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Open Domain-Specific Architecture

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ODSA Sub-Project Lead

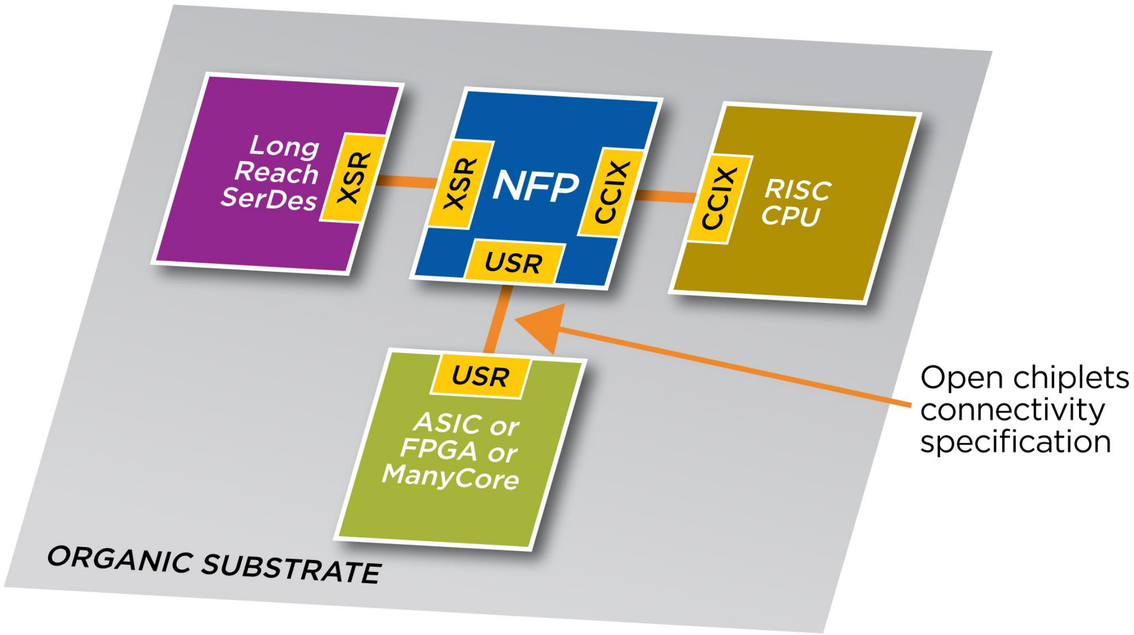
ODSA: Open Domain-Specific Architecture

Domain-specific architecture: Programmable devices optimized for specific applications or class of applications. Meet the demands of high-intensity workloads in the data center and at the edge – e.g. machine learning, video processing

