
mfab
Realize your nano vision

MYFAB – AN OVERVIEW FOR THE SPANISH NANOLITO NETWORK

Zaragoza, May 26, 2009

Thomas Swahn, Director Myfab

OUTLINE

- Overview, history, and networking benefits
- 2:nd phase: new goals and a new organization
- Agreements on shared responsibility
- Projects and achievements
- Exploitation
- Future: financing, expanding networks

MYFAB VISION

Myfab provides world-class micro- and nano infrastructure enabling researchers and innovators to solve the grand challenges of the future.

MYFAB MISSION

Myfab takes responsibility for quality, flexibility and uniformity in the field of micro- and nanofabrication, enabling one-stop-shop access to Swedens most advanced cleanrooms and complementing facilities to provide state-of-the art resources, mutual support and rewarding synergies for researchers, innovators and entrepreneurs world-wide.

CORE VALUES

Sharing

We share common resources, knowledge and opportunities. We pass new knowledge on to others for continuous improvements.

Supporting

We have an open and generous environment supporting each other for constant enhancement of our results.

Responsibility for quality

In everything we do, we take individual responsibility and action for quality.

THE UNDERPINNING MESSAGE

- Nanotechnology is everywhere
- Nanotechnology is necessary for future applications
- Anyone can have access to clean room facilities
- Cooperation is the way to reach excellence

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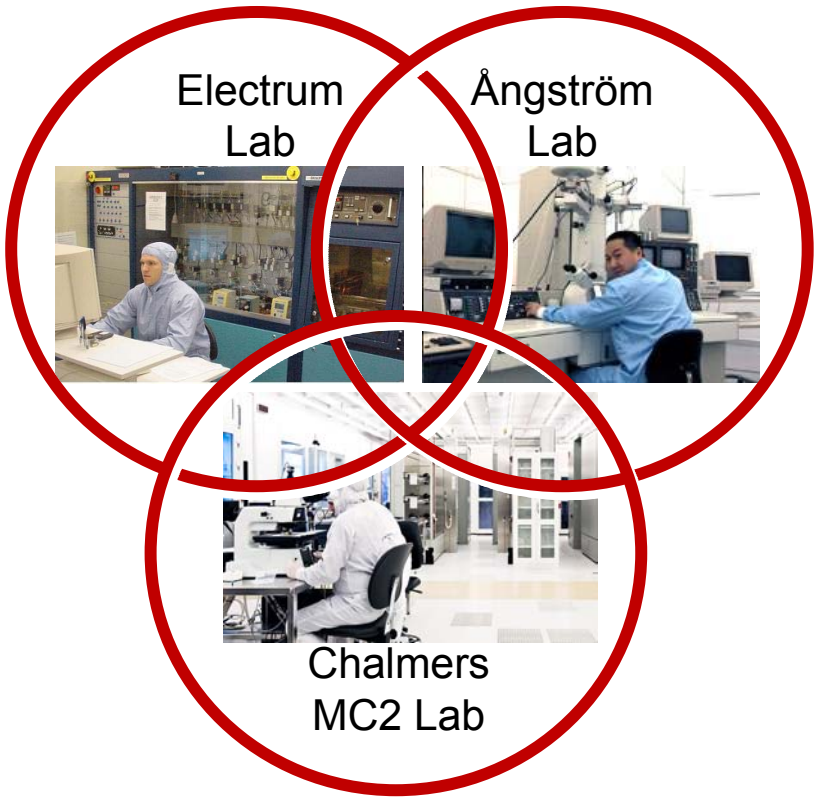
What is Myfab?

