Endeavour Program

Faculty of Engineering and IT

POSTER DESIGN

Dr Jade Sleeman

Session aims

To better understand how to design an effective poster in terms of:

- ✓ Content
- ✓ Layout
- ✓ Visual appeal
- ✓ Logistics

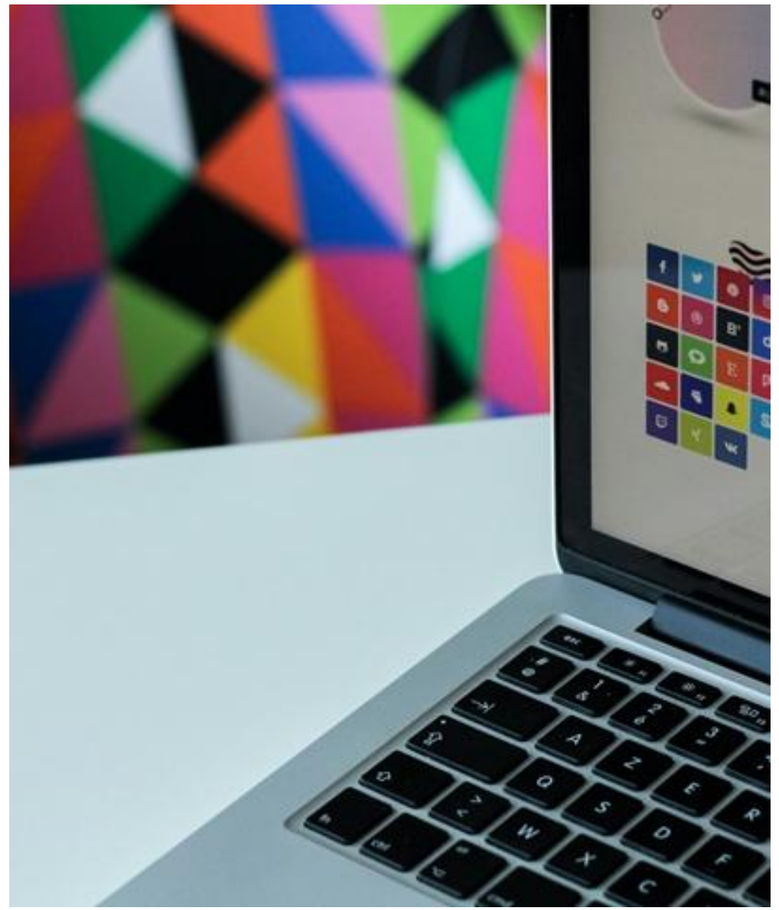


Photo by NordWood Themes on Unsplash

Content

Select content based on the needs of your audience

Ask yourself:

1. What is the **most useful/essential information** relating to our project?
2. What will our **audience most want to know**?
3. What is the **best medium** to present this information?
    - heading
    - text
    - graphic (chart, graph, image)
4. How can I show a **direct connection** between the text and the graphics?
5. How can I **reduce the amount of text** in order to maximise graphics/white space?

Compare 2 posters

Survey of the Least and Crested Auklet colony near Sugarloaf Head, Semisopochnoi Island, Aleutian Islands, Alaska, during 2004

Ian L. Jones and Jacques F. Marais Department of Biology, Memorial University of Newfoundland, St. John's, Newfoundland, A1B 3X9, iljones@mun.ca

The Least (*Aethia pusilla*) and Crested (*A. cristatella*) Auklet colony on the south-facing slopes of Sugarloaf volcano, Semisopochnoi Island, Aleutian Islands, Alaska (51° 53'N 179° 37' E) is the second or third largest among only nine such colonies of the entire Aleutian Islands. The three largest colonies, at Kiska, Semisopochnoi and Gareloi, each appear to support more than 500,000 breeding pairs of auklets, placing these among the ***largest concentrations of breeding seabirds in Alaska***.

Why survey Least and Crested Auklet colonies? For management, information concerning distribution and abundance of these species, two of the most abundant seabirds in Alaska, is crucial. Because they breed in concealed rock crevices, auklets are difficult to count and remain poorly understood compared to cliff-nesting seabirds. Nevertheless, some auklet colonies have changed in geographical area and density, or disappeared entirely, during historical time – leading to the suggestion that mapping and photographic documentation of auklet colony locations and boundaries would be useful (Art Sowls, pers. comm.). We urgently require such documentation of auklet colonies in order to interpret the effects of climate change on habitat and food supplies, plant succession on habitat suitability, and non-indigenous predators (e.g., rats) introduced to auklet breeding islands.

Methods Before the survey we obtained and georeferenced a geological map (Coats 1947, c. 1" = 1 mile) of Semisopochnoi Island, part of the **Alaska Maritime National Wildlife Refuge**. We located the likely colony location on this map based on previous accounts (Early et al. 1978, Thomson 1997). At 285 20 m² plots on a survey grid we recorded date and time of our visit, whether occupied auklet breeding crevices were present/absent, auklet density based on sign (0, L, M or H; following Renner et al. IN PRESS), auklet density based on ILL's method (0, 1-10, 11-100, >100 active crevices per 100 m²), and the proportion of vegetation and rock cover, during June and July 2004. Our survey grid was based on 100 m by 100 m cells; each survey plot was located at a randomly derived point within each cell so the mean distance between points was 100 m. We also recorded data for 29 additional plots on June 10, for a total of 314 plots surveyed. The island was circumnavigated by skiff and extensively explored to look for other auklet colony locations during July 2004.

Results Least and Crested Auklets breed at one nearly contiguous colony on Semisopochnoi Island, located near Sugarloaf Head. The colony site closely overlaps the area of the most recent lava flows from the Parasitic Cone at the base of Sugarloaf Peak volcano (mapped by Coats 1947), with two areas of high density centered on the points of origin of the lava flows on the southeast and southwest sides of the Parasitic Cone at about 200 m asl. We found one isolated patch of auklet colony on an area of rounded beach boulders in Nuclear Cove. This patch was separated from the main colony by c.500 m of unoccupied lava flow adjacent to Nuclear Cove. The maximum straight-line width of the colony at the shoreline (from easternmost to westernmost crevices) was 2.8 km. At its highest point c. 390 m asl, the innermost crevices were 1.5 km (straight line distance) from the shoreline. Among the plots within the colony boundaries, 14 (7%) were high density, 41 (21%) medium density, 69 (36%) low density and 68 (35%) had no active breeding crevices (Fig. 2). We estimated that the colony site may support about 1 million nesting auklets, 90% of them Least Auklets and 10% Crested Auklets. The colony site was nearly completely covered in vegetation (grasses *Calamagrostis* sp., *Elymus* sp. and *Puccinnellia* sp.) with bare rock (lava) comprising less than 0.1 % of the surface area. Openings in the vegetation through which auklets gained access to underlying blocky lava were typically small (5 - 20 cm diameter) and appeared to be maintained by birds forcing themselves through the dense vegetation cover. We estimated that 200 – 250 pairs of Glaucous-winged Gulls were nesting on the auklet colony and nearby lava flows. We observed Glaucous-winged Gulls hunting and killing auklets throughout the auklet colony. Among 100 Glaucous-winged Gull pellets examined, each at a different site within the colony, 92% contained Least Auklet remains, 2% Crested Auklet remains, 2% fish remains, 2% limpet, and 1% sea urchin.

Conclusions and Recommendations

- Semisopochnoi Island supports a Least and Crested Auklet colony of about one million birds occupying 150-250 year old lava flows that are completely covered by vegetation.
- The geographic area of the colony site at Semisopochnoi is greater than 2 km², making it the largest (in area) measured colony in the Aleutian Islands, but recently colonized Glaucous-winged Gulls and especially advancing plant succession represent possible threats to its future viability.
- Colony mapping using a 100 m survey grid and hand-held GPS-receivers provided a reasonably accurate and precise delineation of the auklet colony. We believe placement of regularly spaced survey plots is preferable to random placement of survey plots within grid cells. We found dropping counts to be of questionable usefulness as a relative density index in this grass-covered colony site.
- Similar surveys of auklet colonies at **Segula** and **Gareloi** are required to complete the mapping of western Aleutian Island Auklet colonies.
- We believe our survey results underline the need to remove rats from Kiska Island, which has the largest remaining patch of ideal auklet breeding habitat (recent lava) in the western Aleutian Islands.

Acknowledgements We thank Arthur L. Sowls for providing the inspiration to survey auklet colonies using descriptive mapping. Heather Renner, Martin Renner, and others provided essential input into the design of the survey techniques. Vernon Byrd offered useful comments on the survey methodology and report. Janet Schaefer and Christina Neal of the Alaska Volcano Observatory provided us with digital copies of the historical maps of Semisopochnoi. The **Alaska Maritime National Wildlife Refuge** provided logistical support for this study. Additional funding was provided by grants from the Natural Sciences and Engineering Research Council of Canada and the Northern Scientific Training Program of the Canadian Department of Northern Affairs.

References Coats, R.R. 1947. Geology of Semisopochnoi Island, Aleutian Islands, Alaska. United States Department of the Interior, Geological Survey. Bulletin No. 1028, plate 59 - Early, T., Bedi, J., Henry, W. and A. Taber. 1978. A bird and mammal survey of the west-central Aleutians, summer 1977. Aleutian Islands National Wildlife refuge, 1978 (unpublished report). - Ebbers, S.M. 1997. Removal of arctic foxes from Semisopochnoi Island in 1997. U.S. Fish and Wildl. Serv. Rep. AMNWR 97/-/ Homer, Alaska. - Renner, H.M., Renner, M., Harding, A.M.A., Jones, I.L., Irons, D.B., Reynolds, J., and G.V. Byrd. 2006. Auklet population monitoring by colony mapping: results from St. George Island, Alaska. Condor. IN PRESS. - Thomson, G. 1997. Counts of seabirds and assessment of potential goose habitat at Semisopochnoi Island, Alaska, site of introduced fox removal in 1997. U.S. Fish and Wildl. Serv. Rep. AMNWR 97/19, Homer, AK. 52 pp.

Further information
The complete survey report is downloadable from:
http://www.mun.ca/serg/Semisopochnol.html

A 20 minute video documentary concerning this project is available on DVD.

