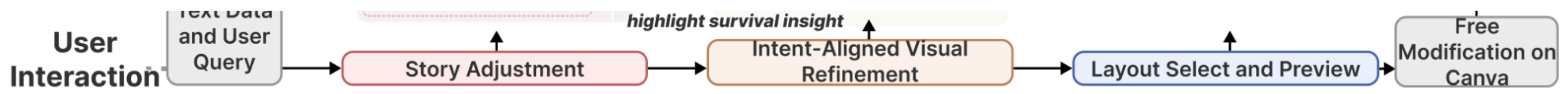
## Story-Layout Alignment

Arranging the infographic **layout** to **guide** the user's **story reading flow**

- Story-informed composition rules
- Visual constraints

**RQ3: How can the user's story intent be preserved through out the design steps of an infographic?**

# Interface



## A Input View

What are the factors that influenced the survival rate on the Titanic? Upload

## Stylization View

Color palette and font settings: H1, H2, Text. Includes a 'SUBMIT' button.

## D Layout View

Grid-based layout editor for the infographic.

## Story Piece

Placeholder for a story unit.

## Subtitle

Placeholder for a subtitle.

## Story Unit

Placeholder for a story unit.

## Story Unit

Placeholder for a story unit.

## B Story View

61.9% of First Class passengers survived.

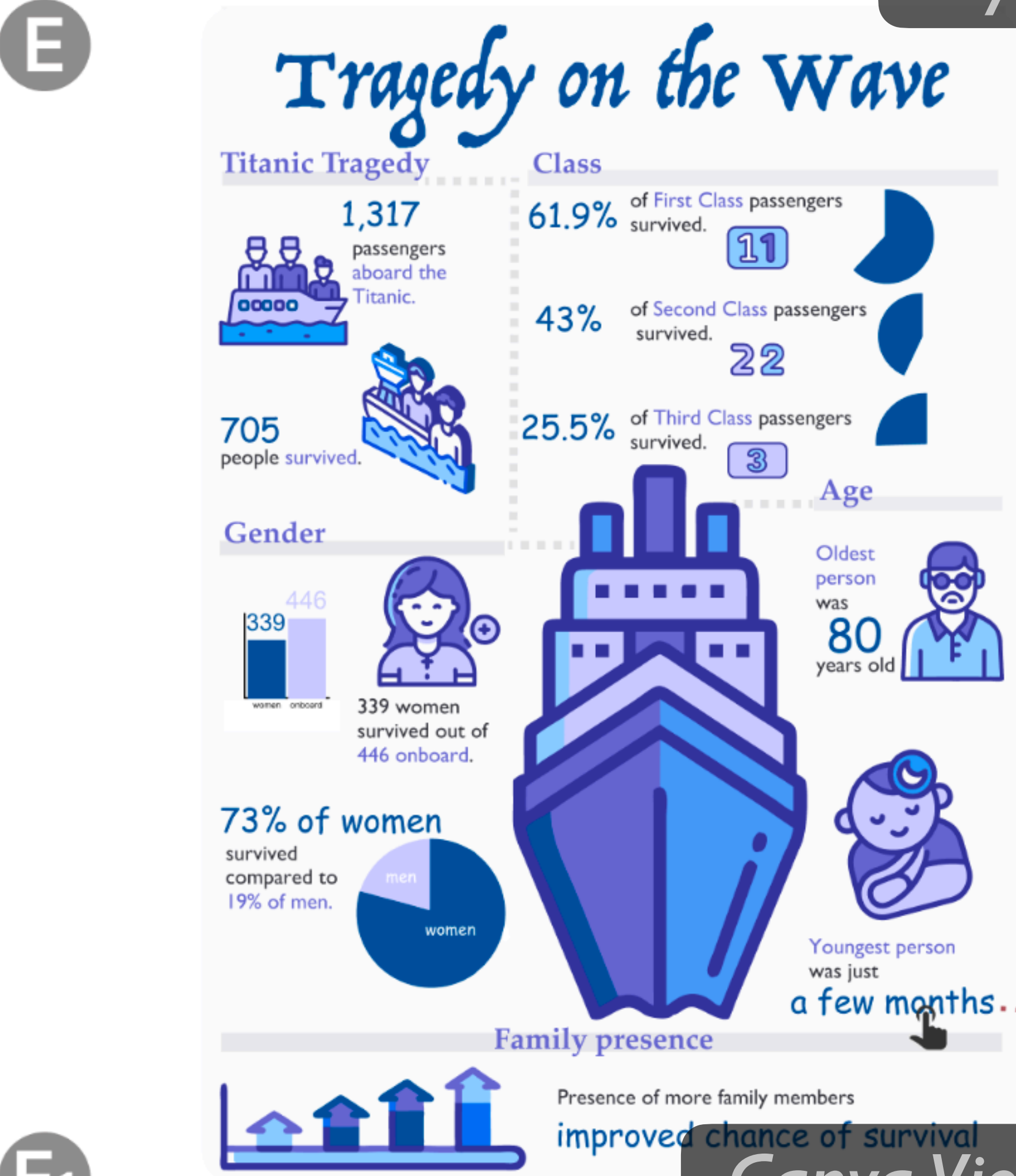
Icon Keyword: Icon of 1. Chart: [Pie Chart]

