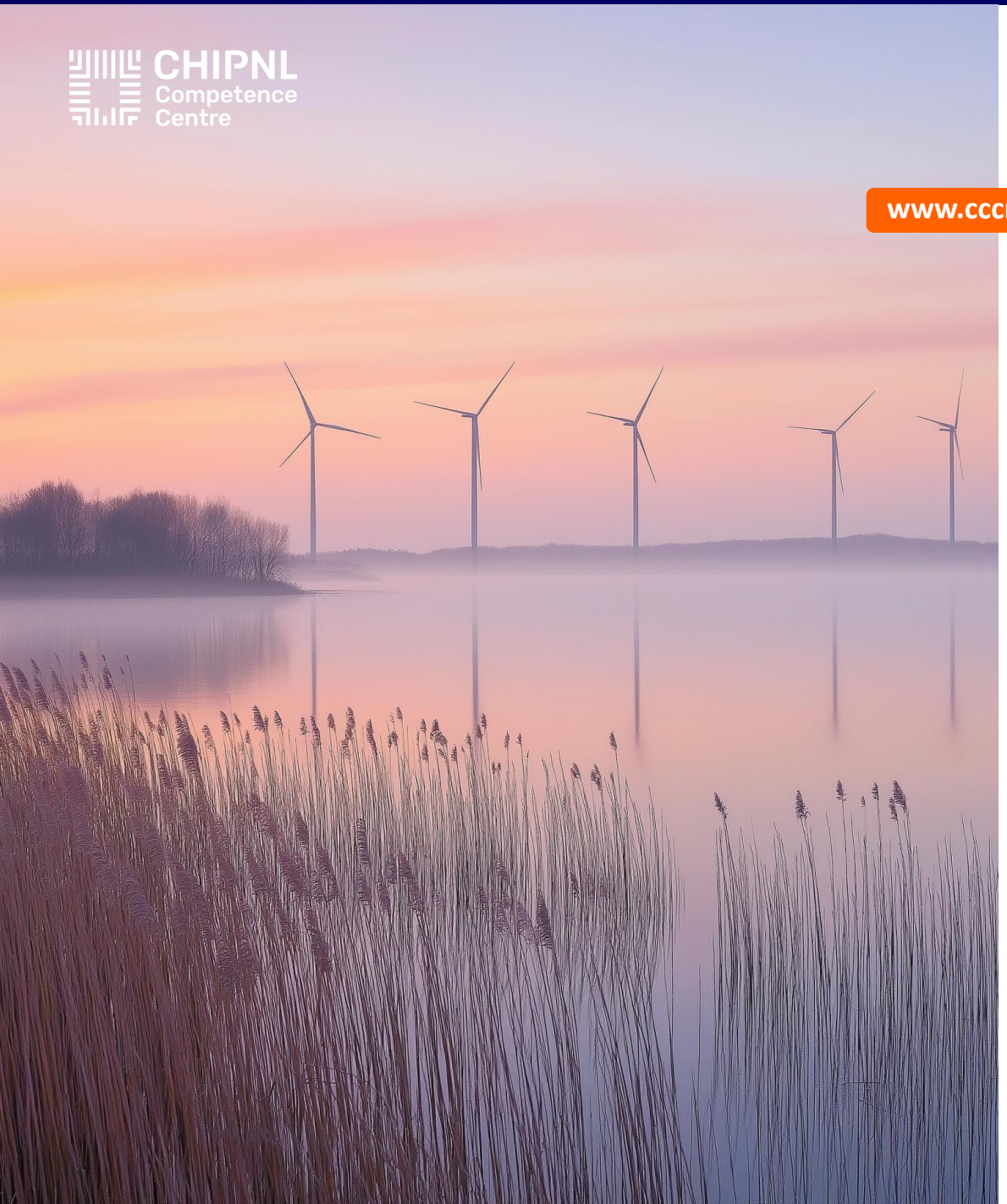
CHIPNL Competence Centre

Chip Packaging in Europe

Mark Luke Farrugia



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www.cccnl.nl

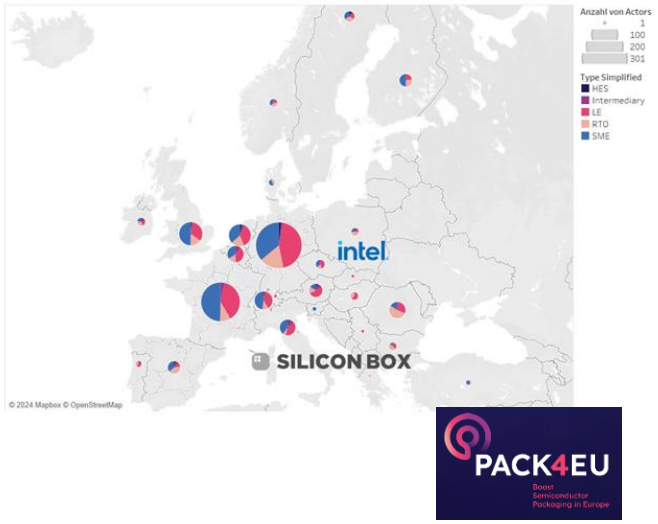
Together, we strengthen the position of the Netherlands and Europe in the global semiconductor market

Services offered by ChipNL Competence Centre:

- **Supply Chain & Technology**
  - Support for product development, testing and production
- **Business Growth & Funding**
