ICE-DIP Project:
Research on data transport for manycore processors for next generation DAQs

› 5/12/2014

Aram Santogidis

ICE-DIP is a European Industrial Doctorate project funded by the European Community's 7th Frameworkprogramme Marie Curie Actions under grant PITN-GA-2012-316596

Background image: Shutterstock

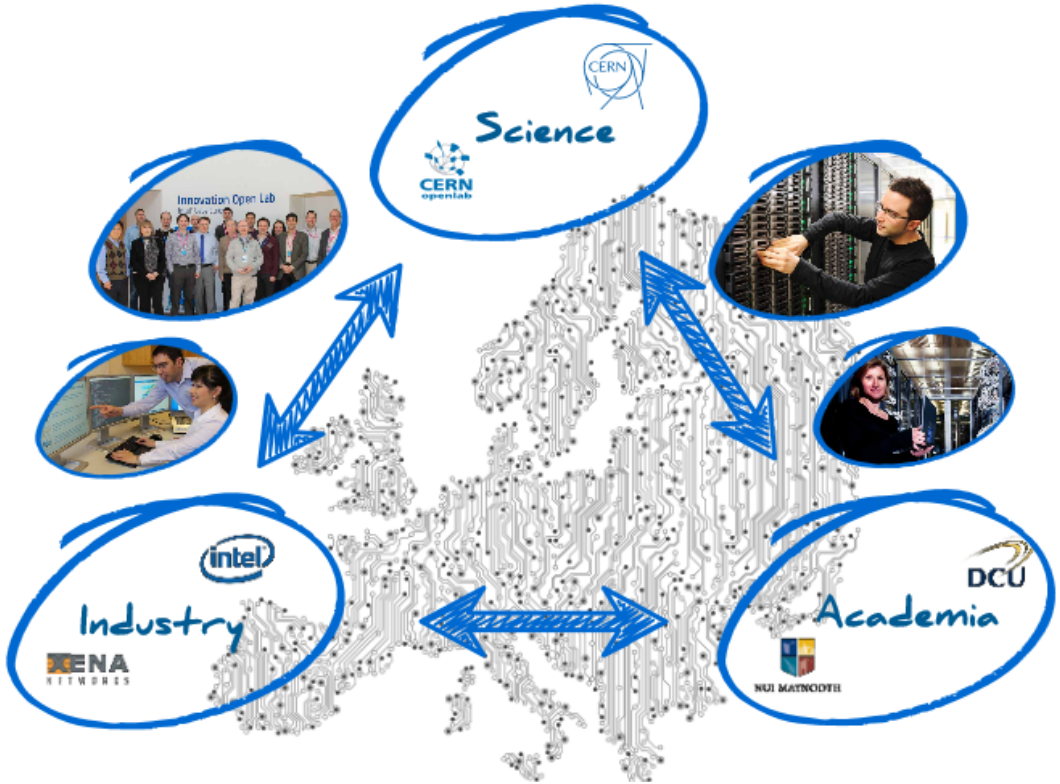
CERN openlab

ICE-DIP 2013-2017:
The Intel-CERN European Doctorate Industrial Program

A public-private partnership to research solutions for next generation data acquisition networks, offering research training to five Early Stage Researchers in ICT

Research topics:

- Silicon photonics systems
- Next generation data
- High speed configurable logic
- Computing solutions for high performance data filtering



