Report on Remote Assessment Procedures.

Impact Study and Recommendations on the Implementation of Remote Assessment Procedures in Spanish Universities

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Crue Universidades Españolas Intersectoral Working Group

CRUE Teaching, CRUE Registrars, CRUE ICT, CRUE Student Affairs

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Contents

1. Introduction and background

The situation caused by the evolution of the coronavirus, COVID-19, during March 2020 has led the Spanish government, Spain's various autonomous governments and Spain's universities to adopt extraordinary containment measures relating to the suspension of face-to-face academic activities in all higher education institutions and the continuation of these activities remotely.

In response to this situation, the Spanish Ministry of Universities (*Ministerio de Universidades*), the various regional ministries (*consejerías*) concerned, Crue Universidades Españolas and other Spanish universities have developed an extensive set of measures to address this contingency scenario, and enable the satisfactory delivery of university teaching activities.

Based on the belief that inter-university collaboration is the best way to provide effective solutions to our university community under the current circumstances, Crue Universidades Españolas has prepared different measures through its various sectorial committees and the working groups which comprise them. These measures include:

i) the creation of the Online Experiences Forum following the Suspension of Face-to-Face Teaching in Spanish Universities due to COVID-19 (*Foro Online de Experiencias ante la Suspensión de la Actividad Docente Presencial en Universidades Españolas por el COVID-19*) initiative, jointly developed by CRUE ICT and CRUE Teaching, through their working groups on Online Education and Educational Technologies (*Formación Online y Tecnologías Educativas*, FOLTE) and Online Learning (*Enseñanzas Online*, EOL), which culminated in the organisation of two online conferences for university managers of Teaching and ICT, held on 17 and 26 March with huge attendance; the reports produced on remote teaching and assessment options as a result of these conferences, and the creation of a virtual space for sharing information among managers;

ii) the work carried out by members of CRUE Registrars' Data Protection Officers' (DPOs) working group on the *Guide to personal data protection in the university environment during Covid-19* (Guía sobre la protección de datos personales en el ámbito universitario en tiempos del Covid-19), which includes a whole series of frequently asked questions on the subject; and

iii) studies on the problems of connectivity and availability of technological resources, produced by CRUE Student Affairs.

Likewise, on Wednesday 18 March 2020, CRUE President's Office and the Spanish Universities Minister (*Ministro de Universidades*) agreed that their teams would hold regular meetings to study the evolution of the coronavirus and develop potential joint initiatives. They also decided to create four working groups with the aim of seeking concrete solutions to the problems that the pandemic is causing on all fronts. Two of these groups are directly related to teaching activities. The first, is the Working Group for the Delivery of Teaching and the Academic Year (*Grupo de Trabajo de desarrollo de la actividad docente y del curso académico*), which is made up of representatives from the Spanish Ministry of Universities, CRUE President's Office and the sector committee presidents of CRUE Teaching, CRUE Teaching Staff and CRUE Student Affairs. And the second is the Working Group for Digital Teaching (*Grupo de Trabajo de Docencia Digital*), which is made up of the president of CRUE ICT, the rectors of Universidad Nacional a Distancia (UNED) and the Universitat Oberta de Catalunya (UOC). The former working group has an associated technical group, made up of representatives from the UNED, the UOC, CRUE ICT and CRUE Teaching, and it aims to pool efforts and to support the *La Universidad en Casa* web resource portal, developed by the UNED and the UOC at the request of the Spanish Ministry of Universities.

The resulting initiative, launched by Crue Universidades Españolas on Friday 3 April 2020, proposed the creation of an intersectoral Working Group to analyse how to adapt face-to-face assessment procedures in Spanish universities using a global approach, preserving the quality of service of student assessment processes in the 2019-2020 academic year to ensure that no student is unable to complete their course because of COVID-19.

This group is made up of representatives from four CRUE sectors: Registrars, Teaching, ICT and Student Affairs. It began work on Monday 6 April 2020, with the main objective of preparing this document - a report on remote assessment procedure options, which considers every facet of the process: methodological, regulatory (including data protection) and technological. We believe that this holistic approach, which considers not only the remote assessment options but also the impact of adopting them on our universities' departments in terms of each different fact, will be useful when designing action plans.

When we started the process of preparing this document, the group's members were aware that some universities had already produced guides for the adaptation of face-to-face assessment procedures, and that more would emerge during its preparation. This has indeed been the case, both through universities themselves and through the Office of the Minister for Universities, which has published a report in the last few days. For this reason, we have been tracking the guides that have been published to collate their contributions and attempt to: i) specify insofar as possible the aspects to consider when adapting the face-to-face assessment processes, and ii) provide specific recommendations on how to proceed in connection with the analysed facets.

The report is structured as follows. In Chapter 2 we first analyse the general considerations for the adaptation process, and then focus on other considerations that are directly related to each of the facets mentioned: regulatory (section 2.1), methodological (section 2.2) and technological (section 2.3).

In Chapter 3 we focus on alternative assessment procedures. In Section 3.1 we set out a list of alternatives, indicating their synchronous or asynchronous nature and their main characteristics from a methodological perspective. In Section 3.2 we identify the most common technological tools for carrying out remote assessment procedures in Spanish universities. In Sections 3.3 and 3.4 we define general scenarios for regulatory and technological compliance, respectively, grouping together the remote assessment procedures presented, summarising a series of considerations, and providing recommendations in this regard. Finally, in Section 3.5 we provide a series of tables reflecting common face-to-face assessment scenarios and the alternatives provided by remote assessment, in each case stating the impact this would have on the different facets analysed in the previous sections.

Chapter 4 contains the bibliography, and Chapter 5, the list of authors of the document.

At the same time, it is important to point out that this document is supplemented by the *Report on the regulatory impact of online assessment procedures: data protection and guaranteeing the rights of students* (Informe sobre el impacto normativo de los procedimientos de evaluación online: protección de datos y garantía de los derechos de las y los estudiantes), which has been prepared by the data protection officers who form part of the intersectoral Working Group and is appended hereto.

2. General Considerations

In this chapter, we first provide a range of general information and recommendations that we consider useful for carrying out the adaptation process from face-to-face assessment to a remote assessment model in a university environment. The next three sections then focus on other issues and recommendations which, though generally applicable to the university, are directly related to each of the facets - regulatory, methodological and technological - considered in this report.

- As a general guideline, assessment must be **"free of discrimination"**, whether it is conducted face-to-face or remotely, in order to protect students' rights.
- The general objective is to *adapt assessment procedures* for learning in different subjects to *remote assessment procedures,* given the exceptional circumstances in which we find ourselves, *assigning greater importance to continuous assessment procedures*.
- **There is no universal solution for designing a remote assessment procedure**. It will not be possible to apply the same assessment procedure to all subjects. Even so, there are global solutions which can be adopted. It will be necessary to conduct a rapid analysis to classify the teaching activities and the learning outcomes of degrees and subjects. Based on that, the most appropriate assessment procedures can be selected for each of them, taking into account the current contingency scenario.
- There are various facets to consider when adjusting assessment procedures to the current remote learning scenario (methodological, ICT, regulatory, legal and data protection considerations, etc.), among which is the **digital divide**. Therefore, the aim should be to ensure equity in the assessment process.
- As a general rule, a remote assessment model can be incorporated into courses through continuous assessment, using a variety of assessment techniques that are suited to the different teaching activities planned. However, the use of the remote assessment model must take into account both the nature of the course, students' connectivity context and their requirements in terms of special educational needs. Based on these two premises, we must accept that in some cases a **special assessment** will be required, using a traditional communication channel, which could even be face-to-face if the contingency scenario so permits.
- The achievable goal should be to *assess the maximum number of students in as many subjects as possible on time, adapting previously defined assessment procedures* to remote assessment. There are a large number of options for achieving this, which are set out in this report. There is no perfect solution - it is necessary to be flexible to adapt to circumstances such as the current contingency scenario.
- A generic recommendation regarding technological resources to support remote assessment procedures would be **to use of technologies that are already available in the specific university, which are as similar as possible to those normally used**

to support face-to-face teaching (for example, the tools available in the virtual classroom —i.e. the learning management system *(*LMS) on the technology platform— or in our videoconferencing systems), adding the minimum essentials (where necessary), *in order to ensure the assessment processes are as reliable as possible* in pre-tested and validated IT environments, *and to minimise the impact of decision-making on users*.

- Even so, it will be necessary to undertake a prior study of the load that the university's virtual classroom can support. It is essential to clearly communicate that *virtual resources are finite* and simultaneous mass usage of them could result in a system crash. Therefore, the **prior planning of the assessment calendar will be of utmost importance**. In the same way that face-to-face exam calendars are planned in advance, taking into account the physical spaces available, remote assessments should also be planned globally across the institution, based on the virtual spaces/resources available.
- It is important to distinguish between issues affecting students with difficulties resulting from a possible digital divide (who live in environments with poor connectivity or do not have the necessary devices such as computers, tablets or webcams, etc.), and students with special educational needs which require other measures to be adopted. Although solutions have been defined at different levels (negotiations by the Ministry of Universities, regional councils, Crue Universidades Españolas and the universities themselves) with the aim of providing connectivity and devices to these students so that they can follow the same assessment procedure as other students, it will be necessary to **coordinate alternative assessment procedures for those who credibly demonstrate that they cannot make use of the remote assessment model**.
- The recommendations or guidelines for remote assessment designed by each university should consider these issues and how to resolve them. For each type of assessment considered, clear *guidelines* should be drawn up on the action to be carried out by teaching staff and students before, during and after the assessment. Instructions will be needed on how to proceed in the event of *technical issues* which could happen to any student before and during the performance of synchronous or asynchronous assessments. Likewise, an *active communication policy* must be designed to disseminate all this information and to specify the channels for students and teaching staff to communicate with the institution.

