

# PML2

## Projection Mask-Less Lithography

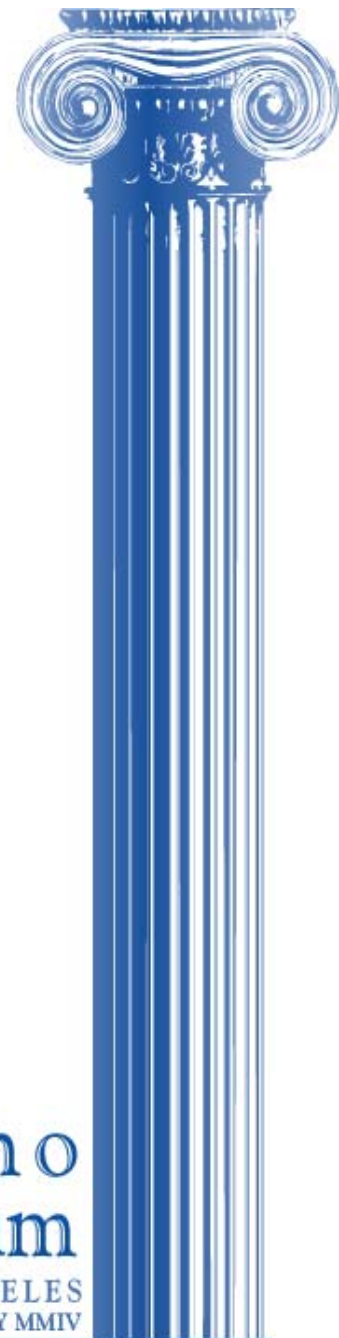
**Christoph Brandstätter, IMS Nanofabrication GmbH**

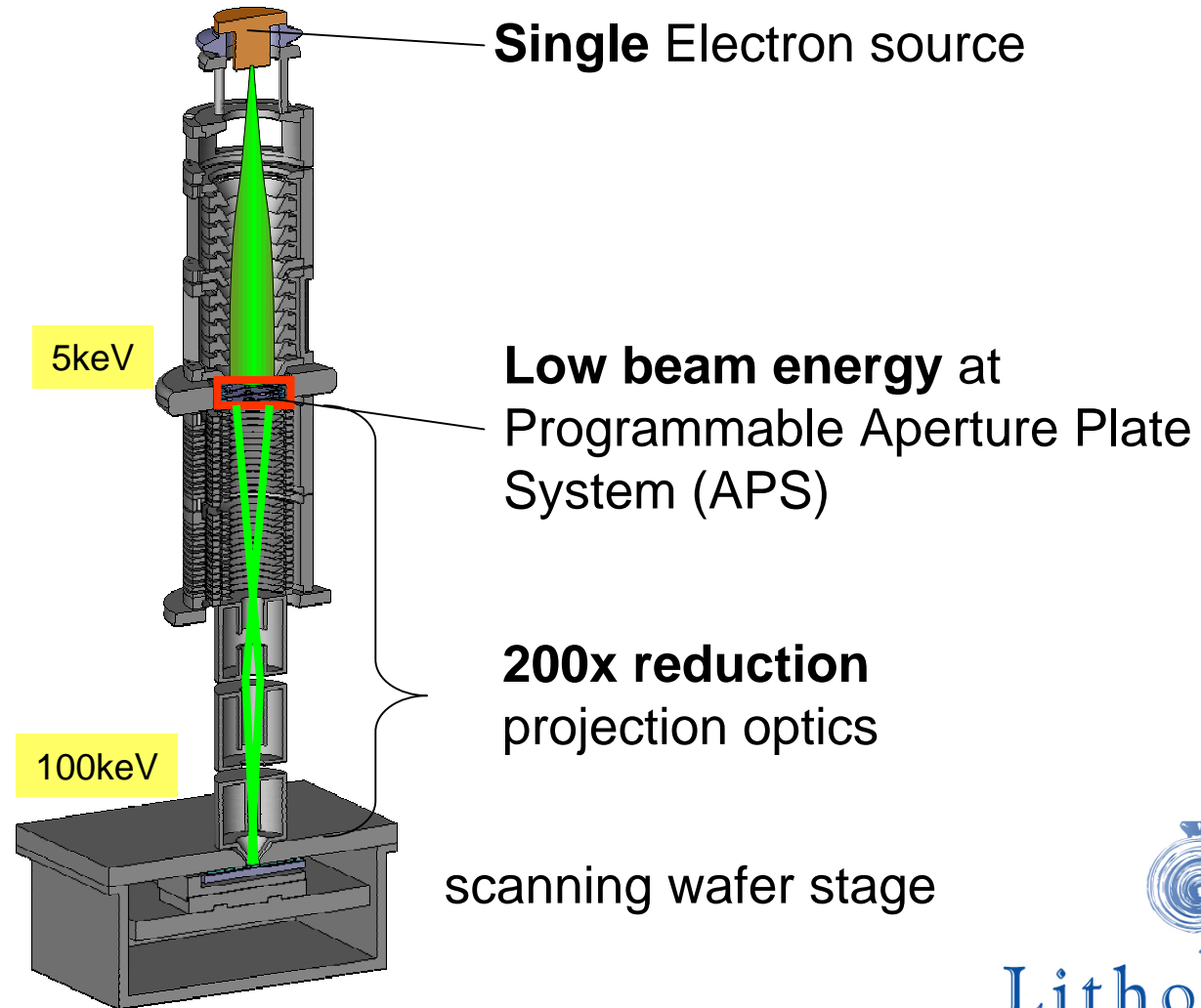
**Hans-Joachim Doering, Leica Microsystems Lithography GmbH**