MYFAB PROVIDES

- One distributed cleanroom facility
- One-stop-shop to all processing needs
- LIMS – a joint system for booking, logging, resource planning and evaluation

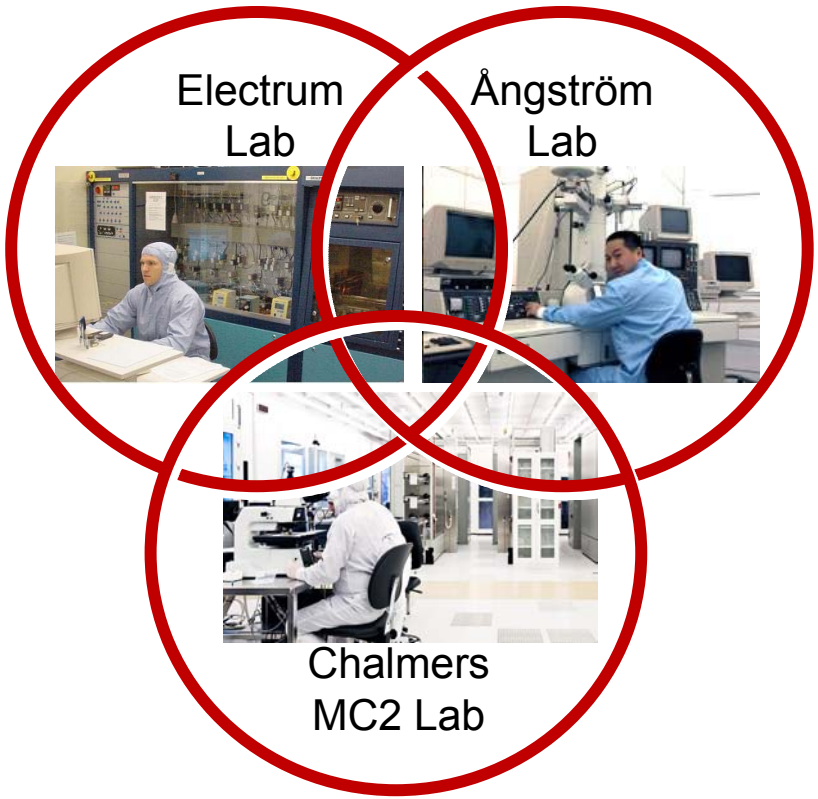
NUMBERS AND FACTS

- 4 500 m² clean room space
- Highly trained personnel
- > 500 instruments
- > $500 M investment
- > 600 researchers
- > 130 companies



NUMBERS AND FACTS

- 100 MSEK Myfab budget 2004 – 2009, from VR, VINNOVA, KAW and SSF
- Main financing through the universities



