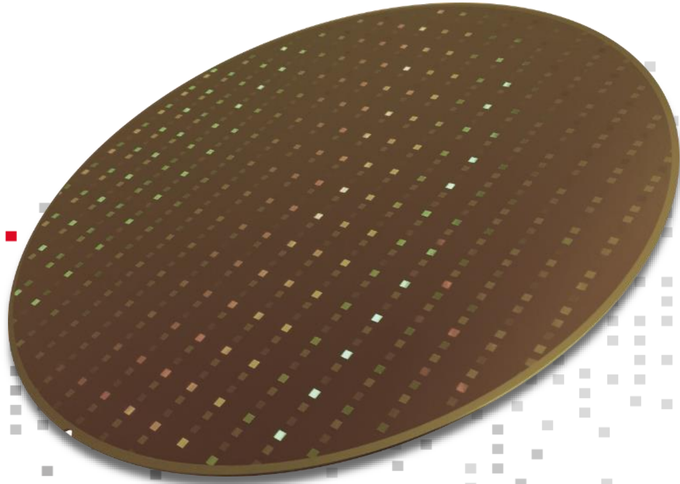


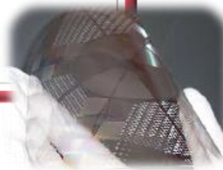
THE INSPIRE PROGRAM: PROGRESSES AND PERSPECTIVES

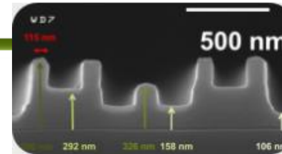
LETI Lithography Workshop | Leti Days

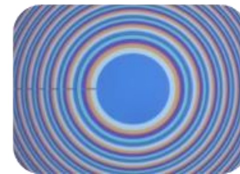
THE POTENTIAL OF THE NANOIMPRINT TECHNOLOGY

High Resolution
Large surface
3D complex shapes
More than Silicon substrates
Non flat substrates

High volume manufacturing
Throughput
Alignment & integration







Etching mask layer
Permanent resist layer
Bio compatible materials
High & low index materials

Photonics
Biomedical
Data storage
Optics & Display

EVG-LETI SOLUTION: INSPIRE PROGRAM

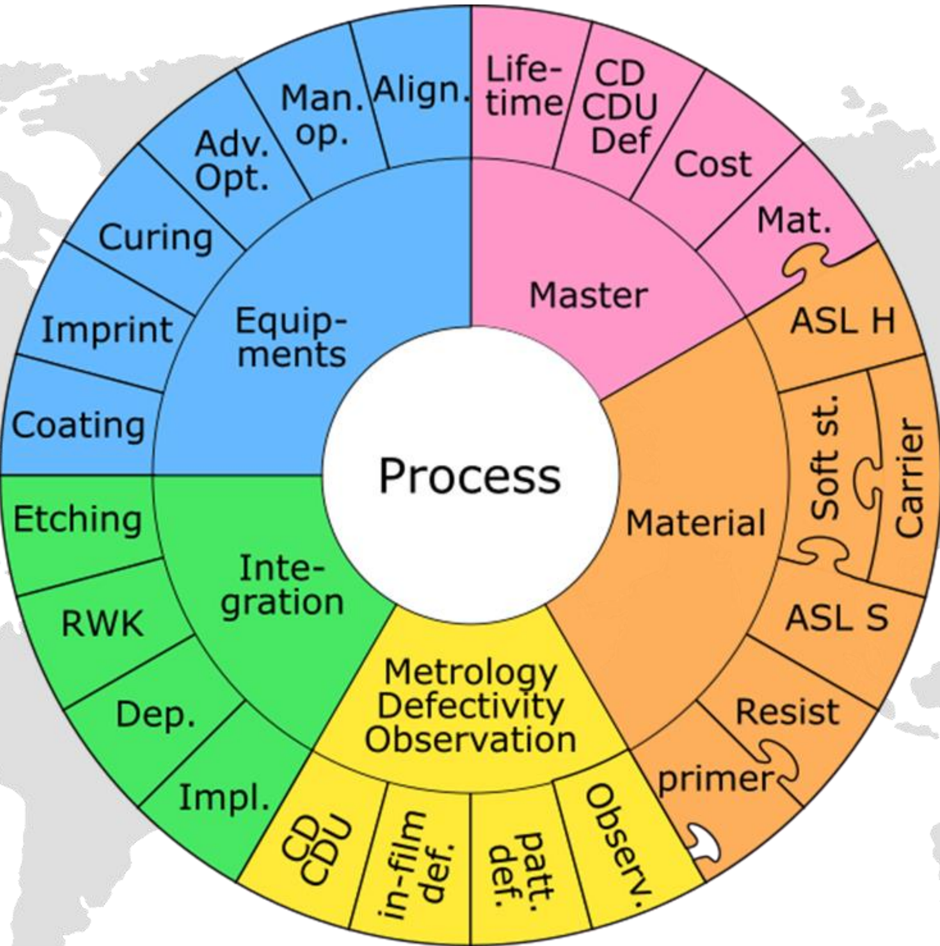
- Imprint materials
- Post-Processing module
- SmartNIL technology
- Upgrades for advanced processes

