



# **Lesson 11: Other forms of scientific communication**

## **Research Methodologies and Scientific Communication**

**Author(s): Erika Blaschke**



# Other forms of scientific communication

## Welcome

In this lesson we will address the topic scientific communication. For researchers it is important to communicate their scientific achievements to different target groups. Regardless of the target audience, it is important to present the results in an appealing manner, either in the form of an oral presentation or a poster presentation.

We will learn and discuss how to design scientific posters, the format of the posters and in a second stage we will discuss how to do an oral presentation and which presentation tools can be used for the preparation.



# Other forms of scientific communication

## Why to present scientifically?



# Why to present scientifically?

- The results must be made available to the public
- The latest findings must be communicated & discussed in the "community".
- Others can build on the results in their research, learn from it, or take other paths.
- Scientific presentations are also a part of university education, e.g. through lectures or the creation of a poster.



# Where to present scientifically?

- Conferences,
- Congresses,
- Seminars,
- Different Events(summer schools, educational journeys,...)



# How to present scientifically?

- Oral presentation
- Poster presentation



# Poster presentation

What is a scientific poster?

In many scientific disciplines, the poster is an important medium with which scientists present their own research at conferences, congresses, etc. A scientific poster is about combining textual and visual elements in order to represent the result in terms of language.



# Poster presentation

## How to plan a scientific poster?

In principle, it is about recognizing the core of your own research in order to present it.

Following questions should be addressed in advance:

Why is my work important?

What are new insights to research?

Which methods do I use?

What are my results?

What conclusions do I draw from this?

What are my recommendations?



Source: utb: Die Gestaltung wissenschaftlicher Arbeiten





# Poster presentation

This results in the following content of a poster:

- Title
- Author
- Subject and relevance
- Research question, hypothesis and goal
- Procedure: examined object, used methods
- Results
- Discussion and outlook
- Literature



# Poster presentation

.... in simpler terms - based on W questions:

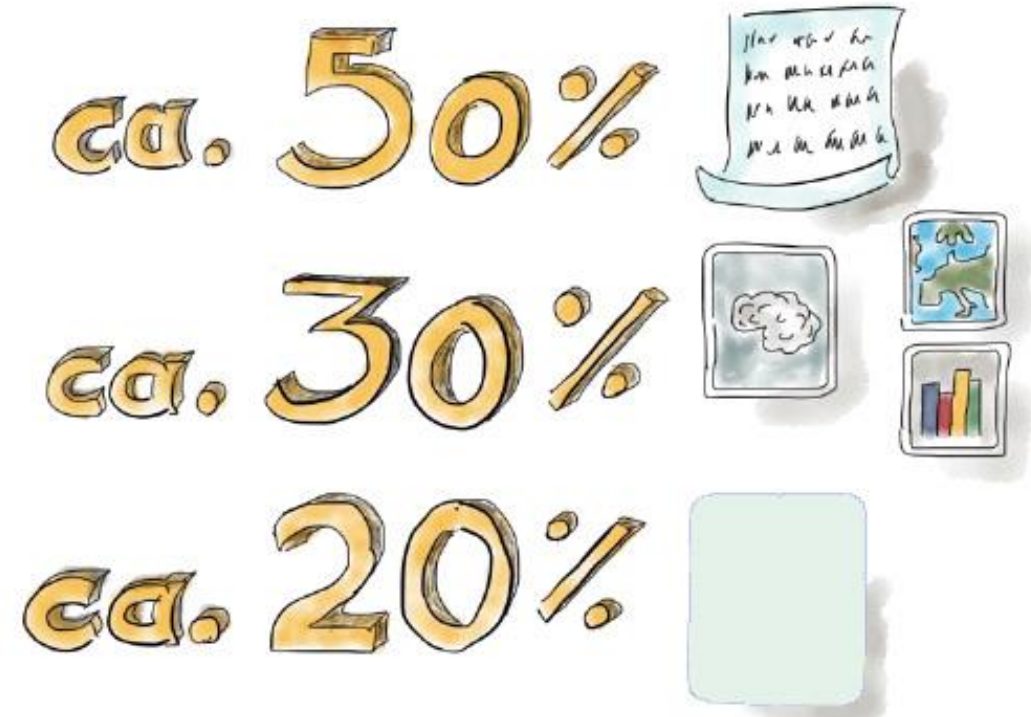
- WHO is investigating
- WHAT
- HOW
- with WHAT result
- for WHICH goal
- on WHICH basis?



