Hints on

HOW TO WRITE A SCIENTIFIC PAPER

Eugénio Oliveira- 2014/2015

Source: GETA and Graduate School of Electrical and Communications Engineering course: Introduction to Research Methodology, Helsinki University of Technology.
Selected Websites on writing scientific papers:


Bates College: [http://abacus.bates.edu/~ganderso/biology/resources/writing/HTWtoc.html](http://abacus.bates.edu/~ganderso/biology/resources/writing/HTWtoc.html)

New Mexico Junior Academy of Science: [http://www.nmas.org/JAhowto.html](http://www.nmas.org/JAhowto.html)

• Literature review

Implies the production of a written Report (or paper’s chapter/section) well organized and including a comprehensive summary of the state of the art (current research perspectives and technology) with a clearly defined focus in a particular domain of knowledge
• to obtain the most recent information it is required that you read
  • the most recent journal articles and
  • conference/Workshop proceedings
  (technical reports belong to the "grey" literature)
  • Research Projects descriptions

• Motivation for literature searches [Sternberg81], [Michaelson90]:
  • full grasp of subject (large picture)
  • show originality of own work (compare explicitly your work (done or to be done) with the earlier work)
  • list of references for your own paper and thesis
  • ideas for new research

• Do not forget:
  • Every day more than 1000 papers are published in electrical engineering and electronics (INSPEC), thus you must carefully select what you read
  • the amount of papers is doubled every ~8 years
MSR- Methodologies for Scientific Research

• Motivation for writing scientific papers [Sternberg81]

• distribution of knowledge

• improves the quality of research

• general aim is the reproducibility of experiments

• measure of scientific merit of the researcher (peer review process)

Scientific Research Publications

• Conferences, (Symposia, Conventions), Workshops
• Scope (broad, narrow or specific)
• Reported work (finished, in progress, tutorials, invited)
  • finished means: results reported and evaluated!
• Meeting intention (scientific progress, business…)

• Journals see Journal Citation Reports and Impact Factors
• Books (Chapters, manual, didactic, thematic)

• Steps for publishing:
  
  • Before: Research
  
  • During: Writing

  • After: Evaluation
Scientific Research

BEFORE writing a paper:

• A scientific research paper should reflect the research method followed.

• In the classical scientific method we may depict the following steps:
  • Observations (empirical, non-empirical)
  • Hypothesis setting to explain or answer those observations
  • Testing predictions searching for evidences about future observations (experimentations → new observations)
  • Test results interpretation
  • Accepting or rejecting Hypothesis

• In the scope of Computing and Information Systems:
  • Requirements
  • Specification/Modelling (Proof?)
  • Implementation (and/or simulation)
  • Evaluation
  • Accepting, rejecting or go to the new spiral re-starting by Requirements
• Steps for publishing:
  • Before: Research
  • During: Preparing and Writing
  • After: Evaluation

  • Paper objectives *  
  • Paper motivation *  
  • Paper preparation  
  • Paper writing  
  • Paper evaluation

  * Also applies to the research issues

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**Paper Production**

**Paper Objectives**

Conceptualization of a scientific paper:

Two main objectives in writing a paper:

• First, it must clearly and completely describe the procedures that were followed and the results that were obtained.

• Second, it must place these results in perspective by relating them to the existing state of knowledge and by interpreting their significance for future study.

  (different from other researchers’ results? Far ahead? Going back to the assumptions?...)
Paper Motivation

• Choose the topic under investigation to be reported:
  • What are the issues to be dealt with,
  • Questions to be answered,
  • Hypothesis to test?

• Related with permitted number of pages

• Vague and open topic (or exhaustive Theme), may be for a book or a speculative article, but not for a 6-12 (or even 12-16) pp. research paper

• Examples of issues to deal with:
  1. “The use of autonomous agents for traffic control management”
  2. “Program specification through Aspect OP”

• Examples of specific questions:
  1. “How to organize my Multi-Agent System?”
     “What the entities will be and which ones can be agentified?”
     “Shall I use heterogeneous (mix different kinds of) Agents?”
     “What kind of measurements are important to be made?”
  2. “What kind of aspects should be considered”
Paper Motivation

- **Examples of Hypothesis:**

  1. “Making a group of heterogeneous agents to communicate and learn improves individual agents’ performance”

