Marko Hännikäinen
marko.hannikainen@live.fi

SCIENTIFIC PUBLISHING: WRITING AND PRESENTING OF HIGH QUALITY PAPERS

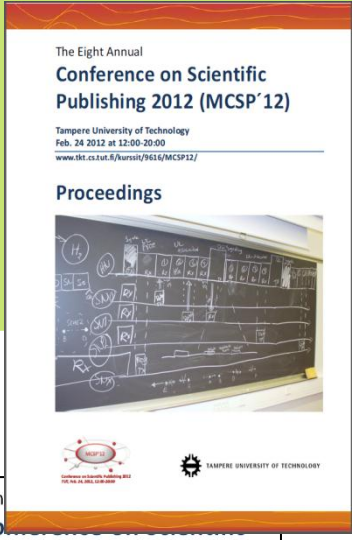
Outline of the lecture

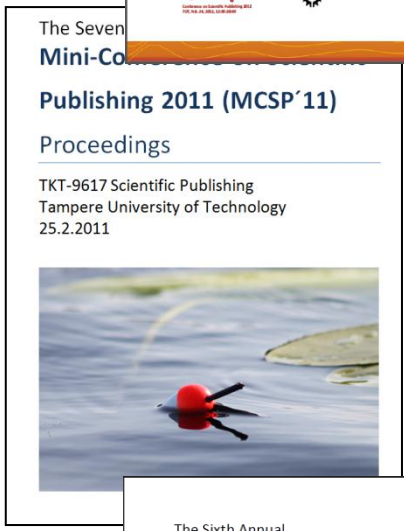
- About the training
- Motivation
- Types of articles and publishing process
- Planning and writing a paper
- Presenting and graphics
- Summary

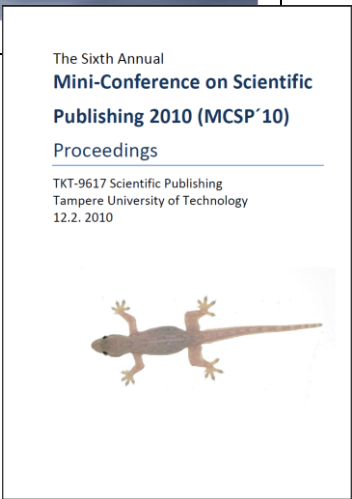
ABOUT THE TRAINING

Background of the lecture

- **Scientific Publishing course** organised yearly at Tampere University of Technology (12 year history)
- Post-graduate and undergraduate 4-5th year students – first papers coming
- Practices the whole publication flow - from planning to presentation
- Course contains an exercise conference, called **Conference on Scientific Publishing (MCSP)**





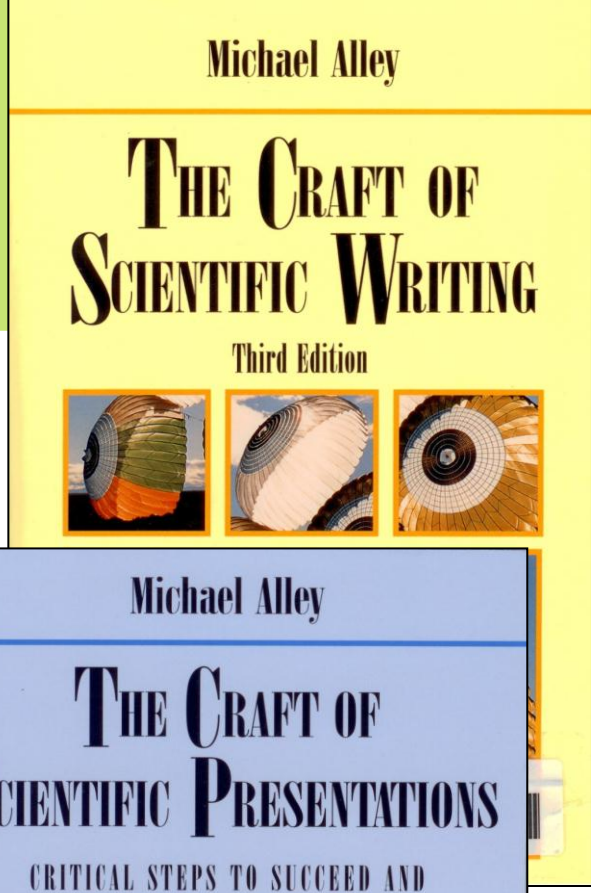


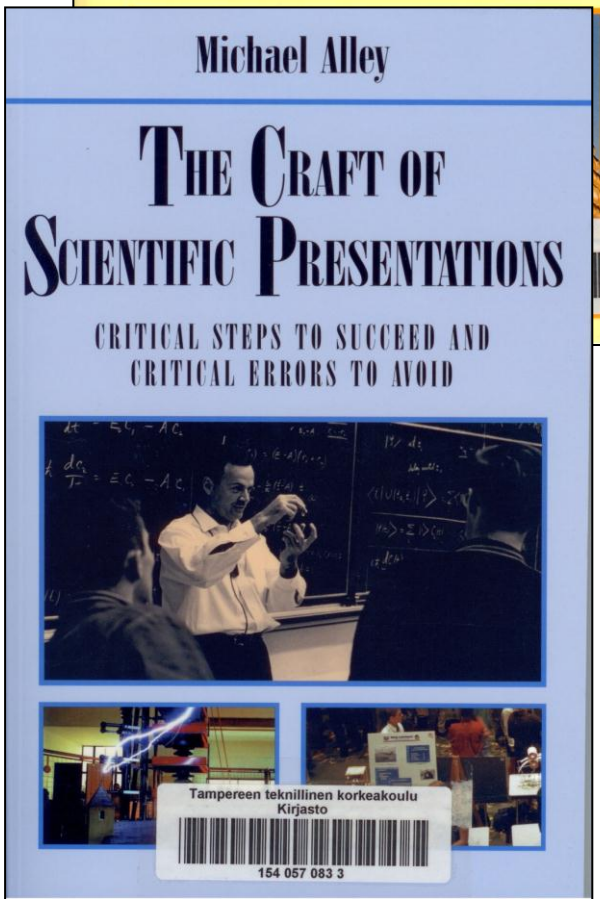
Conference on Scientific Publishing (MCSP)

- MCSP is the final event of the course TKT-9716 Scientific Publishing.
- The program of MCSP consists of students' exercise paper presentations in two parallel tracks, common sessions, a keynote speaker, and a social event.

Suggested literature

- **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





MOTIVATION

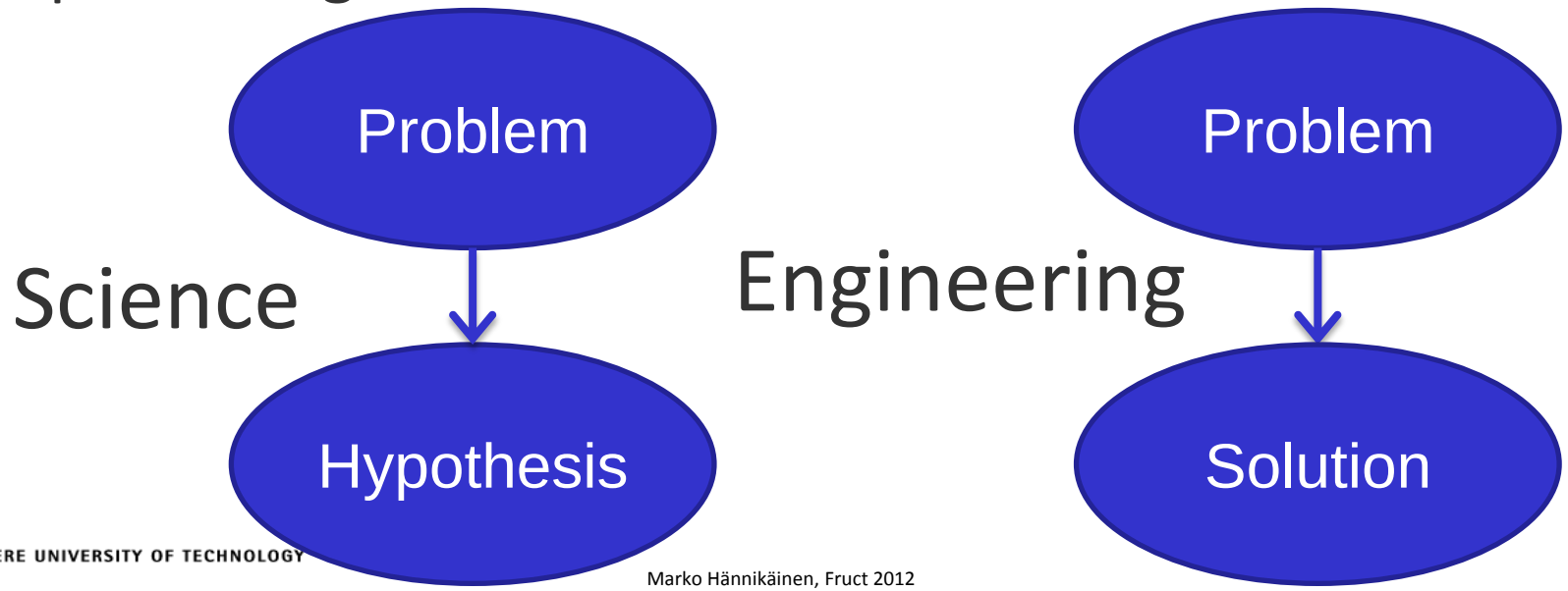
Stamped as Scientific

- 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

- Writing good papers has a **set of simple rules**
- The key thing is **self-discipline and systematic work**
- But learning to apply the rules will be **boring**

But this is technology, not nature?

