

# OPEN POSSIBILITIES.

## Strategic Initiatives

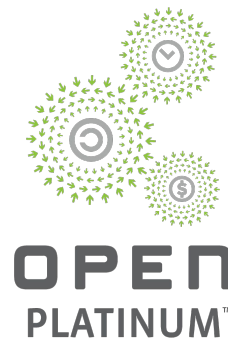


NOVEMBER 9-10, 2021

# Strategic Initiatives

Dharmesh Jani, Facebook  
Jessica Gullbrand, Intel  
Jeff Caitlin, Edgecore Networks

OPEN POSSIBILITIES.



# IC Role in the first decade of OCP

2011-2020

## Grow

Create/update project charters that set guidelines & limits for activity & scope of work. Review contributions for technical completeness

## Contribute

Reviewing and voting on the disposition of each contribution to the OCP Foundation and ensure OCP principles are embodied in the contributions

## Develop

Provide guidance and feedback to the incubated projects and help shape new projects & encourage the Project Leads and Community to bring new contributions forward.

## Establish

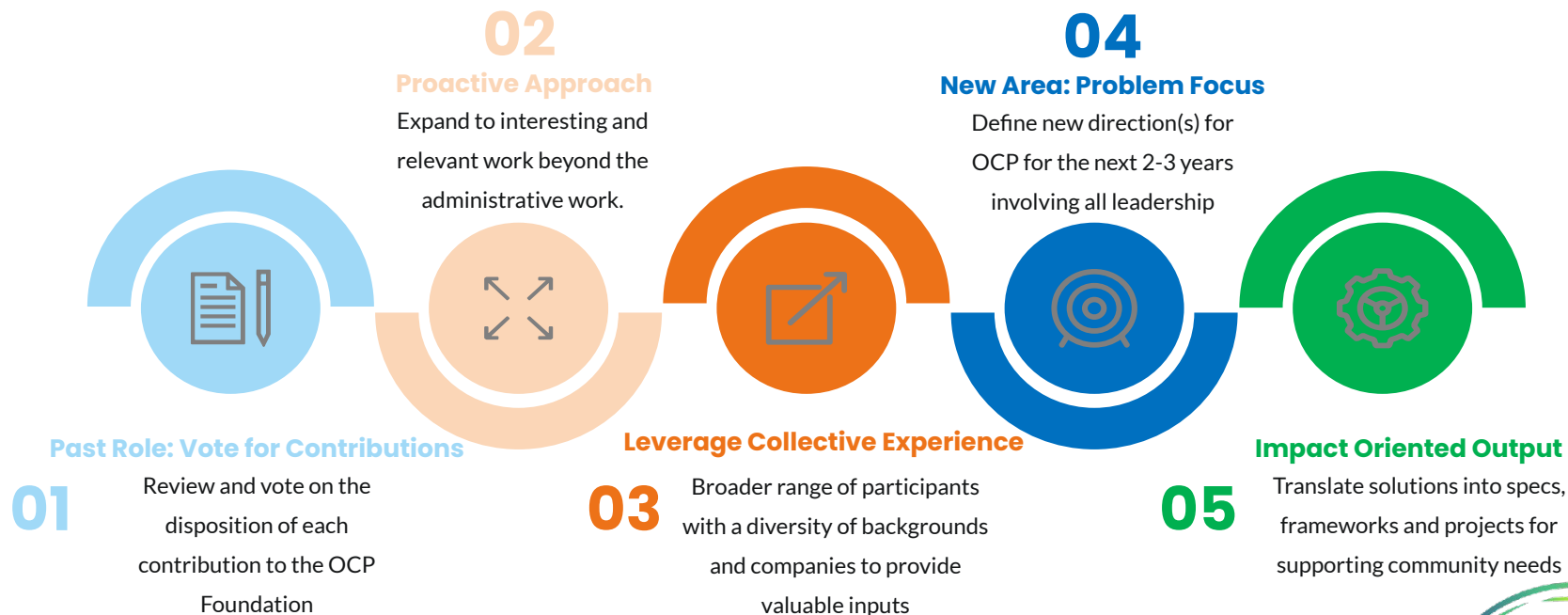
Launch and establish cadence for various projects to adhere to the OCP foundation charter.

Develop community connections via IC representative connecting with the Foundation

OPEN POSSIBILITIES.



# OCP IC role has evolved over last 2 years



OPEN POSSIBILITIES.

# OCP IC Mission Redefined

Mission to highlight and solve industry challenges



- Identify the industry **problem sets**
- Drive the **solution discovery** process
- **Crystalize and define** the roadmap
- **Influence** the OCP board

OPEN POSSIBILITIES.