Story Unit 2: H1 H2 Icon. 43% of Second Class passengers survived.

Icon Keyword: Icon of 2. Chart: [Pie Chart]

Story Unit 3: H1 H2 Icon. 25.5% of Third Class passengers survived.

Icon Keyword: Icon of 3. Chart: [Pie Chart]



## E1 Canva View

Editing tools: pencil, square, text, download.

14

## E2

Edit Text: a few months

Text Font: 20px, Comic Sans MS

Text Color: [Color Picker]

Delete

Legend for Story Piece components: H1, Icon, Chart, Text.



What are the factors that influenced the survival rate on the Titanic?



Upload



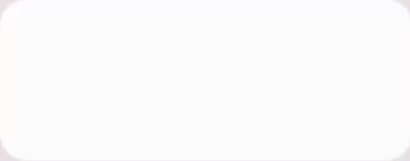
1000



600

px

NEXT STEP



Aa

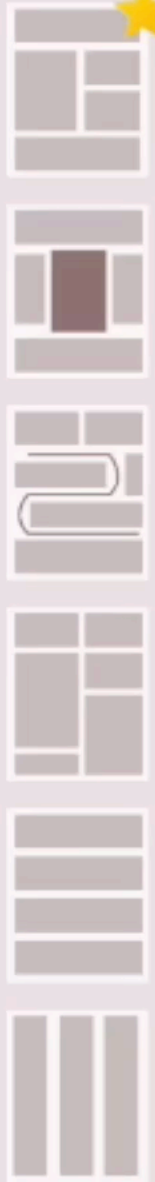
H1



H2



Text



SUBMIT

InfoAlign



# Evaluation & Findings

Mix-method, task-based user study

12 experienced infographic designer

Coherent&Consistent stories representation ↑

## I. Workflow-level quality

Dimension	Questionnaire Items
<b>Story Construction</b>	Q1. The role of this story piece in the overall story is clear and makes sense.
	Q2. The connections between this story piece and its related story pieces are clear.
	Q3. This story unit clearly elaborates the idea of its corresponding story piece.
	Q4. The overall storyframe is in line with my story goal.
<b>Visual Encoding</b>	Q5. The icon keyword for this story unit semantically matches its content.
	Q6. The chart for this story unit appropriately visualizes its data or insight.
	Q7. The highlighted text in this story unit correctly emphasizes the key information.
	Q8. The colors and fonts are consistent with the theme and tone of the story.
<b>Spatial Composition</b>	Q9. The layout presents the story in a clear and logical sequence.
	Q10. The overall narrative flows smoothly from beginning to end.
	Q11. The layout is well-structured.

