Open Science
There are strong indications that, in the time ahead, openness will be an integral part of all knowledge production and dissemination. Open research is about to become the new norm, and it will therefore be natural for all results, activities and competencies to be assessed in the light of the aims of open research. Open research will therefore affect how careers are assessed.

Assessing and recognising a greater breadth of activities in research and teaching and interaction with society. Many of the activities that academic staff perform in line with the institution’s goals and work are not systematically assessed or valued. Individual research achievements in the form of published research results are more strongly incentivised than other work, and individual achievements are given greater weight than collaborative efforts. A better balance in the assessment of the various key activities has been called for.

The guide is flexible but offers a systematic and structured framework for assessment. The assessment can be adapted to emphasise different competencies for different tasks/positions/career stages depending on both the individual’s career and the institutional needs. This will mean greater transparency about which assessment criteria are emphasised in the specific context, and will improve predictability, not least for applicants. It will also provide a better basis for career follow-up throughout the academic career path.

It is not enough just to agree on the need to modernise career assessment practices among academic leaders. Real change only happens when it becomes common practice within academic communities. Responsibility for implementing the new practice therefore must be rooted centrally in academic institutions and locally in departments and research centres. NOR-CAM and its principles will be a helpful tool for designing specific changes in routines for recruitment, evaluation committees and appointment committees.

Six principles
1. Measure quality and excellence through a better balance between quantitative and qualitative goals
Bibliometric indicators should be used with caution and supplemented with other information.
2. Recognise several competencies as merits but not in all areas at the same time or by each employee
The individual academic is not expected to excel in all areas. It is the universities that must achieve the expected objectives given by the government regarding research, education and interaction with society, not the individual academic.
3. Assess all results, activities and competencies in the light of Open Science principles
Openness should be seen as an integrated part of the academic activity.
4. Practice transparency in the assessment and visibility of what should be recognised as merit
Individuals must know what criteria will be used to assess them and must be given insight into how the criteria are applied.
5. Promote gender balance and diversity
Changes in the assessment criteria must be sensitive to impact on gender balance and diversity.
6. Assist in the concrete practice of job vacancy announcements and assessment processes locally
The framework should be a helpful tool in the recruitment and appraisal processes in the institutions and within the academic communities.

Four recommendations
1. To establish a comprehensive framework for the assessment of academic careers that: balances quantitative and qualitative goals and forms of documentation for academic standards and competencies

   enables diverse career paths and promotes high standards in the three key areas: education, research and interaction with society.

   recognises the independent and individual competencies of academic staff as well as their achievements in groups and through collaboration.

   values Open Science principles (including open assessment systems).

   values and encourages academic leadership and management.

2. To engage internationally in developing a Norwegian assessment model because: changes in the assessment criteria cannot be made by one country alone; a Norwegian model can contribute to related processes internationally.

3. To use NOR-CAM as a practical and flexible tool for assessing academic results, competence and experience for academic personnel.
NOR-CAM will highlight six areas of expertise through systematic documentation and reflection. See the matrix on the next page.

4. To develop an ‘automagic CV system’ that enables academics to retrieve data that can be used to document competencies and results in their own career, including applications for positions, promotions and external funding.

Who does what?
The institutions
NOR-CAM and the principles behind it should be supported by the institution’s management and be incorporated into the institution’s career and HR policy.

The institutions should update their guidelines for the announcement of academic positions and for assessment in connection with employment and promotion.

Scientific assessment committees should be followed up to ensure that the new system is implemented in practice.

Academic staff
Use NOR-CAM to document achievements and competencies with components from the entire range of academic activities.

Funders
Use NOR-CAM as a basis for assessing applicants and project participants’ competencies when assessing research projects.

Authorities
Ministry of Education and Research: incorporate the principles of NOR-CAM into the new national framework for the evaluation of Norwegian research and higher education.

Directorate for ICT and joint services in higher education and research: Develop a module that can be used to document competencies and results in one country at a time.

