

# WISE 2023

POWERED BY 4C STRATEGIES

## Whole Industry Simulation Exercise 2023

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## Post-exercise Report

*This report is publicly available and covers the full WISE 2023 programme.*

*Note: the information in this report was consolidated from across the 42 participating firms. This report was authored by 4C Strategies in Jan-Feb 2024 and reviewed/endorsed by the HKFSBCM Board in Apr-May 2024.*

*Report delivered to participating firms and HKMA in May 2024.*



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# WISE 2023

WHOLE INDUSTRY SIMULATION EXERCISE

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*WISE 2023 has, for the first time ever, allowed the Hong Kong financial services industry to integrate Operational Resilience with a crisis management exercise. This is a massive step for the industry, further enhancing its ability to respond more effectively to incidents and become operationally resilient.*

”



**Mr. Hozefa Badri, Chair,  
Hong Kong Financial  
Services Business  
Continuity Management  
(HKFSBCM) Board**

“

*The HKMA attaches great importance to strengthening the operational resilience of the banking sector. We have actively participated in the WISE exercise since 2015 and have all along encouraged our banks to do the same. Through active participation in WISE, both the banks and ourselves have gained useful insights into the areas that require improvement in achieving operational resilience.*

”



**Mr. Raymond Chan,  
the then Executive Director,  
Banking Supervision Hong  
Kong Monetary Authority  
(HKMA)**



# Foreword



It is with great pleasure that we present the Post-exercise Report (PER) for WISE 2023, offering a comprehensive outline of the various deliverables and initiatives which made up the WISE Programme in 2023.

WISE 2023 stands as a testament to the strength and commitment of the financial services sector in Hong Kong, embodying a tradition of preparedness and strategic thinking. At its core, WISE 2023 was designed to foster resilience and fortify crisis preparedness across the sector. Through a series of workshops, activities, and training sessions, participants engaged in the design, development, delivery, and evaluation of a distributed simulation exercise. As you will read in this report, WISE 2023 was so much more than just a single exercise and I am extremely proud that we were able to deliver so many more tangible outcomes and benefits to the programme such as a Capability Maturity Model for benchmarking and crisis management training, to name a couple. With that said, it is the benefits we cannot measure from which I believe the greatest value can be drawn. The coming together of practitioners from different banks, different locations, the sharing of knowledge and the relationship building that will support the sector and individuals alike in future planning and incident response, are priceless.



Central to the success of WISE 2023 was the collaborative partnership between the 4C Strategies team and the HKFSBCM. I am extremely grateful for the way we were able to work together and realise the aims and objectives of the Board. The other key element to success was the many volunteers from across the sector who represented their firm in one of a few pivotal roles. Their dedicated planning and execution, both in-person and remotely, ensured the successful delivery of this exercise. The resulting insights and suggestions provided within this report reflect these efforts and underscore the collective dedication to safeguarding the integrity and stability of this vital industry.

WISE 2023 achieved several significant outcomes, all focussed on bolstering operational resilience and crisis management in the financial sector. Sector-wide response improvements were identified, and a robust Capability Maturity Model was developed. Participants established a scenario testing platform to comply with annual regulatory testing requirements and where possible and within the participants risk appetite, incorporated testing for Operational Resilience testing. Senior management and Crisis Management Teams (CMT) gained crucial experience in industry-wide response planning and the handling of cyber threats. And lastly the exercise also honed BCM professionals' skills in crisis facilitation and end-to-end response planning.

I extend my sincerest gratitude to all those who contributed to the success of WISE 2023, whose collective efforts have undoubtedly strengthened the industry's preparedness for its future challenges.



**Ben White**

Exercise Director  
4C Strategies





4C STRATEGIES

## About 4C Strategies

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4C Strategies is the leading provider of training and organisational resilience solutions. For over two decades we have been supporting financial institutions, global enterprises, armed forces, and the public sector across 100 countries.

Our software and professional services have proved critical in helping organisations increase resilience through effective risk, business continuity, and crisis management. Central to this is our training and exercise program.

From small-scale table-top sessions to industry-wide real-world scenarios, we regularly run exercises for the financial sector for 20 to 200 participants, leveraging our presence in Europe, Asia Pacific, and North America. Enhanced by our Exonaut software, tailored exercises challenge participants and provide data-driven insights into capabilities and key areas for improvement to reinforce the resilience of staff and organisations.

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**Exercise, improve, and thrive in adversity with 4C.**



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# Executive summary

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# Introduction

This report presents the key findings and insights from WISE 2023, as well as the methodology that was used to deliver a successful exercise programme.

Included in the document is a breakdown of the Crisis Management (CM) training provided to senior managers from various firms who actively participated. The report also illustrates the establishment of a sector-wide Crisis Management Capability Maturity Model (CMCMM), a strategic framework crafted from the data gathered during the initial exercise kick-off meeting in July 2023. This holistic approach aims to evaluate performance, as well as provide a benchmark and roadmap, for enhancing crisis resilience beyond WISE 2023.

WISE 2023 was a collaboration between 4C Strategies (4C), the Hong Kong Financial Services Business Continuity Management (HKFSBCM) Board, and participating firms. The report includes the careful planning and execution conducted during three in-person ‘sprint weeks’ in Hong Kong and the sessions run in the interim periods which were managed online.

Each participating firm has been provided with an individual, firm-specific report. Beyond offering firm-specific performance metrics, these individualised reports present analysis and suggestions provided by the respective firm’s Evaluators, emphasising the exercise’s role in refining crisis management capabilities at an organisational level.

Following the 4C methodology of “Design, Develop, Deliver, and Evaluate”, this report provides a structured breakdown of the WISE 2023 process. The reader will be guided through each phase to understand how the exercise was developed from concept to execution.

## WISE and the HKFSBCM

Since 2013, the financial services sector in Hong Kong has convened every two years to conduct a Whole Industry Simulation Exercise (WISE). WISE provides an opportunity for Business Continuity Management (BCM) practitioners and Crisis Management Teams (CMTs) to collectively navigate a severe, yet plausible, scenario in order to strengthen the crisis preparedness and overall resilience of participating sectors within the Hong Kong financial services industry. The HKFSBCM Board launched the first WISE in 2013, firmly in the knowledge that industry-wide simulation exercises create a unique opportunity for participating organisations to test their procedures, remain up to date with emerging threat trends and sector risks, and share best practice and knowledge.