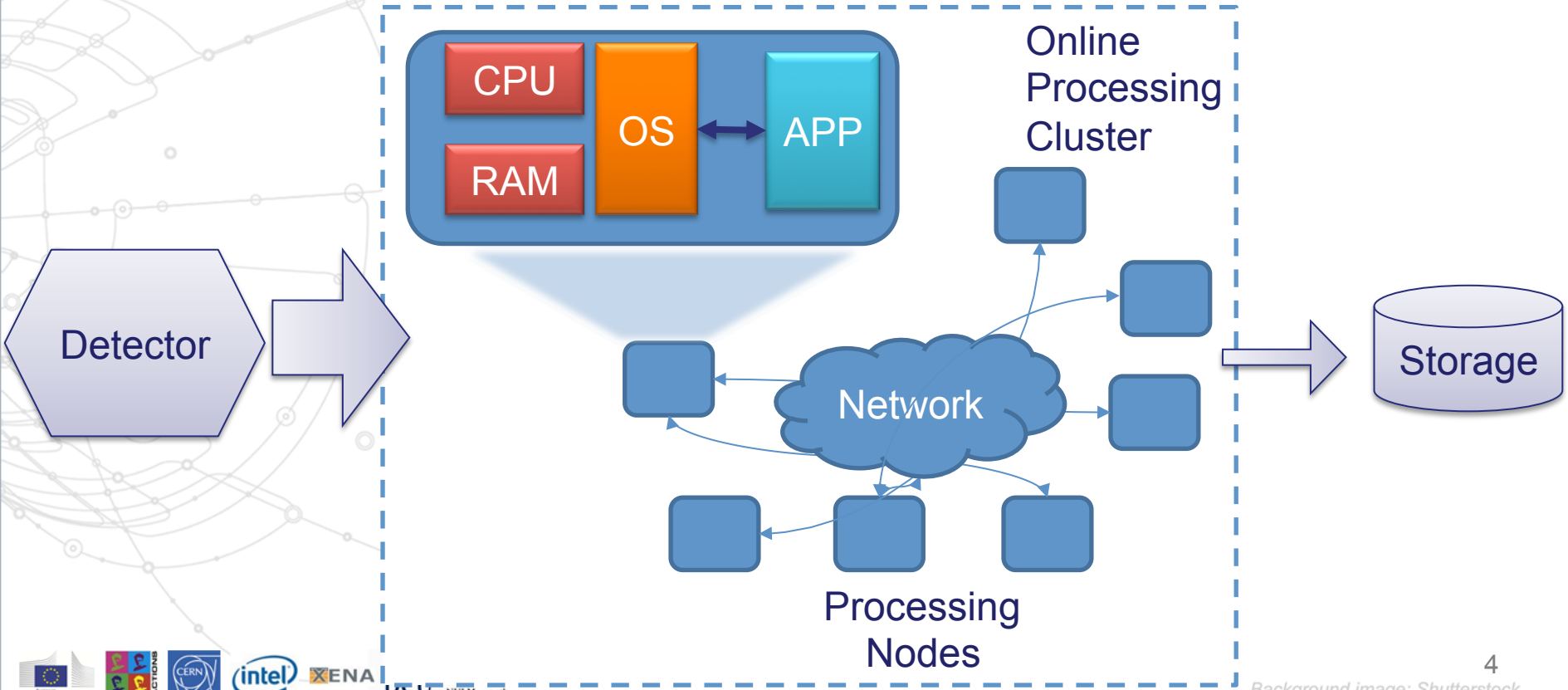
Background image: Shutterstock

The points of my research
Data Transfer

- Move data fast to manycore processors
- Develop easy to use intra/inter-machine communication interface
- Study the trade-offs of related communication patterns and mechanisms
- Conduct this research in the context of next generation DAQs

