Workshop

Visual Storytelling in Medicine

Expert co-creation
of visualization concepts
for narrative health communication

Our Team for Today

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Visualization group
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What to expect from this workshop

A brief introduction to: Health Literacy, Visual Storytelling, Visual Storytelling in Medicine

Our topic today: Vaping as a topic for health communication and prevention

Focus: Visual Communication for Prevention

Exploring how complex health-related information can be communicated visually

Hands-on workshop: Working in groups of 3–4 participants,

Developing and discussing visualization ideas,

Sharing and building on each other's ideas

Why do we need visual medical storytelling?

- Vast amount of health information available

- Often the information are not tailored to the target audience of non-experts [2]

> Health literacy encompasses people's knowledge, motivation, and skills in finding, understanding, evaluating, and applying relevant health information in various forms so that they can make judgments and decisions in their daily lives regarding disease management, disease prevention, and health promotion that maintain or improve their quality of life throughout their lifespans. [1]

- 46% of the population in Europe has low health literacy [2]

- Many studies link low health literacy to e.g., suboptimal diesase management, more frequent hospital admissions or higher morbidity & mortality [1]

Narrative Visualization for Communication

Narrative Visualization as an approach to making (health) **information more accessible to non-experts.**

- Combination of data & visualizations into engaging stories [3]

- Used in various contexts (e.g.,medicine [6], sports [5] & climate change [4])

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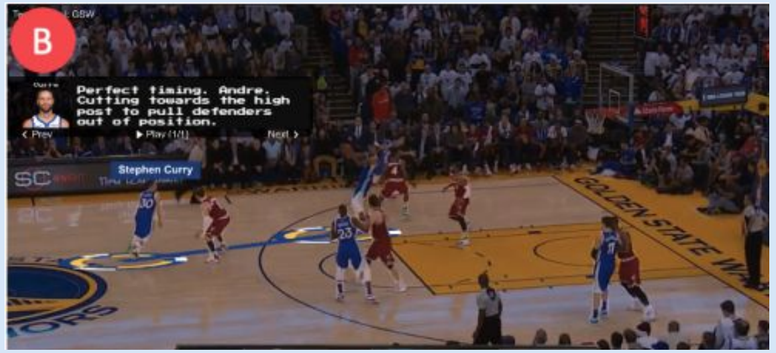

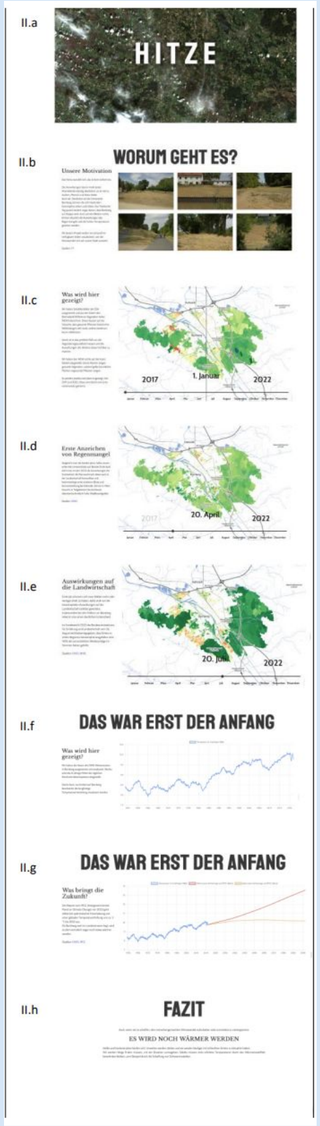

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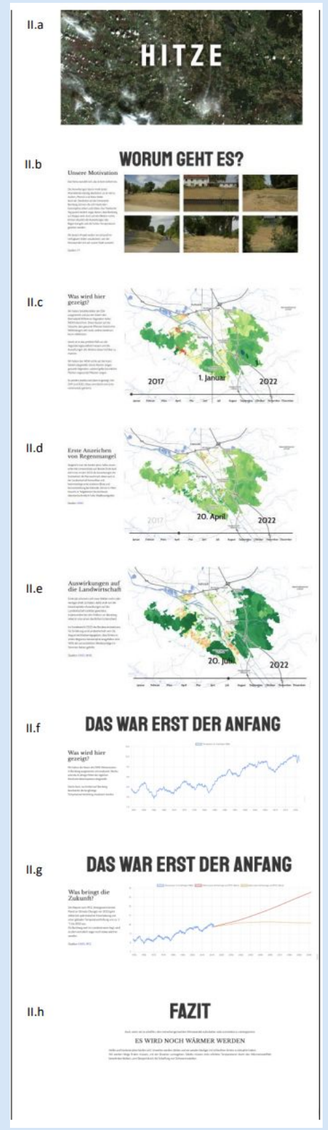
- Used in various contexts (e.g., medicine [6], sports [5] & climate change [4])
- Can be categorized in genres [11]