### Aligning story goals and constructed stories

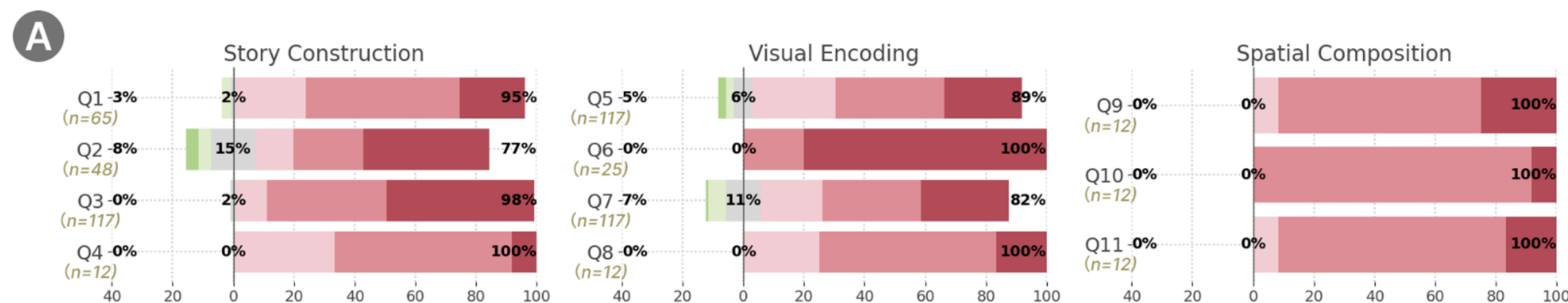
- 95% story pieces were rated as coherent
- 98% story units were rated as coherent

### Story-aligned visual designs

- 89% icons were rated as semantically appropriate
- 98% highlights were rated as correctly emphasizing
- All charts were rated as appropriately reflecting data

### Story-informed spatial composition

- All layout were perceived as well structured, in logical sequence with a smooth reading flow