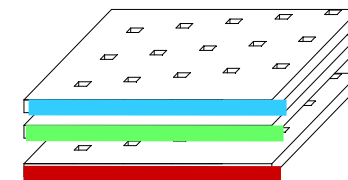
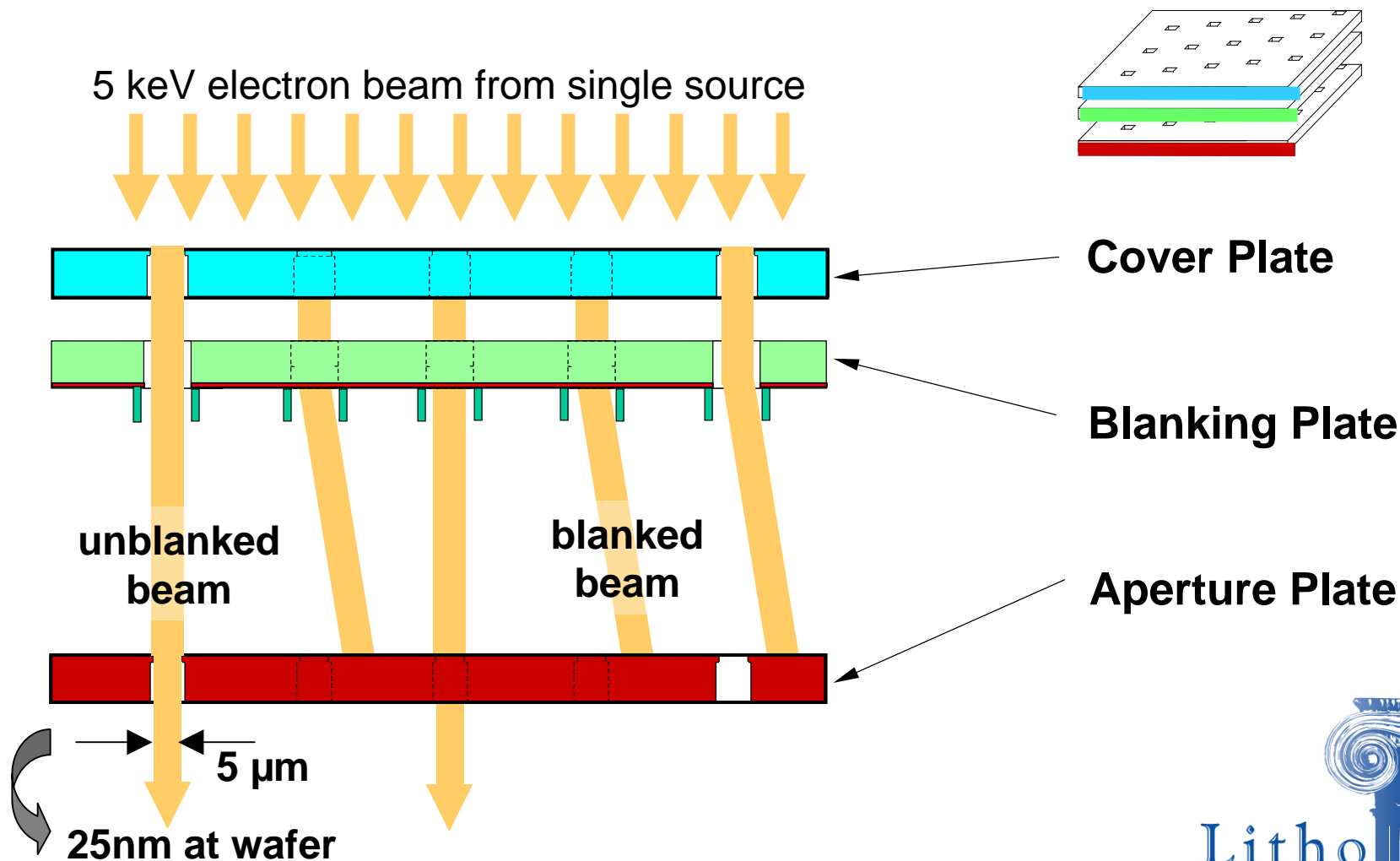
**Klaus Reimer, Fraunhofer Institute for Silicon Technology**

