

Brabant Innovation Day Tokyo 2026

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Why collab with NL from Japanese perspective

9 June 2026

Hitachi High-Tech Corporation

Nano-Technology Solution Business Group

Yoshinori Momonoi



- Overview of Hitachi High-Tech's R&D activities in the Netherlands
(Past – Present – Future)
- Why conduct R&D in the Netherlands?
(Motivation and challenges)
- Appreciation to our partners in the Netherlands

Joint research with TU Delft

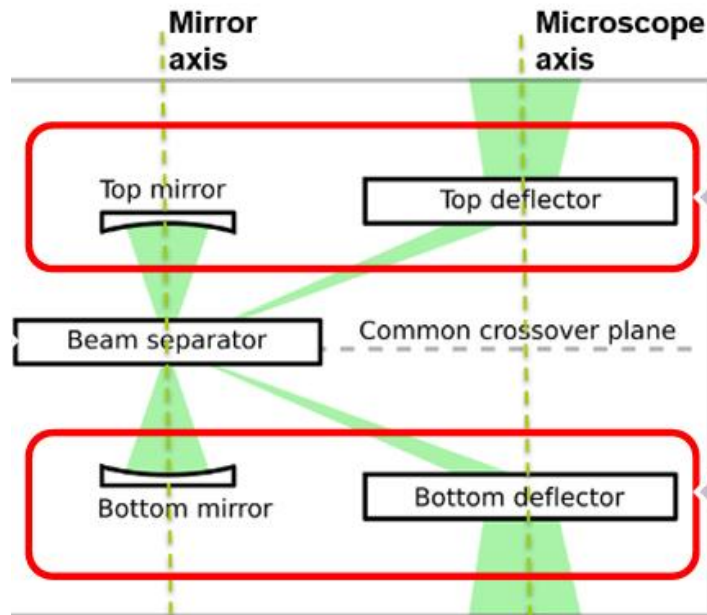
2013- Started collaboration by dispatching trainees

2018 Jointly published a paper on the MEMS aberration corrector

2018- Launched a joint research program

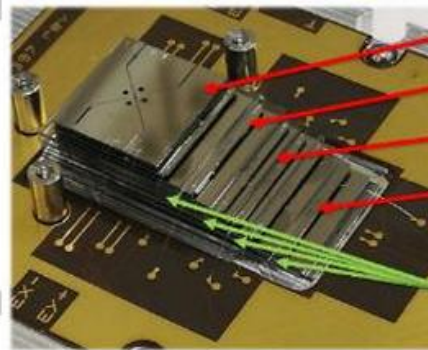
2025 Completed Proof-of-Concept and obtained a doctoral degree

2026 Shifted from fundamental academic research to product development



Double Mirror Corrector

Integrated deflector and mirror in a stack of MEMS electrodes (7 layers)



- Deflector
- Field clamp
- Lens electrode
- Mirror electrode
- Bond wire/pad
- Insulators

D. Maas *et. al.*, IMC20, Busan, 2023.

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Ultramicroscopy

Date: June 2018

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Design for an aberration corrected scanning electron microscope using miniature electron mirrors

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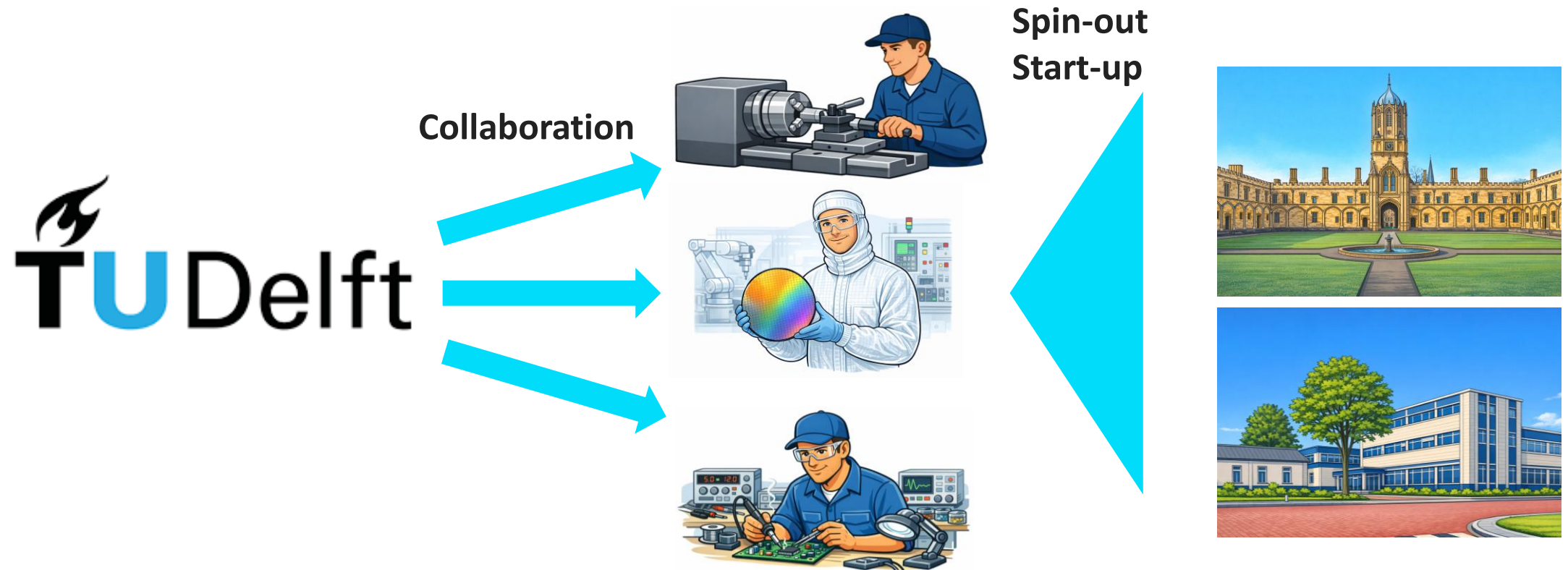
Received 19 December 2017, Revised 26 February 2018, Accepted 4 March 2018, Available online 7 March 2018, Version of Record 22 March 2018.

