

# INDUSTRY STRATEGY

## 2021-2030



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MAXIV







# A WORLD-CLASS TOOL FOR INDUSTRIAL RESEARCH

To industry, MAX IV provides a unique opportunity to make new discoveries that can accelerate business development. With the world-class tools available, industry can look deep into the unknown, the “black-boxes” crucial to their research and development programmes, enabling radical improvements to their materials and processes. These improvements can create both business value and societal benefits. As industry plays a crucial role in sustainable development, industrial innovation ultimately has the power to contribute to shifting the world onto a more resilient path.

## **Evolving together**

The MAX IV facility is continuously developed in collaboration with industry to better meet industry user needs. Several beamlines at MAX IV are currently being used by industry and more additional industry-relevant beamlines will enter user operation in the coming years, making the majority of the 16 first beamlines relevant for industry. With another ten ports

open for additional beamlines, industry has a clear opportunity to participate in and influence MAX IV’s future development to meet industrial research needs.

## **Our strategy for the coming years**

To engage and collaborate more closely with industry, MAX IV’s Industrial Relations Office (IRO) uses a sector approach. Corresponding to the transformative science areas identified in the MAX IV Strategy 2030, the IRO has further identified ten industry sectors of strategic interest. These are: paper and pulp, drug discovery, food and packaging, metals and engineering, health and life sciences, catalysis and chemical processing, mining and recycling, textiles, automotive and aerospace, and batteries and energy materials.

Using a sector approach, we expect to have significantly strengthened R&D in these sectors by 2030. Furthermore, this strategy sets out how we can improve knowledge transfer between industry and MAX IV going forward.

# STRATEGIC GOALS THROUGH 2030

Our strategy towards industry aims to enable industrial users to reach the Sustainable Development Goals through research at MAX IV. To achieve this, we use sector-based initiatives, and work with the following goals:

## 1. BROADEN THE INDUSTRIAL USER BASE

- Make relevant industry sectors across Sweden, the Nordics, and the rest of Europe aware of the research opportunities at MAX IV.
- Engage the ten most important industry sectors in the Nordics with initiatives connected to the use of MAX IV.

## 2. INCREASE THE INDUSTRIAL USE OF MAX IV

- Increase the industrial use through the general user access mode in collaboration with academia and other mediators towards 40%.
- Achieve a yearly average of 5% proprietary use of the user beamtime at MAX IV. The quota will be significantly higher on some beamlines.
- Allocate up to 5% of the user beamtime at MAX IV to a new open access mode for industry.
- Increase industry competence in the use of MAX IV from the basic awareness level to the advanced industrial user level.
- Support industrial use of MAX IV from experimental design to data interpretation through a full range of services tailored to industry needs.

## 3. DEVELOP MAX IV TO SUPPORT INDUSTRIAL NEEDS

- Involve industry in the development of sample environments to increase the industrial research capabilities.
- Incorporate industry in the planning and funding of new beamline projects and development.
- Increase MAX IV staffing that supports industry, with two FTEs in the IRO and five additional FTEs at selected beamlines.

## 4. EMPLOY A COLLABORATIVE APPROACH TO INDUSTRY ENGAGEMENT

- MAX IV aims to have a strong partnership with the European Spallation Source (ESS) on industry activities, particularly outreach, education, and strengthening the ecosystem of surrounding actors.
- We will achieve these ambitions together with industry, academia, institutes, financing bodies, and other organisations to accomplish the industry goals.







## 1. BROADEN THE INDUSTRIAL USER BASE

Reaching out and engaging industry in the utilisation of MAX IV through a sector approach is at the heart of the industry strategy.

We have identified ten industry sectors where the techniques at MAX IV have a considerable potential to impact industrial research and development. These sectors are at different maturity levels concerning the awareness of the possibilities at MAX IV and the user capabilities of advanced X-ray based tools. The IRO engages with these sectors through tailored solutions and efforts to improve knowledge transfer between MAX IV and industry.

**Orange** corresponds to promising communities that have made individual efforts on a few-stakeholder basis. These sectors use non-dedicated funding resources to use MAX IV, and there is a clear, known case for future opportunities and impact.

**Yellow** sectors represent user communities that have formed thematic collaboration initiatives and taken major steps to focus resources and competence building efforts. These sectors require additional resources at MAX IV and active industrial support from the IRO.

**Green** sectors have a long-term engagement, often together with institutes, funders, and academia. They have invested in staff with the expertise needed to fully exploit the facility, or in dedicated equipment at MAX IV to secure access for their user community.

