



NXE pellicle progress update

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EUV Mask Pellicle TWG
Maastricht, The Netherlands
October 4, 2015

Contents

- Introduction: a look back
- NXE pellicle roadmap
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EUV pellicle development overview

As shown: Mask TWG 22 Feb 2015

ASML

PUBLIC
Slide 3
7-Oct-15

Film
scaling

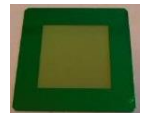
Oct'12

11mmx11mm



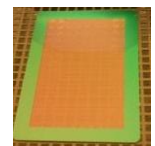
May'13

50mmx50mm



Nov'13

Half size proto



Feb'14

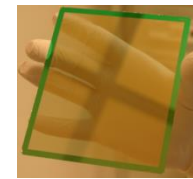
Full size proto
(attached to wafer)



Mar'14

Jun'14

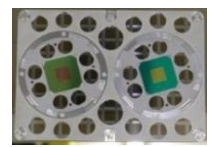
Full size proto



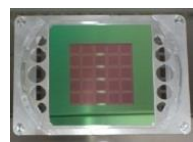
Dec'14

Machine
testing

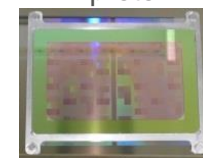
11mm x 11mm



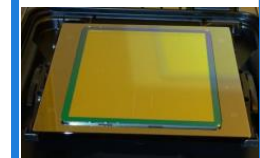
50mm x 50mm



Half size
proto

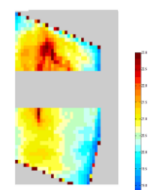


Full size proto

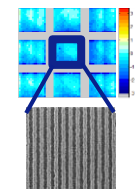


Imaging
testing

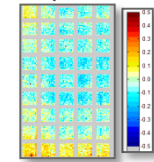
11mm x 11mm



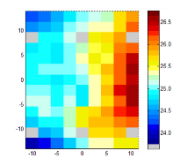
50mm x 50mm



Half size
proto

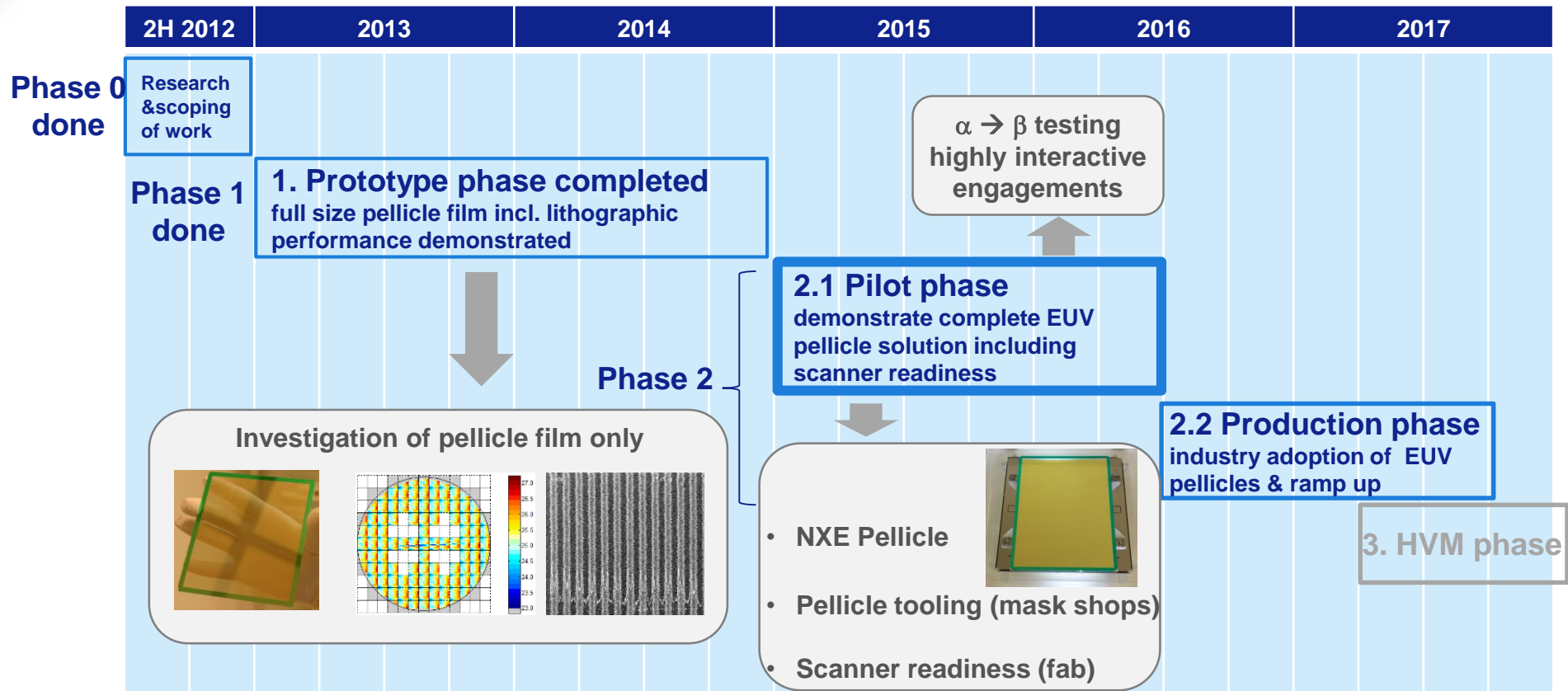


Full size proto



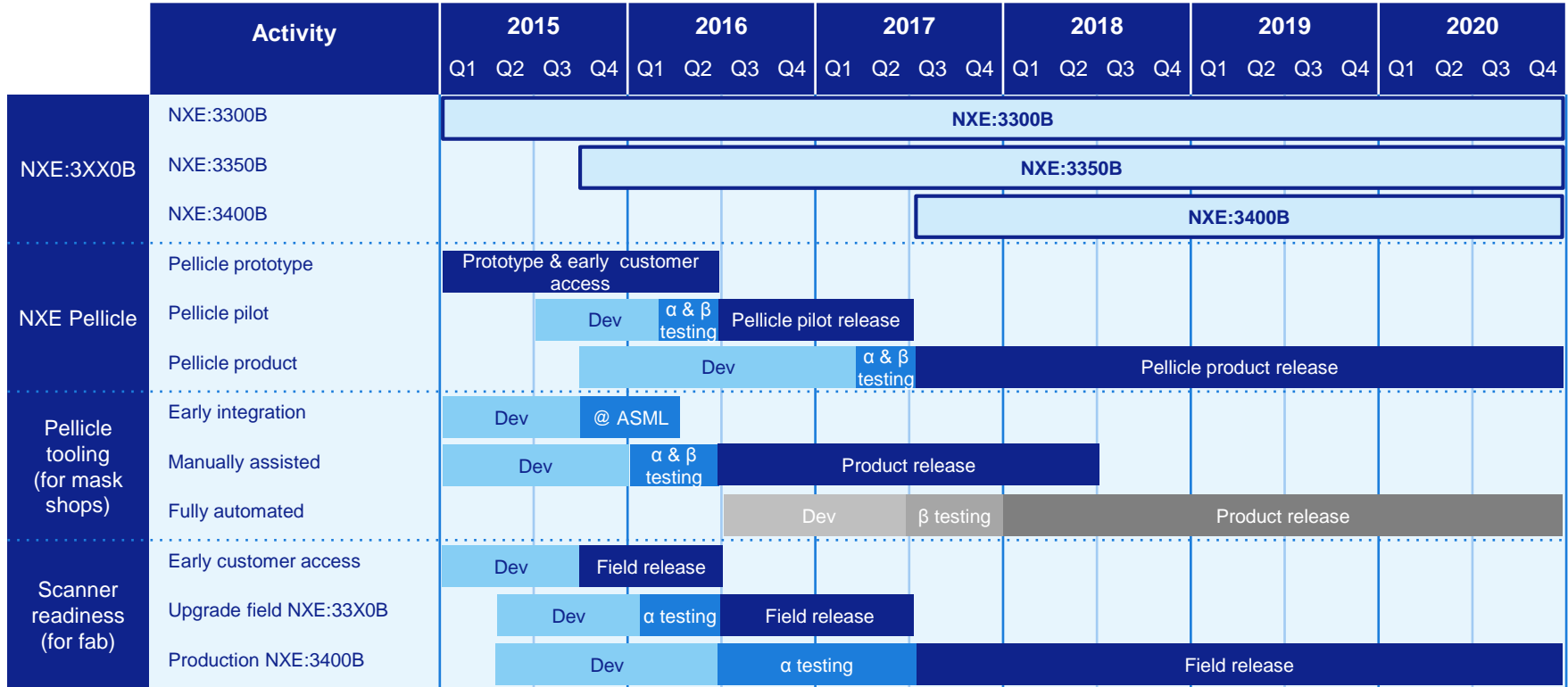
**Next EUV pellicle update from ASML, at Photomask Japan 2015,
see "EUV pellicle development update" Carmen Zoldesi, paper reference 0024**

