

Preface

The Ninth International Workshop on Persistent Object Systems (POS-9) took place at the SAS Radisson Hotel in Lillehammer, Norway, from 6th to 8th September 2000. Previous workshops in the series have been held in Scotland (1 and 2), Australia (3), the USA (4), Italy (5), France (6), and the USA (7 and 8). In keeping with those workshops, POS-9 was short but intensive, fitting 28 papers and panel sessions, a boat excursion, and some memorable meals into two and a half days.¹ The participants' concentration was no doubt helped by the Northern European weather that prevailed for most of the workshop.

Continuing a trend experienced over the previous few workshops, POS-9 had difficulty attracting a high number of papers. Of course it is hard to tell whether this is a problem with the field of persistent systems itself, or merely a consequence of the increasing number of workshops, conferences, and journals competing for submissions. In his Epilogue to the proceedings, Ron Morrison makes some interesting suggestions for possible improvements to future POS workshops.

Out of a total of 26 submitted papers, 19 were accepted for presentation at the workshop. Breaking down by region, 6 1/2 came from the USA², 1 from Africa, 3 1/2 from Australia, and 8 from Europe. In a new development for POS, an equal number of papers came from England and from Scotland.

All submissions were reviewed by at least three members of the Program Committee. Several generated significant disagreement among their reviewers; these papers were accepted on the basis that substantial changes would be needed if they were to be included in the final proceedings. All such papers were updated successfully; our thanks go to the PC members who acted as shepherds to oversee the revisions. Indeed, as usual, the entire process relied on the dedication and hard work of the PC, and we thank them sincerely.

In full, the Program Committee was:

Ole Anfindsen
Malcolm Atkinson
Jean Bacon
Sonia Berman
Steve Blackburn
Richard Connor
Laurent Daynès
Giorgio Ghelli
Tony Hosking
Alfons Kemper
Eliot Moss
Dave Munro

Atsushi Ohori
Tamer Özsu
Fausto Rabitti
John Rosenberg
Peter Schwarz
Liuba Shrira
Santosh Shrivastava
Paul Wilson
Alex Wolf
Stan Zdonik
Ben Zorn

¹ Photos from the workshop are on the POS-9 web site at

<http://www-ppg.dcs.st-and.ac.uk/Conferences/POS9/>.

² Fractional numbers arise from trans-continental collaborations.

During the workshop, presentations were organized into short sessions of (loosely) related papers, each concluding with a panel during which the various authors had an opportunity to expand on deeper or more general issues. These proceedings include reports by the session chairs summarizing these discussions.

It is customary, in reporting on POS workshops, to note any current trends in areas of interest. The main broad research area addressed at POS-9 remained that of object stores, accounting for around half of the papers. The remaining papers covered a rich mixture of system architecture, middleware, and applications. A previously observed trend of diminishing interest in language design and type systems continued, with the almost complete dominance of Java as a language platform.

Finally, we acknowledge the generous support for POS-9 provided by the Research Council of Norway. We thank Ragnfrid Sjøberg and Helle Frøyseth for their excellent support with the local arrangements, and Helen Bremner for transcribing various session tapes.

June 2001

*Graham Kirby
Alan Dearle
Dag Sjøberg*

Table of Contents

Session 1: Overview	1
<i>Graham N.C. Kirby</i>	
A Framework for Persistence-Enabled Optimization of Java Object Stores	4
<i>David Whitlock, Antony L. Hosking</i>	
Architecture of the PEVM: A High-Performance Orthogonally Persistent Java™ Virtual Machine	18
<i>Brian Lewis, Bernd Mathiske, Neal Gafter</i>	
Session 2: Overview	34
<i>Stephen M. Blackburn</i>	
A Spatiotemporal Model as the Basis for a Persistent GIS	36
<i>Erik Voges, Sonia Berman</i>	
Experience with the PerDiS Large-Scale Data-Sharing Middleware	55
<i>Marc Shapiro, Paulo Ferreira, Nicolas Richer</i>	
Toward Pure Polylingual Persistence	70
<i>Alan Kaplan, John V.E. Ridgway, Bradley R. Schmerl, Krishnan Sridhar, Jack C. Wileden</i>	
Session 3: Overview	84
<i>Richard Jones</i>	
Transactional Remote Group Caching in Distributed Object Systems	87
<i>Magnus E. Bjornsson, Liuba Shrira</i>	
Platypus: Design and Implementation of a Flexible High Performance Object Store	100
<i>Zhen He, Stephen M. Blackburn, Luke Kirby, John Zigman</i>	
Evaluating Partition Selection Policies Using the PMOS Garbage Collector	125
<i>David S. Munro, Alfred L. Brown</i>	
TMOS: A Transactional Garbage Collector	138
<i>John Zigman, Stephen M. Blackburn, J. Eliot B. Moss</i>	
Session 4: Overview	157
<i>Antony L. Hosking</i>	