- Master program
- Material benchmark
- CDU-overlay-defectivity
- Technology assessment
- ramp-up of integrated process

THE NANOIMPRINT VALUE CHAIN

REPLICATION

STANDARDIZATION



MATERIALS COMPATIBILITY

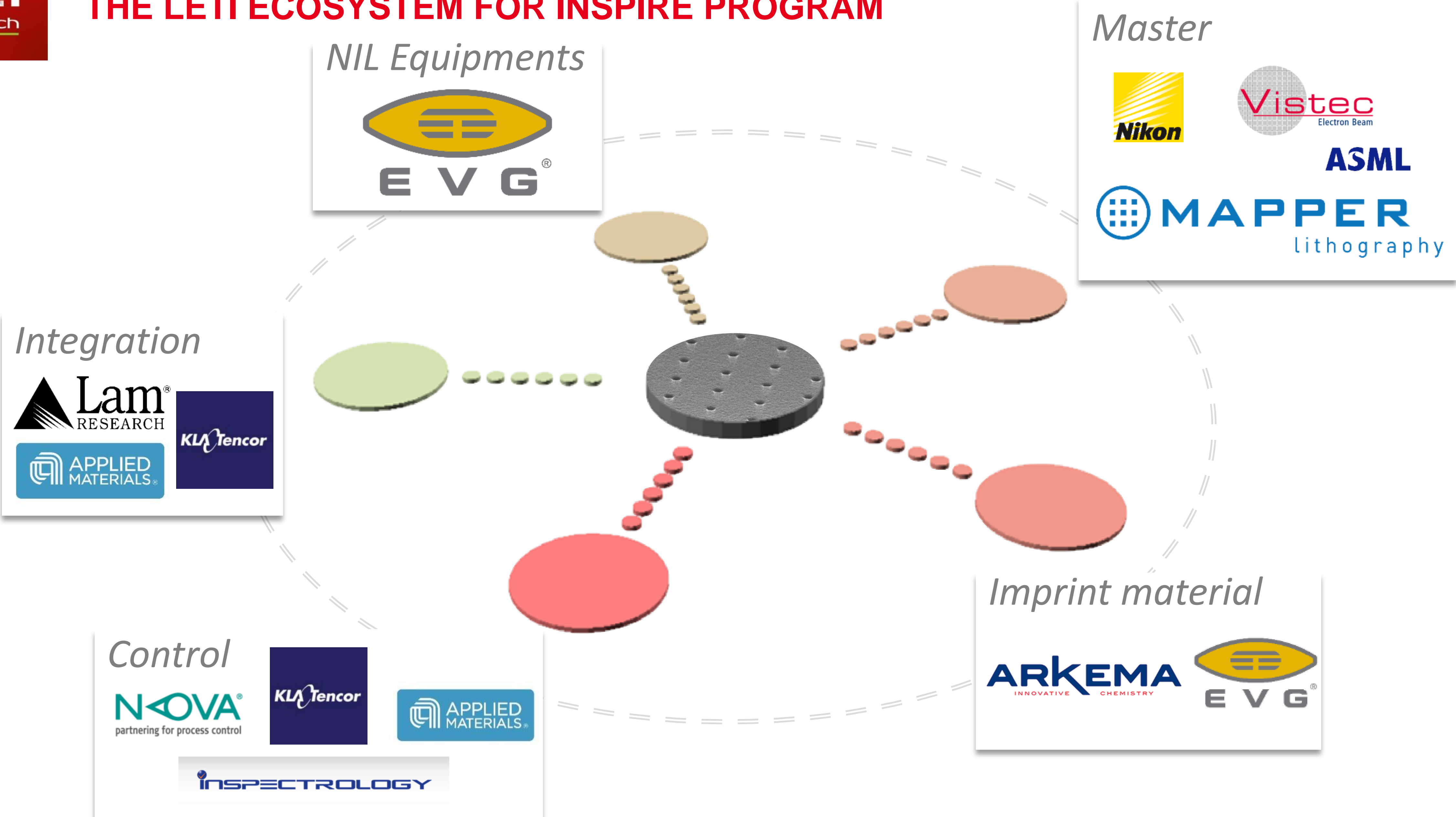
ASSESSMENT

SCALING

CHARACTERIZATION

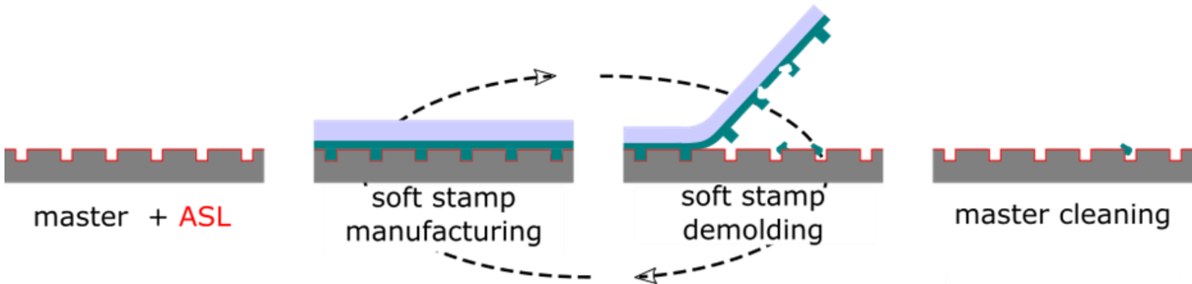
EVALUATION

THE LETI ECOSYSTEM FOR INSPIRE PROGRAM

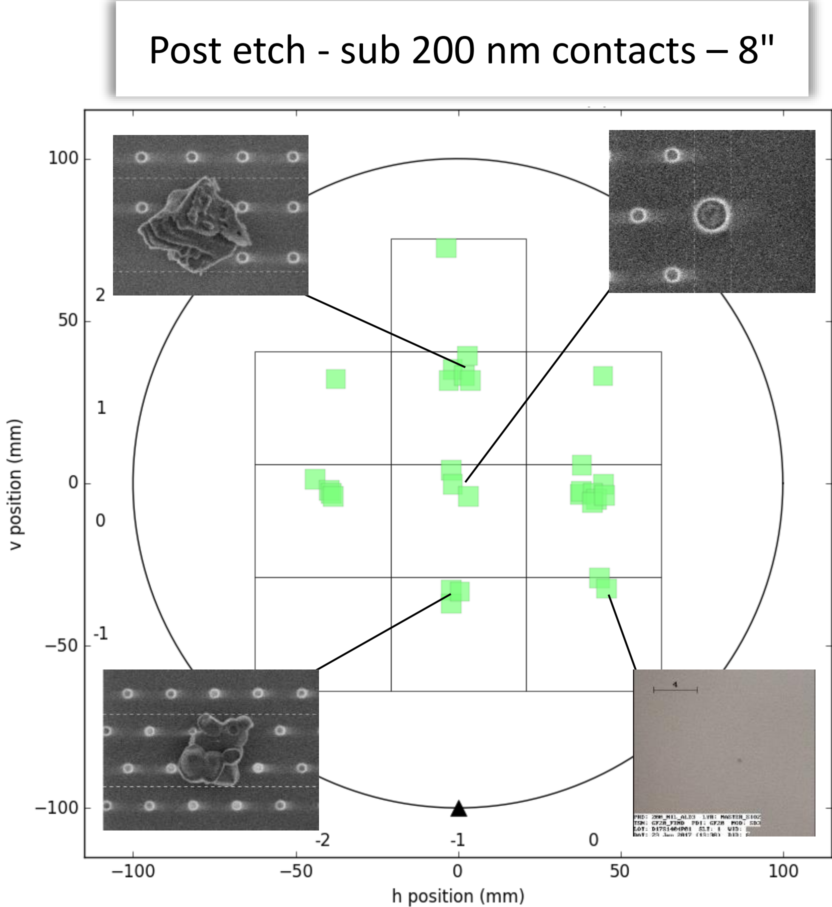