History

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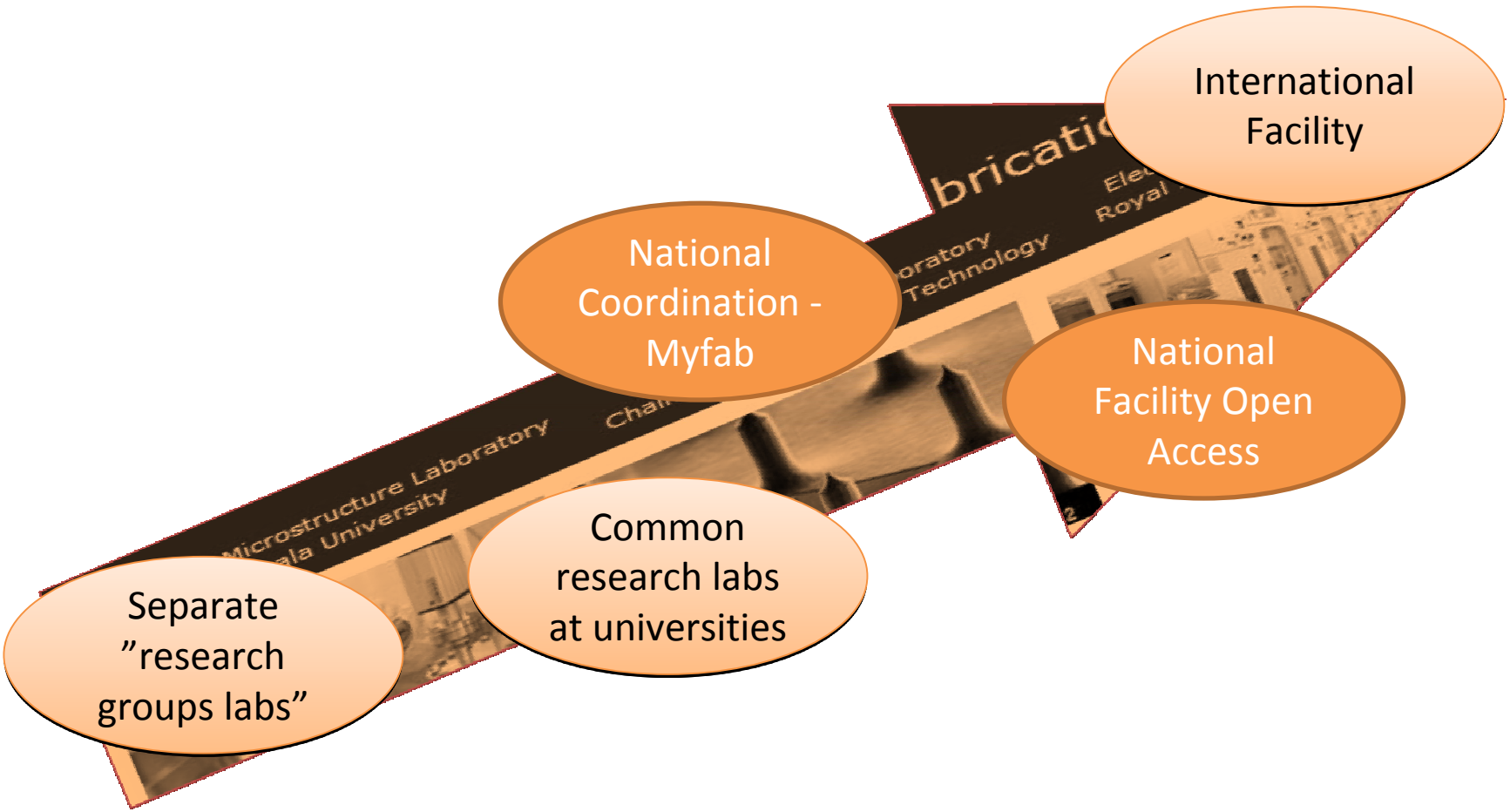
Three Swedish cleanroom facilities but no coordination:

1987 KTH, Electrum Laboratory

1997 UU, Ångström Microstructure Laboratory

2000 Chalmers, MC2 Nanofabrication Laboratory

MYFAB PROGRESS GRAPH



Benefits of coordination, networking and open access

BENEFITS

- Avoiding duplication of expensive equipment
- Local access to the whole network
- Harmonized user fees and instrument classes
- Backup for standard processes
- Cross-diciplinary synergies
- Access to a broad range of expertise

Myfab's second period of operation – challenging new goals and a new organisation

October 2007 – June 2009

GOALS 2007-2009

- 20% increase of traditional academic users
- 100% increase of academic users in ”new” areas
- 100% increase of industrial users
- 50% increase of process service for European customers (including co-processing in EU-projects)

MYFAB BOARD OF DIRECTORS

Chairman: Ingemar Lundström

Ingela Agrell, SSF

Maria Janiec, VINNOVA

Karl-Fredrik Berggren, VR

Jan S Nilsson, KAW

Johan Holmberg, Secretary, VR

Thomas Swahn, Director Myfab

MYFAB MANAGEMENT BOARD

Director: Thomas Swahn

Deans of Myfab Laboratories = “Lab. Owners”:

Mikael Östling

Lab.Mgr **Nils Nordell**, KTH Electrum Lab

Dag Winkler

Lab. Mgr **Peter Modh**, Chalmers MC2 Nanofabrication Lab

Jan-Åke Schweitz

Lab. Mgr **Stefan Nygren**, Ångström Microstructure Lab

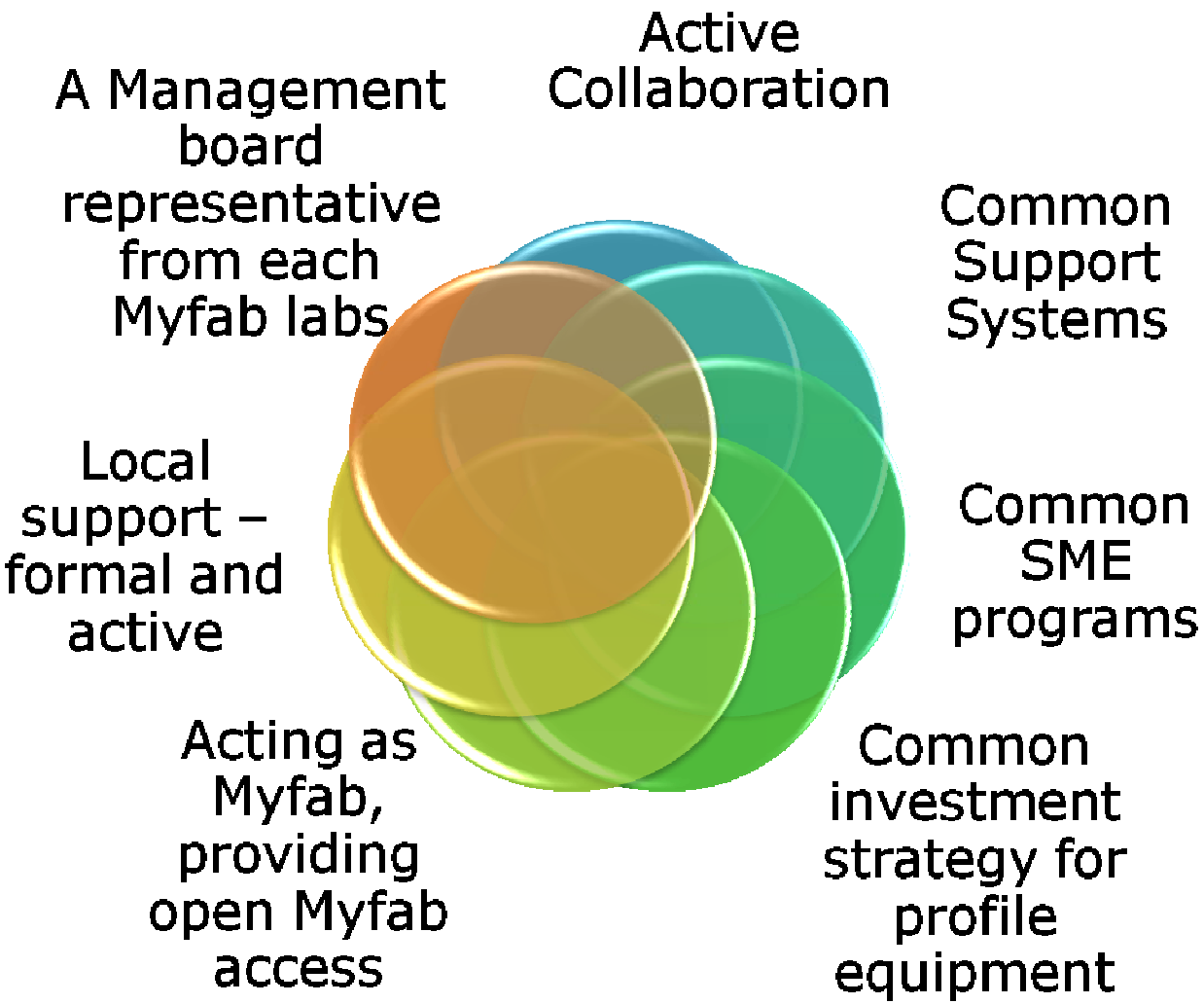
MYFAB OPERATIONS

- Board Meeting
- Management Board Meetings
- Operations Meetings
- Project Meetings
- Workshops