- Engineering sciences are studying human-created constructions instead of nature
  - Products, services, (design) methods
- Still, the same rules apply in conducting research and publishing

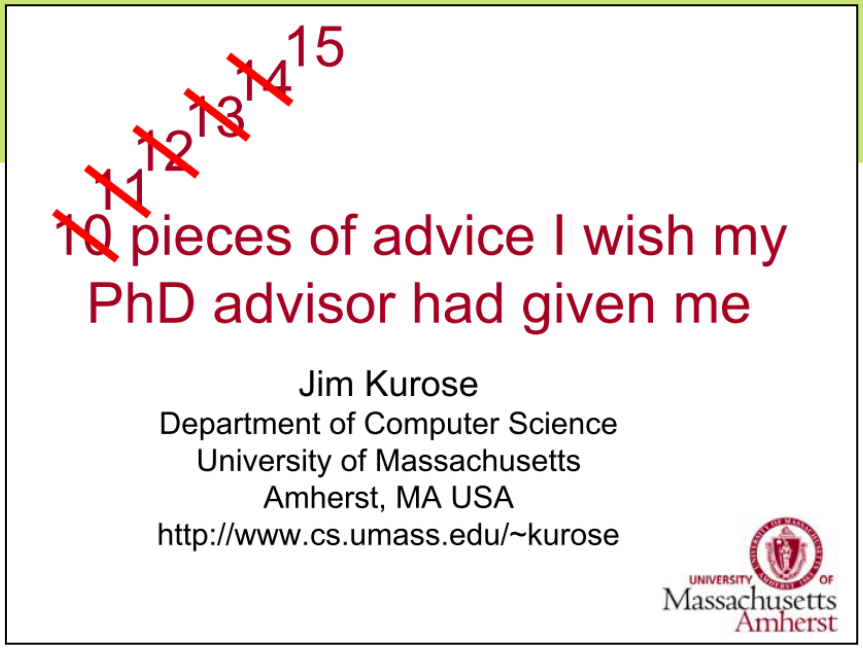


1015 pieces of advice for PhD students

1. Study broadly
2. Pick your problems carefully
3. Publish
4. Time is your most precious resource
5. **Learn how to write really well**
6. Learn how to speak really well
7. Learn the process of doing research
8. Think about what you want to do afterwards
9. Meet people, listen, collaborate
10. Identify role models
11. Have fun – enjoy

Added by others ..

1. Learn how to deal with stress
2. Learn how to deal with rejection
3. Learn how to multiplex
4. Learn how to read/review/write fast, but well



Jim Kurose
Department of Computer Science
University of Massachusetts
Amherst MA 01003 USA
kurose@cs.umass.edu
phone: 413-545-1585
FAX: 413-545-1249

Writing well (and fast)

- Writing well (and fast) gives you an “unfair advantage”
- Writing well matters in getting your work published in top venues
- Writing well (and fast) gives you more time to do research (and free time)

Summary of “I can not write because..” problems

- ”It takes time”
  - Yes, therefore learn to do it fast
- “I just can’t write”
  - Writing is very hard only at the beginning, after a couple of papers it is just hard
  - The only way of learning how to write is to write (courses and books may help)
- ”It is nit-picking – it kills creativity”
  - Scientific writing is a set of simple rules, lots of them
  - These rules make the paper easier to read, understand, compare
  - It should be easy and fast check the main contribution of a paper

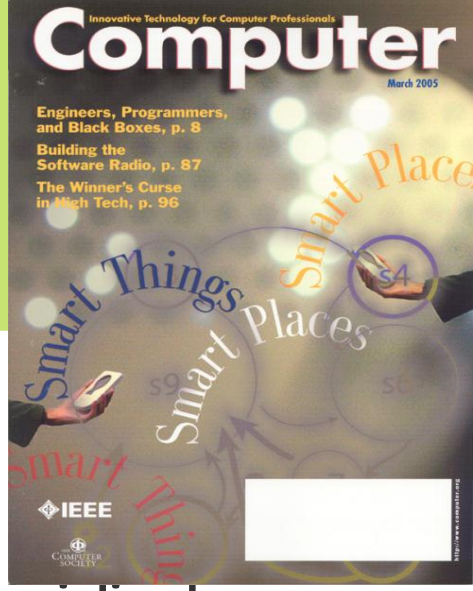
TYPES OF ARTICLES AND PUBLISHING PROCESS

Scientific article (‘paper’)

- Published in a scientific **journal**, also conference proceedings, books
- Contains **novel research** results or reviews existing results in a novel way
- Presents the research **process** used for acquiring the new results
- Have under gone the **peer review** process by one or more referees (reviewers) in order to check that the content of the paper is suitable for publication in the journal

- **New result**, theoretical or experimental
- **Novel insight** synthesis, combinations of ideas
- **Useful survey/review** - area of research, current development, standardisation, etc

Types of articles

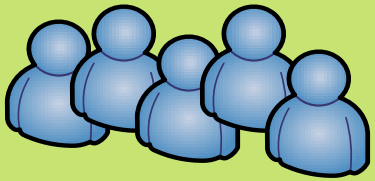


- **Journal papers**
  - **Full articles, letters**
  - **5-25 pages (2000-10000 words), narrow scope/highly specialized**
  - **Open access and traditional buness models, printed and digital**
- **Proceedings**
  - **Conference, workshop, and symposium papers**
  - **4-6 pages, room for one point-of-view and one topical manner, no reviews**
- Others
  - Scientific books, Research reports, theses, …
  - Web-publications, Wikipedia, White papers, …
  - Press releases, newspapers for general public

Author

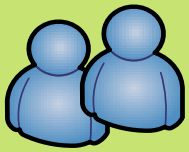
Program chair

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

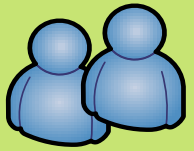
Conference that publishes Conference Proceedings

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(?)

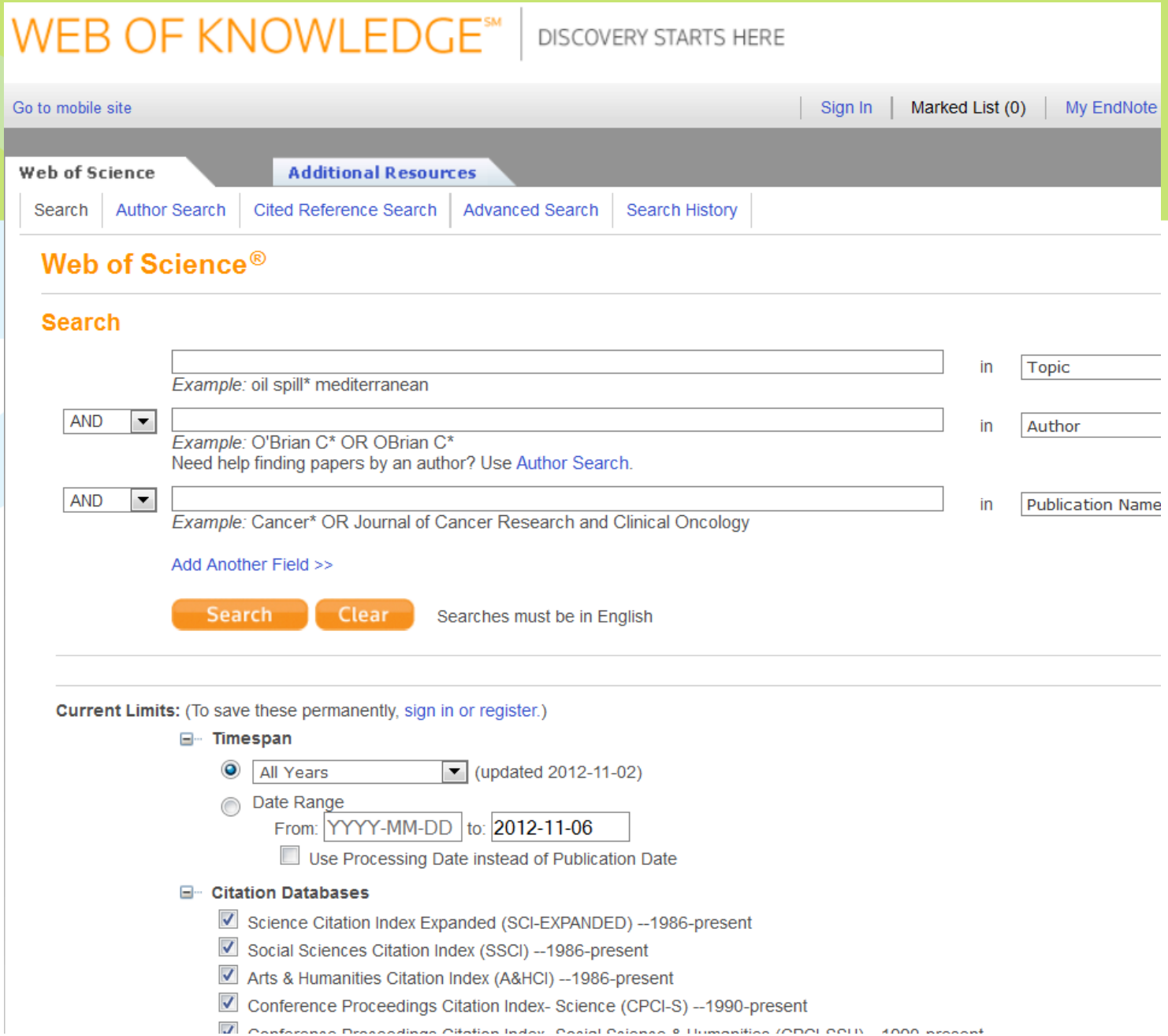
Journal publication

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
- 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
- Cannot make multi-discipline comparisons

Tools for evaluating the quality

- Abstract and citation database
  - Thomson Reuters Web of Knowledge (Previously kown as ISI Web of Knowledge) http://apps.isiknowledge.com/
  - Scopus (SciVerse Scopus) http://www.scopus.com/home
- Web searches, forums, social applications
- The Finnish Publication Forum Project "JULKAISUFOORUMI"
  - Quality classification of scientific publication channels, especially journals and book publishers, in all research fields
  - http://www.tsv.fi/julkaisufoorumi/english.html


WEB OF KNOWLEDGE℠
DISCOVERY STARTS HERE
Go to mobile site
Sign In
Marked List (0)
My EndNote
Web of Science
Additional Resources
Search
Author Search
Cited Reference Search
Advanced Search
Search History
Web of Science®
Search
in
Topic
Example: oil spill* mediterranean
AND
in
Author
Example: O'Brian C* OR OBrian C*
Need help finding papers by an author? Use Author Search.
AND
in
Publication Name
Example: Cancer* OR Journal of Cancer Research and Clinical Oncology
Add Another Field >>
Search
Clear
Searches must be in English
Current Limits: (To save these permanently, sign in or register.)
Timespan
All Years
(updated 2012-11-02)
Date Range
From: YYYY-MM-DD
to: 2012-11-06
Use Processing Date instead of Publication Date
Citation Databases
Science Citation Index Expanded (SCI-EXPANDED) --1986-present
Social Sciences Citation Index (SSCI) --1986-present
Arts & Humanities Citation Index (A&HCI) --1986-present
Conference Proceedings Citation Index- Science (CPCI-S) --1990-present

Journal Summary List

Journal Title Changes

Journals from: subject categories ENGINEERING, ELECTRICAL & ELECTRONIC VIEW CATEGORY SUMMARY LIST

Sorted by: Impact Factor SORT AGAIN

Journals 1 - 20 (of 229)

[1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10]

Page 1 of 12

MARK ALL UPDATE MARKED LIST

Ranking is based on your journal and sort selections.