The WISE concept relates to delivering an industry-wide tabletop exercise. A central simulation team provides ‘injects’ which prompt participating CMTs to determine and perform the appropriate actions without committing to any physical response, such as performing an evacuation. Similar industry-wide exercises are conducted globally, for example, SIFMA’s Quantum Dawn Exercise (US) and MAS’s Raffles Exercise (Singapore).

## Building on Previous Feedback

In previous iterations of the WISE series, CMTs have tackled transport disruptions, physical terror attacks, swine flu outbreaks, and cyber and information security breaches and threats. To seek continuous improvement, the WISE series is enriched by efforts to build upon feedback from previous exercises such as WISE 2019. WISE 2023 was the fourth exercise facilitated by the HKFSBCM in Hong Kong and the first since the COVID-19 global pandemic. Suggested enhancements included to give participating firms greater input into scenario development and inject design, to involve the regulators to a greater degree, and to modify the exercise delivery format, pace, portal, and schedule.

To deliver WISE 2023 with an enhanced scenario involving a cyber incident with a third-party impact, 4C was contracted by the HKFSBCM Board in June 2023. After months of planning preparations, capability building events and training sessions, WISE 2023 was delivered on 16 November 2023.



Day of the exercise, 16 November 2023.





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# 1. WISE 2023

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*Introduction to the scope and scale of the WISE 2023 Programme.*



# WISE 2023

WHOLE INDUSTRY SIMULATION EXERCISE

**WISE 2023** was a 3-hour table-top exercise conducted on 16 November 2023 with 42 financial institutions and over a thousand participants. The exercise simulated a large-scale cyber incident that led to the loss of a critical third party affecting the Hong Kong financial sector. In the 3-hour exercise window, a total of over 500 exercise injects were deployed across the firms – some firm-specific and some generic. There was also participation from the industry’s 3 key regulators: the Hong Kong Monetary Authority (HKMA), the Securities and Futures Commission (SFC), and the Insurance Authority (IA). The exercise was developed in line with the exercise aim and the four exercise objectives, the details of which can be found in [Appendix C](#).



**WISE 2023** developed through a series of activities from July to November 2023 (including briefings, workshops, and trainings), designed to prepare each firm for the exercise through sharing of best practices for crisis management, definition of roles and responsibilities, and strengthening of communication channels between Single Points of Contacts (SPOCs) and WISE 2023 organisers.



Capability development workshop, July 2023.

There were two key considerations in preparation for each of the 42 firms to exercise their own plans and procedures in the 3-hour testing window:

1. How to establish a severe but plausible and challenging scenario that impacts each of the participating firms, enabling each firm to determine the extent of their involvement.
2. How to arrange the necessary logistics for over a thousand participant to engage in the exercise simultaneously, and cohesively deliver all information, injects, and exercise material through a centralised portal.



## 1.1 WISE Programme Outcomes

To establish target outcomes for WISE 2023, the HKFSBCM Board carefully considered how to best build on the progress made from previous WISE events, and how the WISE 2023 Programme could best equip participants against an evolving risk landscape. The below 11 outcomes were established.

<p>Promote Business Continuity Management (BCM).</p> <p>01</p>	<p>Establish a platform for financial institutions to conduct scenario testing against a severe but plausible scenario to support their Operational Resilience programme and self-assessments.</p> <p>02</p>	<p>Train and educate senior management and CMTs to deal with the systemic impact of cyber and other threats to the financial sector in Hong Kong.</p> <p>03</p>
<p>Allow the participating firms to experience the end-to-end response planning when industry-wide interruptions occur.</p> <p>04</p>	<p>Enable BCM professionals to gain more experience in planning for and facilitating CMTs.</p> <p>05</p>	<p>Enable organisations to meet requirements for annual exercises and/or Operational Resilience.</p> <p>06</p>
<p>Identify sector wide response improvements.</p> <p>07</p>	<p>Develop and test a sector wide Capability Maturity Model.</p> <p>08</p>	<p>Practice crisis communication, internal, external and with regulators.</p> <p>09</p>
<p>Offer a channel for financial institutions to fulfil BCM related regulatory requirements.</p> <p>10</p>	<p>Build confidence in the banking sector with clients, regulators, and society at large.</p> <p>11</p>	

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To support the intended outcomes, 4C met with the HKFSBCM Board and participating firms during three separate on-site visits:

**Sprint Week One (July 2023):** structured to kick-off the exercise and introduce concepts to the training audience. It was also used to gather feedback on industry best practice and confirm programme outcomes with inputs from participating firms of the HKFSBCM.

**Sprint Week Two (September 2023):** focussed on scenario development and scenario validation. This was complimented by a series of workshops and training opportunities for nominated individuals from each organisation.

**Delivery Week (November 2023):** involved final planning meetings, a full exercise rehearsal, and the final exercise delivery.

The WISE 2023 Programme Timeline can be found in [Appendix B](#).



Crisis Management Training, September 2023.

## 1.2 Participants

Participation in WISE 2023 was open to any financial sector firm with a presence in Hong Kong and was encouraged by the HKMA, SFC (through ASIFMA) and the Hong Kong Association of Banks (HKAB). The WISE 2023 Briefing Day during Sprint Week One took place at the HKMA office in July 2023, to enable member banks to hear about the scope and benefits of participation. In total, 42 firms registered through 4C's online portal.

For the full list of participating organisations, please refer to [Appendix E](#).





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## 2. Programme Deliverables

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*Overview of all programme deliverables, including CMT Training, the Crisis Management Capability Maturity Model and associated WISE 2023 promotion materials.*



**WISE 2023**

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## What Made WISE 2023 Unique?