Slideshow

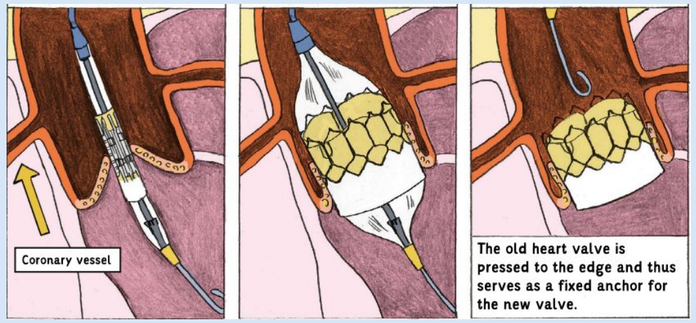
Datavideo

Scrollytelling



Narrative Medical Visualization

Patient Education



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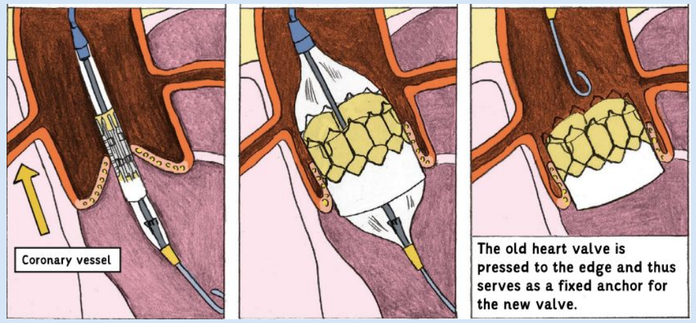
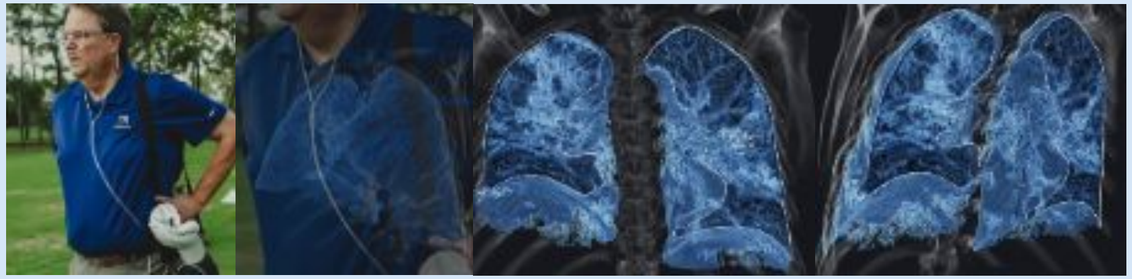
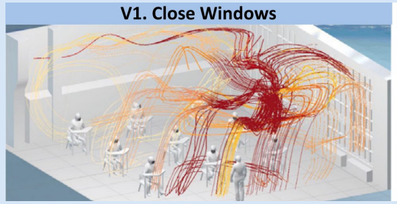
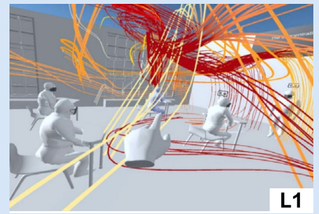


Public Health Communication







Narrative Medical Visualization

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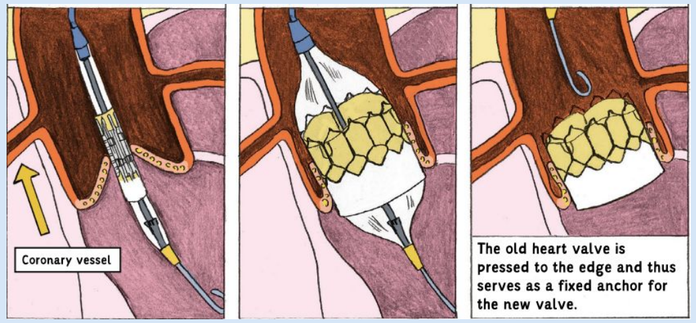