Litho  
Forum  
LOS ANGELES  
27-29 JANUARY MMIV

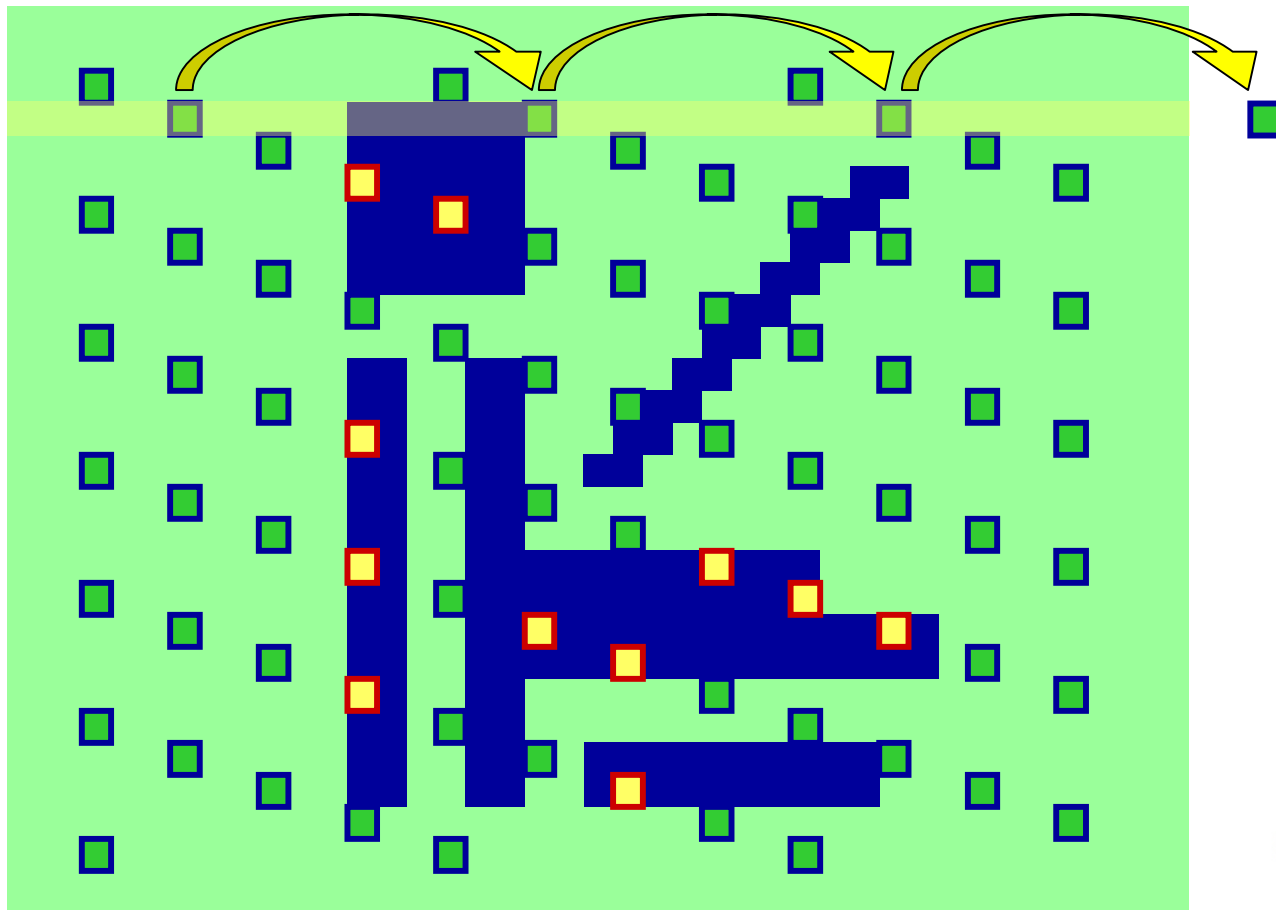
presented by  
International SEMATECH







high redundancy



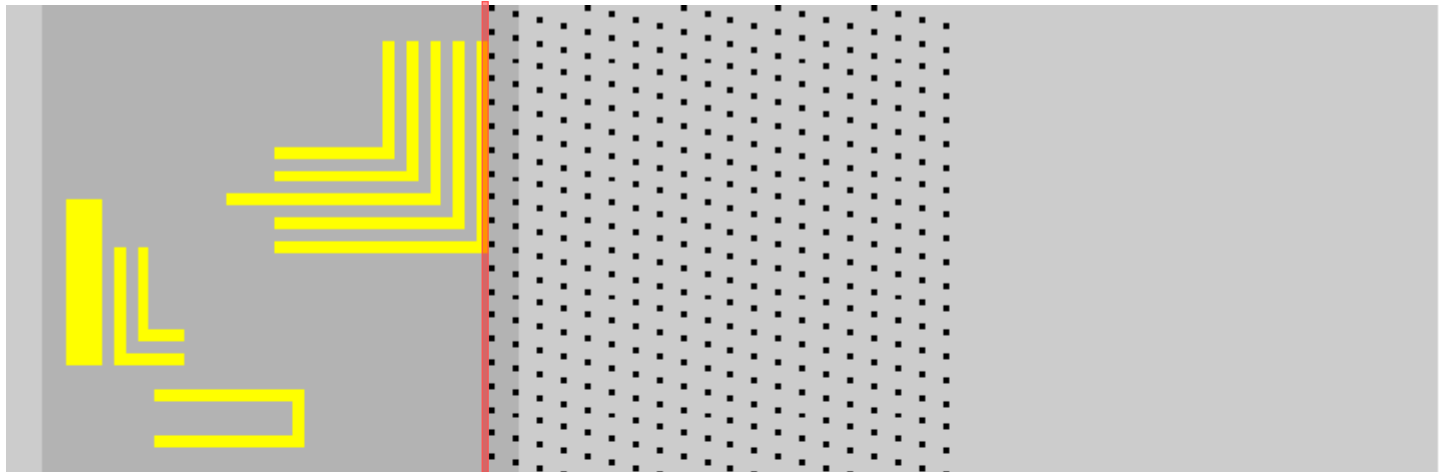
beam

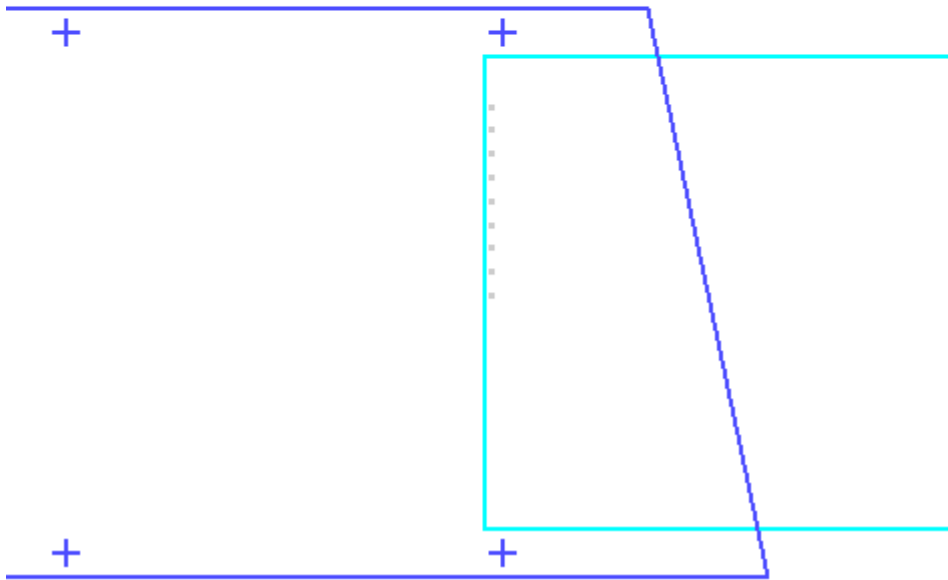
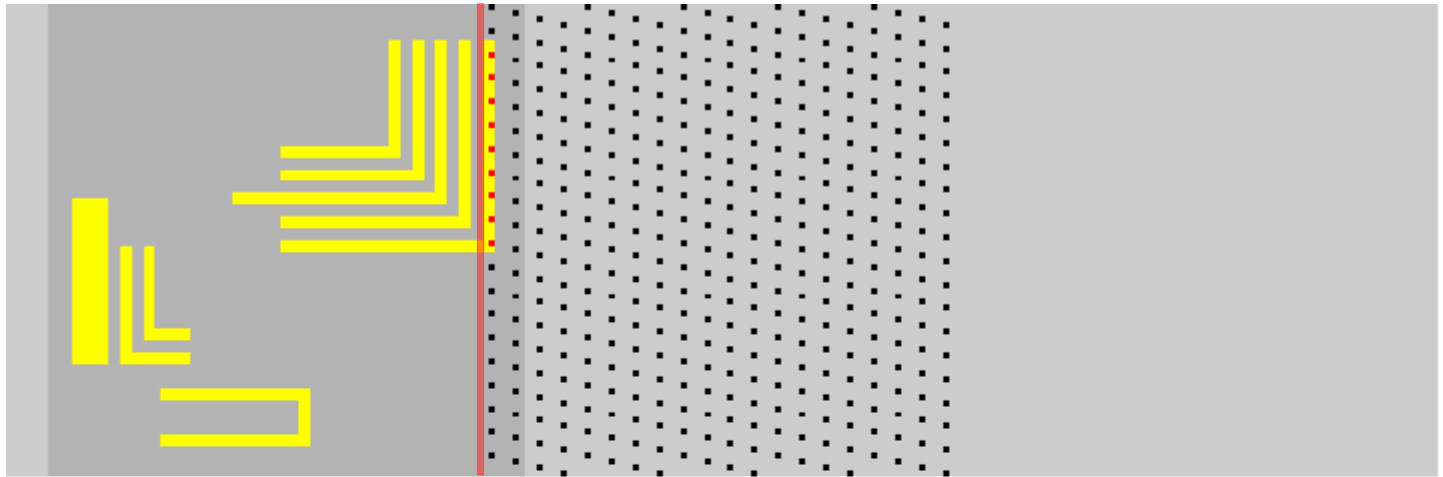
