

7th FRUCT conference
Saint-Petersburg, Russia
26-30 April 2010

Scientific publishing process

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Outline of the lecture

- Introduction
- Publishing process
- Types of publications
- Planning and writing
- Peer-review
- Selected practical topics

Introduction



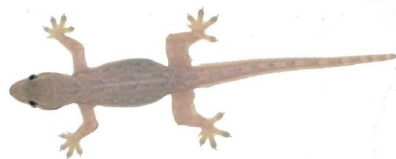
Background of the lecture

- Scientific Publishing course organised yearly at Tampere University of Technology (over 10 year history)
- Post-graduate and undergraduate 4-5th year students interested in PhD studies
 - Helps for MSc thesis writing and technical reporting
- Course contains an exercise conference, called Mini Conference on Scientific Publishing (MCSP)
 - Writing, submitting, reviewing, presenting exercise



The Sixth Annual
**Mini-Conference on Scientific
Publishing 2010 (MCSP'10)**
Proceedings

TKT-9617 Scientific Publishing
Tampere University of Technology
12.2. 2010



Literature (1)

- Michael Alley, “The Craft of Scientific Writing”, Springer-Verlag New York Inc
- Michael Alley, “The Craft of Scientific Presentations: Critical Steps to Succeed and Critical Errors to Avoid”, Springer-Verlag New York Inc.
- <http://www.writing.engr.psu.edu/handbook/visuals.html>

Michael Alley

THE CRAFT OF SCIENTIFIC WRITING

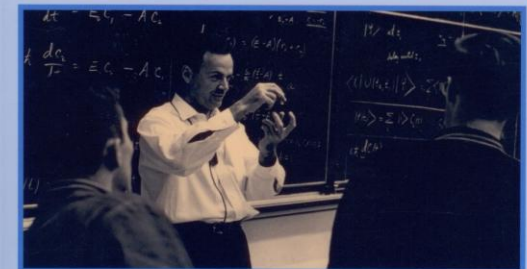
Third Edition



Michael Alley

THE CRAFT OF SCIENTIFIC PRESENTATIONS

CRITICAL STEPS TO SUCCEED AND
CRITICAL ERRORS TO AVOID



Tampereen teknillinen korkeakoulu
Kirjasto





Publishing process



Stamped as Scientific

- Scientific means that the new knowledge proposed is obtained and presented in a way that can be **trusted to be true**
- Scientific papers have gone through the **quality control of the scientific community**



The term scientific...

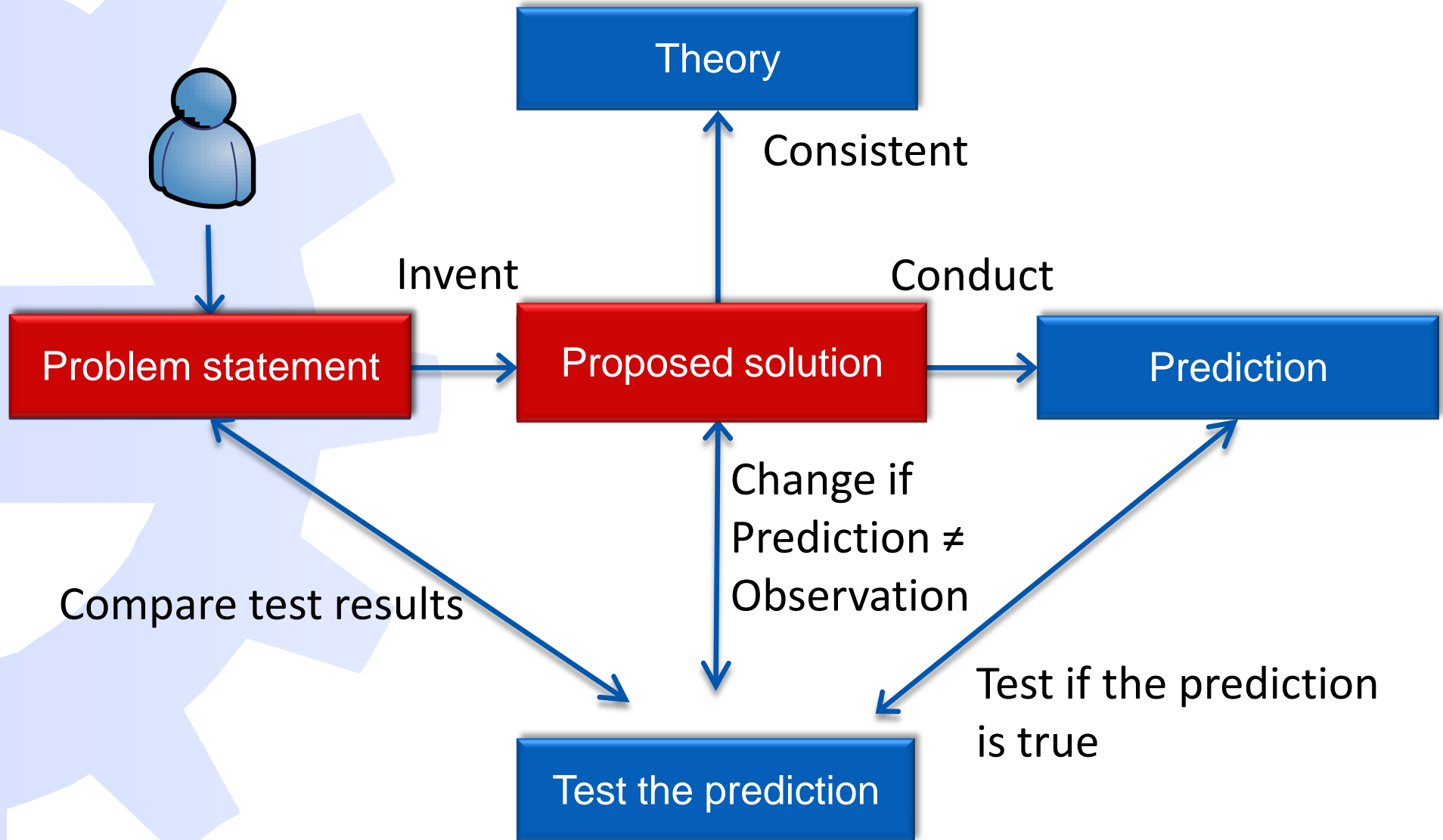
- Scientific is a term for a **set of simple rules** for conducting and reporting
- The key thing is **self-discipline and systematic work**
- Same rules apply to all formal presentations, e.g. technical reports
- But there will be **boring topics** on the way for learning to apply the rules