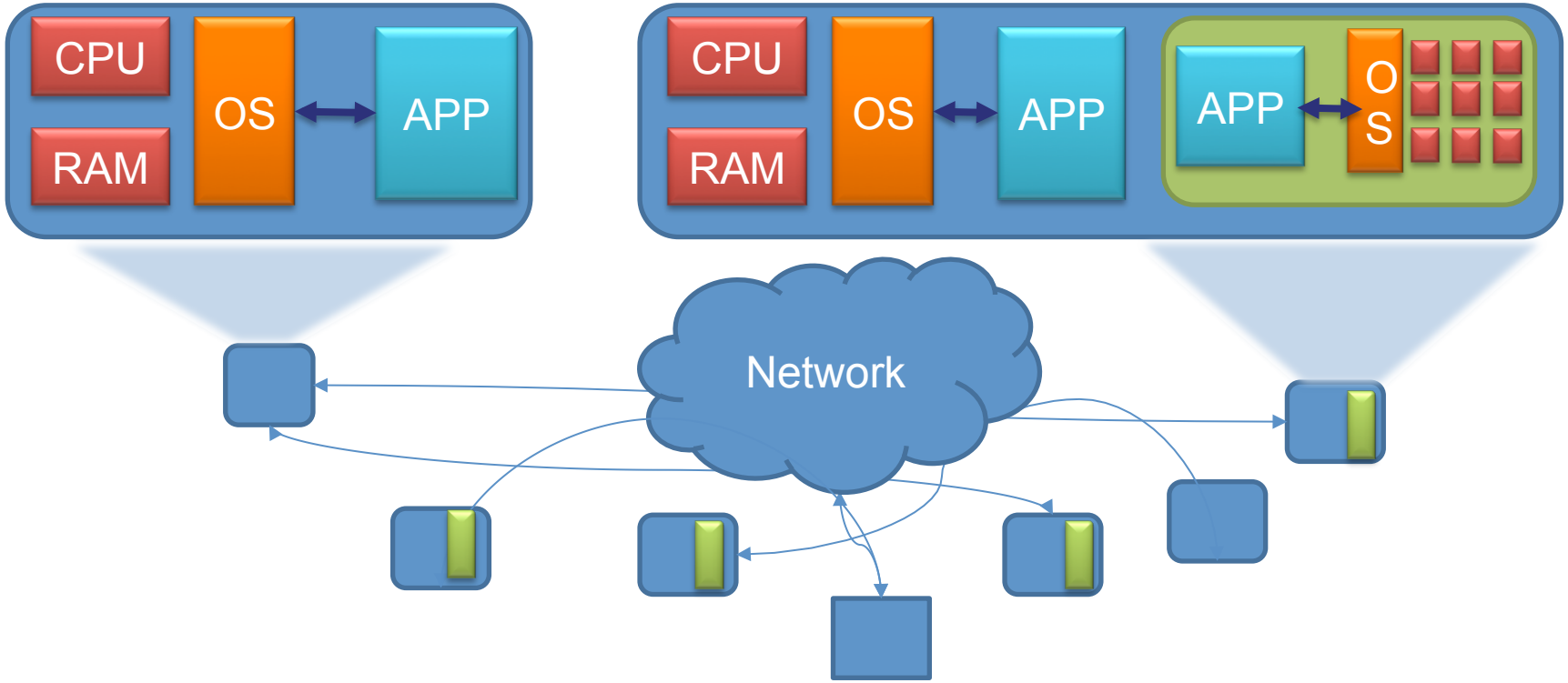
Background image: Shutterstock

Distributed application for online processing



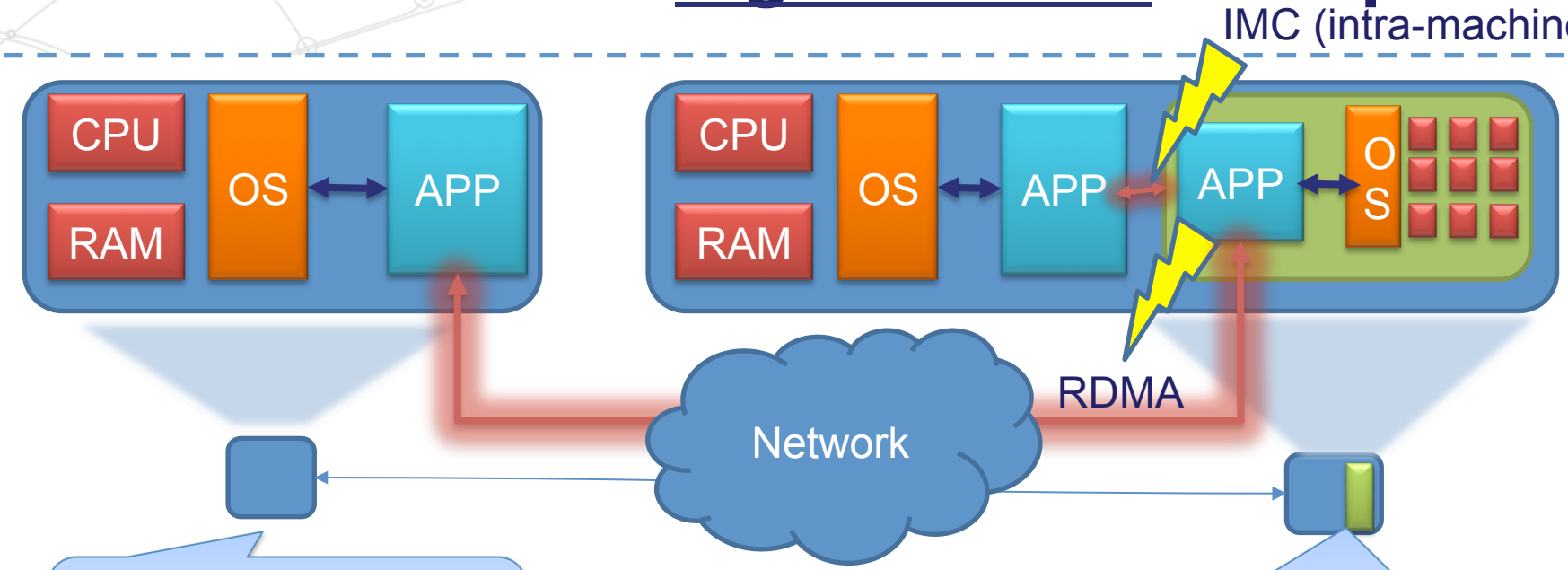