ASML committed to demonstrate complete pellicle solution for EUV and support the industry to implement



NXE pellicle road map

Phase approach of pellicles, tooling and scanner readiness



NXE pellicle frame components in manufacturing phase

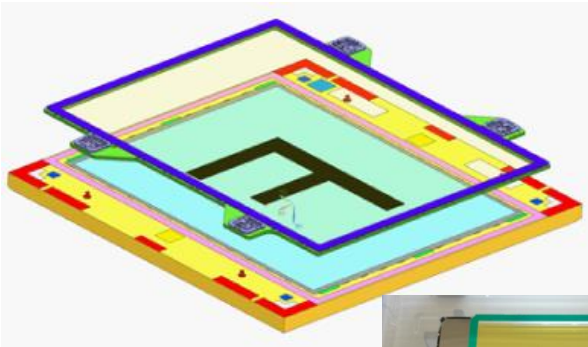
All designs frozen, production of parts ongoing, first hardware coming in

February '15:

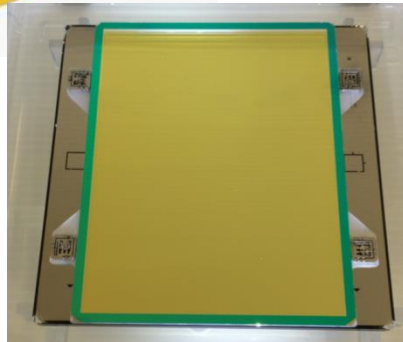
- Initial design & first concept introduced
- First demonstrator built

September '15:

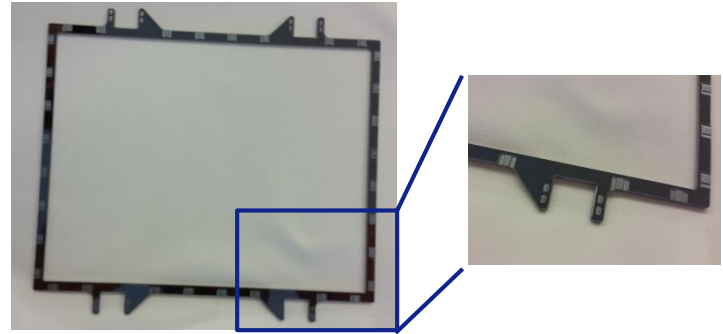
- Design optimized & finalized
- Pellicle frame parts being manufactured



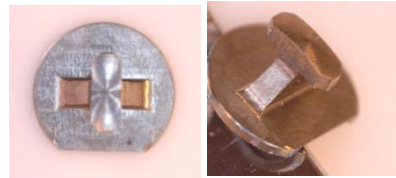
NXE pellicle concept



NXE pellicle demonstration model



Pellicle frame



Studs (interface to reticle)