Rules of scientific publishing?



- Scientific presentation (written, oral)
- Scientific publisher and community
- Own organisation/ employer (what, when, where, how can be published)
- Language (English grammar and vocabulary)

Scientific Method



Practical publishing flow



Scientific paper

- A paper is a scientific article that is published in a scientific journal
 - (Terrible circular definition...)
- A scientific article (paper) **contains new research results or reviews existing results** in a novel way
- A paper has undergone go the **peer review** process by one or more reviewers

New contribution of a scientific paper

- **New result**, theoretical or experimental
- **Novel insight/synthesis/combinations** of ideas
- **Useful survey** - on selected area of research, development, standardisation
- **Useful tutorial** – teaching of known topics

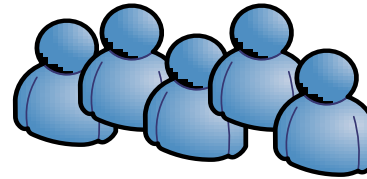
Author



Program chair



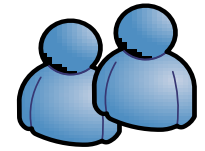
Program committee



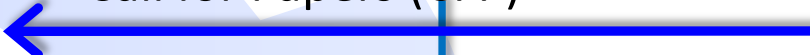
reviewers



Extra-reviewers



Call for Papers (CFP)



Submission of full paper



Decision: Accept/reject (type of accept: oral/poster, length of paper)
Review comments

Review comments
Recommendation

Camera ready (final)



Register (=pay)

Pay for extra pages

Presentation (expected, sometimes checked)

Copyright form

**Conference that publishes
Conference Proceedings**



Author

Editor

reviewers

Extra-reviewers



Original submissions of full manuscript



Review comments, recommendation



Decision: Accept/reject/
minor revisions/major revisions
Reviewer's comments

Revised version



Final decision
Accept/reject/conditional accept

Checking revisions
New review comments
Recommendation

Camera ready (final)



Copyright
Publication fees(?)

