



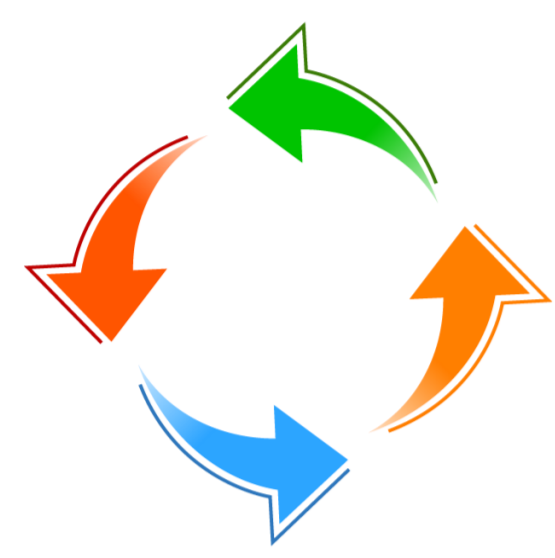
FP7 Coordination and Support Action to fund 50 technology transfer projects (TTP) in computing
U
Programme for research,
609491.

CK/CLsmith: An Automated Testing Framework for Many-Core Vendor Tools

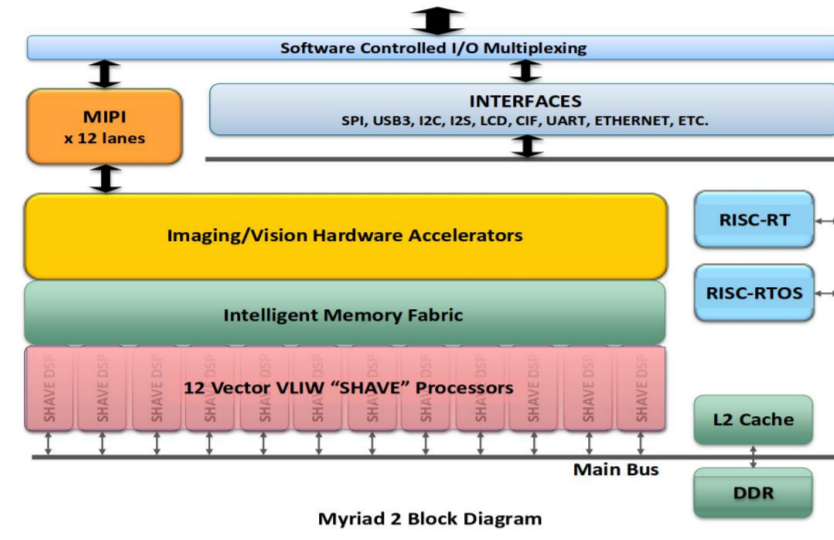
Alastair F. Donaldson, Andrei Lascu, Imperial College London, UK
Grigori Fursin, Anton Lokhmotov, dividiti Ltd., UK