Mark	Rank	Abbreviated Journal Title (linked to journal information)	ISSN	JCR Data						*Eigenfactor*™ Metrics	
				Total Cites	Impact Factor	5-Year Impact Factor	Immediacy Index	Articles	Cited Half-life	*Eigenfactor*™ Score	*Article Influence*™ Score
☐	1	IEEE T PATTERN ANAL	0162-8828	24674	5.960	7.981	0.669	181	9.0	0.04964	2.617
☐	2	IEEE T IND ELECTRON	0278-0046	9014	5.468	4.665	0.460	454	4.8	0.01228	0.536
☐	3	PROG QUANT ELECTRON	0079-6727	634	4.750	5.909	0.667	6	9.4	0.00160	2.190
☐	4	PROG ELECTROMAGN RES	1559-8985	3346	4.735		3.071	197	1.8	0.01021	
☐	5	P IEEE	0018-9219	17993	4.613	6.824	0.566	122	>10.0	0.03460	2.391
☐	6	IEEE J SEL AREA COMM	0733-8716	13838	4.249	5.615	0.361	155	7.8	0.04225	2.090
☐	7	IEEE T MED IMAGING	0278-0062	10426	4.004	5.544	0.468	158	7.3	0.02141	1.368
☐	8	IEEE T INFORM THEORY	0018-9448	29333	3.793	5.434	0.420	462	8.8	0.07658	1.841
☐	9	IEEE SIGNAL PROC MAG	1053-5888	3040	3.758	6.157	0.733	60	6.1	0.01248	2.397
☐	10	IEEE T NEURAL NETWOR	1045-9227	9883	3.726	4.144	0.330	179	8.5	0.01649	1.004
☐	11	IEEE T FUZZY SYST	1063-6706	5211	3.624	4.804	0.266	128	7.5	0.00838	0.974
☐	12	IEEE T SOFTWARE ENG	0098-5589	5449	3.569	4.241	0.423	52	>10.0	0.00695	0.956
☐	13	IEEE T POWER ELECTR	0885-8993	7719	3.483	3.813	0.405	321	6.0	0.01179	0.545
☐	14	IEEE J SOLID-ST CIRC	0018-9200	13137	3.466	4.037	0.295	278	6.8	0.04255	1.334
☐	15	IEEE T IMAGE PROCESS	1057-7149	12214	3.315	4.646	0.385	200	7.3	0.03070	1.329
☐	16	IEEE T AUTOMAT CONTR	0018-9286	23227	3.293	4.828	0.216	301	>10.0	0.04562	1.461
☐	17	PATTERN RECOGN	0031-3203	11149	3.279	3.725	0.567	307	7.3	0.02762	1.021
☐	18	IEEE WIREL COMMUN	1536-1284	1925	3.180	5.935	0.062	64	4.2	0.01025	1.658
☐	19	AUTOMATICA	0005-1098	12382	3.178	4.013	0.278	388	8.0	0.03130	1.242
☐	20	IEEE T GEOSCI REMOTE	0196-2892	14614	3.157	3.873	0.489	364	7.1	0.03369	0.961

MARK ALL UPDATE MARKED LIST

Journals 1 - 20 (of 229)

[1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10]

Page 1 of 12

GESTS int'l transactions. Haku

Noin 235 000 tulosta (0,28 sekuntia) Tarkennettu haku

welcome to the **GESTS** - [Käännä tämä sivu]
30 Aug 2010 ... **GESTS** International **Transactions** on Communication and Signal Processing; Title : **GESTS** International **Transactions** on Communication and ...
www.**gests**.org/ - Välimuistissa - Samankaltaisia

<style type="text/css"> BODY,TD,input,DIV,form,TEXTAREA,center,pre ... - [Käännä tämä sivu]
GESTS Int'l Transaction on Communication & Signal Processing **GESTS Int'l Transaction** on Acoustic Science & Engineering **GESTS Int'l Transaction** on Computer ...
www.**gests**.org/main_conference_01.html - Välimuistissa - Samankaltaisia

Näytä lisää tuloksia kohteesta www.gests.org

Recursivity: Another Academic Scam - [Käännä tämä sivu]
12 Jul 2009 ... If you have a new paper or an improved version to be issued in **GESTS** international **transactions**, please, send us the final camera-ready ...
recursed.blogspot.com/.../another-academic-scam.html - Välimuistissa - Samankaltaisia

Lars' Braindump :: **GESTS** Fake Journals Spam :: May :: 2008 - [Käännä tämä sivu]
27 May 2008 ... paper to be published in the **GESTS** International **Transactions**. This e-mail has been sent only to the authors who chose as a high quality ...
larsbraindump.blogsome.com/.../**gests**-fake-journals-spam/ - Välimuistissa - Samankaltaisia

JULKAISUFOORUMI

- Pääsivu
- Julkaisufoorumihanke
- Julkaisukanavien haku
- Julkaisukanavien ehdottaminen
- Paneelit
- Ohjausryhmä ja sihteeristö
- Muuta materiaalia
- Yhteystiedot
- Linkit
- In English

Tieteellisten seurain valtuuskunta on toteuttanut Suomen yliopistot -yhdistys Unifin aloitteesta julkaisujen laadunarvioimista varten ***Julkaisufoorumi-hankkeen.*** Hankkeen tavoitteena on ollut luoda järjestelmä, jossa tieteellistä julkaisutoimintaa voidaan arvioida määrän lisäksi myös laadullisesti. Julkaisufoorumijärjestelmän perustana on julkaisukanavien eli tieteellisten lehtien, sarjojen ja kirjakustantajien kaikki tieteenalat kattava tasoluokitus. Julkaisukanavien arviointi tapahtuu 23 tieteenalakohtaisessa asiantuntijapaneelissa. Kansainvälisiä esikuvia julkaisufoorumille on mm. Norjassa ja Tanskassa.

Luokituksessa on 3 tasoa: 1 = perustaso; 2 = johtava taso; 3 = korkein taso

Ensimmäinen Julkaisufoorumi-luokitus on valmistunut vuonna 2011. Julkaisukanavien tasoluokituksia voidaan selata hakusivulla. Tasoluokitukset arvioidaan uudelleen kolmen vuoden välein, seuraavan kerran 2014, ja uusia tieteellisiä julkaisukanavia lisätään Julkaisufoorumiin vuosittain tasolle 1. Julkaisufoorumi-luokitusta täydennetään seuraavan kerran syksyllä 2012, jolloin paneelit arvioivat tasolle 1 lisättäviä julkaisukanavia. Tähän arviointiin voi ehdottaa lisättäväksi lehtiä, julkaisusarjoja ja kirjakustantajia julkaisukanavien ehdotussivulla 31. toukokuuta 2012 asti.

Julkaisufoorumi-luokitus soveltuu tutkimuksen arvioinnin työvälineeksi suurten julkaisumäärien tasolla. Luokituksen on tarkoitus toimia yliopistojen koko tieteellisen julkaisutuotannon laadun indikaattorina opetus- ja kulttuuriministeriön käyttämässä yliopistojen valtiorahoitusmallissa vuodesta 2015 alkaen. Tutkimusorganisaatiot ovat autonomisia soveltaessaan erilaisia arviointimenetelmiä oman toimintansa kehittämisessä. Julkaisufoorumi-luokitus ei sovellu tieteenalojen väliseen vertailuun, eikä se voi korvata julkaisujen sisältöön perustuvaa vertaisarviointia yksittäisten tutkijoiden tai tutkimusryhmien arvioinnissa.

Lisätietoa Julkaisufoorumi-luokituksesta ja sen käytöstä

Julkaisufoorumi-luokituksen käyttöohje
Instruktioner för Publikationsforum-klassificeringen
User Instructions of the Publication Forum Classification

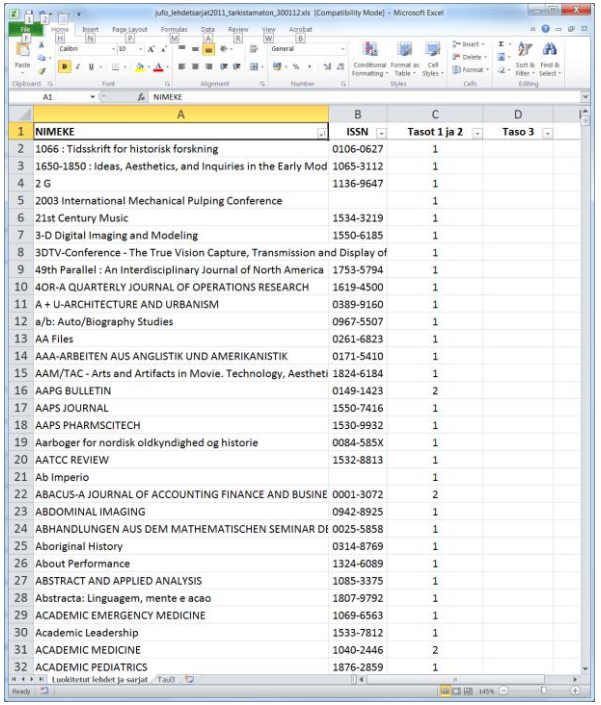
Julkaisufoorumi-hankkeen loppuraportti
Slutrapporten för Publikationsforum-projektet
Final report of the Publication Forum project

