European Banking Authority

HANDBOOK ON SIMULATION EXERCISES

FOR RESOLUTION AUTHORITIES

JULY 2025

EBA/REP/2025/20

Contents

Executive Summary

The EBA is tasked, pursuant to Article 8(1)(ab) of Regulation 1093/2010 of the European Parliament and of the Council, with developing and maintaining 'an up-to-date Union resolution handbook on the resolution of financial institutions in the EU which is to set out best practices and high-quality methodologies and processes for resolution, taking into account the work of the Single Resolution Board, and changing business practices and business models and the size of financial institutions and of markets'. This handbook chapter ('handbook') provides best practices and high-quality methodologies and processes on Simulation Exercises for Resolution Authorities aiming at enhancing the preparedness and operational efficiency of resolution processes through structured simulation exercises (SimEx) run by resolution authorities (RAs).

The handbook is structured to follow the general development sequence of a SimEx, from initiation to planning, preparation, delivery, and closing. As a baseline it promotes a common taxonomy, on **testing**, **simulation exercises** and **dry runs**. Testing focuses on evaluating specific components or systems under controlled conditions, while simulation exercises are those controlled environments that mimic real-world scenarios, allowing participants to practice responses and improve decision-making. Finally, dry runs combine testing and simulation to provide a comprehensive understanding of system capabilities and potential limitations. This means, simulations and testing are not always necessarily linked, as there are tests without a simulation component (for instance, self-assessment, internal audit, deep dive, on-site inspection), while a simulation can have purposes different than testing (training or creating a system).

In more detail and aiming to harmonising the taxonomy, the handbook identifies six main types of simulation exercises that are considered relevant for resolution related simulation exercises: **brainstorm, desktop exercises, walkthroughs, fire drill, decision-making exercise, operational simulation**. An additional concept of **end-to-end simulation** is also introduced but is not seen as a different type of simulation as it rather combines in a more comprehensive way the other types of simulations.

The **initiation phase** identifies the decision to run a SimEx. The SimEx concept statement – which puts in a clear and brief manner the requirements of the exercise – the scope and goals are defined during this phase. The output of the initiation phase is the SimEx Charter, which identifies the main elements of the simulation and provides guidance for the subsequent phase of preparation.

The **set-up phase** refers to the planning and preparation of the exercise, including: participants and team descriptions (identifying the roles such as players, observers, design team, and control team); design of the scenario (developing the narrative and challenges for the simulation); timeline and milestones (that is, setting the simulation operational timeline and the project management timeline); rules of play for participants; and allocation of resources and budget (in terms of human resources, scenario-specific assets, tools, and platforms). This phase might include an onboarding process or training for players.

The **delivery phase** is the actual running of the SimEx in which the players act. The design team transforms, generally, in the control team, which ensures the simulation runs as planned, delivering planned injects and manages the simulation's progress. The control team might also simulate stakeholders and manage any deviations from the expected path.

Finally, the **closing phase** entails the **collection of feedback** and the preparation of the **closing report.** As a best practice, feedback is to be collected from participants and observers during and after the simulation and is subsequently used to generate the closing report. The handbook includes some examples of questions for players as guidance to collect feedback. The closing report summarises key lessons learned and provides recommendations, including an action plan, in relation to the aim and objectives of the SimEx set in the initiation stage.

The last part of the handbook consists of several annexes which provide additional practical resources for the RAs running a SimEx, including examples related to each of the stages and templates: A1. A template for a SimEx Charter; A2. Areas to be tested in resolution simulations; A3. Examples of injects for resolution simulations; A4. Suggestions for players; A5. Suggestions for tools and platforms; A6. Using GPAI in SimEx; A7 – Questionnaire template for feedback collection; A8. Check list for feedback collection.

Additionally, Annex A presents a showcase example to illustrate the concepts described in the handbook and follows the example of how a resolution authority would set-up and deliver a simulation exercise.

1. Introduction

1.1 Legal background

1 Articles 8(1)(ab) and 29(2) of the Regulation (EU) No 1093/2010 of the European Parliament and of the Council[1] provide for the development of a Union resolution handbook as a convergence tool to promote common supervisory (including resolution) approaches and practices. The EBA is tasked under Article 8(1)(ab) of that Regulation to 'develop and maintain an up-to-date Union resolution handbook on the resolution of financial institutions in the Union which is to set out best practices and high-quality methodologies and processes for resolution, taking into account the work of the Single Resolution Board and changing business practices and business models and the size of financial institutions and of markets'. Furthermore, in Article 29(2), second subparagraph of that Regulation, it is indicated that 'The Authority shall also develop and maintain an up-to-date Union resolution handbook on the resolution of financial institutions in the Union, which duly takes into account the nature, scale and complexity of risks, business practices, business models and the size of financial institutions and of markets.

2 While the EBA Handbook does not take the form of legally binding acts and is not to restrict judgement-led supervision, as stated in recital 7 of Regulation (EU) No 1022/2013 of the European Parliament and of the Council[2] (which includes provisions on the EBA Handbook in Regulation (EU) No 1093/2010), RAs should, in principle, use it to identify best practices and high-quality methodologies and processes. The use of the handbook should be considered as a significant element in assessing the convergence of supervisory and resolution practices and for the peer review under Regulation (EU) No 1093/2010.

3 This handbook covers resolution authority-run simulations that cover different aspects of Directive 2014/59/EU of the European Parliament and of the Council[3] (the Bank Recovery and Resolution Directive (BRRD) framework).

[1] Regulation (EU) No 1093/2010 of the European Parliament and of the Council of 24 November 2010 establishing a European Supervisory Authority (European Banking Authority), amending Decision No 716/2009/EC and repealing Commission Decision 2009/78/EC (OJ L 331 15.12.2010, p. 12) ELI: http://data.europa.eu/eli/reg/2010/1093/oj.

[2] Regulation (EU) No 1022/2013 of the European Parliament and of the Council of 22 October 2013 amending Regulation (EU) No 1093/2010 establishing a European Supervisory Authority (European Banking Authority) as regards the conferral of specific tasks on the European Central Bank pursuant to Council Regulation (EU) No 1024/2013 (OJ L 287, 29.10.2013, p. 5–14) ELI: http://data.europa.eu/eli/reg/2013/1022/oj.

[3] Directive 2014/59/EU of the European Parliament and of the Council of 15 May 2014 establishing a framework for the recovery and resolution of credit institutions and investment firms and amending Council Directive 82/891/EEC, and Directives 2001/24/EC, 2002/47/EC, 2004/25/EC, 2005/56/EC, 2007/36/EC, 2011/35/EU, 2012/30/EU and 2013/36/EU, and Regulations (EU) No 1093/2010 and (EU) No 648/2012, of the European Parliament and of the Council (OJ L 173 12.6.2014, p. 190). ELI: http://data.europa.eu/eli/dir/2014/59/2024-01-09.

4 This chapter of the resolution handbook is addressed to resolution authorities (referred to in this handbook collectively as “Resolution authorities” or “RAs”). The guidance provided in the handbook is without prejudice to any mandatory Union law.

1.2 Handbook objectives and structure

5 **This handbook covers resolution authority-run simulations**, whereby RAs are the main organisers of such simulations. These simulations cover different aspects relevant to the BRRD framework.

6 The objective of this handbook is to provide a conceptual framework, and to share best practices, high-quality methodologies and processes in organising and running simulation exercises (SimEx) for the benefit of RAs in order to help advance the quality of SimEx. An increase in consistency should drive an increase in interoperability between RAs, facilitating cross-border simulations where RAs from different jurisdictions can play a role.

7 RAs consider simulation exercises as an efficient tool for training and testing purposes.

8 The handbook is structured along the general development sequence of a SimEx – from initiating a simulation to planning and preparing, followed by delivery and ending with collecting feedback and developing the closing report.

9 The best practices, high-level methodologies and processes in this handbook are based on the current experience of RAs.

10 Annex A provides one concrete SimEx example to showcase how the concepts and best practices could be applied in a specific situation. The showcase example explains the set-up of a desktop simulation exercise to test RAs’ decision-making process.

11 The handbook includes a limited number of samples and covers only selected topics relevant to RAs across different jurisdictions, considering that RAs exist in different organisational structures (e.g. departments/units of central bank, independent public authorities).

12 RAs should refer to the elements provided in this handbook to the extent that they suit the type, scope and objectives of the exercises they are developing.

13 In the context of this handbook, participants are individuals or entities involved in SimEx. The concepts of players, design team, control team and observers are explained in Section 3.1.1. In addition, the handbook refers to staff as being any members of the RA, or any other authority that would become participants in the simulation.

1.3 Testing, simulation exercises and dry runs

14 The main types of exercises that are relevant in this context are the following:

- Simulations – create a controlled environment to mimic real-world scenarios, allowing participants to practise responses, test plans, and improve decision-making processes in situations that replicate realistic elements in part or in whole. The simulations' main purpose is to mimic or duplicate reality.

- Testing – focuses on an evaluation or scoring of a specific component or system[4] under controlled conditions to verify its functionality against predefined requirements. Tests are usually used to identify gaps, deviations from expected behaviour, or possible areas for improvement. Testing can have a binary outcome (pass/fail) or an evaluation on a scale defined by the testers.

- A dry run – as described in the EBA GL on resolvability testing[5], combines testing through a simulation and can provide a comprehensive understanding of system capabilities and limitations. The combined approach – testing through a simulation – of a dry run can provide a comprehensive understanding of system capabilities and limitations. The most frequent exercises are those combining simulation and testing. The term 'dry run' is also customarily used to mean a dress rehearsal for large and complex simulation exercises.

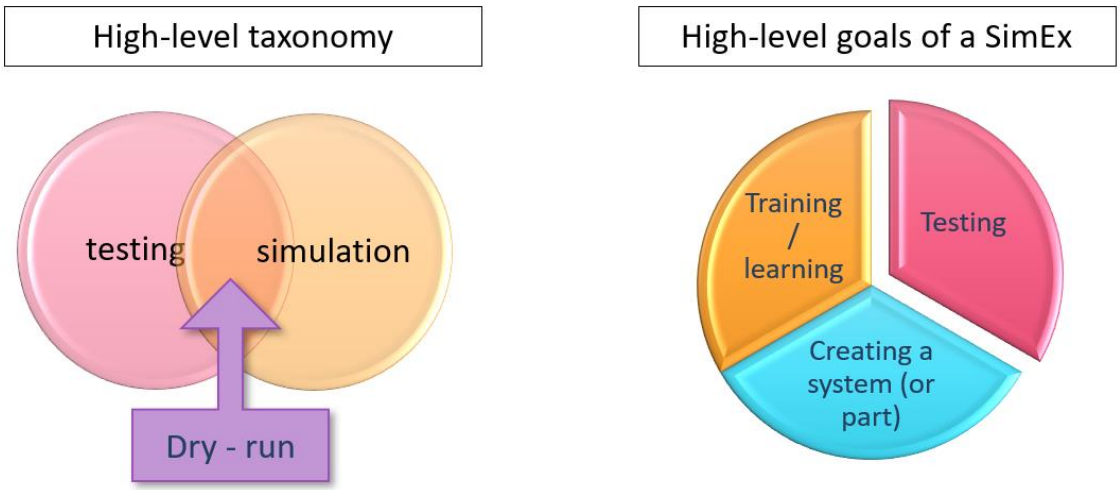

Figure 1: overview of interactions between testing and simulation and main goals of a simulation

15 Examples of tests without a simulation component are *self-certification, self-assessment, internal audit, deep dive, on-site inspection* (as provided in the EBA GL on resolvability testing[6]). Simulations that do not include a testing component are those that focus on training and learning elements, or those that aim to create new systems or components.

[4] In the context of this handbook, a system is understood to be any components required to operationalise a resolution action, such as resolution plans, resolution authorities' internal procedures, handbooks for operationalising resolution tools, IT tools at the RAs' disposal, etc.
[5] EBA/GL/2023/05.
[6] EBA GL on resolvability testing, EBA/GL/2023/05, Annex 4.

16 Indicatively, simulations can be used for different purposes, including the following:

- Testing – to assess or grade a specific system, or part of a system, under controlled conditions, to verify its functionality against predefined requirements/expectations.
- Training and learning – to provide training on the implementation of a specific system, or part of that system, to enhance trainees' practical skills in this regard, and to increase overall operational preparedness, including increasing awareness, readiness and staff knowledge.
- Creating a system – to initiate the development of a system (or parts of it) from scratch, which, with varying levels of additional development, would become a valuable asset for resolution.

17 Based on existing literature and RA simulations conducted to date, and also considering the EBA GL on resolvability testing, a total of six types of simulations are considered as best practices.

1.4 Main type of simulation exercises

18 As a best practice, the following typology of exercises is proposed:

1.1.1 Brainstorm

19 Brainstorming is the simplest form of a SimEx. Brainstorms are usually freeform exercises designed to enhance creative and out-of-the-box thinking.