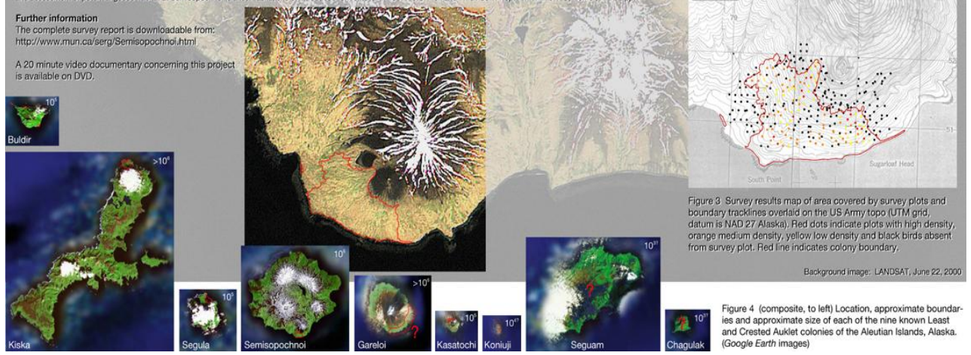


Figure 4 (composite, to left) Location, approximate boundaries and approximate size of each of the nine known Least and Crested Auklet colonies of the Aleutian Islands, Alaska. (*Google Earth* images)

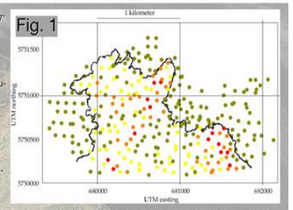


Figure 1 Raw 2004 survey data displayed on UTM grid (no datum used). Heavy black line indicates boundary track line, red dots indicate plots with high density, orange medium density, yellow low density and green birds absent from survey plot.

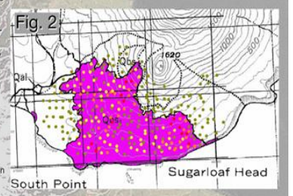


Figure 2. Survey results map showing overlay of data on nearby geographical features of Semisopochnoi Island as shown by Coats' geological map (no datum, main grid is 1000 yard army grid, second grid is UTM grid). Purple indicates entire extent of colony, red dots indicate plots with high density, orange medium density, yellow low density and green birds absent from survey plot.

Figure 3 Survey results map of area covered by survey plots and boundary tracklines overlaid on the US Army topo (UTM grid, datum is NAD 27 Alaska). Red dots indicate plots with high density, orange medium density, yellow low density and black birds absent from survey plot. Red line indicates colony boundary.

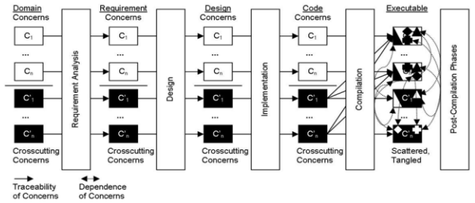
Background image: LANDSAT, June 22, 2000

Which poster has more accessible content? Why?

Enhanced Intermediate Language Design to Preserve AO Modularity in Object Code

For more information see home page of the Nu project at http://www.cs.iastate.edu/~nu/

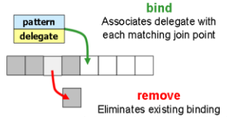
Broad Problem



Conceptual concerns not separate after Aspect-Oriented (AO) compilation

Nu: Enhanced Intermediate Language Preserves Modularity

- **New constructs:**
  - ***bind*** **and** ***remove***
- **Language semantics allows static as well as dynamic deployment of aspects**



Semantics of *bind* and *remove*

Technical Contributions

- **Enhanced intermediate language design to preserve design modularity in object code**
- **Production level virtual machine to support Nu Intermediate Language**

Software Engineering Benefits

- **Improved Scalability of Development Processes**
  - **e.g. by improving incremental compilation of AO programs**
  - **Afford improved benefit of separation of concerns enabled by AOSD to large-scale software systems**
- **Other potential benefits:**
  - **Improved post-compilation processes e.g. debugging**
  - **Lower cost of developing robust tool support**
  - **More opportunities for optimizations**

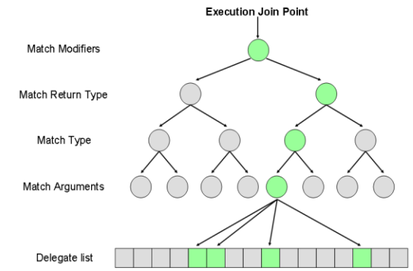
Virtual Machine Support for the Nu Intermediate Language

- **Extension of Sun Java Hotspot™ Virtual Machine (VM)**
- ***bind*** **and** ***remove*** **constructs added as native methods and implemented inside the VM**
- **VM interpreter code instrumented to match join points and invoke delegates**
- **J2SE extended to include a library of patterns for developers**

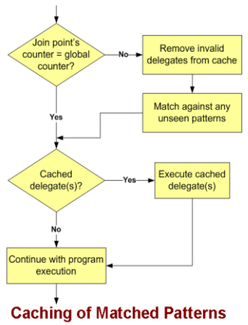
Sub-problem: Fast Dynamic Join Point Matching

Technical Results:

- **Optimize individual pattern matching using fast algorithms and data structures**
  - **index-based modifier matching, classification-tree based type matching, Finite-state automaton based name matching, and petri-net based composite pattern matching**
- **Data structures and algorithms for caching already matched patterns**
  - **Avoids unnecessary invalidation of cached results**
- **Techniques for incremental matching of a join point**



Matching a Join Point with Classification Trees



Caching of Matched Patterns

Future Work

- **Continue improving the efficiency of pattern matching and join point dispatch**
- **Develop a benchmarking framework to evaluate the efficiency**
- **Implement support for the Nu intermediate language in the Java VM C1 compiler**

Department of Computer Science **Robert Dyer and Hridesh Rajan** IOWA STATE UNIVERSITY

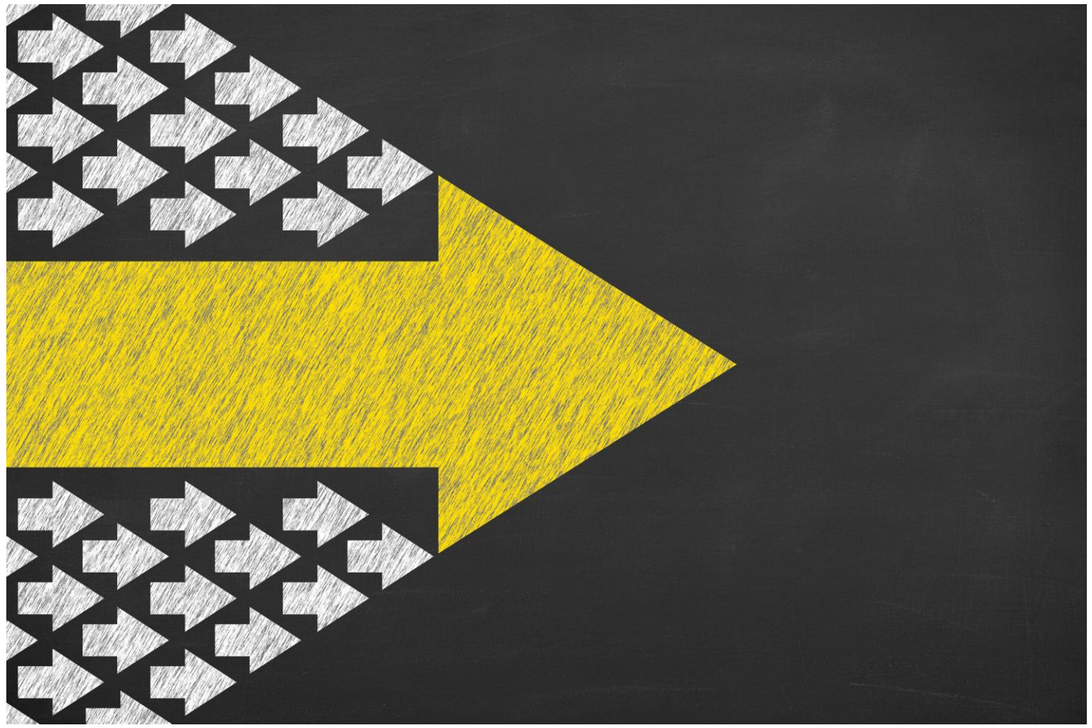
Headings and content

What are the advantages/disadvantages of this?

Use headings to help your audience to navigate the information in your poster

Some posters follow a research paper structure:

- Introduction/Aims/Objectives
- Methods
- Results
- Analysis/Discussion/Conclusions



Informative headings

- **Consider using informative headings: minimise text, maximise information**
- **Do not waste text on ‘predictables’**
- **Use key points as headings**

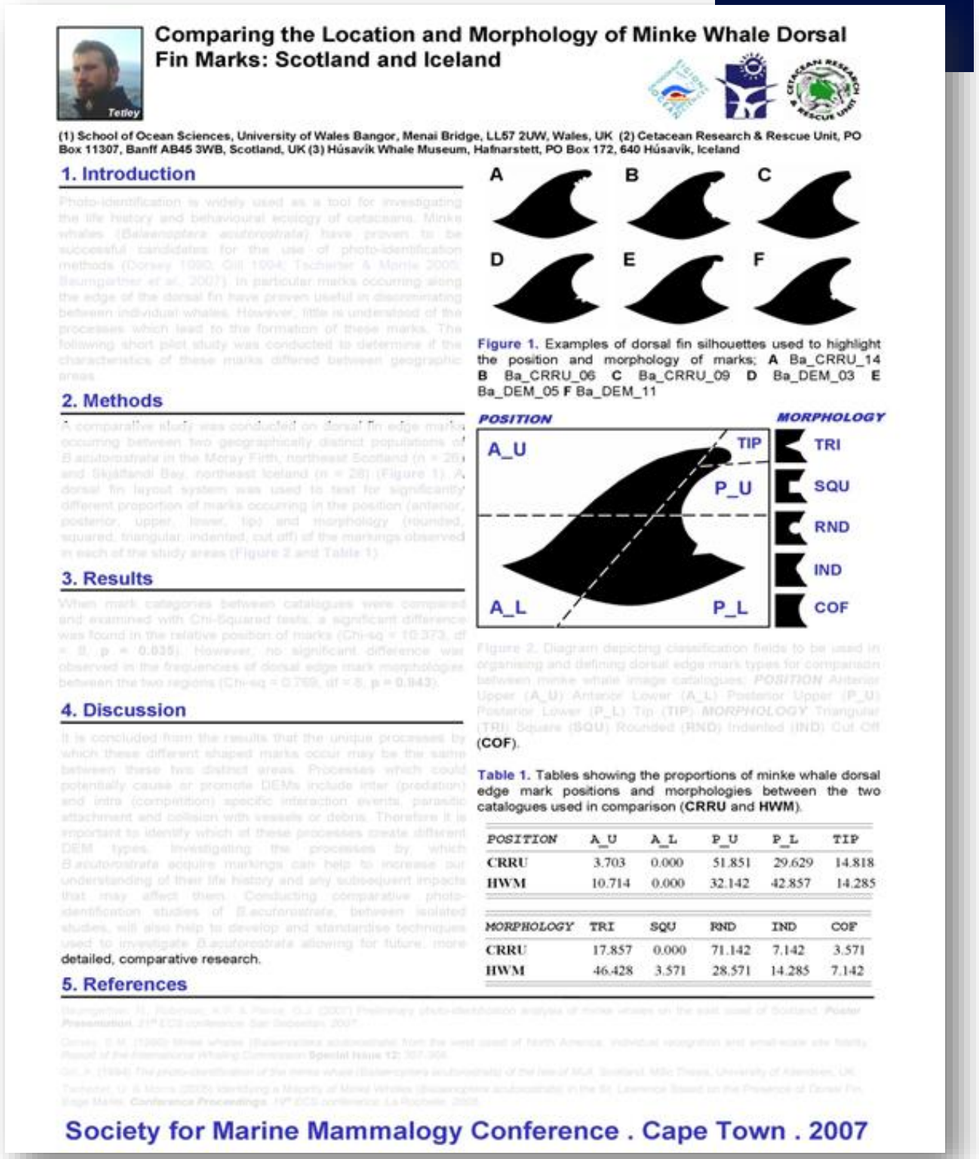
e.g.