TTP Problem

Many-core APIs: large, sophisticated, hard to implement

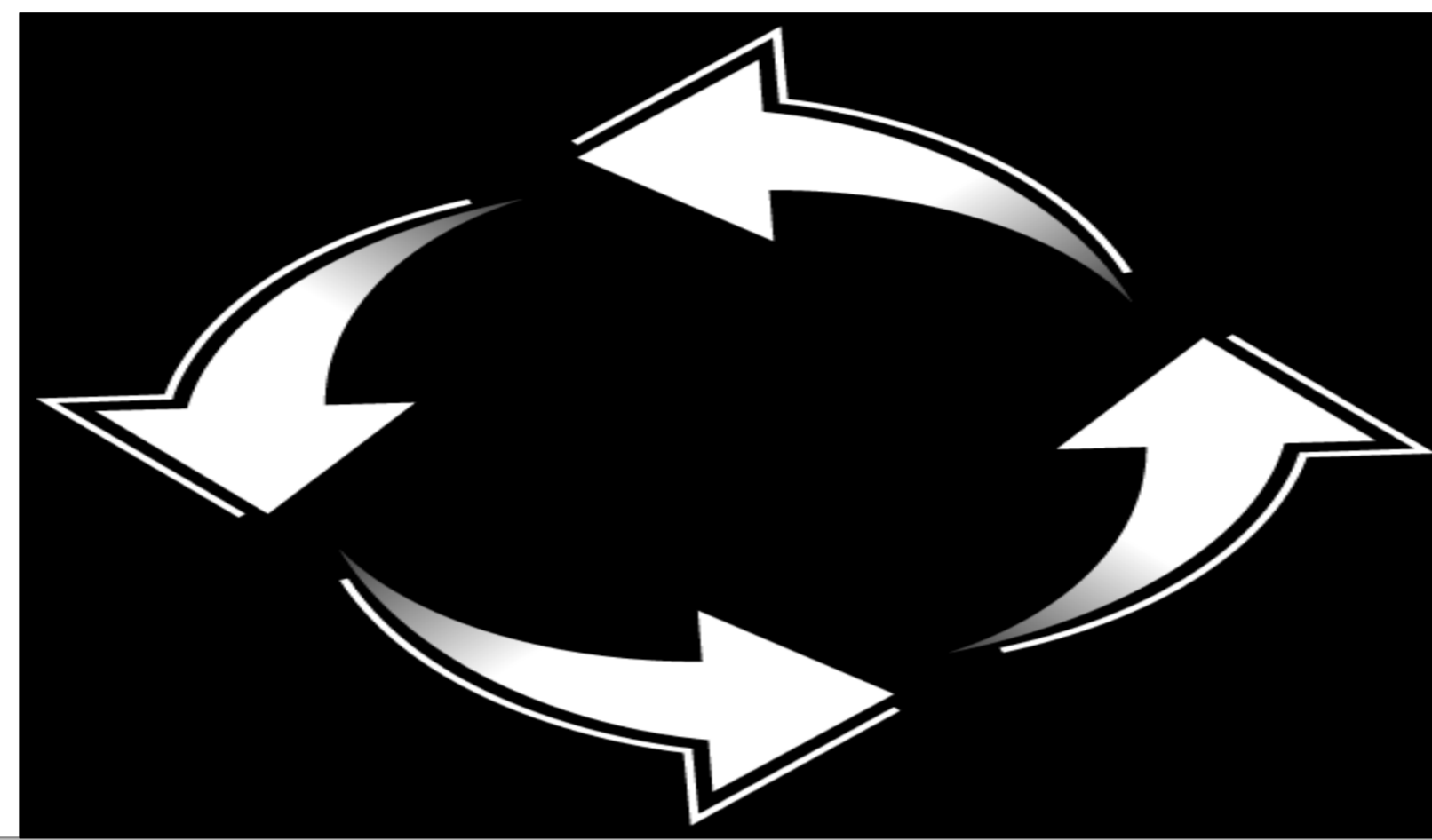


Spans CPUs, GPUs, FPGAS



Unites graphics and compute

OpenCL compilers: prone to wrong code bugs



Current vendor testing strategies: inadequate

3 / ' , paper (Imperial) reports more than 50 bugs in commercial OpenCL implementations, from multiple major vendors

TTP Solution

Find compiler bugs automatically via **random differential testing**

CLsmith

Imperial College London
generate
based on

Large set of feature-rich OpenCL test cases

test

Collective Knowledge dividiti

Crowd-sourcing of results from diverse platforms

Visualisation of test results

Bug identification

Bug ranking

Test case reduction

Bug reproduction

3 & UR Z B HFN ' 2 SHQ & / S O D W
from major vendors

Movidius

THE UNIVERSITY OF EDINBURGH
informatics

« D Q G P R U H

CK offers a seamless, generic framework for crowd-sourcing, managing and analysing large data sets arising from computer science experiments, including many-core API fuzzing

TTP Impact

A many-core crowd-testing service

CK/CLsmith will lead to a service for rapid testing of prototype API implementations

Increased value of vendor tools

Eliminating key defects early will lead to reliable vendor tools, with higher value to customers

Better many-core software

Reliable vendor tools will enable construction of safer, more secure many-core software for society

TTP Facts

Contact Alastair F. Donaldson
E-mail alastair.donaldson@imperial.ac.uk
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dividiti