  2. “Most of the programs can be transformed using the new AOP paradigm”

- **Examples of Prediction:**

  “Using a set of heterogeneous agents will improve the measure of the quality of traffic control. Different situations causing traffic congestion will be resolved”

  2. “Using Aspects make programs more portable”

Paper preparation

Before testing the hypothesis and predictions:

- Make a list of main sources to check before entering the library or the Internet

- Gathering and Organizing information
  - Read each source
  - Take notes and summarize.
  - Use quotes for transcriptions.
  - Add bibliographic information (author’s name, title of the book/article, publication information)
  - Keep track of this work in a log book (log page in your web site, Log files, Wiki ...)

- Experiments:
  - What method, what kind of data using which assumptions
Paper preparation

Summarizing:
- Select a small concrete topic related with your research interests
- Summarize the state of knowledge on the general topic
- Define (one or several) hypotheses that can be tested
- Relate your work to general body of knowledge on the topic
- Make predictions based on the Hypotheses

- Recall the research you already made on the subject
- Gather and Organize all the existing information
- Revisit your Notes
- Interpret the results.
- Extract the conclusions.
- Accept/reject the Hypothesis

Writing the Paper

WRITING A SCIENTIFIC PAPER (the FORMAT):
- A paper is composed of:
  - Title
  - Abstract
  - (Key words)
  - Introduction
  - Procedure, Methods and Techniques
  - Results and Discussion
  - Acknowledgements (give credits)
  - Bibliographic list of sources

- There are “standard formats” from Springer, IEEE, ACM,...
Writing the Paper

WRITING A SCIENTIFIC PAPER OR THESIS (the FORMAT):


IMRAD Structure of a Paper [Day98]

I. Introduction

- What question or problem was studied?
- Write the whole literature review here, do not continue it elsewhere.

II. Methods (model)

- How was the problem studied?
- Describe the whole system model here (parameters presented with symbols), do not continue the system model description elsewhere.

III. Results

- What were the findings?
- These must be your own results. Plagiarism (also self-plagiarism) strictly forbidden. Give numerical values of all parameters (guarantee repeatability).

IV. Discussion

- What do these findings mean?

Paltridge’s Four Thesis Types

Traditional Simple
- 1. Introduction
- 2. Literature Review
- 3. Materials and Methods
- 4. Results
- 5. Discussion
- 6. Conclusions

Traditional Complex
- 1. Introduction
- 2. Literature Review
- 3. Materials and Methods
- 4. Study 1
  - 1. Introduction
  - 2. Methods
  - 3. Results
  - 4. Discussion
- 5. Study 2
  - 1. Introduction
  - 2. Methods
  - 3. Results
  - 4. Discussion
- 6. Study 3
  - 1. Introduction
  - 2. Methods
  - 3. Results
  - 4. Discussion
- 5. Conclusions

Topic Based
- 1. Introduction
- 2. Topic 1
  - 1. Introduction
  - 2. Literature Review
  - 3. Materials and Methods
  - 4. Results
  - 5. Discussion
  - 6. Conclusions
- 3. Topic 2
  - 1. Introduction
  - 2. Literature Review
  - 3. Materials and Methods
  - 4. Results
  - 5. Discussion
  - 6. Conclusions
- 4. Topic 3
  - 1. Introduction
  - 2. Literature Review
  - 3. Materials and Methods
  - 4. Results
  - 5. Discussion
  - 6. Conclusions
- 5. Conclusions

Compilation Based
- 1. Introduction
- 2. Background to the Study
- 3. Research Article 1
  - 1. Introduction
  - 2. Literature Review
  - 3. Materials and Methods
  - 4. Results
  - 5. Discussion
  - 6. Conclusions
- 4. Research Article 2
  - 1. Introduction
  - 2. Literature Review
  - 3. Materials and Methods
  - 4. Results
  - 5. Discussion
  - 6. Conclusions
- 5. Research Article 3
  - 1. Introduction
  - 2. Literature Review
  - 3. Materials and Methods
  - 4. Results
  - 5. Discussion
  - 6. Conclusions
- 6. Conclusions
Writing the Paper

WRITING A SCIENTIFIC PAPER (the FORMAT):

Ref: Structure of an IEEE paper [Spectrum85]
From: VTT TECHNICAL RESEARCH CENTRE OF FINLAND 9.5.2007 Aarne Mämmelä

Abstract
1. What the author has done.
2. How it was done (if it is important).
3. Principal results (numerically, when possible).
4. Significance of the results.