Results

OR

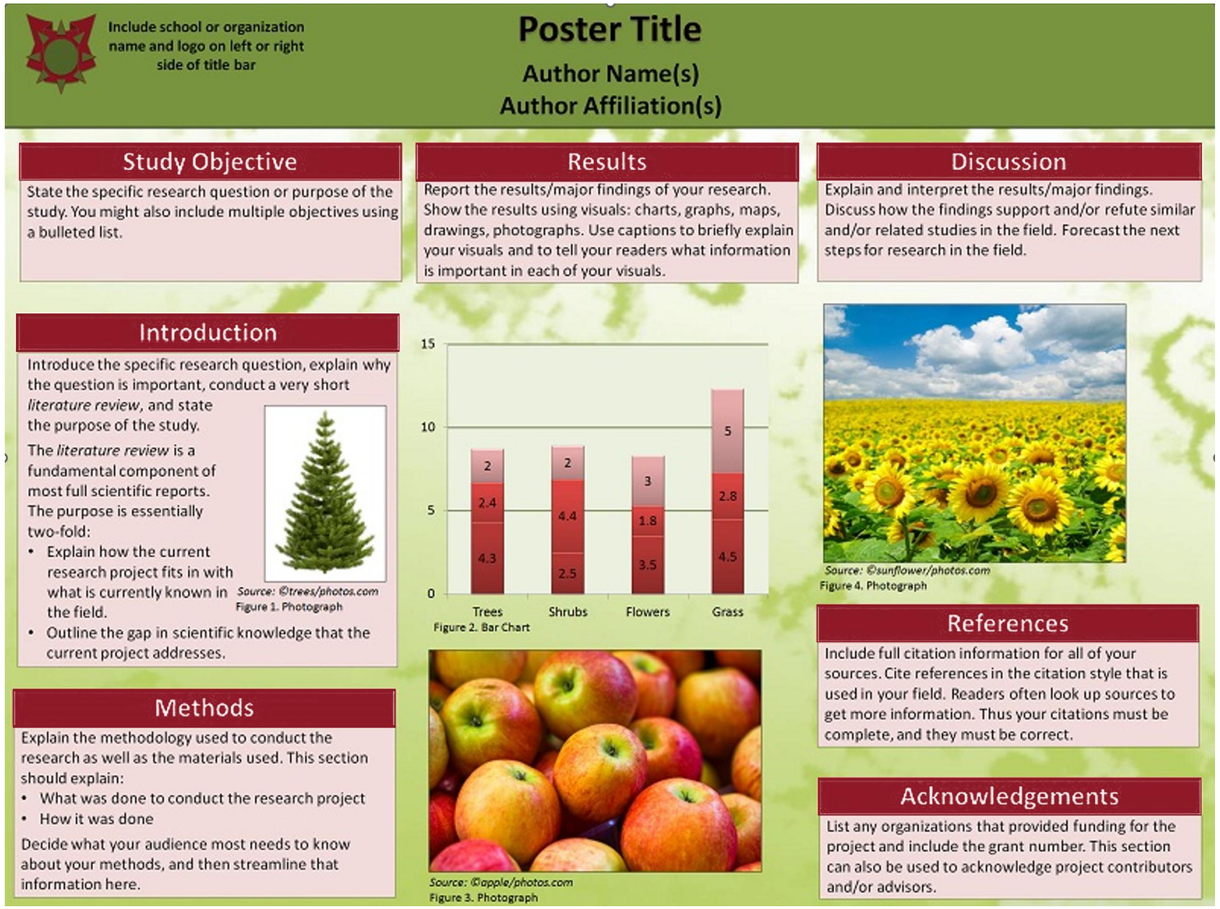
Model Predictive Control for Trajectory Tracking of a Quadrotor UAV ✓

How useful are the headings in these posters?



Layout

Layout



- **Make ‘navigation’ clear: boxes for sections, numbering, logical sequencing**
- **Balance texts and graphics**

Layout- capturing attention

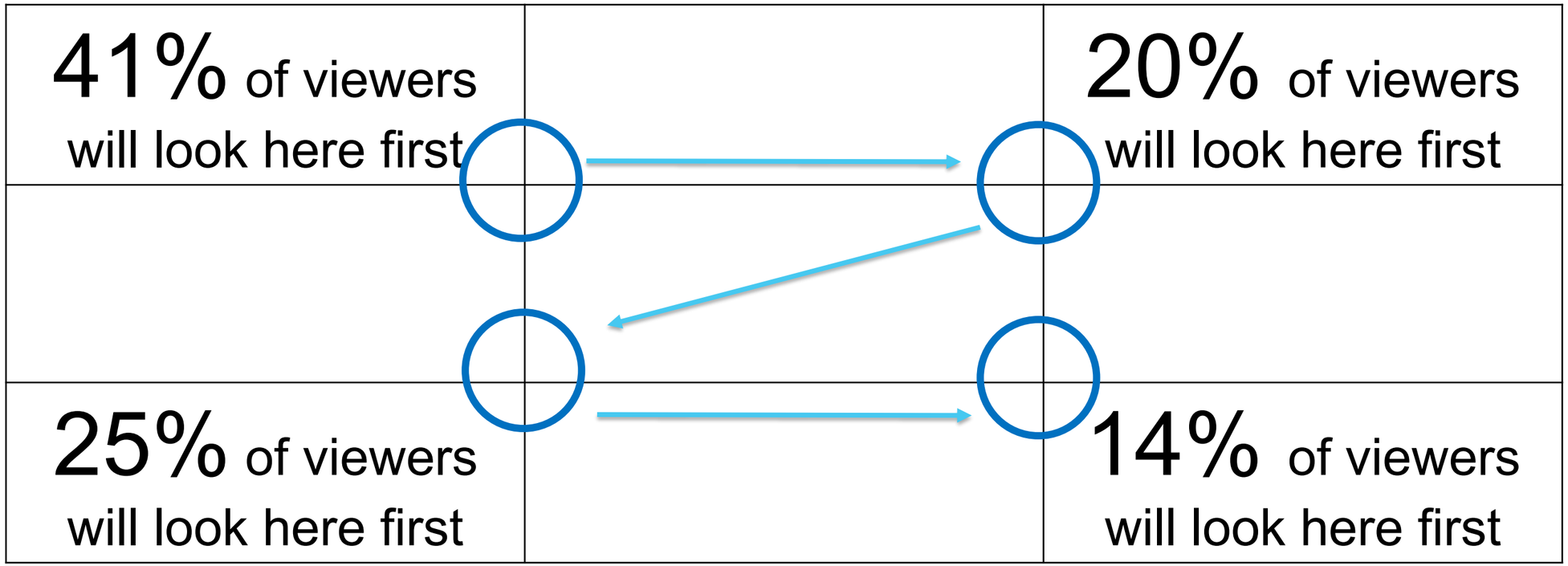
Use layout to help your audience to navigate the information on your poster

Where is your eye drawn first?

Layout- for navigation

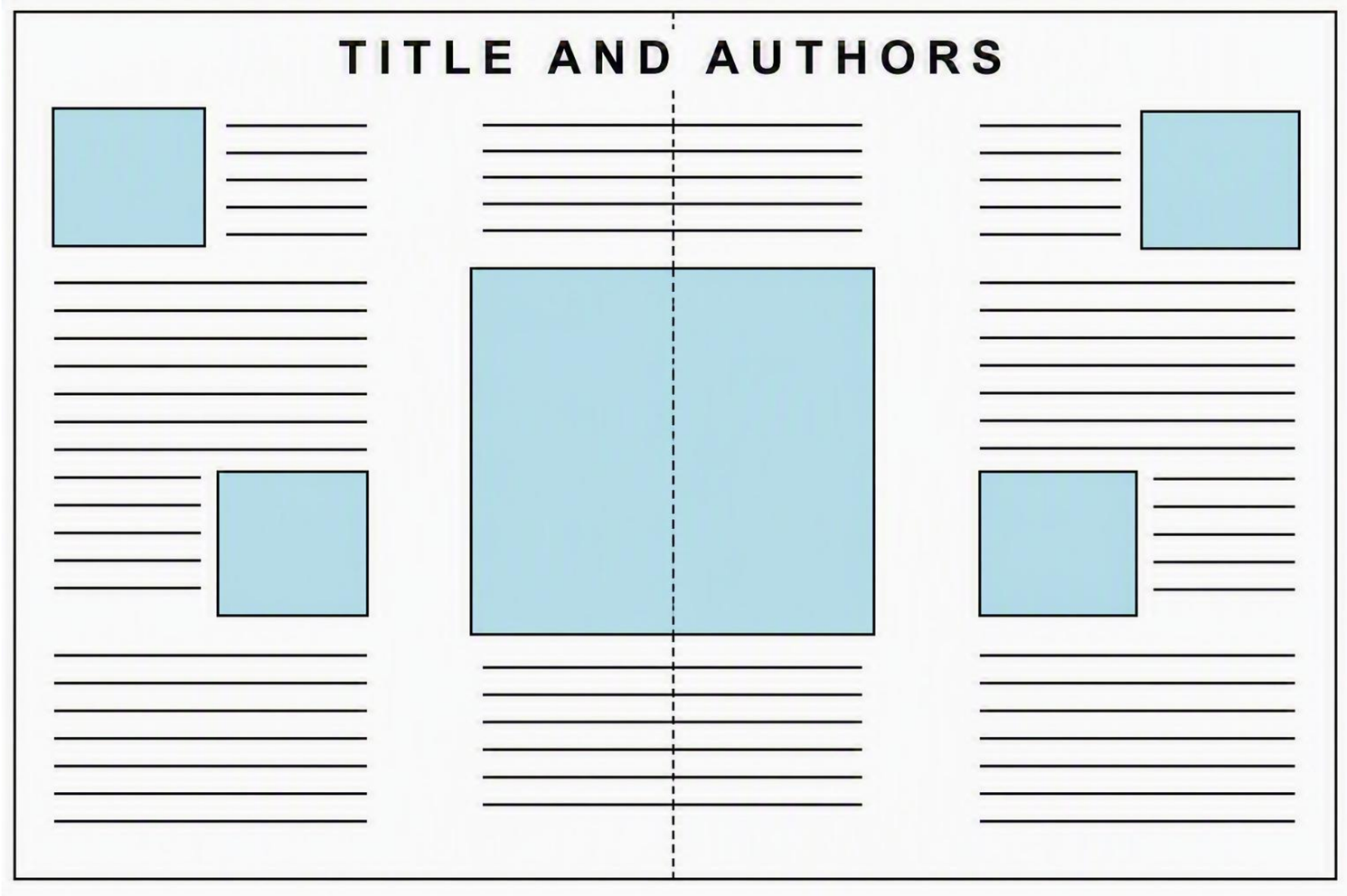
Use layout to help your audience navigate the information on your poster

- The layout of your poster should have clearly defined sections with a logical flow.
- Eye tracking studies suggest the eye focuses most naturally where the lines intersect.
- Audience comprehension is higher when content is laid out in a zig zag pattern.