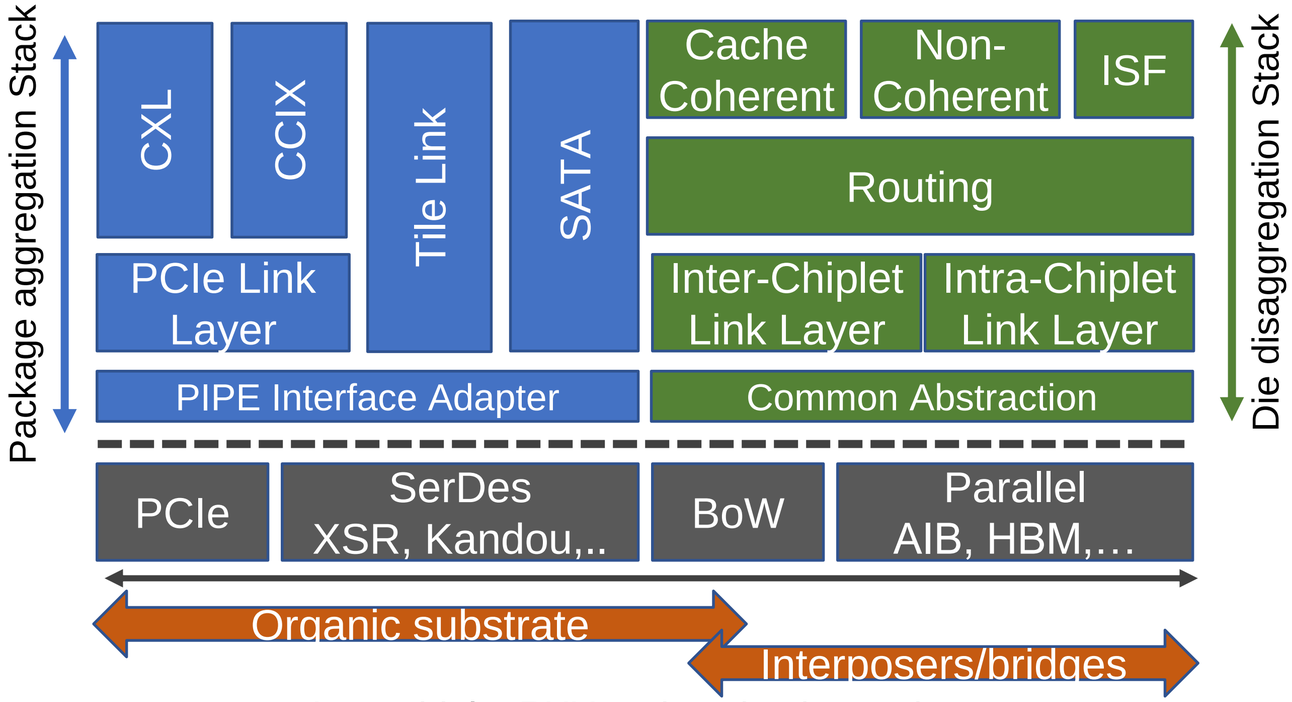
Chiplets: Implement an integrated product as a collection of die in a single package, instead of a single die. Each die is a chiplet. Can reduce development and manufacturing costs.

The Open Domain-Specific Architecture

An open interface for inter-chiplet communication



Multiple chiplets need to function as though they are on one die

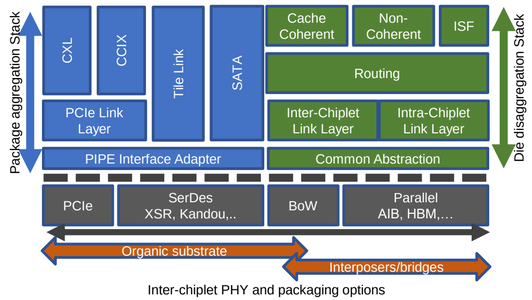


Inter-chiplet PHY and packaging options

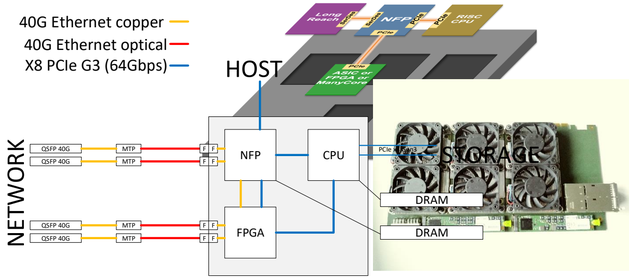
Chiplets for accelerators:

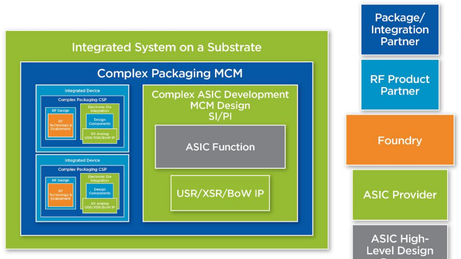
- Shrink a board into a package
- Disaggregate a complex or large die