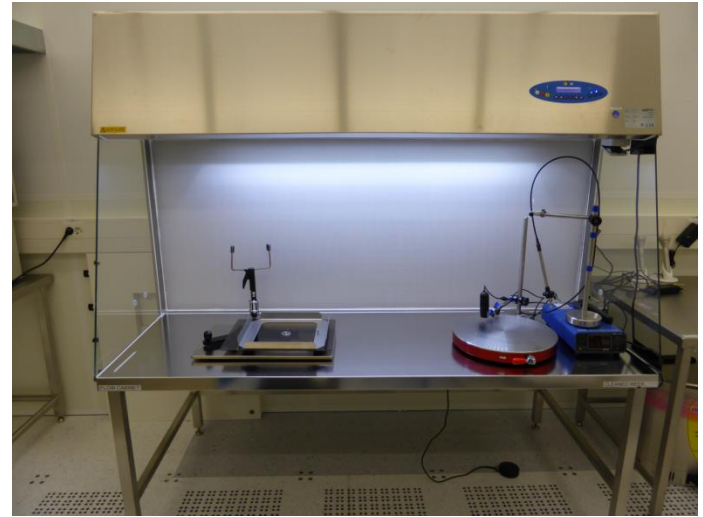
Fixtures

NXE Pellicles are being integrated at ASML

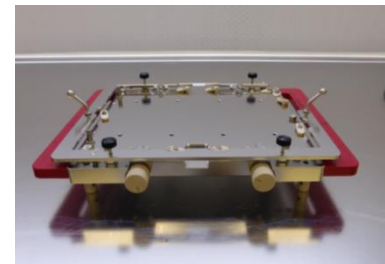
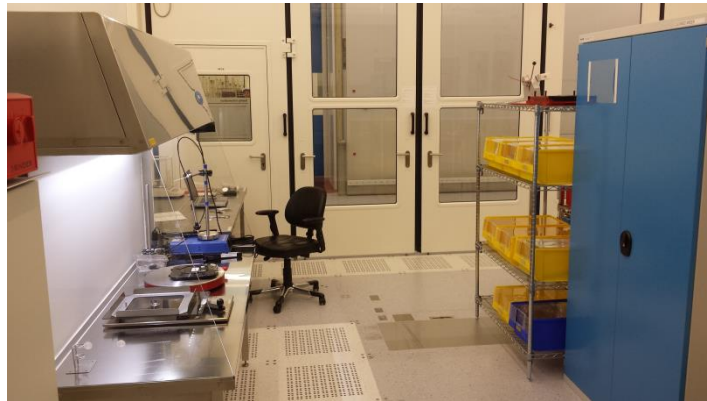
Pellicle work center to support early integration phase available



Pellicle work center setup in the ASML cleanroom



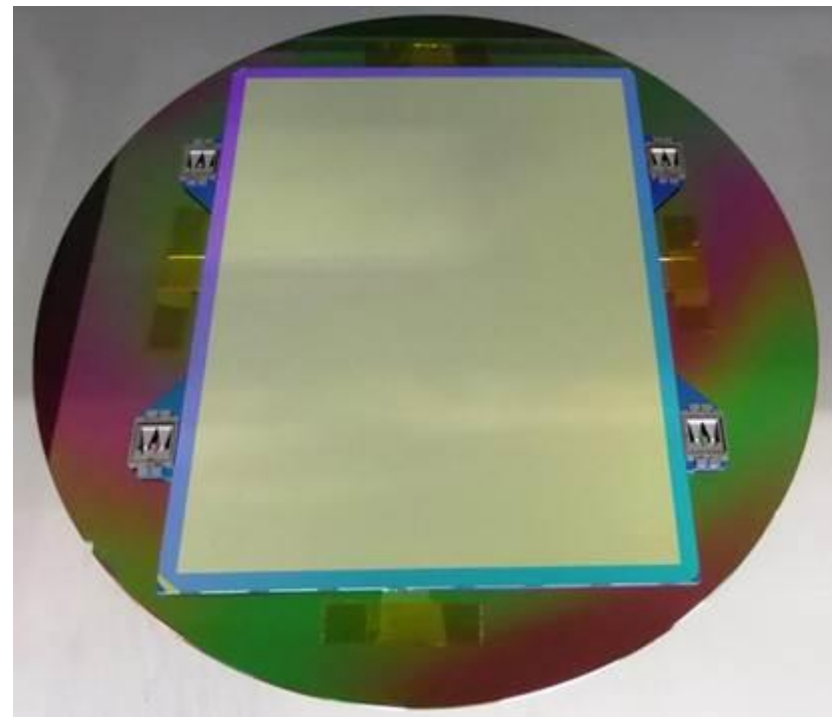
Working area for pellicle integration



Early integration tool

1st NXE pellicle assembled at ASML Pellicle work center

Pellicle assembly performed by trained operators

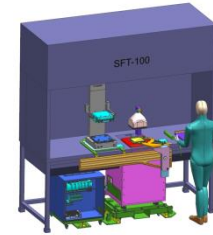


Mask shop tools to support NXE pellicle under development **ASML**

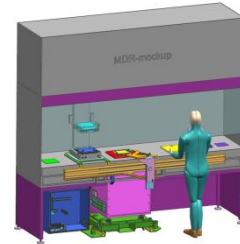
Designs frozen, manufacturing started; ready for α testing by end of 2015