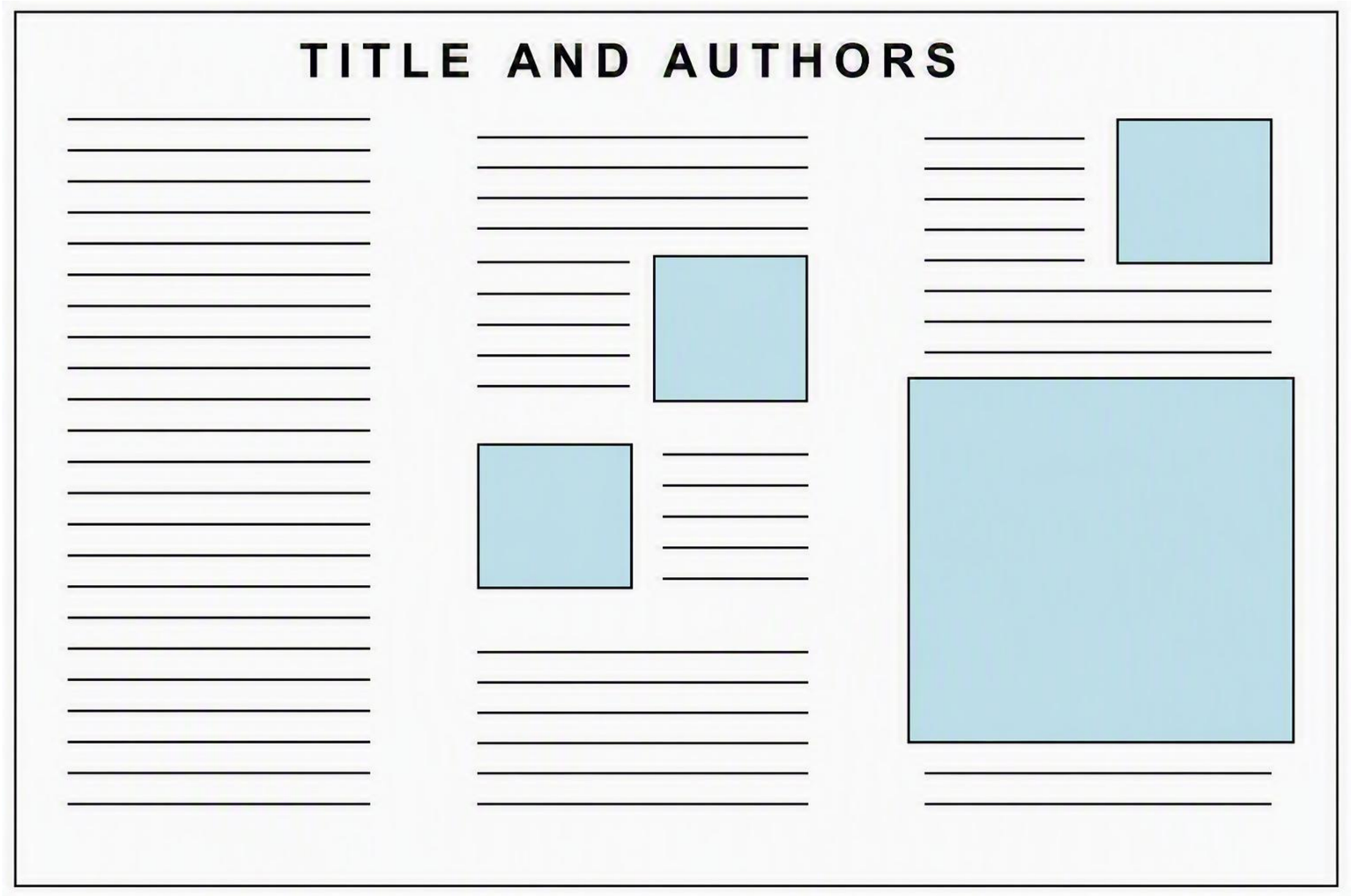


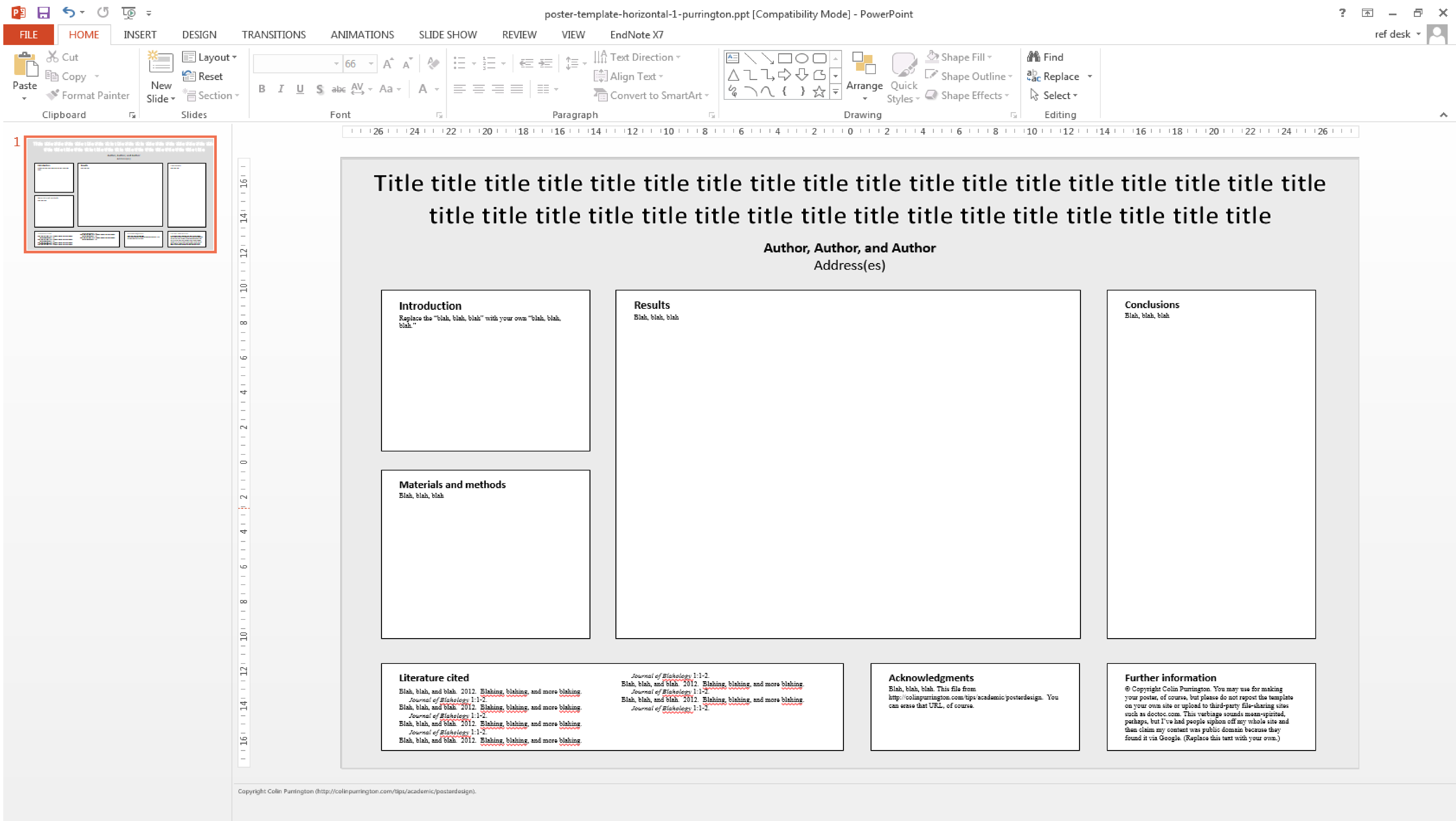
Majooni et al., 2017

Balance text and graphics



Don’t crowd a section with text

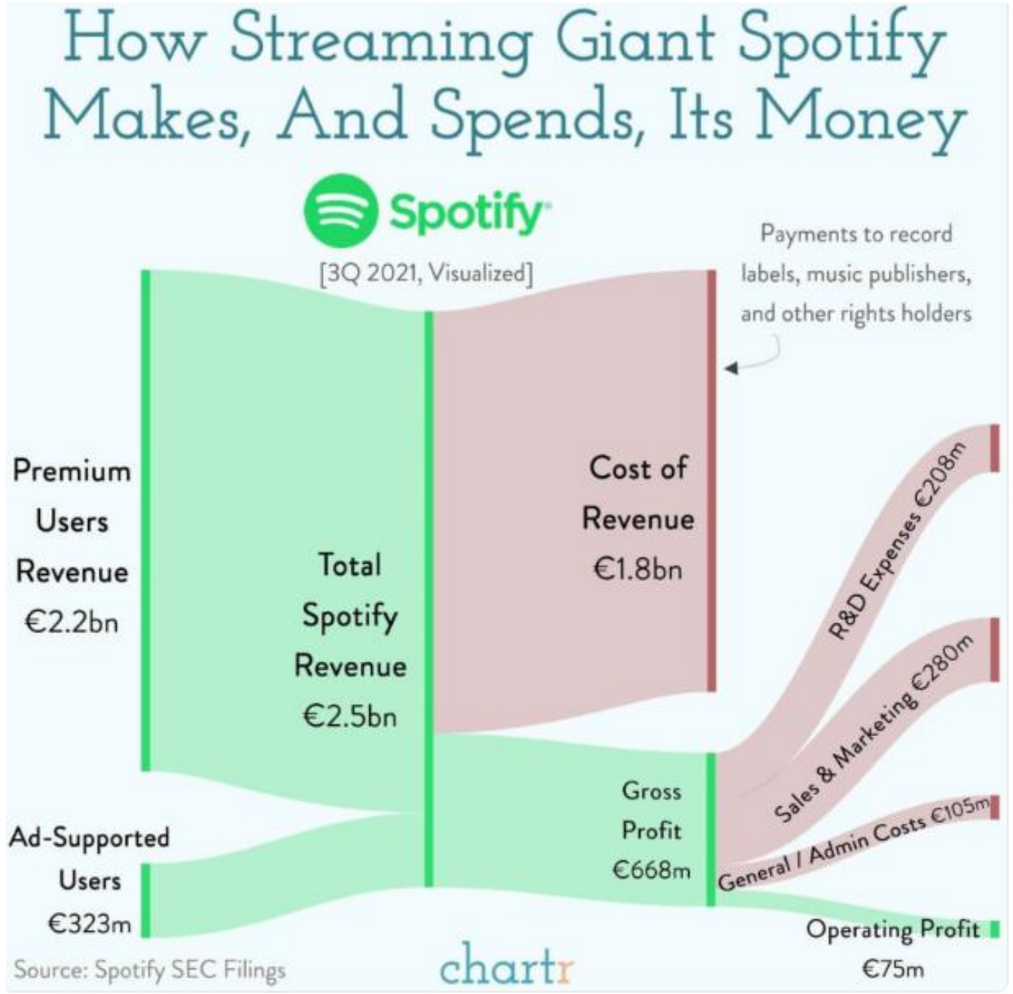




[See: How to make an academic poster in powerpoint - YouTube]

Visual appeal

Choose the right visualisation



How would you visualise this data?