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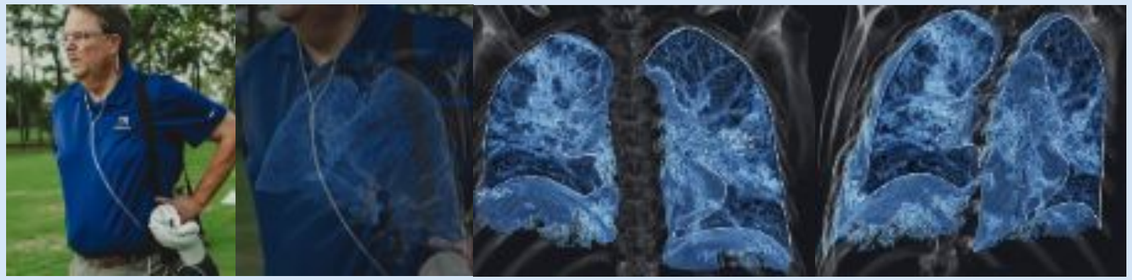
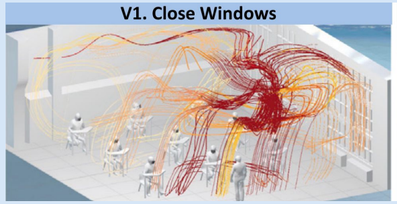
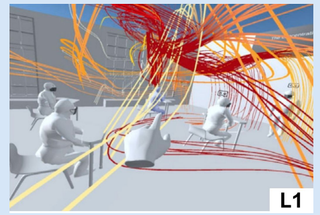




