

# What's new at Parallel Scientific

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# Parallel Scientific



- Founder: by Peter Braam (Red Hat, Lustre, SUN, Xyratex,...).
- Vision:

“Exploit unique opportunities in combining knowledge of programming languages, mathematics and HPC with cloud and hardware domain expertise.”

# Parallel Scientific timeline

**2009** “Hello World!”

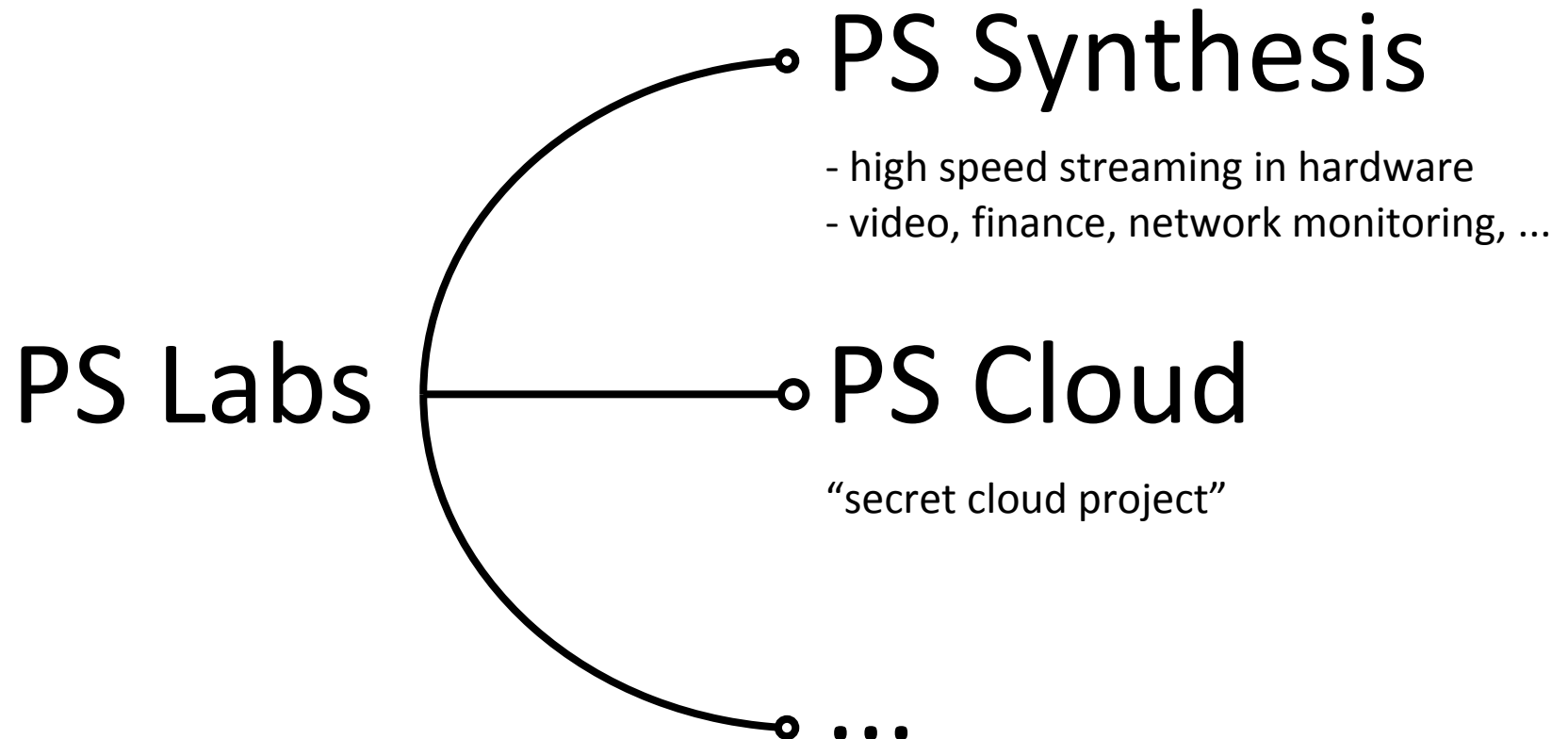
**2010** Radically new cluster architectures

**2011** Exa-Haskell proposal

**2012** SpinDrift toolchain for FPGA programming

**2013** High availability for exascale  
Hardware streaming analytics

# PS Labs spin-offs



# Our methodology

- Identify problem domain
- Formulate domain specific languages
- Implement runtime for DSL
- Optimize, exploiting commonality.

# Our technology

- Fast MPI-like framework for Haskell.
- DSL's for hardware programming  
→ *non hardware experts can program FPGA's.*
- IP cores for high speed stream analysis
  - risk management
  - network events monitoring
  - sensor data aggregation
  - video switching
- Main problem area: **real-time analytics**

# The way we see the future

- Hardware increasingly exporting its inherent parallelism to the software.
- Increasingly heterogeneous hardware resources.
- Hardware circuit just a computation with fixed shape.
- Software needs to survive many generations.
- **Key to efficient utilization:**

*Make the cursor between hardware and software adjustable, given fixed codebase.*