The Memory Behavior of the WWW, or The WWW Considered as a Persistent Store	161
<i>Nicolas Richer, Marc Shapiro</i>	
A Comparison of Two Persistent Storage Tools for Implementing a Search Engine	177
<i>Andrea Garratt, Mike Jackson, Peter Burden, Jon Wallis</i>	
Session 5: Overview	187
<i>Liuba Shrira</i>	
An Approach to Implementing Persistent Computations	189
<i>Ewa Z. Bem, John Rosenberg</i>	
Transparent Orthogonal Checkpointing through User-Level Pagers	201
<i>Espen Skoglund, Christian Ceelen, Jochen Liedtke</i>	
An Overview of Ulisse, a Distributed Single Address Space System	215
<i>Gianluca Dini, Giuseppe Lettieri, Lanfranco Lopriore</i>	
Session 6: Overview	228
<i>Alan Dearle</i>	
Hyper-Code Revisited: Unifying Program Source, Executable, and Data	232
<i>E. Zirintsis, Graham N.C. Kirby, Ron Morrison</i>	
Implementing Orthogonally Persistent Java	247
<i>Alonso Marquez, Stephen M. Blackburn, Gavin Mercer, John Zigman</i>	
Session 7: Overview	262
<i>Sonia Berman</i>	
Event Storage and Federation Using ODMG	265
<i>Jean Bacon, Alexis Hombrecher, Chaoying Ma, Ken Moody, Walt Yao</i>	
An Application Model and Environment for Personal Information Appliances	282
<i>Olivier Gruber, Ravi Konuru</i>	
Scalable and Recoverable Implementation of Object Evolution for the PJama ₁ Platform	292
<i>M.P. Atkinson, M. Dmitriev, C. Hamilton, T. Printezis</i>	
Epilogue	315
<i>Ron Morrison</i>	
Author Index	321

Epilogue

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1 Congratulations

There are a number of components that must seamlessly gel to ensure a successful POS Workshop. The first component is the environment and we are indebted to Dag Sjøberg and his team for inviting us to this beautiful part of the world, organising excellent accommodation and preparing a memorable social programme. The excitement of the 120 metre ski jump and the bobsleigh run (even if only simulated) at the Olympic stadium was neatly balanced by the peaceful serenity of the paddle steamer Skibladner on Lake Mjøsa.

The second essential component is the technical programme. To some extent this is out of the control of the organisers since it depends on the papers that are submitted to them. Graham Kirby and Al Dearle took our offerings and moulded them into a stimulating, well-balanced programme. The format provided for traditional paper presentation and most notably a platform for extensive and healthy challenge and debate. Our thanks are due to them and the Programme Committee for undertaking this difficult task.

The final component of a successful Workshop is the participants themselves. The 9th POS Workshop will be remembered for the high-quality engagement and interaction of the attendees (and not just on the dance floor). While the exchanges were challenging they were also tolerant and well argued, particularly when it involved our younger researchers. This was the mood of the Workshop and it is hard to escape the conclusion that it was, in no small way, a consequence of the Norwegian environment and superb technical programme.

2 Innovation in the Workshop

Since 1985 the POS Workshop series has continuously changed its methods to meet the needs of the community. If there is another POS (POS X) I would like to suggest three areas we might tackle to keep the Workshop, and our research, at the leading edge. These are:

- the reviewing process
- the demonstration of working systems
- the presentation of experimental results

We should remember that the POS Workshop series was originally set up to cater for both theory and experimentation but has always encouraged theory that is firmly placed in practice.

2.1 The Reviewing Process

There was a lot of discussion before and during the Workshop on the subject of reviewing and how we could maintain the high-quality feedback we require for our research. Reviewing is a growing problem in Computer Science as the subject becomes more diverse and reviewers have less and less time to donate to the process. I would therefore like to make a suggestion for good practice to the organisers of POS X that may give a lead for the whole of Computer Science.

The suggestion is that we adopt a system of open reviewing where reviewers names are made known to the authors after the decision making process. For accepted papers the reviewers' names are published, as having reviewed the particular paper, in the proceedings. By this, reviewers take some responsibility for the quality of the papers presented at the Workshop, as well as for the feedback they give on rejected work.

While open reviewing is more difficult for Programme Committee members, I believe that it is how we would all wish to be reviewed ourselves. I look forward to its implementation and the response of the Computer Science community.

2.2 Demonstration of Working Systems

The POS Workshop series has always recognised the importance of experimental systems, and it is on this theme that I would like to suggest a second innovation. This is that wherever possible a paper presentation should include, or indeed may be replaced by, a demonstration of a working system.

Given that the paper is published in the proceedings of the Workshop, the demonstration can be used to illustrate the claimed results, and may even seduce some sceptics into reading the paper. With the advent of very powerful lightweight portable computers, demonstrations should not pose insurmountable technological problems.

2.3 Presentation of Experimental Results

Many scientific subjects have well proscribed ways of presenting results. Computer Science, being so young, has not yet developed these techniques and it is left to the ingenuity of the presenter to set the work in context. We often use the well-known technique of presenting a hypothesis and illustrating how the work meets the hypothesis. I would like to suggest that wherever possible we take a lead, and ask authors to use the categorisation developed by Larry Snyder [3] to highlight their results. The Snyder categorisation uses three themes in presenting work. These are:

- proof of existence
- proof of performance
- proof of concept

I have tried to use this categorisation for the papers in POS 9 and include it here. Some papers overlap, and I leave as a challenge to the authors to either show my error or sharpen up the claim made in the category.