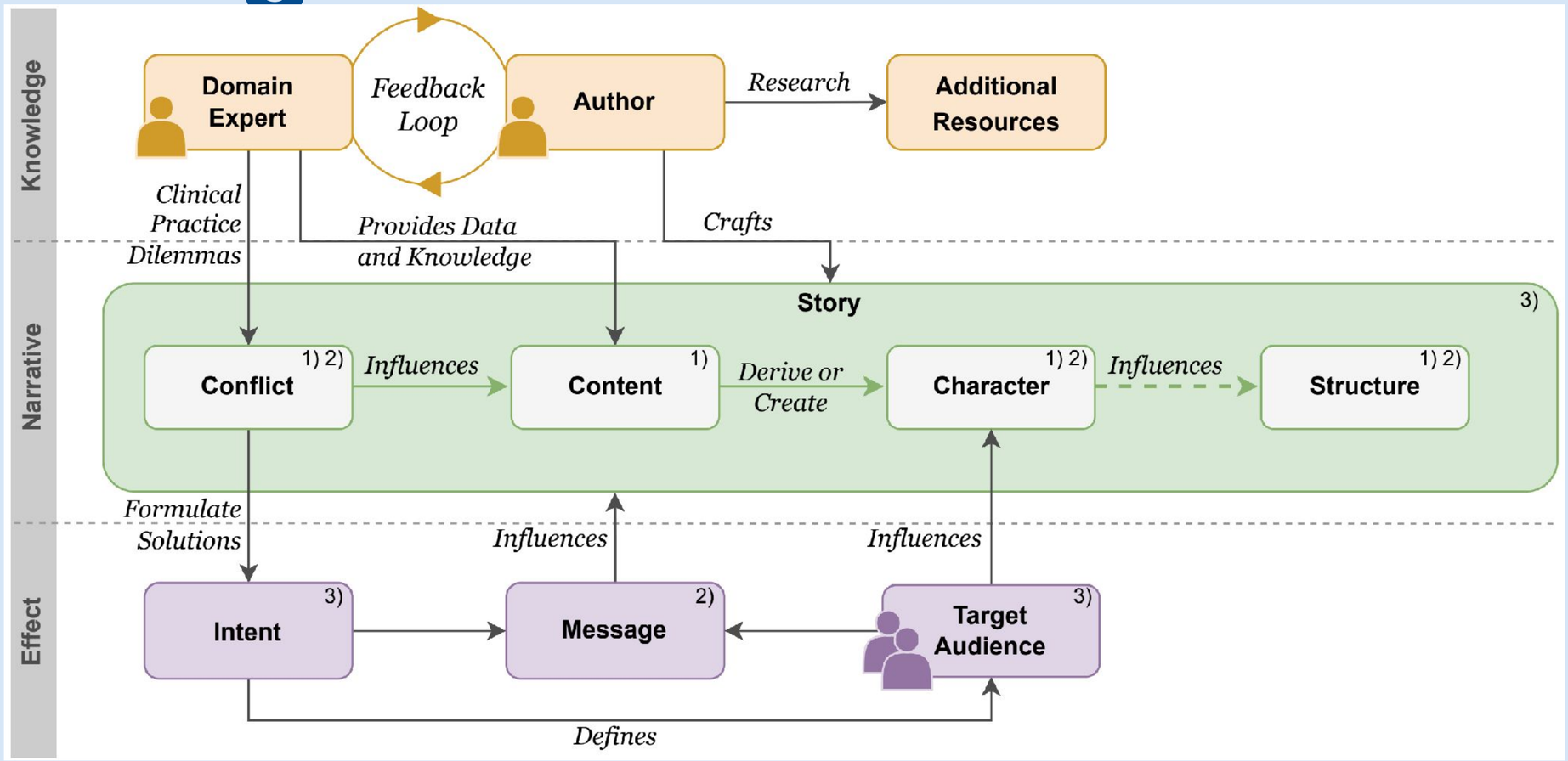


- clear & understandable
- relevant

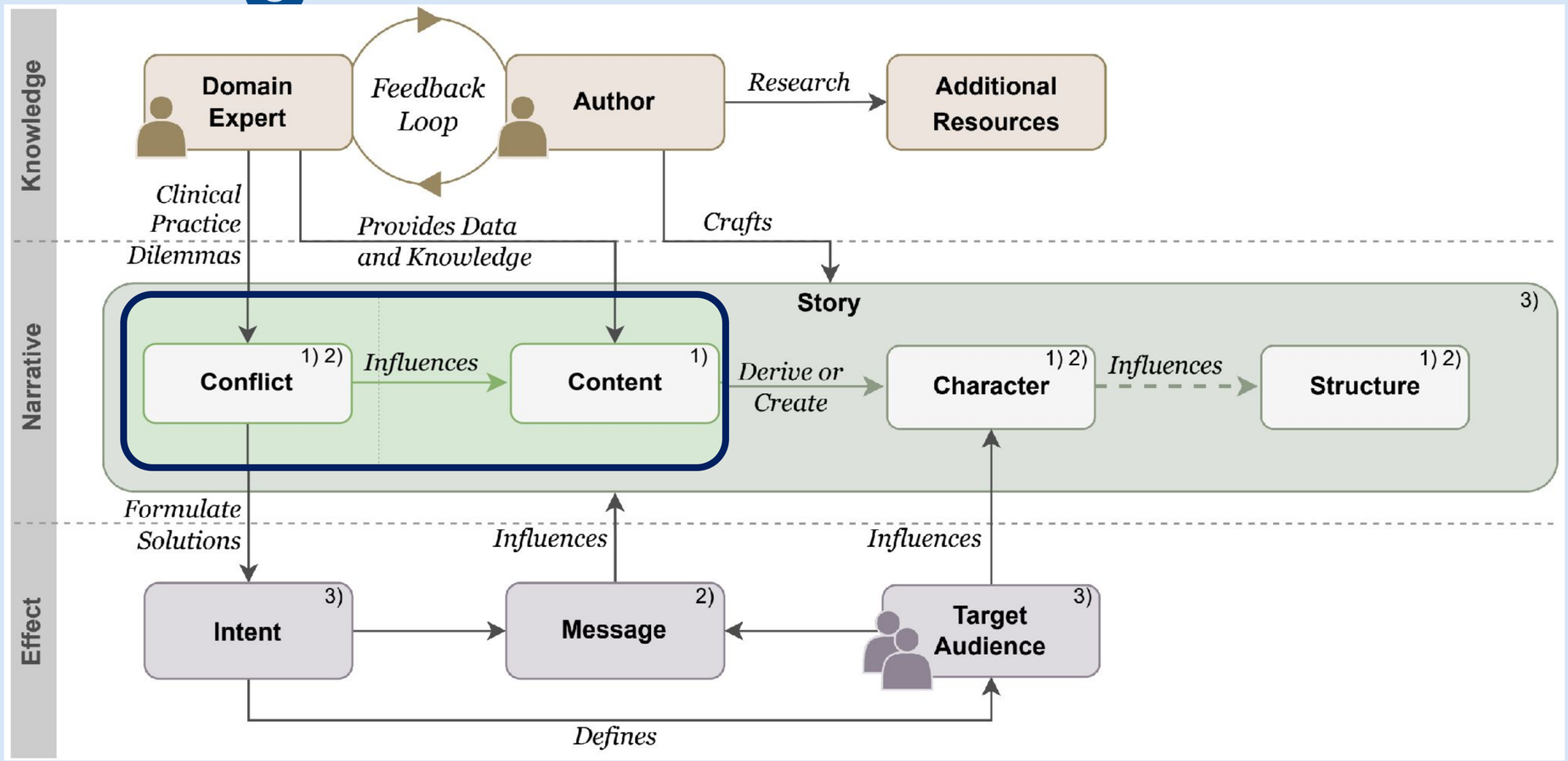
- interesting & engaging
- memorable

Visuals help to understand complex information

Narrative Medical Visualization Design Process



Narrative Medical Visualization Design Process



Today: Vaping

What ist vaping?