Journal publication



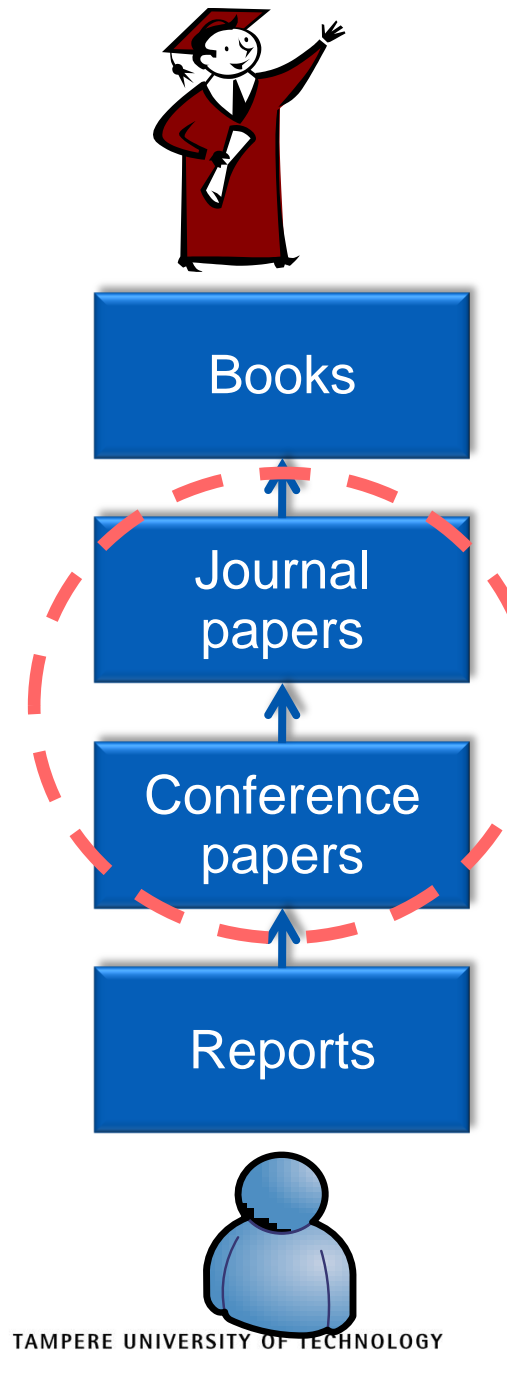


Types of publications



Types of articles

- Scientific books
 - Monographs, handbooks, textbooks
- Journal papers
 - Letters and full articles (not letters to the editor)
- Proceedings
 - Conference, workshop, and symposium papers
- Research reports
 - E.g. by university press
- Standards
- Patents
- Web-publications
- Press releases, newspapers for general public



Style of journal papers

- 5-25 pages (2000-10000 words)
- Journals with a narrow scope
 - Understanding the paper requires availability of references to the reader
 - E.g. IEEE Transactions
 - Focused introduction –readers are expected to already be familiar with the overall research area
- Journals with wide coverage of topics
 - Non-expert reader can understand the problem area
 - E.g. IEEE Computer
 - Paper explains itself with a review or tutorial style of introduction

Conference, workshop, symposium papers

- 4-6 pages (2000-3000 words)
- Room for one point-of-view and one topical manner
 - Research presentation without any details or detailed presentation of one topic – not both
 - Only one key result (in detail)
 - Usually not reviews
- Short introduction
 - Limited set of references and related research (due to scope and page limit)

Other Web publications

- Web pages, etc
 - Emerging way of publishing news, press releases, deliver appendix material, source codes, etc.
- White papers by companies
 - Usually in the form of a scientific paper
 - No dot possesses the same reliability nor the value of a scientific paper
- Wikipedia etc.
 - Not a distinguished source for scientific information (not a reference)
 - However, can help you a lot to find the 'real' references and to get the overall picture



Quality or journal/conference



Quality of a journal

■ Immediacy index

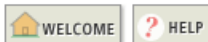
- How “topical” the journal is
- The number of citations the journal receives in a given year divided by the number of articles published

■ Cited half-life

- Half of a journal's cited articles were published more recently than the cited half-life
- For example
- Journal's half-life in 2005 is 5
- Citations between 2001-2005 count half of all the citations, and the other half of the citations are before 2001

Quality of a journal: the impact factor

- The **average number of citations** in a year given to those articles that were published during the two (usually 2) preceding years in that journal
- E.g., 2003 impact factor of a journal would be calculated as follows:
 - A = the number of times articles published between 2001-2002 that **were cited** during 2003
 - B = the number of articles published in 2001-2002
 - 2003 impact factor = A/B



Journal Summary List

[Journal Title Changes](#)Journals from: **subject categories ENGINEERING, ELECTRICAL & ELECTRONIC** Sorted by:

Journals 1 - 20 (of 229)

Page 1 of 12

Ranking is based on your journal and sort selections.