# Poster presentation

How to design a scientific poster?

The secret of a good poster is the interplay of text, picture elements and open space. The following variables help with orientation:



# Poster presentation

## Structure of a scientific poster

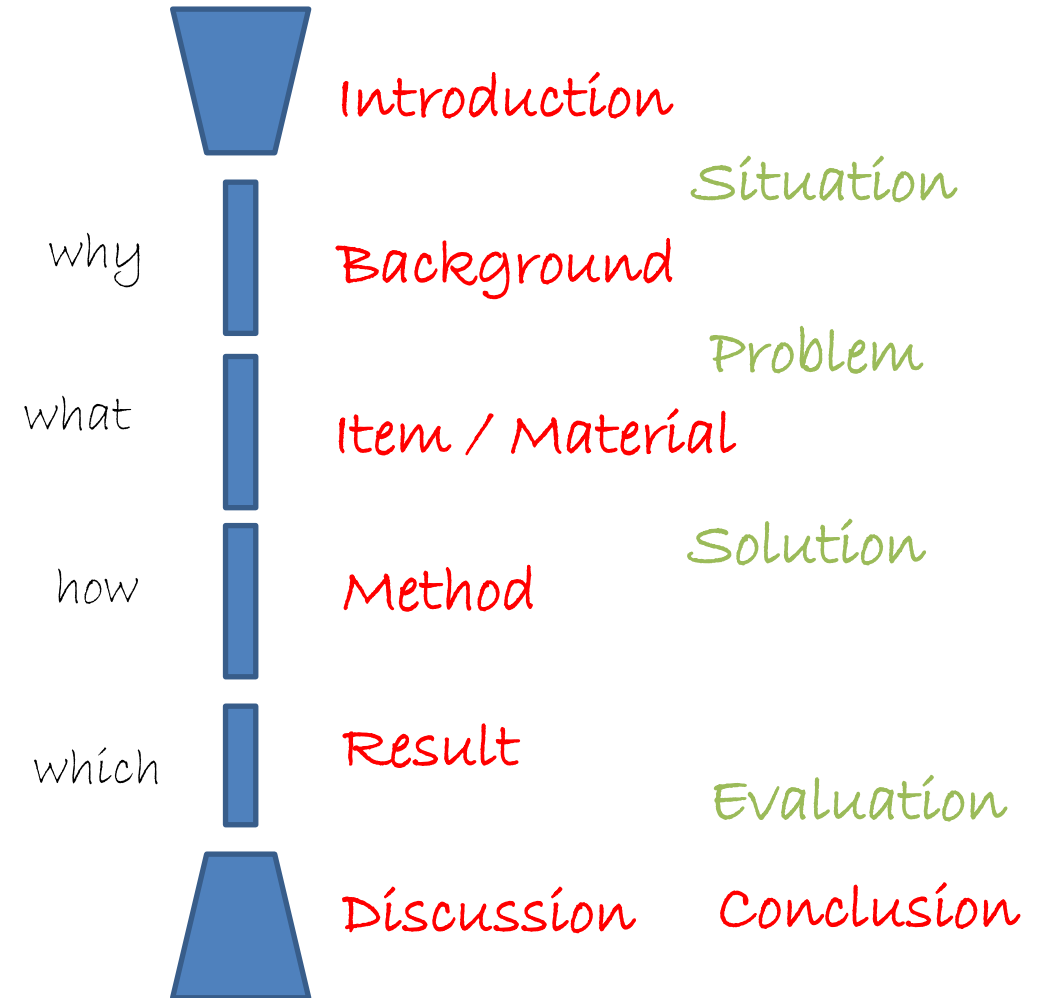
A poster can be structured very differently. Apart from the logical structure of the research work, the conventions of the subject areas as well as individual preferences are decisive. The key is that the audience can quickly recognize the structure. Therefore, it is important to think carefully about what information the poster should transport. Careful planning of the logical structure is the A & O of a good poster.

It can help to recall the basic structure of a scientific topic (W-questions)



# Poster presentation

This results in various options for arranging a theme for a poster. It is advisable to first sketch the idea with pen and paper.



Source: Own representation



# Poster presentation

## Poster design

- Obey basic rule of the design standards
  - avoid redundant and disturbing issues.
  - The use of colors, pictures and graphic elements should always be checked whether these contribute to the rapid comprehensibility.
  - A poster very soon appears overloaded, restless or too colorful and misses his goal to inform quickly and accurately.



# Poster presentation

## Poster format

Common format for poster presentation is format DIN A0 and DIN A1.