2.1. General regulatory considerations

In a short period of time, universities have been required to adapt their regulations to comply with the provisions of Spanish Royal Decree 463/2020 of 14 March on the suspension of face-to-face academic activity and the maintaining of this activity remotely and online (*Real Decreto 463/2020, de 14 de marzo en relación con la suspensión de la actividad académica presencial y el mantenimiento de dicha actividad en modalidad a distancia y «on line»*). This is a particularly intense process for physical universities, both in terms of the transition to distance learning and the need to adapt the corresponding assessment processes, with the expectation that assessments will have to be carried out online and that no student should be left behind as a result of this crisis.

Thus, universities must draw up their own exceptional regulations for adapting to a new model that allows for different remote assessment options. It must do so not by changing the standards regulating the organisation of teaching and the carrying out of assessment in each university, but instead adapting to a new assessment model that does not use traditional systems, by introducing specific changes to teaching guidelines. This must be done without diminishing students' rights and guarantees, and specific procedures must be planned for students who lack the digital resources necessary to take the assessment with the specified method. The aim is to guarantee equal opportunities and avoid any kind of discrimination in the assessment process in a transparent digital environment, taking into account students' needs and circumstances (functional diversity, reconciliation of personal and family life, employment-related considerations, lack of sufficient technical resources or lack of digital skills) and offering alternative assessment methods.

It is important that these exceptional regulations are approved by the governing bodies of the universities with the greatest possible consensus. And, they should be disseminated as widely as possible through the ordinary channels of communication, so that students can find out with enough notice which assessment system will be used in each subject. This will guarantee legal certainty and transparency.

These regulations must consider general or specific contingency procedures in the event of a remote assessment, e.g. the virtual classroom or videoconferencing system crashing, individual connectivity problems, etc., and guidelines to follow in such cases.

Other important considerations are measures to preserve academic integrity and the use of available legal mechanisms (expulsion from the assessment, fail result or, where appropriate, the opening of disciplinary proceedings) in the event of cheating in assessments or coursework.

The general terms established must also guarantee the right for results to be reviewed and potentially challenged. It is therefore essential to collect evidence from assessments that are carried out using systems that comply with data protection legislation and the public's digital rights. The permanence and accessibility of evidence must be guaranteed during the statutory review and custody period, in order to be able to respond to potential student appeals, and enable audits by quality assurance agencies or for regulatory compliance.

In short, we are facing an exceptional situation that requires the adoption of extraordinary temporary measures. These measures must at all times adhere to the principles of legality, legal certainty, transparency and legitimate expectations.

2.2. General methodological considerations

Given the current teaching and learning contingency scenario, which requires the use of virtual and distance models, we are making the following general methodological recommendations to ensure the assessment of students' learning outcomes:

- *Focus remote teaching on the truly essential aspects* of each subject, assessing only the learning outcomes that have been covered as part of the teaching activities.
- *Appropriately monitor teaching activities,* weighting assessments and preventing students becoming overwhelmed with excess assessments and tasks.
- Review the assessment system for each subject/course and *clearly specify any changes made to the* assessment criteria and procedures, to the weighting initially assigned to each activity/component being assessed, and to the requirements set out (if applicable).
- *Inform the student body of* changes to the assessment system with sufficient notice and provide detailed instructions prior to assessments being taken.
- *Ensure the equity, quality and adequacy of the assessment process* with respect to the nature of the subject matter, the content and teaching methods for the changes made to the assessment system.
- *Diversify the methods of assessment*, opting for a **continuous assessment system that** offers students rapid, adequate feedback on their learning progress, assessing the possibility of dispensing completely with a final assessment.
- *Prioritise assessments that are best suited to the type and nature of each subject/course,* avoiding rote assessment wherever possible.
- Supplement assessment with *synchronous* (*online*) *and asynchronous* (*offline*) *virtual scenario* techniques.
- *Spread the weight across the different planned assessment activities* so that the final assessment forms part of them, **at all times considering the course areas that have already been assessed** so as not to disadvantage the student and to prevent them sitting only one final assessment with the resulting issues of ensuring authenticity, managing appeals and potential resits.
- Assess the various teaching activities using a detailed, objective correction and marking scheme, guidelines or criteria, which must be communicated to the students, with details of the impact of each assessment on the final mark.
- Inform students in advance about the *use of plagiarism detection programs* if they are required to submit a document, as well as the impact

on the result of any practices that breach university education principles are detected.

- Remind students of the *requirement to comply during assessments with the principles of individual merit and authenticity,* as well as the requirement to guarantee the authorship and originality of their work, in accordance with the university's general co-responsibility principle set out in Article 2.2 of the University Student Statute (*Estatuto del Estudiante Universitario*). Thus, in assessments carried out by videoconference, *students must provide documentation accrediting their identity,* which may be required at any time by teaching staff.
- *Include some feedback, supervision and/or follow-up* in all assessments*,* both for educational purposes and for quality control of the process, via video-conference, email or any other digital means that permits it.
- Establish mechanisms and procedures to enable the *resits for failed assessments*.
- *Carry out the assessments using the virtual classroom and the available IT tools recommended by each university,* following the established procedures in terms of technical requirements for access, regulations for use, notice periods and deadlines for resolution or response (especially in the case of synchronous assessments).
- *Enhance service and information for teaching staff and students* in institutions regarding the required adaptation for assessment procedures. We recommend developing infographics that simply depict the most relevant aspects, as several universities already have done. We also recommend enhancing the training of teaching staff by developing guides, video tutorials and webinars about assessment options and how to implement them using the university's technological resources, as well as very simple infographics that show process flows, and spaces for FAQs and resolution of doubts.

2.3. General technological considerations

In this section we will set out a series of technological considerations that universities should bear in mind to ensure the smooth operation of IT platforms and processes that will support the remote assessment procedures. Firstly, we will contextualise the scope of work and objective to achieve from the perspective of information security and computer system availability. Then, we will set out a series of other, more specific considerations in detail, based on a three-phase timeline: pre- assessment phase, assessment period, and post-assessment phase.

2.3.1. General considerations for security, information portability, and the availability of systems throughout the process

Designing a proprietary assessment process model and using digital services means complying with GDPR to identify and design technical or organisational measures that must complement the security measures enforced by the Public Administrations and third parties, under which they must comply with the National Security Scheme (*Esquema Nacional de Seguridad*, ENS). These measures are the result of an impact analysis on certain risks that are posed to people, which must be foreseen and mitigated as best as possible, as detailed in section 3.3 on regulatory compliance.

The digital services that support remote assessment are not explicitly considered in Annex I of the CCN-STIC 803 ICT Security Guide (*Guía de Seguridad de las TIC*) on the assessment of systems in universities. However, their assessment is related to that of CRUE_01_01-Virtual teaching and CRUE_01_06-Support for carrying out and correcting exams, found in the Usual Services for Universities (*Servicios habituales para universidades*) section, and when taken together these services could comprise remote assessment services. Similarly, the type of information processed would correspond to CRUE_I_03 Exams, defined as "Data processed in automated or centralised systems for the generation, storage and/or correction of exams". This is included in the Usual Types of Information for Universities (*Tipos de información habituales para universidades*) section. In the aforementioned guide, these services and the information processed by them were assessed as medium category (based on the assessment criteria established by the ENS) with respect to the five data security properties of availability, integrity, confidentiality, authenticity and traceability.

Although private universities are not legally required to apply this set of measures, which were laid down under Spanish Organic Law on Data Protection and Guarantee of Digital Rights (*Ley Orgánica de Protección de Datos y de Garantía de Derechos Digitales*, LOPDGDD), we recommend adopting a similar set of controls.

Therefore, like the university's other computer systems, the telematic systems on which remote assessment processes can be carried out are included in the university's Security Policy and in the scope of implementation of the ENS. In short, it is a question of implementing the necessary security measures to ensure:

1. Availability of remote assessment services: These digital environments should be sufficiently resilient to prevent the assessments being discredited. To achieve this, the environment must be designed with sufficient redundancy and space to support the maximum expected load and to cope with possible temporary contingencies arising from contingency planning or possible denial-of-service attacks, as well as to provide alternative resources to offer a "Plan B" if necessary.
2. Authenticity and integrity of remote assessment processes: having robust authentication and remote access mechanisms available; informing those involved how to use them correctly and informing them of their duties and obligations.
3. Confidentiality of the information processed in remote assessments: protecting communications and applying the measures established for the protection of assessment data and activity logs.
4. Traceability of remote assessment processes, keeping logs of users' activity, and the action taken in the event of interruptions in the process, so

that ICT staff can recover the service and both students and teaching staff know what to do in this kind of situation.

The above must always adhere to the criterion of "pursuing a system that is sufficiently secure but in which security measures do not make it difficult or impossible for the main agents (students and teaching staff) to use remote assessment services".

On the other hand, regardless of the tools used in the assessment process, it is essential to ensure the portability of evidence between the different platforms used and the universities' information systems. In the event that portability of information from the assessment process is not possible (because it is stored on a server provided by an external supplier), a service agreement must be established with the supplier that guarantees the durability and accessibility of the evidence during the period required for legal purposes. It will also be necessary to ensure that teaching staff can access the necessary evidence to carry out the assessment, and to confirm the students' identity and the authorship of tasks carried out in remote assessments.

