

PRONANO

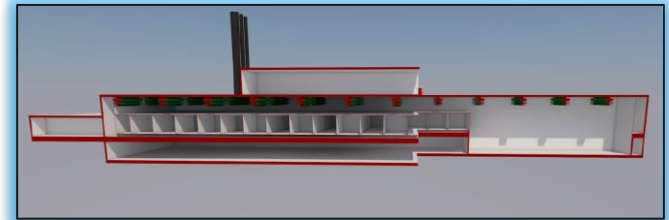
NANOPRODUCTS FOR THE FUTURE

Pilot line infrastructure investment in harmony with ECSEL UltimateGaN project for next generation GaN power Electronics

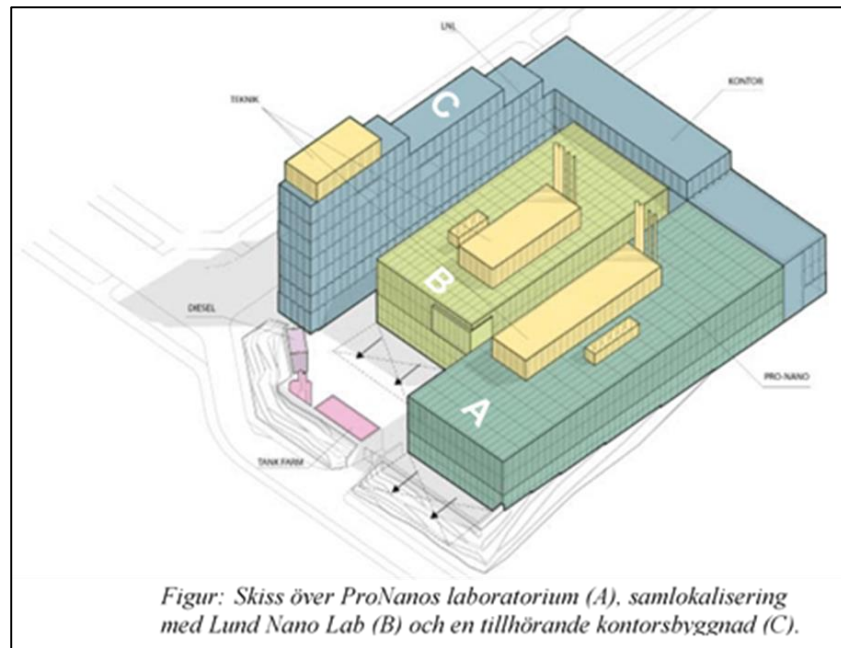
Michael Salter

ECS-SRA session Energy

EF ECS 2019 Helsinki



Science Village Scandinavia



Figur: Skiss över ProNanos laboratorium (A), samlokalisering med Lund Nano Lab (B) och en tillhörande kontorsbyggnad (C).

Nano/micro scale fabrication at Lund University clean room, Lund Nano Lab



Epitaxial growth of III-Vs (GaAs, InP, antimonides, nitrides, ternary compounds). Nanowires and thin films

Electron beam lithography

UV lithography

Metal deposition (sputtering, evaporation)

Etching

Structural and electrical materials characterization

Applications: Power electronics, quantum devices, LEDs, Solar cells, Sensors

RISE pilot production facility ProNano



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NANOPRODUCTS FOR THE FUTURE

Swedish Digital Innovation Hub for Applied Nanotechnology & Materials

NanoPilot Manufacturing Center: Testbed-, scale-up and incubator for nanotechnology based innovation

Commercialization of nanotechnology based research

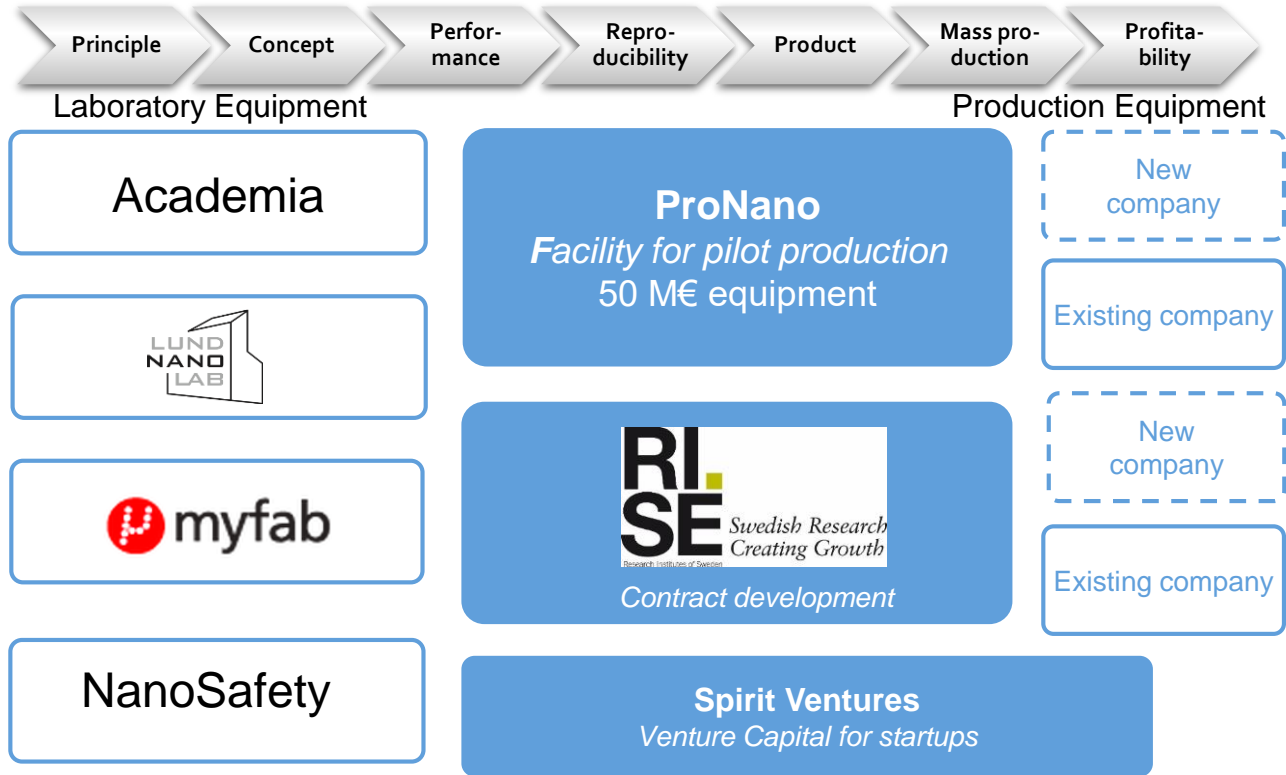
First case: Nitride materials for power electronics & microLED