- table
- bar graph
- or even a set of pie charts

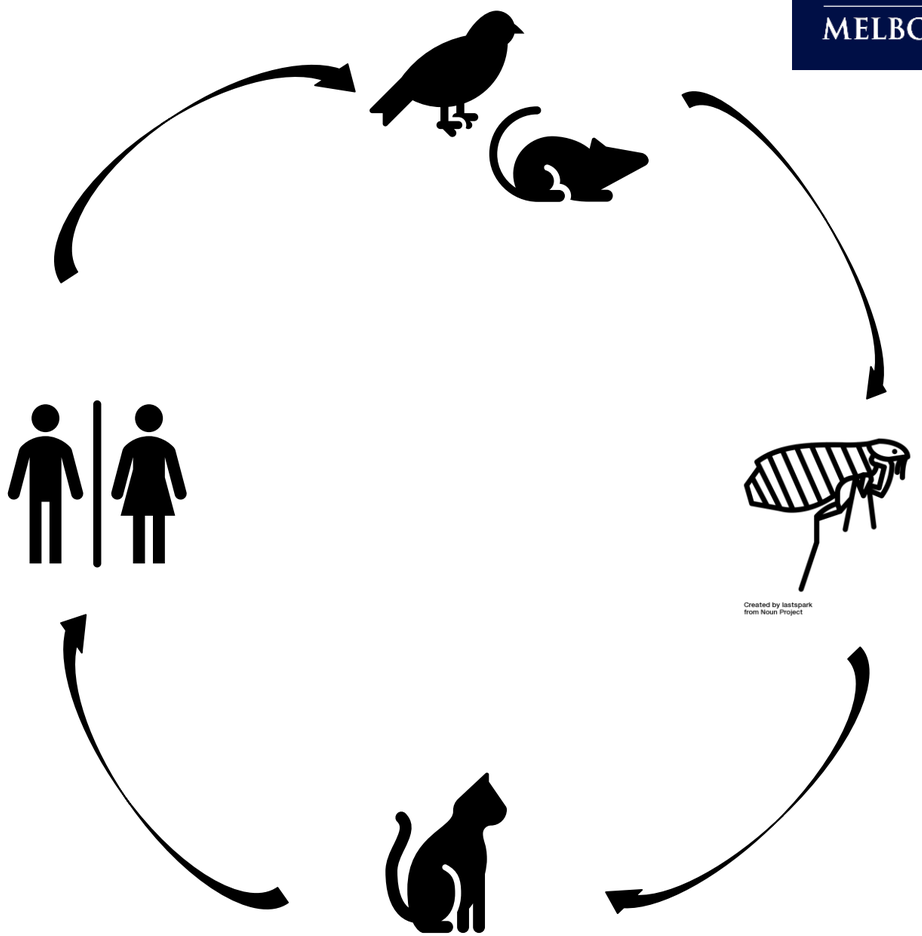
Source: https://www.polymersearch.com/blog/10-good-and-bad-examples-of-data-visualization

Graphics

- Keep them simple
- Features should convey essential information (shading, appropriate numbering, background pictures)
- All graphics and text should be legible from 1 -2 metres distance.

Graphics to reduce text

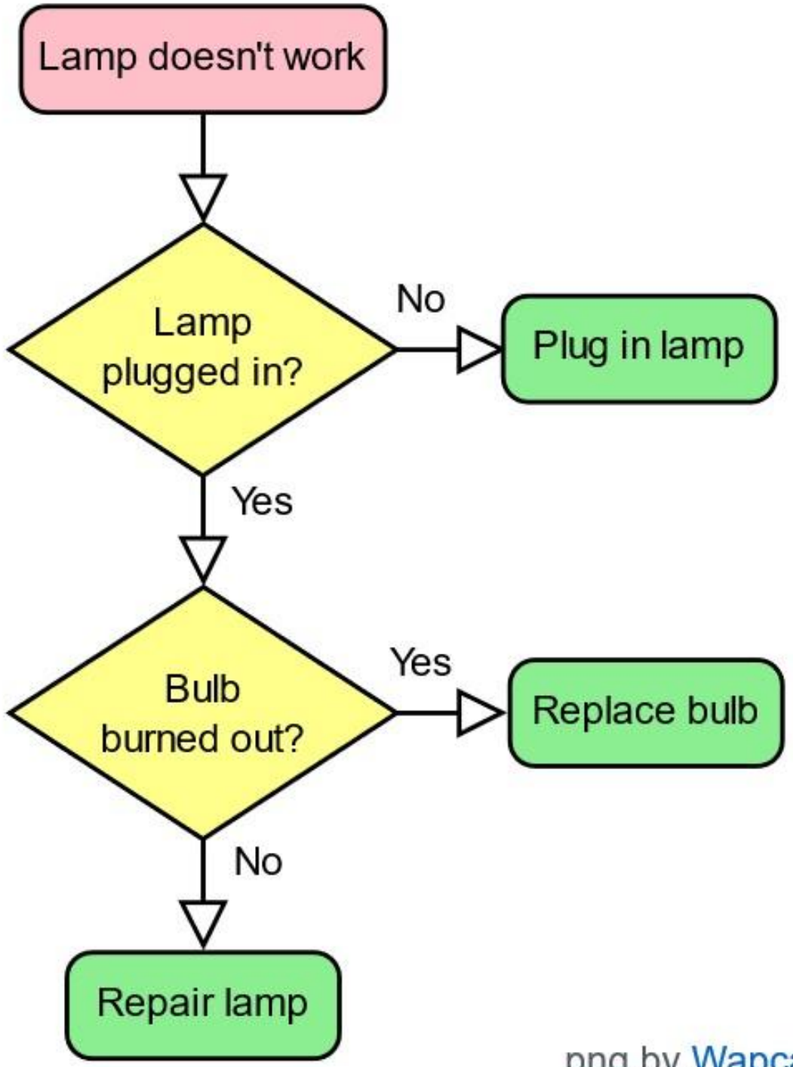
Cats reported to acquire xxxosis through contaminated prey such as birds or rodents and act as hosts to continue sexual reproduction, enteroepithelial cycle, and oocyst production (Dubey et al., 1970). Carnivorous animals from wild habitats such as skunks, raccoon, fox, bears also acquire toxoplasmosis through the ingestion of cysts from tissues. Human beings acquire toxoplasmosis by consuming half-cooked contaminated meat, such as lamb or pork (Dubey et al., 2005, Hill et al., 2010). The ingested tissue cyst is digested by the action of various proteolytic enzyme activities in the stomach of the host organism and release the parasite in the form of bradyzoites. The parasite is observed to be highly resistant to protease and survive in the host organism's small intestine. A report estimated more than 10 million cyst removal through fecal materials in cats within two weeks of ingestion. The released oocyst sporulates within five days of release in the environment. In the soil sample, the sporulated organism remains alive for about one year (Dubey, 1998).