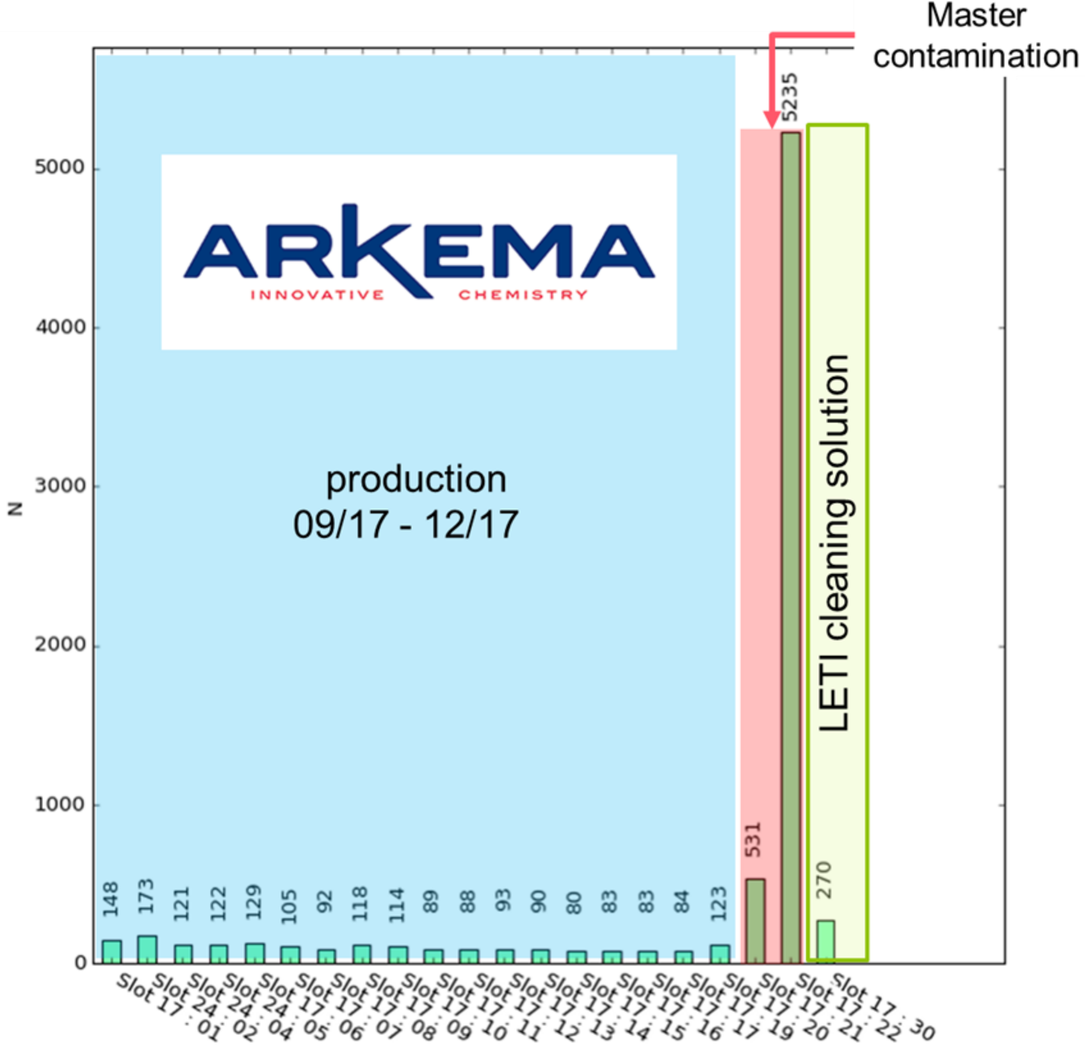
MASTER LIFETIME

- Lifetime through defectivity story



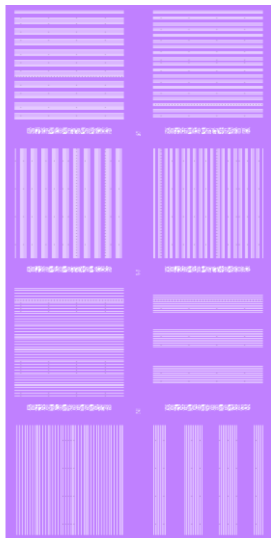
Post etch - sub 200 nm contacts – 8"

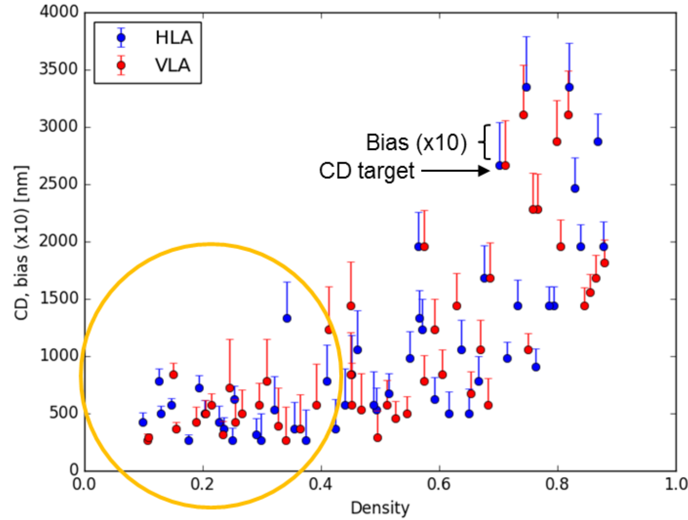