Example: resolution experts would join in a meeting and answer how they would respond to a notification of a failing institution (e.g. notification of failing or likely to fail).

20 As a best practice, in a brainstorming SimEx, RAs should note down the steps they would take, setting the first base for developing a procedure, plan or handbook.

21 The brainstorming SimEx should be used to create or develop a system, whether fully or in part. It should be used as a starting point when there is no element or when there are only a few elements for the system intended to be created.

22 A brainstorming SimEx involves minimum preparation time and resources. Observation during the exercise and the articulation of the closing report are very important for brainstorming, as they capture the main elements of the system under development. Brainstorming could be part of a larger SimEx, for example when a new problem arises within the scope of the SimEx (flexible type of simulation). As a different example, the brainstorm can be used by a player that is invited by the RA to the SimEx but has only limited knowledge of the resolution framework and their role.

23 The brainstorming being a starting point, as a best practice, RAs should consider taking follow-up actions to make the system usable in resolution.

1.1.2 Desktop exercise

24 The desktop exercise is also an initial and simple form of SimEx. The EBA GL on resolvability testing describe this exercise as the *initial stage to enhance playbooks and ensure standardisation, consistency and alignment with the requirements for the documentation of key processes by individual steps, including timing, responsibilities and dependencies.*

25 As a best practice, desktop exercises should be used when there is already a system or part of a system (e.g. plan or procedure) in place. This system is tested by having participants discuss and review mock inputs and outputs as per the system's plans or procedures, without actually implementing the procedures.

26 Example: the resolution authority would like to check that the sequences of steps and responsibilities are correct for the process to follow when they are notified of a determination of FoLtF (failing or likely to fail). The players would take turns and indicate what they would prepare and who they would contact, passing the floor to the persons they would contact.

27 As a best practice, desktop exercises can be used to identify gaps or inconsistencies in plans or procedures or to reveal any shortcomings in the interaction between several procedures or plans, and especially if different teams of players would be involved. For example, team A follows procedure X and team B follows procedure Y. The two procedures interact in some points (i.e. the output of one is an input for the other). The desktop exercise will help both teams to understand the procedures of the other team, the other team's expectations and requirements regarding their interaction.

28 Desktop exercises could also be used for training, for example for participants to be familiar with the steps of plans or procedures. This is a discussion-based simulation where participants analyse potential scenarios and discuss the actions according to the underlying plans and procedures.

29 The desktop exercise, as a best practice, is used (1) preliminarily to identify that the procedures and plans do not have timing and logical flaws and/or (2) to ensure that the level of training for staff participating in the SimEx is at a level where they are familiar with the plans and procedures.

1.1.3 Walkthrough

30 The walkthrough is a more advanced form of a desktop exercise. The EBA GL on resolvability testing state that the walkthrough *traces an operation step-by-step through the MIS or procedures from its inception to the final disposition.*

31 As a best practice, a walkthrough should be used when there is already a procedure or plan in place. Alongside a discussion and critical review of the procedure or plan, participants may also perform a demonstration by implementing the steps from the target procedure or plan, but without the need to do so in real time.

32 Example: to test their bail-in calculator, RAs could trace the steps preceding the use of the tool, use mock inputs in the tool and generate an output that will then be sent to staff who are supposed to receive this information. A Walkthrough SimEx can be run over a period of three days, much longer than events would unfold in reality, to allow time to discuss each step and identify possible improvements in the process.

33 As a best practice, a walkthrough should be used to identify gaps and inconsistencies, as well as potential practical issues. A walkthrough can also be used for training, by having participants act out the steps of the procedures/plans.

1.1.4 Fire drill / drill

34 The fire drill is described in the EBA GL on resolvability testing as a *process-oriented, focused and flexible plausibility check of selected steps in a playbook.*

35 As a best practice, the drill should be designed to practice and refine specific skills or parts of procedures or plans. Drills are used, in general, in relation to single, isolated, specific operations, functions or tools.

36 Examples:

- the RA may test its internal response, limited to the first 'n' steps, when receiving a notification of a FoLtF (Failing or Likely to Fail).
- RAs choose a drill exercise to check the response times of college members, for example as required in the ESMA GL on resolution colleges[7].

37 As a best practice, a drill should also be used for training purposes as well as for refining awareness, alertness and response times. RAs should consider using the drill for joint team training.

38 The drill SimEx is usually short, it being possible to execute the same drill a few times; in sequence, for example. Additionally, contrary to the best practice referred to in paragraph 73 of this HB, RAs should also consider asking players to perform the drill ad hoc. As an example, RAs may indicate to players that a drill is coming up without providing a precise moment. As a best practice, a drill should be used to check an institution's ability to deploy a specific capability (such as a Virtual Data Room (VDR) or generating a report), and that an RA can access the relevant information and documents. The drill could be part of a larger SimEx if, for

[7] ESMA91-372-1958 – Guidelines on written arrangements and procedures for the functioning of resolution colleges.

example, the RA would then follow an internal procedure with the input generated by the drill (e.g. checking accuracy and integrity before producing an internal report).

1.1.5 Decision-making exercise

39 The decision-making exercise (DME), or management simulation, is a structured activity designed to help players or teams of players practise and improve their ability to prepare for and take decisions. As a best practice, in this type of exercise, participants should evaluate available information, options, weigh up pros and cons, and choose the best course of action. For this type of exercise, a decision-making procedure, plan or process should be in place.

40 As a best practice, the DME should be used for training, both for the decision-makers (e.g. the management body and senior management), for the staff that provide the input for the decision, as well as the staff that will use the output of the decision. In these cases, players become familiar with expectations and can practise the flow of information for the decision and improve the reaction time. These exercises could be used to familiarise decision-making bodies or persons with the input they may receive and the output that is expected from them.

41 As a best practice, a DME can also be used to test if the procedures leading up to the decision point provide sufficient information for a decision to be taken and to identify areas for improvement.

42 Example: the participants can assess whether all necessary information is available and documented for deciding on taking resolution action and if there are clear roles for drafting the documentation. In some cases, senior management could simulate decision-making related to a given procedure, taking into account the applicable scenario.

43 As a best practice, the DME should also be used as a tool to train and identify areas for improvement in resolution colleges. Similarly, the DME can be used for the authorities at national level, for institutions not part of a cross-border group, as even in these cases there is an expectation of several decisions before reaching a final decision on taking resolution action and implementing a resolution strategy.

1.1.6 Operational simulation

44 The operational simulation exercise (OSE) is a form of exercise to test the effectiveness of procedures, systems, tools and staff in a realistic, operational environment. The operational simulations do not involve taking decisions. The OSE is based on an existing process, procedure, plan or system that will be the underlying component of this SimEx. The OSE is focused on the operationalisation of a specific plan, procedure or tool.

45 Example: an RA can use the OSE to simulate the set-up of a bridge institution. In this example, all steps are followed for the procedure to set up the plan. The team responsible checks that the sequence of the procedure is correct, can understand how much time it would take to

perform the steps and can use this simulation to raise awareness to stakeholders outside of the RA.

46 As a best practice, RAs should also use OSEs for training purposes, as the players are expected to not only be familiar with the plans, procedures and tools, but also to apply them as if it were a real event. The OSE can also be used, through observations during the simulation, to understand if the procedures or plans can be made more efficient or improved, or if there are limitations. The OSE allows players to focus on the operational aspects by taking out the decision-making component. The OSE can be combined with a DME for a more holistic approach.

End-to-end simulation

47 End-to-end simulations (E2E) are exercises that cover the management of an institution failure (i) either for most of the (or the full) timeline (from FoLtF event, or even before, until the stabilisation period), or (ii) involve most (or all) authorities that are expected to have a role in the management of a financial crisis, or (iii) cover most (or all) processes required to manage a financial crisis. Considering this wide scope, E2E simulations are sometimes called full-scale simulations.

48 The E2E SimEx reaches a wider footprint in terms of timeline, teams and players involved, and/or procedures and plans. The individual types of SimEx presented in this section are much more focused on specific aspects. In practice, the E2E is a combination of several of these other types of SimEx under the same scenario narrative (drills, DME and OSE).

49 As a best practice, the system (procedures, plan, tools) should already be developed and, ideally, already tested through the other types of SimEx. The organisers of an E2E should also have experience in organising other forms of SimEx.

50 The E2E SimEx is the most realistic and complete simulation compared to the other types. The E2E involves multiple staff, in general multiple authorities, and is more resource-intensive. The aim is to simulate a real-world event as closely as possible. As a best practice, the E2E exercise should test and evaluate most functions of the resolution procedures and handbooks or resolution plans.

51 Example: an RA organises an E2E to test the management of a failing institution that is not part of a cross-border group. As part of the exercise, the RA and the competent authority will each play DMEs and OSE. Part of the RA team that is responsible for the bail-in tool will have to perform a drill. In addition, stakeholders that were not previously involved in the management of a failing institution, such as the market authority and the stock exchange, are invited to take part in this E2E.

52 Figure 2 illustrates how the various types of simulations can be part of an E2E. In addition, it illustrates how dry runs can be a fire drill, DME or OSE. Finally, Figure 2 illustrates how the testing, learning and creation feed into the different types of simulations.

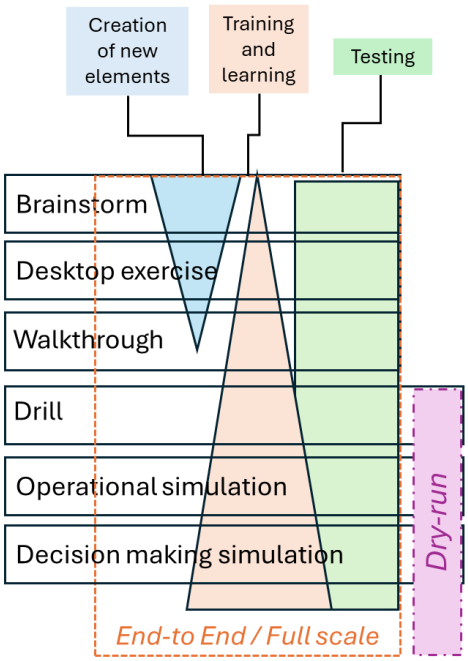

Figure 2: Overview of the different types of simulations and their interaction

2. Initiation – decision to run a SimEx

2.1 Trigger for launching a SimEx

53 As a best practice, RAs should use a SimEx (1) to test a system, plan, procedure or tool, (2) to train staff or (3) to create initial versions of plans or procedures.

54 Figure 3 indicates the sequence of the main steps for initiating a SimEx.

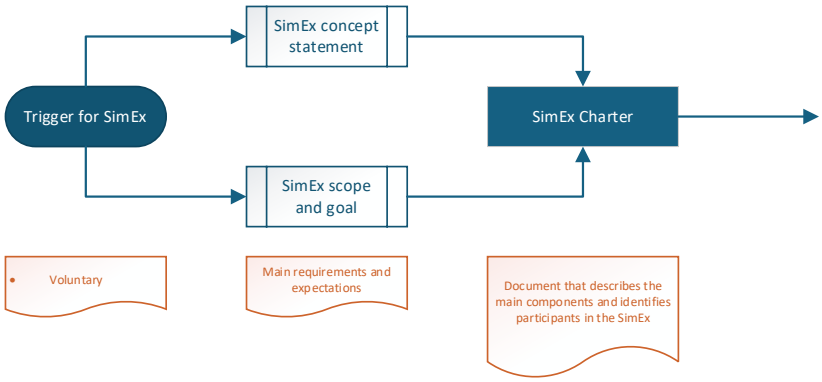

Figure 3: Process for the initiation of a SimEx

2.2 SimEx concept statement

55 As a best practice, RAs deciding to do a SimEx should draw up a SimEx concept statement. A **SimEx concept statement** puts together, in a clear and brief manner, the requirements and expectations of the SimEx agreed within the RA. The SimEx concept statement should be used for articulating the central points of the SimEx and to ensure comprehension and adherence to the same vision by participants. As a best practice, the SimEx concept statement should not be longer than a few sentences. The SimEx concept statement should be used before the planning phase and identifies the main potential participants and the main principles of the proposed SimEx. This short statement, as a best practice, should be used during the planning and preparation phases to share information and ask questions to participants to clarify the goals and the scope of the exercise and to determine general lines of direction. As a best practice, potential participants should be able to share their first ideas and views on the SimEx, leading to the articulation of the **SimEx Charter** (Section 2.4).

Examples of SimEx concept statements in the context of the resolution framework

- ❑ The decision-making and communication processes of the RA are newly created as procedures and have not been assessed or utilised to date. Hence, a SimEx is to be voluntarily carried out by the RA with the relevant stakeholders to assess their efficiency and to identify possible enhancements that can be made.
- ❑ The resolution plans have been developed and improved over several years, so the RA decides to carry out a SimEx to determine its readiness to operationalise the preferred resolution strategy in the most effective manner.
- ❑ The RA's senior management believes it would be beneficial to train the RA's staff on preparedness to undertake the activities required to progress a resolution action in the correct sequence and in an effective way.
- ❑ The interaction of members of a resolution college is different in a crisis event than in the resolution planning phase. There is very little opportunity to interact in a crisis mode other than by conducting simulations. RAs indicate that running a simulation helps increase readiness and college members' awareness of their roles and responsibilities in a crisis scenario, and the testing of their communication and coordination, including dedicated tools and decision-making processes, is considered as a best practice.