I. Introduction
1. Nature of the problem.
2. Background of previous work.
3. Purpose and significance of the paper.
4. Method by which the problem is approached.
5. Organization of the paper.

II. Materials and methods (Model)

III. Results

IV. Conclusions
1. What is shown by this work and its significance.
2. Limitations and advantages.
3. Applications of the results.
4. Recommendations for further work.

Acknowledgments
References
Photograph and biography
Writing the Paper

WRITING A SCIENTIFIC PAPER (the FORMAT):

Authors’ names and affiliations:

Always use the same name (your signature) to avoid any confusion with other researchers in the same Community.
Identify the author for correspondence with *

Also give the complete name and address of the institution or Labs the authors belong to.

Do not forget emails!

Writing the TITLE

Title

- specific enough to immediately show what kind of information will be found on the paper, but not so specific that you include unnecessary information;
- short, usually not more than 70 (max limit 100 characters)
- a professional, rather than conversational tone

- Ex(+pos)
  “Virtual Enterprise Normative Framework within Electronic Institutions’
  in M. P. Gómez, G. Dornis & F. Zambonelli (eds.),
  Engineering Societies in the Agents World V: LNAI 3417, Springer,

- Ex(-neg?)
  Luis Barreto, Daniel Moura, Eugénio Oliveira,
  “Fighting Fire with Fear”
  in Proceedings of EUMAS’04, 2nd European Workshop
  on Multi-Agent Systems, Ed. C. Sotoichi P. Georgios, Wiele

Colloquial...
Writing the TITLE

Title

Maria C. Neves and Eugénio Oliveira

"Integrating Fuzzy Logic and Neural networks in the Design of Navigation Competencies of an Autonomous Mobile Robot"

in Proceedings of International Conference on Computational Intelligence Modelling, Control and Automation (CIMCA'99), Vienna, Austria, Feb 1999

Maria C. Neves and Eugénio Oliveira

"Fuzzy Neural networks for Robot Navigation"

Writing the ABSTRACT

Abstract

• What researchers/referees read or inspect to select readings among tenths of papers

• Write the abstract only after you have written the rest of the paper. Extremely concise synthesis of your entire paper.

• It contains:
  • the major question, or hypothesis,
  • the basic approach to answering that question,
  • key results and/or data
  • a brief conclusion about what you discovered.
  • About one-half page (of double-spaced) text

Discriminate from previous papers
Writing the ABSTRACT

• Ex(− pos)

ABSTRACT

During the last two decades, researchers have collected a decisive amount of experimental evidence about the fundamental role of emotion on cognitive processing. Emotional phenomena have been correlated with effective decision-making processes, memory, learning and other high-level cognitive capabilities and skills (e.g., risk assessment). In this paper we will describe an ongoing work that aims to design new Agent Architectures influenced by what has been learned in psychology and neurosciences about emotion-cognition interaction. In particular, we will present an Agent architecture that includes several emotional-like mechanisms, namely: emotional evaluation functions, emotion-based processing, emotional tagging and mood congruent memory. These emotional-like mechanisms are intended to increase the performance and adaptability of Agents operating in real-time environments. We will also introduce Pyrosim, a MAS platform we have developed to serve as an appropriate test-bed for Emotional-based Architectures.

Pyrosim simulates a forest fire in a complex 3D environment where Emotional Agents must take decisions about multiple concerns in real-time.

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Writing the ABSTRACT

• Ex(+ pos)

ABSTRACT

Agents that buy and sell goods or services in an electronic market need to adapt to the environment's prevailing conditions if they are to be successful. Here we propose an online, continuous learning mechanism that is especially adapted for agents to learn how to behave when negotiating for resources (goods or services), and led to Nash equilibrium when faced with other adaptive opponents.

Taking advantage of the specific characteristics of the price adaptation problem, where the different price states are ordered, we propose a specific reinforcement learning strategy that simultaneously allows good stability and fast convergence. Our method works by positively reinforcing all the lower value states if a particular state is successful and negatively reinforcing all the higher value states when a failure occurs. The resulting adaptive behavior, proved, in several different market situations, to perform better than nonadaptive agents and led to Nash equilibrium when faced with other adaptive opponents.