A toolbox for recognition and rewards
In recent years, initiatives to further develop ways of assessing research quality and academic careers have increased in scope and strength. This guide proposes a more flexible and holistic framework for recognition and rewards that adopts core principles for assessment: more transparency, greater breadth, and comprehensive assessments as opposed to one-sided use of indicators.*

NOR-CAM – The Norwegian Career Assessment Matrix (‘automagic CV system’)
A working group appointed by Universities Norway (UHR) was mandated to recommend guiding principles for the assessment and evaluation of research activity. The full text report can be found here: https://www.uhr.no/en/front-page-carousel/nor-cam-a-toolbox-for-recognition-and-rewards-in-academic-careers-158a.asp

NOR-CAM: The Norwegian Career Assessment Matrix
This matrix offers a systematic and flexible framework for assessment. The framework can be adapted to developmental processes as well as in the European University Association (EUA) and the EU. An important goal of the guidance and framework is to make the assessment processes more transparent and predictable, both for the individual and for the institutions. What skills are needed for the position to be filled? How well does your own competence fit the position advertised? What are the requirements for promotion?

Bibliometric indicators should be used with caution and coupled with other information. Changes in the assessment criteria cannot be made by one country alone. A Norwegian model can contribute to related processes internationally. NOR-CAM will highlight six areas of expertise through systematic documentation and reflection. See the matrix on the next page.

4. To develop an ‘automagic CV system’ that

   enables academics to retrieve data that can be used to document competencies and results in their own career, including applications for positions, promotions and external funding.
NOR-CAM - The Norwegian Career Assessment Matrix (NOR-CAM) serve as a framework for assessing general academic activity (results and competencies). One of the main aims of NOR-CAM is for multiple areas of expertise to be assessed more systematically than is currently the case.

<table>
<thead>
<tr>
<th>1. Area of competence</th>
<th>2. Results and competencies (examples)</th>
<th>3. Documentation</th>
<th>4. Reflection</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Research output</strong></td>
<td>- Published works</td>
<td>CRIS systems (e.g. Cristin) and other databases</td>
<td>Reflection on the relevance and quality of the results. Emphasis is placed on open access to published works and other results, as well as whether the data adhere to the FAIR principles.</td>
</tr>
<tr>
<td><strong>B. Research process</strong></td>
<td>- Leadership and participation in research groups</td>
<td>CRIS systems and other databases. Narrative CV system with links to source data.</td>
<td>Reflection on roles and relevance. How and why various actors within and outside academia have been involved in the research process. Emphasis is placed on transparency in the research process.</td>
</tr>
<tr>
<td><strong>C. Pedagogical competence</strong></td>
<td>- Planning, execution, evaluation and development of lectures and supervision of students</td>
<td>CV system with links to source data. Institutional registration of lecturing activity. Pedagogical portfolio.</td>
<td>Reflection on formal and informal competence and experience. Emphasis is placed on open education and the sharing of educational resources.</td>
</tr>
<tr>
<td><strong>D. Impact and innovation</strong></td>
<td>- Innovation</td>
<td>CRIS systems and other databases, Altmetrics, Narratives and impact stories. Patents and licences.</td>
<td>Reflection on the relevance and effects of activities for society, as well as external contributions to research. Sharing of research and educational results with the general public and others.</td>
</tr>
<tr>
<td><strong>E. Leadership</strong></td>
<td>- Institutional and departmental leadership</td>
<td>CV system with links to source data, CRIS systems and other databases, narratives.</td>
<td>Formal and informal leadership, reflection on roles, processes and effects. Contribution to strategies and policy development in relation to open science.</td>
</tr>
<tr>
<td><strong>F. Other experience</strong></td>
<td>- Experience and competence from sectors outside academia</td>
<td>CV system with links to source data.</td>
<td>Reflection on how these experiences contribute to the competence in general.</td>
</tr>
</tbody>
</table>

**1. Area of competence**
- Leadership and participation in research groups
- Working across disciplines
- Research integrity/RRI
- Editorial activity
- Peer reviews
- Building consortia
- External funding
- Development of research infrastructure
- Leadership and participation in clinical trials

**2. Results and competencies (examples)**
- Published works
- Datasets
- Software
- Methodologies
- Artistic results
- Research reports

**3. Documentation**
- CRIS systems and other databases
- Narrative CV system with links to source data

**4. Reflection**
- Reflection on the relevance and quality of the results. Emphasis is placed on open access to published works and other results, as well as whether the data adhere to the FAIR principles.
- Reflection on roles and relevance. How and why various actors within and outside academia have been involved in the research process. Emphasis is placed on transparency in the research process.
- Reflection on formal and informal competence and experience. Emphasis is placed on open education and the sharing of educational resources.
- Reflection on how these experiences contribute to the competence in general.