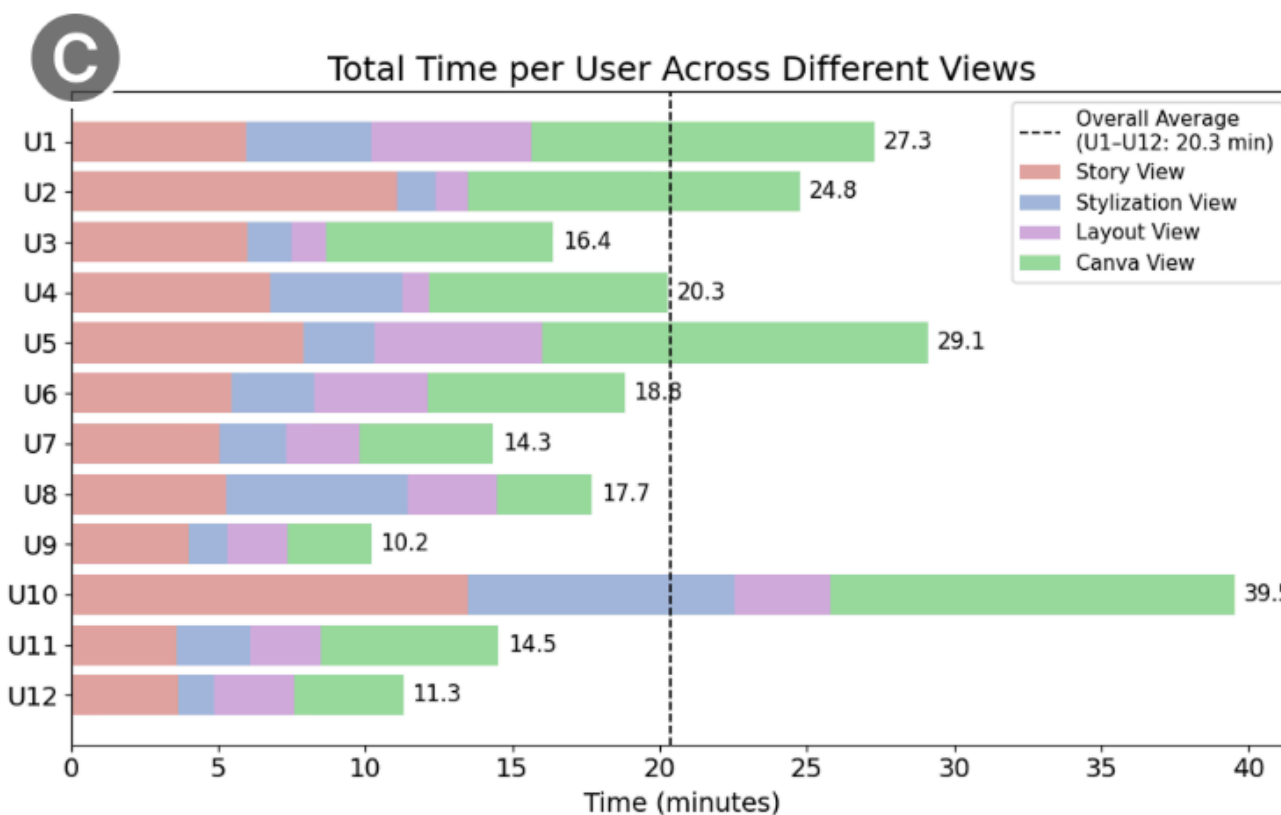
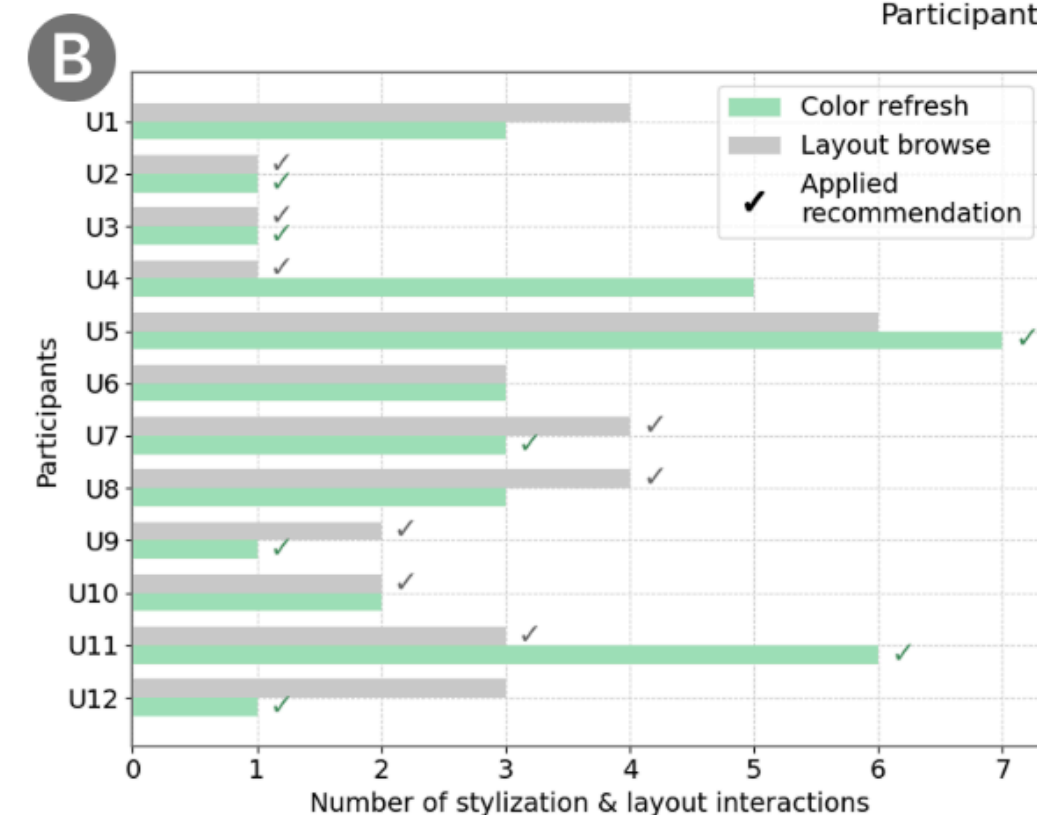
