

# The OpenCS initiative

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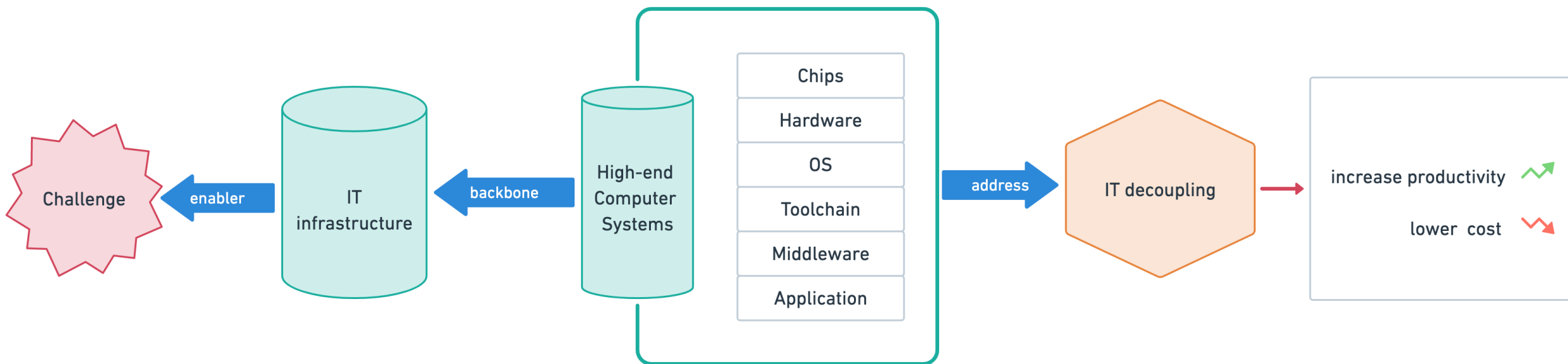
OpenCS 2022

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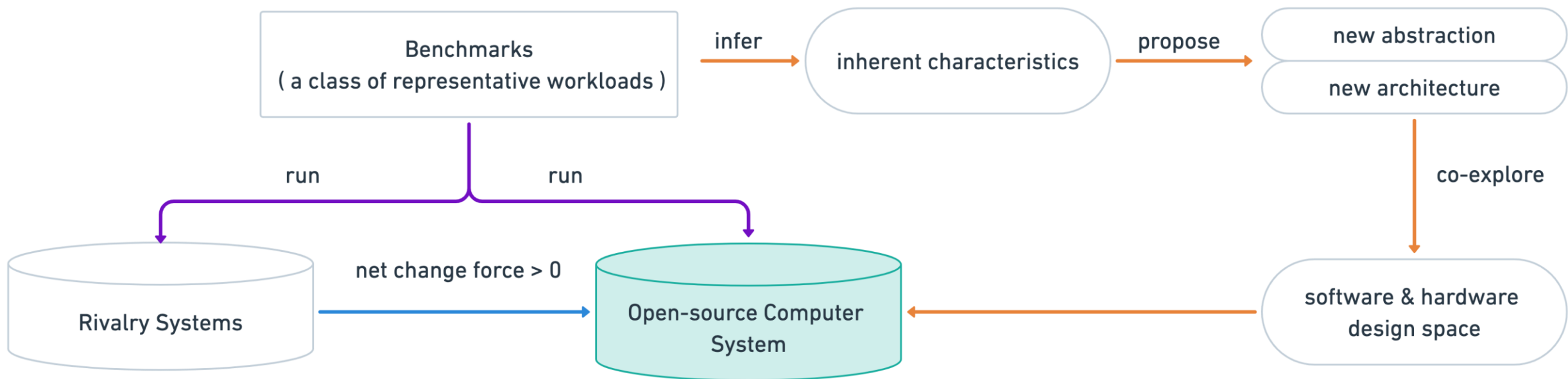
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# Why we launch the OpenCS initiative?



*Jianfeng Zhan, Open-source computer systems initiative: The motivation, essence, challenges, and methodology, BenchCouncil Trans. Benchmarks Standards Eval. 2 (1) (2022) 100038.*

# What is the OpenCS initiative?



# Not reinventing the wheel!

- Propose innovative abstraction and methodology to co-explore the software and hardware design space to attain peak performance, security, and other fundamental dimensions.
- Emphasizes compatibility with the ecosystem.

# Primary OpenCS Target: High fusion computers

- More and more applications are built from systems consisting of the IoTs, edges, data centers, and humans-in-the-loop.
  - Consider humans an essential part and perform safety-critical or mission-critical operations;
  - Have intertwined internal or external dependencies;
  - Must first satisfy the accuracy metric before meeting the performance goal under different cases.
- Target: High fusion computers: building IoTs, edges, data centers, and humans-in-the-loop as a computer.
  - Everything will be open-sourced!
- Wanling Gao, Lei Wang, Mingyu Chen, Jin Xiong et al. High fusion computers: The IoTs, edges, data centers, and humans-in-the-loop as a computer, BenchCouncil Transactions on Benchmarks, Standards and Evaluations, Volume 2, Issue 3, July 2022, 100075



# Other Research Targets

Domains	Benchmarks	Metrics	Status
The IoTs, Edges, Datacenters and humans-in-the-loop as a computer	?	?	Emerging
AI for science	SAIBench	Application-specific	Emerging
Deep learning	MLPerf or AIBench	State-of-the-art quality	Mature but progressive
MetaVerse	?	?	Emerging
HPC	HPCC	FLOPS	Mature but progressive
Big Data	BigDataBench or BigBench		
Warehouse-scale computer	?	Tail latency & Throughput	Mature but progressive
Cloud computing	?	System utilizations and quality of services	Mature but progressive

# A short summary of the OpenCS initiative

- Three projects led by three institutes.
  - Institute of Computing Technology, Chinese Academy of Sciences
    - The IoTs, Edges, Data centers and Humans-in-the-loops as a computer
    - Wanling Gao, Lei Wang, Mingyu Chen, Jin Xiong et al. High fusion computers: The IoTs, edges, data centers, and humans-in-the-loop as a computer, BenchCouncil Transactions on Benchmarks, Standards and Evaluations, Volume 2, Issue 3, July 2022, 100075
  - Microsoft Research Asia
    - AI for science Benchmarks
    - <https://www.computercouncil.org/SAIBench/>
  - Beijing Institute of Open Source Chip
    - MetaVerse Benchmarks



# Official web site.

- <https://www.computercouncil.org/oscs.html>
- Everything will be open-sourced!
- The first open-source resource!
  - <https://opencs.computercouncil.org/qstack.html>
  - Please listen to Dr. Wenli Zhang's live presentation!

UTC-5 (New York), 10:35-11:00, November 10th, 2022

UTC (London), 15:35-16:00

UTC+8 (Beijing), 23:35-24:00

## Invited talk

Dr. Wenli Zhang

Institute of Computing Technology, Chinese Academy of Sciences

Title: An open-source high concurrency user-space network stack and three test tools for C10M

- Welcome your joining and contributions!





Thank you !