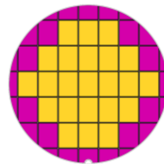


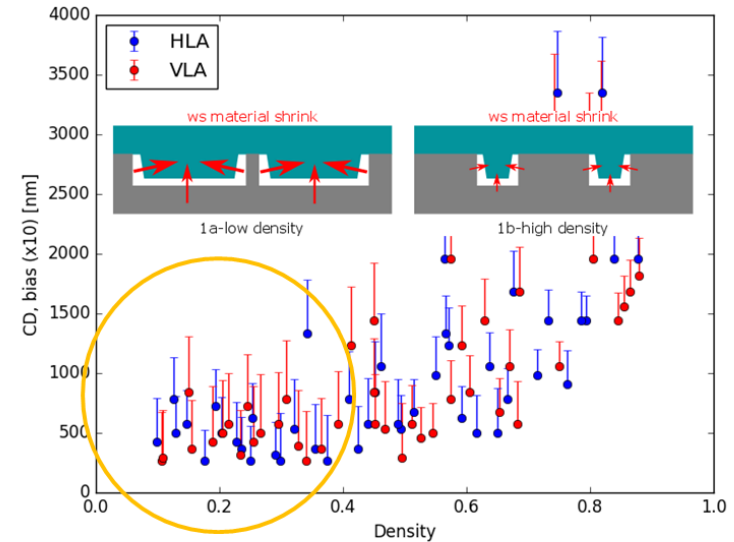
DESIGN RULES FOR ADVANCED MASTER MANUFACTURING

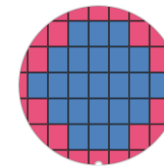
1600 various arrays
for calibration
& assessment