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Writing the ABSTRACT

Ex(neg) ABSTRACT

The present paper aims to contribute to the research on depth perception mechanisms by using a biologically inspired model of stereoscopic vision. Stereogram images show that human beings are able to perceive depth just from the differences between the images coming from the retinas of both eyes. The research made aspires at finding support for the idea that the way stereogram images are perceived by human beings is just a consequence of the way they see on real world environments; that is, to show that the information received by the brain for generations is perfectly enough to make us interpret stereogram images as having differences on depth.

Usually, to implement a stereoscopic depth mechanism on robots two parallel cameras are used. The images supplied by these cameras are very difficult to match by means of a biologically inspired algorithm since these ones require the use of local information, and the extension of information needed to match the images from two parallel cameras is too large. Human beings have the ability to move their eyes and when they look at a real world object both eyes converge to that object. The disparity method built is expected to make use of this behaviour (eye convergence) in order to reduce the disparity computation to local and much simpler algorithms.

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Writing the INTRODUCTION

Introduction

A chance to explain the research motivation (including relevance).

Present your ideas in a clear and orderly fashion.

The reader will follow your logic and anticipate what happens throughout the rest of your paper.

Includes:

1) why did you undertake this study?

2) what is the state of existing knowledge?

3) what specifically are you going to present and highlight:
Writing the INTRODUCTION

- **Observations** - **General**: What brought you to this area of inquiry? What did you observe that caused you to begin this study? (Start with a general observation, and then get more specific).
  
  **Specific**: Set of observations during experiments

- **Hypothesis** - Based on your observations, what is your hypothesis?

- **Structure** – Name and briefly describe all the sections of the paper

- **Prediction** - What is the prediction(s) that accompanies your hypothesis?

- **Expected results** - As you conclude your introduction, always write what you expected to see prior to beginning your research.
  
  - The introduction might have one or two pages (for a 12 pp. paper)

Writing the Descriptive part

**Procedures, Methods and Techniques**

- Although it can be done, it is not necessary to explicitly discuss the approach in philosophical terms.

- Justify the use of the selected methods, techniques and algorithms.

In this section you tell your reader exactly what you did to test your hypothesis, but don’t write unnecessary detail.

- provide enough description to make it possible to repeat your experiment (mainly for reports, thesis, book chapters...)
Writing the Descriptive part

Take into consideration:

- **Explain how you tested your hypothesis** - This is the main goal
- **Write in paragraph form** - Don’t make a list of procedures or equipment.
- **Write in past tense** – the work has been done...
- **Decision making** - Include a paragraph on data analysis and how you arrived at your decisions regarding your hypothesis.
- Give enough information that someone could repeat what you've done.

Reporting the Results

**Results section**

- Here you report the results of your experiment/System.
- Describe the chosen scenario (advantages and limitations)
- Be strict about your observed results. Do not discuss them here.
- Include graphs or tables.
  
  If a figure can be used to show the data, use the figure (e.g. a graph) instead of a table. Most people understand graphs more quickly than tables.
- Don’t present the same data in several ways, choose the one best way.
- Every graph, figure, or table you include should be referred to in the text of your results section.
Reporting the Results

Remember the following:

- **First** - Show updated data
- **Second** - Include results of any statistical tests
- **Third** - State whether your hypothesis was accepted or rejected
- **Write in past tense** - You've already found the results
- **Tables and Graphs** - Include these only in the results Section
- Do always some explanation in your text about figures
- **Don't interpret the results** - You'll interpret your results in the discussion section.

Details:

- **Table captions** are always above a table,
- while **figure captions** are placed below a graph, picture, or sketch.
- Each table or figure should be inserted in order immediately following the text page it is first cited on.
DISCUSSION part

Discussion

• Interpret the results (or discuss, comparing to other researchers results).
• Start with a specific conclusion about your results.
• Enlarge the overview of what those results mean.
• Consider the following:
  • Conclusions - Did you accept or reject you hypothesis?
    • What does this allow you to conclude about your questions?
    • Is this what you expected to see, or is it very different from what you expected?
  • Interpretation - If your results were not what you expected, consider possible reasons for this.