In view of all the above aspects, we would advise that the Head of ICT Services, the Data Protection Officer, the Data Controller and the Information Security Officer of the university participate in the institutional design process for the remote assessment model.

2.3.2. Pre-assessment phase

Specific information security considerations:

- Review compliance with the university's password policy, which should apply to both teaching staff and students; special attention should be paid to password expiration conditions to prevent last-minute access restrictions. Recommend prior checks on to ensure the platform can be accessed by teaching staff and students. There will be a significant impact on support, so non-critical incidents related to assessment must be avoided wherever possible.
- Review and adjust the perimeter security policies of the University network (firewalls, DNS, IDS) and of the systems that support remote assessment, applying the necessary restrictions and controls to prevent and minimise the impact of possible attacks.
- Monitor the sources of connections to the servers used for the remote assessment.

Internal considerations for computer platforms on which assessments will be carried out:

- Provide a list of institutional tools and platform services in advance, in addition to the information for accessing them and the support channels for incidents. Given the current contingency scenario and the resulting urgent deadlines, we would advise basing the entire remote assessment process on technological tools that are fully functionally validated in the university, and to avoid the use of new tools that are not currently operational.

- Carry out an advance study of the workload that can be assumed by the technological platform of the institution where the assessments are to be carried out.
- Review computer systems in advance and remove redundant information for reduce their operating load. Consider the option of separating teaching and remote assessment bodies. Assess the possibility of using cloud backup systems that transparently integrate with university platforms.
- Analyse the additional needs of database systems for storing evidence in the event of a remote assessment scenario that is vastly out of the ordinary for these systems, which may also require the mass storage of assessment recordings. Scale services accordingly.
- As a consequence of the possible storage of new evidence mentioned in the previous point, review the security policies for backups, taking into account the need for effective backup recovery in the event of appeals. To this end, document and validate the traceability and recording of evidence for each assessment scenario.

Considerations for planning the assessment schedule:

- The virtual spaces/resources available in the university at any given time should be taken into account for planning remote assessments.
- Complex cases that the university believes should be handled with special consideration due to their volume, criticality, etc., must be identified and special attention paid to them. For example, the handling of large classes of first year students, which may require the "virtual" splitting of assessment groups or additional infrastructure support.

All of the above could take the form of a series of controlled trials for the validation of the assessment scenarios, carried out before the assessments are held, with a sample of teaching staff and users acting as students.

2.3.3. Assessment phase

- Active monitoring, especially at the beginning of the assessment period, to check that the increase in load on the systems is being responded to adequately, according to the different types of assessments. It might be worth considering advance prioritisation, based on the degree of criticality of the assessment, so that the most critical ones are sat first.
- Monitoring support channels with teaching staff and students during the assessment. During the assessment period, it is very important that both students and teaching staff have direct and easy contact with User Support Centres (*Centros de Atención al Usuario*, CAUs) which can resolve any incident. These CAUs play a key role in the process and their scaling is a complex process, given the excess need for immediate support that the current situation will entail, and the usual shortage of human resources in this role. We have considered the possibility of alternative solutions, including a tiered support system, where support groups are set up and brought in by each university to manage minor incidents, with only high-level incidents being redirected to ICT services.

- Effective monitoring of the assessments to identify those that could not be fully or partially completed by any of the students. Incident log so that they can be looked into at a later date. Student appeals related to technical problems must not reach the stage where results are reviewed by teaching staff, but should instead be identified and reported beforehand. We advise against allowing them to be reported after the fact, once the result has been obtained.
- Objectively rescheduling assessments that are unsuccessful on an individual basis, and even revisiting assessment calendars, if it is found that the systems are not capable of supporting the initial scheduling.

2.3.4. Post-assessment phase

Considerations related to the correction of the assessments and the notification of provisional results:

- In order to mark the contents of the assessments, teaching staff must be provided with guidelines that clearly explain how to mark the content of the assessments on the university platforms.
- To prevent teaching staffs' personal computers becoming cluttered, they should be reminded that content will always be available on the university platform.
- In order to comply with data protection and appeals regulations, provisional results must not be communicated to the university's students via unofficial channels. Thus, it would be best advised to use the university platform's own result management modules.

Assessment results review phase:

- Reviewing the assessment results may require significant use of synchronous videoconferencing-type systems. It may be advisable to provide an appointment request module on the university platform.
- Remember that appeals relating to technical problems (of the "my session was disconnected", the assessment was not properly recorded, etc. type) must not be dealt with in this phase, as they should have been identified beforehand.

3. Remote assessment procedure design

The aim of this chapter is to provide as much information as possible about the different existing Remote assessment methods, their use as alternatives to face-to-face assessment procedures and the impact of this adaptation on the different methodological, regulatory and technological facets analysed.

The chapter is organised in four sections. The first (section 3.1) lists the different remote assessment methods and analyses them from a methodological perspective. The second (section 3.2) lists the standard tools available in the virtual classrooms of Spanish universities which enable the implementation of these methods. The third section (section 3.3) describes a series of regulatory scenarios that group together the legal issues to be considered for the methods described. The fourth section (section 3.4) carries out the same task from a technological point of view, defining more general scenarios and analysing their impact. Finally, the last section (section 3.5) integrates all the previous information, defining a series of alternative scenarios for adapting from face-to-face assessment to remote assessment.

3.1. Remote assessment methods

This section includes different remote assessment procedures for university degree subjects. A brief description is provided for each procedure, indicating whether it is synchronous or asynchronous -which will have different associated implications in the three subsequently analysed facets- and commenting on the most relevant methodological aspects, if appropriate.

3.1.1. Oral examination

Description

Technique used to measure the educational objectives relating to oral expression and the active participation of the student in the learning process with respect to command of content, communication skills, attitudes, reflective processes, etc.

Suitable for evaluating comprehension of content, knowledge of data or facts, organisation of ideas, communication skills and ability to defend ideas or arguments.

This must be done in **synchronous mode**.

Methodological considerations

It can be used as an alternative to the traditional face-to-face exam.

It can also be used as a contrast assessment for another assessment; either across-the-board for all students or in cases where malpractice is suspected.

Each student must be informed by email, in good time, of the day, time and duration of the oral examination.

Since it will be carried out remotely, special attention must be paid to scaling the use of such assessments, if there is a high number of students, carrying out short exams.

3.1.2. Open written assessment

Description

A timed assessment conducted under the supervision of the lecturer, where students must answer one or more questions related to the course in their own words and in writing. Sometimes, students may consult notes, documents, supporting material and/or access the internet.

It is suitable for verifying the command of content and achievement of curriculum objectives, as well as the assessment of written communication, organisation of ideas and analytical capability.

It must be completed **synchronously,** using different technological tools according to the methodological design and level of identity checks required (videoconferencing systems, virtual classroom tools, etc.)

Methodological aspects

When used as a means of remote assessment, open written assessment can be an alternative to the traditional face-to-face examination. However, in a virtual teaching and learning environment, student there is not normally a guarantee of authorship. We do not recommend making excessive use of this type of assessment. In all cases, the weight attributed to it in the subject should be effectively balanced.

If there is a high number of students to assess, it may be advisable to create several different assessment models, in which case it is important for them to be of comparable levels of difficulty so that the assessment is fair.

It can be supplemented with an oral interview via video conference to check the authenticity of the answers.

3.1.3. Objective assessment

Description

A structured written assessment with various questions or items, where students either select the answer they think is correct or adds details, such as a word or a short sentence. These are the usual multiple-choice (test-type) assessments.

Objective assessments are suitable for assessing a wide range of knowledge or content, avoiding biases or ambiguities. They make it possible to check the comprehension and interpretation of the course objectives and for the lecturer to clearly identify any concepts that have not been learned.

They can be contemplated in both **synchronous** (if carried out as a program activity with a specific duration) and **asynchronous** (if part of an assignment from teaching staff on the subject) **mode**.

Methodological aspects

This type of assessment can continue to be used as a means of remote assessment, maintaining the same performance conditions in terms of duration and completion time, although the student's authorship cannot normally be guaranteed.

It can be supplemented with an oral interview by video conference to check the authenticity of the answers.

3.1.4. One-minute paper

Description

This consists of open-ended questions (one or two) that are asked minutes before the end of a class based on specific, clearly defined questions, which allow for a concrete answer.

It is suitable for evaluating what the students have understood in a specific teaching session and to reinforce what has been individually learned.

It should be carried out **synchronously** in order to be of real use in assessing how much attention has been paid during the class.

Methodological aspects

The One-minute paper can be used as a simple means of remote assessment via a forum or a chat with students, directly scheduling a survey or test with a start and end time from the usual learning platform.

3.1.5. Academic work

Description

An assessment technique that includes the work done by students, ranging from short and simple to large and complex work, in recent years. This can include individual or group work.

It is suitable for developing skills, such as searching for and selecting information, or organising and selecting knowledge, with both the outcome of the work and its preparation being the subject of continual assessment by the teaching staff and the students themselves.

It is carried out in **asynchronous mode**.

Methodological aspects

It is recommended that short, simple academic papers are proposed as a means of remote assessment, to allow for remote delivery, stating the expected learning outcomes, how they should be carried out, available resources, deadlines, delivery format and assessment criteria.

3.1.6. Concept map

Description

A concept representation tool that allows the student to graphically construct, organise and interrelate the key ideas of a thematic area. It is useful when there is a high conceptual load, as it makes students more aware of their knowledge.