Background image: Shutterstock

Heterogeneous computing with manycore co-processors



Background image: Shutterstock

We need high efficient transport

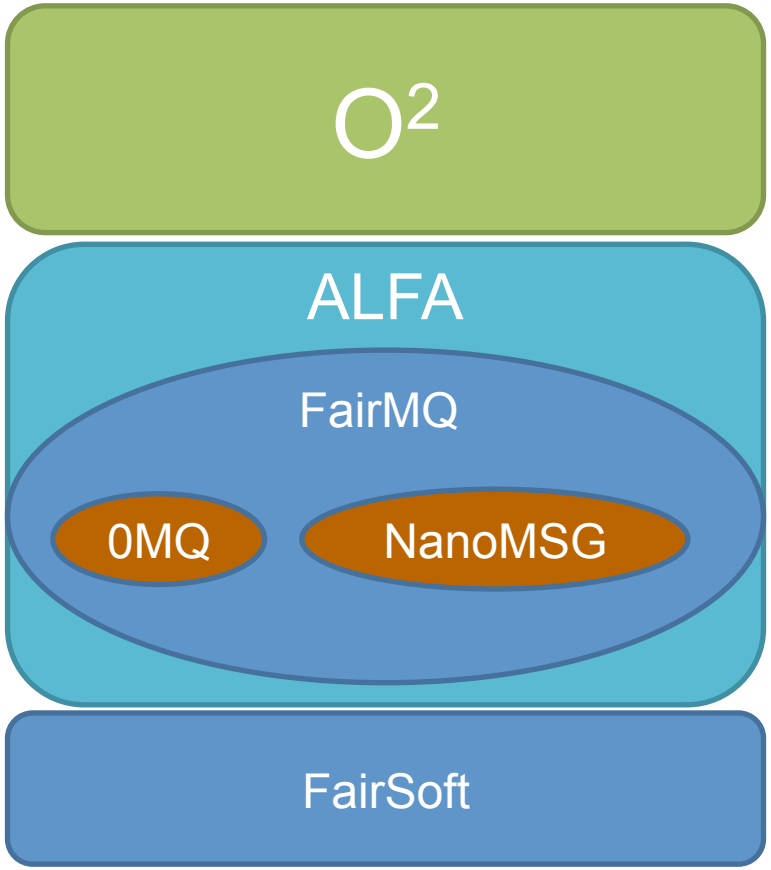