- Do you need to collect more data?
- Identify sources of error or inadequacy of the research.
  -- Did anything go wrong while you performed the experiment?
  -- Were there problems with the methods that may have made it difficult to test your hypothesis effectively?

- Does the whole issue need to be reexamined based on your unexpected results?
- If your results were what you expected, what is the significance of this?
- How do your results fit in with what other researchers have found?
- Do your results and conclusions generate new questions and predictions?
DISCUSSION part

- **The bigger picture:**
  - What have you, and the research community gained from this research?
  - What is the real impact of the research?
  - Speculate upon broader meaning of the conclusions

- Discussion should be around two to three double-spaced pages (for a paper in a journal or in a book)
  - always more than ¾ of page for short papers

Others

- **Acknowledgments:**
  (optional, depending on the study, the project, the team) give credit to those who helped in your research through advice, work, permission, technical advice, suggestions, funding and logistic support, etc.

  Names, Institutions, projects, grants,…
- Other format:
The authors, title, title of the article, book/article, volume, chapter, editor, ISBN, and page numbers, date.
Others

- **Harvard System:**
  - Start with Names and Year

  - Example:
    “…these results agree with the previous works (Cardoso, H and Oliveira E, 2009).”

- Other format:
  - **Vancouver System:**
    It uses a numerical sequence
    “…these results agree with the previous works [1] and [2]”

- Use **concise** terms.

  **Instead of:**
  - prior to
  - due to the fact that
  - in a considerable number of cases
  - the vast majority of
  - during the time that
  - in close proximity to
  - it has long been known that

  **Write:**
  - before
  - because
  - often
  - most
  - when
  - near
  - I'm too lazy to look up the reference
Others

• Use **concise** terms.

Instead of: 

- possess
- sufficient
- utilize
- demonstrate
- assistance
- terminate

Write:

- have
- enough
- use
- show
- help
- end

*WRITING A SCIENTIFIC RESEARCH ARTICLE*  

• Do not use either very short or very long paragraphs.

• Do not use very long complex **sentences**

• Start a paragraph with a **topic sentence**  
  or some other indication of the subject

• Divide long **text sections** into smaller parts with headings
Others

• Use **concise** terms.

“The pessimistic perspective ...”

“You’ve written the paper, and now it’s time to submit it to a scientific **journal**. The journal editor will pick the **referee** most likely to be **offended** by your paper, because then at least the referee will read it and get a **report** back within the lifetime of the editor. Referees who don’t care one way or the other about a paper have a tendency to leave manuscripts under a **growing pile** of paper until the floor collapses, killing the 27 English graduate students who share the office below (Schulman, Cox, & Williams 1993).

Be aware that every scientific paper contains serious errors.”

*How to Write a Scientific Paper*

_E. Robert Schulman_  
Charlottesville, Virginia

Others

• Does the paper asks the following **Questions**??.

  • **WHY**? At least in the **Introduction**
  • **HOW**? In the **Methods**
  • **WHAT** did you find out? In the **Results**
  • **WHAT** does it mean? In the **Discussion/Interpretation**
### Others

**Table of Contents for a Doctoral Thesis**  
*(monography)* Writing a Doctoral Dissertation by Gordon Davis

- Abstract
- Preface
- Table of Contents
- List of Abbreviations
- List of Symbols
  1. Introduction
  2. Literature Review
  3. “Materials” and Methods
  4. Results
  5. Discussion (may be combined with results)
  6. Conclusions
- References
- Appendices

- Length of the thesis is up to 200 pages

Another site of the Galois Group about writing a doctoral dissertation:  
Scientific writing involves lots of peer review and constructive criticism.

Scientific paper evaluation forms
- Each conference and Journal have their own forms

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## Papers Evaluation

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<th>Score</th>
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<td>descriptive and appropriate</td>
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<td>Introduction:</td>
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<td>Procedure or Materials and Methods:</td>
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<td>research design is appropriate</td>
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<td>clear text description of results</td>
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<td>figures and tables referred to as note</td>
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<td>figures and tables are essential, proper format, and &quot;stand alone&quot; with clear captions</td>
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<td>all relevant data is presented?</td>
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<td>are results adequately analyzed by appropriate statistical methods?</td>
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<td>all relevant data discussed?</td>
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<td>data justifies conclusions/interpretations?</td>
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<td>informal and appropriate (related) for scope of study?</td>
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<td>report is clearly written and logically</td>
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Papers Evaluation

Overall:

- report is clearly written and logically organized?
- understanding of content clearly demonstrated by author?
- spelling and grammar OK, easy to read?