2.3 Scope and goal

56 Defining the goal and the scope is a key element within the initiation phase. The goal is the desired outcome of the SimEx and is linked to creating a system or part, to testing or to training.

The scope defines the boundaries and deliverables required to achieve the goal and should clarify how to achieve the goal and 'what's included or excluded' in the SimEx.

57 In particular, as a best practice, the following should be clearly defined early on:

a) what is in scope and essential ('must-have' elements) for the SimEx;

b) what is in scope, but only desirable ('nice to have' elements); and

c) what is not in scope.

58 Agreeing on the scope and priority of elements to be tested is crucial for providing clarity to the preparation and delivery of the SimEx. As a best practice, only a few and concrete elements should be within the scope of a SimEx, as otherwise the number of resources required to prepare, track and deliver the SimEx would be high and likely to lead to diluted outcomes. In terms of scope (testing, training or creation), as a best practice, the goals should include only aspects that are credible and related to a potential resolution scenario, giving priority to situations, tools or elements that are *ex ante* considered more credible and essential for resolution.

59 Annex 2 provides a non-exhaustive list of areas that could be tested in a resolution context. The goal and scope of the SimEx determine the exercise type, resources needed, and the participants that should be involved.

60 As a best practice, it is important to maintain the focus agreed on at the initiation point and avoid focus creep by including new elements during the preparation phase, such as enlarging the scope or adding new goals, as experience indicates this is very tempting. RAs should, as a best practice, remind participants throughout the planning, preparation and delivery stages of the decided scope and goals of the SimEx.

61 As a best practice, RAs should start with a smaller and simpler SimEx and progressively increase complexity in subsequent simulations. This ensures an increase in maturity and expertise of organisational aspects. In addition, the validations through testing are increasingly complex, also aligning with an increase in staff training and awareness.

Examples of goals that may be considered when developing a resolution-specific exercise:

- ✓ Gain assurance that RAs' own capabilities are in line with expectations. For example, the RA would like to check how long it takes to contact potential valuers in the process of appointing independent valuers.
- ✓ Identify potential deficiencies and opportunities for improvement related to the practical implementation of a resolution decision. For example, the RA would like to check that it can obtain, in a short time, all documents and approvals required to set up a bridge institution.
- ✓ Promote crisis preparedness and awareness among own staff, among staff of other relevant authorities and/or of institutions potentially within the scope of resolution. The RA would like to organise a training exercise where staff from all authorities with a function in managing a

bank failure at national level are invited and would mock-manage the failure of a local institution.

✓ Enhance and train on procedures for communication within resolution colleges, including decision-making processes. The GLRA proposes a SimEx within the college, where, following a notification of the group's failure, the college will need to follow-up with the decisions to take resolution action.

2.4 SimEx Charter

62 As a best practice, RAs should develop a SimEx Charter. A SimEx Charter is the final output of the initiation stage. It is a document that identifies the main elements that should be included in the simulation and proposes concrete and directive elements for the planning and preparation phases. As a best practice, RAs should use the SimEx Charter as guidance to keep the project on track, avoiding scope creep throughout the exercise from the planning phase until the closing report is finalised.

63 As a best practice, during the SimEx lifetime, **updates to the SimEx Charter** should be avoided, as they risk altering the project scope and increasing SimEx complexity, which may require more resources and may decrease the focus of all participants. As a best practice, any deviation from the SimEx Charter should be reasoned and documented.

64 As a best practice, the main elements of the SimEx Charter should, in general, identify: (i) the project manager, i.e. the person responsible for the execution of the project; (ii) the sponsor(s), i.e. the person(s) responsible for approving the simulation; (iii) the main goal of the project, according to the concept statement; (iv) the elements in scope that are essential, elements in scope that are desirable, and elements which are not in scope; (v) the tentative deadline for organising the simulation; (v) references to any existing materials or tools (e.g. the procedure that should be tested); and (vi) the type of exercise that best fits the goals, scope and resources (see Section 1.4).

65 The SimEx Charter should be proportionate to the size and complexity of the SimEx, i.e. smaller for brainstorming and more extensive for an E2E SimEx.

66 Annex 1 proposes a template for a SimEx Charter that can be customised and used in practice. Depending on the desired outcome and type of SimEx, the elements provided in paragraph 64 above can be customised to best reflect the specificities of each SimEx.

67 As a conclusion, Figure 4 provides a summary of the elements described in the initiation section and how they link with the delivery of the simulation.

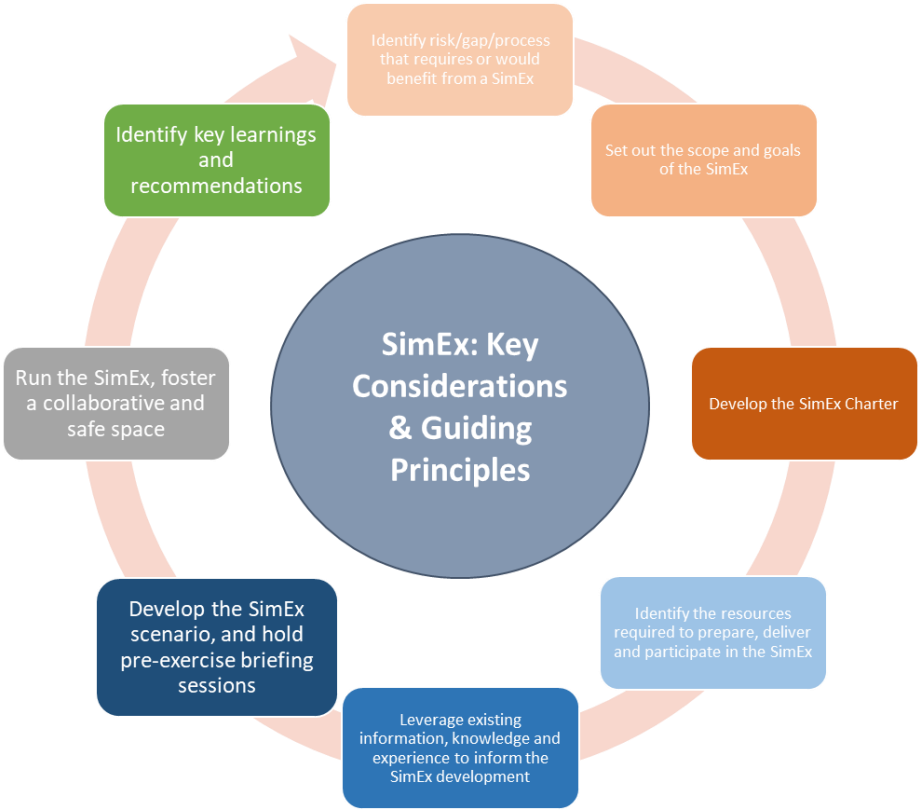

Figure 4: Diagram of the main elements that are considered in the initiation part of a SimEx

3. Simulation set-up / preparation

68 The initiation phase described in Section 2 of this HB should, as a best practice, be followed by the simulation set-up, which should comprise two main phases: the planning phase and the preparation phase. The simulation set-up is usually, from the experience shared by RAs, the most time- and resource-demanding phase. Experience has shown that the set-up phase takes between one and six months (or even more) and varies in proportion to the length and complexity of the exercise. Desktop exercises and walkthroughs would generally require less time to prepare than an E2E exercise, for example.

69 This chapter covers the main aspects of setting up a SimEx. Figure 5 provides the details of the elements covered by the simulation set-up: planning and preparation phases.

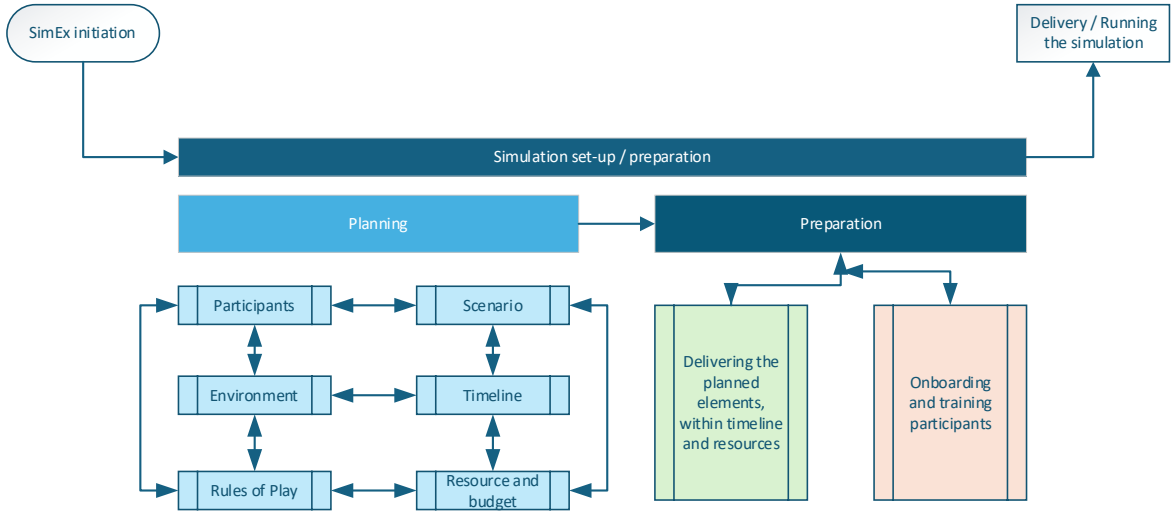

Figure 5: Details of the simulation set-up elements

3.1 Planning – outlining the SimEx

70 The first part of the simulation set-up process consists of articulating a plan for how to prepare the simulation. Based on the SimEx Charter developed in the initiation stage (Section 2), the elements that are desired in simulation should be articulated in a plan. This section explores the elements that indicatively, as a best practice, should be covered by the SimEx plan.

3.1.1 Participants and team descriptions

71 As a best practice, the different roles of participants should be defined. This section explores the different roles of participants in a SimEx in all stages, from planning and preparation up to the concluding report. RAs should define and allocate staff to these roles. In general, there are several categories of roles, as follows: players, observers, the design team, the control team. These roles intervene depending on the complexity and type of the SimEx, while for more simple exercises some roles can be overlapping (i.e. one person serves as designer, controller and observer).

72 Figure 6 indicates when, during the lifetime of a SimEx, the various roles are expected to act. The rest of this chapter will present the expectations for each role, best practices recorded from past experiences and examples of how these roles are applied.

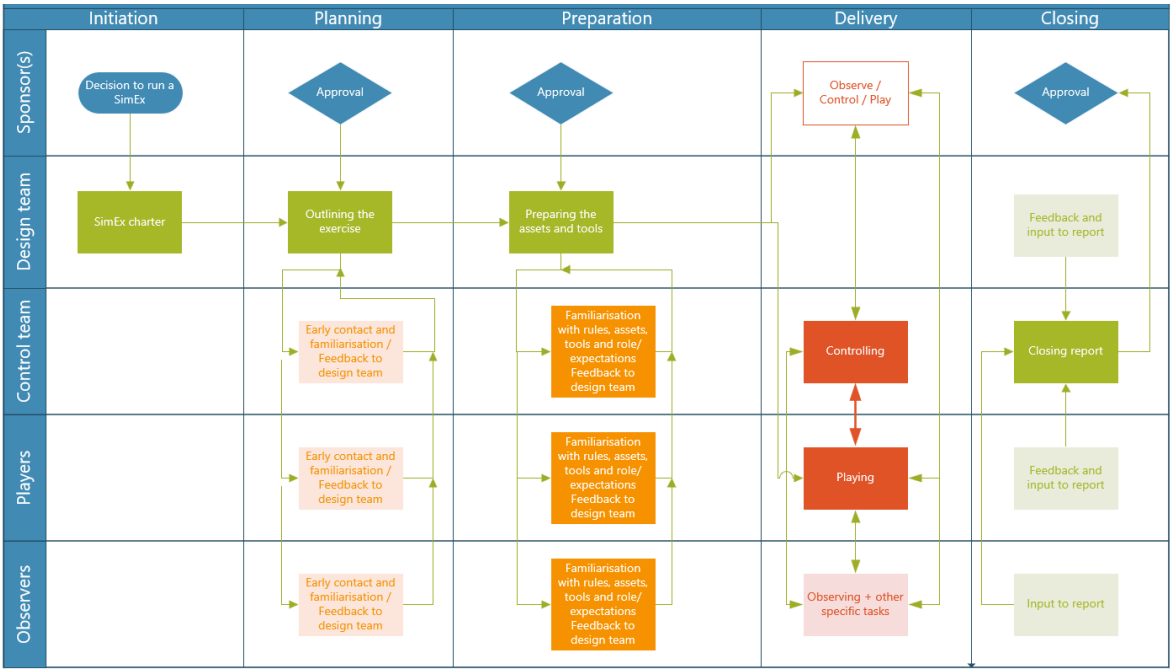

Figure 6: Timeline of when various roles are expected to intervene in a SimEx

73 As a best practice, within the planning phase, all participants in the SimEx – control team, players, observers, etc. – should be informed about the project and be made aware of their possible future involvement as early as possible. The goal of sharing early information is two-fold:

- to block space in calendars as soon as the timeline is known (i.e. for day(s) of the exercise and for potential kick-off meeting and/or training or onboarding sessions);
- to elicit early comments and suggestions from the various stakeholders that would lead to improvements and increased efficiency in the planning phase, and ensure buy-in for the execution phase.

a. Players

74 At the centre of any SimEx are the **players**, who step into roles they would have during an actual institution failure and resolution event, e.g. by making decisions, implementing procedures, and generally responding to challenges just as they would in a real crisis.