  - Guidance on investment opportunities and growth-related funding programmes
- **Talent & Skills**
  - Access to specialised training, education and matchmaking with industry
- **Promotion & Internationalisation**
  - Boosting visibility and expansion within an international network

CHIPNL Competence Centre

Chip Packaging in Europe



Revitalizing Chip Packaging in Europe is strategically vital for our continent

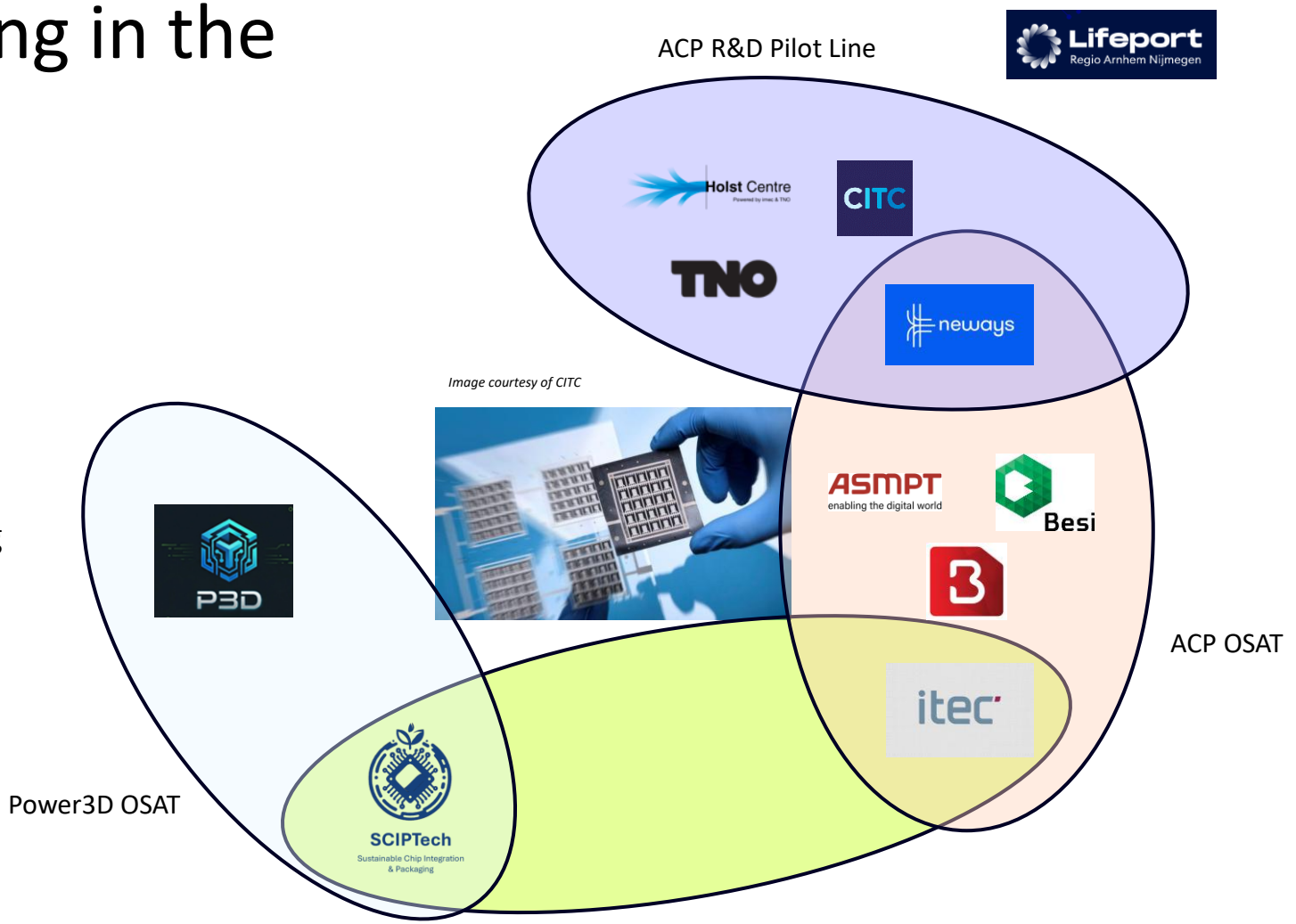
We shouldn't limit ourselves to the niches!