Whilst previous iterations of WISE could be characterised as simulation events, WISE 2023 was primarily focused on the integration of Operational Resilience into crisis management testing, beyond the scope of a single simulation event. 4C leveraged its world leading Exonaut software and over 20 years of experience to produce



Over 700 data points were gathered in Sprint Week One to create the CMCMM

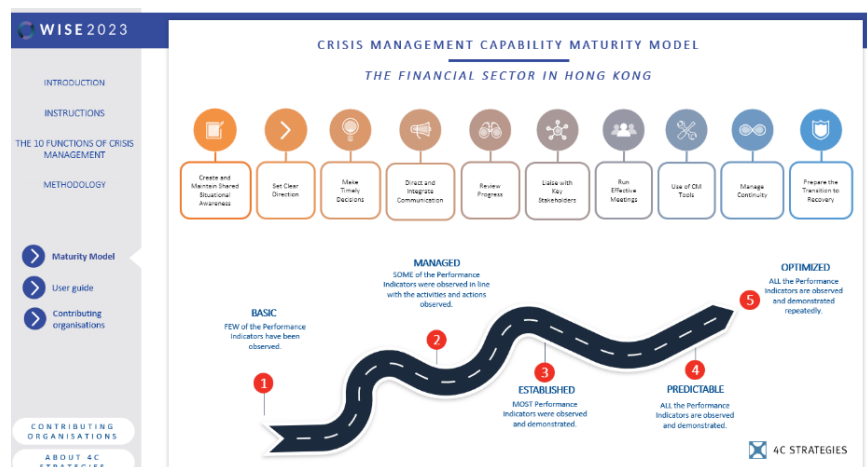
outcomes that are firsts not only for the WISE series, but for exercises of this scale across sectors.

### 2.1 Operational Resilience Guidelines

A key objective for WISE 2023 was to bring in the Operational Resilience program into the planning and development of the exercise. Operational Resilience has become a regulatory focus and priority over the past few years, and financial service firms are working closely with regulators to embed deeper end-to-end priority planning into making their firms more operationally resilient. As such, participating firms were given the option to include Operational Resilience requirements into their WISE 2023 exercise. Guidelines were developed to support firms with gathering key data such as recovery time objectives (RTOs) and determining impact tolerances. The findings could then be incorporated into the exercise day discussions and injects.

### 2.2 Crisis Management Capability Maturity Model (CMCMM)

The CMCMM is an industry-wide benchmarking framework, developed and delivered as part of the WISE 2023 programme to track and measure the maturity of the firm’s crisis management capabilities against the industry. This framework was designed



Extract of the Crisis Management Capability Maturity Model.

so that firms could use it for WISE 2023 and beyond, to continuously enhance their readiness and response procedures, pinpoint gaps, and allocate resources strategically.



The CMCMM is based upon international crisis management standards, organisational resilience benchmarks, and industry best practices. The model was enhanced by 4C in collaboration with the Scenario Leads and SPOCs who provided over 700 data points. The structure of the CMCMM comes from 4C’s proprietary **10 Functions of Crisis Management**: a structured approach suitable for continual training and development:



The 10 Functions of Crisis Management

## 2.3 Crisis Management Training

Leveraging feedback from previous WISE exercises, 4C delivered two crisis management training sessions in advance of the exercise day. During the training sessions, participants engaged in jointly



understanding the critical elements of gaining situational awareness through effective information sharing and the use of assumptions. Participants also examined the importance of record-keeping and the potential ramifications of inaccuracies, particularly concerning audits or regulatory scrutiny. Emphasis was placed on comprehending the principles of defensible decision-

making and the various factors influencing this process, including assumptions and their implications on decision outcomes. Participants were introduced to a range of tools and methodologies throughout

the training designed to strengthen their decision-making processes, which attendees then practised and rehearsed through a short tabletop exercise at the end of the training.

## 2.4 The Exonaut® Exercise Portal

Exonaut, 4C's software-based proprietary Training & Exercise Management solution, was utilised by 4C and participating firms of WISE 2023 as the platform for the end-to-end exercise management process. Exonaut provided a secure, central repository for exercise information, training materials, injects and pseudo media. During the exercise, performance evaluations and observations were all submitted and processed using Exonaut.

## 2.5 Promotional Materials

One of the 11 defined outcomes for WISE 2023 was to “promote Business Continuity Management” to a wider audience. To achieve this, 4C delivered a series of marketing and promotional materials that showcased the originality of the WISE 2023 Programme and featured the importance and value of collective industry-wide exercising. Further, a short documentary-style video was released in May 2024 that illustrates each phase of WISE 2023 and includes interviews with the HKMA, participating firms, the HKFSBCM Board as well as the 4C exercise delivery team.





## 3. Observations

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*Summary of the feedback and analysis provided by 42 participating firms. The 4C Project Team carefully read through each of data points and compiled a holistic view of the sector's performance for each of the Objectives.*



# Observations per Objective

Observations are provided against the four objectives that were communicated with participating firms throughout the planning of WISE 2023:

1. To assess the ability of participating firms to respond to the systemic impact of cyber and other threats to the financial sector in Hong Kong.
2. The Crisis Management Capability Maturity Model (CMCMM).
3. Assess the ability of the sector and financial authorities to respond collectively to a major operational disruption caused by a cyber-attack, including decision making and collective action.
4. Assess the effectiveness of HKFSBCM participant organisations to formulate a coherent communication strategy relating to a cyber incident.



## 3.1 Objective 1

To assess the ability of participating firms to respond to the systemic impact of cyber and other threats to the financial sector in Hong Kong.

### Overall Observations

WISE 2023 enabled a broad range of sophisticated and well considered responses across participant firms to a complex, large scale cyber-attack. The decision to allow individual Scenario Leads to determine the severity of this attack resulted in each firm being affected in a different way, even with the malware maintaining a common behaviour pattern; this ensured all firms were required to enact their crisis management plans and procedures. It was encouraging to see an overwhelming degree of success reported by firms when responding to this crisis.

#### Sustain (Areas that Scored Well):

- Most participating firms reported that their **crisis management framework** was robust. Their plans and procedures included clearly defined roles and responsibilities within their CMTs which enabled effective decision making. It was noted that the opportunity to test these frameworks on an exercise of such a scale was a useful indication of maturity.
- As the size of the CMTs participating in each organisation varied from individuals to teams close to fifty, a common theme was the need for **clear and concise communications** across the multiple departments which are required to orchestrate an effective response to an incident such as a cyber-attack. Much of the success of this collaboration is attributed to individual firm's emphasis on fostering a collaborative culture and promoting cross-departmental cooperation.