ODSA Goal: Chiplet Marketplace



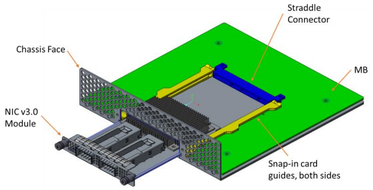
Inter-chiplet PHY and packaging options

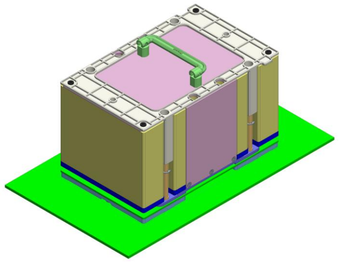


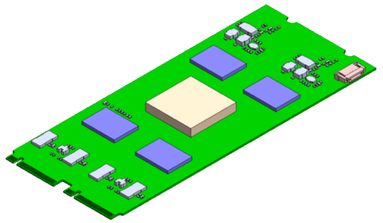


ODSA Activities

Chiplet Marketplace







OCP Use cases

ODSA Announcements at the Regional Summit

All activities involve broad and active participation from multiple members

OCP: Significant progress and growth in the ODSA

Avera: Releasing a 0.7 draft proposal for a Bunch of Wires (BoW) interface – at https://www.opencompute.org/wiki/Server/ODSA

Achronix: A design for the proof-of-concept software development platform and a mock up (go see it)

zGlue: The formation of a workstream to specify chiplet physicals, the Chiplet Design eXchange

Our Session: The making of an Open Interface

DJ/FB: Why do we care about chiplets and accelerators

Steve/Achronix: How do we use chiplets – The PoC

Mark/Avera: How do we wire chiplets together – BoW

David/Intel: How do chiplets exchange bits – Link Layer

Jawad/zGlue: How do we describe chiplets - CDX

Wolfgang/Avera: How do package chiplets – Packaging

Panel (Thursday): How do we work together on chiplets?

Please Help! Join a Workstream

Join the PoC, Build fast:
(Quinn Jacobson/Jawad Nasrullah/
Jayaprakash Balachandran)

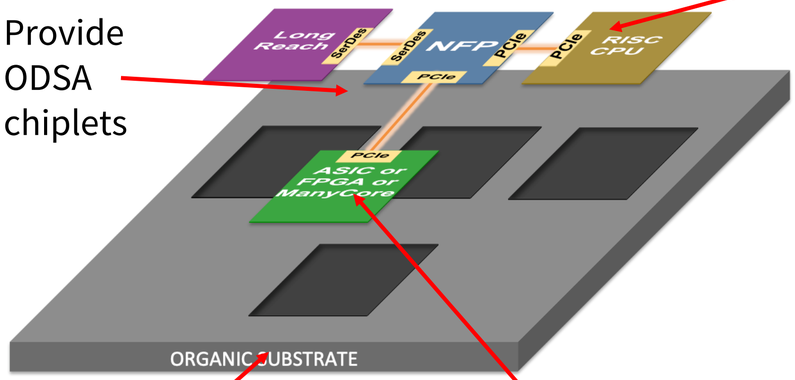
Join Interface/Standards:
(Mark Kuemerle/Ramin Farjad/
Robert Wang/David Kehlet)

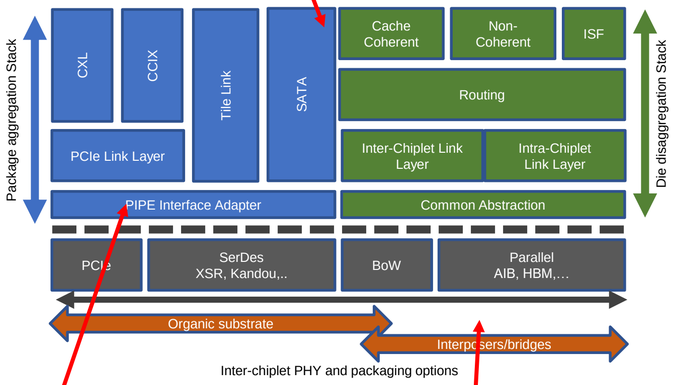
Join Business, IP and workflow:
(Sam Fuller/Dharmesh Jani)