Mark	Rank	Abbreviated Journal Title (linked to journal information)	ISSN	JCR Data						Eigenfactor TM Metrics	
				Total Cites	Impact Factor	5-Year Impact Factor	Immediacy Index	Articles	Cited Half-life	Eigenfactor TM Score	Article Influence TM Score
<input type="checkbox"/>	1	IEEE T PATTERN ANAL	0162-8828	24674	5.960	7.981	0.669	181	9.0	0.04964	2.617
<input type="checkbox"/>	2	IEEE T IND ELECTRON	0278-0046	9014	5.468	4.665	0.460	454	4.8	0.01228	0.536
<input type="checkbox"/>	3	PROG QUANT ELECTRON	0079-6727	634	4.750	5.909	0.667	6	9.4	0.00160	2.190
<input type="checkbox"/>	4	PROG ELECTROMAGN RES	1559-8985	3346	4.735		3.071	197	1.8	0.01021	
<input type="checkbox"/>	5	P IEEE	0018-9219	17993	4.613	6.824	0.566	122	>10.0	0.03460	2.391
<input type="checkbox"/>	6	IEEE J SEL AREA COMM	0733-8716	13838	4.249	5.615	0.361	155	7.8	0.04225	2.090
<input type="checkbox"/>	7	IEEE T MED IMAGING	0278-0062	10426	4.004	5.544	0.468	158	7.3	0.02141	1.368
<input type="checkbox"/>	8	IEEE T INFORM THEORY	0018-9448	29333	3.793	5.434	0.420	462	8.8	0.07658	1.841
<input type="checkbox"/>	9	IEEE SIGNAL PROC MAG	1053-5888	3040	3.758	6.157	0.733	60	6.1	0.01248	2.397
<input type="checkbox"/>	10	IEEE T NEURAL NETWORK	1045-9227	9883	3.726	4.144	0.330	179	8.5	0.01649	1.004
<input type="checkbox"/>	11	IEEE T FUZZY SYST	1063-6706	5211	3.624	4.804	0.266	128	7.5	0.00838	0.974
<input type="checkbox"/>	12	IEEE T SOFTWARE ENG	0098-5589	5449	3.569	4.241	0.423	52	>10.0	0.00695	0.956
<input type="checkbox"/>	13	IEEE T POWER ELECTR	0885-8993	7719	3.483	3.813	0.405	321	6.0	0.01179	0.545
<input type="checkbox"/>	14	IEEE J SOLID-ST CIRC	0018-9200	13137	3.466	4.037	0.295	278	6.8	0.04255	1.334
<input type="checkbox"/>	15	IEEE T IMAGE PROCESS	1057-7149	12214	3.315	4.646	0.385	200	7.3	0.03070	1.329
<input type="checkbox"/>	16	IEEE T AUTOMAT CONTR	0018-9286	23227	3.293	4.828	0.216	301	>10.0	0.04562	1.461
<input type="checkbox"/>	17	PATTERN RECOGN	0031-3203	11149	3.279	3.725	0.567	307	7.3	0.02762	1.021
<input type="checkbox"/>	18	IEEE WIREL COMMUN	1536-1284	1925	3.180	5.935	0.062	64	4.2	0.01025	1.658

Quality of Workshop, Symposium, Conference

- Depends on the reputation of the conference
- Acceptance rate (not always the best meter)
- Scientific society as sponsor/publisher (e.g. IEEE, IEE, ACM)
- The age of the conferences (e.g. 51st conference on ... vs. 2nd workshop on...)
- Who are on the program committee?
- Beware of meetings that do not publish

ieeevtc.org / vtc2008spring /

Welcome to VTC Singapore!



- Home
- Welcome
- NEW** Keynote Speakers
- NEW** Final Program
- Tutorials
- Registration
- Visa Assistance
- NEW** Presenter Info
- Hotel Information
- Flight Information
- Exhibits / Patronage
- Committees
- Call for Papers
- Email Updates

2008 **IEEE 67th** Vehicular Technology Conference: VTC2008-Spring 11–14 May 2008, Marina Bay, Singapore

The 2008 IEEE 67th Vehicular Technology Conference will bring together individuals from academia, government, and industry, to discuss and exchange ideas in the fields of mobile and vehicular technology. The conference will feature world-class plenary speakers, tutorials, and technical as well as applications sessions. The setting is Singapore, a country that is home to a diverse mix of cultures and ideas, making a melting pot like nowhere else in the world. Come experience Southeast Asia at its finest.

Final submission is now closed.
Hotel registration at VTC rate ends: **4 April 2008**
Early (non-author) registration ends: **11 April 2008**

Venue Information
visitsingapore.com

Links
ieee.org
vtsociety.org



<http://www.ieeevtc.org/vtc2008spring/>

[Include Citations](#) | [Advanced Search](#) | [Help](#)[Most Cited Articles](#)[Most Cited Citations](#)[Most Cited Authors](#)[Venue Impact Ratings](#)

Estimated Venue Impact Factors.

Generated from documents in the CiteSeer^x database as of March 20, 2008. This list is automatically generated and may contain errors.

Impact is estimated based on Garfield's traditional impact factor.

Choose Window: | [1993](#) | [1994](#) | [1995](#) | [1996](#) | [1997](#) | [1998](#) | [1999](#) | [2000](#) | [2001](#) | [2002](#) | [2003](#) | [2004](#) | [2005](#) | [2006](#) | **2007**

Only venues with at least 25 articles are shown. Venue details obtained from [DBLP](#) by [Michael Ley](#). Only venues contained in DBLP are included.