- There was amicability for **conducting regular, similar, large industry-wide simulation-type exercises**. Firms felt there were benefits to bringing a large audience together to simulate a crisis of this magnitude across the organisation and sector. This enabled a broader understanding of playbooks, policies and procedures which would significantly contribute to a better state of preparedness for an actual crisis scenario.

#### **Develop (Suggested Enhancements):**

- **CMT core membership and attendance** should be reviewed regularly to ensure that composition meets requirement. A key observation made by many firms was that it is important to understand who is critical to act promptly on new information to ensure timely decision-making can occur, and these key roles and attendees should be documented in the playbook. Time constraints imposed through the exercise scenario emphasised the need to ensure that information could be shared timely and accurately with the right stakeholders.

**Recommendation:** Review CMT membership and attendance to include the right SMEs.

- Some firms identified the need for **business unit/level discussions** to facilitate their operational responses to support the CMT's overall management of the incident. During a real situation, separate business unit/level discussions are required to prepare the CMT with necessary updates to make informed decisions. During an exercise where participants do not know all the injects, it is more challenging to have the foresight to include all the different units/levels.

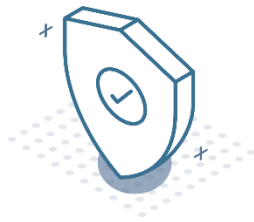
**Recommendation:** If feasible, invite the wider business to future exercises, training sessions and CMT discussions. However, consider the topic and relevance, to avoid information overload and exercise fatigue.

- Having accurate **critical business service mappings** are important to understand the operational impact of an incident. The scenario provided an opportunity to specifically test participating firms' understanding of third-party software vulnerabilities. For some firms, it took time for their CMT to receive an accurate picture on the level of integration of the third-party software, which directly affected the CMT's ability to conduct effective "case planning" (worst / best / most likely) and could affect the speed of response.

**Recommendation:** Enhance worst-case scenario planning to help CMTs to be better prepared for timely decisions during an escalating crisis before they impact critical business services. Incorporate additional plans and procedures to strengthen CMT awareness.

- **Having a widely understood playbook** was vital for many of the firms to ensure that their response remained on track and that appropriate stakeholders were informed of the situation at the right time, thus enabling effective decision-making. Having a broad variety of scenarios mapped out in playbooks would prevent issues which were raised by some firms which included difficulty in accessing technical details on internal applications, the identification of impacted third-party applications, and who was responsible for investigating these issues.

**Recommendation:** Conduct and review internal stakeholder mapping in the playbook.



### 3.2 Objective 3

Assess the ability of the sector and Financial Authorities to respond collectively to major operational disruption caused by a cyber-attack; including decision making and collective action.

#### Overall Observations

The WISE 2023 evaluation reveals that the Hong Kong financial services sector actively promotes and engages in cross-sector collaboration. The sector is aware of the need for and value of engagement with peer firms, regulatory authorities, and third-party vendors. There were many comments on the actual processes required for sector-wide collaboration and collective decision making, such as the quality of information, the efficiency / clarity / channels of communication, and the respective roles and responsibilities of regulators and firms alike.

#### Sustain (Areas that Scored Well):

- **High quality information** is an essential requirement for effective collective decision-making. The presence of SMEs enabled accurate and clear updates which directly led to more intentional decisions and had a positive impact when communicating with the regulator and peer firms.
- **Information sharing across the sector** during the exercise was varied. Firms were generally satisfied with the suitability of existing contingency plans related to collaborations with peer firms during an incident. Some firms could modify their plans relatively easily if found to be unsuitable. Firms that engaged with peer firms and vendors tended to gain more value from the exercise, whilst other firms talked through their engagement strategies.
- Firms that incorporated **third party impacts** into their scenario planning and responses reported a higher level of capability under Objective 3.
- The **interaction between the regulators and affected firms** was reported as positive, to the extent that firms who were not contacted, due to exercise constraints, noted that this should be a key area of focus in future training opportunities. In most cases where firms were contacted directly by the regulator as part of the exercise, regulators and firms were able to share timely communications.
- A **standardised template of questions** from the regulator (HKMA) was well received. The regulator’s questions enabled firms to be better prepared and meet reporting obligations.

***"All critical dependencies, including third party service providers, should be included in the CMT discussions to ensure holistic impact assessment and, where necessary, recovery planning."***

*Participating Firm, November 2023*

#### Develop (Suggested Enhancements):

- Some firms provided feedback that they could have benefited from further **internal support and guidance around regulatory interaction**. This feedback was two-fold:
  - During a real crisis, **additional internal resources** are needed to manage the information requests from the regulator and correctly prioritise workloads to respond timely.



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- Some firms cited the timeliness of the response to the regulator can be an area for improvement. Sometimes the request for information or the deadline for submissions from the regulator could be challenging during a real crisis.

**Recommendation:** Roles and responsibilities for gathering and submitting information to the regulator should be established at the outset of a CMT meeting.

- **Information integrity** is a vital part of collective decision making. The involvement of qualified and appropriately senior CMT members to communicate with peer banks and regulators was noted as a particular strength of the sector. As a further enhancement, some firms felt they could benefit from more sharing on what was taking place across peer firms.

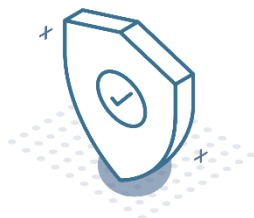
**Recommendation:** Consider how to incorporate more sharing into the actual exercise duration so that participating firms can feel they are part of a collective industry exercise.

*“Unfortunately, during the exercise, there was an insufficient guidance or information sharing collectively as a sector in regard to how firms should respond as a sector.”*

*Participating Firm, November 2023*

- While firms were overall positive about the industry exercise, **continuous improvement with sector resilience** remains an ongoing objective for HKFSBCM and drives many of the activities that aim to strengthen the Hong Kong BCM community.

**Recommendation:** Consider feedback and observations from WISE 2023 to enhance future HKFSBCM activities around strengthening the sector’s resilience.



### 3.3 Objective 4

Assess the effectiveness of HKFSBCM participant organisations to formulate a coherent communication strategy relating to a cyber incident.

## Overall Observations

Objective 4 focuses on external communications with the media and the ability to identify key audiences so that messages are consistent, coordinated and controlled. It is important to note that this objective was **not** mandatory for the participants, hence the analysis is less comprehensive.