- “Vaporiser” or “E-Cigarettes” include a liquid with usually nicotine & various flavorings and aromas (in some countries these are forbidden)
- liquid is heated by a battery-powered heating element, vaporized and then inhaled through a mouthpiece

Why is it an important topic for public visual communication?

- they look and smell harmless & get promoted in social media for young people
- more young people (in germany) are vaping (2,9% in 2021 - 6,7% in 2025 in boys and 1,8% in 2021 - 7,8% in 2025 in girls)
- disposable cigarettes are bad for the environment and hazardous to handle (risk of explosion) → they will be banned in EU from 2027 on (not the focus today)

What we already know about Visual Communication for “Vaping-Consequences”

- Common approach: Young main characters or depiction of formers users who quit vaping [12]

- Design principles according to a co-design workshop with young adults [13]:
    - Capture attention through visual appeal
    - Make messages relevant and relatable to youth
    - Focus on immediate consequences
    - Provide clear calls to action & use supportive language
    - Avoid ambiguity and fearmongering in risk communication

Literature

[1] Bitzer, E. M., & Sørensen, K. (2018). Gesundheitskompetenz–health literacy. *Das Gesundheitswesen*, *80*(08/09), 754-766.

[2] WHO (2025). Low Health Literacy is costing health. https://iris.who.int/server/api/core/bitstreams/f80ae253-f5a0-4e82-9c36-1db337f40114/content

[3] Y. He, K. Xu, S. Cao, Y. Shi, Q. Chen and N. Cao, "Leveraging Foundation Models for Crafting Narrative Visualization: A Survey," in *IEEE Transactions on Visualization and Computer Graphics*, vol. 31, no. 10, pp. 9303-9323, Oct. 2025, doi: 10.1109/TVCG.2025.3542504.

[4] F. Beck, L. Panzer and M. Redepenning, "Local Climate Data Stories: Data-driven Storytelling to Communicate Effects and Mitigation of Climate Change in a Local Context," *2024 IEEE VIS Workshop on Visualization for Climate Action and Sustainability (Viz4Climate + Sustainability)*, St. Pete Beach, FL, USA, 2024, pp. 1-9, doi: 10.1109/Viz4Climate-Sustainability64680.2024.00005.

[5] C. Lee, T. Lin, H. Pfister and C. Zhu-Tian, "Sportify: Question Answering with Embedded Visualizations and Personified Narratives for Sports Video," in *IEEE Transactions on Visualization and Computer Graphics*, vol. 31, no. 1, pp. 12-22, Jan. 2025, doi: 10.1109/TVCG.2024.3456332

[6] Meuschke, Monique, et al. "Narrative medical visualization to communicate disease data." *Computers & Graphics* 107 (2022): 144-157.

[7] Mittenentzwei, Sarah, et al. "Investigating user behavior in slideshows and scrollytelling as narrative genres in medical visualization." *Computers & Graphics* 114 (2023): 229-238.

[8] Jiaan LI and Hailiang WANG. 2025. Designing and Evaluating a Narrative-driven Spatial Visualization for Improving Patient-centered Communication among Older Adults. In Proceedings of the Extended Abstracts of the CHI Conference on Human Factors in Computing Systems (CHI EA '25). Association for Computing Machinery, New York, NY, USA, Article 184, 1–11.

[9] Lei, T., Deng, Y., Yang, R., Li, Z. (2025). The Application of Interactive Narrative in the Health Knowledge Visualization. In: Duffy, V.G. (eds) Digital Human Modeling and Applications in Health, Safety, Ergonomics and Risk Management. HCII 2025. Lecture Notes in Computer Science, vol 15791. Springer, Cham

[10] Brand, A., et al. "Medical graphics to improve patient understanding and anxiety in elderly and cognitively impaired patients scheduled for transcatheter aortic valve implantation (TAVI)." *Clinical Research in Cardiology* 114.3 (2025): 302-312.

[11] E. Segel and J. Heer, "Narrative Visualization: Telling Stories with Data," in IEEE Transactions on Visualization and Computer Graphics, vol. 16, no. 6, pp. 1139-1148, Nov.-Dec. 2010, doi: 10.1109/TVCG.2010.179. keywords: {Data visualization;Visualization;Media;Image color analysis;Engineering profession;Economics;Narrative visualization;storytelling;design methods;case study;journalism;social data analysis},

[12] Potter A, Mueller TS. A Comparative Analysis: Gen Z Tobacco vs. Vape Cessation Advertising Campaigns. Health Commun. 2026;41(2):349-359. doi:10.1080/10410236.2025.2519121

[13] T. Sun, G. C. K. Chan, D. Stjepanović, et al., " Co-Designing AI-Generated Vaping Awareness Materials With Adolescents and Young Adults: A Qualitative Study," Drug and Alcohol Review 45, no. 1 (2026): e70022


Questions?