1. [POPL](#) **0.45**
2. [OSDI](#) **0.43**
3. [PLDI](#) **0.4**
4. [ACM Conference on Computer and Communications Security](#) **0.39**
5. [S&P](#) **0.37**
6. [NSDI](#) **0.37**
7. [CSFW](#) **0.33**
8. [ASPLOS](#) **0.32**
9. [SIGCOMM](#) **0.31**
10. [RAID](#) **0.31**
11. [EuroSys](#) **0.3**
12. [FAST](#) **0.3**
13. [TCC](#) **0.26**
14. [IPTPS](#) **0.26**

<http://citeseerx.ist.psu.edu/stats/venues>

Paper structure



Energy-efficient neighbor discovery protocol for mobile wireless sensor networks

Mikko Kohvakka*, Jukka Suhonen, Mauri Kuorilehto, Ville Kaseva,
Marko Hännikäinen, Timo D. Hämäläinen

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Received 14 November 2006; received in revised form 2 November 2007; accepted 27 November 2007
Available online 15 December 2007

Abstract

Low energy consumption is a critical design requirement for most wireless sensor network (WSN) applications. Due to minimal transmission power levels, time-varying environmental factors and mobility of nodes, network neighborhood changes frequently. In these conditions, the most critical issue for energy is to minimize the transactions and time consumed for neighbor discovery operations. In this paper, we present an energy-efficient neighbor discovery protocol targeted at synchronized low duty-cycle medium access control (MAC) schemes such as IEEE 802.15.4 and S-MAC. The protocol effectively reduces the need for costly network scans by proactively distributing node schedule information in MAC protocol beacons and by using this information for establishing new communication links. Energy consumption is further reduced by optimizing the beacon transmission rate. The protocol is validated by performance analysis and experimental measurements with physical WSN prototypes. Experimental results show that the protocol can reduce node energy consumption up to 80% at 1–3 m/s node mobility.

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Keywords: Algorithm/protocol design and analysis; Low power design; Mobile computing; Wireless sensor networks

1. Introduction

Wireless sensor network (WSN) is the most potential technology for very low power ubiquitous networks. Foreseen applications fields include mon-

itoring of remote or hostile geographical regions, tracking of animals and objects, and monitoring in smart building and industries [1,2]. WSN may consist of even thousands of small and fully autonomous nodes, which gather sensor information, perform data processing, and communicate with each other. Nodes route data by multiple low-energy hops to sink nodes, which may act as gateways to other networks. Network management is

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Structure of the paper (1)

- Title, Author list, affiliations
- Abstract, keywords
 - E.g. IEEE Approved Indexing Keyword List
- Introduction
 - Motivation and problem statement
- Related research
 - What is the state of the art situation
 - Prove of problem statement
- Proposed new solution
 - According to problem statement and related research



Structure of the paper (2)

■ Research methods

- How was the problem studied, how you prove it?
- What testing, experimentation, analysis arrangements are done?

■ Implementation

- Prototypes, simulators, models, ...

■ Experiments carried out

- Simulations, measurements, analysis

■ Evaluation of results

- Analyses, comparisons



Structure of the paper (3)

- Discussion
 - General discussions about results and their usability
- Conclusions
 - What do these findings mean?
 - What is most important?
 - Significance of this work?
 - What would be future work?
- Acknowledgements
 - Colleague not contributing to research and writing, funding sources
- Biographies
 - Very short CV in textual paragraph
- References
- Appendix

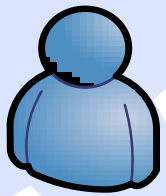




Planning and writing a paper

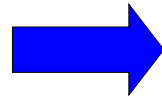


Paper writing process



Student

Getting the
results to write
about



Documenting
the results



Publication

Problem with this flow?

Paper writing process

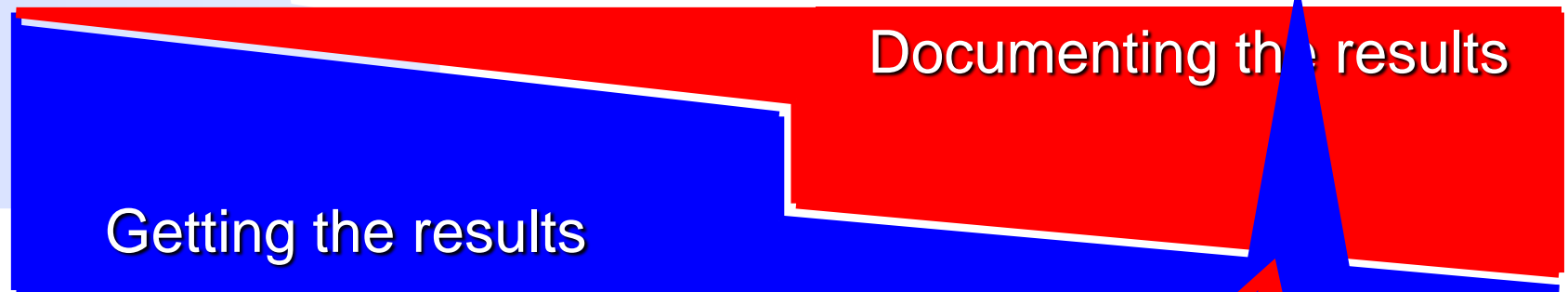
Targets



Results available



Final polishing



- You are off the focus?
- Idea for a new paper?