Total Grading Score: ___%
Papers Evaluation

<table>
<thead>
<tr>
<th>Poor</th>
<th>Fair</th>
<th>Good</th>
<th>Very good</th>
<th>Excellent</th>
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OVERALL RATING

COMMENTS TO THE AUTHORS
Suggestions for improvement, corrections, text reduction (limit 8 pages), etc.

The text should be revised for English correctness.
Some figure references are incorrect, namely on pages 4 and 6.
Sections 2 and 3 look rather small. I suggest them to merge as subsections of a single section.
In figure 4 (offer publishing and searching), I wonder if the arrows identified with 5 and 6 should connect directly
to the “Web Browser” peer.
The text in section 4.3.3 and the last paragraph of section 4.4 suggest this.

Reviewer: ZZZ [The reviewer’s name will be kept confidential]

Paper number: 36
Title: A Case Study of Agent-Based Virtual Enterprise Modelling
Author(s): MO
Assigned Program Committee member: EO
Referee’s full name if different from PC member (needed for list of outside reviewers): HHHHHHH

Confidential comments for Committee use only:
This paper exceeds the allowed number of pages, as its length is 12 pages.
7 Strong accept (award quality)
6 Accept (I will argue for this paper)
5 Weak accept (vote accept but won’t object)
4 Neutral (not impressed, won’t object)
3 Weak reject (vote reject but won’t object)
2 Reject (I will argue against this paper)
1 Strong reject
### Papers Evaluation

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<td>Significance of topic</td>
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**Recent Review Form from the EasyChair.org**
Papers Evaluation

Comments to the Authors (mandatory)

The paper addresses an important topic. However, several references are missing on the use of MAS to model the creation of virtual enterprises. The paper explains the integration of MAS and VE, which has been done before.

Furthermore, other authors have proposed similar approaches to include learning in the process of VE formation.

In page 3, it is arguable whether a Facilitator/Matchmaker should be part of an agent-based VE. It definitely helps on its formation, but I believe it is not part of the VE. The concept of Consortium Agent is also not clear.

The notion of leveled commitment contracts lacks a reference to the work by Sandholm. At the bottom of page 4, what kinds of norms do you mean?

In page 5, figure 3 looks very high-level. I wonder if this figure adds something to that explained in the text...

Other authors have proposed the use of utility functions for evaluating bids, which makes this approach not new (again, references to the literature are missing).

In section 3.1., the concept of monitoring should be explained deeply: what is to be monitored and how?

Section 3.3. presents learning capabilities, which have also been proposed in the past by other authors to the process of VE formation (e.g. Rocha & Oliveira).

The employed learning method is barely explained. Equation (3) looks cumbersome.

Section 4, page 9: are there two CFP? Do they happen in sequence? The text is very confusing...

Experimental results are not detailed appropriately.
Papers Evaluation

Main contributions

The paper addresses an increasingly important topic, that of virtual organization formation. It also includes directions on how learning could be added to the formation of a virtual enterprise.

Positive aspects:
Illustration of a case-study for MAS in VE formation.

Negative aspects:
Lack of novelty, and lack of appropriate references to the available literature.
Not clear presentation of the case-study, which makes the paper hard to follow.

Further comments

======== EUMAS 2003 REVIEW FORM =========
Please motivate all your choices concisely - as authors we all know how unhelpful it is to receive marks with no comments!!

Paper ID:EUMASL111

Title of Paper: Supporting multi-lateral semantic information viewpoints when accessing heterogeneous distributed environmental information
Authors: Landong Zuo and Stefan Poslad

SUMMARY OF PAPER (Main Topics and Key Contributions)

In the scope of the EDEN-IW (Environmental Data Exchange Network for Inland Water) Project, the authors aim at providing a so-called "intelligent interface" for users to query heterogeneous information resources. They propose a Multi-agent system architecture and a (partially) common ontology facility to enable all the needed translations between the different repositories.
Papers Evaluation

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Interest/Appropriateness for EUMAS

NOTE: Please take into account the heterogeneous nature of the EUMAS workshop from researchers from AI, distributed systems, pervasive computing, databases through to people from the industrial sector.