*Industry sectors with different types of engagement:*

Battery and energy materials  
Mining and recycling  
Automotive and aerospace  
Catalysis and chemical processing  
Textiles

Health and life sciences  
Food and packaging  
Metallic materials and metals engineering

Paper and pulp  
Drug discovery





## 2. INCREASE THE INDUSTRIAL USE OF MAX IV

Access modes, administration processes, consultation and support functions, and the user knowledge level on X-ray techniques all affect the industry use at MAX IV.

### Through proprietary access

The *proprietary access mode* offers beamtime for a fee, where industrial users can keep the results confidential. Our target is to increase the industrial use of MAX IV through the proprietary access mode tenfold by 2030. This requires increased efforts and services that can support industry before, during, and after experiments. To reach this target, MAX IV will:

- Ensure that the proprietary beamtime sales revenue supports the further development of MAX IV in a beneficial way.
- Strengthen industry-relevant beamlines with staff and services that can support industry with competence and guidance.
- Integrate the MAXESS Industry Arena into Teknikparks-funktionen and connect industry users with mediators that can help with results analysis.
- Increase collaboration with mediator companies and institutes.

### Through general access

Industrial users mainly enter MAX IV through the *general access mode* in collaboration with academic, institutional, or other mediator groups. This access mode offers beamtime for free with the requirement that the results be published in a scientific journal. In 2020, industrial beamtime through general access accounted for about a fifth of the total available user beamtime.

Collaborative open access tends to be a prerequisite for later proprietary access and is an important first step for an industrial user. An open access mode for industry, where proposals are judged based on industrial or societal impact, would strengthen the competitiveness of industrial proposals, leading to increased industrial use of MAX IV. We aim to open an access mode for more applied research projects to enhance industry participation, and to update the information on available access modes for industry.



### 3. DEVELOP MAX IV TO SUPPORT INDUSTRY NEEDS

To increase the industrial use of MAX IV, the IRO and its user network shall be involved in the development of beamlines and experimental environments.

We will establish an Industrial Reference Group (IRG) to guide the development and activities to better meet industrial needs. Other short-term goals are to:

- Support industry sector-driven instrument development.
- Push the development of automated analysis tools and services.
- Increase the number of staff exchanged between industry and MAX IV.
- Connect industry to MAX IV staff developing technical solutions.
- Involve industry in new beamline development projects.

We will continuously work towards establishing industrial and applied science beamlines focusing on the most beneficial techniques for industry, such as diffraction and tomographic imaging.







#### 4. EMPLOY A COLLABORATIVE APPROACH TO INDUSTRY ENGAGEMENT

**MAX IV collaborates with a large set of external stakeholders in various constellations to strengthen the industrial use of MAX IV.**

The most important external collaboration platforms are our industry sector initiatives. We collaborate with ESS on outreach, education, and connecting the eco-system of support functions. Together with SVS, RISE, SWERIM, CeXS and Lund University, MAX IV and ESS lead the MAXESS Industry Arena project to help industry connect with relevant research partners and mediators. We also aim to:

- Map industry friendly user environments at major universities in the Nordics.
- Continue the dialogue with funding agencies on how to develop funding schemes to support industry.
- Ensure industrial relevance and involvement in educational and training activities developed at MAX IV and in collaboration with MAX IV stakeholders.
- Continuously work with RISE, SWERIM and other research and technology institutes in the Nordics, private mediator companies and contract research organisations to support industrial users.
- Engage in the LEAPS community in respect of industry collaboration and exchange of best practices with the industry offices at DESY, ESRF, Diamond, PSI, ALBA, Elettra, and Spring-8.
- Take part in the development of the Science Village between MAX IV and ESS to support industry needs.
- Collaborate with Big Science Sweden on outreach and engagement.



# HOW DO WE GET THERE?

To build closer relationships with industry sectors, it is our ambition to make it easier for industry to interact with MAX IV in a broader way. We do this through sector-based activities and tailored outreach efforts.

In order to achieve the strategic goals, and thereby contribute to the overall MAX IV Strategy 2030 objectives, we will primarily focus on strengthening industry-relevant beamlines with increased resources in terms of staff and services that can support industry. We will also focus on deepening

our collaborations with mediators within universities, companies, institutes, and contract research organisations to increase industrial user value. Such collaborations are essential to making MAX IV more accessible to industrial users through collaborative research projects.

Altogether, these efforts aim to increase and broaden the industrial use of MAX IV, paving the way for a more integral way of conducting research together to create business value, knowledge transfer, and societal benefits.











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