EUROPEAN
SPALLATION
SOURCE



Filling the Gap



ProNano: Bringing Nanotechnology to Market

■ Vision

- ProNano shall be a globally leading **pilot production plant** for **nanotechnology** products and the hub in an ecosystem that will revolutionize industries and markets, with nanotechnology products for a better tomorrow.

■ Mission

- ProNano facilitates **commercialization** of nanotechnology products by providing start-ups, industry and research institutes in Northern Europe with access to a globally leading pilot production plant and ecosystem for nanotechnology products.

■ Goals

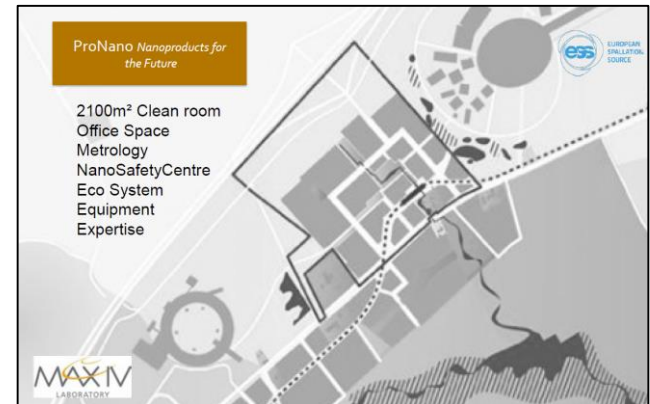
- High adaptability – Cutting start times
- High availability – Cutting lead times
- High traceability – Cutting process optimization times

■ Strategy

- Establish ProNano as a globally leading pilot production plant for nanotechnology products in Northern Europe
- Establish ProNano as the hub in an effective nano ecosystem by continuously marketing ProNano towards existing and potential customers, service suppliers and researchers and interconnect

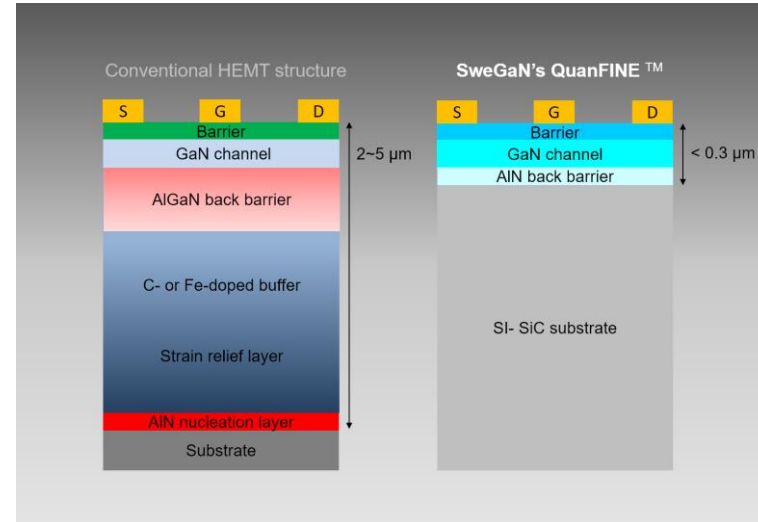


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NANOPRODUCTS FOR THE FUTURE



UltimateGaN 2019-2022

- GaN is the material for the future in RF and high power electronics. In UltimateGaN, the leading European specialists in wide bandgap semiconductors will collaborate to develop the next generation of GaN power electronics.
- UltimateGaN is an ECSEL project with a European consortium led by Infineon. RISE in Lund and Kista will fabricate devices and develop disruptive, high-quality GaN substrates based on nanotechnology in collaboration with SweGaN AB and Hexagem AB.



ProNano Timeline

Phase 1
Period
2020-2025



- Quick start in pre-existing facility, test the business model
- First technical focus on III-Nitride Epitaxy and Metrology
- “Nanohouse” Implementation (offer co-location for nanotek companies)
- First customers secured for full operation (2 shifts)
- Operational ready Q1 2020

Phase 2
Period
2025-



- ProNano in Science Village
- Co-location with Nano Lund / Lund University
- Establishment of large-scale Innovation Infrastructure
- 2100 m² modular clean room
- Projected total inv. volume ~50 MEUR
- Parallel planning ongoing at national and EU level