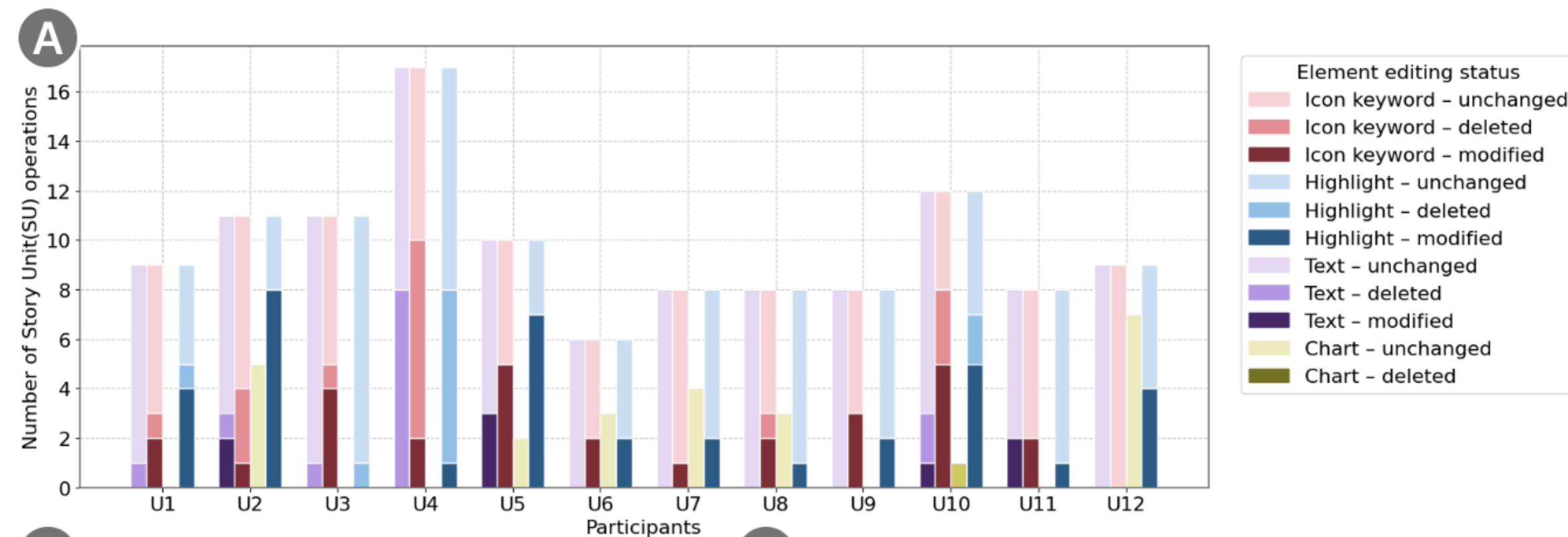