Horizontal format or landscape format

DIN-Formate	in mm	enthalten in A0	Pixel bei 300 ppi (dpi*)	Pixel bei 150 ppi (dpi*)	Pixel bei 72 ppi (dpi*)	Größe in qm	in qm bei Teilung von 1
A0	841 x 1189	1 x	9933 x 14043	4967 x 7022	2384 x 3370	0,999949	1
A1	594 x 841	2 x	7016 x 9933	3508 x 4967	1684 x 2384	0,499554	0,5
A2	420 x 594	4 x	4961 x 7016	2480 x 3508	1191 x 1684	0,24948	0,25
A3	297 x 420	8 x	3508 x 4961	1754 x 2480	842 x 1191	0,12474	0,125
A4	210 x 297	16 x	2480 x 3508	1240 x 1754	595 x 842	0,06237	0,0625
A5	148 x 210	32 x	1748 x 2480	874 x 1240	420 x 595	0,03108	0,03125
A6	105 x 148	64 x	1240 x 1748	620 x 874	298 x 420	0,01554	0,015625
A7	74 x 105	128 x	874 x 1240	437 x 620	210 x 298	0,00777	0,0078125
A8	52 x 74	256 x	614 x 874	307 x 437	147 x 210	0,003848	0,00390625
A9	37 x 52	512 x	437 x 614	219 x 307	105 x 147	0,001924	0,001953125
A10	26 x 37	1024 x	307 x 437	154 x 219	74 x 105	0,000962	0,0009765625



# Poster presentation

## Poster format – further information

- No abbreviations
- Text must be readable from 1m distanceCommon format for poster presentation is format DIN A0 and DIN A1.
- Horizontal format or landscape format
- Format A0: font size minimum 32 pt, title 58 pt, illustration: 17 pt





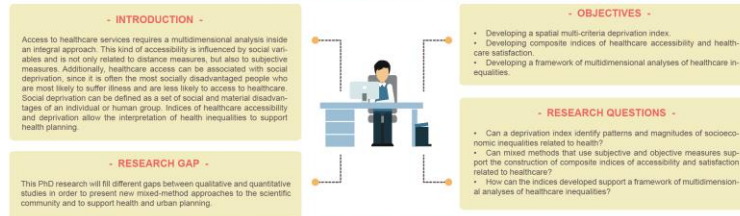
# Poster presentation - examples

## SPATIAL SOCIAL INDICES: POTENT TOOLS IN HEALTH PLANNING

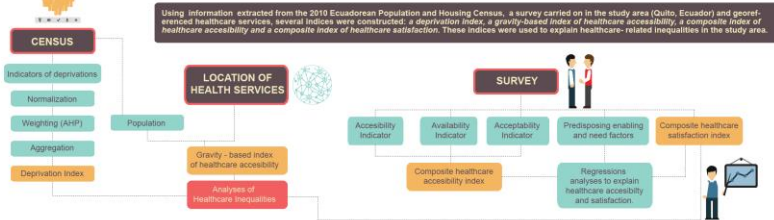
THE CASE OF QUITO - ECUADOR

University of Salzburg, Department of Geoinformatics - Z\_GIS  
Pablo Cabrera Barona, PhD Student.

### THE RESEARCH PLAN



### THE METHODOLOGY



### PRELIMINARY RESULTS



### CONTRIBUTIONS



### CONCLUSIONS

This research provides a workflow to evaluate health-related inequalities by using spatial social indices. It is important to mention that an index can not fully explain a specific phenomenon. For this reason it is important to work with a combination of composite indices and simple indicators in order to validate the obtained results. This methodology can be transferred to other regions of the world to further evaluate health-related inequalities, identifying clear links between deprivation and accessibility to healthcare becomes an important issue for health planning and policy making.

pablo.cabrera-barona@stud.sbg.ac.at

www.pablocabrera-barona.com

@PabloCBF

## Reachability Queries in Multi-modal Networks

GIScience

Bezaye.Belayneh {@stud.sbg.ac.at}

supervised by  
Prof. Nikolaus Augsten, PhD

UNIVERSITÄT  
SALZBURG

### I. Introduction

Given a spatial network, a time frame, a set of points of interest (POIs) and a query point, a **reachability query** retrieves POIs that are reachable from the query point within the time frame at a specific point in time.

Application area: route planning, urban planning, geo-marketing,...