# 2019-2020 Focus Areas

List generated by collecting the broad areas from PLs and subsequent voting by all VLs

1	COMMON PLATFORMS
2	MODULARIZATION
3	PLATFORM SECURITY
4	COMMON PROFILES ACROSS OCP
5	CONSUMPTION OF HYPERSCALE HW
6	DATA STORAGE
7	INTEGRATED SOLUTIONS
8	GRANULAR POWER MANAGEMENT
9	TRANSITION to 400Gbs
10	PON/OLT & CPE DISAGGREGATION
11	NEW PLATFORM INITIALIZATION ARCHITECTURE
12	CLOUD SERVICE MODEL
13	DC ENERGY EFFICIENCY
14	SCALE OUT OF LIQUID COOLING/ IMMERSION
15	OUTSIDE PLANT COMPLIANT OFFERINGS
16	GREEN INITIATIVES



- Workstreams created with OCP IC leads
- Based on the high-level objects further next steps were refined via IC feedback
- Community feedback was also secured by involvement of PLs and feedback from respective project communities

OPEN POSSIBILITIES.



# 2020-2021 Focus Areas

The exercise has bubbled up collection of ideas that are strategic and tactical in nature

Review	2021 Order	Topic	Title	Owners/Staffholders	Priority	Description of industry challenge
2.6	1	Enterprise	INTEGRATED SOLUTIONS	Steve Hsieh Rajeev Sharma Ron	Severed IS categories were recommended by OCPDA. Steve Hsieh has volunteered to choose one and organize a Pilot program to address that segment.	Customers (other than hyperscalers) want to buy solutions that comprehend hardware, software, security features. Whereas solutions are available from an OEM, most OCP products are commodity.
2.4	2	Hyperscale Telco Edge	SUSTAINABILITY & CIRCULARITY	DJ	Recommend that we create a cross functional team to identify formulate a overall strategy for the organization. Likely to affect many existing projects. Also can include the creation of a 5th Tenet.	Lack of solution providers that define and offer turnkey solution with OCP HW, particularly storage.
2.2	3	Hyperscale Enterprise	DC SECURITY (DC FACILITIES EQUIPMENT)	Security Project Common Platform	Updates security project charter and create sub-project as necessary. The "C Expectations" table produced by the COMMON PLATFORM work stream can include a column for DC industrial control systems (ICS). Some notable participants include the...	The linear model of take-bite-dispose is reaching its physical limits. 2015 study indicates global demand for resources was equivalent to 1.5 times what earth can support in one year.
3.3	4	Hyperscale	AI HW SW DESIGN COLLABORATION	DJ	Update security project charter and create sub-project as necessary. The "C Expectations" table produced by the COMMON PLATFORM work stream can include a column for DC industrial control systems (ICS). Some notable participants include the...	Security for extended data center facilities equipment such as power, cooling and DC facilities monitoring and control. Security threats exist today where the DC equipment can be compromised (data leaks, outages or breaches of data).
2.5	4.9	Hyperscale	COMMON FOOTPRINT FOR ML WORKLOADS	DJ	Combine with "AI HW-SW Design Collaboration"	Key elements of the circular economy model optimize resources by circulating products, implemented through design practice, refurbishment/manufacturing, redistribution/secondary market sales and recycling.
2.6	5	Hyperscale Enterprise	COMMON TEST AND VALIDATION FOR OCP SERVICES AND MODULES	DJ with support from Elaine?	Possible new project if we can identify member interest. Interest today inside Facebook to kick this off.	To solve the growing complexity of AI workloads, co-design approach is needed to allow for simultaneous work on all the bottlenecks (HW and SW) which can affect the performance such as training time. An open source effort in this space can provide opportunity for solving some of the problems.
2.8	6	Hyperscale Telco Edge	SCALE OUT OF LIQUID COOLING/IMMERSION	Breven (lead) Don Michel Rafael Brink Steve Mills Jennifer Gultbrand	Proposed that OCP (Breven) take lead on this and use the work streams of ACS and the new ACF project to drive activity.	Performance benchmarking with validated test is critical for faster adoption of OCP devices. Currently OCP does not have any mechanism to incorporate this aspect of HW development.
3.0	7	Hyperscale Enterprise Telco Edge	CLOUD SERVICE MODEL			New breakthrough in power delivery, cooling, and security if IT equipment efforts are aligned by the advancement of the Data Center facility. The DC facilities need a standard interface to their building of cool plate and immersion cooling.
2.7	8		SOFTWARE DEFINED MEMORY (SDM)	Developing PTT Community		Lack of a comprehensive Service Model for cloud-based hardware where all service is done remotely.
2.7	10	Hyperscale Telco	TRANSITION TO 4000s			Persistent memory is a new storage tier that needs management same as other storage tiers. Opportunity for OCP to introduce standardization. Possible compatibility with modularization activities.
2.6	11	Hyperscale Telco Edge	NEW PLATFORM INITIALIZATION ARCHITECTURE			Challenges delivering high capacity switching for Datacenter (4000 and beyond). Transceiver power, too many PHY options, and overall package power. Several companies working on CORD-4000.
1.6	12	Hyperscale Enterprise Telco Edge	DATA STORAGE			Platform Initialization Architecture. Too many run time processes that impact the OS (example: correctable memory error requires all cores to be halted while BIOS performs error correction).
2.9	13	Hyperscale Enterprise Telco Edge	DC ENERGY EFFICIENCY			Data storage technology will be required to supply over 10 Zeta bytes/2B of storage space by 2025 (DC).
0.6	14	Hyperscale Enterprise Telco Edge	Enable Telco's to Consume Hyperscale HW (new Title only)			Storage technology delivers two vectors: Speed, Capacity. Speed RLE approaching 1.52 and ACS-DC conversion efficiency approaching 95% leaves the opportunity to continuous improvement. Scanning the existing BOMs to create a connected security around the globe will face new challenges (power grid, harsh environment, real estate, etc.).
1.2	15	Enterprise Telco Edge	PON/OLT & CPE DISAGGREGATION			Design for TelcoCarrier Consumption.
0.3	16	Telco Edge	OUTSIDE PLANT COMPLIANT OFFERINGS			Expected huge growth worldwide for CPE, PON & OLT service deployment, driven by disaggregation.