75 The identification of players, as a best practice, should happen top down: (i) first identify which authorities would be involved in a real case that resembles the one simulated; (ii) then identify which authorities are invited to the simulation and then (iii) as a last step, each invited authority should determine the relevant staff that would be invited as players in the SimEx.

76 In a more extensive SimEx, ideally, RAs should consider, as a best practice, representation from most, if not from all, authorities that would be expected to act in a resolution case. For

example, in addition to staff from RAs, involving competent authorities, competent ministries, deposit guarantee schemes, central banks, the European Commission, the SRB and the EBA can be foreseen. The goal is to mirror the various stakeholders involved in an actual resolution process. In some cases, players different from RAs could also be invited to play, covering, for example the institution, external consultants and valuation companies, trading venues, central securities depositories (CSDs), Central Counterparties (CCPs), or the NNA (national numbering agency for ISIN codes), etc.

77 Depending on the scope/content of the SimEx, as a best practice, RAs should ensure that players' selection includes participants from various operational functions within the resolution authority. The range of players should also be defined by taking into account the type of simulation exercise that is envisaged and the activities that are meant to be covered by the simulation exercise (i.e. in a smaller scale simulation exercise, not all roles may be needed).

78 Different players derive distinct benefits from engaging in a SimEx, depending on the type of SimEx. For example, senior management is actively challenged to make critical decisions under the pressure of limited time and information, mirroring the complexities they would face during an actual resolution. This enables them to refine their strategic thinking and crisis leadership skills. Mid-management coordinates their teams and ensures the smooth execution of strategies, gaining a deeper understanding of how their decisions cascade throughout the organisation. Meanwhile, expert-level staff gain practical experience in executing resolution procedures, moving from theoretical knowledge to hands-on application.

79 As best practice, RAs should ensure that players, in general, are involved in almost all SimEx phases: planning (for early feedback), preparation (onboarding: familiarisation with rules, tools and role expectations), delivery (for the actual role-playing) and closing (for feedback and input to the report).

b. Design team

80 The design team is responsible for designing the SimEx, namely for determining all the elements required to run the SimEx as expected and then producing those elements. The design team creates – in the planning and preparation phases – the infrastructure that supports the entire SimEx.

81 When the design team is formed, as a best practice, a project manager is allocated for the exercise. The role of the design team, in the planning phase, is to deliver the SimEx plan (that identifies all the elements required to ensure a smooth running of the SimEx and timelines for delivering those elements).

82 As a best practice, the design team should consider all aspects of the SimEx – how information will flow between participants, what resources each player will need, and how to maintain security and confidentiality throughout the exercise.

83 While it is possible that the same people are both players and members of the design team, as a best practice, such overlaps should be avoided. When the goal of the SimEx is to identify gaps in the procedural documents or to test the players' readiness and ability to use the target process, plan or tool, the design team should, as a best practice, consider not informing the players about the full design of the SimEx in advance. This will guarantee objectivity in observing those gaps. As a best practice, the design team (or part of the design team) should become the control team during the delivery phase of the SimEx. Since the design team is very familiar with all the aspects of the simulation, they would have clarity on how to control the simulation. Depending on the complexity of the SimEx, the control team may require more staff than the design team. In addition, the design team may also be involved in the closing phase by providing feedback and input to the closing report.

84 It is also a best practice to have people independent of the resolution function in the design team. Such independent people could, for example, be from a different RA, from a different authority (e.g. EBA), or staff from the same institution outside the resolution function. Their opinion could be more objective in case divergent opinions arise.

c. Control team

85 The control team ensures that the SimEx runs as intended. The control team becomes active when the SimEx starts to be run.

86 As a best practice, members of the design team should transition to the control team in delivering the SimEx. Depending on the type and size of the SimEx, control teams may require additional people in the design team and, as a best practice, should incorporate people independent of the design team to ensure objectivity.

87 As a best practice, the control team should (i) indicate the initiation of the SimEx; (ii) deliver planned injects; (iii) constantly observe players in their actions and intervene to correct course or accelerate play (e.g. taking a decision that players seem unable to reach); (iv) stand in as players who are not present themselves but are needed for the SimEx (e.g. the CA or the failing bank).

88 The role of the controllers is key to ensuring that the SimEx remains focused on the key areas, that participants are guided through the scenario narrative, and that any unexpected developments are managed within the timeline and scope of the SimEx. Past simulations have shown that not all potential content-related questions from players can be anticipated – especially in the case of very complex exercises. In such cases, the active intervention of the control team is important to control the smooth unfolding of the exercise.

89 In addition, the control team can make observations to be used in the closing report. The control team may also be responsible for preparing and coordinating the delivery of the closing report.

90 As a best practice, control teams should include experts external to the RA who bring fresh perspectives and may bring real-world experience to the simulation. In cases where the experts are from private companies (such as consultants), there is a need to carefully consider the management of confidential information. RAs may choose to bring external experts for their expertise in specific matters (valuation, reporting, SimEx organisation, etc.). As a best practice, RAs should ensure that external participants have knowledge of the BRRD framework and should ensure adequate confidentiality arrangements.

91 In the case of multi-RA SimEx, it is considered best practice for one senior manager from each RA to be part of the control team, and to participate in the simulation if senior management involvement is expected.

92 As a best practice, RAs should consider, where relevant, assigning to the control team the task of simulating players required in the SimEx but who are not present themselves. For example, this can be the case for the failing institution, for potential buyers or valuation companies, or even for other authorities (the CA) if they are not present themselves. Annex 4 indicates potential simulated players and their role in a simulation.

93 The responsibilities of the control team could include:

- **Providing instructions and support**: offering clear instructions and continuous support to participants throughout the exercise ensures that all participants understand their roles and the objectives of the simulation.
- **Facilitating group discussions and interactions**: facilitating discussions and interactions among participants encourages collaboration and effective communication.
- **Managing time effectively**: ensuring that the exercise progresses smoothly by managing time effectively and adhering to the schedule.
- **Ensuring accessibility**: Participants should always know who to ask for assistance and how to reach out to the control team. The control team should be easily accessible for any queries or issues that arise during the exercise.
- **Documenting critical points**: Taking note of difficult points in the simulation that need to be assessed after the exercise. This includes identifying significant challenges, such as lack of correct communication (e.g. asymmetric information-sharing), wrong expectations, misunderstandings, or technical failures. These observations will be crucial for post-exercise evaluation and improvement.

d. Observers

94 Observers' main tasks occur during the SimEx' delivery, and generally amount to taking notes and providing feedback in the debriefing sessions and for the closing report. Sometimes, observers may inform controllers, during the exercise, about teams' performance in case the observers sense that the players are stuck, or are off-route and controller intervention may be warranted.

95 As best practice, RAs should appoint as observers staff with expertise in the matter they are tasked to observe or who have an auditing or legal background. Observers' role can be two-

fold: (1) to contribute to the closing report with their observations, and (2) in specific cases, to help the design and control team with ad hoc adjustments in the preparation and planning phase, as well as in the delivery phase.

96 Observers can be grouped into two categories, based on their tasks and expected coverage:

a) Based on the allocated tasks, the observers can be **active** (have specific tasks allocated to them and clear instructions on whether to intervene in relation to the players or control team) or **passive** (as they do not have specific tasks to monitor and may be instructed to not intervene during the delivery phase, unless specifically asked by the controllers).

b) Based on their coverage, the observers can play a **holistic role** (they are expected to attend from the early stages of the simulation, including from the initiation or preparation phase) or a limited role (where they are expected to be presented to some parts of the simulation). In most cases, limited observers are present during delivery only, when there is an increased need to monitor actions from all players that unfold concurrently.

97 In practice, these types of observers are mixed. There may be cases of holistic active observers or limited active observers. As a best practice, all observers' feedback should be taken into account for the debrief sessions and closing reports.

98 As a best practice, RAs should consider inviting as observers, in addition to staff from playing authorities, experts from authorities or stakeholders that would not have an active role (or only a limited one) in the crisis simulation but who have experience of simulations or real-life crisis. Observers can also be from authorities that have active roles in financial crisis management but who are not participating in the specific exercise because of the simulation's focus (e.g. the competent authority is invited to observe, while the simulation focuses only on RAs' actions) or they are not part of the set-up (e.g. an RA from a different country). In addition, as a best practice, RAs should consider inviting the EBA as an observer.

99 The number of active observers is linked to the number of players. Consequently, if the players operate from different physical locations, as a best practice, there should be one active observer allocated to each team.

100 As a best practice, if resources permit, the observers should be different people from the control team, to guarantee a sufficient level of objectivity in the observations performed. Observers should be onboarded at the same time as the players, so they can understand what the players are required to do. This way they can familiarise themselves with the SimEx earlier and can also make observations on these earlier stages. Observers can feed their input to the design team to improve the SimEx before it is carried out.

101 It is a best practice to give observers specific elements to follow, such as either a specific team or player or the realisation of an outcome, keeping track of time needed to perform a task, or monitoring the number of interactions, etc.

3.1.2 Scenario

102 The scenario is the narrative of the simulated events within a SimEx. It provides the context for the exercise, outlining the situation (i.e. the starting point and background information), and articulates the challenges or issues that participants will face in the form of objectives. As a best practice, the SimEx scenario should be defined in the preparation phase.

103 Scenarios can vary widely in complexity and scope, from simple tabletop exercises to large-scale, multi-authority simulations. The specific details of a scenario are tailored to the learning objectives or testing scope and desired outcomes of the exercise.

104 Scenarios may have the following characteristics:

- They are challenging but not overly difficult. As a best practice, in order to challenge the participants, the scenario should be severe but plausible and 'playable', i.e. not discouragingly difficult.

- They consist of a key main event (i.e. an idiosyncratic bank failure event or a system-wide, multi-institution failure event) that leads to several other events or incidents that challenge the players during the simulation.

- They have a pre-determined temporal dimension described by one or several timeframes that are: (i) **compressed or accelerated time periods**, (ii) **normal or true speed periods**, i.e. as expected in reality; or (iii) **slow time periods** that allow for analysis during the exercise, including pauses or **breaks**. All three types of time speed can be used in one exercise, during different phases.

- They are realistic, to the extent possible, and relevant both for immersing the players in the simulation as well for being conducive to the SimEx's purpose and goals. As a best practice, the scenario should use realistic assumptions and information to the extent possible.

105 Scenarios can be linear (the players advance in the simulation on a pre-determined path, regardless of their decisions or outputs), while the more advanced SimEx are dynamic (the control team may add new challenges to players during the simulations, and the simulation may evolve based on players' decisions and achievements). Furthermore, the scenarios should, as a best practice, evolve in the light of real-life cases, previous test results, and regulatory developments.

106 As a best practice, RAs should develop the scenario along the scope and objectives articulated in the SimEx Charter.

107 As a best practice, RAs should consider including the following elements in the SimEx scenario:

a. The narrative

108 In a simulation context, the narrative is the coherent sequence of events and interactions that give meaning to the simulated experience and, in general, includes the following elements: the background leading up to the simulated financial stress, the definition of the starting point, injects planned for delivery on triggers (time or milestone), and the expected sequences of steps or milestones that the players are expected to follow.

109 As a best practice, the narrative should be used by the control team for the coordination of the simulation.

110 Part of the narrative can be unveiled to players ahead of the simulation, during the preparation phase or at the very beginning of the simulation.

111 Example: the players are informed, as an introduction session to the simulation, about the stress the institution is facing and its causes, if the issues are idiosyncratic or systemic, etc.

b. The problem or challenge to be solved

112 RAs should, as a best practice, determine the problem or challenge to be solved based on the objectives of the exercise.

113 The problem or challenge to be solved will help RAs determine what details are needed for the scenario story, how to create the story in a realistic and 'playable' way, and ensure the right level of realism.

114 The problem or challenge to be solved refers to the central issue or crisis element that drives the simulation and needs to be addressed.