It is suitable for promoting the construction of knowledge, and for integrating and relating concepts. It enables the assessment of the ability to synthesise and integrate information, as well as to check the level of knowledge acquisition after a period of learning.

It must be carried out **asynchronously**. The creation of a concept map requires prior preparation and organisation of work that exceeds the duration of a synchronous activity.

Methodological Impact

Assessments can be scheduled in which students generate concept maps through specific tasks, after a series of sessions related to specific concepts, methods or learning outcomes. This is a very useful way to carry out an initial assessment and explore students' preconceptions about a topic.

3.1.7. Reflective diary

Description

This is a personal report, a narrative about a task, in which students detail the actions taken in their learning, including their concerns, feelings, observations, questions, hypotheses, explanations, etc.

It is intended to facilitate the dialogue between lecturer and student, allowing for feedback. It promotes self-assessment and the development of critical thinking. It allows the assessment of the student's reflective and critical ability, as well as their creativity and written communication skills.

It must be carried out **asynchronously,** as it involves reflecting and, therefore, demonstrating the ability to reconstruct the learning or the difficulties arising from the learning process.

Methodological aspects

It is an alternative to academic work that encourages self-learning and reflection on learning and acquired concepts. It is very suitable in a virtual teaching environment. It can be used on the same terms and conditions as academic work, through remote delivery.

3.1.8. Portfolio

Description

A portfolio is a structured set of documents, prepared by the student, that collects evidence to demonstrate his/her knowledge and level of acquisition of skills in a subject or course, in relation to some guideline-criteria specified by the lecturer.

It is suitable for reflecting on learning and assessing complex learning outcomes or generic skills that are difficult to otherwise assess. Assessment is used based on evidence of what the student is capable of doing through the selection of samples of work, and on his/her ability to communicate, reflect, construct, etc. It encourages a continuous dialogue between the student and lecturer, which allows for feedback.

It is **asynchronous** by nature**,** as it is an activity that the student must carry out by providing evidence over a period of time.

Methodological aspects

It is an alternative to face-to-face assessment that can be used to gather information on the progress and extent of student learning from the collection of a set of documents. Specific tools can be used to create electronic portfolios or other known alternatives, such as creating blogs, sharing documents in the cloud, etc.

3.1.9. Observation

Description

A strategy based on the systematic collection, in the learning context itself, of data on student performance, skills, abilities and attitudes.

It is suitable for assessing learning outcomes that cannot be observed by other means, which allow for the collection of systematic and contrasted information or evidence. It allows information to be obtained on attitudes or behaviour.

It can also be used to evaluate the student's participation in the subject.

It can be considered as both **synchronous and asynchronous**. In the first case, it would be carried out during a specific class or session. In the second case, it would use evidence of students' commitment to the learning available in the virtual classroom, such as the use of forum(s), questions/answers/comments provided, access

to chat, management of wikis, downloading of documents, interacting with colleagues and teaching staff, etc.

Methodological aspects

It is a technique that can be applied in a remote assessment environment to assess the participation and involvement of students in activities that are carried out synchronously during class (debates, role-play, problem-solving, etc.) or asynchronously outside of class hours as a task assigns to students by the lecturer (forums, wikis, etc.). In the latter scenario, assessment is carried out through the collection of performance-related data (time spent connected to the platform using a resource, most-accessed resources, number of interactions with lecturer or peers in chats or forums, etc.).

It can also be used to assess the overall extent to which students are engaging with the subject, as shown on the platform, by analysing their individual platform log.

3.1.10. Projects

Description

A means of enabling the assessment both of the projects prepared by students and the skills, abilities and knowledge acquired through their preparation.

It is suitable for assessing the student's ability to apply the knowledge and skills of the discipline in putting together a project, while encouraging independent and team work. It makes it possible to assess student's ability to research and search for information.

It is performed in **asynchronous mode,** although it may be supplemented with related synchronous follow-up assessments for observation purposes, which can be assessed as part of the mark for the project or simply used for information gathering purposes.

Methodological aspects

For this assessment procedure to be carried out remotely, it is necessary to clearly define the project's objective, the expected results and whether it should be carried out in a group (preferable) or individually. At the same time, it is necessary to establish both the tasks to be carried out individually and as a group, as well as the available resources and deadlines. Students should propose a work plan that should be reviewed and adjusted in terms of its duration and timing. Short reports demonstrating the progress and challenges in relation to the work plan should be proposed, as well as mentoring sessions to guide and define objectives.

The work can be delivered individually (each student presents their contribution to the project) or as a group. In the latter case, apart from a final written report, a recorded presentation in screencast format may be requested.

3.1.11. Problems/cases

Description

A suitable means of assessing the knowledge and skills used by the student when addressing and solving a problem or a case set by the lecturer.

The starting point of this teaching/learning method is a problem or a case designed by the lecturer, so that the student, who does not have all the information, must reflect and identify their needs. To solve it correctly, the student must research, understand and integrate the basic concepts relating to the subject.

It is suitable for promoting independent learning, and developing reflection and critical thinking on unique, uncertain or complex problems or topics. Beyond the approaches and solutions proposed, it allows for the assessment of decision making, and the ability to analyse and assess information and creativity.

It is can be carried out **synchronously or asynchronously**. There are subjects in which a case or problem, given its nature, can be solved directly in a synchronous activity. However, in others, resolution of the case or problem will require much more detailed work, involving prior study, data analysis and the construction of hypotheses, so would therefore need to be carried out asynchronously.

Methodological aspects

To use this means of assessment in a virtual or remote environment, it is necessary to clearly state the problem or case, indicating whether it should be solved as a group or individually. At the same time, it is necessary to establish both the tasks that should be performed individually and as a group, and the available resources and deadlines. The development of the problem or case should be monitored.

In addition to the planned delivery of the work, a final meeting should be planned with the student or all group members, to analyse the work carried out, using one of the available remote tutoring tools.

3.2. Technological tools available in Spanish universities for carrying out assessment procedures

The below table contains a list of the most common IT tools available in the virtual classrooms of Spanish universities for carrying out the remote assessment procedures described above. In creating this table, we followed the general recommendation, which is already mentioned in various parts of this report, on **using technologies that are already available in the university in question, which are as similar as possible to those usually used to support of face-to-face teaching** to facilitate all areas of the adaptation process for all of those involved.

The table indicates the different tool options for remote assessment methods considered, and states which evidence to collect, which we will deal with in greater detail in the next section. By “record”, we mean a record of

events, i.e. a collection of data that automatically captures the type, content or duration of activities performed on a system by a person through a device. Evidence linked to the portfolio method is called an "artifact" in learning environments and is defined as the collection of educational documents (text, images, animations, simulations, audio and video) that make up the associated deliverable.

Remote assessment method	Synchronous mode	Asynchronous mode	Evidence required
1. Oral examination	Videoconference	————————	Record and/or recordings
2. Open written assessment	Videoconference	Virtual classroom Tasks Module and plagiarism detection tool	Record
3. Objective assessment	Virtual classroom Tasks Module	Virtual classroom Questionnaire Module	Record
4. One-minute paper	Videoconference (*)	Virtual classroom Questionnaire Module	Record
5. Academic work	Virtual classroom Questionnaire Module	Virtual classroom Tasks Module and plagiarism detection tool	Record and/or recordings
6. Concept maps	Videoconference (*)	Virtual classroom Tasks Module and plagiarism detection tool	Record
7. Reflective Diary	————————	Virtual classroom Diary and/or One Note tool, and plagiarism detection tool	Record
8. Portfolio	————————	Virtual classroom Portfolio Tool, One Note and plagiarism detection tool	Artifact
9. Observation	————————	Virtual classroom Forums, Wikis, Reports and Analytics tool	Lecturer's notes
10. Projects	————————	Virtual classroom Tasks Module and plagiarism detection tool	Record
11. Problems/Cases	Videoconference (considering options like chat)	Virtual classroom Tasks Module and plagiarism detection tool	Record and/or recordings

(*) Depending on the lecturer's approach, it may be necessary to use a video conferencing system in addition to the standard functionalities

The tools included in the table - *Moodle*, *Blackboard*, *Sakai* and *Canvas* - are available on the LMSs that support the most common virtual classrooms in Spanish universities, according to the *Report on the State of Educational Technologies in Spanish Universities 2018* (Informe de Situación de las Tecnologías Educativas en las Universidades Españolas 2018 – "Informe FOLTE"), published by Crue Universidades Españolas in 2019. The usual videoconferencing systems can also be used: *Google Meet*, *Blackboard Collaborate*, *Microsoft Teams*, *Zoom,* etc. The most widespread plagiarism detection tools in our universities, according to the aforementioned report are *Turnitin*, *Safeassign*, *Unicheck*, *Urkund* and *Compilatio*.

We recommend that evidence is recorded using the tools available in the virtual classroom. If that it is not possible, it would be interesting to use systems integrated with the virtual classroom that would enable the activity to be recorded and the corresponding evidence to be automatically generated and stored.

3.3. The impact of regulations and data protection guarantees on remote assessment procedures

This section includes the basic recommendations for regulatory compliance that apply to each management phase, as well as a basic table of specific requirements that should be met, where appropriate, by the different remote assessment methods described in section 3.1. These recommendations are taken from the *Report on the regulatory impact of online assessment procedures: data protection and guaranteeing students' rights* (Informe sobre el impacto normativo de los procedimientos de evaluación online: protección de datos y garantía de los derechos de las y los estudiantes), which was drawn up by the data protection officers from the intersectoral Working Group and is appended to this document.