Julkaisufoorumi-hankkeen (2010-2012) arviointiohjeet paneeleille
Täydennys Julkaisufoorumi-hankkeen arviointiohjeisiin 3.2.2012

Julkaisufoorumi-luokitus ja viittausindeksit tieteellisten julkaisujen laadun mittareina

Publication forum categories

- Printed and digital journals, regular conference proceeding, publishers' anthology and monograph series of scientific research outcomes
- Three categories
  - LEVEL 1: Domestic and foreign scientific publications (80% of the classified journals and series)
  - LEVEL 2: Leading scientific publication channels (20% of the classified journals and series)
  - LEVEL 3: Top most quality, highest level of the discipline or research area with extremely consistent impact (25% of level 2 journals and series, 5% of all)



	A	B	C	D
1	NIMEKE	ISSN	Tasot 1 ja 2	Taso 3
2	1066 : Tidsskrift for historisk forskning	0106-0627	1	
3	1650-1850 : Ideas, Aesthetics, and Inquiries in the Early Mod	1065-3112	1	
4	2 G	1136-9647	1	
5	2003 International Mechanical Pulping Conference		1	
6	21st Century Music	1534-3219	1	
7	3-D Digital Imaging and Modeling	1550-6185	1	
8	3DTV-Conference - The True Vision Capture, Transmission and Display of		1	
9	49th Parallel : An Interdisciplinary Journal of North America	1753-5794	1	
10	4OR-A QUARTERLY JOURNAL OF OPERATIONS RESEARCH	1619-4500	1	
11	A + U-ARCHITECTURE AND URBANISM	0389-9160	1	
12	a/b: Auto/Biography Studies	0967-5507	1	
13	AA Files	0261-6823	1	
14	AAA-ARBEITEN AUS ANGLISTIK UND AMERIKANISTIK	0171-5410	1	
15	AAM/TAC - Arts and Artifacts in Movie. Technology, Aestheti	1824-6184	1	
16	AAPG BULLETIN	0149-1423	2	
17	AAPS JOURNAL	1550-7416	1	
18	AAPS PHARMSCITECH	1530-9932	1	
19	Aarboger for nordisk oldkyndighed og historie	0084-585X	1	
20	AATCC REVIEW	1532-8813	1	
21	Ab Imperio		1	
22	ABACUS-A JOURNAL OF ACCOUNTING FINANCE AND BUSINE	0001-3072	2	
23	ABDOMINAL IMAGING	0942-8925	1	
24	ABHANDLUNGEN AUS DEM MATHEMATISCHEN SEMINAR DE	0025-5858	1	
25	Aboriginal History	0314-8769	1	
26	About Performance	1324-6089	1	
27	ABSTRACT AND APPLIED ANALYSIS	1085-3375	1	
28	Abstracta: Linguagem, mente e acao	1807-9792	1	
29	ACADEMIC EMERGENCY MEDICINE	1069-6563	1	
30	Academic Leadership	1533-7812	1	
31	ACADEMIC MEDICINE	1040-2446	2	
32	ACADEMIC PEDIATRICS	1876-2859	1	

Quality of Workshop, Symposium, Conference

- Reputation of the conference
- Acceptance rate
- Indexing of articles in scientific databases (e.g. ISI, Scopus)
- Scientific society as sponsor/publisher (e.g. IEEE, IEE, ACM)
- Availability of articles in electronic databases (e.g. IEEE Xplore)
- The age of the conferences (e.g. 51st conference on … vs. 2nd workshop on…)
- Beware of meetings that do not publish

STRUCTURE OF A PAPER

Structure of the paper (1)

- Title, Author list, affiliations
- Abstract, keywords
  - E.g. IEEE Approved Indexing Keyword List, what other authors use
- Introduction
  - Motivation and problem statement
  - Why this is an important problem?
- Related research
  - What similar others have proposed?
  - What are the earlier results?
  - What is the remaining problem?
  - How is your proposal new and better?
- Proposed new solution
  - According to problem statement and related research

Title, authors
Abstract, keywords
Introduction
Related research
Proposed new solution
Research methods
Implementation
Experiments
Evaluation of results
Discussion
Acknowledgements
Conclusions
References
Appendix

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
  - What does the test data mean and prove?

Structure of the paper (3)

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

All compulsory parts are needed in every paper: 4 pages conference to 30 page journal

Title, authors

Abstract, keywords

Introduction

Related research

Proposed new solution

Research methods

Implementation

Experiments

Evaluation of results

Discussion

Acknowledgements

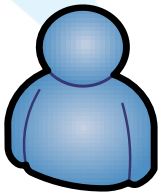
Conclusions

References

Appendix

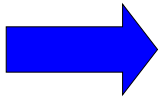
PLANNING AND WRITING A PAPER

Paper writing process



Student

Getting the results to write about

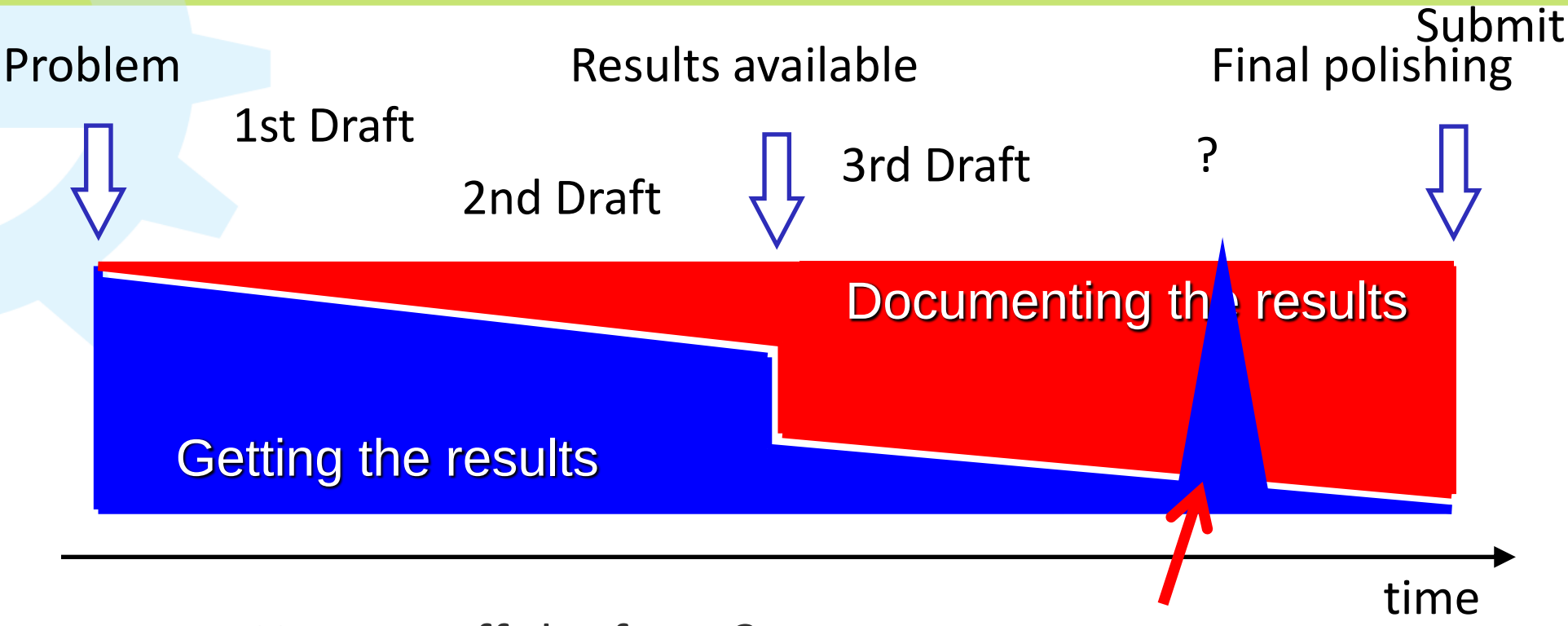


Documenting the results

Publication

Problem with this flow?

Paper writing process



- You are off the focus?
- Proposed solution or testing has errors?
- You have found the topic for a new paper?

Definition of the problem is the difficult part, with a clear target everything else follows

- The problem definition does not (should not) need be wide
- Target to a single well defined topic and explain it fully!
- “This has just been done” or “It just works” are not enough for problem definition and motivation for work
- Time and other resources are limited - write what you have now – do not wait for what you will do later!

1: Every paper tells a story

- what is the “elevator pitch” of your story?

  elevator pitch = summary that is short enough to give during an elevator ride

- the story is *not* what you did, but rather
  - what you show, new ideas, new insights
  - why interesting, important?
- why is the story of interest to others?
  - universal truths, hot topic, surprises or unexpected results?
- know your story!

Power sentence “elevator pitch”

- **Decide what is the elevator pitch of your paper**

”I present my WLAN MAC protocol and prove that its performance is better than others”

”I present my WLAN MAC protocol and prove that its performance is better than others”

- Motivation why this work has been done? Why we need more performance? Why this is an important problem?
- What is performance? Mbit/s, reliability, roaming delay?
- What are the related research proposals, what is their performance?
- What is you design?
- And how does your design differ from other protocols? What have you applied, what have you developed by yourself?
- What are the experiments/test you use to measure your performance?
- How do these experiments prove the performance? Is the test reliable?
- Conclusions and critical evaluation. What needs to be done next?

Make a concrete publication plan as follows in 1-2 pages

- What is the elevator pitch “the claim” of your paper?
- Key questions when planning:
  - Problem and scope: what is solved? What have you done?
  - Why is this important problem, motivation for the paper?
  - What is new compared to related work?
  - The used methods (e.g. simulation)?
  - What you propose, what is your solution to solve the problem?
  - What is the use (significance) of results?
- Do the plan quickly!
- Circulate the plan with other authors
- Iterate the plan

Co-authors

- Agree on the expectations for actual work of other authors
  - Write sections
  - Help with measurements
  - Review the paper
- Usually misleading expectations for co-authors
  - ~~Give correct answers~~
  - ~~Complete the unfinished draft version for final submission~~
  - ~~Turn your random notes into a perfect text~~

MANAGING THE PAPER WRITING

Paper introduction: problem and scope

- Introduction motivates that this paper is worth reading (and accepting)
- Introduction must contain a clear definition of
  - Motivation for the paper and the research area, the problem statement, and explicitly say what is novel in this paper
- This must be on the first page of the paper

Abstract

- Must be independently understandable
  - No references to the paper or list of references
  - Also the paper itself must be independently readable without the abstract
- Must cover the whole paper, not just copy-paste the introduction

Abstract contains:

1. What is done (what is the research problem)
2. What is the related work and the novelty (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

Concentrate of results

- In first papers, it is tempting to write what you personally have learned and what you have done, but this is off-topic
  - Long introductions and related and organisation of experiments. E.g. 4 page budget (1 page for related, 3 for new results)
- You cannot hide missing information with unclear expressions!
- You cannot prove anything with unpublished work
- Clearly separate your work and the work of others
- Do not guess!