Background image: Shutterstock

Online-Offline system for ALICE

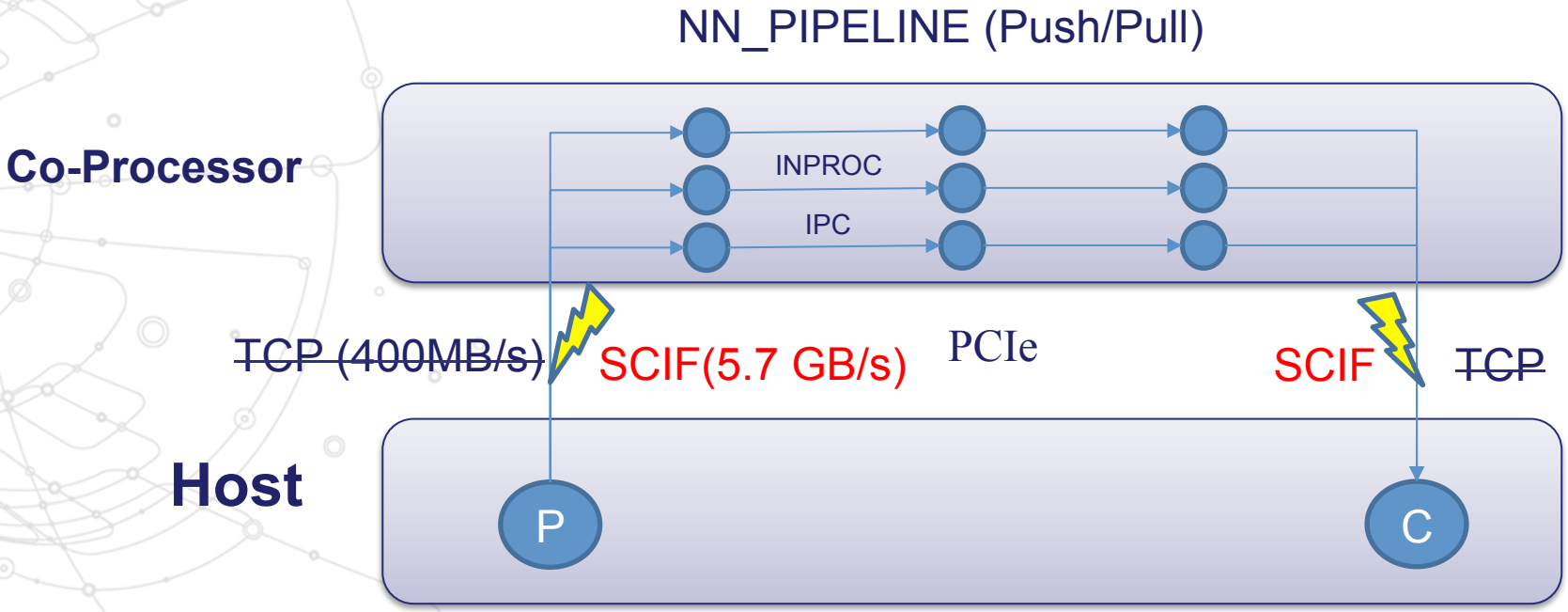
Software framework for ALICE and Fair experiments