Channel	Ownership	Type	Processing
			Common: identification Webcam monitoring
Virtual Classroom	Own (there may be a hosting service provider) Integrates or uses third-party plagiarism detection tools	2. Open written assessment	
		3. Objective assessment	
		4. One-minute paper	
		5. Academic work	Data included in tasks: interviews, recordings, videos, photographs.
		6. Concept maps	
		7. Reflective Diary	Subjective or personal data
		8. Portfolio	Data included in tasks: interviews, recordings, videos, photographs
		10. Projects	Data included in tasks: interviews, recordings, videos, photographs Webcam monitoring
		11. Problems/Cases	Recordings
Videoconference	Service Provider * it is not known if own or locally-installed tools exist	1. Oral examination	Webcam monitoring Recordings
		2. Open written assessment	
		3. Objective assessment	
		9. Observation	
Cloud working environments	Service Provider	4. One-minute paper	Data included in tasks: interviews, recordings, videos, photographs
		6. Concept maps	
		9. Observation	

Aside from the specific processing of personal data, general category data processing also takes place in all the remote assessment scenarios considered:

1. Identification of the persons assessed and the assessors.
2. Administrative and academic management of the assessments.

3. Controls on the normal course of the assessment and guarantee of transparency and legal security requirements in the assessment processes.
4. Correction of assessments.
5. Ordinary review or first review of assessments processes.

Similarly, identification data is used in all types of assessment, although in some cases it is classified. Accordingly, the use of identification data involves two types of procedure:

1. Use of agreed passwords when accessing information systems.
2. Visual verification of students' identity and their actions during the assessment.

In principle, based on an approximate classification, the above table shows three different types of channels that encompass all the assessments considered (*virtual classroom*, *videoconferencing* and *cloud work environments*), and it identifies special category data processing, in addition to regular processing.

The below table includes the purposes of data collection and types of classified data in the context of the assessment type:

Assessment	Purpose	Data	Processing
Common	Control of arbitrary or illegal actions	Commonly: lecturer in charge, identification of the student undergoing assessment	Depends on each assessment
1. Oral examination	Recording of assessment	Image and voice	Recording
2. Open written assessment	Detection of plagiarism	Data on student plagiarists	Data analysis
3. Objective assessment	Detection of plagiarism	Data on student plagiarists	Data analysis
4. One-minute paper	Detection of plagiarism	Data on student plagiarists	Data analysis
5. Academic work	Detection of plagiarism	Data on student plagiarists	Data analysis
6. Concept maps	Detection of plagiarism	Data on student plagiarists	Data analysis
7. Reflective Diary	Detection of plagiarism	Data on student plagiarists	Data analysis
8. Portfolio	Detection of plagiarism	Image and voice Data on participants	Recording
9. Observation	Recording of assessment	Image and voice	Recording
10. Projects	Detection of plagiarism	Image and voice Data on participants	Recording
11. Problems/Cases	Detection of plagiarism	Data on student plagiarists	Data analysis

From an organisational point of view, specific recommendations are proposed for the same three phases as those already considered in section 2.3. The next three subsections focus on considerations for regulatory compliance in each of these phases, while the fourth refers to a general principle for application in the process.

3.3.1. Pre-assessment phase

The following recommendations for action should be considered in the assessment process design phase:

- Review the Processing Activities Record, with the aim of either including new purposes in processing related to academic management, or including new processing. In particular, we recommend considering:

    - Precisely defining the purposes of the processing.
    - Specifying the periods for which personal data should be kept, which may be linked to preservation of evidence requirements.

- Review, where applicable, the regulations on assessments and/or examinations if necessary. This recommendation is particularly relevant if such a review would make it easier to define with foresight and accuracy the roles, duties and obligations of the members of the university community, with respect to the new scenario under consideration.
- Update information on personal data protection or privacy policies and adopt a layered information strategy that includes the following as a minimum:
    - the university website,
    - the virtual classroom, and
    - sending a notification directly to the members of the university community;

  as well as the possible specific inclusion of information in teaching guidelines, their addenda, or subject spaces in the virtual classroom, at least, in cases where processing consists of recording the assessment or involves remote visual control of the student's participation in the assessment.

- Always remember that if recording or watching via a webcam you should:
    - provide advance warning and sufficient notice of the conditions that must be met by the space used for the assessment, ensuring the absence of third parties who are not involved, and providing a reminder of the university's liability disclaimer concerning the effect on the private or family life of teaching staff and/or students.
    - inform the persons concerned of the compulsory nature, if applicable, of the taking or recording of images and the consequences of their refusal.

- Review and verify the legal relationships with companies that provide services relating to the assessment (cloud, videoconferencing, etc.), which are known as "data processors" in data protection terms. Despite the generous legal deadlines granted under the LOPDGDD, we advise reviewing and/or updating pre-existing data processor contracts.

- Accurately inform the university community and, in particular, academic supervisory bodies, about:
    - The authorised list of applications and/or IT tools with which it will be possible to operate, expressly prohibiting the use of software not authorised by the university, or stating the processes for obtaining authorisation for its use, and indicating the consequences that failure to comply could have on the security of the university's information.
    - The definition of the roles, obligations and responsibilities of academic bodies, managers and teaching staff in this respect.
- Require information from teaching staff and students to whom the assessment process poses a privacy risk with respect to situations of functional diversity, vulnerability, gender violence and any other circumstances that may imply some type of adaptation of the assessments, which is recognised under academic regulations or is considered and so communicated by the relevant authorities. Likewise, the rights of the persons concerned in these procedures should be facilitated, where possible, in particular the right to oppose the processing of their data.
- Specifically ensure, for tasks involving intellectual creation, the handling of personal data, images of third parties, or students' subjective opinions:
    - The strict application of the purpose limitation principle, limiting the use of data processing to the sole purposes of the assessment.
    - The prohibition of use of the data for any other purpose, excluding compatible use without the consent of the persons concerned.
    - The prohibition of disclosure of personal data to third parties who are not involved in the assessment process and are not competent, responsible or entitled to assess the student or group of students in question.
- Also ensure, for tasks involving intellectual creation, the handling of personal data or images of third parties, that the university and/or the subject tutor includes in their teaching plan, as academically required, learning to ensure students are able to:
    - Apply data anonymisation criteria.
    - Understand, know and apply ethical research principles.
    - Obtain, where required, proper informed consent for subjects' participation in the research, the processing of personal data, and/or the processing of images and sounds.
    - Know their duties of secrecy, security and confidentiality.
    - Safeguard and adopt due precautions if those concerned could be minors, persons with functional diversity, vulnerable persons or at risk of social exclusion, and/or persons with disabilities.
- Consider and review the virtual classroom publication terms for exams preparation documents, such as the lists of dates, times and people called to an

oral exam. Consider the general measures on publishing personal identification data, which also apply to the academic results publication phase.

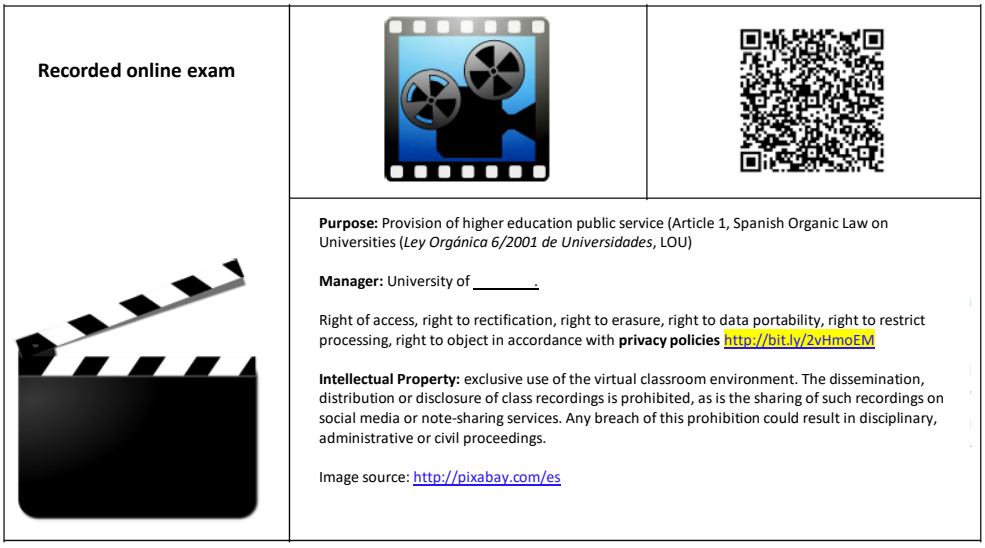
- Have services that enable the portability of data from the assessment process and its durability. These services must ensure the accessibility of the evidence necessary to demonstrate the completion of the assessment or any incidents that occurred, and only those involved in the relevant assessment process should be granted access.