[https://docs.google.com/spreadsheets/d/1eA6T8Sg7AH\\_e8WQJbVwFlaOYumsUUCuPuLQX6Jk77QmA/edit#gid=0](https://docs.google.com/spreadsheets/d/1eA6T8Sg7AH_e8WQJbVwFlaOYumsUUCuPuLQX6Jk77QmA/edit#gid=0)

INTEGRATED SOLUTIONS

SUSTAINABILITY AND CIRCULARITY

DATA CENTER FACILITIES SECURITY

AI HW AND SW CO-DESIGN

COMMON TEST AND VALIDATION

SCALE OUT LIQUID COOLING/IMMERSION

OPEN POSSIBILITIES.

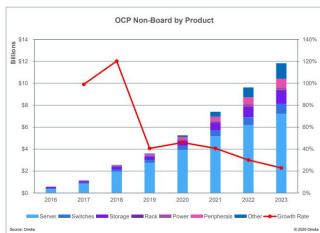


# Themes reflect past year discussions

Narratives from OCP keynotes to industry analysts and company priorities...

## Non-Board OCP revenue expected to top \$11B in 2023

- IT infrastructure (servers, switches, storage) top categories for revenue
- Racks & power need DC building changes & getting denser, resulting in slower growth
- Other (PON and cell site gateway) challengers out to 2023
  - PON remains in POCs
  - Cell site gateway with strong software ecosystem poised for growth
- Other [co-processors] emerging category will be impactful by 2023



OMDIA

OCP 2020  
Information Classification: General

Source: Cliff Grossner 2020 OCP Global Summit: Omdia Market Assessment

## Facebook and Google announce plans to become carbon neutral

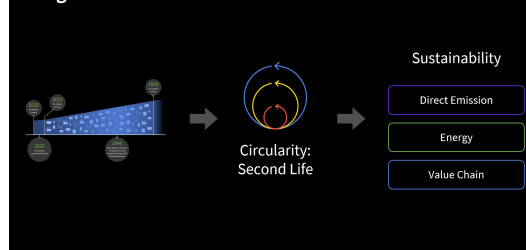
Firms join Apple and Microsoft in committing to put no excess carbon into the atmosphere



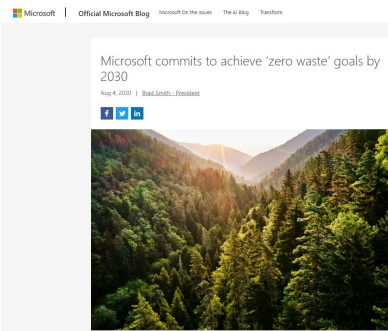
▲ Google has committed to being powered exclusively by renewable energy by 2030. Photograph: Steve Marcus/Reuters

Facebook and Google are becoming carbon neutral businesses, joining competitors Apple and Microsoft in committing to put no excess carbon into the atmosphere, both companies have independently announced.