### **Sustain (Areas that Scored Well):**

- **Effective communication strategies** emerged as a consistent theme and most firms had a high level of preparedness. The focus was on timely, transparent, and accurate communications which utilised a variety of tools including Microsoft Teams, Zoom, whiteboards, and email distribution lists.
- Comprehensive **plans and policies** were in place at most firms and there was specific mention of the value for a structured communication plan focused on cyber incidents with documented protocols for internal teams, customers, regulators, and the media. There was also recognition

of the importance of social media monitoring and management in shaping public perception during a crisis due to the high reputational risk.

- Some firms had **dedicated crisis communication** teams who were proactive with updating their **online messaging** through the social media simulator during the exercise.

**Develop (Suggested Enhancements):**

- Most firms in WISE 2023 expressed interest for greater levels of **direct engagement with the regulators** during the exercise.

**Recommendation:** This is a point for consideration for the next WISE exercise.

- Firms were mostly positive about their own individual communication strategy with the public. While there was generally consistent public messaging across firms later in the exercise, the social media Exercise Control (ExCon) team discovered some notable **contradictions in messaging** at the beginning of the exercise. Some firms attributed the issue to a ‘technical problem’, while others made explicit the existence of a ‘cyber-attack’.

***“It would be better if a centralized party collected all the crisis information (e.g., bank services affected) and issued a statement to the public.”***

*Participating Firm, November 2023*

**Recommendation:** Firms could leverage existing information sharing platform, such as the Cyber Intelligence Sharing Platform (CISP) for the banking and insurance sector to align and ensure accuracy of information, and to avoid rumours and misinformation.



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# 4. Capability Assessment (Objective 2)

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*Results of the Capability Assessment, as required by Objective 2.*

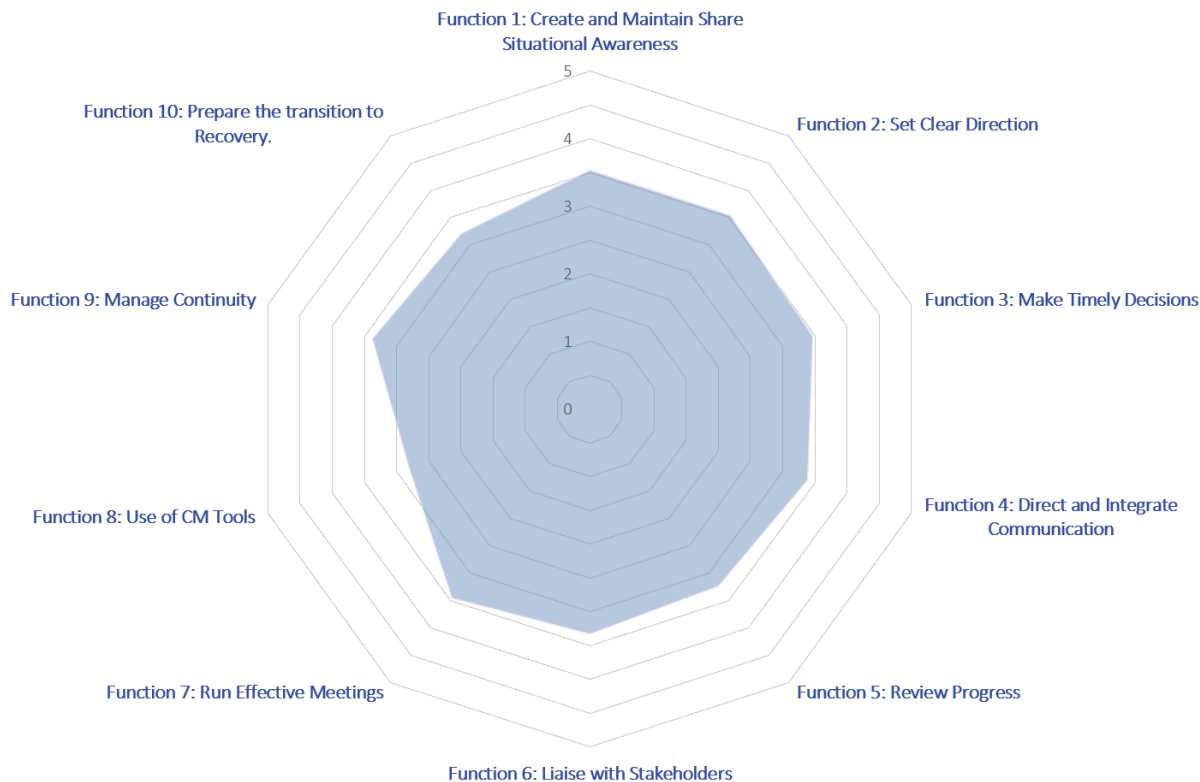


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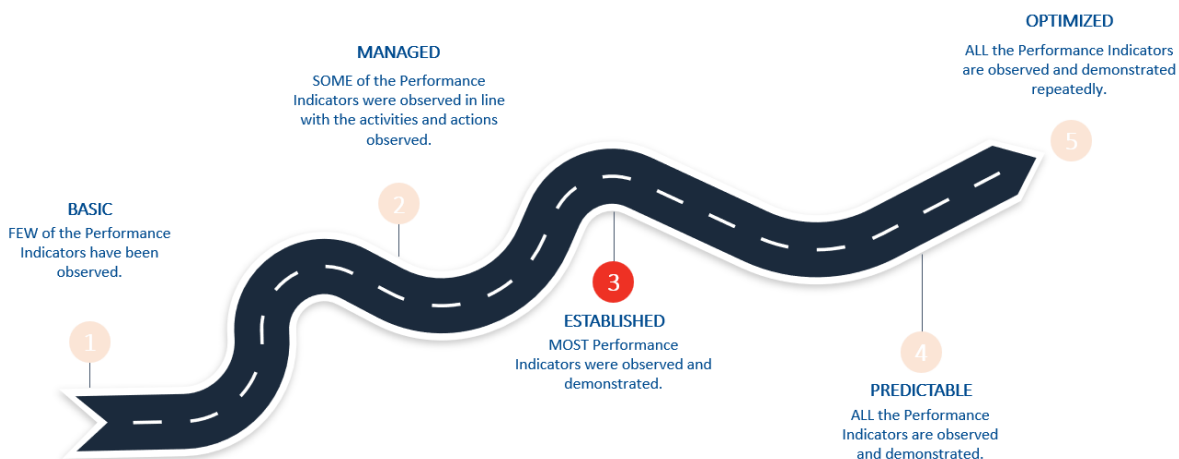


## Overall Sector Capability: 3.3, Established



### 4.1 The Sector Benchmark

This assessment represents a consolidated view of the findings from all capability assessments submitted during WISE 2023. In total, 77 assessments were submitted over the course of the exercise, providing an overall average score of 3.3/5, which equals to an Established level of Crisis Management capability. Note that the assessments were done by numerical scoring only and no further comments or feedback were required.