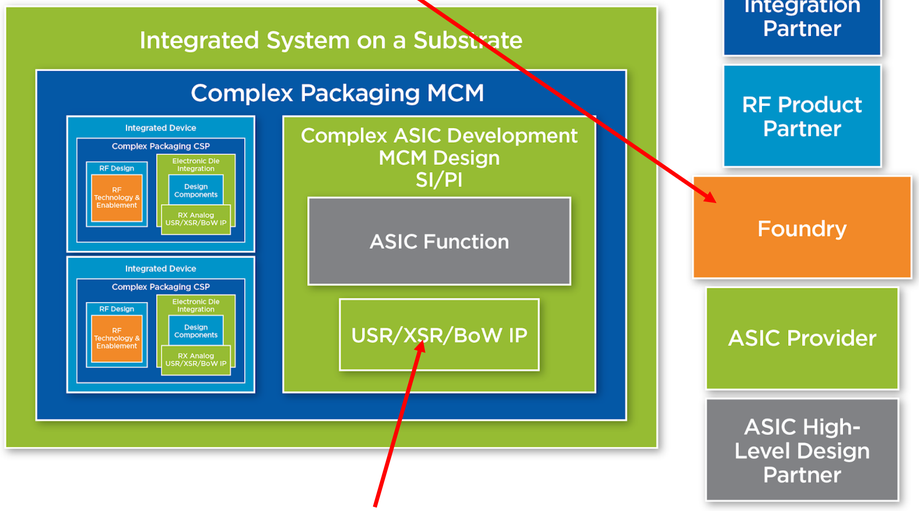
Develop software

Define test and assembly workflow

Provide ODSA chiplets







Develop Packaging + Socket, Dev Board

Provide FPGA IP

Define Architectural Interface

Provide PHY Technology

Provide Chiplet IP

Workstream contact information at the ODSA wiki

Active Projects

Project	Objective	Organizations Participating	Recent Results	Upcoming Milestones	Needs
PHY Analysis	PHY requirements PHY analysis Cross-PHY abstraction (PIPE)	Alphawave, AnalogX, Aquantia, Avera Semi, Facebook, Intel, Kandou, Netronome, zGlue,	PHY Analysis paper (published at Hot Interconnect)	PIPE abstraction	
BoW Interface	No technology license fee, easy to port inter-chiplet interface spec	Aquantia, Avera Semi, Netronome	BoW Interface proposal (published at Hot Interconnect)	BoW specification 0.7 End September, 2019	Test chips, Chiplet library supporting interface
Prototype	product that integrates existing die from multiple companies into one package	Achronix, Cisco, Netronome, NXP, Samtec, Sarcina, zGlue, Macom, Facebook	Decomposable design flow.	Committed schedule	End user End user participation ~30% funding is open
Chiplet design exchange	Open chiplet physical description format.	Ayar, NXP, zGlue,	Draft spec	ZEF Exchange format draft specification	
Link and Network Layer	Interface and implementations – requirements and proposals	Achronix, Avera Semi, Intel, Netronome, NXP, Xilinx			
Multi-chiplet test	Test requirements for an open-chiplet interface				
Chiplet monitoring	Monitoring infrastructure for chiplet operation				
Business workflow	Formalize learnings from prototype effort				

Engineers from:
Achronix, AnalogX, ASE, Avera Semi, Ayar, Cisco, Facebook, Ferric, Intel, Kandou, Macom, Marvel, Netronome, NXP, On Semi, Samtec, Sarcina, Synopsys, Xilinx, zGlue

Wiki: https://www.opencompute.org/wiki/Server/ODSA, meet Fridays at 8 AM Pacific Time.
Please join us.

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26–27, September, 2019