Key learnings from Joint research with TU Delft

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- Rapid development style leveraging external organizations, along with a culture of open innovation (processing/assembly, MEMS, electronics, etc.)
- Many startup tech companies originating from academia and industry

A new development style for Hitachi High-Tech



- Strong technical capabilities driven by model-based development
- Language and time zone challenges, as well as the complexity of transitioning from lab to fab
→ Emphasizing the importance of local management and on-site development capabilities

1. LANGUAGE BARRIERS

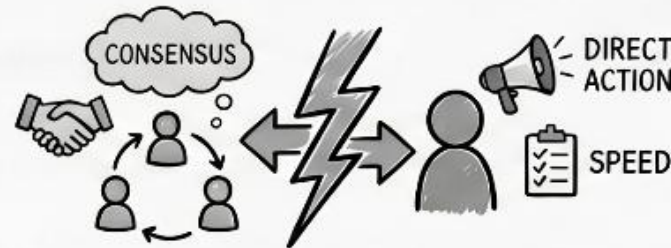


Impact Technical Precision

- ★ Japanese engineers often struggle with high-precision English communication, leading to project misunderstandings.



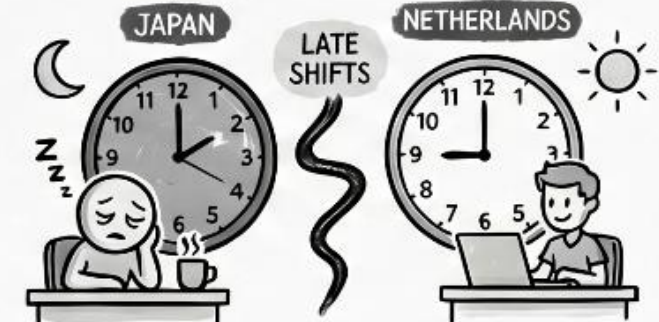
2. CONFLICTING DECISION-MAKING CULTURES



- ➔ Divergent work ethics and consensus-building styles create friction in project management.



3. TIME ZONE FRICTION



Late-Night Work

- 👁️ Limited synchronous windows force Japanese teams into late-night work to maintain project momentum.



Why Collaboration Matters

To develop next-generation metrology tools, in-house development is no longer sufficient.

Collaboration is essential to:

- Develop tools with innovative technology
- Enhance development speed
- Leverage diverse expertise

Our Solution for Semicon team: Open Innovation Promotion Group

To address these challenges and foster effective global collaboration, we initiated the **Open Innovation Promotion Group in Tokyo, Apr. 2024.**

Enhancing development capabilities by leveraging a high-tech ecosystem (industrial clusters, academia, and government)

■ Advantages of Eindhoven

- Eindhoven developed as an industrial city following the establishment of Philips in the late 19th century.
- Today, it has evolved into **a world-class open innovation ecosystem**, where **industry, academia, and government collaborate closely**.

■ Strength of the Open Innovation Hub: High Tech Campus Eindhoven

- **A leading innovation hub with around 300 companies and 15,000 researchers and engineers.**
- Provides an environment for advanced R&D across multiple fields such as high-tech systems, nanotechnology, and embedded systems, as well as **a social hub bringing together diverse industries and talent.**

■ Availability of Key Technology Partners

- Mechatronics, MEMS, vacuum technology, power electronics, AI, etc.

■ Collaboration with Academia

- Partnerships with leading institutions such as TU/e and TU Delft
- Opportunities to **recruit highly talented students**, including through internship programs



A New Chapter of Collaborative Semiconductor Metrology Development in Eindhoven

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Hitachi High-Tech Analytical
Science Finland (Espoo)
X-ray and LIBS analyzers

High Tech Campus Eindhoven
Semicon New Development branch

TU Delft / TNO
Electron Microscope modules
for semicon-metrology

Imec (Leuven)
Over 20 years of collaboration
in semicon-metrology

Hitachi High-Tech Analytical
Science GmbH (Udem)
Optical Spectrometers

Hitachi High-Tech Europe GmbH
EU headquarter in Dusseldorf
- ECC (Europe Collaboration Center)

VLC Photonics
In Valencia (Photonic ICs)

- Introduction to academia and tech companies in Brabant
- Introduction to key stakeholders at the High Tech Campus Eindhoven
- Advice and support regarding site establishment and daily life for employees

Step 1 (Past)

- Joint research with TU Delft, including the assignment of researchers (total of six)
- Proof-of-concept of the MEMS aberration corrector
- Joint development with the deep-tech company in NL

Step 2 (Present)

- Transition from Proof-of-Concept to product development
- Consideration of establishing a development site in the Netherlands

Step 3 (Future)

- Expansion of activities with development and validation partners
- Expansion of development themes and personnel

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