## 4.2 Data Collection

Each participating firm submitted self-assessments of their current CM capability as part of the exercise through the exercise portal. This was done by the lead Evaluator at the firm and was done against each of the ten functions of CM. The ten functions of CM outlines what best practice looks like for the financial sector in Hong Kong and are expected to be demonstrated by an effective CM Team while responding to a crisis. By scoring each function on a scale from 1 (Basic) to 5 (Optimized) the baseline level of CM Capability for the sector could be identified, enabling progress to be tracked over the past year.

## 4.3 Key Observations

### Sustain (3 Functions that Scored Well):



#### Setting Clear Direction (Function 2)

Score: 3.54/5.00

In a crisis, each firm proactively sets clear direction for the CMT in responding to the event. This was recognised as a priority across the sector. Several firms mentioned a focus on the direction, plus 'reviewing actions and decisions' as best practise.



#### Creating and Maintaining Shared Situational Awareness (Function 1)

Score: 3.53/5.00

Most firms mentioned the importance of gaining an accurate situational awareness in a crisis which includes **collaboration within and across teams**, transparent **communications**, a high level of **awareness** of plans and policies, as well as a **well-rehearsed** CMT that uses a common language and has clear roles and responsibilities.



#### Making Timely Decisions (Function 3)

Score: 3.47/5.00

During the exercise, the CMTs had a **clear focus** on working at pace to take charge of the situation as early on and as **proactively** as possible through determining risk thresholds, leveraging decision-making models, invoking escalation processes, and implementing appropriate governance.

### Develop (3 Functions that Did Not Score as Well):



#### **The Use of CM Tools** (Function 8)

Score: 2.8/5.00

CMTs should be trained on how to **use CM tools** (such as agendas, IT hardware, systems, applications, etc.) to support an effective crisis management response. Several firms mentioned agendas were not in place or not fit-for-purpose, as well as some ambiguity around which communication tools to leverage when communicating more broadly and escalating issues.



#### **Preparing the transition to recovery** (Function 10).

Score: 3.21/5.00

“Preparing the transition to recovery” was exercised to a lesser extent as the 3-hours of exercise play concluded at the peak of the incident. Therefore, there was no resolution to the scenario in sight and the inability for CMTs to **rehearse and validate the capability** within this area was limited.



#### **Review progress** (Function 5)

Score: 3.24/5.00

More than half of the participating firms went through a review cycle in phase 2 of the exercise by having the CMT review communication plans and previous minutes/actions from phase 1. Due to the 3-hours of exercise play and the rapid course of events (simulating 2 days), most firms expressed a **lack of time to go through a proper review process** as they would in reality.

## Recommendations for Future Exercises

**Annual Benchmarking:** Each firm should consider conducting an annual capability assessment against the CMCMM which would enable them to track their capability over time and ensure resources and resilience activities are focused on the key areas of development.

**Duration of Exercise:** Longer crisis simulation exercises should be considered to give firms the ability to widen the discussions beyond the CMT to business units/levels, to better simulate a multi-day crisis, and to have time to consider the transition to recovery.

**Exercise Crisis Communication Teams:** Firms should consider involving their Crisis Communication Teams in future WISE or CMT exercises. Future industry exercises could include internal/external client/media injects to further test and embed best practices around the critical area of crisis communications.





4C STRATEGIES

# Appendix

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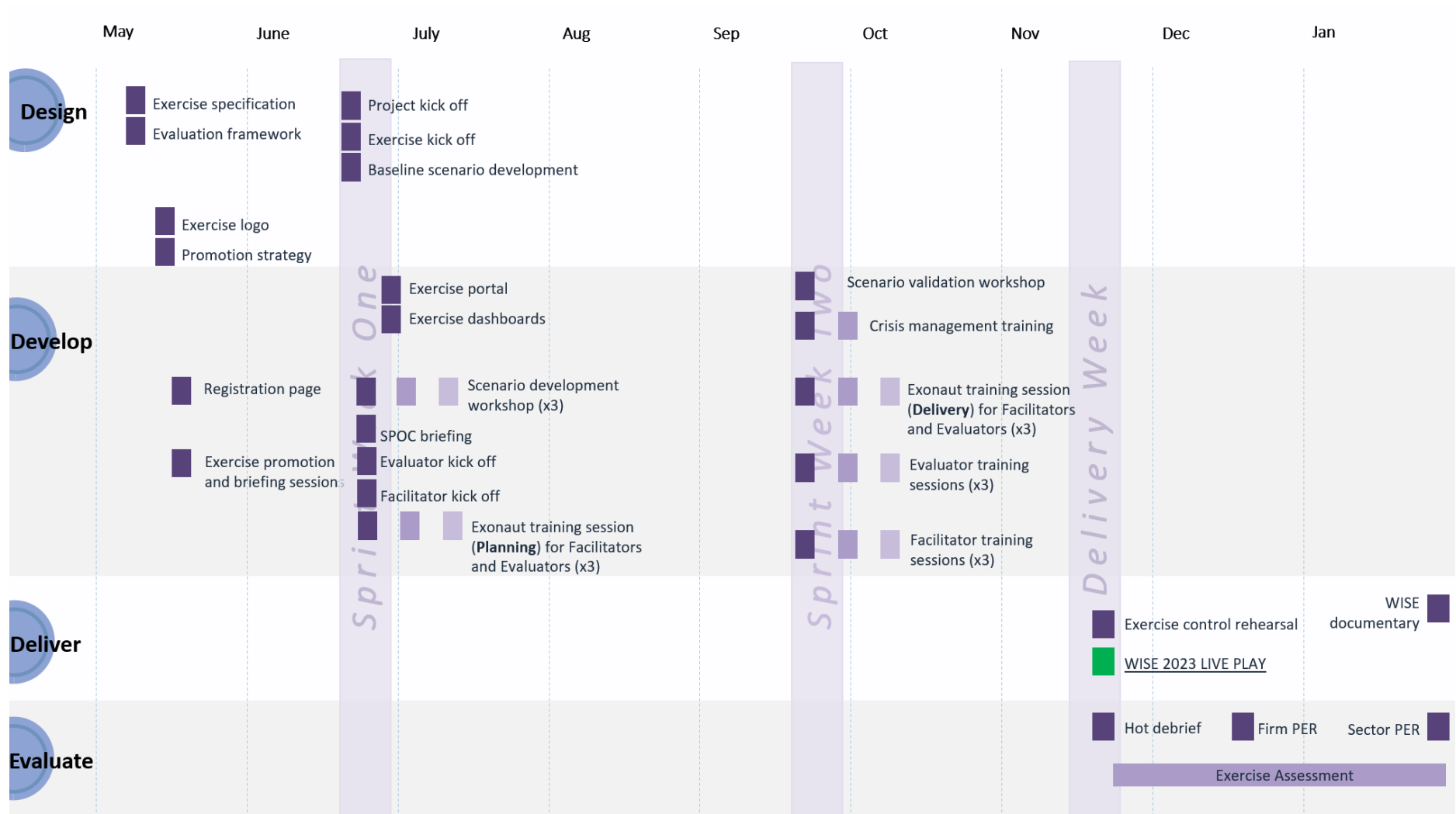
**WISE 2023**

