Ubiquitous Data

Philippa Gardner, Imperial
Peter Buneman, Edinburgh
Gavin Bierman, Cambridge
The topic of databases emerged from two key requirements:

- Simple abstraction of structured data
- Robust, efficient implementation of large quantities of data

Successful solution: Relational databases

With ubiquitous databases, the emphasis is now on scale. The number of data locations is typically very small. Distributed databases provide an early, practical example of mobile code. The number of data locations is typically very small.
Examples of Bioinformatics databases:

- 500 public databases
- Many commercial databases
- Evolutionary structure of data
- Few original data sources

Future healthcare

- Access potentially millions of databases
- Move trusted code to source data

A researcher correlating the occurrence of a cardiovascular condition with genetic structure must sequence data. A researcher correlating the occurrence of a cardiovascular condition with genetic structure must sequence data. A researcher correlating the occurrence of a cardiovascular condition with genetic structure must sequence data. A researcher correlating the occurrence of a cardiovascular condition with genetic structure must sequence data. A researcher correlating the occurrence of a cardiovascular condition with genetic structure must sequence data.
Semi-structured data manipulation is not straightforward. We must study:

- Query languages: XQuery
- Pattern-matching languages: C# with XML types
- Storage and optimization techniques
- Provenance and annotation

Manipulation of such data is not straightforward. We must study...
Processes

Process calculi provide primitives for describing and analysing global distributed infrastructure, focusing on process migration, process interaction, and private channel communication. Example applications include languages supporting distributed programming with mobility: polyphonic C#, BPEL, and typed processes to ensure fine-grained resource access control.

Processes calculi provide primitives for describing and analysing authentication protocols and typed processes to ensure fine-grained resource access control.
Integrating Data and Processes
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To find a sound theoretical understanding for languages and data associated with the Web.

15 Year Challenge