External Dependencies



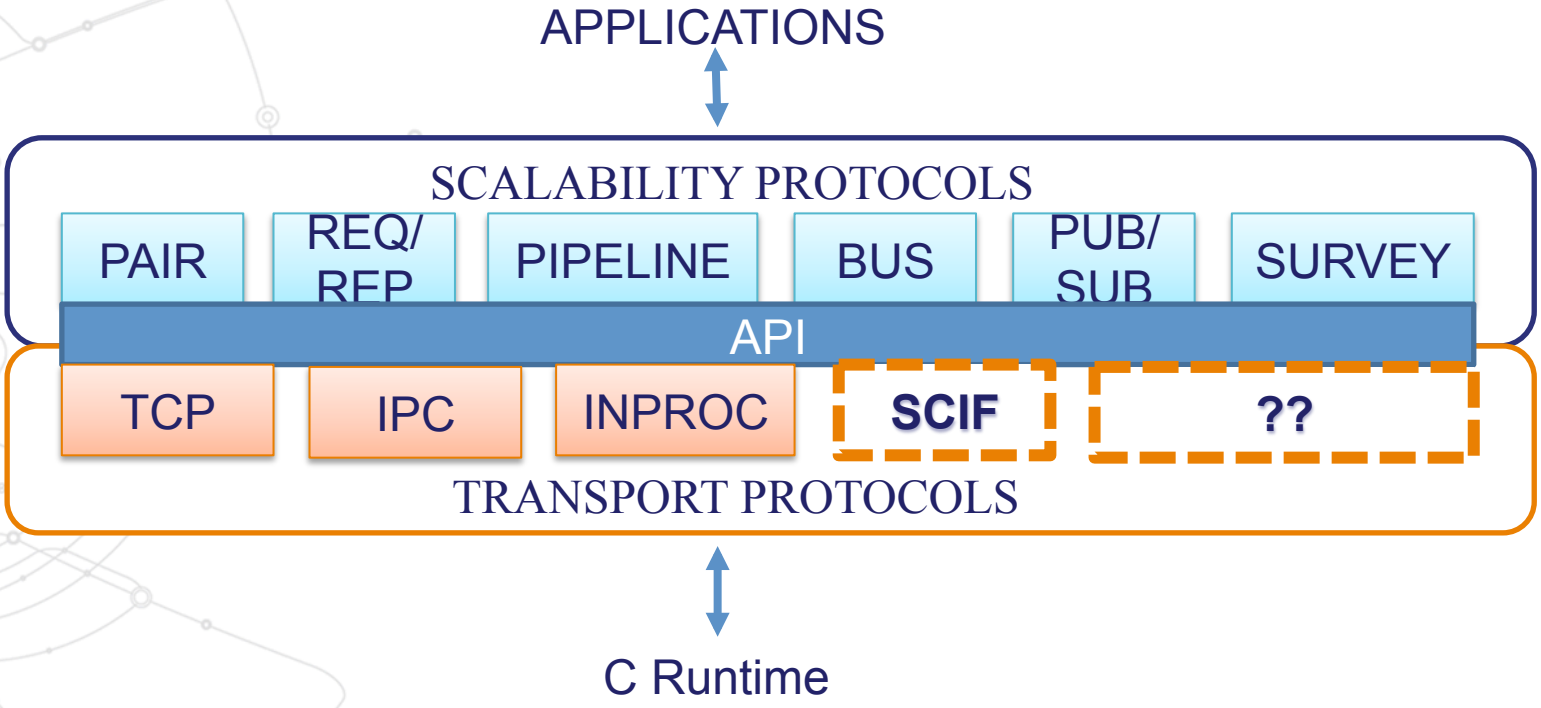
Background image: Shutterstock

Boosted NanoMSG's performance of Intra-machine communication



Background image: Shutterstock

NanoMSG extended with SCIF support



Background image: Shutterstock

Future plans

- Focus more on ZeroMQ
- Develop a message-passing to RDMA mapping protocol
- Study ALFA and O^2
- Experiment on infiniband hardware
- Work on getting early access on KNL and OmniPath.

Background image: Shutterstock

Background image: Shutterstock

ICE-DIP is a European Industrial Doctorate project funded by the European Community's 7th Frameworkprogramme Marie Curie Actions under grant PITN-GA-2012-316596