WHOLE INDUSTRY SIMULATION EXERCISE

## Appendix A – Glossary

<b>Assessment</b>	<i>The systematic process of documenting and using empirical data to measure knowledge, skills, and capability. An overall assessment has been made against each of the three pre-agreed objectives in this report. The assessment is based on the observations submitted by Evaluators in the exercise as well as the feedback and input from participants in the debrief session.</i>
<b>Benchmark</b>	<i>The industry average for the Hong Kong Financial Sector. Calculated by taking the average of the Capability Assessment values from each firm across each of the functions of the Crisis Management Capability Maturity Model.</i>
<b>Cold Debrief</b>	<i>A debrief conducted within the two weeks post exercise. It captured strengths and areas of improvements as well as ideas for future learning.</i>
<b>Evaluation Framework</b>	<i>Contains the full framework for how to evaluate the exercise, including exercise purpose, objectives, performance indicators and checks for Evaluators. The evaluation framework is a result of collaborative efforts between 4C, the HKFSBCM, and the Firms.</i>
<b>Evaluator</b>	<i>The person(s) within the Firm responsible for the exercise evaluation within the firm. The Evaluator/s were responsible for providing the analysis and assessments contained in this report and supporting the development of the Evaluation Framework.</i>
<b>Event</b>	<i>The core building blocks of the scenario that drives the course of events, consisting of one or more incidents.</i>
<b>Facilitator/Single Point of Contact (SPOC)</b>	<i>The individual within the Firm accountable for coordinating the planning and participation in the exercise for the Firm.</i>
<b>Forum</b>	<i>The Forum is a reference to the group of organisations who are members of the Hong Kong Financial Services Business Continuity Management (HKFSBCM). The work of the Forum is administered and governed by the HKFSBCM Board: a group of elected individuals from these member organisations who volunteer their time to advance BCM within the financial services sector of Hong Kong.</i>
<b>Hot Debrief</b>	<i>An after-action review hosted by the firm immediately after the exercise ended to gather immediate thoughts and feedback on performance and the exercise in general.</i>
<b>Incident</b>	<i>Conductible elements in the scenario initiated by exercise director. Incidents are contained within scenario events and have a start and an end point.</i>
<b>Inject</b>	<i>A scripted piece of information inserted into the exercise designed to elicit a response or decision and facilitate the flow of the exercise. Typically, an inject is an instruction for the Players in the form of, for example, a phone call, e-mail, or fax message. It can also be an update from mainstream or social media. Injects are individual scheduled exercise elements that are delivered by the Facilitator or role Players.</i>
<b>Objective</b>	<i>Exercise objectives are specific statements describing what is to be measured and evaluated against individuals, groups or firms participating in the exercise.</i>
<b>Observation</b>	<i>An observation is a statement based on something the Evaluator has seen, heard, or noticed that is believed to impart beneficial new knowledge or wisdom. It is something that can be analysed to produce recommendations.</i>
<b>Player</b>	<i>A Player is any individual deemed to be ‘playing’ in the exercise. They have no role in the management or delivery of the exercise. Everything Players do in the exercise should simulate what they would do for real in the event of an actual crisis, within the constraints of the exercise bubble through the Exercise Portal.</i>
<b>Scenario Lead</b>	<i>The person(s) responsible for providing feedback during the scenario development process, developing, and delivering firm-specific injects, among other responsibilities.</i>

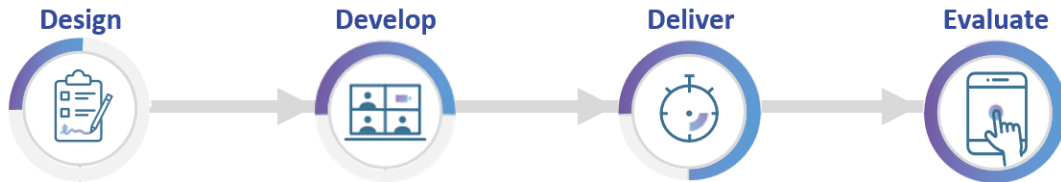
# Appendix B – WISE 2023 Programme Timetable





## Appendix C – Exercise Methodology

The following section provides an in-depth description of the four phases for delivering WISE 2023: Design, Develop, Deliver, Evaluate.



The WISE 2023 programme was enabled through two main modes of governance: (1) the use of the Exonaut Exercise portal and (2) the set up and collaboration between 4C and HKFSBCM.