Myfab
a National Resource

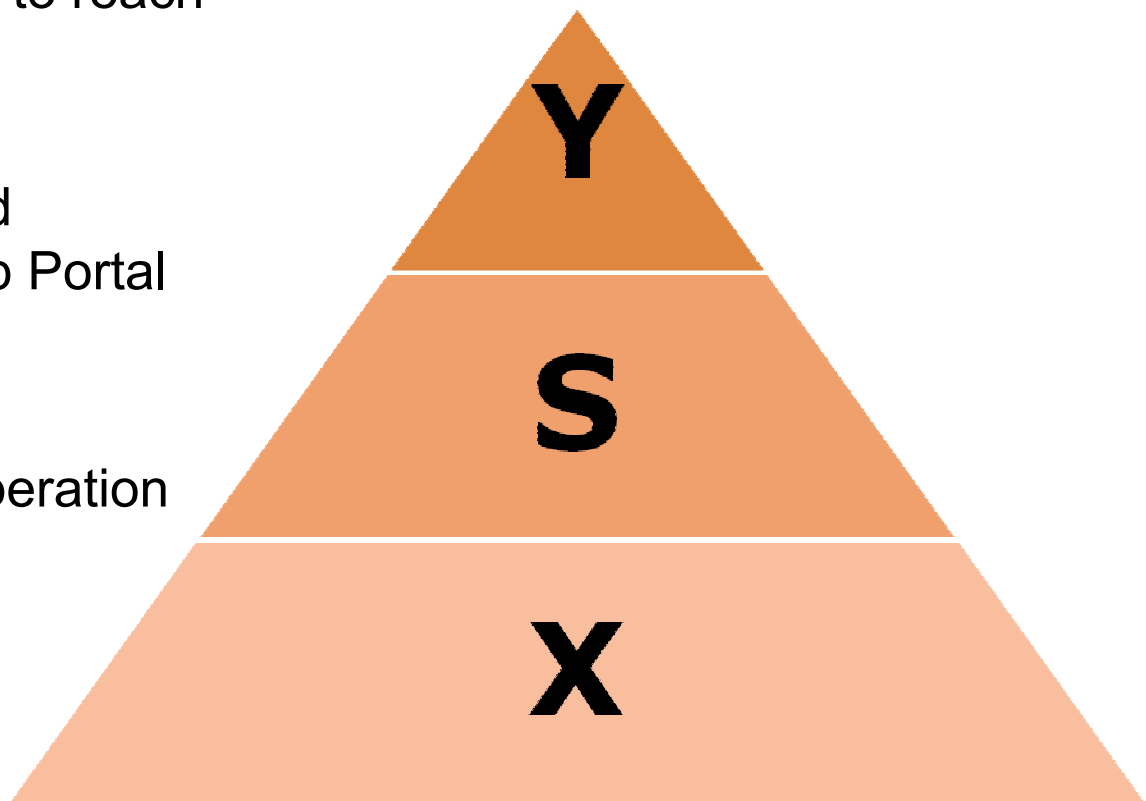
"Give and take – for a larger cake!"

AGREEMENT ON SHARED RESPONSIBILITY



BUDGET MODEL

- **Y**: For Myfab projects, to reach Myfab goals
- **S**: For Myfab tools and processes: LIMS, Web Portal etc.
- **X**: Base support for operation of the Myfab labs



IMPACT OF THE NETWORK

- Myfab is mentioned and referred to in the Swedish ”FO-prop” as a national resource of strategic importance.
- For three* out of twenty prioritized research areas, Myfab is pointed out to be of strategic importance

* Material Science, Nanoscience, and ICT (Information and Communication Technology)

Myfab projects and achievements

SOME NETWORK ACTIVITIES (1)

- >18 projects/activities, including:

Strategic:

- Application and investment coordination: KAW, VR, VINNOVA, EU,
- Strategic planning at Vice-Chancellor level (long-term research infrastructure support)

SOME NETWORK ACTIVITIES (2)

Open Access, inter-network usage:

- Introduction course , for local- and network resources
- LIMS development, implementations, support, development:
  - our booking tool, for planning how to carry out the work, and for follow-up on usage, billing, etc.
- Myfab Web Portal – on-going
  - flexible, easy to update etc, for news, links, discussions, news, announcements etc.