# Evaluation & Findings

Mix-method, task-based user study

**12** experienced infographic designer

## 2. Human-AI interaction patterns



Integrating story goals and creator intent through human-AI co-creation

Adjustment Rates

- Highlights: 41.0%
- Icons: 39.3%
- Text: 17.9%
- Charts: 4.0%

*storytelling infographic must not only align with the story goal but also integrate the creator's subjective intent to form the final communication*

Efficiency

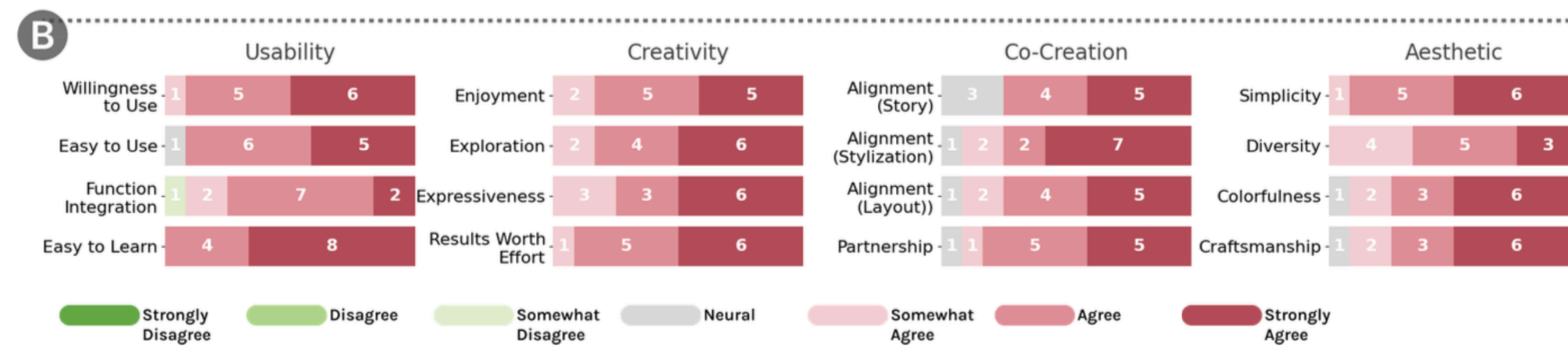
- 20.3 mins in total (SD=8.5)