115 Indicatively, the following elements can be considered:

a) type of issue: solvency, liquidity, operational or a combination of those;

b) systemic relevance: system-wide issue (affecting several entities with bank runs resulting from direct or indirect contagion, and if the players may need to resolve several banks failing at the same time) or idiosyncratic;

c) the speed of events: slow burning, rapid solvency issue or fast burning/liquidity issue, or a combination.

116 The SimEx scenario challenges can be enriched with the underlying issue that triggers the problem, such as, for example: financial losses, operational failures (e.g. human error, information technology failure, fraud, cyber incident, or non-performance of vendors or service providers), etc.

117 Determining the type of problem to be solved will lead to deciding what kind of institution is failing and the level of detail required to create the mock failing bank. For example, the need for a detailed or simplified balance sheet, a resolution plan or a playbook for a resolution tool; the need for having mock or real critical functions and financial markets infrastructure ITS templates, or a bail-in data set, or not at all.

c. Constraints and assumptions

118 As a best practice, RAs should determine the assumptions, limitations and constraints to be imposed on the players. As a best practice, the constraints of the SimEx should be also set forth in the SimEx Charter as out of the scope of elements of the exercise.

119 Assumptions refer to the starting point of the scenario, the type of institution that is under stress, and the trigger point of the failure. For example, the starting point may be the decision to take resolution action.

120 As a best practice, RAs should ensure that players and observers are aware of the constraints and assumptions early on. For example, from the moment of the development of the SimEx Charter.

121 The SimEx is a simplified version of possible real events – with the purpose of focusing the SimEx on specific elements to be tested or trained – some aspects affected by this simplification may act as constraints. For example, if the purpose is to train coordination and communication, the mock failing bank may not have detailed financial information. This simplification would indicate to players that they are not expected to perform any kind of financial calculations. Similarly, if the purpose is to run a tool such as the bail-in calculator using data from a real institution, a complete resolution plan is not required.

122 The assumptions of a SimEx provide the boundaries of the simulation in order to ensure focus on the goals and playability of the simulation and to limit the areas where players are expected to intervene.

123 Throughout the simulation, assumptions can be considered as 'friendly' elements, or simulation enhancers, such as, for example, no challenge from creditors, perfect timing and execution from market authorities, no negative market reaction, etc. Conversely, certain assumptions may serve as challenges, such as, for example, all interested buyers quitting the process at the non-binding offer stage.

d. Linearity and flexibility

124 As a best practice, RAs should determine the linearity and flexibility of a SimEx to the extent to which players' decisions and actions can affect, or not affect, the SimEx's unfolding and outcome. As a best practice, RAs should ensure that the SimEx follows certain steps, defined in advance, as envisaged and described by the scenario. When the SimEx requires players to

produce an output, such as decisions or determinations or calculations, the rest of the SimEx may be impacted by this output. In this respect, a SimEx may be:

- **linear** (no deviation is allowed, regardless of players' output), with a pre-determined path; or
- **flexible/dynamic** (where the players' output is allowed to influence the next step in the SimEx).

125 As a best practice, players and observers should always know in advance the type of approach envisaged – linear or flexible.

126 In the case of flexible simulations, the players' outcome (their solution to the challenge) may be different to the one planned or expected by the preparation or control team. As a best practice, if similar deviations happen in a linear simulation, RAs should ensure that controllers intervene to correct course.

127 For example, players in a SimEx in the resolution framework may believe that the scenario will inevitably lead to resolution and make a minimal assessment of whether the conditions for putting a failing institution into resolution are met, for instance a public interest assessment. In this example, the control team could intervene and correct the SimEx course, by indicating to disregard the output generated by players and proposing an alternative output, namely that the institution would be put into liquidation, as the players had failed to assess several components of the public interest, wrongly believing that resolution should be pursued. The control team notes this unexpected event for the debrief and post-simulation assessment, to assess why it occurred.

e. Injects

128 An inject refers to the introduction of pieces of information specifically tailored to provoke a particular response from participants, guiding the course of the exercise's narrative. Injects can be used to (i) advance the progression of the simulation, to (ii) challenge participants, or to (iii) control and keep the simulation on track.

129 Examples of injects that challenge participants: the SimEx introduces, at an unexpected moment, a deteriorated valuation of the failing institution to the RA, after the initial valuation is delivered. The inject aims to test efficiency in sharing information between players, in reconsidering options and the flexibility of decision processes. This inject mimics the not unlikely event where, in a crisis, the information is imperfect and asymmetric.

Another example of an inject is the simulated notification of the Competent Authority to the RA on the determination of FoLtF, which can be used as the starting point of a SimEx.

130 Other injects can aim at advancing the simulation, in cases where a specific input is needed from simulated players. As an example, in the SimEx, the RA may test the possibility of using

the Sale of Business (SoB). To simulate this, replies from potential buyers will be required. The answers of the fictious buyers are determined in the planning phase and sent to the players at the right moment during the simulation as injects.

131 Simulation exercises with injects, when used as elements of surprise, can increase attention and the learning effect and intentionally trigger stressful situations for the players. Past exercises have shown that participants may decrease their engagement and attention in longer simulations without injects.

Injects can be **pre-planned**, to help advance the simulation in a controlled manner, or can be **ad hoc** to respond to players' requests for information or to help players advance if they encounter an impasse or blockage in a part of the simulation.

132 As a best practice, injects should be delivered from the control team, usually through one of role played stakeholders (e.g. valuation firm, bank management body, competent ministry, etc., played by one of the control team members).

133 The following are best practices regarding injects in a SimEx:

a) Limited number of injects: the design team should avoid overwhelming participants with too many injects at once.

b) Authenticity: by using publicly available real-world data and information to the extent possible, the injects should be as realistic as possible. This enhances the learning experience and prepares participants for actual situations.

c) Documentation: The control team and the observers should use detailed documentation and descriptions of injects, including purpose, timing, and expected response. This helps the control team and observers to manage the simulation effectively and follow up for the closing report.

134 Additional specific examples of injects that can be used in a resolution SimEx are found in Annex 3.

f. Timeline and milestones

135 As a best practice, two timeline dimensions should be determined for every SimEx:

- **The SimEx Project Management Timeline (PMT)**: encompassing the overall management and coordination activities related to the SimEx project as a whole.
- **The Simulation Operational timeline (SOT)**: representing the events and activities occurring within the simulation itself.

(i) SimEx project management timeline (PMT)

136 The SimEx PMT covers the SimEx as a whole, from its initiation to the conclusion of the closing report. This timeline could include milestones for SimEx deliverables, and milestones for onboarding and potential training of participants. As an example, the PMT can include the

allocated time slot(s) when the SimEx is planned to take place (e.g. two hours, half a day, one day, two half-days,) and indicate if there are gaps between the playing days (e.g. two half-days, with one day of break for adjustment and debrief).

137 As a best practice, the SimEx PMT should also include the dates for debrief and feedback collection at the end of the exercise, as well as the time allocated for drafting the closing report.

138 As a best practice, RAs should ensure that the planning and preparation timeframes should allow sufficient time to plan the SimEx, to construct all materials required for its running and, for more complex SimEx, to train participants.

(ii) Simulation / operational timeline (SOT)

139 The SimEx SOT covers the starting point of the mock crisis, the sequence of events that unfold throughout the exercise, and the end point of the simulation.

140 As a SimEx is trying to recreate a close-to-real environment, the SOT should reflect reality. However, in most cases, it is not realistic to replicate the whole timeframe of a real event. Therefore, it is intrinsic that a SimEx be significantly shorter (also in direct relation to the simplification factor of a SimEx over a real event) than the event it mimics. At the same time, the SimEx should still reflect the main characteristics and time phases of the event proposed for the simulation.

141 As a best practice, RAs should consider including the following components in SOT:

i. The starting point of the scenario: this can be the same as in a real case (i.e. when issues start to manifest). A SimEx can start later in the process of managing the failure, for example, after the resolution action has been conducted and the stabilisation period is managed.

ii. The end moment of the scenario: this can be, as in a real event, the release of a solved institution back to the market, or an intermediary step, such as the decision for resolution.

iii. The actual time allowed for the SOT to unfold between the start and end points. This dimension depends on the type of simulation chosen and can vary significantly. RAs have indicated that past SimEx SOTs lasted anywhere from two hours to five days. The SOT time can use the following types of artificial constructions:

a) **Breaks** allow for debrief sessions (feedback extraction) and for possible readjustments of the simulation (especially in the case of longer simulations, where several phases of a resolution are to be played and the players may stray off the desired track). Unlike the real world, a simulation exercise has the advantage of allowing time to stop during the events and recalibrate the simulation, for instance by introducing changes in scenarios to lower the challenge if players cannot move forward, and to discuss particularly important actions where

players find challenges or where the control team would like to better understand the actions of the players. Breaks for adjusting the challenges should only be used in exceptional cases, as they can negatively affect the players' identification with the SimEx.

b) **Acceleration of time** is a technique to allow players to focus on specific processes, while processes that are outside of the simulation purpose can be skipped. Under this practice, out of scope processes are considered as black boxes where the control team delivers, through inject, the outcome in a short time period as opposed to waiting for the expected time for the respective decision. For example, if the independent valuer is simulated, the time when the RA would ask for the valuation report, while in reality it could be expected to have a few hours or days for the report to be generated, the control team may provide the mock valuation report straight away.

As a best practice, if the SimEx is conducted in sessions over several days, the breaks over the active sessions should be planned and should coincide with elements expected in a real situation (e.g. break at the decision of FoLtF or break at the decision to take resolution action). The breaks can allow the control team to recalibrate scenarios, if needed, and provide new pieces of information to avoid blind spots and keep players' motivation high throughout the SimEx. In addition, RAs should ensure that breaks give time to the control team to adjust their plans and injects for the coming sessions in relation to the decisions taken by players, in case such decisions do not coincide with what the preparation/control team had envisaged before launching the SimEx. Breaks can also allow exercises to be conducted between other daily tasks of the authority. For example, some RAs had simulations where, for a week, half of the day is devoted to the simulation, with the rest of the time devoted to regular activities. This way it might be easier to find time for larger simulation exercises.

142 As a best practice, in deciding on the length of the SimEx, RAs should take into account that players need to be kept active during the entire execution of the SimEx and avoid idle periods. Depending on the type of simulation, players can be engaged all the time or only at different moments. Past SimEx have shown that, for large simulations, there were idle periods for some players – which would be the case in a real-life event, too. These players might use these idle periods for other/normal tasks. As a best practice, the control team should communicate to participants any accelerated time phases from the preparation phase. In a simulation context, accelerated time refers to the intentional speeding up of simulated time relative to real time to observe long-term effects or outcomes more quickly. Management of accelerated time is especially challenging when conducting SimEx with several authorities or teams. Lessons learned from past SimEx show that meetings between different authorities in accelerated time tend to be disproportionately long in relation to the accelerated time agreed on. It is thus important to stress this aspect for players and explain in the players' training what to expect from an accelerated time.

143 As a best practice, in cases where accelerated time is used, the control team should ensure that the players are made aware of the transition to a new phase of the simulation. For example, one controller can intervene and announce to all participants that the simulation is

moving to the resolution action, following the decision to put the bank into resolution. In this example, the decision for resolution was not simulated, the decision-making body was only informed that the information for such a decision reached their level, but the simulation does not entail the actual assessment and taking of the decision.

g. Environment

144 As a best practice, RAs should consider the following modes of simulation environments:

i. **Virtual simulations:** all participants connect to an online environment and the SimEx is conducted without physical interaction between participants.

ii. **Physical simulations:** all participants are physically present at one or several location(s). In this second case, virtual connection between the teams could also be envisaged. In the physical set-up, no player should be allowed to virtually connect without being present in a physical shared location. In some cases, all players are all present in the same physical location and no online connections are used.

iii. **Hybrid simulations**, where participants gather in one or more physical locations but are also allowed to connect online individually.

145 Experience of RAs indicates that fully virtual SimEx are difficult to conduct over long periods of time. In addition, it has been identified as best practice that observers should be in a physical room with the players. Some communication platforms allow for breakout rooms dedicated for each team, or task, but observing players in virtual settings is more challenging than being in the same physical room with the players. Fully virtual meetings require more coordination and information-sharing processes, while SimEx with all players in the same physical room require the least coordination.

146 As a best practice, brainstorming, desktop exercises and walkthrough exercises are considered to provide the maximum benefit in a physical set-up because the interaction of participants is more intense.

147 Virtual and hybrid simulation require the use of platforms for information-sharing and communication (chatting, video calling/conferencing, etc.).

148 Some participating authorities might have restrictions on confidentiality concerning virtual meetings. Such constraints should be taken into account for the SimEx to replicate the expectations and constraints of a real event.

3.1.3 Rules of play

149 The rules of play (RoP) indicate to participants and observers what they are allowed to do and what they are prohibited from doing in the SimEx. As a best practice, the RoP should be developed by the design team and clearly established in advance in a 'RoP document' that is circulated to the different participants to guarantee that all participants have a clear idea of their roles.