Let’s start with the

Workshop

Tim
Social context

... starts vaping because most of his friends use e-cigarettes. He has never really thought about why he started or what exactly he is inhaling. As he learns more about vaping, he begins to question his habits: Why do people start vaping? What happens when I vape and how might it affect my body? What makes vaping appealing to young people?

Jonas
Weight control

... has heard that nicotine can influence appetite and that some people use e-cigarettes to help control their weight. He is curious whether there is actually any truth to this and what role nicotine plays in the body. As he looks into the topic, he begins to wonder: Can vaping really affect appetite or body weight? What happens in the body when nicotine is inhaled? Are there health risks associated with using vaping for weight control?

Anna
Money

... has noticed how much money she now spends on disposable e-cigarettes. What started as an occasional purchase has gradually become a regular expense, and she begins to wonder whether there are other long-term consequences of her vaping habit. She asks herself: How much do I actually spend on vaping over time? How might regular vaping affect my health in the long term? What do we know about the long-term consequences of vaping?

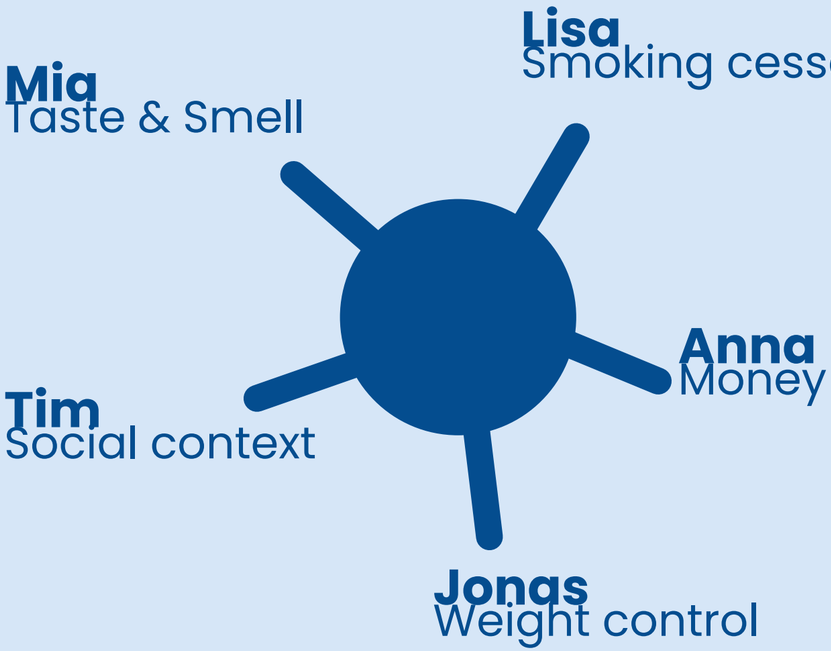
Mia
Taste & Smell

... is fascinated by the wide range of flavours available for e-cigarettes and regularly chooses new ones to try. She starts wondering why vaping can taste and smell like fruit, sweets or other familiar things. As she learns more about e-cigarettes, she asks herself: What creates these different flavours? What is actually contained in the liquid? What happens to these substances when they are heated and inhaled?

Lisa
Smoking cessation

... stopped smoking a year ago and switched to e-cigarettes because she believed they would be less harmful. She knows that vaping and smoking are not the same, but she is unsure what this means for her health. She wants to understand: What happens in the body when I vape compared with smoking? Which health risks are reduced, and which remain? How certain are we about the long-term effects of vaping?

Continue the story visually… (15 minutes)



What to keep in mind:

- **target group:** young adults
- **main goal:** prevention
- **requirements:** understandable, interesting, relevant, memorably, visualization should increase understandability of complex health information

What aspect is worth visualizing and how?

Continue the story visually… (15 minutes)

Choose one story:

- **Tim**
  Social context
- **Mia**
  Taste & Smell
- **Jonas**
  Weight control
- **Lisa**
  Smoking cessation
- **Anna**
  Money

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What aspect is worth visualizing and how?

Find a group

Show your work to the group (1 minute each)

You now have 1 minute to pitch your idea to the group. Be sure to keep it brief and try to answer the following questions:

1. What do you want to **communicate**?
2. What should the viewer **understand**?
3. How exactly did you **visualize** it (explain your choices briefly)?
4. What **format** do you have in mind (e.g., VR application, poster, comic, ...) ?