# Evaluation & Findings

Mix-method, task-based user study

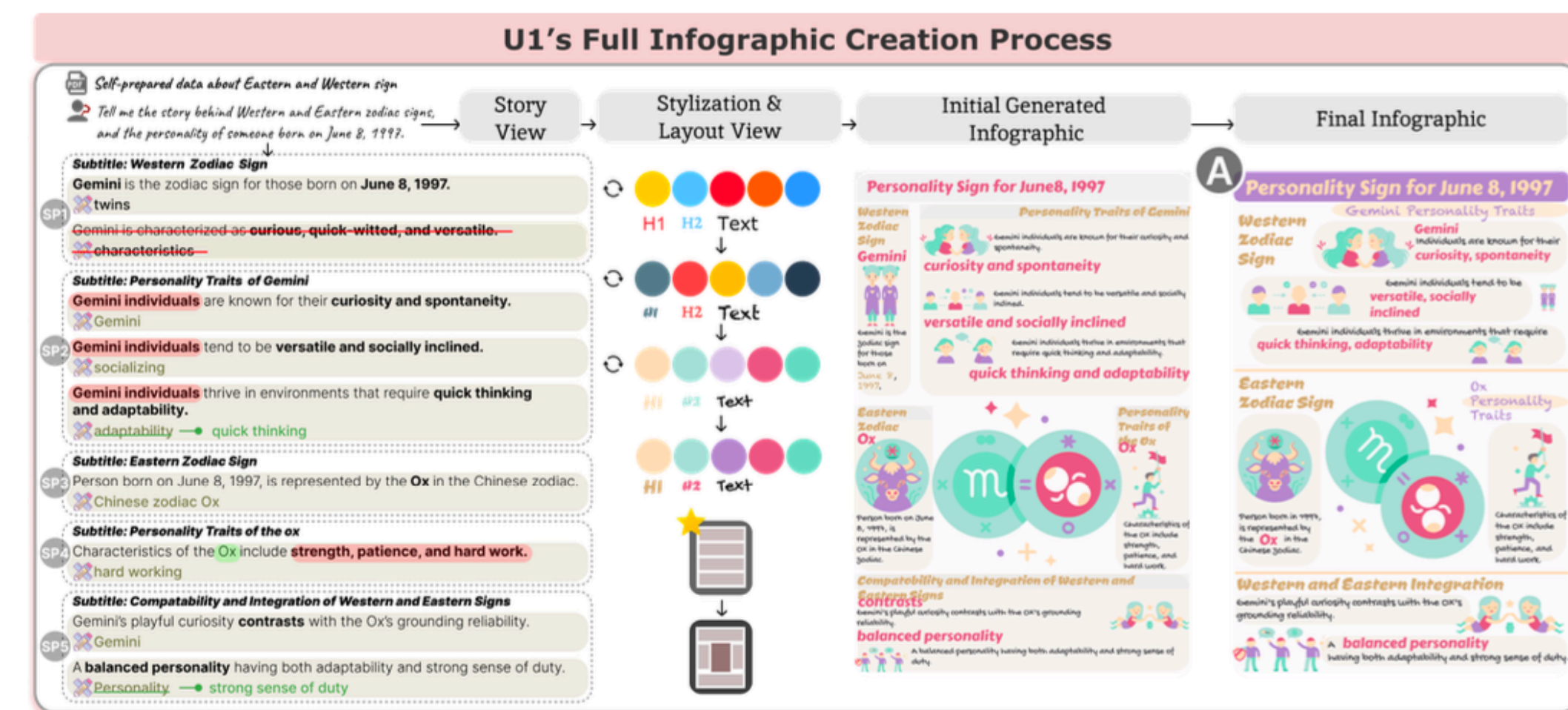
12 experienced infographic designer

## 3. Overall system effectiveness

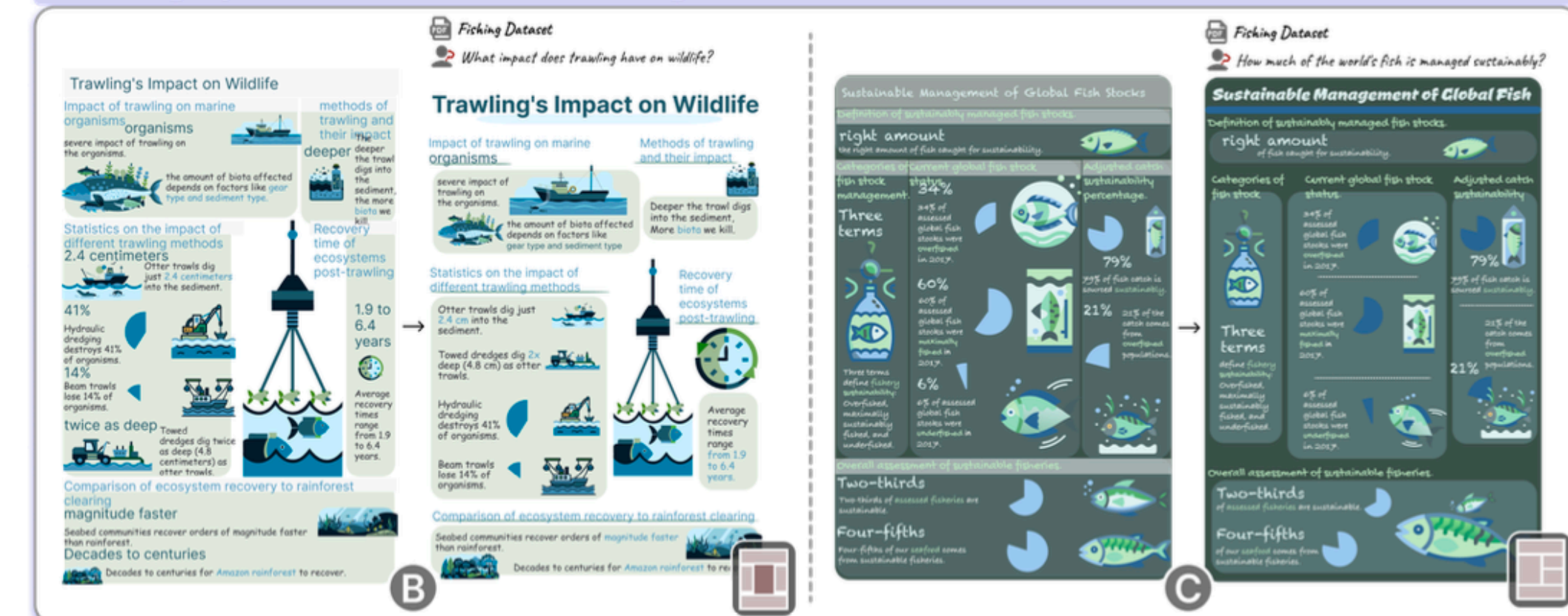


- Usability: M=6.27, SD=0.84
- Creativity Support: M=6.31, SD=0.75
- Human-AI Co-Creation: M=6.10, SD=1.04
- Aesthetics: M=6.17, SD=0.88