150 The RoP are meant to enhance the SimEx and to facilitate the players' actions in the simulated environment for reaching the goals of the SimEx. Observers should be aware of the players' RoP, to better understand their possible actions and their limitations.

151 As a best practice, the rules of the play should be clearly defined upfront and should be available to those taking part in the exercise. The RoP constitute a set of parameters that participants follow during the exercise. It is therefore important that the rules are known and understood by every participant. As a best practice, it is important to promote a transparent discussion with each player to identify any sensitive areas that may emerge and understand which areas can be included in the play and which cannot.

152 As an example, RoP can indicate that the players should use a specific platform for communication and all other exchanges of information are prohibited, or that the players will not be allowed time for decisions, and they are free to randomly pick a possible decision.

153 As a best practice, the RoP should indicate that the actions or omissions of the players in the context of the simulation will not be taken into account for any kind of professional evaluation. Otherwise, players may be afraid to fully engage, considering that the outcome of the SimEx or any hesitations may have repercussions. As a best practice, RAs should make sure that the RoP will be effectively enforced in the context of the simulation. As best practice, the rules should not be amenable to changes or be challenged once the actual SimEx starts. The controllers should be ready to intervene when rules are violated, to guide players towards actions and behaviours compatible with the RoP.

154 As a best practice, the RoP should clearly set the rules and expectations for players, taking into account the aims and objectives of the particular exercise. RAs should ensure that elements that are part of the SimEx Charter and in the RoP should be presented in a way that ensures players understand what is expected from them. As a best practice, briefings/training sessions should be held before the exercise to ensure that participants are fully informed, understand the aims and objectives of the exercise, are aware of their role, etc. Adequate time should be provided so that the participants can read and consider the exercise instructions, and any other relevant documentation/materials, in advance of the exercise.

155 The RoP are highly important when the SimEx combines teams from different authorities.

Examples of RoP categories

a) Scenario-specific rules – these rules directly relate to the specific scenario, such as time constraints, resource limitations, geographic boundaries, and information availability.

b) Simulation play rules – These rules dictate how actions translate into outcomes, such as execution rules (all documents will be prepared by filling in templates, or documents need to be prepared as they would be sent for actual approval), communication and interaction protocols (how to email and interact with other players, how to interact with controllers and observers), decision-making processes (whether decisions affect the next step or not).

c) Participant behaviour – These rules define expected participant behaviour, such as role-playing expectations, or what safeguards will be used to comply with data protection and confidentiality requirements.

3.1.4 Resources and budget

156 As a best practice, based on the determination of all the above elements, RAs should consider including in the **SimEx plan** what resources are needed for an effective preparation, delivery and conclusion of the SimEx.

157 In developing the SimEx plan, RAs should, as a best practice, consider the time requirements for staff to prepare and attend the exercise, as running too many simulation exercises in a given amount of time can lead to staff fatigue. Therefore, as a best practice, when deciding to run a SimEx, RAs should factor in the complexity of organising and running a SimEx and the frequency of such exercises, the overall cost and potential fatigue.

158 Some of the elements that RAs should consider as a best practice in developing the SimEx plan are explained in the paragraphs below.

a. Human resources

159 As a best practice, human resources from internal and external sources should be identified in terms of number of people and their expected time commitment. The human resources typically include people for the roles of design team, control team, players and observers. The human resources estimation should outline how many people in each team are needed, when to be involved, for how long, and for what scope.

160 As a best practice, players should mostly be from the RAs and from other authorities expected to have a role in managing a financial crisis. To increase the realism of the SimEx, as a best practice, the RA should consider inviting external parties to play their roles in the simulation, such as legal consultants, valuers and private institutions. In such cases, specific onboarding practices should be adapted, and confidentiality aspects should be checked and agreed.

161 Practices shared by RAs show the following estimates, depending on simulation type and complexity. For example, the estimates set out below could be used as guidance, considering that the complexity of any type of simulation and prior experience with organising a simulation will indicate deviations from these estimates.

162 For a brainstorm, one to two people may be needed to prepare the SimEx and around 10 or 15 people could be involved in a session of half a day of brainstorming.

163 For a desktop exercise, two to four people could prepare the SimEx in a period of two to six weeks. The design team will then become controllers and observers during the unfolding. A few more additional people may become observers during the SimEx.

164 For DME and OSE, it is estimated that two to six people could prepare the exercise in a timeframe of two to four months. The exercise could take half a day or two half-days. The design team members would become controllers and additional two to three people would be onboarded as observers.

165 For a E2E SimEx, a core design team of 5 to 15 persons, specialised in various areas in a 6–12 month period, could prepare the simulation. These people will convert to the control team. As a best practice, one observer should be assigned for each team playing and one controller for no more than four teams.

166 Involving as many authorities with responsibilities under the BRRD framework and private parties (valuers, legal advisers, banks) in the development of the simulation, as well as during its running, is very useful for improving organisation and cooperation. Focused exercises on specific areas with only limited participants are also very useful and might be less costly and complex. To enhance readiness, awareness and capabilities, all relevant participants that would have a role in a real-life situation should, as a best practice, be involved in simulations, being mindful that the more participants are involved, the more time and resources are required. Some authorities can be invited as observers, decreasing the resources required but increasing the benefits of sharing lessons learned and attracting observations from other perspectives.

b. Scenario-specific assets

167 As a best practice, the SimEx plan should identify, based on the elements of the scenario, what is required to run the SimEx. For example, if there is a requirement to have a detailed mock bank description (business model, simplified BS, specific details such as a derivatives book, recovery and resolution plan), or if a high-level description will be sufficient. Should there be a simulation of a realistic portfolio of derivatives and financial contracts, or are these elements not required?

168 The elements of the scenario, e.g. the details of the general economic background, of the banking system, the description of the failing institution (mock balance sheet, resolution plan) and injects (valuations, losses and prudential indicators levels) should be clearly identified.

169 Identifying these elements will provide clarity about the number of persons needed to construct them and the time required. If there is a limited amount of time/budget for the preparation, the design team may consider limiting the background scenarios and/or narrative, if the analysis of this information is not the main goal of the exercise.

c. Tools and platforms

170 As a best practice, the design team should identify the tools and platforms to be used for the SimEx. For example, different tools and platforms to be identified can include:

- Communication tools (online conference platform, email and messaging platforms, document and information exchange platforms, co-authoring platforms).

- Survey and general feedback collection tools, data tracking and analysis, including AI).
- Project management tools.
- Technical tools: tools specific to resolution, such as, for example, bail-in calculator, valuation tool, standardised documents and templates.

171 As a best practice, the design team should consider having high-tech tools that create an opportunity to train and familiarise staff with tools they may be required to use in a real situation and the more demanding set-up required by using high-tech tools. The use of platforms introduces new complexities to the SimEx, as it may raise confidentiality issues or make additional training necessary. As a best practice, the players should use, as much as possible, the tools that would be available in real-life cases as this would be an opportunity to test and train on these platforms. Players should not use tools that would not be available in a real situation, as this could create incorrect automations. If other tools are used in a simulation, it should be made clear that those are used only for the simulation, and not in an actual case.

3.2 Preparation phase

172 The preparation phase consists in the creation of the elements described in the planning phase following the SimEx plan. In addition, all participants involved during preparation, delivery or closing are informed about the SimEx, its timeline and their expected roles.

3.2.1 Preparing resources identified in planning phase

173 The preparation phase relates to the production of the SimEx documents and materials determined in the planning phase.

174 As a best practice, RAs should ensure that simulation resources replicate the operational and procedural aspects of real-life scenarios to the extent possible. Key considerations include:

- Using the communication and reporting infrastructure that is expected to be used in actual cases, wherever possible. This would enhance realism, provide training to participants, while also testing the systems in place. In addition, the deployment time and costs are lower than if new systems were deployed for the specific purpose of the simulation.
- The mock institution and mock financial system should resemble what the RA may be asked to intervene in during a crisis. As a best practice, when using information that is real or which resembles an actual institution, RAs should consider potential stigmatising implications if that institution is recognisable, and avoid any indication or implication that that institution is approaching FoLtF. As a best practice, RAs should indicate that using real information and involving institutions in a SimEx is a realistic ground for training and testing. Using data and information that mimic an existing institution has the advantages of increasing realism, detecting possible hurdles that are closer to the real environment and decreasing the time for preparing materials.
- As a best practice, all documents and materials used in the simulation should be labelled and/or watermarked with ‘simulation’ or similar.

175 The assets that will be used in a SimEx can be delivered in various ways/levels of realism. For example, some can be written documents (emails, printed documents), or can be used as videos. In some cases, interactive platforms may be used, for example to mimic social media and news outlets.

176 In producing the assets, it is important to respect the deadlines established in the SimEx plan, otherwise the SimEx itself could be affected.

3.2.2 Onboarding players, controllers, observers

177 As a best practice, depending on the type of simulation, the desired dynamics and the objectives of the simulation, the design team should consider what information and documents are relevant to be shared with what types of participants ahead of the simulation. The injects are not usually disclosed to players, to ensure the element of surprise. RoP and the background of the institution are generally shared in advance, while a valuation report may be shared only with observers before the exercise starts. Examples of materials that should be shared in advance include:

- The exercise instruction document for participants, i.e. the RoP;
- Details related to the exercise scenario (including any relevant background information);
- Relevant supporting documentation (e.g. resolution plans, valuation reports, RA relevant handbooks, organiser's guidance etc.);
- Feedback and evaluation forms/surveys for participants; and
- The SimEx control plan/main events list for the control team/facilitator.

178 As a best practice, it is important to have a process to onboard players, observers and other participants as early as possible. In addition to sharing documents and information with them, as described above, the onboarding practices could include:

- A first interaction in the onboarding process to indicate the date and the length of the actual exercise, so that calendars can be blocked. If a dedicated onboarding session or training sessions are foreseen, these should also be communicated.
- A second interaction can consist of a meeting between the design team and participants. Participants are introduced to the SimEx, mainly indicating what the simulation is about and what is expected from them.
- In a more complex SimEx (such as E2E), RA should consider, as a best practice, holding two or more briefing sessions: in the first session, only general and high-level elements are introduced and the session is used to understand players' concerns and early questions, or reactions to documents. Subsequent sessions should go into more detail and present the updated information. In some cases, participants should be provided with the possibility of providing written input after the session.

179 In the case of a non-complex SimEx, the briefing session can happen on the day of the simulation, with perhaps a break between the briefing and the actual simulation.

180 While it is identified as a best practice to warn participants well in advance of the simulation, in cases of drill exercises, players may not be warned in advance. This is because the drill may test reaction times and general preparedness. Still, even for drills, players may be told to expect a drill in a given week or month.

181 As a best practice, in briefing and onboarding sessions, the design/control teams should encourage questions from players and observers to uncover areas of potential lack of clarity, as the simulation can still be adjusted at this stage to allow for optimal delivery.

3.2.3 Rehearsal and training

182 As a best practice, RAs should consider, for more complex simulations, the need for rehearsals or specific training. This may be the case, for example, in cases of a SimEx where a significant number of players (or several teams) are expected, where the SimEx is expected to be longer than a half-day or when tools not ordinarily used will be employed.

183 In a rehearsal, as a best practice the control team and the players should use a brainstorming or desktop exercise as a simplified version of the exercise to follow. The aim is to reassure participants of their understanding of the SimEx and requirements. In general, first-time participants in a simulation are nervous about participating in a simulation. To decrease this tension, a rehearsal is a best practice.

184 If tools (such as a platform for sharing information or for conferencing) are to be used, a technical training session should take place as a best practice. The aim is to ensure that all participants have access to and can use the basic functionalities. This practice avoids a situation where a simulation starts and participants indicate that they do not have access to a specific tool.

185 The rehearsal and training sessions are also useful to indicate to participants how to contact the control team in case of questions, or when reaching a barrier or blockage in the simulation.

186 Rehearsals can be useful in identifying ambiguities, logistical challenges and technical issues in advance.

187 The rehearsal and training are also opportunities for the control team to train itself. The control team will get a sense of potential biases of players that may need correcting during the simulation, so they can prepare injects to control the players' path. For example, during rehearsal, the control team may observe that several players ask about ELA (Emergency Liquidity Assistance), while the design of the simulation was not meant to touch on ELA. In this way, the control team can prepare two or three injects to respond to such requests in the simulation. In addition, the design team can clarify in the preparation that ELA should not be part of the simulation and should not therefore be asked about by players.

188 As a separate best practice, the control team may run its own preparedness simulation and plan. In this case, the control team will run the exercise as a brainstorming or desktop exercise, without players. Observers may be invited to attend this training session. This preparedness exercise allows the control team to indicate what can be expected at each stage. Brainstorming techniques can be used to evaluate what players may do and what possible responses could be sent from the control team to manage the simulations.