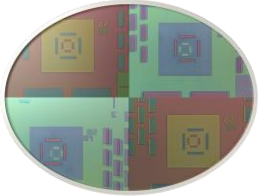


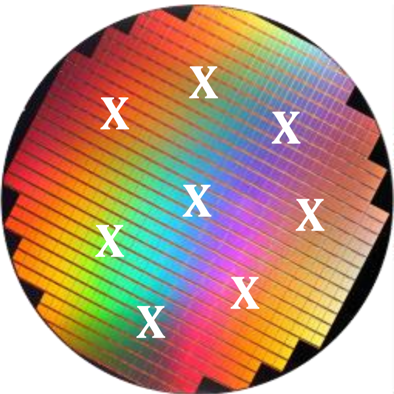


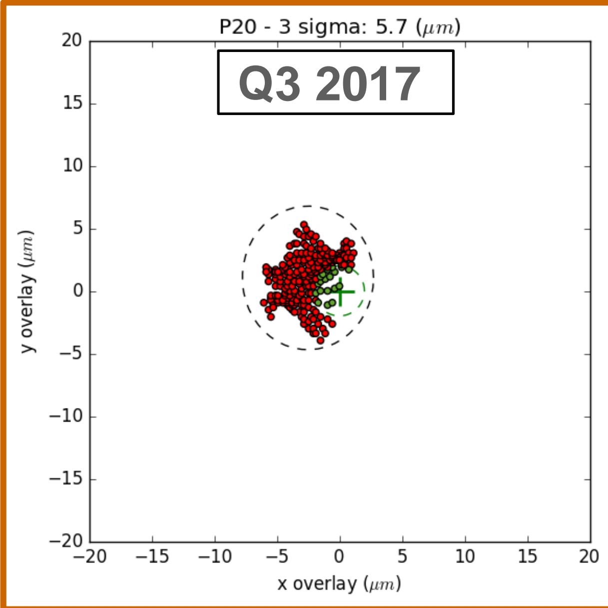


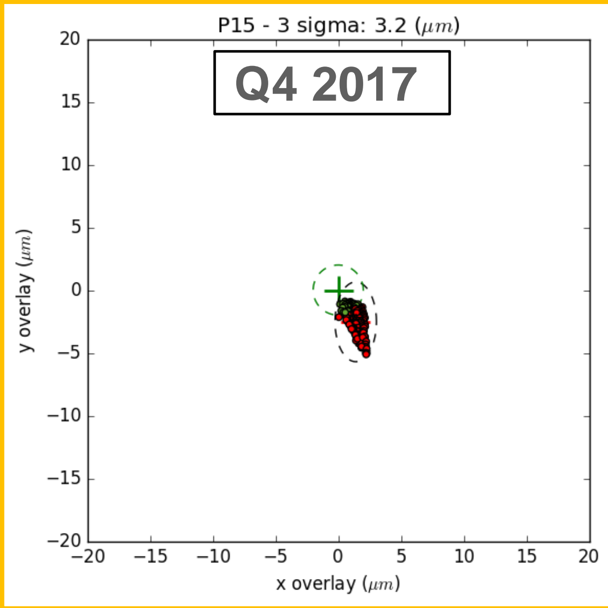
Design → Master → Metrology → Soft stamp → **Imprint** → Metrology

