Panel: Grand Challenges in Testing Data-intensive Computing Systems

Glenn Paulley, Director, Engineering
The issue is complexity

ISO SQL Standard, in pages, including indices

- SQL/1992
- SQL/1999
- SQL/2003
- SQL/2008
- SQL/2011
Complexity grows with each product release.

SQL Anywhere dbserv.dll sizes, in K bytes:

- 8.0.2
- 9.0.2
- 10.0.1
- 11.0.1
- 12.0.0

Size in K bytes
Object-relational mapping toolkits

- Object-relational mapping toolkits are designed to address the impedance mismatch between OO and relational models
  - 61 different ORM toolkits are listed in Wikipedia for Java, C++, Delphi, Ruby, .NET, PHP, Python, Perl
- **Example: Java Hibernate 3.2.6**
  - 266 packages, 1938 classes, 18,680 functions, over 118K LOC
  - Debugging problems requires **real** understanding of the Hibernate architecture and source code
- Other toolkits (eg. EntityFramework) offer even greater complexity
- Problem determination and performance analysis is difficult
Forthcoming technologies

- Data streaming support, continuous queries
- Analytics, CEP integration
- Row-pattern matching in standard SQL
- Greater exploitation of distributed, multi-core hardware
- Solid-state storage
- Temporal data support
- Cloud computing requirements: robust query processing
- Greater penetration of ORM technologies

and the list continues to grow....
Our panelists

- Phyllis Frankl (Polytechnic Institute of NYU)
- Leo Giakoumakis (Microsoft)
- Harumi Kuno (Hewlett-Packard Laboratories)
- Ken Salem (University of Waterloo)
- Florian Waas (Greenplum)