Ideas and results to publish

- Definition of the problem is the difficult part, everything else follows
- The problem definition does not (and **should not**) be wide
 - Target to a single well defined topic and explain it fully!
 - How is this better and different than the work of others (related)
 - “This has just been done” or “It just works” are not enough for motivation
- Time and other resources are limited - write what you have done – do not wait for what you will do later!

Planning

- **Decide what is the single sentence “claim” or “point” of your paper?**
- **This should guide you to concentrate on the key topic in related work, experiments and writing!**

”I present my wlan link protocol and prove that its performance is better than others”

E.g. "I present my wlan link protocol and prove that its performance is better than others" mean you'll have to include

- Motivation why this work has been done
 - Why we need more performance, maybe application scope of the wlan link protocol (multimedia, sensor)?
- What is performance?
- What are the related protocol proposals and what is their performance?
- What is your design?
- What are the experiments/methods how you prove your performance?
- Experiment results and analysis
 - Is your protocol better or not?
- Conclusions and critical evaluation

Paper introduction: problem and scope

- Introduction must contain a clear definition of
 - Motivation for the paper and the research area
 - Problem statement, what is solved?
 - Your own (authors') contribution
 - Explicitly say what is novel!
- This must be on the first page of the paper
- Motivate that this paper is worth reading (and accepting)
 - Use later the related research and its analysis later to prove that there is novelty

Reviewer says: “The paper does not refer to this particular publication..”

- Definition of scope accurately protects the paper against misunderstandings
- Define what is outside the scope of the paper
- Explain why you have selected (and why not selected) references to your paper

Concentrate on new

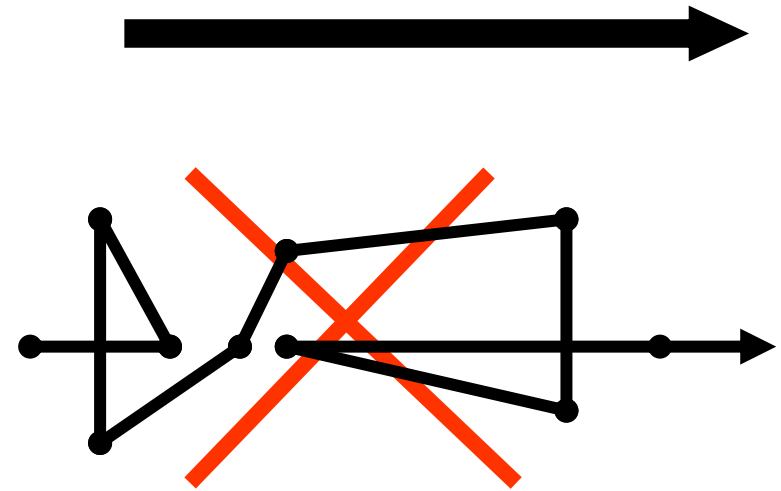
- In first papers, it is tempting to write what **you personally have learned** from references, but this is **off-topic**
 - This usually results to long introduction and related research parts
 - E.g. 4 page budget (1 page for related, 3 for new results)
- Write what you know, what are your results and what you read from references
 - Beware of 'obvious' things and tautologies
 - You cannot hide missing information with unclear expressions
 - You cannot refer to unpublished work
 - Do not guess!

