10152 Executive Summary
Relationships, Objects, Roles, and Queries in Modern Programming Languages
— Dagstuhl Seminar —

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During the 4 days of the seminar, 21 talks, 4 tutorials and 6 demos were given by the participants. In addition, a beauty contest was run on the last day, where participants were invited to solve a benchmark problem using their system.

On **Monday**, Dr. Stephen Fink gave a tutorial examining state-of-the art practices in programming non-relational stores. This is particularly relevant to web-based systems, and many well-known systems adopt the discussed approaches, including: Facebook, Amazon, YouTube, Craig's List, Yahoo and Twitter. In particular, the main challenge faced by such systems is the potential for significant demand generated from the Internet. Following on from this, were a number talks focusing on the implementation of relationships and roles in programming languages. In the evening, some of these systems were demonstrated, giving the audience a chance to see how far along in development they were.

Tuesday began with a tutorial by Prof. James Noble which surveyed several techniques for implementing roles and relationships in modern programming languages. James focused on the connection between programming languages and models of the real world and, in particular, the current mismatch between them. The morning talk session looked at different techniques for reducing the mismatch between SQL-style querying and modern programming languages. In the afternoon session, further talks were given looking at advances in programming language design which support roles, relationships and querying. In the evening, demos were given on related systems.

Wednesday was a half-day, which saw participants taking an excursion to Trier. A highlight of this was dinner and wine-tasting in the famous Mosel wine region. Prof. Friedrich Steimann gave the morning tutorial on the meaning of roles in programming languages. Friedrich drew inspiration from several old texts looking at concepts and uses of spoken and written languages.

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Serge Abiteboul, a participant from the (concurrent) Dagstuhl seminar 10151 on Enabling Holistic Approaches to Business Process Lifecycle Management, gave a tutorial on **Thursday**. This examined the rise and fall of object-oriented databases — a particularly relevant topic for the participants. Serge brought an interesting and alternative view on this subject, and provided some valuable cross-fertilization of ideas. Following on from this, Stephan Herrmann gave a short tutorial on the Portable Common Tool Environment (PCTE), which is an EMCA standard. Talks on Thursday covered a range of relevant topics, including verification of relationship-based systems, and analysis of object behaviour protocols. Demos were given in the evening of related systems.

Friday saw many participants demonstrate their solutions to the hotly-contest *Beauty Contest*. This consisted of a real-world benchmark problem, put together by Friedrich Steimann, extracted from a (hypothetical) theater application intended to support play rehearsals. Participants were given just ten minutes to present their solution and argue why it was elegant. Highlights included several systems which imported the works of Shakespeare as test data. The solution by Christian Wende using a derivative of the EMFText system was declared the winner.

Schedule

The seminar schedule, including the tutorials, sessions and demonstrations was as follows:

Monday	
9:00am	**Introduction:**
11:00am	**Tutorial:** Programming Non-Relational Data Stores: A Short Survey, by Stephen Fink
14:00	**Session:** Programming Languages I
20:00	**Demos:** Whiley, Object Teams.
Tuesday	
9:00	**Tutorial:** Roles and Relationships by James Noble
10:00	**Session:** Querying without Pain
14:00	**Session:** Programming Languages II
20:00	**Demos:** Rascal

Wednesday	
9:00	**Tutorial:** Roles by Friedrich Steimann
10:00	**Session:** Roles, Relationships, and References
Thursday	
9:00	**Tutorial:** (by Serge Abiteboul) **Tutorial:** ECMA PCTE OMS (by Stephan Herrmann)
10:00	**Session:** Relationship Based Programming **Session:** Deduction of Programming Structures
14:00	**Session:** Static Analysis and Types
20:00	**Demos:** Rumer, Fusion
Friday	
9:00	**Beauty Contest**