

P21 Annual meeting 2022, 30 June -1 July Notes and Observations

John Lincoln with input from other PLG attendees

Top highlights

The first face-to-face P21 annual meeting in 3 years. ~250 present for full meeting

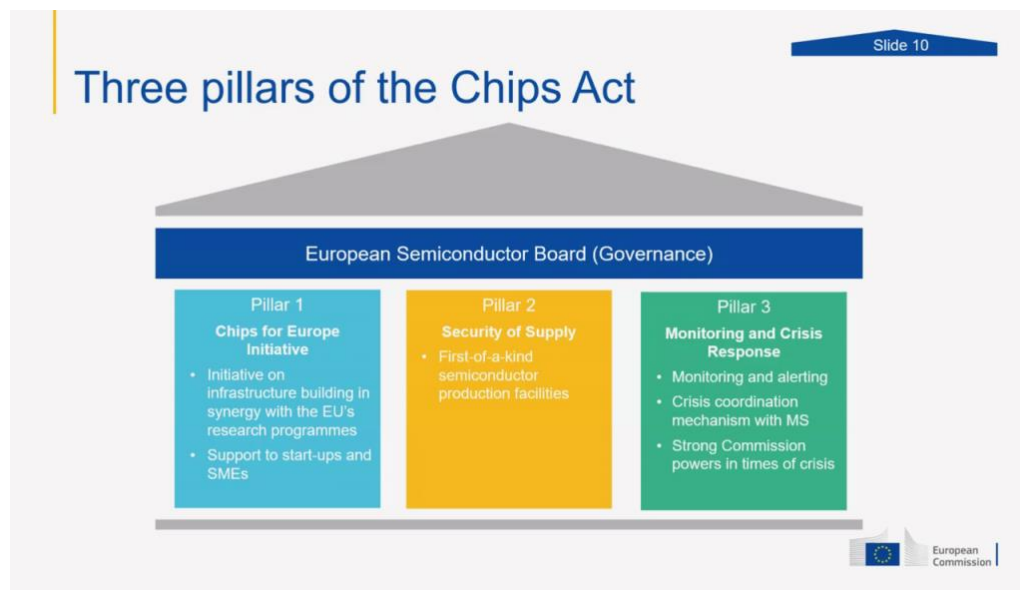
- Notably positive upbeat atmosphere, with P21 appearing reinvigorated
- Marked the start of developing the next Strategic Research Agenda (SRIA)
- Significant engagement and discussion with the EU Chips act.

Summary

The upbeat engaged atmosphere was perhaps surprising as traditionally engagement can be more subdued when the focus is on the longer term SRIA rather than detailing upcoming HEU funding calls. Returning in person helped, but the principle cause appears to be the newly emerging and increasingly significant opportunities around the EU chip act.

EU Chips act

With a budget of ~€4billion (partly carved out of Horizon Europe) this is a significant new investment direction for the EU. This is structured as a key digital technologies joint undertaking with member states, meaning member states are expected to make additional matched contributions significantly increasing the scale of the fund¹.



Source <https://www.silicon-alps.at/update-on-the-european-chips-act-three-pillars-explained/>

Organised in 3 pillars. Pillar 1 one covers R&D collaboration, pilot lines national competence centres, i.e. all the typical area where Horizon Europe funding is expected to play at <TRL 7 to bridge the gap from 'lab to fab'. We can expect a number of relevant R&I calls and competitions to emerge from this including cover into all areas of integrated photonics.

Pillar 2, is different on supporting manufacturing capability in Europe at scale, i.e. intervention at TRL9+. Critical has been debate on what constitutes first-of-a-kind. Until very recently this was

¹ The commitment of €470m from the national growth fund in the Netherlands to Photondelta, would, for example, be an example of matched contribution from a member state.

taken to mean support would only be available for fabs offering more advanced semi node of manufacture than already available in EU, ie. bringing 5nm node in Europe- hardly relevant to photonics except in drive circuitry. The latest indications, direct from the Commission, are this will include a broader interpretation where novelty can be in e.g. sustainability or function, which brings integrated photonics very much into play.

‘photonic chip foundries can be supported (mature node sizes) within the state aid regime addressed by the Chips Act if innovative’ e.g. adv functionality, new production methods

Pillar 3, takes its lead from the Covid vaccination, and gives to the Commission power to control production of semiconductors in Europe in a crisis. This is highly interventionist and may not be to the liking of everyone.

The commission is fostering collaboration with Intel to support pillar 2, but it is already being noted that Intel do not have a history or experience in running the open foundry models that would be preferred for semi capacity in EU.

For start-up and smaller companies there will be a dedicated EIC semiconductor chips fund under EIC of circa €300m Eu leveraging up to €900m in blended finance with no finance cap. For established companies and to support scale-up a separate InvestEU fund will support €125m to €1.25bn, again with significant external leverage.

Under questioning the Commission indicate they do not see any potential risk in creating over supply/ surplus capacity. Their forecast indicates semicon demand will continue to grow strongly (this is at odds with many industrial expert and external commentators e.g. [Semiconductor Hard or Soft Landing? CHIPS Act? - SemiWiki](#)). The Chips act will include measure to build skills capacity – although cited potential interventions such as enhanced scholarships don’t appear particularly novel.

A white paper from Photonics21 on the chips act and relevance for / opportunities for photonics is in development with notable inputs from the UK (Mike Wale is co-chairing). This is likely to form basis of joint calls between photonics semicon pillar 1.