## Design for Re-use



Source: Katharine Schmidtke 2020 OCP Global Summit Keynote



# OPEN POSSIBILITIES.



OCP  
GLOBAL  
SUMMIT

Source: DJ 2020 OCP Future Technologies Symposium Keynote





# UPDATE ON 2019-2020 STRATEGIC INITIATIVES

Jessica Gullbrand, Intel

OPEN POSSIBILITIES.



# 2019-2020 Strategic Initiatives

## 2019-2020 Strategic Initiatives

Common Platforms

Platform Security

Common Profiles across OCP

Modularization

OPEN POSSIBILITIES.



# 2019-2020 Strategic Initiatives

## 2019-2020 Strategic Initiatives

Common Platforms

Platform Security

Common Profiles across OCP

Modularization

2021 Specification Template &  
2021 Supplier Requirements

DC: DC-SCM

OPEN POSSIBILITIES.



# 2019–2020 Strategic Initiatives

## New Specification Template

- [https://docs.google.com/document/d/1eLDfaqI29-jDA8VUrprZRZCg\\_kxt3ES6ZFLFglrkuw8/copy](https://docs.google.com/document/d/1eLDfaqI29-jDA8VUrprZRZCg_kxt3ES6ZFLFglrkuw8/copy)

## New Supplier Requirements

- <https://www.opencompute.org/documents/2021-supplier-requirements-one-per-supplier-for-suppliers-building-a-product-based-on-an-approved-specification>

OPEN POSSIBILITIES.



# UPDATE ON 2020-2021 STRATEGIC INITIATIVES

OPEN POSSIBILITIES.



# OCP industry challenges for 2021

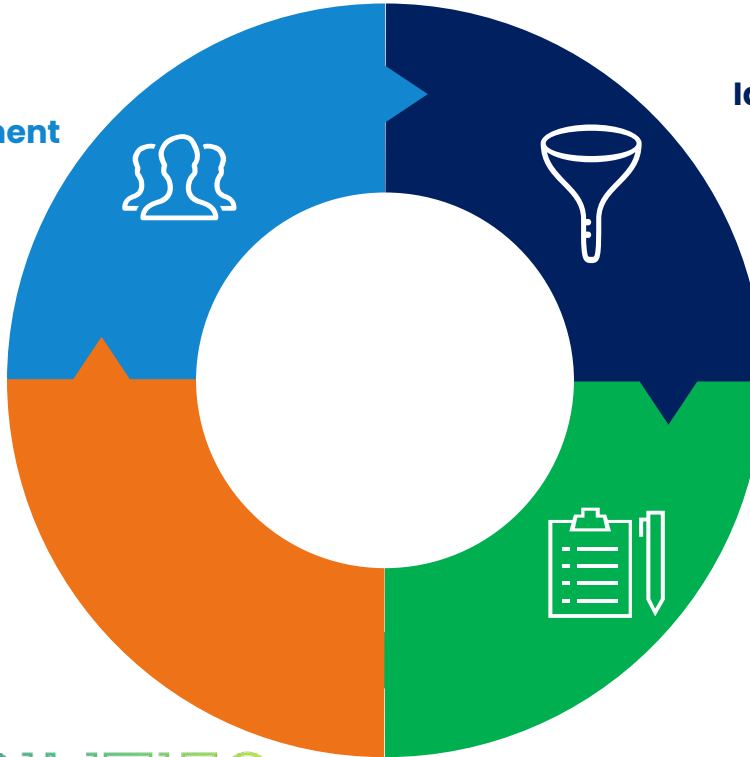
Our efforts started with additional external perspective

## Volunteer Leadership involvement

The industry analysis from Omdia was presented to entire VLs and subsequently each PLs also communicated the ask to their respective community to funnel major problem statements community was experiencing

## External perspective via OMDIA

Obtain external perspective on the areas where OCP needs to focus on via activity assessment.



## Identify key themes and rank

Data collected was organized and categorized into key focus areas. These were voted by all the OCP IC members to generate ranking of the areas to identify top 4-6 areas

## Course of action for 2021

On Dec 3 IC meeting, we have started deliberating the plan for 2021 and how to tackle the top problem statements identified.

OPEN POSSIBILITIES.



# 2021 Strategic Initiatives (SI)

## 2021 Strategic Initiatives

Integrated Solutions

Sustainability & Circularity

Common Test and Validation

Data Center Facilities Security

Scale Out Liquid Cooling/  
Immersion

OPEN POSSIBILITIES.