YES, as far as MAS are concerned, this paper is of interest to EUMAS.

How to make different heterogeneous pieces of information be considered for coherent integration is very relevant for MAS related R&D.

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Papers Evaluation

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Originality

NOTE: EUMAS has no proceedings and accepts multiple submissions, either recently published work, currently submitted or for future submission. Therefore, the originality of the work should not be judged in terms of multiple submissions but in terms of how much the work is innovative and adds something to the state of the art.

X Somewhat original

An interesting architecture and Ontology services organisation have been introduced and some technical solutions have been presented.

=========================================

Technical Quality (PLEASE MOTIVATE!!!)

NOTE: EUMAS aims at being a quality technical forum disseminating the highest European achievements in MAS and related areas. However, in addition to well established research work, it also particularly welcomes preliminary work. If the work appears promising and innovative, and the quality of the writing is satisfactory, we would like to have it included even if is only in the preliminary stages (e.g., lacking of formalization, evaluation, or leaving several open issues).

X Very sound

Although there is a lack of formalization, the description made points to a coherent and sound approach based on a multi-lateral view of a domain ontology.
Papers Evaluation

Suggestion (PLEASE MOTIVATE!!!)

X Accept as Long Presentation (30 Minutes)

First, the problem in hands is not trivial at all. Coherent integration of heterogeneous resources based information poses a huge number of problems that are addressed in the paper. Secondly, the work is directed towards an interesting and relevant application domain. Third, it would be interesting to discuss current, and not yet completely solved, problems, as well as possible solutions during the meeting.

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COMMENTS TO AUTHORS:

The problem you have addressed is indeed very relevant for the MAS community. However, the paper could be improved:

- There is a lack of formalization of the described models.
- Examples are not fully described and they are also not fully representative of the different steps involved in the information translation, selection and retrieval processes.
- It is not clear what has to be shared (through Global terms) and what (or how much) can be private and specific of each agent.

- There are some misspells:
  - pg3: “the uses DAML...”
  - pg4: “used...co-ordinate”
  - pg5: “whishes to uses...”
  - pg6: “it expected there will be...”
  - pg8: “...to translated...”
  - pg9: “formulizing”
and others.

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PRIVATE INFORMATION (not returned to authors):

• GETA and Graduate School of Electrical and Communications Engineering course Introduction to Research Methodology, Helsinki University of Technology,

Writing instructions

Bibliography

Research methods, systems engineering, and philosophy of science

Largest Databases on papers in Engineering

• Engineering Village
  • most comprehensive databases in engineering, no citations

• COMPENDEX (9.2 million), INSPEC (8.8 million), NTIS (2.3 million)
  • altogether 20.3 million abstracts (much overlap)

• Web of Science (1986)
  • most comprehensive citation search
    • Science Citation Index Expanded (SCIExpanded, 17.5 million),
    • Social Sciences Citation Index (SSCI), Arts & Humanities Citation Index
    • altogether 21.5 million abstracts (2005)

• SCOPUS (1996, references 1996)
  • Competitor of Web of Science, largest database available
    • Chemistry, Physics, Mathematics, and Engineering; Life and Health Sciences; Social Sciences; Psychology and Economics; Biological, Agricultural and Environmental Sciences; General Sciences
    • altogether 28 million abstracts (2008)

Ref: VTT TECHNICAL RESEARCH CENTRE OF FINLAND 9.5.2007 Aarne Mämmelä 44
Largest Databases on papers in Engineering

Taxonomy of Databases

1. Bibliographies
   - best way to find knowledge if available
   - See Science Citation Index, General Search, Document type: Bibliography or Review
   - See SCOPUS, Document type: Review

2. Electronic libraries (whole papers included as .pdf files)
   - IEEE/IEE Electronic Library (IEL) from 1950 (user interface is IEEE Xplore), 1.3 million publications, 133000 new publications/year
   - ACM Digital Library, portal.acm.org/dl.cfm
   - SPIE Digital Library, spiedl.org

Other References for this presentation

• 2005 Journal Citation Reports (JCR), Science Edition. Institute for Scientific Information (ISI), isi01.isiknowledge.com/portal.cgi.