An example of a **reachability query**, given a spatial network, POIs (students), a query point (school), and a time frame (10min): *which students can reach the school within 10min?*

A spatial network can be: time-dependent (train, bus,...), time-independent (road, pedestrian), or a combination of both.

When a spatial network contain both time-dependent and time-independent networks, it is called a **Multi-modal Network**

Figure 1: Reachability Query

### II. Naive Approaches

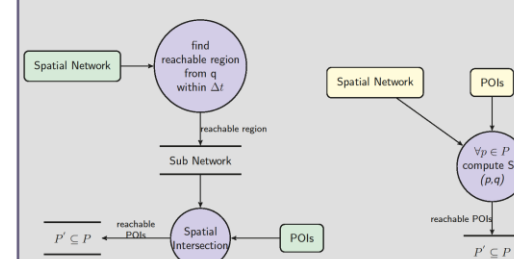


Figure 2: Compute the subset of the network that reaches the query point (q) within the time frame ( $\Delta t$ ) and intersect with the POIs set (P).(left); Compute the shortest path (SP) between each POI and q. (right)

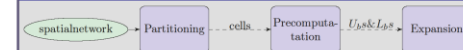
### III. The Gap and The Goal

Current approaches are either:

- mainly designed for **time-independent** networks (=inefficient in **time-dependent** networks), or
- do not scale** for large network size (= involves large number of shortest path computation)

**Main Goal:** to develop, implement, and empirically evaluate efficient algorithms for reachability queries in multi-modal networks.

### IV. Methodology



Precomputation of Upper ( $U_b$ ) and lower ( $L_b$ ) bounds:

- $U_b$  and  $L_b$  between any pair of border nodes within each cell
- $U_b$  between each border node of a cell and the cell's virtual node (furthest node from any border nodes)
- $U_b$  and  $L_b$  of the edges between the border nodes of neighboring cells.

Expansion (given query point  $q$  and time frame ( $\Delta t$ ):

- if  $U_b < \Delta t$ , then the region which is fully reachable.
- if  $L_b < \Delta t$ , then the region can be part of the reachable area.

### V. Challenges

- good partitioning
- patterns of frequencies in public transportation networks

### VI. References

- [1] V. Bauer, J. Gampert, R. Loperfido, S. Predieri, S. Puter, and I. Timko. Computing isochrones in multi-modal, schedule-based transport networks. ACM, 2008.
- [2] D. Papadimitriou, J. Zhang, N. Mamoulis, and Y. Tao. Query processing in spatial network databases. VLDB '03, 2003.

FWF

database  
research group

# Poster presentation

## Purpose of a poster

- A poster is a paper in size A1 or A0
- summarized on the introduction / theory, method & main results of a work summarized & discussed
- offers the audience the opportunity to get an overview of the research topic in a relatively short time
- serves as a basis for discussions

### Zweck eines Posters:

A poster is a paper in size A1 or A0, summarized on the introduction / theory, method & main results of a work summarized & discussed.



# Oral presentation



Eye-contact with audience



enthusiasm



blackout



Body language



convince



self-confidence



# Oral presentation

Body language	
Positiv	negative
➤ Open hands	➤ Crossed arms
➤ Friendly face	➤ Gesture of embarrassment
➤ Calm, steady view	➤ Hectic, unfriendly face
	➤ Turn back to audience



# Oral presentation

## Dealing with nervousness

- Rehearsal at home
- Think about glitches and questions
- Familiar yourself with venue and devices



# Oral presentation

- Involvement of the audience
- Circumstances (seating arrangements, daytime,...)
- Generate attention
- Contact to the audience: eye-contact!
- Show self-assurance
- Concentrate and focus on yourself
- Do not let the concept get out of hand



# Oral presentations - common mistakes

- Cross arms in front of body - no body language
- Hectic, permanent movement
- too fast talking
- Too less or too many additional means
- Hands in trouser pockets
- No eye-contact with the audience



# How to present scientifically?

## Programmes to use

- PowerPoint
- Open Office
- Adobe Illustrator
- Indesign
- CorelDraw
- ...





# How to present scientifically?

Oral presentation:

<https://www.youtube.com/watch?v=swlWHulpubl>

<https://www.youtube.com/watch?v=QKOO99UjsSE>

<https://www.youtube.com/watch?v=6A3qofuTUGQ>

Poster presentation:

<https://www.youtube.com/watch?v=vMSaFUrK-FA>

<https://www.youtube.com/watch?v=llr22p0jWjQ>

<https://www.youtube.com/watch?v=0ozwCEeaVWE>