# 2021 Strategic Initiatives (SI)

2021 Strategic Initiatives	Goals	OCP Project
Integrated Solutions	Generate OCP products consisting of integrated OCP HW, SW & security features	Marketplace: <ul style="list-style-type: none"><li>- TIP collaboration</li><li>- Storage Solutions</li><li>- Kubernetes</li></ul>
Sustainability & Circularity		
Common Test and Validation		
Data Center Facilities Security		
Scale Out Liquid Cooling/ Immersion		

OPEN POSSIBILITIES.





# 2021 Strategic Initiatives (SI)

2021 Strategic Initiatives	Goals	OCP Project
Integrated Solutions	Generate OCP products consisting of integrated OCP HW, SW & security features	Marketplace: <ul style="list-style-type: none"><li>- TIP collaboration</li><li>- Storage Solutions</li><li>- Kubernetes</li></ul>
Sustainability & Circularity	Adopt sustainability goals and recognition process to drive better recycling and reuse	Strategic Initiatives
Common Test and Validation		
Data Center Facilities Security		
Scale Out Liquid Cooling/ Immersion		

OPEN POSSIBILITIES.



# 2021 Strategic Initiatives (SI)

2021 Strategic Initiatives	Goals	OCP Project
Integrated Solutions	Generate OCP products consisting of integrated OCP HW, SW & security features	Marketplace: <ul style="list-style-type: none"><li>- TIP collaboration</li><li>- Storage Solutions</li><li>- Kubernetes</li></ul>
Sustainability & Circularity	Adopt sustainability goals and recognition process to drive better recycling and reuse	Strategic Initiatives
Common Test and Validation	Develop & introduce validation tests for performance benchmarking of OCP devices	Strategic Initiatives
Data Center Facilities Security		
Scale Out Liquid Cooling/ Immersion		

OPEN POSSIBILITIES.



# 2021 Strategic Initiatives (SI)

2021 Strategic Initiatives	Goals	OCP Project
Integrated Solutions	Generate OCP products consisting of integrated OCP HW, SW & security features	Marketplace: <ul style="list-style-type: none"><li>- TIP collaboration</li><li>- Storage Solutions</li><li>- Kubernetes</li></ul>
Sustainability & Circularity	Adopt sustainability goals and recognition process to drive better recycling and reuse	Strategic Initiatives
Common Test and Validation	Develop & introduce validation tests for performance benchmarking of OCP devices	Strategic Initiatives
Data Center Facilities Security	Develop & introduce security of extended DC facilities equipment (power, cooling, monitoring, control, ...)	Operation Technology Security (OTS)
Scale Out Liquid Cooling/ Immersion		

OPEN POSSIBILITIES.



# 2021 Strategic Initiatives (SI)

2021 Strategic Initiatives	Goals	OCP Project
Integrated Solutions	Generate OCP products consisting of integrated OCP HW, SW & security features	Marketplace: <ul style="list-style-type: none"><li>- TIP collaboration</li><li>- Storage Solutions</li><li>- Kubernetes</li></ul>
Sustainability & Circularity	Adopt sustainability goals and recognition process to drive better recycling and reuse	Strategic Initiatives
Common Test and Validation	Develop & introduce validation tests for performance benchmarking of OCP devices	Strategic Initiatives
Data Center Facilities Security	Develop & introduce security of extended DC facilities equipment (power, cooling, monitoring, control, ...)	Operation Technology Security (OTS)
Scale Out Liquid Cooling/ Immersion	Create a “standard” interface between DCF and liquid cooled/immersed IT equipment	Advanced Cooling Facility / Solutions

OPEN POSSIBILITIES.



# Call to Action

Sign up and participate in the OCP Strategic Initiatives:

- Sustainability & Circularity + Common Test & Validation - Strategic Initiatives (SI)
  - <https://www.opencompute.org/projects/ocp-2021-strategic-initiatives>
- ISC Security - Operation Technology Security (OTS)
  - <https://www.opencompute.org/projects/operation-technology-security-incubation>
- Scale Out of Liquid Cooling/Immersion - Advanced Cooling Facility (ACF) & Advanced Cooling Solutions (ACS)
  - <https://www.opencompute.org/projects/advanced-cooling-facilities-incubation>
  - <https://www.opencompute.org/projects/acs-immersion>;  
<https://www.opencompute.org/projects/acs-cold-plate>;  
<https://www.opencompute.org/projects/acs-door-heat-exchanger>

OPEN POSSIBILITIES.



Thank you!



NOVEMBER 9-10, 2021