In parallel EPIC is working on a position paper, thought to be more direct to pillar 2, calling for an EU PIC leadership group. Although some confusion remains about the focus of this, not least because EPIC claimed there was no current business case for PICs in any application (something refuted by many industrialists present).

Overall the EU chips act has been presented as offering significant potential for photonics, both in pillar 1 through support for next gen innovation, but now also through pillar 2 capacity building.

[Multi-annual strategic research and Innovation agenda \(SRIA\)](#)

The objective of the SRIA is to layout the long term direction for photonics innovation in Europe and thus provide the basis on which to set future funding priorities from Photonics21 and its various working groups.

This SRIA rewrite is likely to be more significant than any previously, with multiple factors in play. Huge unforeseen macroeconomic events with Covid and conflict in Ukraine. Major focus on supply chain. Restructuring of P21 working groups with additions in defence, security, space; energy, mobility & climate and agri-food. Much stronger emphasis on fostering collaboration with other PPP and EU missions. Net zero and sustainability now an all pervasive theme. Plus reduced EU budgets.

Each of the working groups started the processes by looking at how these significant changes impact future priorities in their area and how past SRIA has changed. Initial feedback showed universal identification with challenges of sustainability and supply chain resilience across all working groups echoing similar themes evident throughout the whole meeting.

The new the SRIA is planned for release in Spring 2023, following additional working group meetings in Autumn 2022 to identify more specific research and innovation areas for intervention and opportunities for collaboration with other EU programmes /PPPs/ missions. The new SRIA will be the basis for recommending priorities for the 2025-2027 HEU work programme in late 2023 ready for calls opening in 2024.

Given the scale of external change, the next SRIA should be an international significant summary of the future trends in the focus of photonics innovation with impact far beyond Europe.

Recent HEU calls and competitions

2021/22 Horizon Europe photonics calls have been as popular as ever, although with significant variation in popularity and success rates

- Adv photonics integrated circuits saw 43 proposals and 19% success rate
- Adv optical comms components 14 applications 35% success rate
- Laser based technology for green manufacturing 38 proposal 11% success rate
- Adv multi-sensing systems 58 proposals, 19% success rate.

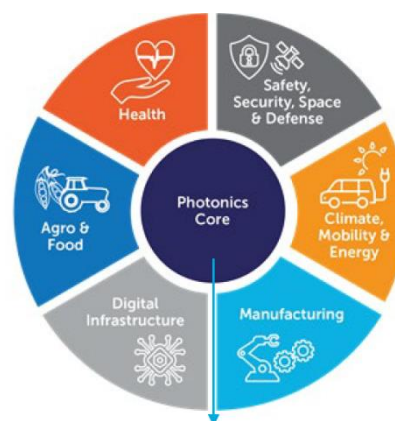
The popularity is significant as it can be a basis for justifying additional calls in an area in the future and gives an indication as to the focus of wider innovation activity/ interest.

The success rate in optical comms components is anonymously high, especially for EU funding. Whilst positive for applicants, this can also be seen as a relative weakness in demand.

Future HEU calls 2023/24

Following inputs from Photonics21 following calls are anticipated in 2023/24. The combination of topics from different working group very much in evidence

Area	Topics title	Year	Indicative budget €m/call
Photonics integration	Pervasive photonics- multi-tech integration for digital infrastructure, sensors and internet of things	2023	18
Imaging and sensing	Advanced Imaging and sensing technologies for agriculture and food monitoring, medical, security, manufacturing, automotive et al	2024	20
Light sources	Versatile light sources and systems as tools for manufacturing, medical and defence	2023	18
Photonics for	Smart photonics for joint communication and sensing	2024	18



Photonics21 working groups

WG 1: Work Group 1 Digital Infrastructure.

WG 2: Work Group 2 Manufacturing.

WG 3: Work Group 3 Health.

WG 4: Work Group 4 Climate, Mobility & Energy.

WG 5: Work Group 5 Safety, Security, Space & Defense.

WG 6: Work Group 6 Agriculture & Food.

WG 7: Work Group 7 Core Photonics.

communications	and access everywhere		
Innovation factory	Innovation factory (multi-tech supply chain)	2024	15
Photonics strategies and skills development (CSA)		2023	4
Photonics for manufacturing (jt with Made in EU)	Innovative, flexible and individualised manufacturing	2023	% of 48
Quantum PICS (jt with Qt flagship)		2024	12

AOB

Herman Hauser gave an excellent key note with robust reflection on Brexit (a very bad idea, incompatible with sovereign capability in adv tech) and interesting commentary that Europe and particularly Horizon Europe provides an excellent framework for collaboration based on shared values . He neatly forecast expansion to include New Zealand among others – negotiations for which were promptly announced the following day.

To quote "if you want to compute use electrons, if you want to communication use photons"

UK participation in Horizon Europe

Although not formally discussed at the annual meeting the current rumours are the UK is increasingly unlikely to associate to Horizon Europe and instead invoke 'plan B'. UK Science Minister George Freeman, MP was in Brussels on the 2 June setting an end of summer deadline for the UK's association to Horizon Europe to be resolved.

<https://sciencebusiness.net/news/uk-will-pull-bid-take-part-horizon-europe-if-stalemate-persists-after-summer>

<https://sciencebusiness.net/news/uk-plans-bigger-better-rival-european-research-council-time-runs-out-horizon-europe>

The precise shape of plan B has not been revealed but is likely to include a provision to support UK organisations joining HEU consortia as independently funded 3rd parties. Exactly which area 3rd party participation would be funded by the UK, if plan B is invoked, remains to be seen.