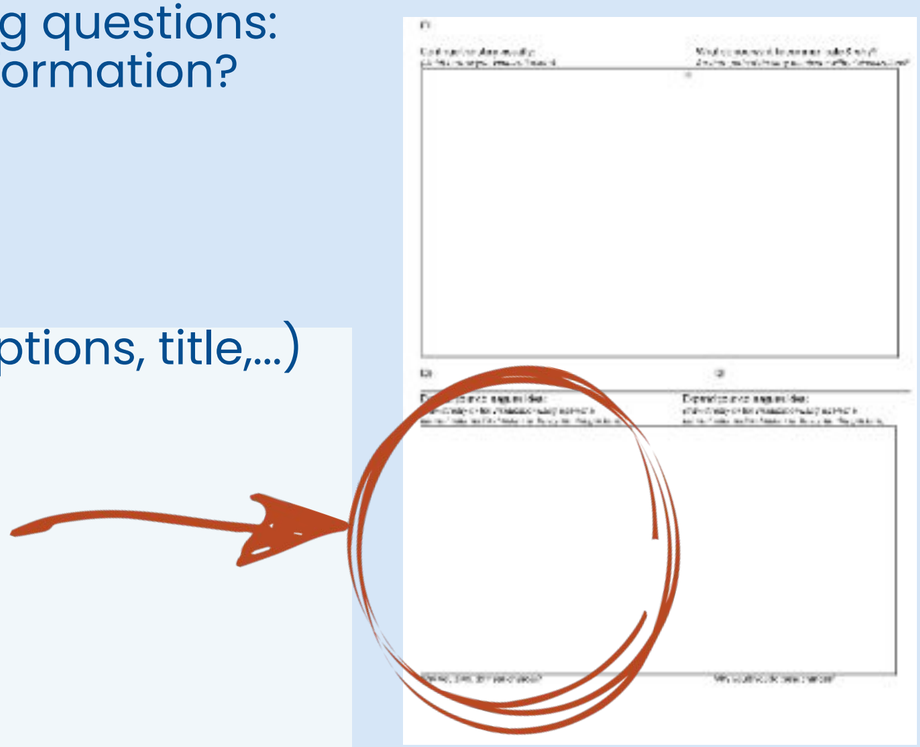
Now ask your colleagues… (5 minutes)

Give your sketch to the person to your right. You will receive the sketch from the person to your left. Look at your colleague's sketch and answer the following questions:

1. Does the visualization help to understand complex information?
2. What would you change?
3. What alternative representation could work?

You may:

- Add something (e.g., visual aspects, labels, captions, title,…)
- Remove something
- Draw an alternative visualization
- Suggest a different visual approach
- Add a possible interaction



Next round: ask your colleagues… (5 minutes)

Now pass the sketch once again to the **person on your right**. Answer the following questions for again, this time for the new sketch in front of you:

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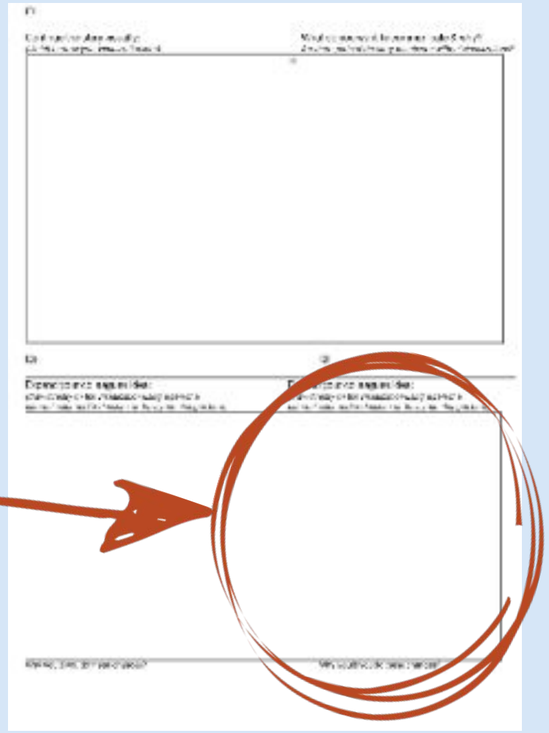

Show your work to the group (30 seconds each)

You now have 30 seconds to show the adapted visualization ideas to the group. Be sure to keep it brief and try to answer the following questions, make sure to cover both iteration steps:

1. What were the **major changes** (e.g., different aspects that were visualized,...)?
2. What should the viewer **understand**?
3. How exactly did the **visualization change** (e.g., what was added, removed,...)?