3.3.2. Assessment phase

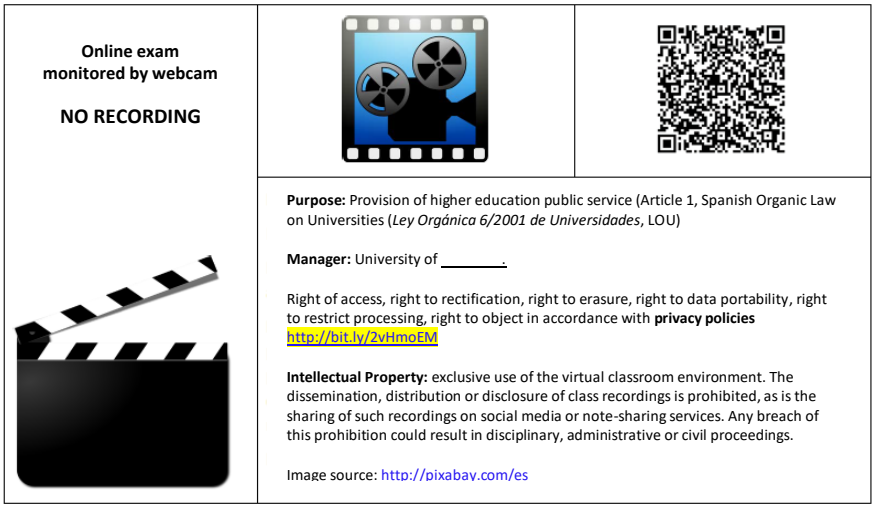
The below recommendations should be followed in the assessment phase:

- Avoid, and discourage, the following practices:
    - Use of students' mobile devices for assessment monitoring, by for example, as a secondary camera.
    - Use of private mobile applications and/or private messaging which is not contracted by the university

- Provision of sufficient training by the university to the teaching staff on the conditions of their connection environment, to prevent unauthorised third parties from accessing student data or having visual access to students, in the event of video recording.
- Inclusion of a notice to warn students when they are being viewed or recorded, which should have similar wording to those shown below. This notice will particularly relevant in cases where the principle of public access (*principio de publicidad*) is applied to the virtual environment, due to the presence of other students during the assessment.



Graphic notice for recording



Graphic notice for remote monitoring

- Set up an incident notification channel for teaching staff and students.
- Follow the planned academic procedure in the event of incidents -whether due to cheating or fraud, or situations resulting from a technical issue or any other issue decided on by the university-, using the means and channels determined by the university, and communicating the necessary information solely and exclusively to the bodies with authority to resolve the incident.

3.3.3. Post-assessment phase

The below recommendations should be followed in the post-assessment phase:

- Avoid publishing provisional results through unofficial university/student communication channels in order to comply with regulations on data protection and reviews and/or appeals. Accordingly, it would be best advised to use the results management modules of the university platform itself.
- Clearly define the conditions for publishing results in the virtual classroom:
    - Results must not be published in spaces which search engines can access.
    - The publication and marking procedures provided in the virtual classroom must be followed.
    - Results publication systems must only contain information relating to the subject, the student's first name and surname, and the result.
    - Exceptionally, in cases where students have identical first names and surnames, four random digits must be published from their national identity card, foreigner's identity number, passport or an equivalent document.
    - The published results must only be accessible for the period established under regulations relating to the review process, while the window for submitting appeals is open. Final results will be published for as long as necessary to ensure that all interested parties are aware of them.

- We advise against publishing results in documents attached to classroom repositories, such as PDFs.
- We advise including a notice to students, which states the purpose of the publication and expressly prohibits its use for other purposes, in particular for publishing information relating to other people's results.

- Remember to use the media indicated by the University for any online reviews. We advise against using personal media or university/personal email.
- Ensure that assessments and the personal data associated with them are kept for at least the period established in the relevant academic regulations. We advise keeping them in the virtual spaces made available by the university.

The sub-working group made up of the universities' data protection officers, considered **excluding facial recognition techniques** (proctoring systems) **from these recommendations.** Due to the technical complexity and strict legislative requirements placed on the use of biometric data, we can only address this question using the data protection impact assessment technique. Furthermore, the lack of regulatory clarity leaves the authorisations for their use open to interpretation, making it advisable to:

- Obtain an explicit declaration from the data protection authorities with jurisdiction on the matter or define a compliance model in cooperation with them.
- Consider regulatory conditions that offer sufficient legal security.

3.3.4. Principle of protection

In the assessment process, regulations must be implemented according to the *in favorem libertatis* principle - the principle of protecting people and their dignity - which is based on the right to education and individual freedoms, and the material value attributed to the principle of equality under the Spanish Constitution.

Therefore, assuming that the protection of people's rights prevails, we recommend minimising the impact of decision-making on users. The digital environment should be as similar as possible to the usual set of tools used in the face-to-face environment, adding the minimum essentials for synchronous or asynchronous communication between the university and the student. Above all, all users must be guaranteed the right to access the digital environment on the same conditions, regardless of their personal, social, economic or geographical status. And, in view of the aforementioned principle of equality, solutions should be sought to allow for the objective assessment of the knowledge of any students who cannot access a digital environment.

The design of the assessment process model and the use of a digital environment involve the assumption of certain risks. These risks must be identified, anticipated and mitigated insofar as possible, and certain protection guarantees must be considered, when designing the required technical and organisational measures.

Universities are advised to review the proposed considerations for guaranteeing protection, availability, portability and resiliency (many of which are included in section 2.3 of this document), as well as the proposed table of possible associated risks identified in the attached *Report on the regulatory impact of online assessment procedures: data protection and guarantee of students' rights* (Informe sobre impacto normativo de los procedimientos de evaluación online: protección de datos y garantía de los derechos de las y los estudiantes), and to keep these in mind when designing their own model.

In this respect, the principle of proactivity by design and default (Article 25 GDPR) is applicable, in order to design and implement the appropriate technical or organisational measures and to be able to demonstrate compliance (Article 5.2 GDPR). As data controllers, universities are required to implement appropriate technical and organisational measures to ensure and demonstrate that their processing of personal data is compliant with the GDPR (Article 24.1 GDPR).

These technical or organisational measures should be identified and designed through joint analysis of the assessment process, the environment that will support it, and any associated risks to users. In addition, these measures must be supplemented with the security measures required by the Public Administration under the ENS: this requirement is extended to third parties that provide services to Public Administration. Although under the LOPDGDD private universities do not have the legal requirement to apply these measures, we recommend developing a set of security controls similar to those discussed, as mentioned in section 2.3.

3.4. The technological impact of remote assessment procedures

In this section we identify the technological impact of implementing the remote assessment methods presented in this document on the computer systems of Spanish universities. Our objective is to identify the risks in order to prevent or manage their occurrence. Accordingly, this section supplements the recommendations provided in section 2.3, by linking them more directly to the remote assessment methods considered. Therefore, we apply a similar procedure to that followed in section 3.3 on regulatory impact. Firstly, we identify six general scenarios that group together the different remote assessment methods from both a methodological and functional perspective in terms of the modalities applied and the IT tools used, and which determine their IT impact. Secondly, we identify three global risk categories for these scenarios, focusing mainly on availability, integrity and traceability. The three types of IT risk identified are:

1. **Synchronous activities with the potential to overload real-time videoconferencing systems,** as a result of the high number of assessments carried out in parallel and concurrent users participating in them on the university's videoconferencing systems (e.g. open written assessments monitored in real-time).
2. **Synchronous activities with the potential to overload access to the virtual classroom,** as a consequence of the high number of assessments carried out in parallel and concurrent users participating in the same in the virtual classroom (for example, mass submissions of work at the same time).
3. **Mass storage of information,** linked to the large database capacity required to manage the volume of evidence produced by the

remote assessments, which also require mass storage space both due to the high volume of assessments and evidence and its unusual nature (far greater volume of video recordings than usual, need to handle unusual formats, such as scanned PDFs in some cases, etc.)

The table below shows the relationship between the six identified scenarios, the assessment methods associated with each of them, the IT tools considered (see section 3.2 for further detail), and the related IT risks:

IT Assessment Scenario	Remote assessment methods	IT tool	IT risk
Oral Examination	1. Oral examination (*synchronous*)	Videoconference	1. Videoconferencing system overload 3. Mass storage
Presentation of work to teaching staff and/or class	2. Open written assessment 10. Projects 11. Problems/Cases (*synchronous*)	Videoconference	1. Videoconferencing system overload 3. Mass storage
Submission of work	2. Open written assessment 5. Academic Work 6. Concept maps 10. Projects 11. Problems/Cases (*asynchronous*)	Virtual classroom Task Module with deadline	2. Virtual classroom access overload 3. Mass storage
Continuous assessment	7. Reflective diary 8. Portfolio (*asynchronous*) 9. Observation (*synchronous and asynchronous*)	Diary, Portfolio, Forums, Wikis, Analytics, etc. virtual classroom modules, One Note, etc. Videoconference	1. Videoconferencing system overload 2. Virtual classroom access overload 3. Mass storage
Synchronous assessment through open-ended and closed-ended questions	3. Objective assessment 4. One-minute paper (*synchronous*)	Virtual classroom questionnaires module with start and end time Videoconference	1. Videoconferencing system overload 2. Virtual classroom access overload 3. Mass storage
Asynchronous assessment through open-ended and closed-ended questions	3. Objective assessment 4. One-minute paper (*asynchronous*)	Virtual classroom questionnaires module with pre-established duration	2. Virtual classroom access overload 3. Mass storage

The second table in this section supplements the above table by including the integrity considerations for each scenario and detailing the technological impact associated with the risks:

IT Assessment Scenario	Integrity	IT risk	Technological Impact
Oral Examination	Verification of evidence by teaching staff: virtual classroom record and/or recording. Student identification and supervision procedure via videoconference.	1. Video conferencing overload 3. Mass storage	Scaling of the videoconferencing system in mass synchronous assessments at the university. Impact of recording all the assessments. Estimating attendance, volume of recordings and safekeeping, which must be verified before starting use the procedure.
	Provide support to participants and follow established procedures for incidents and potential appeals.		Preparing evidence recovery procedures to analyse incidents or appeals.
Presentation of work to teaching staff and/or class	Verification of evidence by teaching staff: virtual classroom record. Student identification procedure. Provide support to participants and follow established procedure for incidents.	1. Video conferencing overload 3. Mass storage	Scaling of the videoconferencing system in mass synchronous assessments at the university. Preparing evidence recovery procedures for the analysis of incidents or appeals.
Submission of work	Verification of evidence by teaching staff: virtual classroom record. Verification using plagiarism detection tool.	2. Virtual classroom access overload 3. Mass storage	Scaling the Plagiarism detection system. Preparing evidence recovery procedures to analyse incidents or appeals.