Examples (invented)

- "Energy saving is always profitable"
  - It would be extremely easy to show many cases, in which the energy saving is not profitable
- "The number of mobile phone users has been rising rapidly to millions and more of users globally, which is the main motivator for this work."
  - If this is key motivation, you should have a number
  - Guessing that it is probably millions and more is no value

Citing (1)

- **Research always basis on earlier work**
- **You are required to know and use previous work**

- Your work needs to extend, complete, correct previous work – not repeat it
- You do not need to do everything by your self, you can refer other papers work!
- This does not, in any means, give the right to copy paste the other publication text and results

Citing (2)

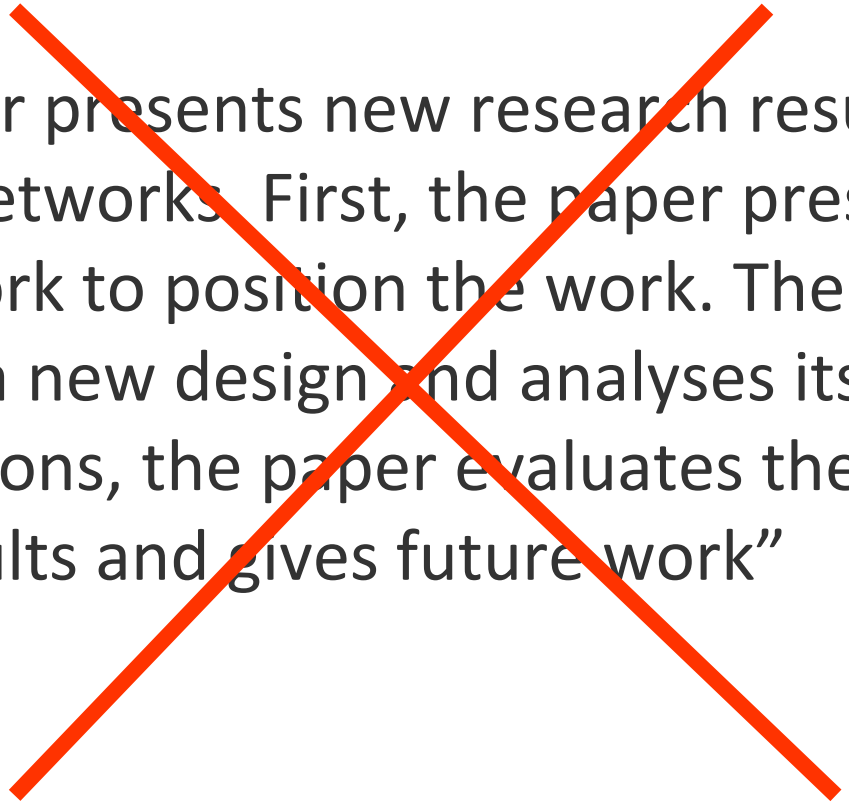
- Direct quotations are seldom used in technical papers: use your own words also when describing earlier work and use references
- Copying directly large sections or paragraphs is not acceptable
  - Changing **of one word** is does not change the situation
  - Single equations can be used with a reference, full proof cannot be directly copied
- Redrawing the same type of image does not make it your own work
  - Permission from the original author, publisher

Review of related work is not a list of references

- Just listing some references has no value - point out the strong and weak points of each related approach
- Summarise, classify, draw conclusions
- References should contain high quality journals and conferences (no wiki, limited local seminars, theses, web links)

Informative vs. Descriptive Example (invented)

- “This paper presents new research results on wireless networks. First, the paper presents the key related work to position the work. The paper proposes a new design and analyses its performance. In conclusions, the paper evaluates the significance of the results and gives future work”



Ambiguous terminology

- System
  - Not good for anything – especially for something you cannot clearly define
  - E.g. “WLAN prototype system” -> “WLAN prototype”
- Based on
  - Is like something but not really, e.g. what is an “Internet-based system”
- Different, various
  - Very little information value for comparisons
  - “Various technologies exist…”
- Many, some, several
  - Very little information value for comparisons
  - “Some publications have proposed this idea…”

Weak (unnecessary) verbs

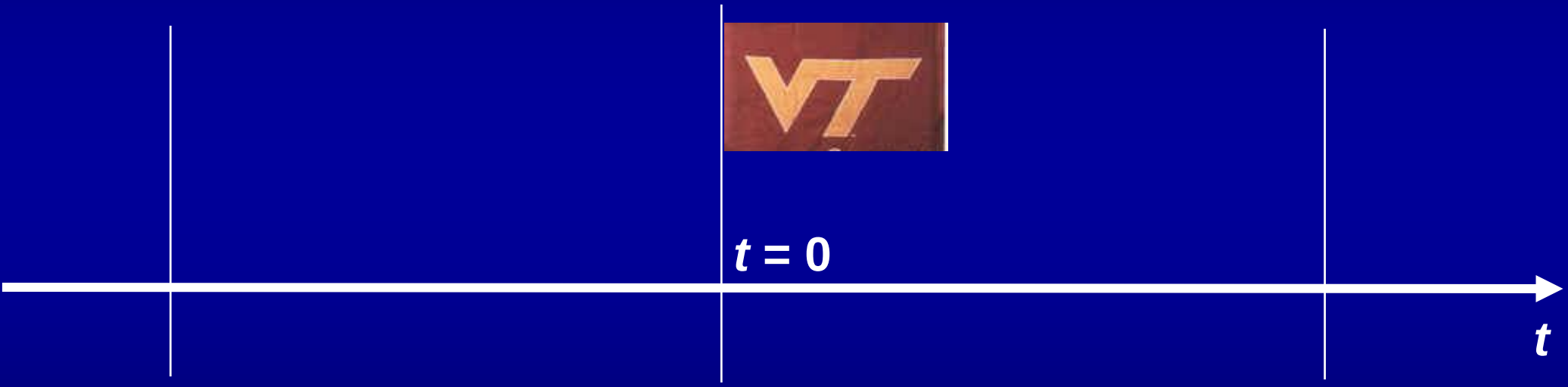
- Enable, provide, be responsible for, may, might, perform, make, is used to, the fact that
- E.g.
  - Make a decision -> decide
  - Perform development -> develop
  - Might begin -> begins/does not begin/can begin in certain conditions
  - Is used to detect -> detects

To decide upon the verb tense in a document, you first plant a reference flag for t=0

Past Tense:
Events that have already occurred

Present Tense:
Timeless details or details at time of reading

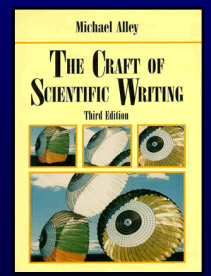
Future Tense:
Events that will occur after project



*The pressure **was**...*
*For the experiment, we **assumed**…*
*As **was shown** back in Figure 1...*

*Air **is** 79 percent nitrogen.*
*Figure 1 **shows**…*
*The computer code in Appendix B **includes**...*
The results show that …

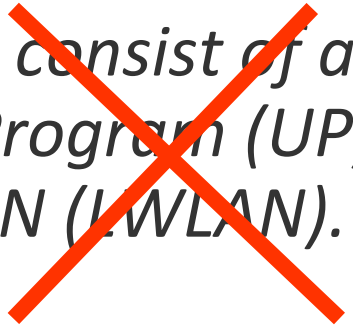
*Future work **will focus** on....*



Abbreviations

- Abbreviations
  - Wireless Local Area Network (WLAN)
  - Once introduced – must be used
- New abbreviations: one is a practical 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 time when those terms are presented
- Write normally after that
- Avoid **bold font**

- Otherwise the text is very restless and confusing

Compound words (for Finnish speakers)

- Very common in Finnish but not in English

- Suunnitteluvuo -> design flow (not designflow or design-flow)
- WLAN- ja WSN-sovittimet - > WLAN and WSN adapters (not > WLAN- and WSN-adapters)
- WLAN-kortti -> WLAN card (not WLAN-card)
- WLAN-pohjainen alusta -> WLAN-based platform

Formulas

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

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

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

MANAGING THE STRUCTURE

Importance of the paper structure

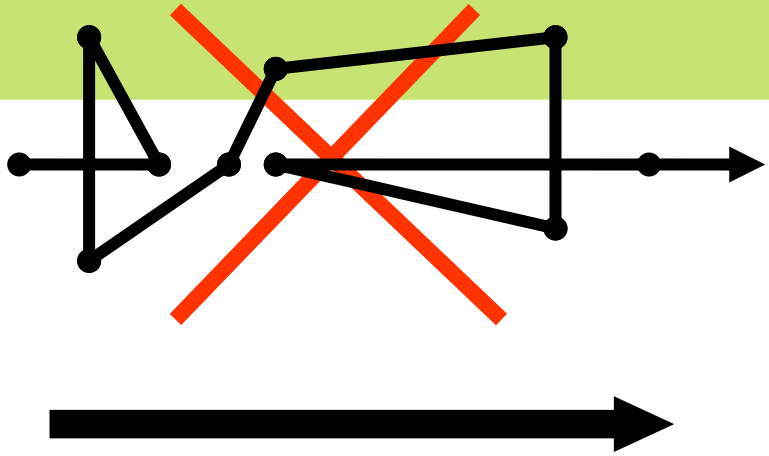
- The most difficult problems in writing (and most of the additional work) come from the broken structure
- Results to numerous iterations
  - Wasted writings
  - Lost nerves
  - Bad reviews
  - Desperation
- “Spaghetti paper”

What is a “spaghetti paper”

- “Why is the author writing about this”
  - No clear structure or problem definition – no purpose for the paper
  - Leaves out required information and emphasizes less important
- Main properties of spaghetti
  1. Everything depends on everything else!
  2. All things are equally important!
  3. All things are presented with random order - or without any logical order!
  4. The text repeats the same information!
  5. Paper makes internal references!