Importance of the paper structure

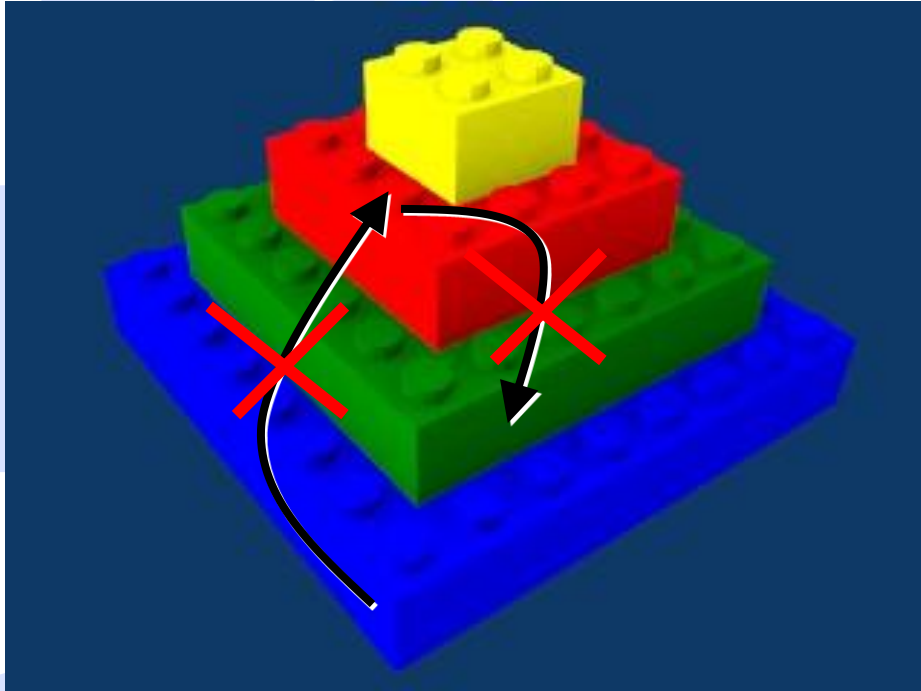
- The most difficult problems in writing (and most of the additional work) emerge from the broken structure
- “Spaghetti paper” means that
 - Everything is associated to everything else
 - All things are equally important
 - Things are repeated
- Results to numerous iterations
 - Wasted writings
 - Lost nerves
 - Bad reviews
 - Desperation

Systematic flow

- Do not make many short notices to coming issues
- Do not refer backward/forward to explain some issue
- Do not overlap & repeat same issues at same detail level
- “spaghetti structure”



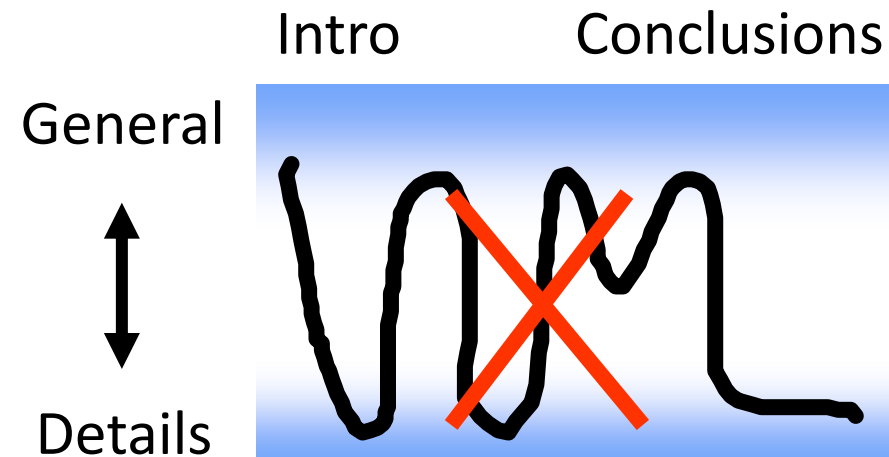
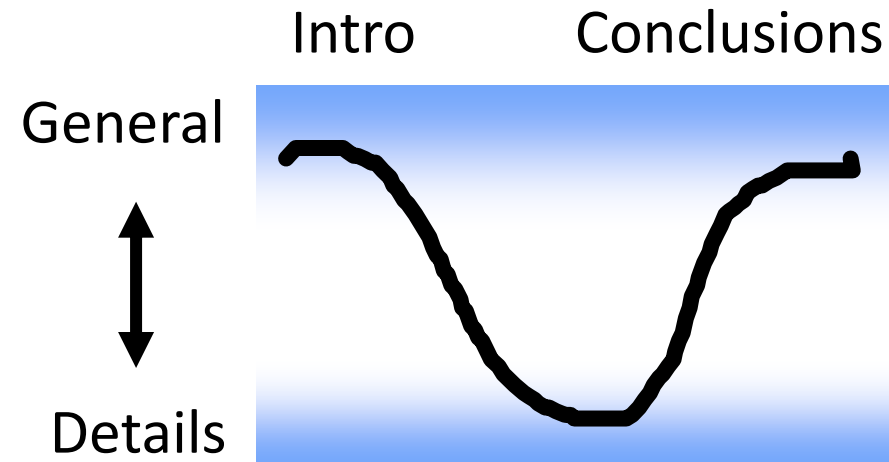
Systemic flow



- The reader is not a mind-reader
- Everything not introduced is unknown to the reader
- Everything introduced is expected to be remembered
- Define one topical matter in one place, do not repeat it anywhere

Level of details

- Do not hop up and down with the level of details
- Do not mix several new matters in one sentence or several topics in one paragraph



Abstracts

- Must be independently understandable
 - No references to the paper or list of references
 - Also the paper itself must be independently readable without the abstract
 - Abstract contains only the information available in other parts of the paper
- **Must cover the whole paper, not just copy-paste the introduction**

Main questions to be answered in abstract?