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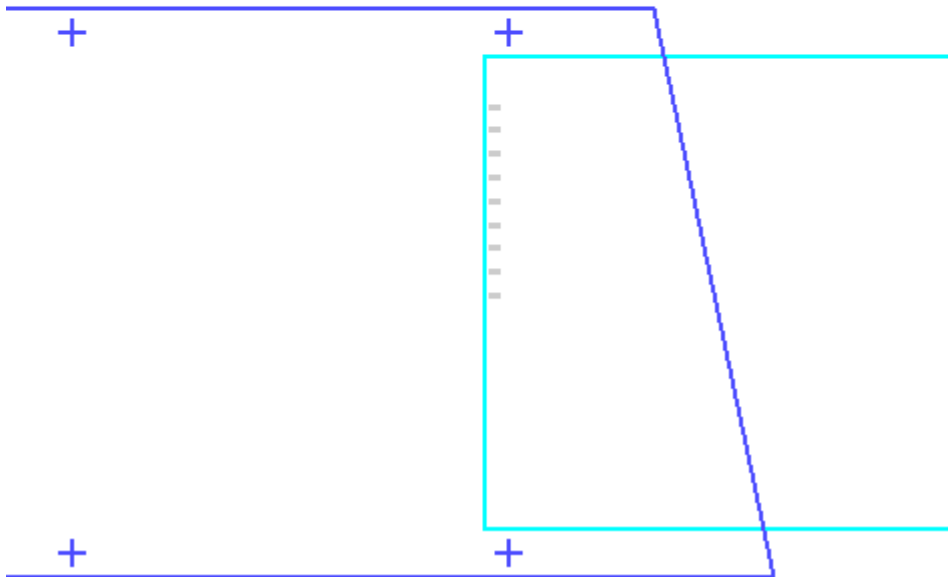
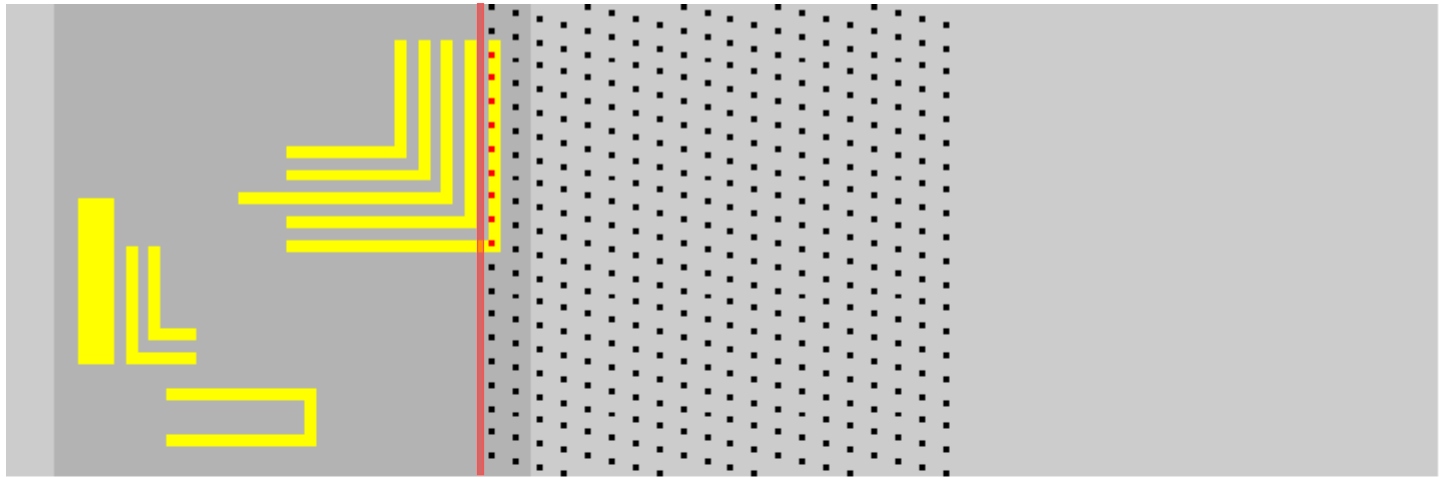
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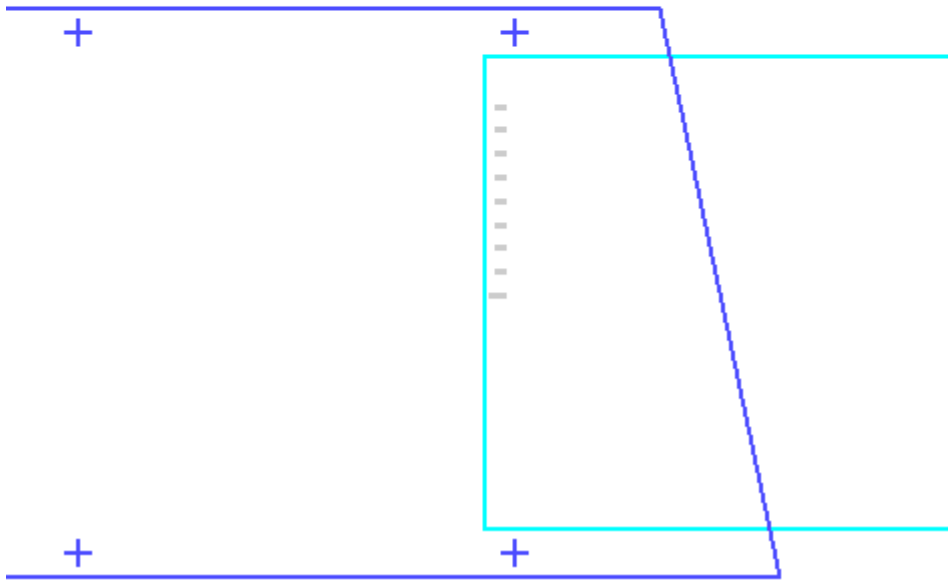
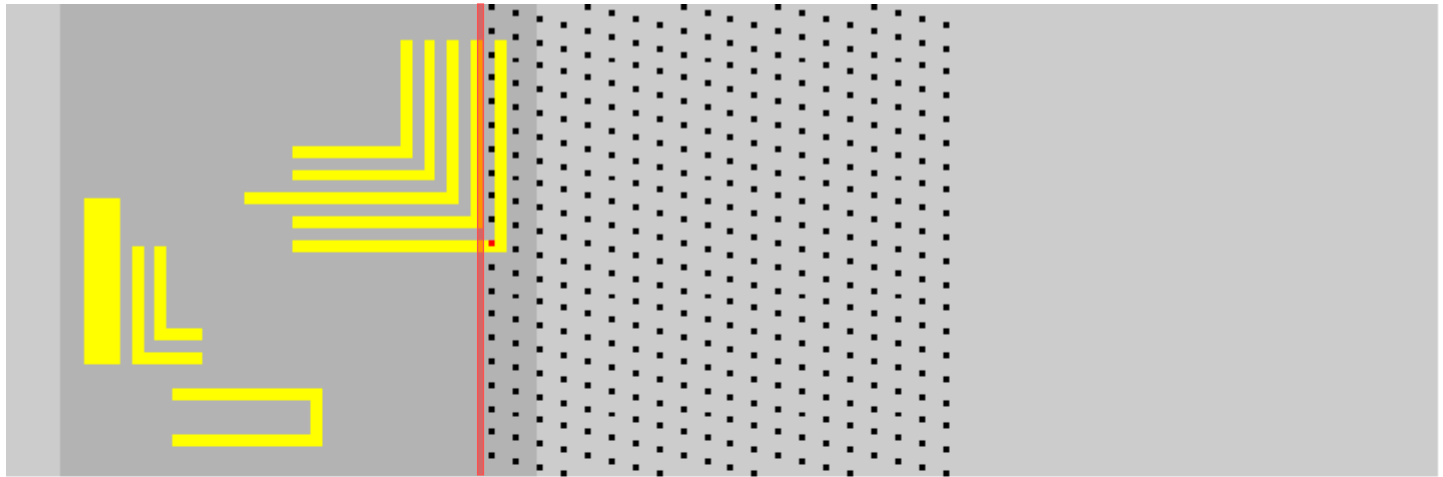
APS level