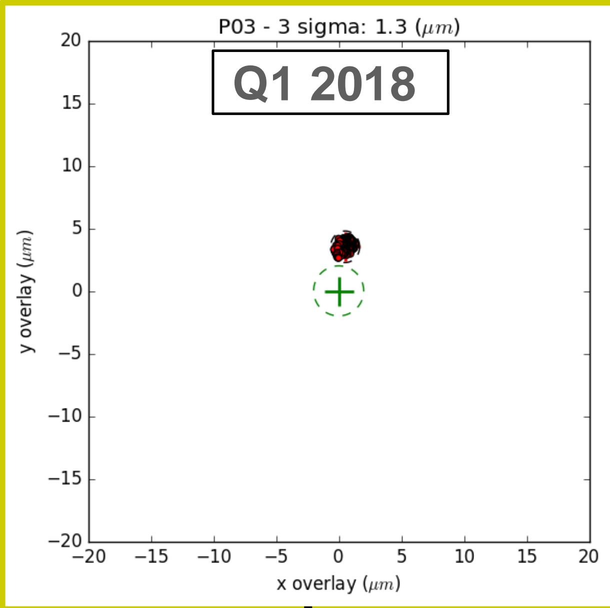
DISTORSION IMPROVEMENT FOR INTEGRATION CAPABILITIES

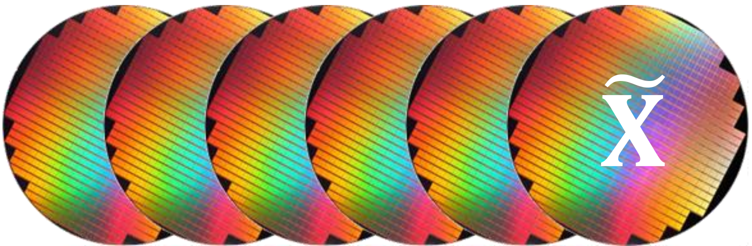


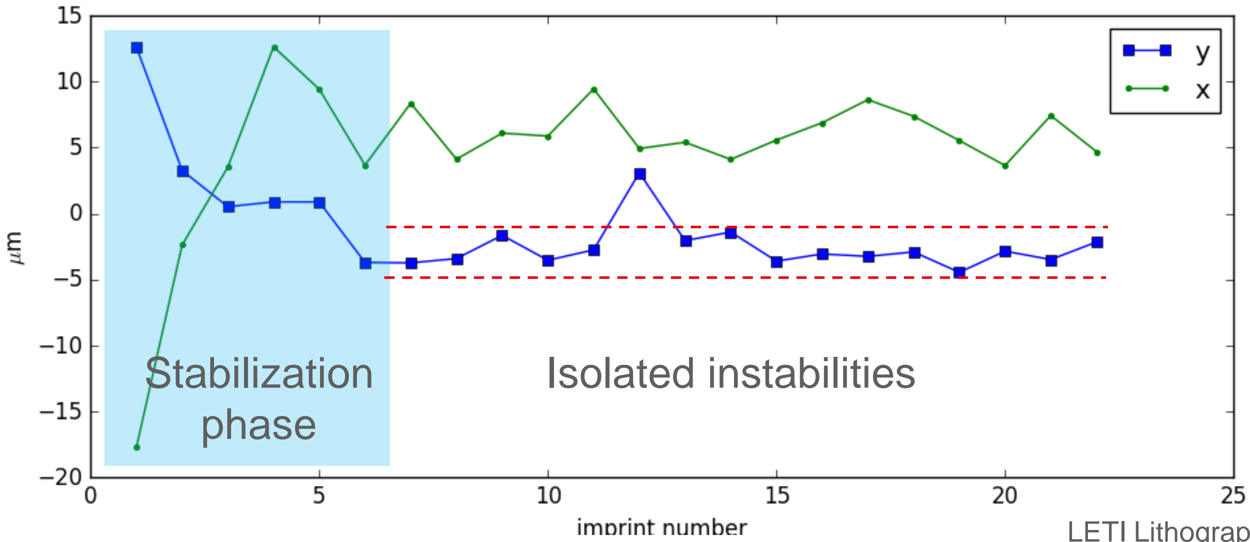












THE 2018 ROADMAP

	Q1	Q2	Q3	Q4
Materials	Filters in tool qualification	< 200 particles [90-500nm] in MOR film	Imprint materials benchmark	imprint resist prod. ready for etch mask app.
Overlay	< 1 µm wafer scale	< 1 µm / 4" area w2w & lot 2 lot repeatability	< 1 µm / 6" area w2w & lot 2 lot repeatability	< 1 µm / 8" area w2w & lot 2 lot repeatability
Production	Imprint fingerprint stability assessment	Metrology and Master platform access	Reference 100 nm produc Yield > 50%	Reference 100 nm produc Yield > 80%
Integration	100 nm feat. AR 1 in dielectric mat. transfer	50 nm feat. AR 1 in dielectric mat. transfer	20 nm feat. AR 1 in dielectric mat. transfer	Mix and match with DUV tools

THE NEXT STEPS FOR FURTHER ASSESSMENT AND VALIDATION