IT Assessment Scenario	Integrity	IT risk	Technological Impact
Continuous assessment	Verification of evidence by teaching staff: virtual classroom record and/or recording. Student identification and supervision procedure via videoconference. Virtual classroom record. Verification using plagiarism detection tool.	1. Videoconferencing system overload 2. Virtual classroom access overload 3. Mass storage	Scaling of the video conferencing system in mass synchronous assessments at the university. Impact of recording all the assessments. Estimating attendance, volume of recordings and safekeeping, which must be verified before starting to use the procedure. Scaling the Plagiarism detection system. Preparing evidence recovery procedures for the analysis of incidents or appeals.
Synchronous assessment through open-ended and closed-ended questions	Verification of evidence by teaching staff: virtual classroom record Providing support to participants and following established procedures for incidents and potential appeals. Student identification and supervision procedure via videoconference. Record and/or recording.	1. Videoconferencing system overload 2. Virtual classroom access overload 3. Mass storage	Scaling of the videoconferencing system in mass synchronous assessments at the university. Impact of recording all the evidence. Estimating attendance, volume of recordings and safekeeping, which must be verified before starting to use the procedure. Estimating attendance in the virtual classroom. Preparing evidence recovery procedures for the analysis of incidents or appeals.
Asynchronous assessment through open-ended and closed-ended questions	Verification of evidence by teaching staff: virtual classroom record Providing support to participants and following established procedures for incidents and potential appeals	2. Virtual classroom access overload 3. Mass storage	Preparing evidence recovery procedures for the analysis of incidents or complaints.

Based on the information presented in these two tables, the overall challenge we face at an institutional level is a scenario where all types of remote assessments take place simultaneously in a short period of time with a high level of participant attendance. This would lead to all IT infrastructure and systems involved experiencing overloads that would affect their availability, as discussed in section 2.3.

Additionally, we must bear in mind that remote assessments depend on infrastructure that is not managed by the university: students' and teaching staff's own equipment, internet connection, etc.

This joint scenario leads us to make the following conclusions and recommendations, in addition to those already discussed in section 2.3:

1. The number of remote assessments to be carried out in each university will be very high so it is necessary to consider that we will not be able to implement them all successfully, especially in cases where they need to be completed synchronously in a short period of time. It is necessary to design options that make it easier to complete the assessment in the event of an incident arising that cannot be remedied, which in an extreme case could result in the assessment needing to be resit.
2. Remote assessments that combine the functionalities of different systems generate complex scenarios (hybrids of the three identified IT scenarios) where the potential for incidents increase and require greater skill on the part of teaching staff and students who use them. An example of a hybrid scenario would be a questionnaire-based synchronous assessment through open-ended and closed-ended questions in the virtual classroom, with support through videoconferencing. This type of remote assessment requires the coordinated participation of two or more teaching staff depending on the number of students. We strongly recommend having a detailed knowledge of the functionalities and the use of the tools, as well as carrying out advance simulations so that the teaching staff become familiar with the environment, as mentioned in previous sections.
3. In general, it is desirable for all the tools used for performing the remote assessments to be integrated with the LMS that supports the virtual classroom, as this enables improved participant identification and makes it easier to centralise evidence. However, it is necessary to bear in mind that this configuration may lead to single points of failure and bottlenecks.
4. In some cases, the tools used in remote assessments will not be integrated with the virtual classroom LMS for automatic evidence collection. In these situations, it will be necessary to include in the protocols the steps to be taken by teaching staff to ensure the storage and identification of evidence. For example, if we use the plagiarism detection tool outside the existing integrations in the virtual classroom (several of the existing tools in the virtual classroom, such as the Tasks tool, usually have a direct integration) it will be necessary to collect the results using a manual procedure then store them later in the virtual classroom to ensure academic integrity.
5. Check that the functionality and configuration of the IT tools used for running the remote assessments ensure that

the evidence created in them (recordings, records, etc.) complies with the institution's regulations regarding their safekeeping and confidentiality. It is not only a matter of ensuring access but also of protecting it from unauthorised users, especially in the case of oral examination recordings.

3.5. Adaptation of face-to-face assessment scenarios using remote assessment procedures and analysis of the impact on the different facets analysed

In this section we conclude the work carried out in this report by collecting a series of tables that reflect common scenarios for face-to-face assessments and the possible options for adapting them into remote assessments. In each case, we indicate the impact on the different methodological, regulatory and technological facets analysed in the above sections, for their use in our universities.

	Description	Methodological impact	Regulatory impact	Technological impact
Face-to-face scenario: WRITTEN ASSESSMENTS	***Objective assessments*** **Correspondence with remote assessments 3.1.2 and 3.1.3 in section 3.1.** ***Synchronous*** *scenario*: Usually carried out with large groups who are taking assessments at the same time through the appropriate tool on the platform. An objective assessment can be built with different types of questions: multiple choice, short answer, complete, relate, etc. Although we recommend using the same type of questions to better control completion times, and to set several shorter assessments instead of one that is too long. It can also be helpful to divide the group into smaller groups and set different assessments for each one.	Constructing an extensive bank of items (to select different random questions for each student) Designing the assessment to minimise the risk of students cheating: shuffling the items for each student, controlling the time allotted for completion of the exercise, configuring the assessment so that the questions are answered sequentially without the possibility of going back, writing questions that encourage reasoning, the integration of theoretical and practical knowledge or the association of ideas, rather than just memorisation (that can be done with the material). If the group is large, we recommend dividing it into smaller groups because this helps with the verification of identity, monitoring and resolving doubts and incidents. Using the report produced by the plagiarism detection tool, interpreting it using the judgement of teaching staff.	Processing students' identification and webcam monitoring. Processing assessment recordings (evidence). Using plagiarism detection tools.	**A webcam, a microphone and a minimum quality of internet connection are required in a synchronous scenario.** Guaranteeing the scaling of the videoconferencing system in mass synchronous assessments in the university. Impact of recording all the evidence. Estimating attendance, volume of recordings and safekeeping, which must be verified before starting to use the procedure. Preparing evidence recovery procedures for the analysis of incidents or appeals. *If the group is large, we recommend dividing it into smaller groups to minimise the impact on the virtual classroom.*

	Description	Methodological impact	Regulatory impact	Technological impact
Face-to-face scenario: WRITTEN ASSESSMENTS	***Submitting an essay, solving a problem or case, or testing a hypothesis*** **Correspondence with remote assessments 3.1.2, 3.1.3 and 3.1.11 in section 3.1.** *Option 1:* ***Synchronous*** *scenario*: In addition to the objective assessments, students may be asked to take another type of assessment on a given date and time, such as an essay, solving a problem or case, or testing a hypothesis. Students will have to perform the task and send it through the appropriate tool on the platform within a certain timeframe. For small groups of students, a written assessment can be monitored through a videoconference to control the performance of the exercise which the students will have to scan or photograph at the end, and submit through the platform. *Option 2:* ***Asynchronous*** *scenario*: When it is not necessary for all students to take the assessment at the same time, it can be submitted through the platform within a certain timeframe. In this case, this can be used to carry out a peer assessment of the task (among the students). This can be done by using: a grading forum where students leave their work and others can access and assess it, or by implementing a peer assessment system (e.g. the Workshops tool in Moodle). Students can be provided with a rubric for assessment to simplify the task.	Building a rubric for assessment. It is advisable for the students to already be familiar with the rubric for assessment, so that it can help them monitor their own work and serve as a clear and objective guide of what is expected from them. If these submissions form part of a continuous assessment process, it is advisable to try to provide the students with feedback that guides them in their learning process, in addition to their result. Using the report produced by the plagiarism detection tool, interpreting it using the judgement of teaching staff	Processing students' identification and webcam monitoring. Using plagiarism detection tools.	**A webcam, a microphone and a minimum quality of internet connection are required in a synchronous scenario.** Guaranteeing the scaling of the videoconferencing system in mass synchronous assessments in the university. Impact of recording all the evidence. Estimating attendance, volume of recordings and safekeeping, which must be verified before starting to use the procedure. Preparing evidence recovery procedures for the analysis of incidents or appeals. Scaling the Plagiarism detection system.