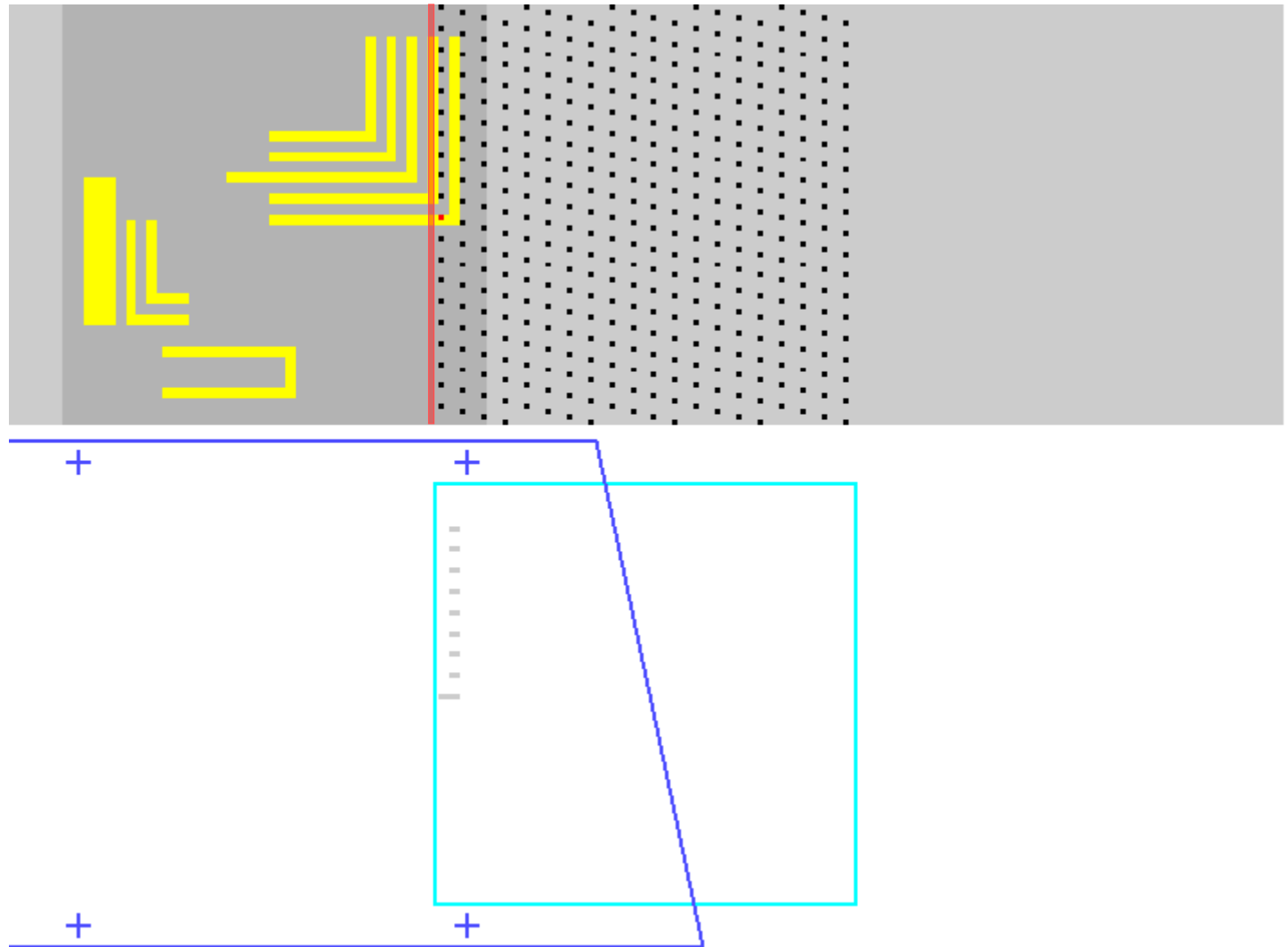
- Pixel data
- Blanking Plate

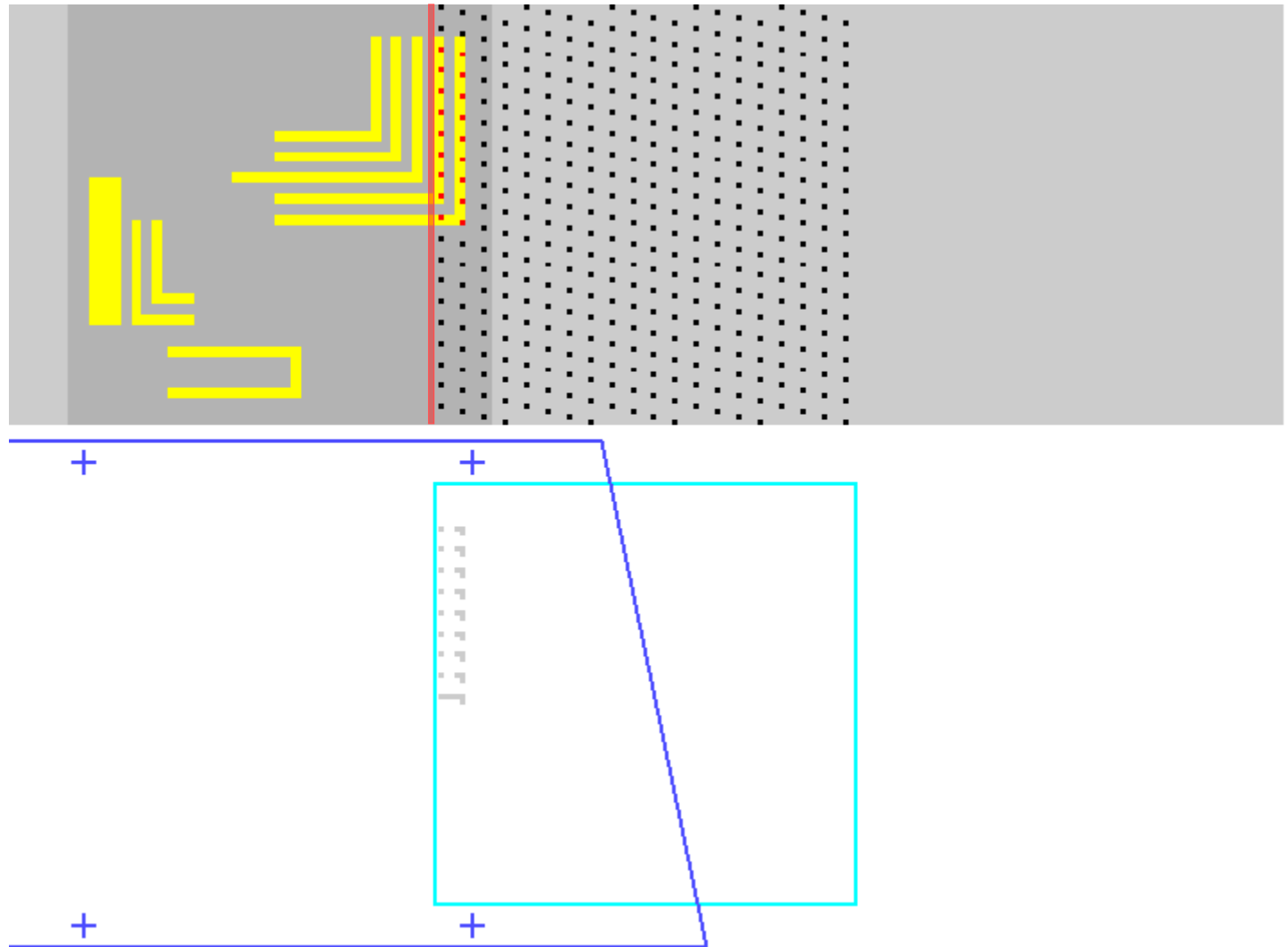