1. What is done (what is the research problem)
2. What is the related work (briefly)
2. How it is done (what is the methodology used)
3. Results (what is the new information of the publication, numerical, comparable data)
4. Significance of the results

Why do you think anyone wants to read this paper?



Peer Review Process

Quality Control in Science



Peer review

- Publications that have **not** undergone peer review remain **undefined by value**
 - E.g. White papers, submitted papers
- Also used e.g. in open source software development, funding decisions

Types of peer review

- Blind blind or single-blind
 - Identity of the reviewers is concealed from the authors and from other reviewers
- Double-blind Review
 - Authors are required to remove any reference that may point to them as the authors of the paper
 - Web searches should not reveal the identity
- “Almost double blind”
 - A more common thing between blind and double blind is to remove the authors’ affiliations

Peer review

- Usually the editor finds reviewers
- Reviewers are expected to inform any conflict of interests that might arise
 - Authors' close colleagues, relatives and friends
- Role of the peer reviewer is advisory
- Peer reviewers seldom achieve good or any kind of consensus

Peer review is hard work

- Reviewing takes time away from the referee's main activities – such as his or her own research, own papers, own family
- Requires high expertise and lots of work
- Peer reviewers are not paid
- Helps in improving the author's expertise
- If you get a bad review – respond politely with reasoning
- Make a report of the changes – how you have taken the comments into account?

Peer reviewer tries to find mistakes first

- The peer review targets to spot every mistake or weakness
- This makes the comments on improvements and decision making easier
- Obvious mistakes take away the authors' credibility immediately
- Showing your work to others (colleagues) increases the probability that the weakness will be identified before submission!

When you review – please understand what you demand...

- Example: the WLAN protocol design
 - “please compare to all other related protocols with simulations and practical measurements would also be needed for these..”
- Constructive comments help to improve the paper (even if rejected)
 - Beware of what is needed vs. nice to have
 - Tolerate that people do write differently
- Content comes first
 - Correct some spelling errors, but leave the proofreading to the author



Practical hints and use of English



Ambiguous terminology

■ System

- Not good for anything – especially for something you cannot clearly define

■ Based on

- Is like something but not really
- E.g. “Internet-based system”

■ Different, various

- There are ‘different things’

■ Many, some

- There are ‘many things’

Unnecessary (weak) verbs

- Enable, provide, be responsible for, can, may, might, perform, make, is used to
 - Make a decision -> decide
 - Perform development -> develop
 - Can begin -> begins
 - Is used to detect -> detects
- The user interface is responsible for enabling the showing of the results during testing
 - > *The user interface shows the results during testing.*

Passive form

- Do not use I : "I did this"
 - We or passive
- Activate passive sentences:
 - "Monitor is watched for the results" - "Monitor shows the results"
 - "the processor code for this application was implemented" - "we implemented the application for the processor"

Specific words and meanings

- The serum had serious side (affects / effects).
 - It has effects /It affects
- A company's success depends on (its / it's) employees.
 - its = genitive, it's = it is
- Quite (a few/few).
 - a few = many, few = little
- Contains vs. consists of

Capitals and Abbreviations

- Capital letters
- Usually in titles: WLAN Terminal with Quality of Service Support
- With a number following
 - Figure 5
 - Issue 7

Abbreviations

■ Abbreviations

- Wireless Local Area Network (WLAN)
- Once introduced – must be used

■ New abbreviations: one is about the maximum

- *Test System (TS) consist of a Client Server System (CSS) and User Program (UP) connected by Laboratory WLAN (LWLAN). In TS, UP accesses CSS with LWLAN.*

Emphasizing

- Italic only the *most important* terms and only one when they are presented
- Write normally after that

Formulas

Formulas are text, not figures. When you present a formula it should be like

$$x=x+1, \quad (1)$$

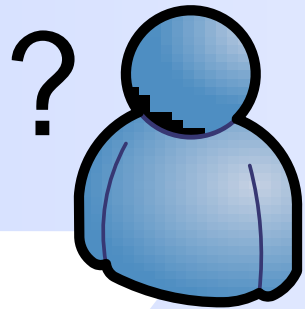
where x presents whatever you like. In (1) the expression is given.

Terminology list

- The used term and definitions are a vital part of the structure
- What is the **single explicit name** you are using for a certain thing?
- It is **strictly forbidden** to vary terms or invent new synonyms for entertaining the reader
- Do not use several definitions (or, i.e.)

Example

“In this thesis, the user, i.e. the designer (also called a programmer), uses the software, i.e. the program”.



Is the software program a client, client software, client program, program, process, task, user interface?

Is the user in your work a human, user, designer, programmer, client, device, slave, user interface?

Where are these objects in the picture?



Questions & Comments