Automation ↔ Expressive freedom



### Infographics from the Same "Fishing" Dataset: Initial vs "Canva View Refined" Versions



### Examples of Infographics Generated from Various Datasets and Story Goals



# Discussion

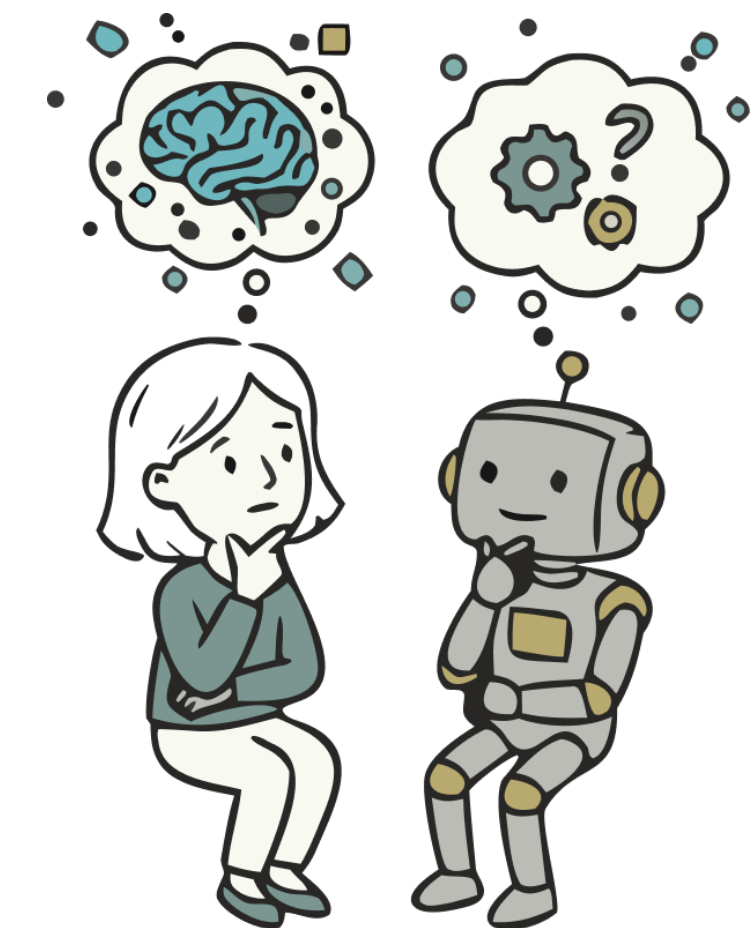
## Narrative-Centric Workflows Beyond Infographics

- E.g., posters, slides, data comics, data videos..
- Shared core principle (narrative-centric)
- Lowers the barriers to visual storytelling



## Balancing AI Automation with Human-in-the-Loop Control

- Users still want to intervene and need authorship
- Too much structure may limit expression



## Richer Input and Adaptive Visual Stories Creation

- Different inputs may require different story structures
- Multimodal input creates new opportunities
- Future direction: adaptive, user-specific storytelling



Jielin Feng

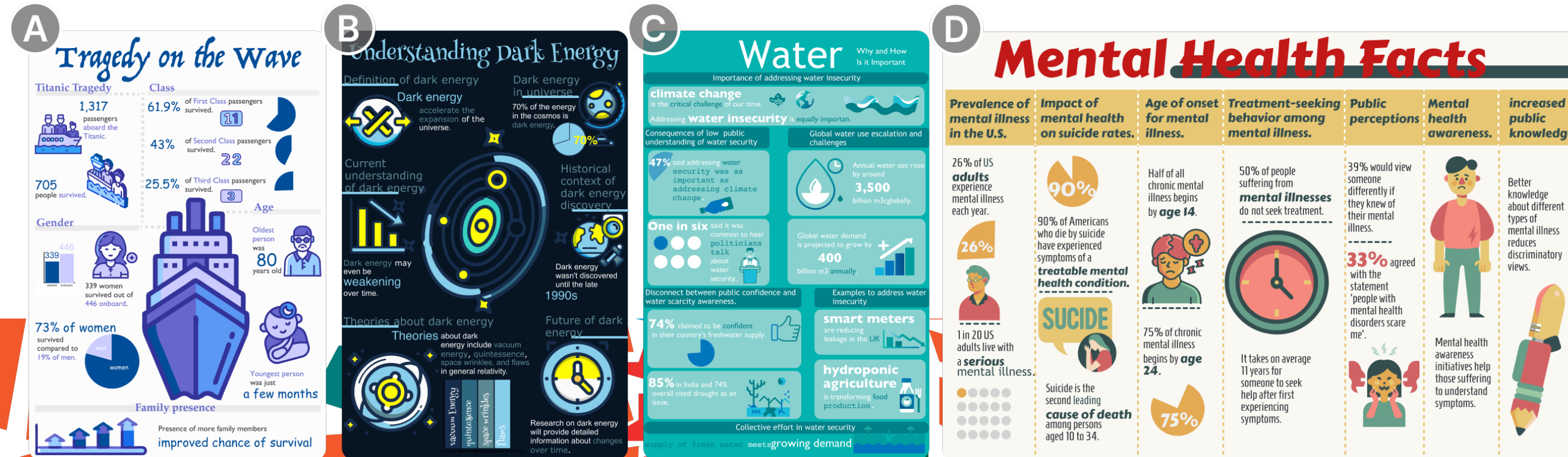


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# Thank You!