Life cycle of xxxxosis

Flow charts

Flow Charts

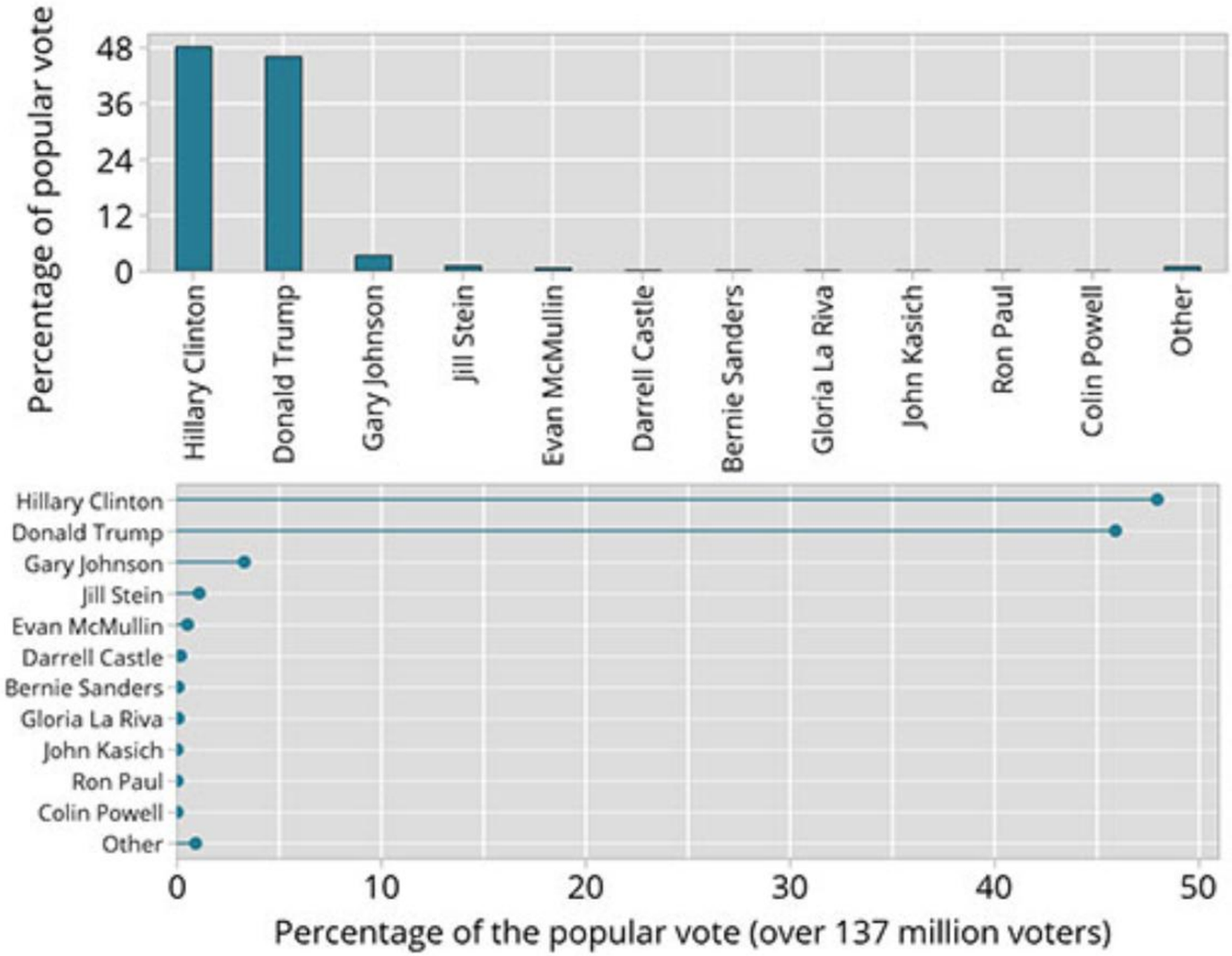


https://www.conceptdraw.com/How-To-Guide/flowchart-symbols

png by Wapcaplet

Graphs

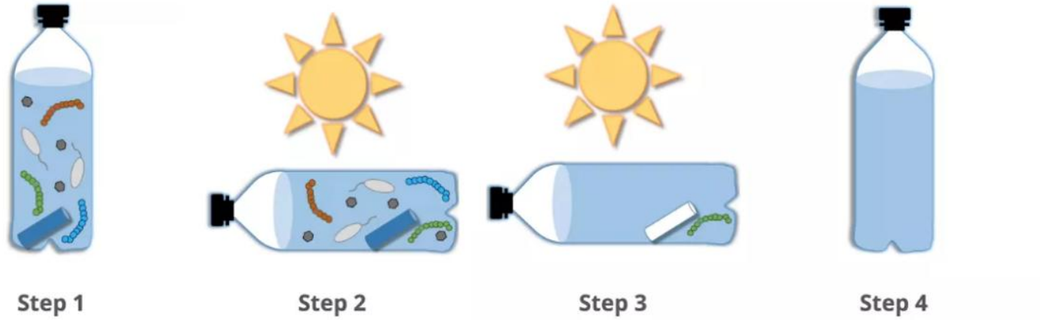
Which graph is easier to read?

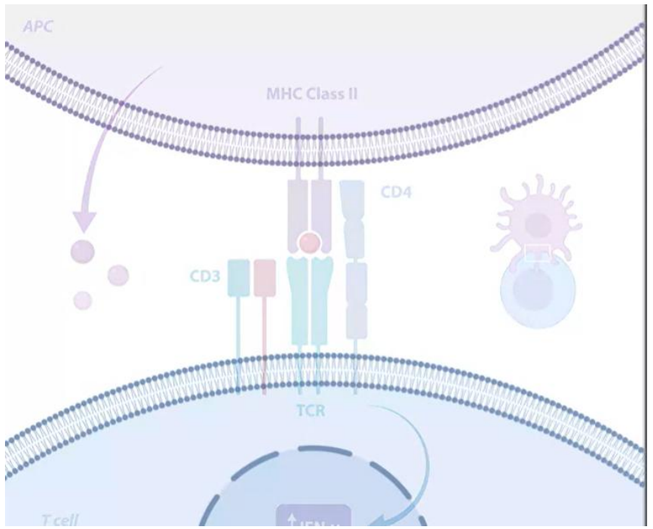


Consider:

- Clear titles
- Horizontal text
- Graph visibility at distance

Diagrams





1. MS Office insert icons

2. https://thenounproject.com/

3. Diagram and graph applications

Eg. https://www.biorender.com/

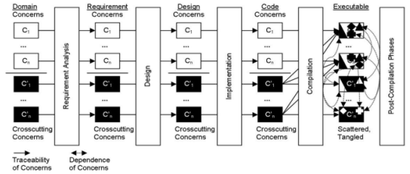
Text

- Minimise text, maximise graphics, tables, pictures
- Use dot points where appropriate
- Use suitably formal, everyday language wherever possible
- Avoid jargon (consider audience)
- Choose a limited range of colours - test for contrast and readability

Enhanced Intermediate Language Design to Preserve AO Modularity in Object Code

For more information see home page of the Nu project at http://www.cs.iastate.edu/~nu/

Broad Problem



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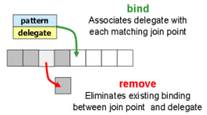

Semantics of *bind* and *remove*

Technical Contributions

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- Production level virtual machine to support Nu Intermediate Language

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  - e.g. by improving incremental compilation of AO programs
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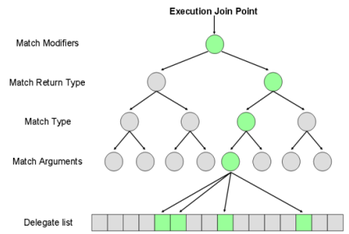

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Caching of Matched Patterns

Future Work

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Department of Computer Science — Robert Dyer and Hridesh Rajan — Iowa State University

Font

Select font type and size to help your audience

- ✓ Make your title readable from 1-2 metres away

- ✓ Use consistent text sizes for different heading levels

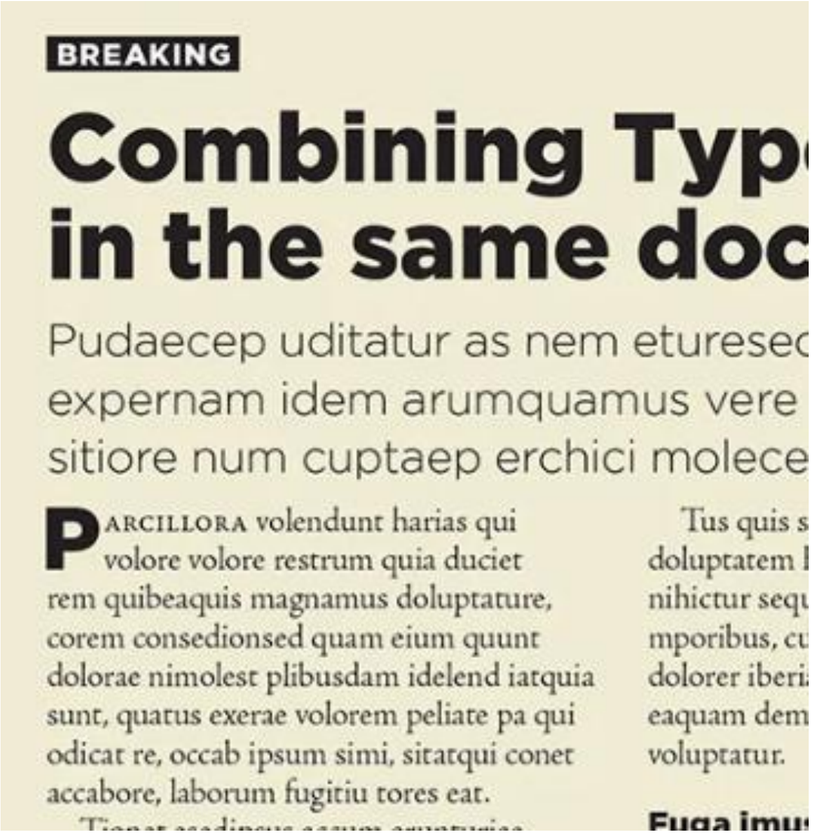
eg.

  - 80 - 90 point for titles
  - 30 - 36 point for headings
  - 18 - 24 point for text

- ✓ Put the names of all the authors and institutional affiliations just below (or next to) title but with smaller font

- ✓ A serif font is more traditional (more legible at small scale)

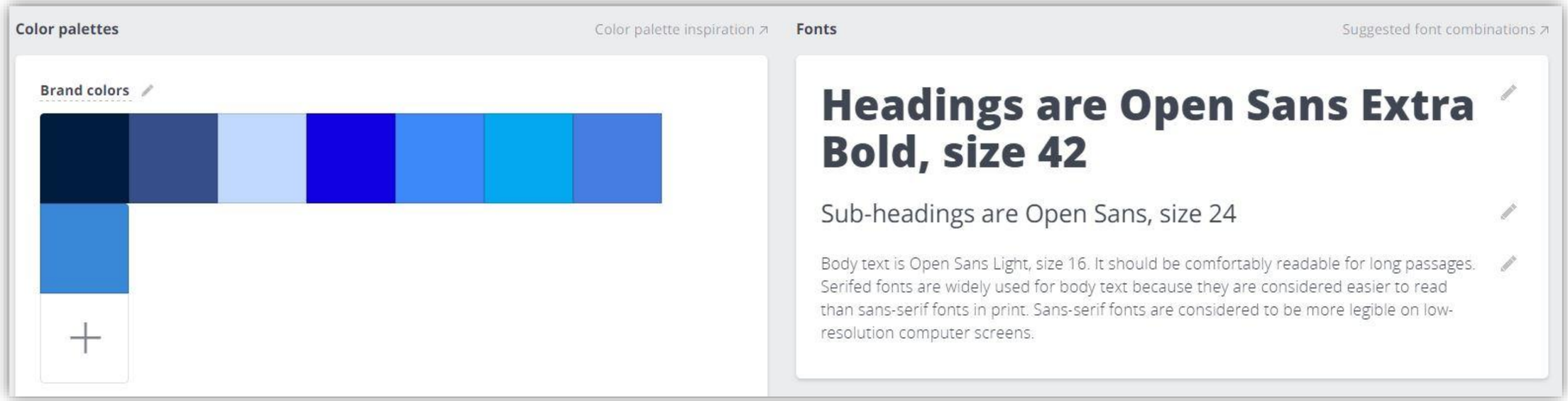
- ✓ A sans-serif font is more modern (and cleaner)