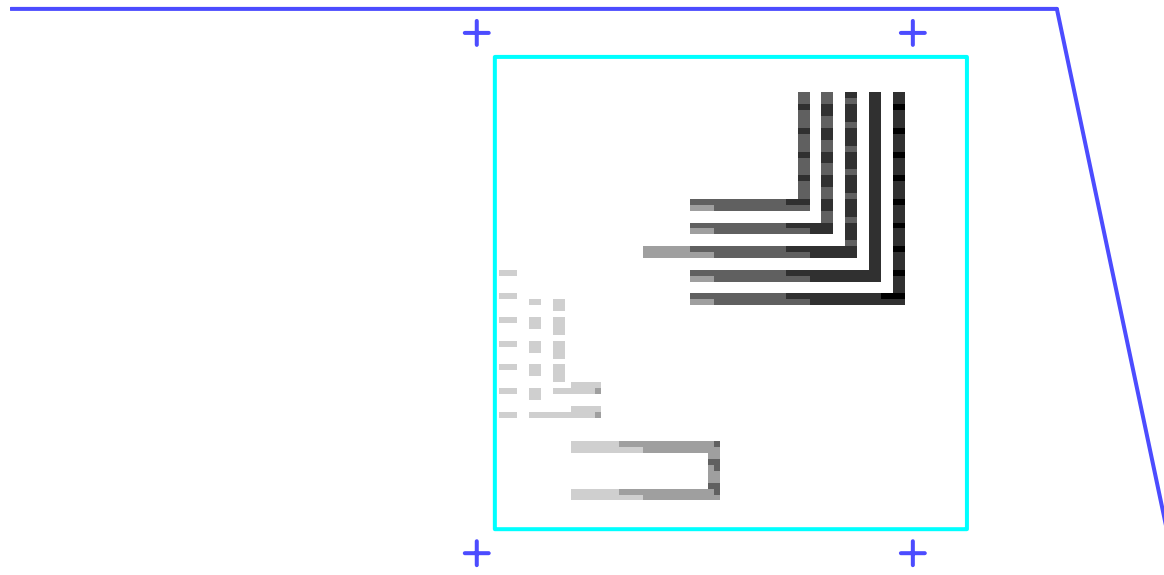
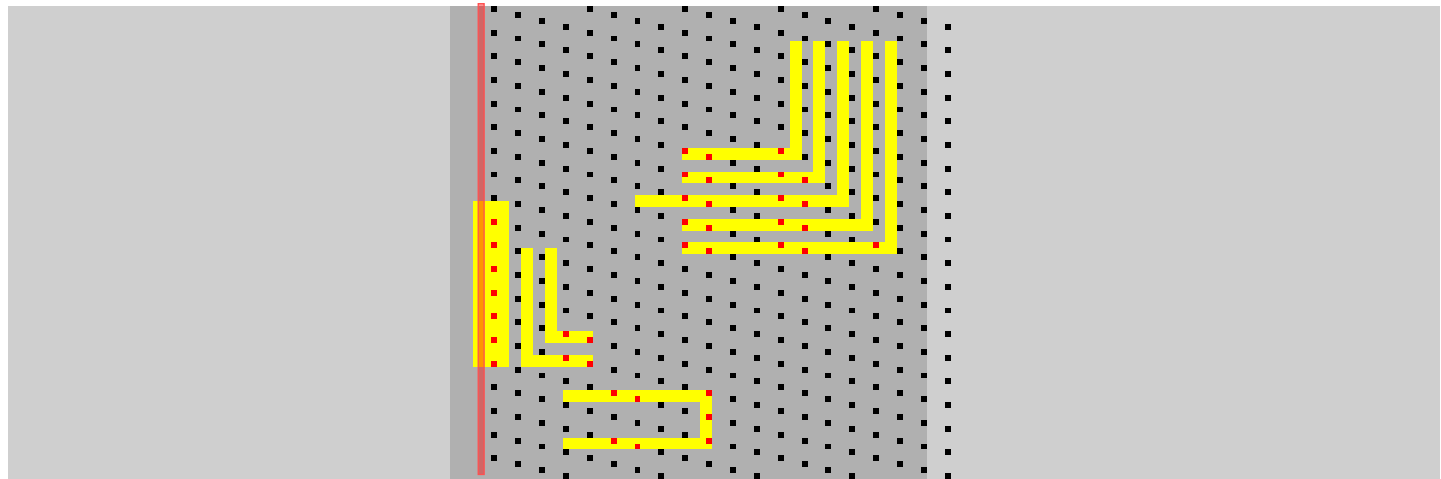