LIMS

Laboratory Information Management System

A tool in itself, in full operation since 2008:

- Lists all tools and presents information
- Booking: User login for booking of tools
- Planning: Info on instrument status, tool responsible, support, planned down-time etc.
- Follow-up: statistics for evaluation and billing

•A uniform web-based system for all Myfab labs

- High quality standards (uptime, reliability, …)

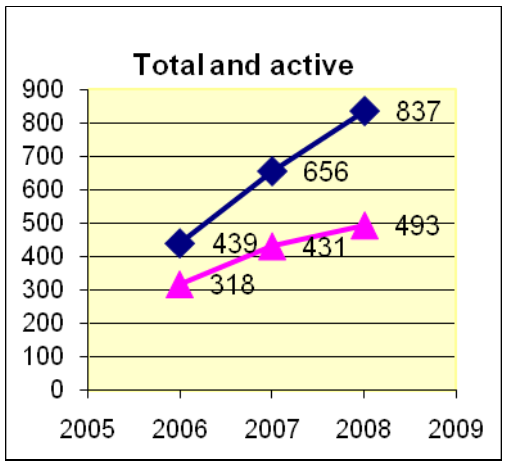
LIMS STATISTICS

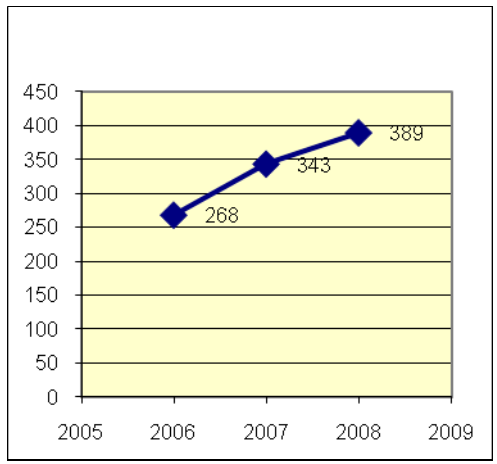
Active users from Industry = Institutes + Companies