Public
Slide 9

1. **SFT-100 : Stud Fixation Tool** → to glue studs onto reticles



2. **MDR-100: Mount Demount Remount tool** → (re)mount and demount NXE pellicle to/from reticles



3. **SRT-100: Stud Removal Tool** → to remove studs from reticles

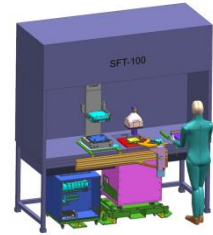


Mask shop tools to support NXE pellicle under development **ASML**

Designs frozen, manufacturing started; ready for α testing by end of 2015

Public
Slide 10

1. **SFT-100 : Stud Fixation Tool** → to glue studs onto reticles



2. **MDR-100: Mount Demount Remount tool** → (re)mount and demount NXE pellicle to/from reticles

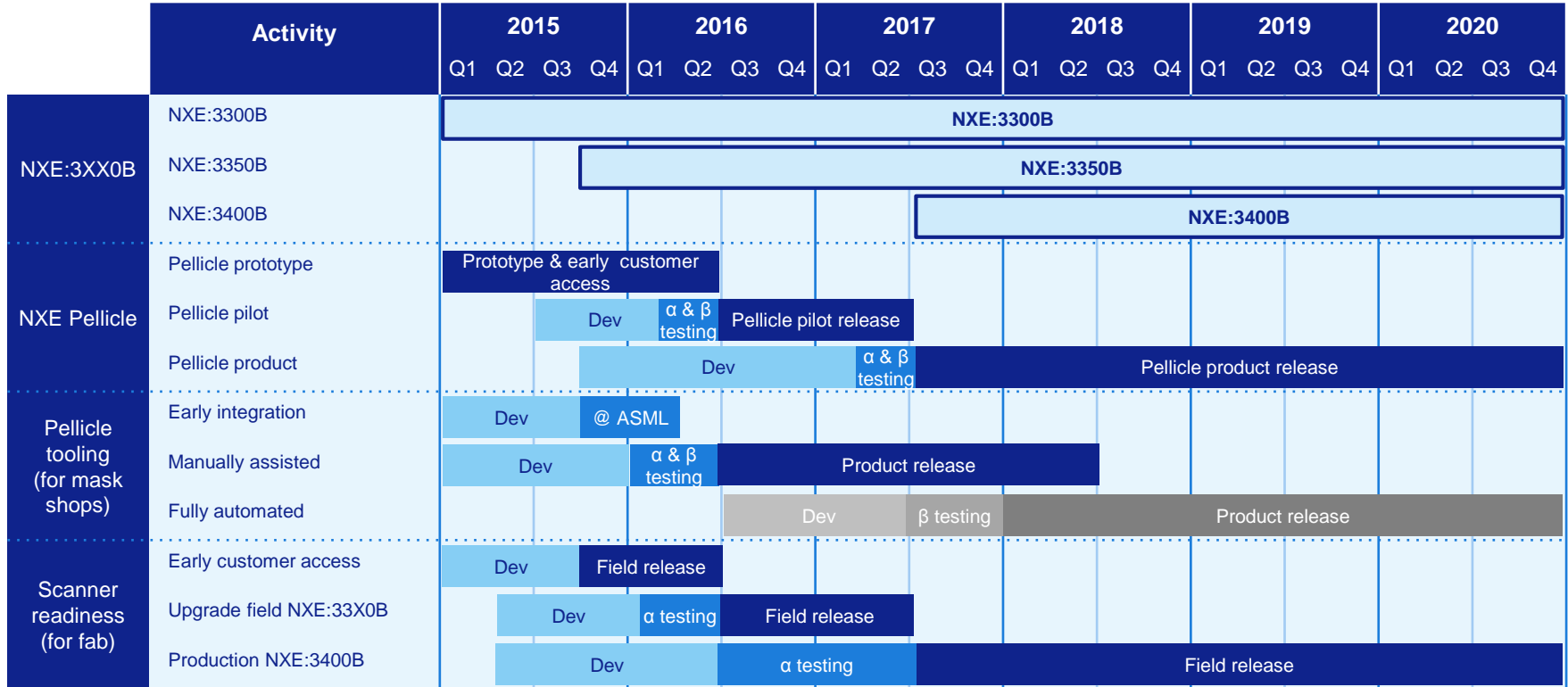


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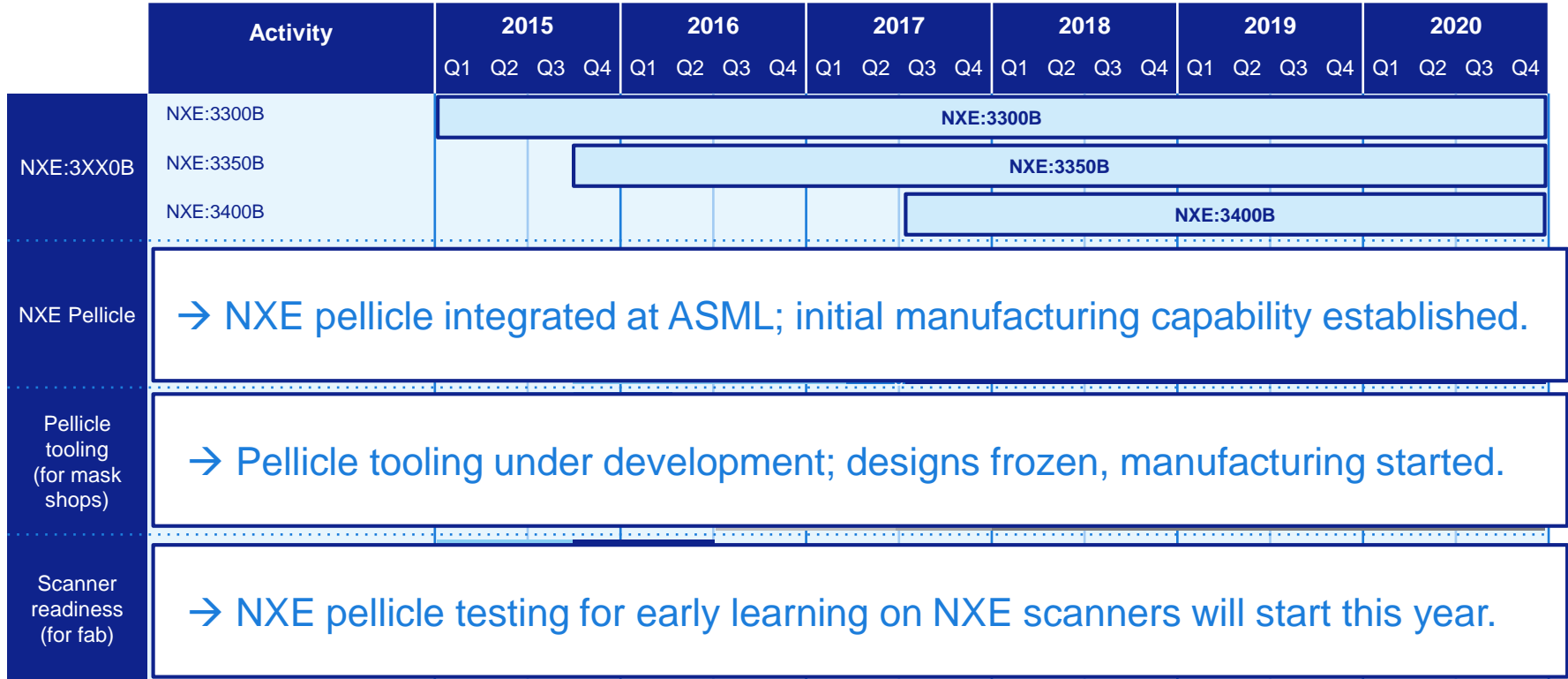


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ASML