4. Delivery – running the SimEx

189 The delivery phase of the SimEx entails the actual running of the exercise. The design team is no longer active as such, and usually transforms into the control or observer teams. The players start and act in the simulation.

190 During delivery, the control team should, as a best practice, ensure that the exercise is started according to the plan; the pre-planned injects are delivered according to the correct triggers, and that the players are on track (timewise and progress wise). Observers should be active with note taking.

4.1 Controlling the simulation

191 The control team should, as a best practice, ensure that the simulation starts as planned. In some SimEx, not all players may be aware of the starting point. For example, in a multi-authority simulation, while the failing institution (mock played by the control team) may inform the CA of its financial difficulties, the other authorities (RA, DGS, etc.) will not be aware that the simulation has started. If such asymmetry of information is planned, the control team should not disclose information that players should disclose between themselves as part of the simulation.

192 As a best practice, the control team should be ready to use the injects at the pre-determined moments (at a specific time or when players reach certain outcomes) or to respond to players' requests. For example, it can be planned that while players are assessing whether the institution would go into resolution or liquidation, the control team delivers an inject that indicates that a potential buyer is interested in purchasing the failing institution. This inject will assess the team's readiness and flexibility to assess and adapt to circumstances. As a different example, the players may require a valuation, and as the control team will be impersonating the independent valuer, the control team will deliver the valuation report as an inject.

193 As a best practice, the control team should also ensure that the players stay on track and on time. To this end, if the control team detects that players are stuck at a decision point, the control team may decide to intervene with additional information or by moving players to the next phase. For example, players may enquire about using ELA while this may be out of bounds for the exercise. If the control team detects that players are spending too much time on the ELA, the control team may remind players that this is not supposed to be played or simply give them an inject (positive or negative answer to an ELA request).

194 As a best practice, controllers need to identify and note down when such incidents occur. It is important to discuss in the debrief sessions to identify such situations and understand whether they were brought up by the SimEx constraints and assumptions, or whether they are a consequence of areas not foreseen in the plans or procedures.

195 A different tool that controllers can use are the breaks. Controllers should consider, as a best practice, pausing the SimEx to adjust the exercise. These pauses can be planned or made ad hoc if controllers feel the need to intervene. The SimEx is resumed by indicating to all players the moment at which the exercise continues.

196 Planned pauses can be used in cases of longer exercises and/or when the simulation foresees several stages. For longer simulations (e.g. more than half a day), breaks can be effectively used for debriefing sessions and possible adjustments from one session to the next. If the simulation foresees, for example, the play of all main stages of a financial crisis (deterioration, resolution intervention and stabilisation), each stage could be simulated with breaks in between. In these cases, as a best practice, controllers should ensure that all players are aware of when the simulation resumes and what has been achieved in the previous stage.

197 As a best practice, controllers should assess the need to intervene in cases of off-topic chatter and digression. It is possible that players will try to solve challenges that are not intended for the simulation. In these cases, the controllers should identify these off-track ventures and redirect players towards the simulation. For example, players may try to identify the correct timing of the resolution action based on market opening hours, but this may be out of scope of the simulation. Controllers, in such a case, would note the challenges the players were trying to solve for the debrief points and indicate to the players that they need to move forwards in the simulation without solving that challenge.

4.2 Simulating stakeholders

198 In the context of the simulation exercise, the control team should, as a best practice, impersonate the roles of various key stakeholders, such as valuers, media outlets, governor of the central bank or minister of finance, members of the management body of the bank, etc. By conducting these impersonations, the control team is controlling and challenging the participants, while also ensuring a realistic and dynamic simulation environment. The control team should always be ready to react to the evolving scenarios and provide timely interventions, knowing the roles it must enact.

199 As a best practice, the control team should identify in advance which person from the control team impersonates which stakeholders' roles. It may be that a controller has only one role-play to take or several. The controllers should identify in advance who will impersonate any stakeholder that the player may reach out to, and who needs to respond in cases of unforeseen roles. For example, a player may reach out to the control team to ask for input from the CCP, while the CCP may not have been considered as being role played. In such scenarios, the control team should, as a best practice, assign a person to respond to such ad hoc requests.

200 To address this potential shortcoming, it is a best practice to let players know in advance which stakeholders will be impersonated. In the onboarding session, players can react to indicate whether they would need additional counterparties, ensuring the control team has a complete list of stakeholders to impersonate.

5. Closing – managing feedback and closing report

201 As a best practice, RAs should ensure that feedback is collected from SimEx players, observers and other participants in advance, during and after the SimEx. The provision of feedback enables the design and control team to identify the key lessons learned, undertake a gap detection assessment, and to assess readiness and training needs, etc.

5.1 Collecting feedback

202 As a best practice, during the planning stage, the design team should decide on the type and structure of feedback to be collected, at what stage(s), by what method(s), and the persons to be involved in providing and capturing the feedback.

203 The collection of feedback from the SimEx players and other participants (including observers) is an important action and, as a best practice, should be undertaken in all SimEx. As a best practice, feedback should be captured from all players and observers.

204 Feedback from external participants (such as banks and valuers), if they participate, may be of particular interest to the RA, since interactions with them, in an operational context, may be otherwise limited.

205 During the planning stage, the following aspects should, as a best practice, be decided in respect of feedback collection:

- The type of feedback: hot debriefings occur shortly after simulations, whereas cold debriefings occur after 24 hours.

- The tools/platforms used to collect feedback: (i) surveys or feedback/evaluation forms (tailored for each phase of the SimEx); (ii) live sessions with moderator; (iii) automated monitoring tools (to obtain an overview of interaction frequency, directions of information flows, type of information exchanges); and (iv) direct observations from the control team or dedicated observers.
- Person(s) responsible for collecting feedback.

206 Feedback can be gathered during all phases of the SimEx – i.e. during the preparation phase, while running the simulation, and at dedicated debriefing sessions during or after the simulation concludes.

207 As a best practice, the collected feedback should be used to generate a lesson learned report, summarising all observations made with the aim of closing gaps, identifying action points and/or improving future exercises.

208 Suggestions for templates and checklists for feedback collection are proposed in Annexes 7 and 8.

5.1.1 Collection of feedback – tools

209 Feedback can be gathered by a variety of tools, such as:

- Automated monitoring tools during the SimEx. For example, closed platform email clients can track all emails from all players and automatically identify the most important parts of the interactions, and the timing of output vis-à-vis input. This solution has the drawback that players will not use their real email client but has the advantage that emails will not leave the SimEx environment. A different approach to email monitoring is to create a functional email that will be CC-ed by all players, and a machine will monitor and produce a report of the players' interactions. If a document-sharing platform is used, controllers can track who accessed documents and how often, etc.
- A live discussion between the SimEx players, observers and controllers after the exercise or during breaks has the advantage that the controllers and observers can explore areas of interest more deeply. In addition, players and observers may contribute to the discussion, based on others' input, as opposed to responding to a survey where participants are shielded from others' opinions. The live sessions have the advantage of extracting more information but are more costly in terms of timing.
- A survey/questionnaire completed after the exercise is a tool that can used to extract participants' viewpoints. As a best practice, the survey should have both closed and open questions and should address the scope and goals of the SimEx.
- Direct observations can be carried out by observers and controllers. Their observations can be used to direct the live discussions and adjust the surveys.

210 Overall, all methods can be combined to extract maximum benefit. The selection of methods may depend on the availability of resources and on the size of the SimEx. For example, a live

discussion for a SimEx with 10 players can easily be managed, and all participants can express their learnings, but in a simulation of 100 players or more this may be more challenging.

5.1.2 During preparation phase

211 As a best practice, useful observations and feedback should be gathered by the design team through its direct interaction with key stakeholders, early on in the preparation phase. Observers, if onboarded this early in the SimEx, can also prepare observations. This feedback can identify possible gaps, ambiguities or priority areas and thus inform the subsequent design and development of the SimEx.

212 Where draft SimEx materials are circulated to participants in advance of the SimEx, the design team should, as a best practice, ensure that any relevant feedback provided is taken on board and the draft SimEx materials are updated to reflect the same.

5.1.3 During delivery

213 During the actual SimEx, feedback can be gathered by using one or more of the methods mentioned in section 5.1. As a best practice, RAs should consider using automated tools, observers' notes and debriefing sessions to track players' actions, difficulties encountered, and solutions enacted.

214 To ensure that helpful feedback is provided, the control team should explain to attendees how and when their feedback will be sought, and the purpose or focus of the feedback. Feedback provided during the simulation can be used to improve the simulation on the go, as it can be used for the closing report. For instance, where the SimEx is being held over a number of days, the control team may request that players provide feedback at certain stages of the simulation to identify whether the simulation is meeting its objectives and to identify key learnings and inform the focus of the exercise on the following days. To ensure concrete and detailed feedback, the control team may guide players to document feedback on the go and early on.

5.1.4 After delivery

215 As a best practice, immediately following the exercise simulation, and where possible, sufficient time should be provided to a dedicated debriefing session (i.e. a 'hot' debrief). A specific survey may be developed by the design team to guide this debriefing session. Alternatively, the exercise controllers and observers should conduct a live Q&A session with attendees to gather their views, feedback and key learnings from the SimEx.

216 Following the completion of the SimEx, a period of time (around 1–2 weeks) should, as a best practice, be provided for reflection and bilateral discussions, before attendees provide further written feedback via a dedicated feedback or evaluation form (i.e. a 'cold debrief').

217 Key questions that may be considered by participants in order to gather their feedback include (additional examples of questions are provided in Annex 7):

- *Did the SimEx meet its aims and objectives?*

- *What are the key learnings or recommendations from the SimEx?*
- *Did the SimEx design encourage useful discussions and learnings?*
- *Was the SimEx well facilitated?*
- *What parts of the resolution plan have you used the most?*
- *What information in the valuation report have you found most useful?*
- *Which were the authorities from the resolution college that you interacted with the most?*
- *Which authorities did you need to interact with but were not part of the simulation?*
- *Did the SimEx materials provide sufficient information to participate effectively in the SimEx?*

218 The purpose of such questions is to draw out the key learnings and insights of the attendees in relation to:

- the aims and objectives of the SimEx (i.e. to improve the team's readiness to execute a resolution action);
- the identification of any areas or topics that may need further consideration and work (i.e. to enhance key resolution documents or to address any identified gaps);
- the SimEx itself (i.e. to improve the preparation, development and delivery of future exercises).

219 The feedback provided will also inform the content, key lessons learned, and recommendations as set out in the closing report.

220 During any of the stages, as a best practice, observers should be invited with an explicit expectation about the sharing of their observations.

5.2 Closing report

5.2.1 Drafting the report

221 As a best practice, following the completion of a SimEx, a closing report should be prepared within a short period of time. The report should, among other things, provide an overview of the SimEx and the feedback gathered, and identify the key lessons learned and any recommendations to be actioned.

222 As a best practice, a first draft of the report should be circulated with the SimEx attendees as soon as practicable (around 2–3 weeks after the SimEx). Obtaining feedback on the report, and the recommendations set out therein, from both the SimEx participants and observers is beneficial, as they may have more comprehensive views on the SimEx than could be captured in the feedback forms. Upon reflection, they may be able to highlight gaps in internal procedural documents, and where observers are from outside of the resolution authority, they may be able to signal areas for improvement.

5.2.1 Recommendations & action plan

223 As a best practice, RAs should ensure that any recommendations set out in the report are relevant and actionable, align with the aims and objectives of the SimEx, and are informed by the SimEx discussions and outcomes.

224 The recommendations that are formulated may relate, among other things, to the following:

- Follow-up work or training to be completed by staff at the resolution authority in relation to any areas or topics that need further consideration or development (i.e. where gaps are identified, where there were opposing views during the exercise simulation, or where the exercise simulation did not go as planned).
- Enhancements or updates to be made to key resolution documents (e.g. resolution plans, handbooks, or other internal procedural documents).
- The preparation, development and execution of the SimEx. Such recommendations may consequently inform the approach and design of future exercises.

225 The recommendations set out in the report should also be assigned to a specific team(s) or authorities, be ranked in order of priority (where relevant), and identify the timeframe in which the recommendation is to be actioned. In the light of the recommendations, an action plan may be developed for their implementation.

226 Figure 7 summarises the main actions that should be taken when conducting the after-action review.

Figure 7: Overview of main actions for closing a SimEx: managing feedback and delivering the closing report

Annex 1 – SimEx Charter

This annex is to be used as described in Section 2.4.

Element	Description	Concrete elements
Project Manager	Person responsible for the execution of the project	
Sponsor(s)	Person(s) responsible for approving the simulation	
Main Goal	As stated in the original enunciation	
Tentative Deadline	When the simulation is scheduled to be carried out	
Expected Key Outcome(s)	Identified outcomes expected from the simulation	
Elements in Scope (Must-Have)	Identification of elements in scope that are a must-have	
Elements in Scope (Nice to Have)	Elements in scope but only nice to have	
Elements Not in Scope (Constraints)	Identification of elements not in scope	
Type of SimEx that best fits the goals		
References	References to any existing materials or tools (e.g. the procedure that should be tested)	

Annex 2 – Areas to be tested

This Annex contains examples of areas that could be tested in the context of RAs' work.