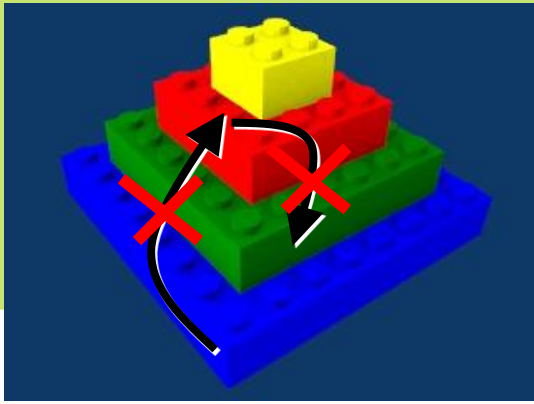
Systematic flow

- Do not refer backward/forward to explain some issue
- Do not overlap & repeat same issues at same detail level
- Explain one subject matter at a time
- Repetition of content is one of the worst enemies!!



This protocol was introduced in Section *2, this* Section *gives more information, and more details are in* Section *4.*

Systemic flow



- The reader is not a mind-reader
- Introduce large topics first (**big picture**) first, five the whole picture – you cannot change the scope later and add new topics
- Everything not introduced is unknown to the reader
- Everything introduced is expected to be remembered

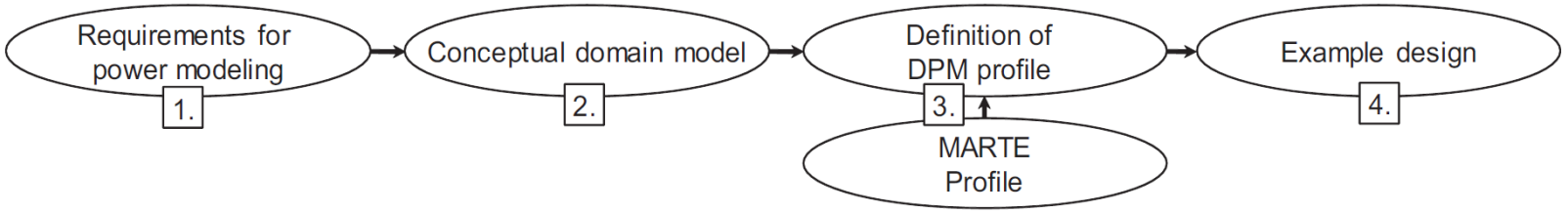
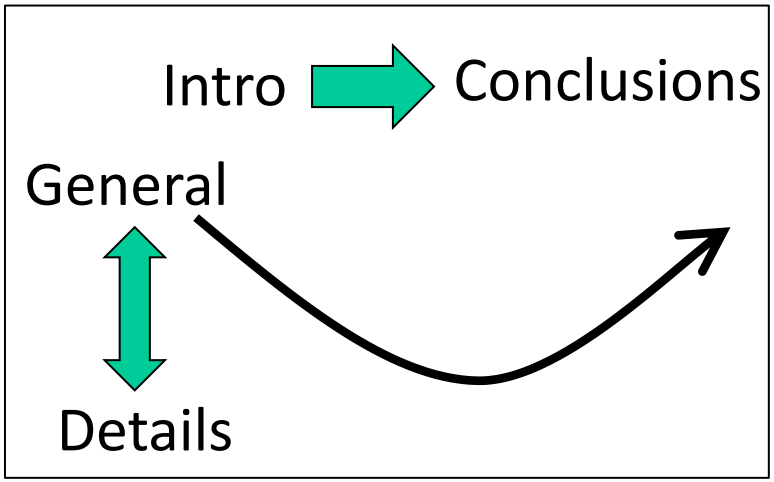


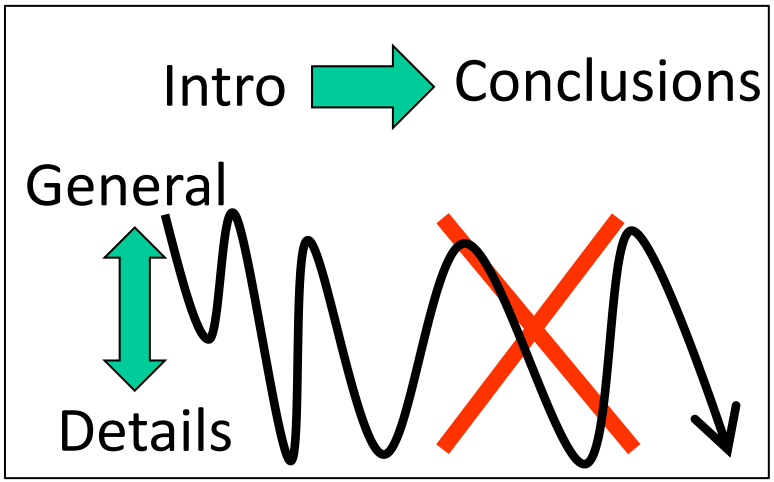
Figure 1: Steps followed in this work for defining the DPM profile.

Level of details

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



“This proposal open new markets in mobile software. The code size is 2 MB.”



Paragraph is the unit of composition (a building block for a good paper)

- One paragraph for each topic; describing a single incident, design part, an idea
- Suggestion: produce a complete paragraph at a time
  - Do not make a draft (with missing contents and lots of errors) that you plan to reprocess, correct, and complete later or
  - If you do, you will multiply your workload are you learn and rewrite it again
- A paragraph is a building block that can be easily
  - Moved from chapter to another, removed, combined
  - Temporary subtitles make it clear what the paragraph contains

Tools for planning the structure

- Content list (like a “shopping list”)
  - What are the topical ingredients to put in
- Questions as subtitles (this is surprisingly good)
  - Question in a subtitle is answered in the upcoming paragraph
  - Titles can be iterated and reordered easily
- Iterate the writing as a whole
  - Check against the plan
- Mind-maps, fishbone models, yellow notes

GRAPHICS AND TABLES

Basics of graphics and tables

- Readers browse through the paper for the first impression
  - Figures, tables, captions, code listings
  - And decide is it worth to read the whole paper
- Graphic presentation is a powerful tool for **compressing** large amount of information **readable** and **comparable**
  - Summarise information
  - Comparable data sets
  - Make complex designs understandable
  - Give the map to the reader for the paper

Graphs and tables are there for a purpose

- Must bring added value
- Never to fill empty spaces or entertain the reader
- Never repeat in figures
  - e.g. only adding something little to an existing picture, no “Animations”

Is this a good block diagram?

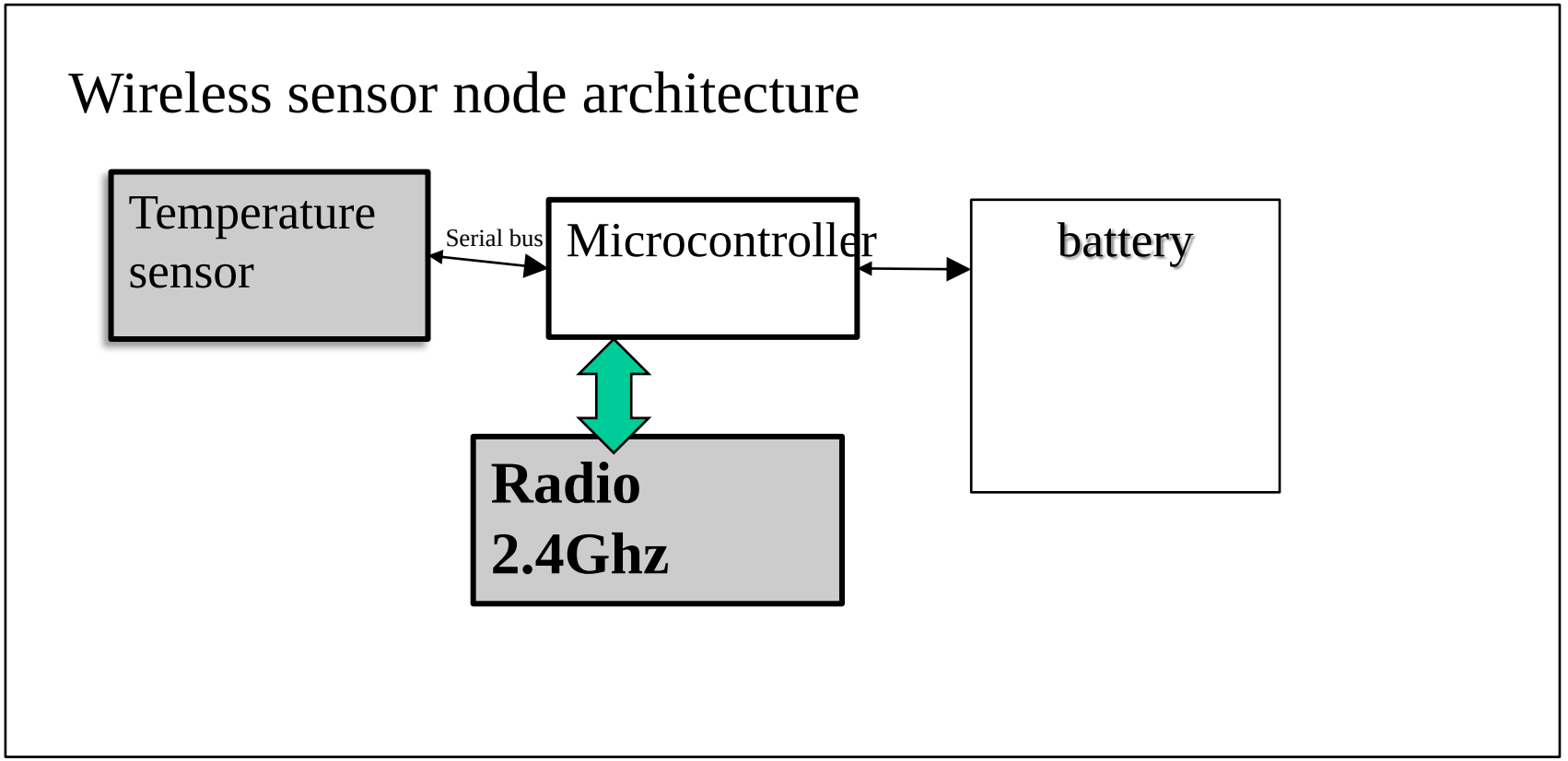


Figure 1: Node HW.