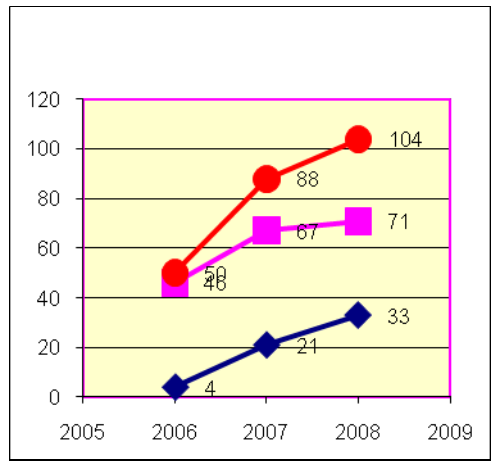
Total

Universities, active users

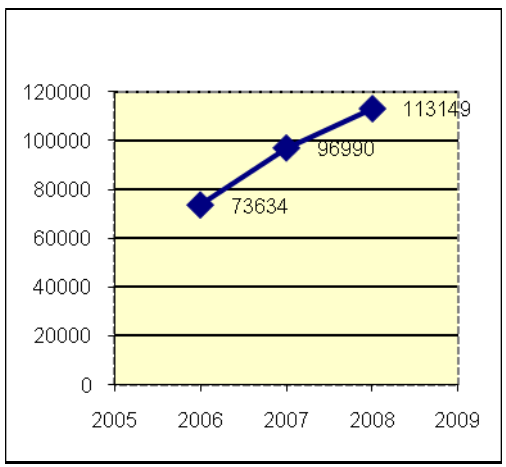
Users

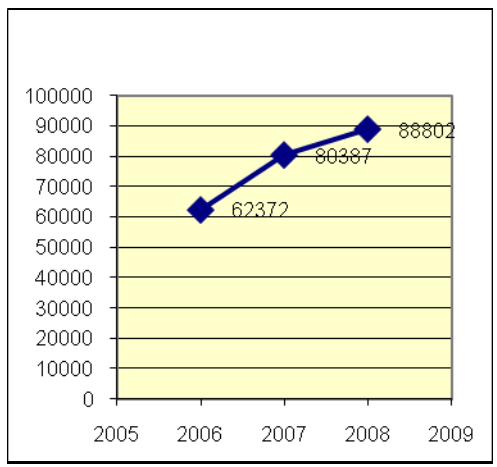


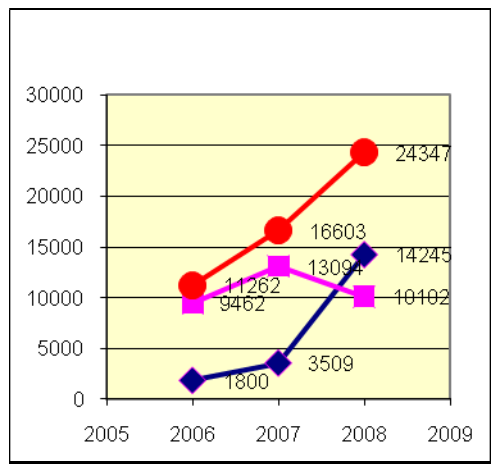




Hours







MYFAB WEB PORTAL

A web-based, flexible, information exchange and meeting forum system:

- Announcements
- Discussion groups
- Presentations
- Dynamic sections
- User interactions

Scheduled to open before summer

SOME NETWORK ACTIVITIES (3)

- Communication
- Myfab User Meeting
- Quality Platform

QUALITY PROJECT STARTED

Objectives

- Define common quality documentation
- Develop a quality platform for Myfab
- Develop a structure for handling quality documents
- Inform about different quality methods, especially for continuous improvements
- Information about ISO 9001 quality standard, and possible Myfab implementation
- Enhance information exchange within Myfab

QUALITY PROJECT

- A review of LIMS is on-going
- Discussions with the Myfab laboratories about their needs have been done (visit at MC2 and Ångström)
- Discussions how to use the portal for document handling and internal info channels have started

SOME NETWORK ACTIVITIES (4)

Continuous investments in state-of-the art equipment

- Grant from Knut and Alice Wallenberg Foundation made investments possible!

Knut and Alice Wallenberg Foundation: 74.5 MSEK grant 2008

- The Myfab network invests in profile equipment!

25% invested and delivered,
75% on-going investments

CONTINUOUS INVESTMENTS

- Knut and Alice Wallenberg Foundation: 74.5 MSEK grant 2008

25% invested and delivered,
75% on-going investments

EXPLOITATION

- More than 130 companies have been using Myfab during the last five years!
- 30 Spin-off companies have started from the Myfab laboratories
- SME Myfab Access – planned VINNOVA program

EUROPEAN NETWORKING

- All three Myfab Labs are members of SiNano Institute
- 7:th Frame Program application ”Flexible Research Infrastructures”, application 2008 + new application 2009 planned

- Extensive involvement by Myfab Labs in several European projects

MC2ACCESS

- Started 1st of January 2006
- Access offered to research groups in EU member states and associated states including the candidate countries
- Access offered to SME:s for their first access
- An access is maximum three months
- Project duration: 48 months
- Total budget: 1.6 M€
- Grant covers access, travel, and accommodation costs

  www.mc2.chalmers.se/mc2access

MC2ACCESS

- 48 projects has been granted so far.
- 25 projects are finished. Around 20 projects are ongoing.
- Access so far offered to 5 SMEs
- Visits are typically of 3-5 weeks length and for 1 or 2 researchers.
- Application are granted only after evaluation from a Scientific Panel, and we offer four application rounds per year.