	Description	Methodological impact	Regulatory impact	Technological impact
Face-to-face scenario: ORAL EXAMINATIONS	***Presentation of work*** (individual or team) with video call, through a presentation or poster **Correspondence with remote assessment 3.1.1 in section 3.1.** *Option 1:* ***Synchronous*** *scenario*: For presentations of teamwork, the student spokesperson shares the team's presentation on his or her screen and the other team members open their microphones and cameras, while the rest of the class watches the presentation. For individual presentations, the student shares the presentation with the lecturer and the rest of the class watches the presentation. *Option 2:* ***Mixed*** *scenario*: The lecturer creates a forum where the presentation or poster is pre-uploaded and all students access it in advance, view it and make comments and questions in the forum beforehand. They present it in a synchronous session to the rest of the class and answer questions in the forum (asynchronous) and in the chat (synchronous). Option 3: ***Asynchronous*** *scenario*: In the event it is not possible to agree on a date and time, a link to a video presentation (presentation with audio) can be shared in the forum (to a group of students) or sent only to the lecturer.	Assessing the oral presentation delivery. Assessing the presentation content or poster. Assessing the process of carrying out the work. Possibility for the lecturer to assess the presentation delivery and content with rubric or with a grading forum. Possibility of peer assessment using the same rubric. Possibility of peer assessment using the grading forum.	Providing sufficient notice of the date and time of the oral presentation (individual or team). Synchronous scenario: Processing students' identification and webcam monitoring. Processing the assessment recordings (evidence).	**A webcam, a microphone and a minimum quality of internet connection are required in a synchronous scenario.** Guaranteeing the scaling of the videoconferencing system in mass synchronous assessments in the university. Impact of recording all the evidence. Estimating attendance, volume of recordings and safekeeping, which must be verified before starting to use the procedure. Preparing evidence recovery procedures for the analysis of incidents or appeals.

	Description	Methodological impact	Regulatory impact	Technological impact
Face-to-face scenario: ORAL EXAMINATIONS	***Interviews*** (individual or collective) **Correspondence with remote assessments 3.1.1 and 3.1.4 of section 3.1.** • In small groups of students (approximately 5-15), this can provide an individual oral assessment, in the form of an interview, through videoconference. • If the group is of an average size (approximately 15-40), An individual oral assessment option may still be feasible, but it would be necessary to strictly control the exam times. • If the group contains 40 or more people, the oral assessment could be carried out in group mode (groups of 4-5 students simultaneously), asking each person different questions, and strictly controlling times.	Building a script with direct questions about knowledge, skills and learning outcomes. Building a rubric to assess the interview. The size of the group conditions which interview mode is selected. In addition, the lecturer may also call students for an oral interview on the subject of the assignment submission.	Providing advance notice of the date and time of the oral presentation (individual or team). Processing students' identification and webcam monitoring. Processing the assessment recordings (evidence).	**A webcam, a microphone and a minimum quality of internet connection are required in a synchronous scenario.** Guaranteeing the scaling of the videoconferencing system in mass synchronous assessments in the university. Impact of recording all the evidence. Estimating attendance, volume of recordings and safekeeping, which must be verified before starting to use the procedure. Preparing evidence recovery procedures for the analysis of incidents or appeals.

	Description	Methodological impact	Regulatory impact	Technological impact
Face-to-face scenario: PAPERS AND SEMINARS	**Correspondence with assessments 3.1.5, 3.1.6, 3.1.7, 3.1.8 and 3.1.10 in section 3.1.** ***Portfolio*** (individual or group) This may contain works produced by students, in the form of a repository of evidence ordered and selected by the students themselves according to the skills, objectives, learning outcomes and/or tasks carried out (activities, exercises, computer practices, summaries, workbooks, presentations, essays, etc.). It may contain text, image, audio or video files, presentations, maps, graphics, websites, etc.). It may document all or some of the activities carried out in the course, and include a reflection, in the form of a self-assessment, on what has been learned. ***Report and diary writing*** Students complete a project and write a final report. This may take the form of a compilation of actions taken to complete a project, solve a problem, or create a solution that responds to a challenge. The diary may include a chronogram or timeline describing and assessing the actions taken. It is recommended that the task uploaded to the platform includes final reflections on the learnings acquired. ***Searching, reviewing and reading publications*** Theoretical papers and summaries: Students access the library's online resources. The results of their searches, reviews and readings are uploaded in the form of summaries, theoretical papers and critical commentaries. ***Audio-visual productions*** Students are assessed on the basis of their audio-visual productions (podcasts, videos, etc.) They can provide a link to the production in a text file, where they present and justify it, including the references used. ***Concept maps*** Students provide a link to their map in a file. The graphic representation can contain the main ideas of a topic, block or module, in a hierarchical structure and linked in a meaningful way.	It can be associated with a rubric for assessment, for lecturer assessment, peer assessment and self-assessment. It is advisable for students to be familiar with the rubric for assessment, so that it can be used for monitoring their personal work or team work, and can serve as a clear and objective guide of what is expected. Using the report produced by the plagiarism detection tool, interpreting it using the judgement of teaching staff We recommend combing this with oral assessments (synchronous interviews on work submitted).	Identifying authorship. Using plagiarism detection tools.	Scaling the Plagiarism detection system. Preparing evidence recovery procedures for the analysis of incidents or appeals.

	Description	Methodological impact	Regulatory impact	Technological impact
Face-to-face scenario: OBSERVATION, ATTENDANCE AND PARTICIPATION	**Correspondence with assessments 3.1.3, 3.1.4 and 3.1.9 in section 3.1.** **Observation** In small groups of students (approximately 5-15) for assessing practical skills (know-how) in laboratory activities, computer science classrooms, sports halls and other situations: *Option 1:* ***Synchronous*** *scenario:* Observation of activities performed by students on their screen with questions from the lecturer about the process carried out *Option 2:* ***Asynchronous*** *scenario:* Sharing a link to a video recording of the student carrying out the process (either as a screencast or as a video recording of performance) and assessing the process after it has been carried out, answering questions from the lecturer about the process carried out (in the form of a checklist or short questionnaire). ***Attendance*** ***Synchronous*** *scenario: You* may wish to monitor students' attendance at sessions via videoconferencing. You can do this by using the chat tool, forcing students to make an entry in the chat and saving a record of these entries, or by using tools provided on the platform for monitoring class attendance (specific or general such as a **query** or a **one-minute paper** where a general session comprehension question is set at the end of the class). ***Participation*** *Option 1:* ***Synchronous*** *scenario:* Students' participation and involvement can be assessed in activities that are carried out synchronously during the class (debates, role-play, problem-solving, etc.). *Option 2:* ***Asynchronous*** *scenario:* *Option 2.1*: It is also possible to assess students' participation and involvement in activities set by the lecturer for students to carry out asynchronously outside of class hours (forums, wikis, etc.) *Option 2.2*: The level of students' participation shown on the platform can be assessed by analysing their individual record on the platform.	Building a checklist to assess what has been observed Building observation scales, where the student's behaviour when completing the tasks or activities assigned to them, along with the skills to be observed are recorded. When assessing attendance, it is necessary to bear in mind that not all students have the option of synchronous access. The assessment of participation may be quantitative, based on the number of contributions, but must also be qualitative, assessing the quality of those contributions. Using the report produced by the plagiarism detection tool, interpreting it using the judgement of teaching staff.	Synchronous scenario: Processing of student identification and webcam monitoring. Processing assessment recordings (evidence). Using plagiarism detection tools.	**A webcam, a microphone and a minimum quality of internet connection are required in a synchronous scenario.** **The student's computer must have recording and viewing capabilities.** Guaranteeing the scaling of the videoconferencing system in mass synchronous assessments in the university. Impact of recording all the evidence. Estimating attendance, volume of recordings and safekeeping, which must be verified before starting to use the procedure. Estimating attendance in the virtual classroom. Preparing evidence recovery procedures for the analysis of incidents or appeals.

Because of its special importance, we have included the usual scenario of face-to-face teaching activities that take place through practicals in laboratories. The practicals themselves are not the method of assessment, but their special teaching design makes it necessary to consider their relation to remote assessment methods and their methodological, regulatory and technological impact.

	Description	Methodological impact	Regulatory impact	Technological impact
Face-to-face scenario: PRACTICALS	**Correspondence with remote assessments 3.1.3, 3.1.4, 3.1.5, 3.1.8 and 3.1.11 in section 3.1.** **Practicals** that can be assessed in the online environment are those which are already carried out in face-to-face settings, which can be carried out in the virtual environment through access to virtual laboratories, remote laboratories or simulators, the use of remote desktops, the study and resolution of clinical cases, etc., or which can be substituted by other practical activities. *Option 1:* ***Synchronous*** *scenario:* *Option 1.1:* Students must carry out, while sharing their computer screen, one or several practical activities proposed by the lecturer to assess their skills in a given task. *Option 1.2:* The lecturer carries out a live demonstration through a video conference or by recording a video that is shared with the students. Then, an assessment is made through a questionnaire, survey or similar, to assess the student's comprehension of the activity. ***Asynchronous*** *scenario:* *Option 2:* Students must submit a report or paper on the activities carried out in the practicals. For this, they will be given practical guides to help them follow the necessary steps to achieve a final result.	The lecturer must prepare a guide of practicals or activities that students can carry out virtually. Once the practical has been completed, either synchronously or asynchronously, the scope of the related learning outcomes will be assessed through tasks, problems or cases, objective assessments (test), one-minute papers, academic work or portfolios. Using the report produced by the plagiarism detection tool, interpreting it using the judgement of teaching staff.	Synchronous scenario: Processing of student identification and webcam monitoring. Identifying authorship. Using plagiarism detection tools.	**Availability of laboratories, virtual, software, simulators, virtual machines, etc. that students need to carry out the practicals.** **A webcam, a microphone and a minimum quality of internet connection are required in a synchronous scenario.** **The student's computer must have recording and viewing capabilities.** Consideration should be given to the impacts associated with the remote assessment methods used to evaluate practical.

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