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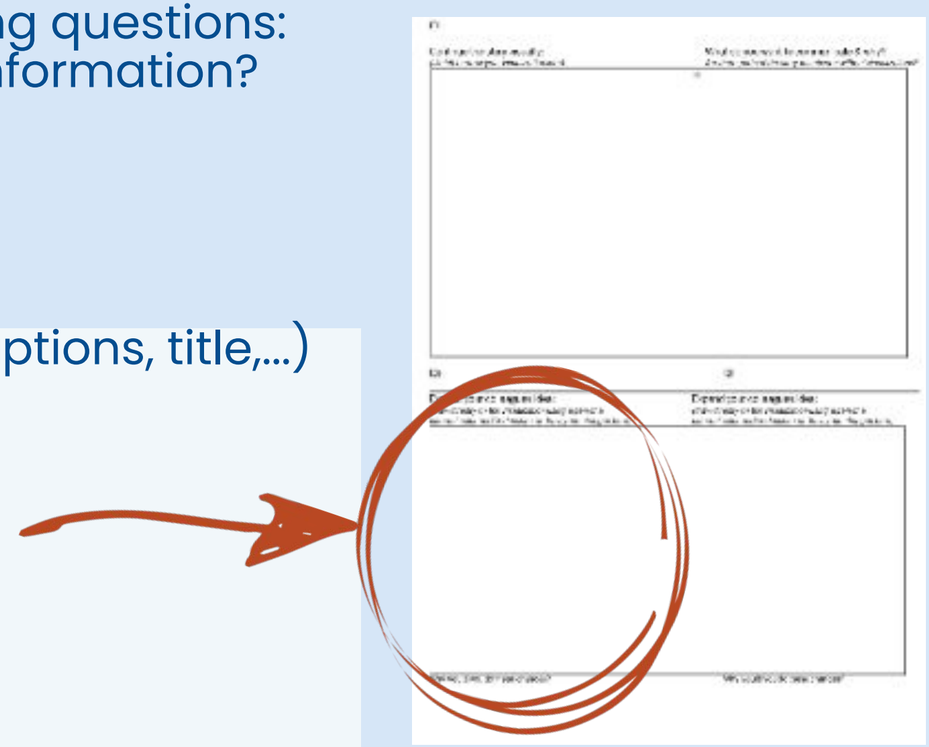

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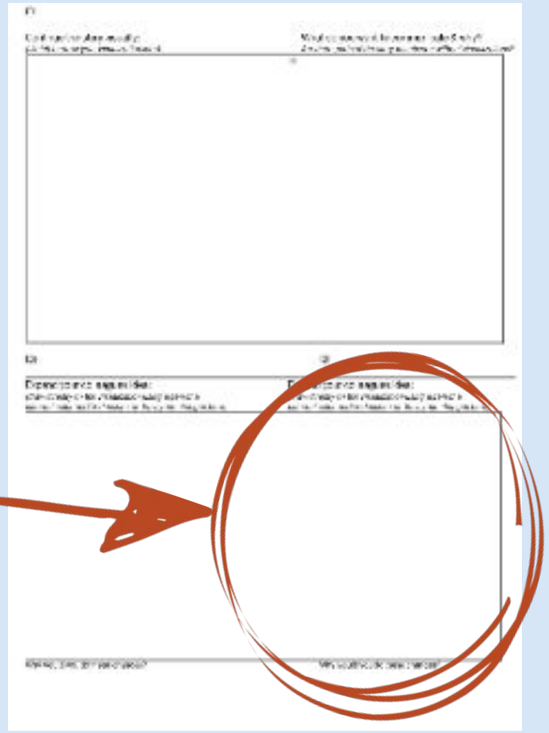

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Show your work to the group (2 minutes each)

Now you have time to discuss in your group. At the end, **choose a visualization** that you think is particularly well-done, particularly innovative, or particularly worth discussing. **Use your sticker** dots to vote for your choice to present.

Think about answers to the following questions and present your idea to the group. (2 minutes maximum):

1. What did you want to communicate?
2. Why did you choose this aspect?
3. How did the feedback change your visualization?
4. What alternative ideas emerged?

First impressions

Short feedback round

- What did you **like** about the workshop?
- What **didn’t you like**?
- What were the **biggest challenges**?
- Was one of the **stories harder / easier** to continue than the others?
- If we do this workshop again, what **topic/context** could be appropriate apart from “vaping”?
- If you are vaping yourself, did this workshop change anything about **your opinion**?

Thank you so much!

If you want to work together with us
on this topic, feel free to contact us.

Sophie Mlitzke, Janine Zöllner, Tabea Grellmann, Bernhard Preim, Monique Meuschke
Otto-von-Guericke University, Magdeburg – transScience Project

T!Raum

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