Myfabs Future

Myfab – awaiting strategic funding decisions!

We are waiting for decisions for continued support to Myfab, to secure long-term stability and continuous improvements of our national resource.

Strengthening the National Resource

Association of additional Swedish laboratories is discussed

We already have the written support from five vice-chancellors:
Uppsala, Stockholm, Linköping, Göteborg and Lund

LUND – NANO LAB, (2007)

III-V nanowires, nano-characterization, prototyping:

- Clean room area:150 m^2 (ISO 5) + 110 m^2 (ISO7)
- Number of tools: 82, > 50 MSEK instrument value
- Booked eq. :~30 000 h (‘08) (univ./ind. c:a 50/50)
- Lab users, total: 123 (univ. 82, ind. 41), active: 109
- Number of companies with own personal: 9 (active 7)



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LUND – NANO LAB

Main areas of activity:

- Epitaxial growth and processing of III-V nanowires
- High-resolution characterization of nanostructures
- Development of prototype devices (companies)

Main equipment:

- MOVPE systems for nanowire growth
- Electron beam and nanoimprint lithography
- Focused ion beam, reactive ion etching
- Evaporation, sputtering, atomic layer deposition, oxidation
- SEMs, AFMs, XRD and other characterisation equipment

LINKÖPING – NORRKÖPING

A node with three smaller cleanrooms is being discussed – “Soft Electronics Laboratory”:

- Soft- and Conventional Lithography in Linköping 225 m^2, class 1000 / 100 in lithography room
- Printed Electronics in Norrköping (400 m^2):

  17 tools, 90 MSEK instrument value,

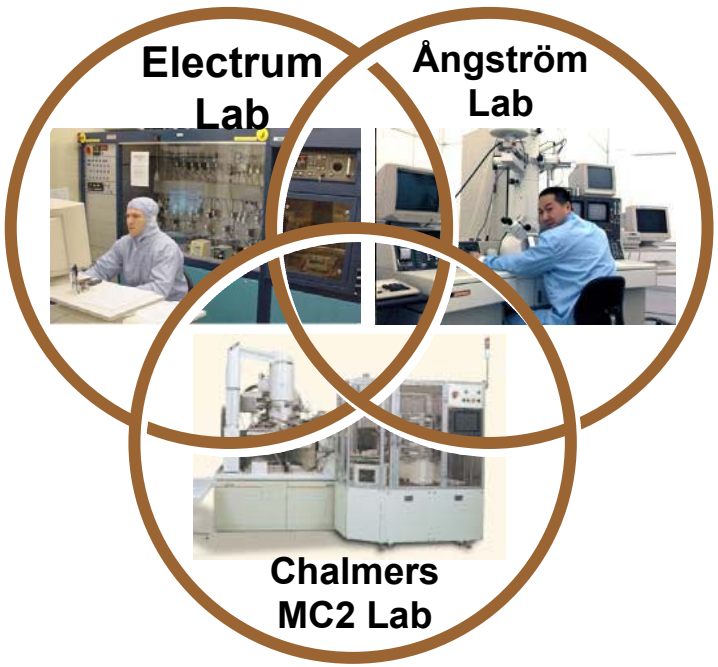
  40 / 17 users from univ / ind.

Myfab

The Swedish Micro and Nanofabrication Network

Supported by:

- Swedish Research Council (Vetenskapsrådet)
- Swedish Agency for Innovation Systems (VINNOVA)
- Knut & Alice Wallenberg Foundation
- Swedish Foundation for Strategic Research (SSF)



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