https://www.adobe.com/au/creativecloud/design/discover/serif-vs-sans-serif.html

Colour

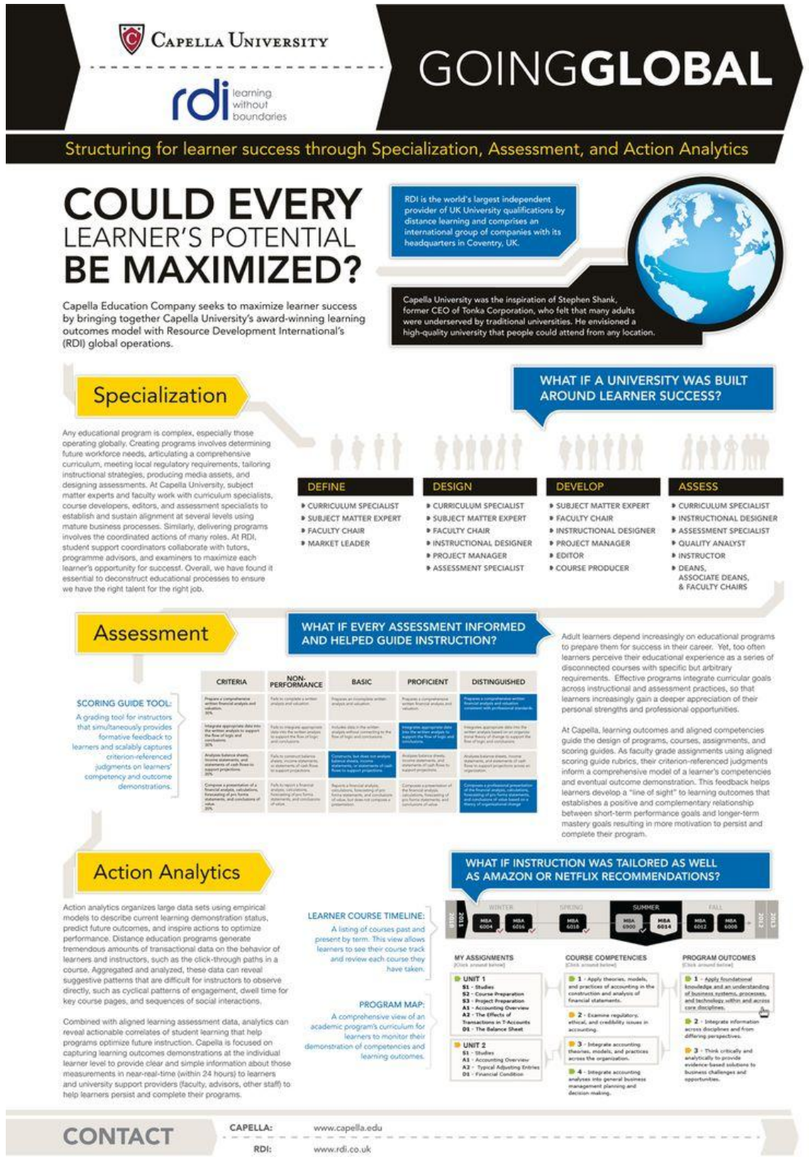
- Carefully select and use a consistent colour and font scheme
- Check for contrast of text on background colour



https://coolors.co/
https://color.adobe.com/create/color-wheel/
https://paletton.com/

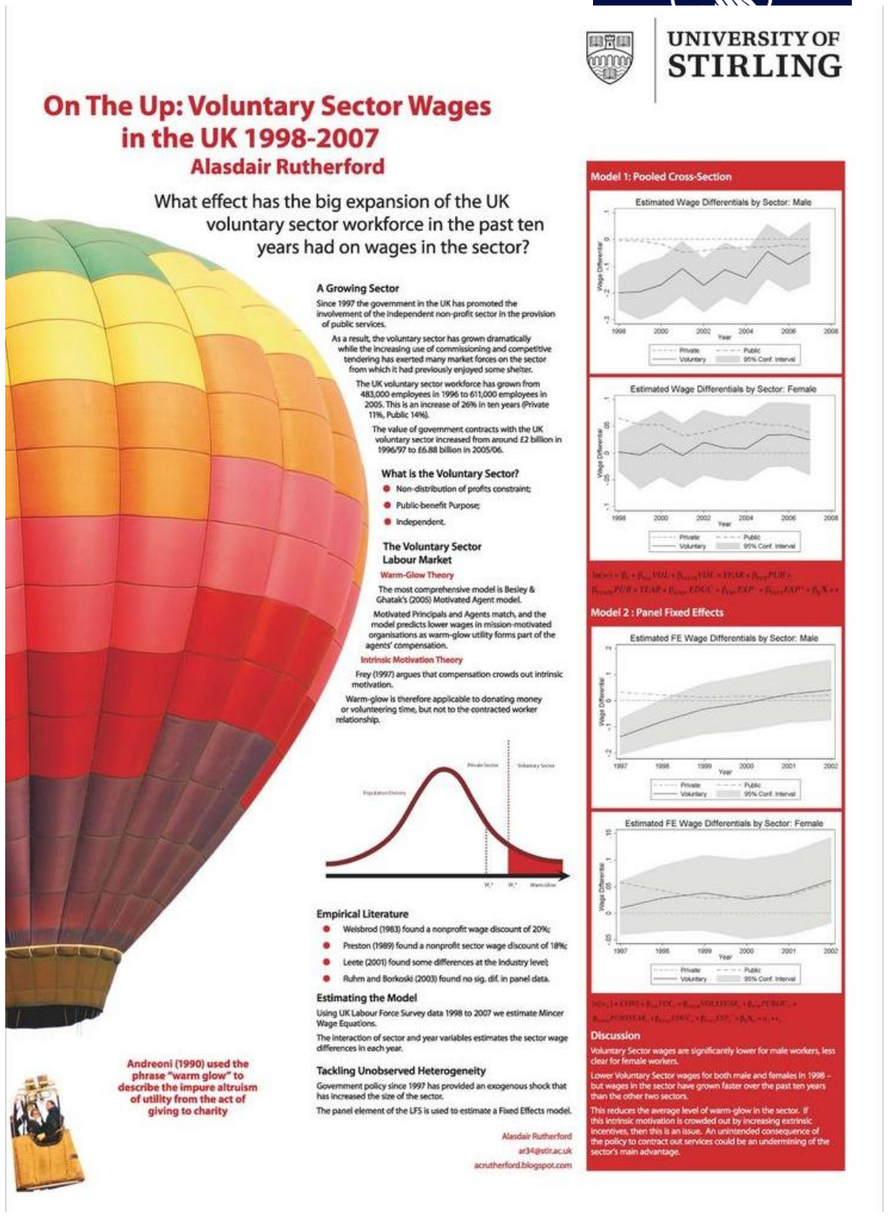
https://fonts.google.com/
https://designmodo.com/best-fonts/

Consider these two posters



What do you like about the designs?

What would you improve?



Highly commended examples

ISYS90119 Information Systems Capstone Project

Organization: Musculoskeletal Health Australia
Supervisor: Mike Zhuang

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FROM GENERIC TO PERSONALIZED: REIMAGINING MHA'S DIGITAL HEALTH EXPERIENCE

Background

Musculoskeletal Health Australia (MHA) currently provides static, one-size-fits-all health information on its website. While informative, it fails to address users' specific symptoms and conditions, leading to poor user engagement and difficulty in finding relevant advice.

As health awareness grows, people increasingly seek personalized and accessible digital health solutions. Consumer Health Informatics (CHI) offers a promising framework for delivering tailored information through the integration of digital technologies.

Problem Statement

MHA's website provides **generic**, **one-size-fits-all** health content that **lacks personalization**, making it hard for users with **specific conditions** to find **relevant** and **useful** information.

Methodology

- A literature review on CHI, Personal Health Records (PHRs), and Health Recommender Systems (HRS).
- A comparative analysis of personalization technologies: PHRs vs. EHRs and HRS vs. Clinical Decision Support Systems.
- Case studies on:
  - MyHealthRecord (Australia)
  - Participatient App (Netherlands)
  - SeniorMed
  - CHESS
  - PatientLikeMe

Proposed Solutions

We propose developing an intelligent search feature for the MHA website that integrates Personal Health Records (PHR) and a Health Recommender System (HRS) to deliver personalized health content.

Key Features:

- **User Input**: Individuals can enter personal health details such as symptoms, age, diagnosis, activity level, and medications through a user-friendly form, emulating PHR functionality.
- **Personalized Recommendations**: Utilizing the input data, the system suggests tailored articles, treatment guides, exercise videos, and dietary tips.
- **Adaptive Learning**: The system continuously learns from user interactions to enhance the relevance of future recommendations.
- **Transparency and Control**: Users can review and update their information at any time, giving them more control over their experience and ensuring the content stays relevant.

What elements of effective design do you notice?

Detecting Errors During Cochlea Surgery

Force Measurement and Shape Sensing of Cochlear Implant to Avoid Surgical Trauma

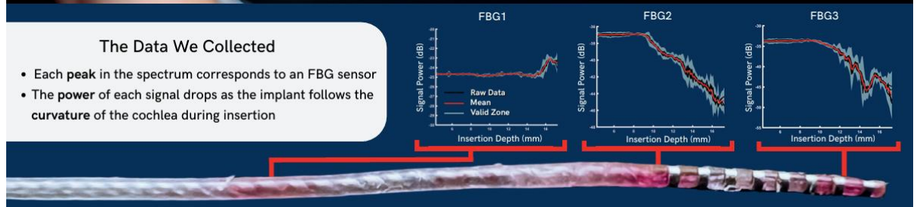
What Can Go Wrong During Cochlea Surgery?

- Damage to the cochlea during surgery can harm patient hearing
- Surgeons insert implants **blindly**, relying only on "feel"

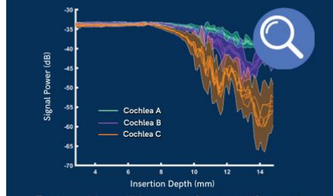
- **Fibre Bragg Gratings (FBG)** are etched into an optical fibre that runs through the implant
- These FBGs have a signal spectrum that is sensitive to **contact** and **bending**

The Data We Collected

- Each **peak** in the spectrum corresponds to an FBG sensor
- The **power** of each signal drops as the implant follows the **curvature** of the cochlea during insertion



Implants with FBG sensors can detect errors during surgery!



Each cochlea will have a **safe range** of **power** values at each point of the insertion

Track the insertion. If the power is within the band, there are no issues

Going outside the safe range signals a possible error, and the surgeon should stop

A Vision For The Future: Implantation Companion

An implantation tool, fully integrated with output from the FBGs that:

1. Automatically tracks and visualises insertion depth
2. Detects errors and notifies surgeons
3. Provides force feedback in robotic surgery, allowing surgeons to feel the resistance against the implants movement

M-21-ODEN-019 Mechatronics Engineering Supervisor: Denny Oetomo Ilia Seleznev, Matthew Hatzikostas, Sebastian Snopczynski

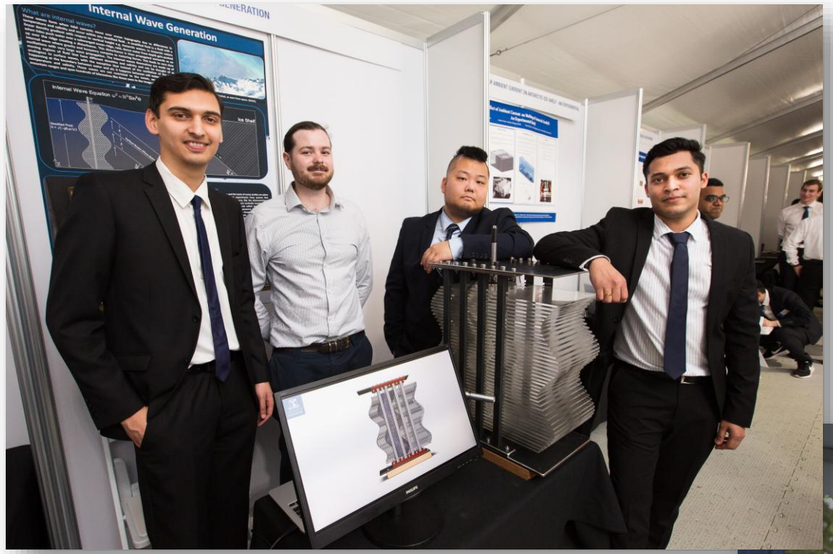
Logistics

Prepare you poster in advance

- **Size** = A0 (84.1cm x 118.9cm) LANDSCAPE
- **Format** = PDF
- **File name** = Project Name_Poster_Date
- **Include**: project title, project code, all team member names, supervisor's name, discipline
- **Logos**: Do not use the University of Melbourne logo; gain permission before using any industry logos