- We need to work on technological breakthroughs to enable competitive and sustainable large volume semiconductor chip packaging – including the "old" legacy products
- By working on new packaging technologies, based on high speed additive techniques, packaging can be made economically attractive in Europe
- And we need to stay ahead of the curve for the "new" chip packaging needs, among others PIC Packaging and 3D Packaging

Semiconductor Packaging in the Netherlands

A number of initiatives are underway in the Netherlands

- All aim to develop packaging technologies that are:
- Economically viable in the EU
- Suitable for low and high volume manufacturing
- Agile
- Environmentally friendly



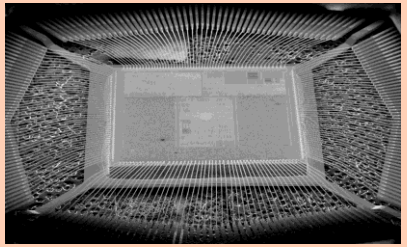
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Chip Packaging in the Netherlands

Classical packaging in SE Asia

Producing in EU comes at a
cost increase of 64%!





Wire bonded QFP

Additive solution, produced in EU with
44% less cost!





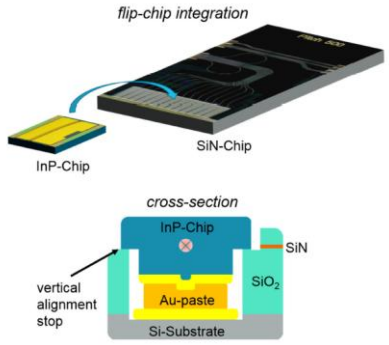
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PIC Packaging in the Netherlands

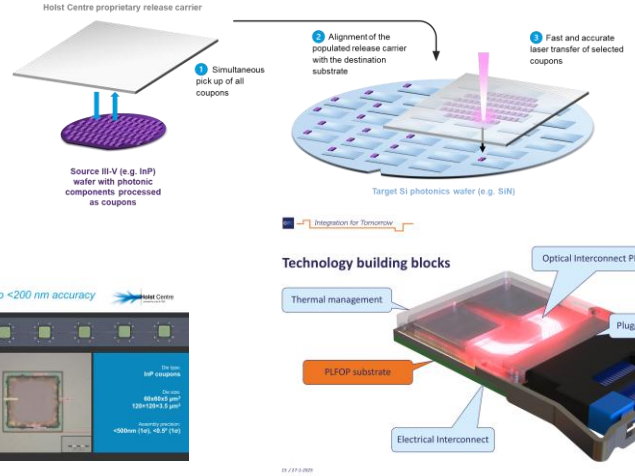
State-of-the-Art
- Single Devices
- Active Alignment