The proposed areas are indicative and not exhaustive. Multiple areas can be chosen at the same time for one SimEx, even from different phases.

- **Pre-resolution phase:**

- internal preparation at RA (signing of confidentiality protocols, creation of insiders list);
- hiring legal/strategic advisers and valuator;
- RA to request access to entity's information;
- analyse (if Sale of Business Tool is considered) directly and/or with advisers: potential bidders, potential sales structures;
- communication and coordination with other authorities with roles in the operationalisation of the action: Competition Authorities for State and merger control, market authorities, foreign investment authorities, supervisors other than banking supervisors (insurance supervisors, for instance);
- feedback on market interest and by type of entity interested;
- valuation report request, preparation on short notice data, receiving and RA assessment (potentially to be conducted with valuers);
- setting up a VDR.

- **Resolution phase:**

- RA receiving binding offers;
- RA analysing resolution conditions, with or without State aid;
- drafting of the resolution decision and consultation of the draft decision in a resolution college;
- exercising the WDCI (write down or conversion of capital instruments) and bail-in of senior debt;
- realistic simulation of the application of the SoB tool by two teams of specialists acting independently of each other (buy-side team and sell-side team);
- approving a bridge institution.

- **Post resolution phase [e.g.]**:

- results of the tool application to shareholders;
- operationalisation of the restructuring plan.

Annex 3 – Examples of injects for resolution simulations

Examples of injects that can be used in a resolution SimEx are:

- Spike in deposit withdrawals, or a sudden increase in customer withdrawals and account closures.
- Accelerated withdrawals by fast payments and social media.
- Negative news: journal news articles or social media posts spreading rumours about the bank's instability.
- News/social media misinformation increases the risk of contagion and loss of confidence.
- Press conferences: bank executives address the media without prior information to the CA or RA.
- IT Failures: major IT system failures affecting online banking and transaction processing.
- Stock price and bond price drops: sharp decline in the bank's stock price due to market reactions.
- Credit rating downgrades: credit rating agencies downgrading the bank's credit rating suddenly and without prior warning.
- Crisis communication plans: injects requiring immediate public statements.
- Emergency meetings: schedule emergency meetings with key stakeholders to develop and implement crisis response strategies.
- The failing institution informs that it is issues (in addition, to challenge participants more, the information is delivered incompletely and/or to the wrong players).
- Other authorities providing decisions on FoLtF or ELA.
- Shareholders that can reject plans, or simply refuse to cooperate.
- Valuers that provide a valuation report (in addition, valuers can provide an additional, unexpected and unsolicited updated valuation report with worse losses).
- Information leaks from media outlets.
- Market reaction following a resolution authority decision.
- Emails from stakeholders, e.g. from the supervisor, or news published about AML issues, press releases from the bank itself.
- A key person in the Crisis Management Team having a conflict of interest.
- A change of the resolution strategy caused by significant losses or by non-existence of buyers.

Annex 4 – Suggestions of players

In addition to staff members from the participating RAs acting as players, players from other authorities or ministries that are expected to have an active role in a real-life resolution case could participate, as well as players from private stakeholders that would have a role in an actual resolution case. The relevant simulated private stakeholders' roles can either be simulated by the RAs' players or participate as themselves.

A specific set of players is formed of resolution college members (RAs, competent authority, competent ministry, authority that is responsible for the deposit guarantee scheme, central bank, EBA). Other prominent roles would be extended to European authorities, such as the SRB, the ECB, and the European Commission (DC Comp, DG Fisma).

The most common simulated players that can also be invited to play are:

- The bank/institution;
- External consultants (e.g. M&A specialists, valuers);
- Trading Venues;
- Central Securities Depositories (CSD);
- Central Counterparties (CCP);
- NNA (national numbering agency for ISIN codes);
- Rating agency;
- Third country authorities;
- Media outlets;
- Critical service providers;
- Correspondent banks;
- Insurance companies;
- Entities from the group of the simulated failing bank.

Annex 5 – Suggestions for tools and platforms

- Platforms can be used for sharing information in a controlled and secure way. As a best practice, it should be the platform used by the resolution college to share information within the college, or the platform that the RA is using to share information internally or with the relevant authorities at national level to manage a bank failure.

- Where real platforms are used, it should be considered whether there could be any negative impact on the platform or the information it contains. In this case, the simulation may unfold in a testing environment.

- As a best practice, platforms for sharing, in a secured way, information and documents in the simulation, should allow for several functionalities: possibility of internal and external users, and different levels for authorisations to access information and co-editing documents' capabilities.

- Mock email platforms that would ensure a closed circuit of all communications and would facilitate after-action accounts of email exchanges.

- Functional email integrated with AI capabilities that could track all email exchanges if using the normal email client.

- Messaging and live communication platform (for text messaging as well as for organising calls), that should be, as in the above cases, the platform that is expected to be used in case of an actual crisis. Controllers can use a different platform only accessible to them.

- Survey tools to collect feedback from participants.

Annex 6 – Using GPAI in SimEx

Use cases

1 This annex includes examples of the use of GPAI[8] in helping in the preparation and delivery of SimEx.

2 The GPAI can be leveraged in various ways to enhance SimEx. Some potential use cases include (i) brainstorming techniques; (ii) the creation of resources (narratives, bank description information, injects, etc.) to be used in the simulation; and (iii) capabilities to follow, summarise and provide conclusions on the simulation.

3 First, the GPAI can be used to **brainstorm** the design of the simulations. For example, GPAI could be prompted to provide 'situations of economic downturn that would trigger a bank failure'. As a different example, a GPAI tool can be given this handbook as an input and asked to provide 'suggestions of a trigger point for running a desktop exercise for a resolution procedure'. A different example would be to ask for suggestions for injects.

4 The GPAI tool could be prompted with information about the chosen simulation and then prompted to provide the desired type of output, such as 'suggestions for injects to be used in a financial crisis simulation'. After the initial output, the GPAI tool can be prompted to refine its output, retaining only specific elements of its outputs and requested to renew the others until the user is satisfied with the output.

5 In a next step, once the brainstorming phase is complete, the GPAI can be prompted to provide details that would enable the design team in the preparation process. For example, the GPAI can be prompted to generate the **scenario narrative**. A GPAI tool can propose options to consider for the narrative of the scenario, starting with the type of issue (e.g. a sudden market crash or a cyber-attack) and then, depending on the user request, can provide the adequate level of detail to create a realistic environment for participants to practise their responses. To return to the example of the previous paragraph, the user may ask the GPAI tool to 'detail, in a scenario narrative of up to one page, the scenario of a bank failure simulation'.

6 During the simulation, the control team can resort to Gen AI to create dynamic answers (injects) in relation to player requests. If the players ask the control team for input that should be provided by one of the simulated entities, the control team could prompt the Gen AI with the players' request and ask for an answer to be provided to the players.

[8] **GPAI – 'general-purpose AI system'** means an AI system which is based on a general-purpose AI model, and which has the capability to serve a variety of purposes, both for direct use as well as for integration into other AI systems. **'General-purpose AI model'** means an AI model, including where such an AI model is trained on a large amount of data using self-supervision at scale, that displays significant generality and is capable of competently performing a wide range of distinct tasks, regardless of the way the model is placed on the market, and that can be integrated into a variety of downstream systems or applications, except for AI models that are used for research, development or prototyping activities before they are placed on the market. **'Agentic AI systems'** refer to a specific type of Generative AI systems that are designed to act with a high level of autonomy to achieve specific goals, such as virtual assistants or chatbots.

7 Furthermore, the GPAI can be asked to generate content for the simulation in picture, audio or video format. In certain simulations, to increase players' immersion, content other than text is used. The GPAI can create such resources based on the scenario narrative and user requirements. In Figure 8, we have created a newspaper cover that can be used to indicate the failure of a bank, as an example.

Figure 8: newspaper generated with GPAI for illustrative purposes

8 In a different case, the GPAI can be used for **Data Augmentation.** This use case is broadly used in other contexts to enhance datasets. For SimEx purposes, the GPAI could be used to increase the number of data points used in simulations with synthetic data. For example, if the simulation is about the closure of a derivatives portfolio, and the design team does not wish to use real data, the GPAI can be prompted a desired table structure, the underlying data validation rules and criteria, to populate the table with synthetic data for the simulation.

9 A different use case could be generating after-action insights and feedback. For example, the GPAI can be looped into the SimEx via a specific email that all participants have to CC in their email, or by using a closed circulation email platform that the GPAI can read. In this context, the GPAI can be asked to indicate any issues to controllers, such as no action from players or long response delays. For the closing report, the GPAI can map the interactions, indicating the most used pathways between players, reaction times, etc. The GPAI can be prompted with all the players' output from the simulation and asked to generate summaries.

Limitations and caveats

10 While a GPAI offers significant benefits, it is essential to be aware of its limitations and potential caveats.

11 First, it is imperative to respect the existing regulatory framework and guidance on the use of GPAI systems and models. In the case of several authorities in the same simulation, as a best practice, organisers should follow the strictest rules on GPAI usage.

12 As a best practice, the extent to which an authority uses confidential/personal input data with the GPAI tool should be in line with the authority's measures regarding governance, security and IT operations.

13 When preparing simulations, it is important not to upload real data, unless the data are already in the public domain, or the authority is integrating a GPAI tool in a way that all the input data used stays within the domain of the authority. For example, published financial reports and financial data from public sources can be used, but not bank reports that are not publicly available.

14 As a best practice, personal or confidential information should not be used as input or prompt to GPAI tools unless the GPAI tool is integrated in a way that all the input data used stays within the domain of the authority. For example, names of participants, their emails or other personal information should not be used. Similarly, real institution names should not be used in the prompts to the GPAI.

15 Finally, a human person should always check the GPAI output, and propose it for the simulation only if the person(s) is satisfied with the output and it is compliant with the SimEx requirements. As a best practice, GPAI results need to be used after applying critical thinking, verification and (where applicable) ethical awareness. GPAI results may not always be accurate/reliable nor explainable, hence careful interpretation is essential.

16 For example, GPAI tools may provide false information ('hallucinations'). In the context of simulations, however, hallucinations may be useful, since the goal is to have players immersed in the simulation, but it is important to be clear that this is not a real event.

Annex 7 – Questionnaire template for feedback collection

Suggestions for feedback questions. *Some of the questions employ a 1–5 scale where 1 = poor and 5 = excellent*

1. Did the SimEx meet its aims and objectives? [1–5]
2. Did the SimEx design encourage useful discussions and learnings? [1–5]
3. What are the most important lessons you learned from these exercises?
4. Was the SimEx well facilitated? [1–5]
5. Do you have any suggestions for running SimEx more smoothly and efficiently next time?
6. Did the pre-briefing materials provide sufficient information for participation in the SimEx? [1–5]
7. What additional materials did you have to obtain to progress in the SimEx?
8. Do you think the simulation was well organised and managed? [1–5]
9. Please give an example of one element you would change to improve the management of the SimEx.
10. Were there any assets (resolution plan, bail-in playbook, etc.) that were particularly useful in the simulation? Were there any resources that were not used at all in the simulation? Which one(s)?
11. How clear was your role and what was expected of you? [1–5]
12. Did you find you had tasks to complete that you didn't anticipate?
13. Were the time limits set realistic to implement? [1–5]
14. Which tasks or actions should have had a longer timeframe to complete?
15. Were you at all times aware of the overall progress of the simulation? [1–5]
16. Were there some elements or processes in the simulation that worked particularly well? Which ones were they?
17. Were there any elements or processes in the simulation that worked poorly, felt unnecessary or were difficult to apply? Which ones were they?
18. What are the three key learnings from SimEx, in your view?
19. If you could change three things for the next simulation, which would these be?

Annex 8 – Checklist for feedback collection

i) Decision on the timeline of feedback collection

Date(s) and time for debrief	
Date(s) and time for feedback collection at the end of the exercise	

ii) Decision on the type of feedback

Type of feedback	Description	Present in the simulation (Yes/No)
Hot Debriefing	Occurs shortly after simulations	
Cold Debriefing	Occurs after at least 24 hours	

iii) Decision on tools/platforms used to collect feedback

Ref	Method	Comments for implementation
A	Surveys/feedback and evaluation forms	
B	Live session with the controllers	
C	Automated monitoring tools	
D	Direct observations from the control team	

iv) Decision on person(s) involved in collecting feedback

	Person(s) responsible for delivery	Deadline to prepare
Preparation of the feedback templates		
Feedback collection process		
Handling and processing feedback		

Tour Europlaza, 20 avenue André Prothin CS 30154
92927 Paris La Défense CEDEX, FRANCE

Tel. +33 1 86 52 70 00

E-mail: info@eba.europa.eu

https://eba.europa.eu