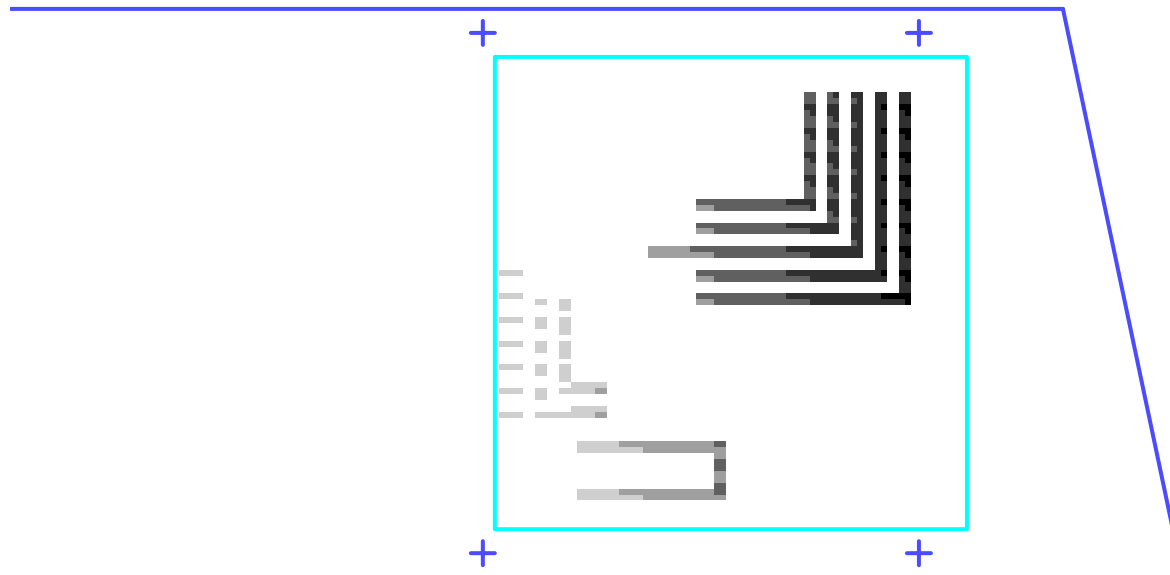
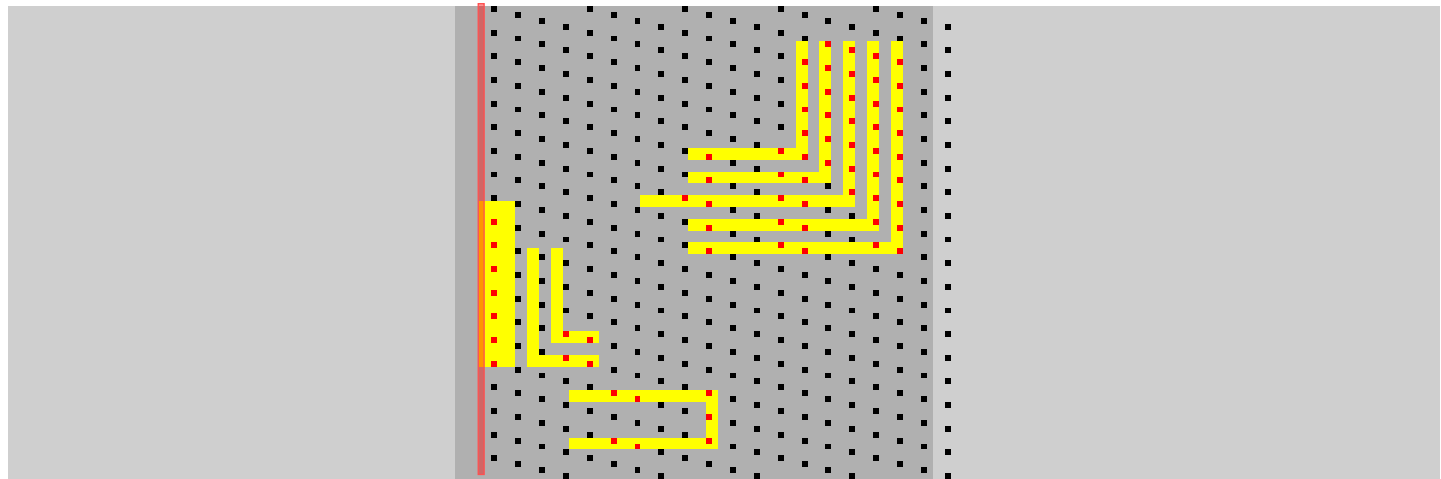


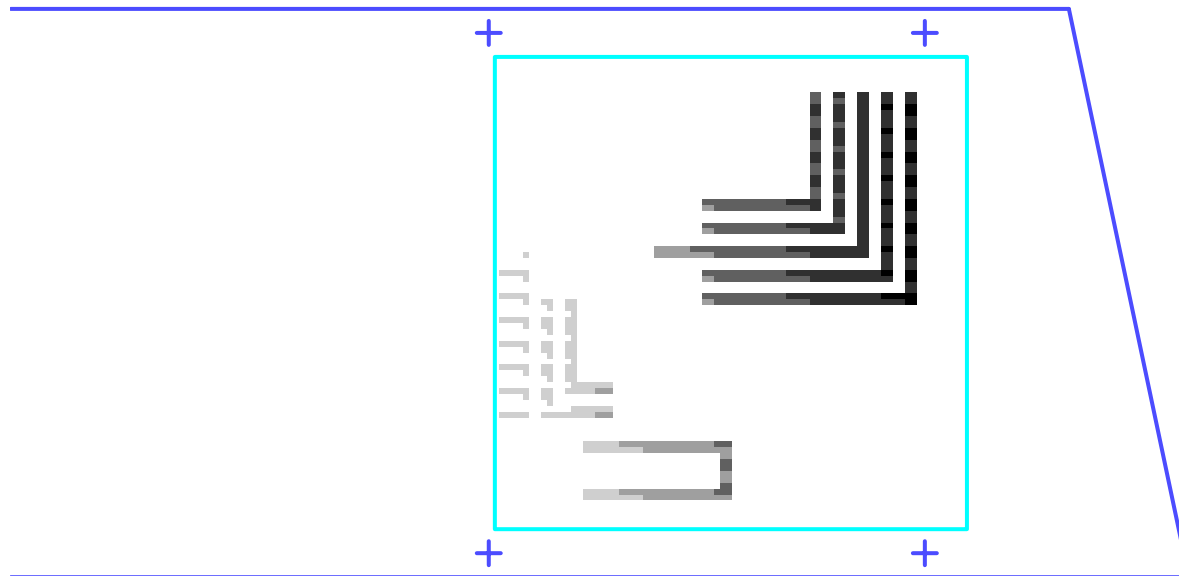
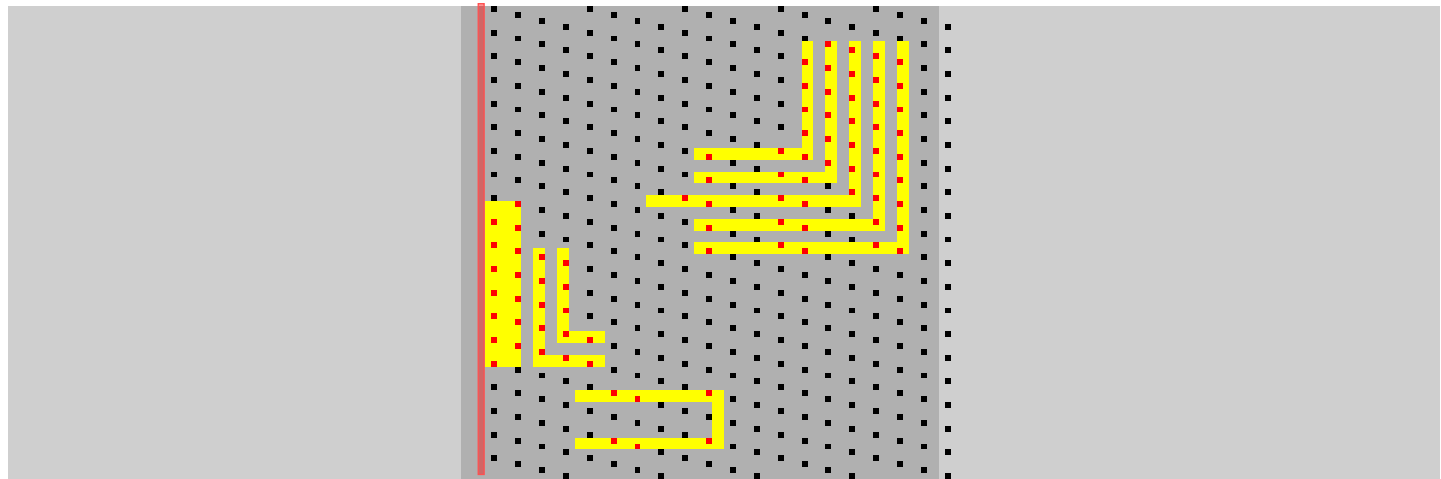