Problems

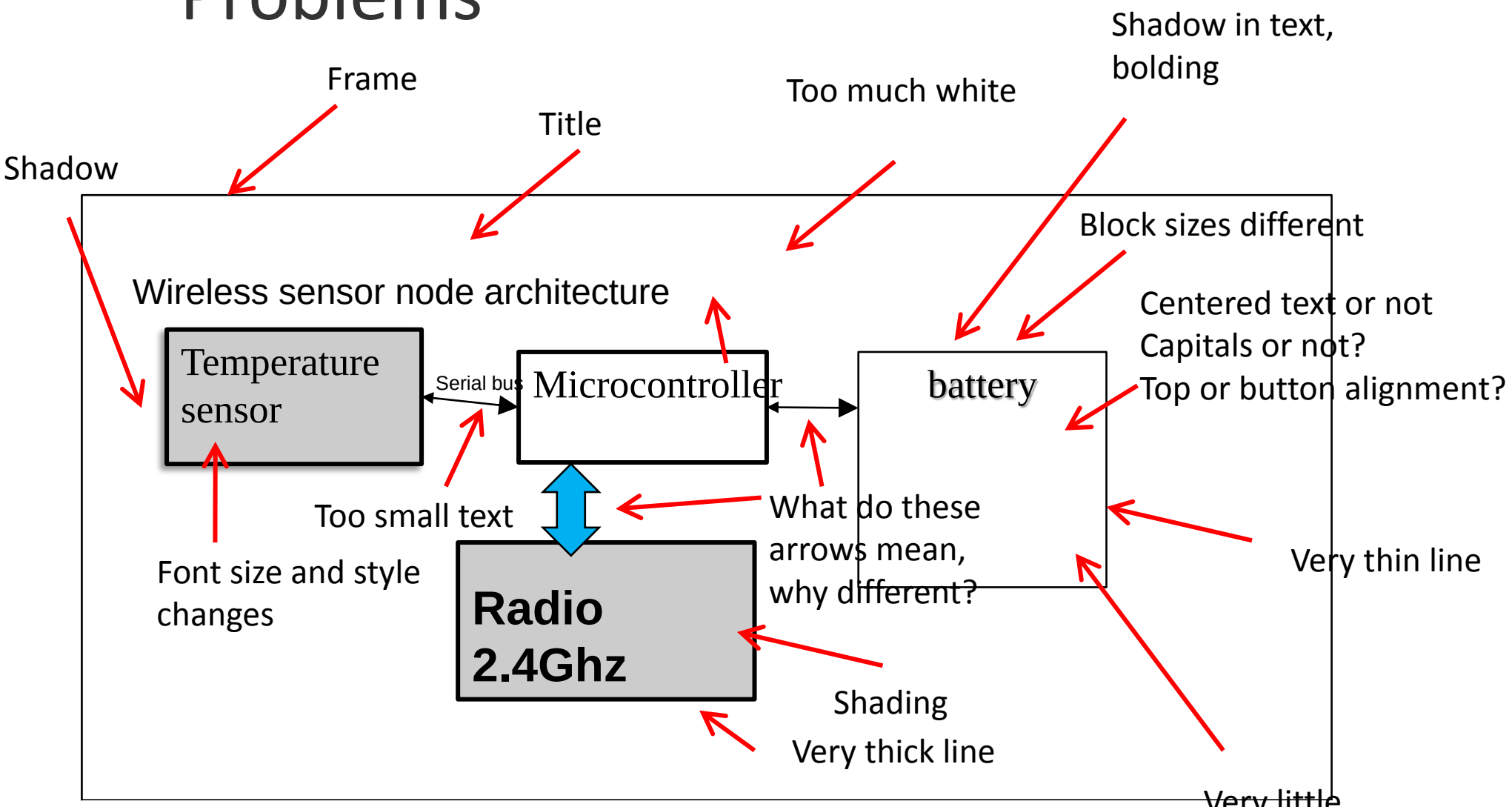


Figure 1: Node HW

Not enough information in caption
Comma or colon? Point after caption or not?

Better?

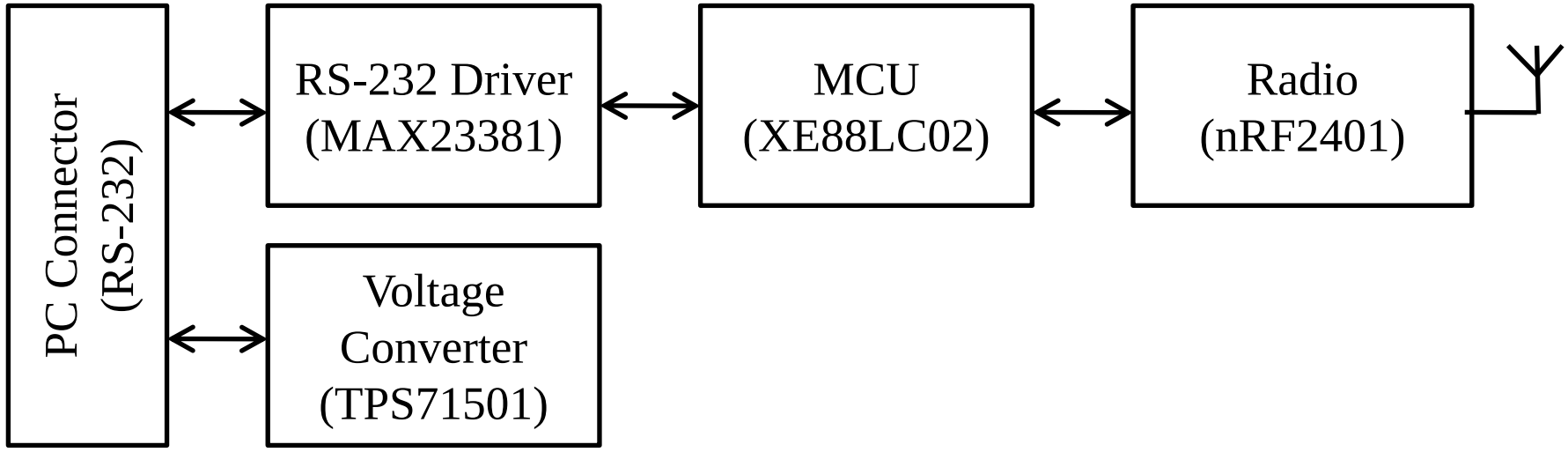


Fig. 6. WSN gateway prototype architecture.

PRESENTING AT A CONFERENCE

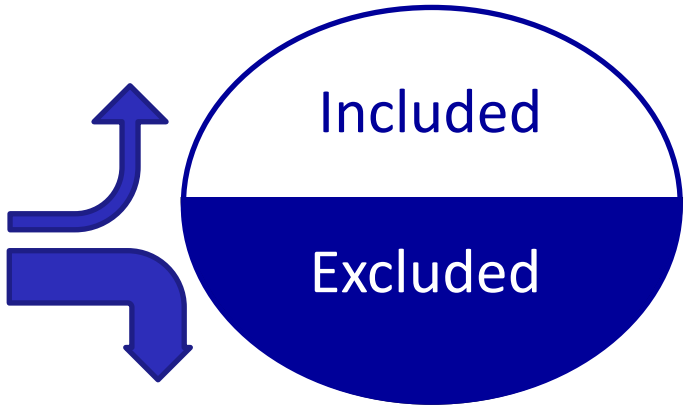
Structure of a presentation (all must be there)

1. Introduction
2. Body
3. Conclusions
4. Questions

Presenting in general

- You do not give facts but ‘advertise’ the importance of the paper and research behind it
- The target is
  - Prove that your paper is worth reading afterwards
  - Make the reading easier
  - Get the audience interested on your research and department
- Make a point, give a big picture

- **Leave unnecessary things out**
- **Leave necessary things out**



Example with Slide

- Title (1 slide)
  - Title/author/affiliation
- Forecast (1 slide)
  - This is the "abstract" of an oral presentation
- Outline (1 slide)
  - Talk structure
- Background (2-4 slides)
  - Motivation and Problem Statement (1-2 slides)
  - Related Work (0-1 slides)
  - Methods (1 slide)
- Results (4-6 slides)
  - Present key results and key insights
- Conclusions/Summary (1 slide)
- Future Work (0-1 slides)
- Backup Slides (0-3 slides)

Mark D. Hill, Oral Presentation Advice
University of Wisconsin-Madison
http://pages.cs.wisc.edu/~markhill/conference-talk.html