Submit by Wednesday 7th October 11.59pm via the link on the Endeavour website

Consider where to position yourself …



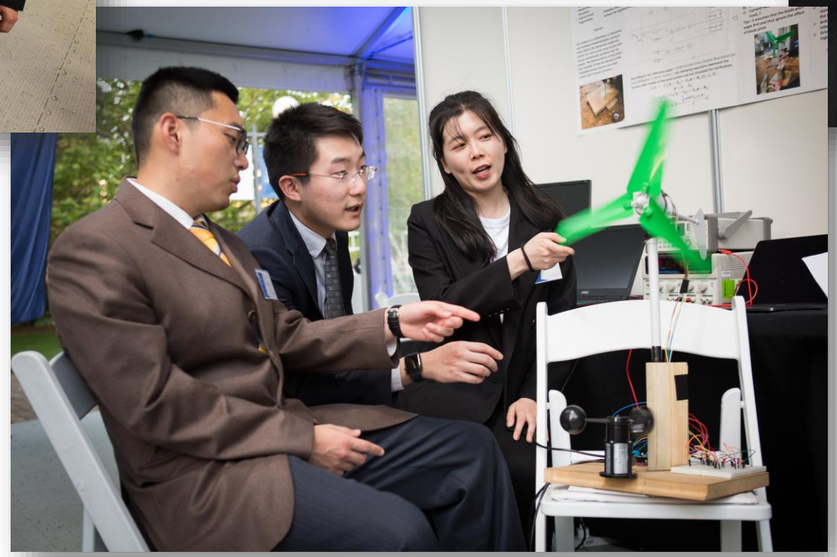


Photo credit: Peter Cassemento at the 2019 Endeavour

Summary

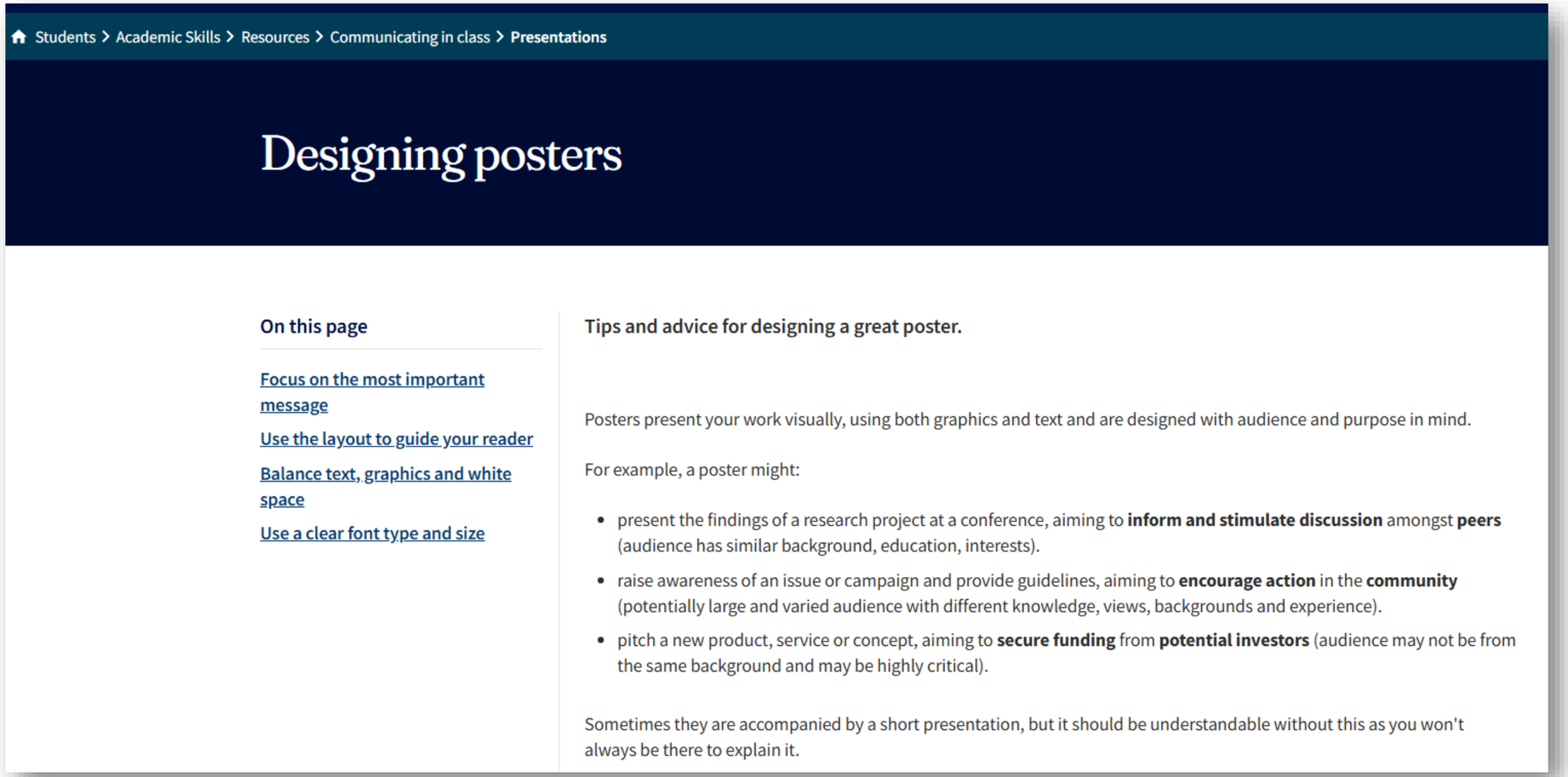
Consider these elements when designing your poster:

- ✓ Content
- ✓ Layout
- ✓ Visual appeal
- ✓ Logistics

Final tip:

- Print out an A3 version
- Get another set of eyes to look at it: Does it make sense to them?

Further support



Students > Academic Skills > Resources > Communicating in class > **Presentations**

Designing posters

On this page

Tips and advice for designing a great poster.

Posters present your work visually, using both graphics and text and are designed with audience and purpose in mind.

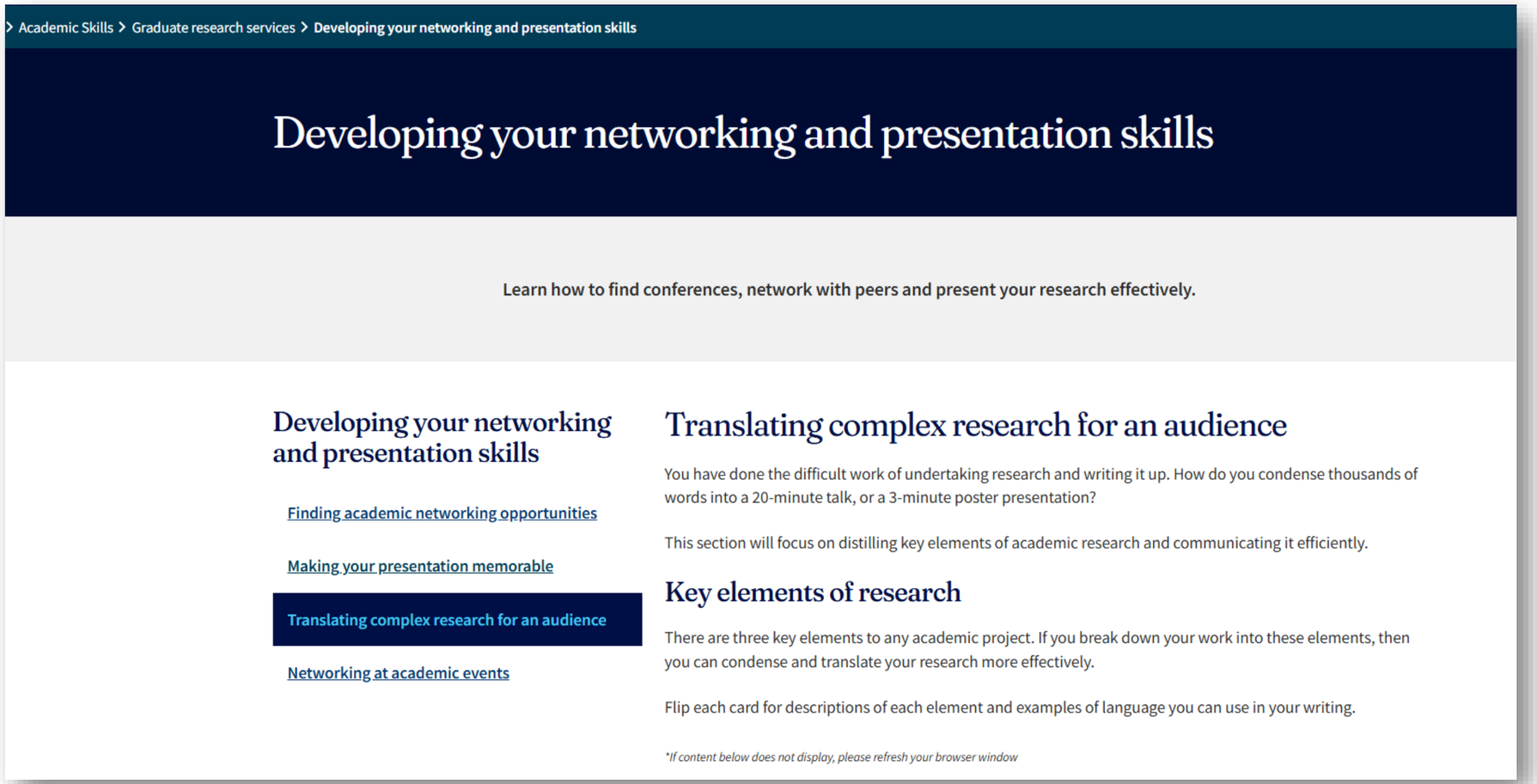
For example, a poster might:

- present the findings of a research project at a conference, aiming to **inform and stimulate discussion** amongst **peers** (audience has similar background, education, interests).
- raise awareness of an issue or campaign and provide guidelines, aiming to **encourage action** in the **community** (potentially large and varied audience with different knowledge, views, backgrounds and experience).
- pitch a new product, service or concept, aiming to **secure funding** from **potential investors** (audience may not be from the same background and may be highly critical).

Sometimes they are accompanied by a short presentation, but it should be understandable without this as you won't always be there to explain it.

https://students.unimelb.edu.au/academic-skills/resources/communicating-in-class/presentations/designing-posters

More resources



https://students.unimelb.edu.au/academic-skills/graduate-research-services/developing-your-networking-and-presentation-skills

Academic Skills

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