2.4 Proof of Existence

Proof of existence gives evidence of the establishment of a new computational artefact. In a sense the persistence concept is our theory and some examples of existence are:

Computational Artefact	Proof of Existence
Can we build a persistent language?	PS-algol
Can we express all the computation in a persistent environment?	Napier88
Can we build a commercial system?	PJama
Can we build a persistent operating system?	Grasshopper
Can we unify code and data in a system?	Hyper-code
Can we build a poly-lingual environment?	PolySPIN, P ³
Can we build object stores?	Nmeme, Sphere

POS 9 papers in this category are:

- *A Framework for Persistence-Enabled Optimization of Java Applications*
- *Architecture of the PEVM: A High-Performance Orthogonally Persistent Java Virtual Machine*
- *SiteCache: a Transactional Group Coherence Protocol for Object Storage System*
- *Platypus: Design and Implementation of a Flexible High Performance Object Store*
- *TMOS: A Transactional Garbage Collector*
- *The Memory Behavior of the WWW, or The WWW Considered as a Persistent Store*
- *An Approach to Implementing Persistent Computations*
- *Transparent Orthogonal Checkpointing through User-Level Pagers*
- *An Overview of Ulisse, a Distributed Single Address Space System*
- *Hyper-Code Revisited: Unifying Program Source, Executable and Data*

2.5 Proof of Performance

Proof of performance gives evidence of an improvement on previous implementations. It may compare a new implementation to previous ones or it may compare competing systems. In the database world, papers based on the 001 [2] and 007 [1] benchmark fall into this category. Furthermore work on measurement, analytical modelling and simulation can often be reported in this style.

The main difficulty with proof of performance papers is ensuring that the measurements are accurate and not subject to undue disturbance factors. Measurements performed by more than one team are often more convincing.

POS 9 papers in this category are:

- *Evaluating Partition Selection Policies using the PMOS Garbage Collector*
- *A Comparison of Two Persistent Storage Tools for Implementing a Search Engine*
- *Implementing Orthogonally Persistent Java*
- *Event Storage and Federation using ODMG*

2.6 Proof of Concept

Proof of concept is a demonstration of how a particular set of ideas achieves its objectives. For example:

- what are we looking for a system to do?
- can we build it for such a cost?
- can we build it to run in a certain space or time?

Quite often a proof of concept investigation will involve a Human Factors analysis. POS 9 papers in this category are:

- *A Spatiotemporal Model as the Basis for a Persistent GIS*
- *Experience with the PerDiS Large Scale Data Sharing Middleware*
- *Toward Pure Polylingual Persistence*
- *An Application Model and Environment for Personal Information Devices*
- *Scalable and Recoverable Implementation of Object Evolution for the PJama Platform*

3 Epilogue to the Epilogue

Given the excellent quality of the food and scientific discussion at the Workshop, it is appropriate to conclude with a quote from The Hitchhiker's Guide to the Galaxy by Douglas Adams—„Thanks for all the fish“. I look forward to the reassembly of our group at POS X. See you there ...

Ron Morrison

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Table of Contents

Session 1: Overview	1
<i>Graham N.C. Kirby</i>	
A Framework for Persistence-Enabled Optimization of Java Object Stores	4
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<i>Brian Lewis, Bernd Mathiske, Neal Gafter</i>	
Session 2: Overview	34
<i>Stephen M. Blackburn</i>	
A Spatiotemporal Model as the Basis for a Persistent GIS	36
<i>Erik Voges, Sonia Berman</i>	
Experience with the PerDiS Large-Scale Data-Sharing Middleware	55
<i>Marc Shapiro, Paulo Ferreira, Nicolas Richer</i>	
Toward Pure Polylingual Persistence	70
<i>Alan Kaplan, John V.E. Ridgway, Bradley R. Schmerl, Krishnan Sridhar, Jack C. Wileden</i>	
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<i>David S. Munro, Alfred L. Brown</i>	
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<i>Liuba Shrira</i>	
An Approach to Implementing Persistent Computations	189
<i>Ewa Z. Bem, John Rosenberg</i>	
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An Overview of Ulisse, a Distributed Single Address Space System	215
<i>Gianluca Dini, Giuseppe Lettieri, Lanfranco Lopriore</i>	
Session 6: Overview	228
<i>Alan Dearle</i>	
Hyper-Code Revisited: Unifying Program Source, Executable, and Data	232
<i>E. Zirintsis, Graham N.C. Kirby, Ron Morrison</i>	
Implementing Orthogonally Persistent Java	247
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<i>Sonia Berman</i>	
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<i>M.P. Atkinson, M. Dmitriev, C. Hamilton, T. Printezis</i>	
Epilogue	315
<i>Ron Morrison</i>	
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