Near Future
- Single Devices
- Passive Alignment



Longer Term
- Panel Based Packaging
- Passive Alignment
- Detachable Optical Fibres
- Ultra High speed Mass Transfer



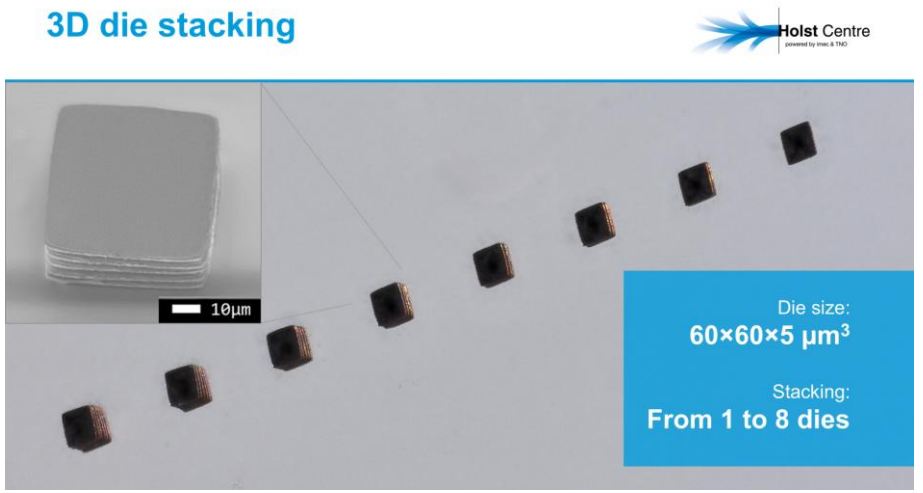
“Semiconductorization” of PIC Packaging

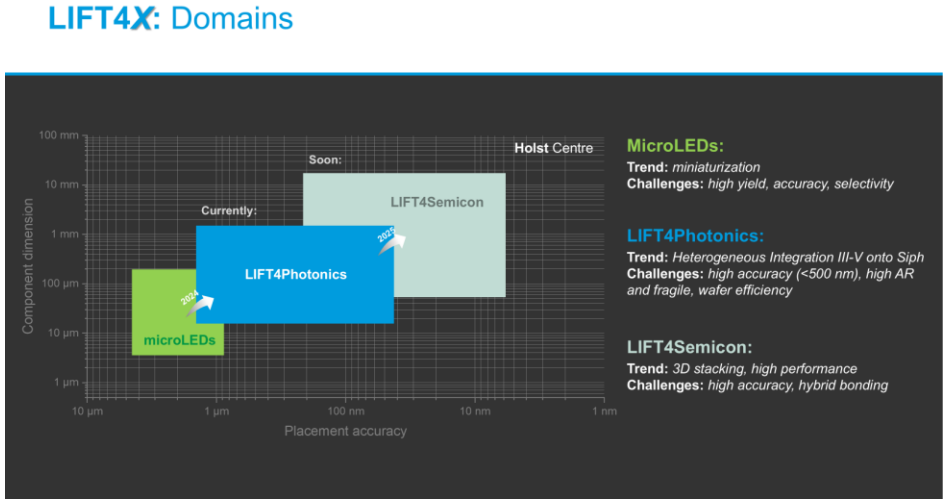
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Semiconductor 3D Packaging in the Netherlands

A number of initiatives are underway in the Netherlands

- All aim at using uniquely developed ultra high speed mass transfer techniques
- Ready for future high volumes with low TCOO and economic viability in Europe!







Co-funded by the European Union
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High Tech NL Share innovation. Shape tomorrow.
Innovation Quarter
imec
JePPIX Platform for Photonic Integration
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TNO innovation for life