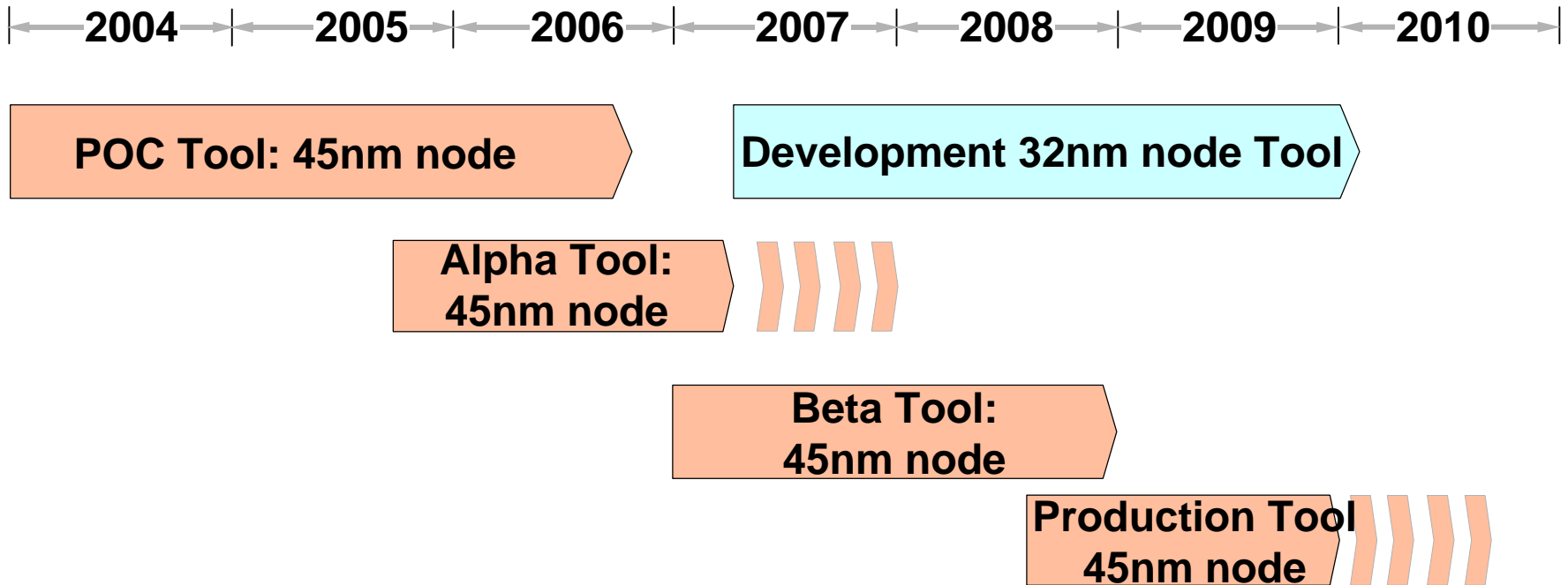








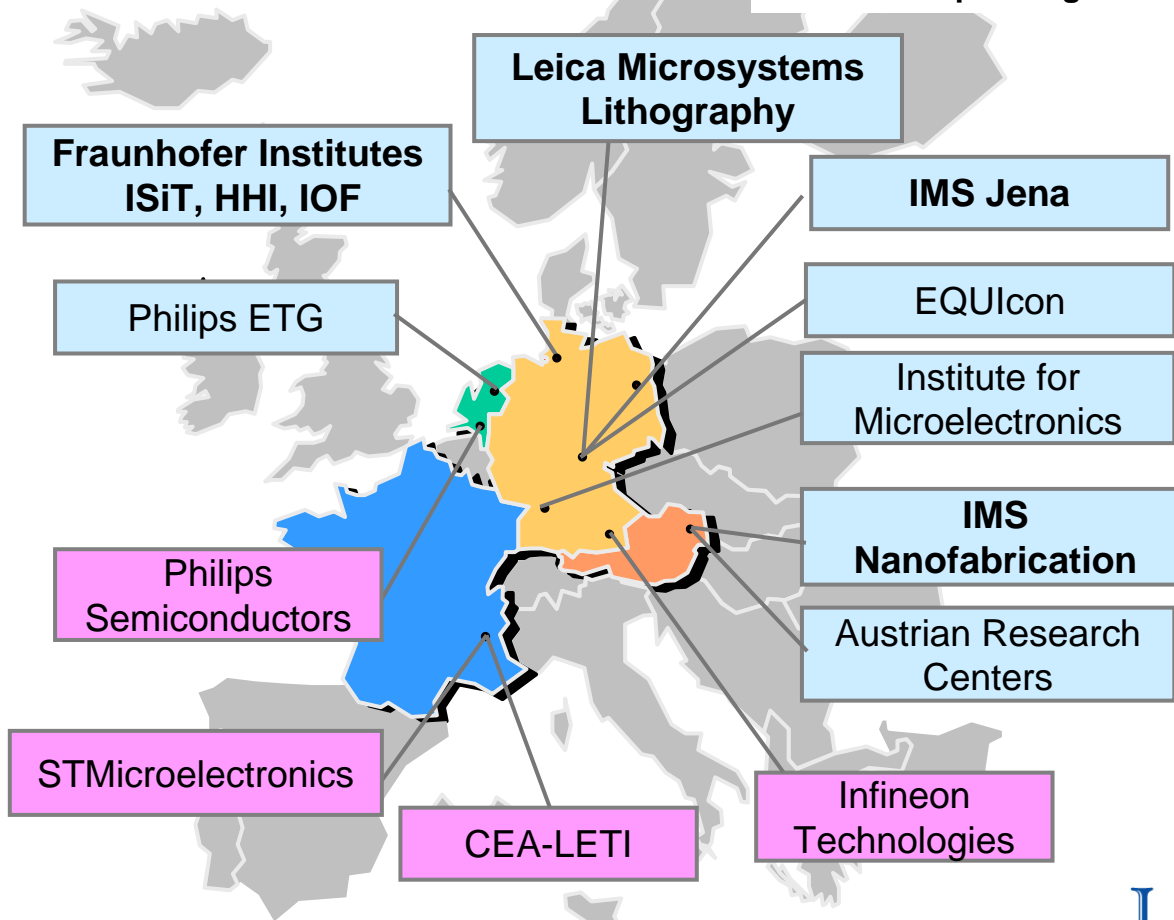
# PML2 Roadmap



## Definition:

**45nm node = 45nm half pitch  
32nm single line**

# PML2 Consortium



# PML2 Strengths

- High process yield due to redundant exposure process
- Compatible with single layer e-beam resist process (proven in 65nm mix & match device fabrication)
- Large working distance  $\Rightarrow$  low contamination
- Low Coulomb interaction due to large field 200x reduction optics
- Multi generational approach based on established technology
- Highly experienced consortium
  - Leading edge tool manufacturer
  - E-beam large field optics
  - Advanced MEMS technology
  - High speed optical data transfer
  - End user experience

# PML2 Infrastructure

- Proven resist technology
- Mix & match experience
- Optical data transmission within state-of-the-art
- MEMS production capability for Aperture Plate System
- Established data preparation techniques
- Wafer metrology established



**We invite you to visit our poster for more detailed discussions.**