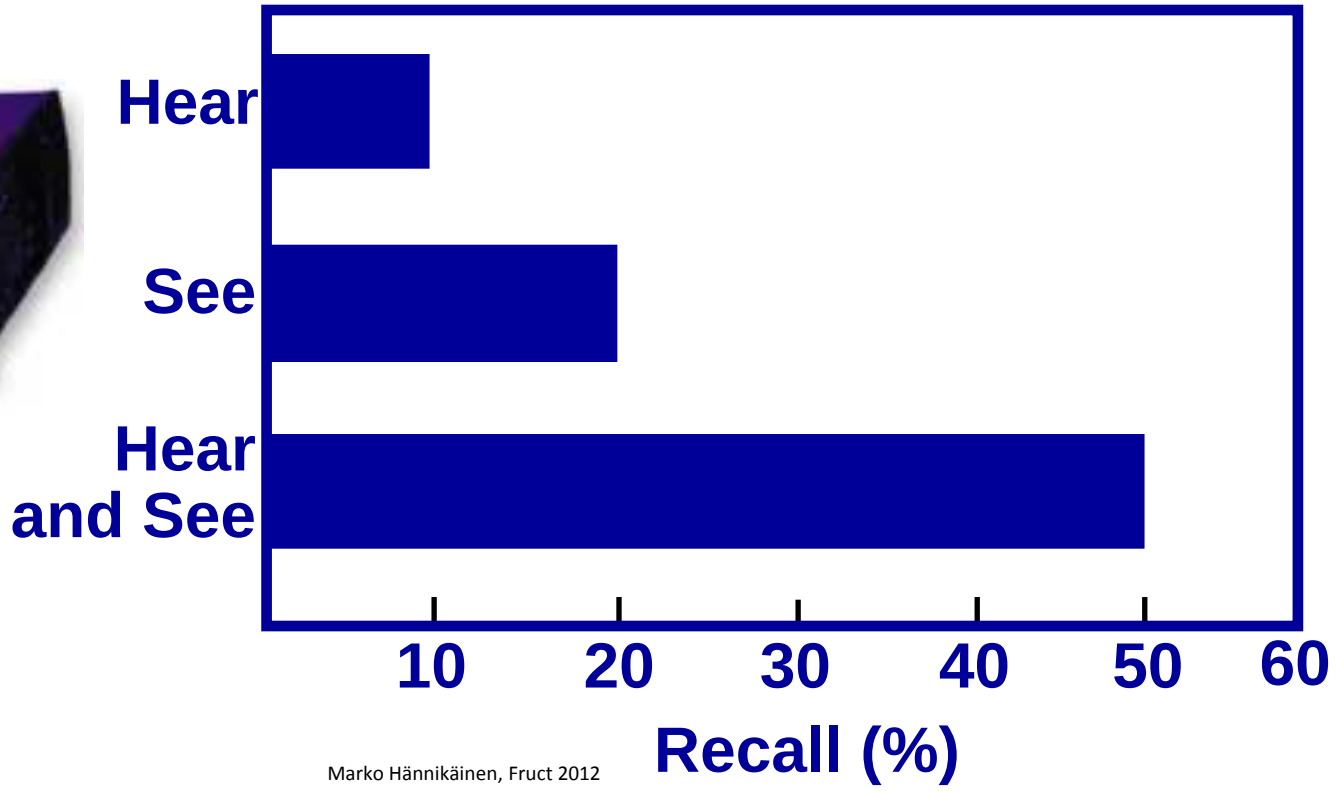
"Important things should be repeated three times"

- Tell them that you are going to tell them the important things
- Tell them the important things
- Then tell them that you have now told them the important things

- You should repeat things in different ways, and not word by word

Audiences remember more when you use well-designed slides

After all, on average, people remember only about 10 percent of what they hear.



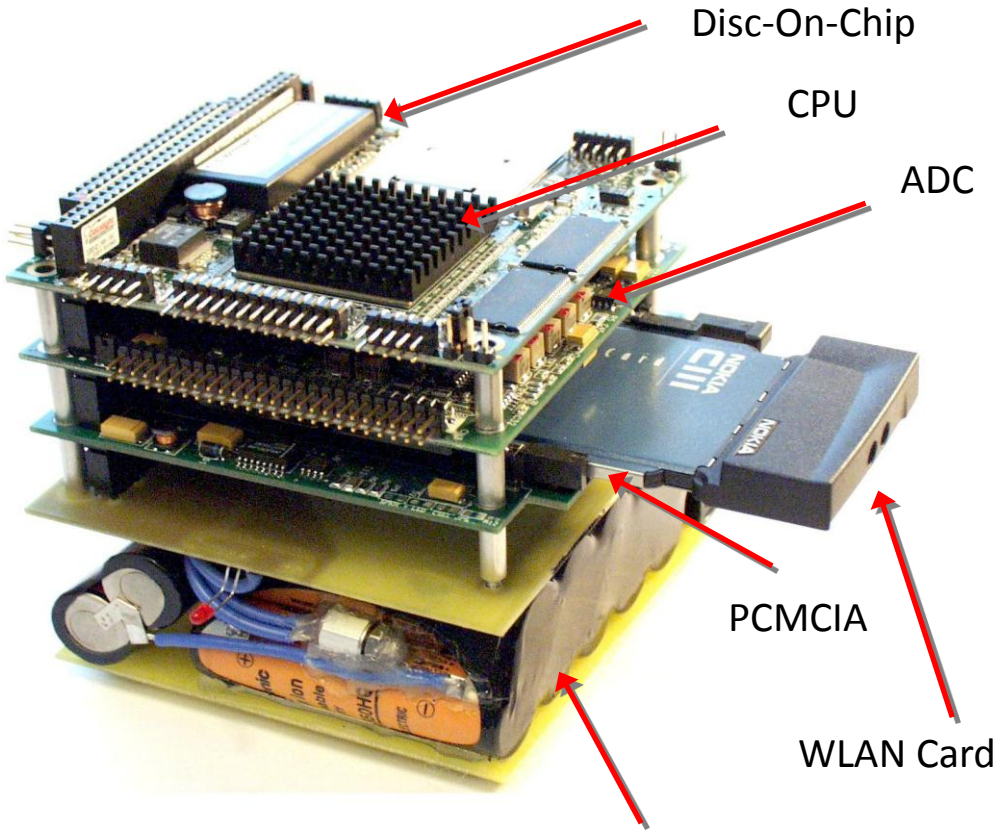
PC/104 Diagnostics Module

- PC/104 industrial PC standard is selected for the diagnostics modules
  - Low power consumption, small size
  - IBM PC compatible
- CPU board
  - Pentium Class Geode 300 MHz
  - Controllers for SVGA, USB, RS-232
- A/D Converter board
  - 250 kHz sample rate
  - 14-bit resolution
  - 16 analog inputs
  - 388 MB Disc-On-Chip
- PCMCIA adapter board
  - Nokia C110 WLAN card
- Battery Pack
  - Integrated +5V voltage regulator
  - Lithium-Ion Cells, 80 Wh

What is missing here?

PC/104 Diagnostics Module

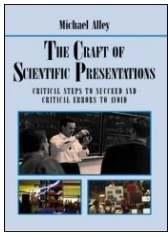
- PC/104 industrial PC standard is selected for the diagnostics modules
  - Low power consumption, small size
  - IBM PC compatible
- CPU board
  - Pentium Class Geode 300 MHz
  - Controllers for SVGA, USB, RS-232
- A/D Converter board
  - 250 kHz sample rate
  - 14-bit resolution
  - 16 analog inputs
  - 388 MB Disc-On-Chip
- PCMCIA adapter board
  - Nokia C110 WLAN card
- Battery Pack
  - Integrated +5V voltage regulator
  - Lithium-Ion Cells, 80 Wh



Powerpoint metamodel vs. Claim + evidence metamodel

- Powerpoint metamodel
  - Topic-subtopic view of the content

- Claim-Evidence metamodel
  1. Make a claim
  2. Show the evidence
  3. Use visuals

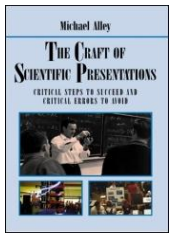


How it works

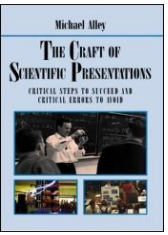
- Claim sentence is the headline of a slide
  - Orients the audience to the purpose of each slide
  - Allows the presenter to clearly emphasize the most important assertion of the slide
- Evidence proves the claim
- Graphics is included for better, faster understanding

Digital Acquisition System

- Accelerometer outputs an analog voltage
- Hardware converts analog signal to digital
- Computer samples a number of points
- Data is exported to popular applications
    - o Microsoft Excel
    - o Matlab



Digital data acquisition changes the data's form



TED Ideas worth spreading

Themes | Speakers | Talks | Translations

TED Conferences | TEDx Events | TED Prize | TED Fellows

TED Community

About TED | TED Blog

Search

TALKS

Show talks subtitled in:

English

Show by event:

All Events

Show by length:

All lengths

Order talks by:

- Newest releases
- Most languages
- Most emailed this week
- Most comments this week
- Most favorited all-time
- Rated jaw-dropping
- ... persuasive
- ... courageous
- ... ingenious
- ... fascinating
- ... inspiring
- ... beautiful
- ... funny
- ... informative

Show talks related to:

- Technology
- Entertainment
- Design
- Business
- Science
- Global issues
- All

View all tags »

Showing 1 - 10 of 770

Business Innovation Factory NEW
Carne Ross: An independent diplomat
20:38 Posted: Sep 2010
Rated: **Inspiring** Courageous Persuas...

TEDIndia 2009 NEW
Alwar Balasubramaniam: Art of ...
16:51 Posted: Sep 2010
Rated: **Fascinating** Beautiful Inspiri...

TEDGlobal 2010 NEW
Sugata Mitra: The child-driven education
17:13 Posted: Sep 2010
Rated: **Inspiring** Fascinating Jaw-droppi...

TEDGlobal 2010 NEW
Rachel Sussman: The world's oldest ...
14:08 Posted: Sep 2010
Rated: **Fascinating** Informative Beautiful...

TEDGlobal 2010 NEW
Derek Sivers: Keep your goals to yourself
03:15 Posted: Sep 2010
Rated: **Informative** Persuasive OK ...

TEDIndia 2009 NEW
His Holiness the Karmapa: The ...
25:23 Posted: Sep 2010
Rated: **Inspiring** Beautiful Longwinded ...

TEDGlobal 2010 NEW
Johan Rockstrom: Let the ...
18:10 Posted: Aug 2010
Rated: **Informative** Persuasive Inspirin...

TEDGlobal 2010 NEW
Nic Marks: The Happy Planet Index
16:49 Posted: Aug 2010
Rated: **Inspiring** Persuasive Informat...

TEDGlobal 2010 NEW
Dan Cobley: What physics taught me ...
07:38 Posted: Aug 2010
Rated: **OK** Unconvincing Informative ...

TEDxOilSpill NEW
Lisa Margonelli: The political ...
17:14 Posted: Aug 2010
Rated: **Informative** Persuasive Unconvincin...

Showing page 1 of 77

1 | 2 | 3 | 4 | 5 Next »

SUMMARY

Writing is a project

- Continuously parallel task in research
- Start with the elevator pitch
- Design, iterate, iterate as whole
- Practice, develop the routine, challenge your text
- Get the unfair advantage of writing well and fast