1. **The Exonaut Exercise Portal:** Exonaut was used throughout each phase of the programme to support and enable firms to meet the objectives of such a sophisticated and complex exercise. The use of Exonaut can be understood in greater detail in [Appendix D](#).
2. **Collaboration between 4C and HKFSBCM.** In response to feedback from previous WISE events, the planning of WISE 2023 was highly collaborative. Each phase was influenced by the Board and the HKFSBCM, who met with 4C in a combination of remote, hybrid and in-person sessions and workshops throughout the four phases.

# Design



The focus of the Design phase was to establish the foundation for the programme and align participants in their understanding of the exercise aims and objectives. It involved:

### Programme Kick-off Sessions

*Governance and roles and responsibilities were established, regulators and participating organisations were briefed on the exercise, and registration began.*

### Baseline Scenario

*Following the first on-site scenario development workshop, participating organisations were presented with the first draft of a cyber-attack scenario.*

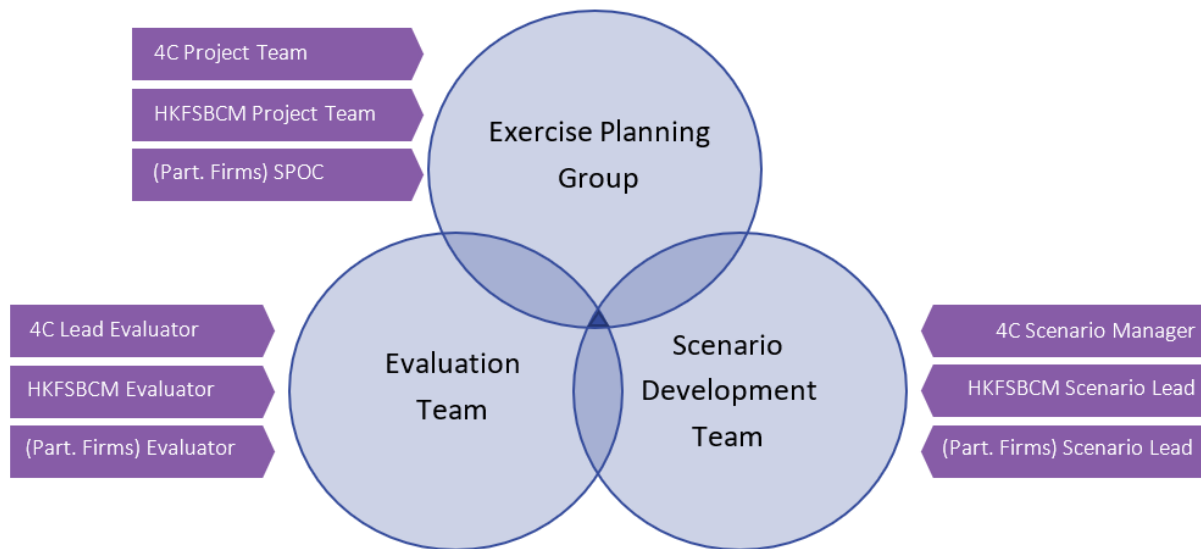
### Exercise Specification

*Details of the exercise were confirmed in a single source of truth – the Exercise Specification. These included exercise aims, outcomes, objectives, format, and the evaluation framework.*

## Programme Kick-off

### Organisation Overview

Programme governance was established by creating three project teams, each with representatives from the HKFSBCM, 4C, and participating organisations.



### Roles and Responsibilities

The roles and responsibilities attached to each of the three project groups were defined during Sprint Week One. Each participating firm nominated an individual to take on one of the following three roles, and each role was further disaggregated between planning and delivery responsibilities. This same individual was expected to carry out these responsibilities throughout the development to delivery phases, allowing for continuity and protecting against information gaps.

	<b>Single Point of Contact</b> <i>Facilitator</i>	<b>Lead Evaluator</b> <i>Evaluator</i>	<b>Scenario Development Lead</b> <i>BCM volunteer and ExCon</i>
<b>Planning Responsibilities</b>	<ul style="list-style-type: none"> <li>• Coordinate the planning and participation in the exercise for the firm.</li> <li>• Main point of contact between the exercise and the participating firm.</li> <li>• Conduct pre-exercise briefing for the participating firm.</li> <li>• Participate in all Exonaut activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Support the development of the evaluation framework.</li> <li>• As required develop firm specific objectives.</li> <li>• Provide feedback for the evaluation framework.</li> <li>• Participate in Evaluator briefings.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide feedback to the scenario development process to ensure the scenario stands up to scrutiny and that there is enough material for the participating firm to exercise with.</li> <li>• Develop firm specific injects in line with the Events and Incidents.</li> </ul>
<b>Delivery Responsibilities</b>	<ul style="list-style-type: none"> <li>• Deliver the pre-exercise Brief to the participants.</li> <li>• Monitor Players’ reaction to the Scenario.</li> <li>• Liaise with ExCon on inject flow and the level (tempo) of Player participation.</li> <li>• Evaluation</li> <li>• Exonaut SME</li> </ul>	<ul style="list-style-type: none"> <li>• Make observations in Exonaut against the exercise objectives based how the Players respond.</li> <li>• Monitor Players’ reaction to the scenario.</li> <li>• Liaise with EX-CON on inject flow and the level (tempo) of Player participation.</li> <li>• Conduct the debrief sessions at the end of the exercise.</li> <li>• Develop and deliver firm specific PER assessment.</li> </ul>	<ul style="list-style-type: none"> <li>• Participate in Exercise Control.</li> <li>• Role play to deliver injects to the exercise if required.</li> <li>• Provide SME advice and responses during the exercise.</li> <li>• Be able to hot script new events depending on Player responses.</li> </ul>

## Baseline Scenario

The baseline scenario provided the foundation of events and incidents that the exercise was built upon. To ensure accurate and unified scenario planning, the baseline scenario was confirmed at the outset of the programme by the HKFSBCM Board and 4C. This baseline scenario was later enhanced by two Scenario Development workshops involving all participating organisations.

The key scenario requirement for WISE 2023 was that it should have a cyber focus, as this is primarily one of the greatest risks facing the sector. To guarantee engagement with (and impact on) the entire training audience, the scenario was developed around a simulated software patch in a widely used third-party application which exposed a vulnerability that could be exploited by a threat actor to install malware. Given the requirement for a sector-wide impact, it was determined that malware, rather than ransomware, would be the most suitable choice.

A piece of software common to all participating organisations (referred to as ‘Software Company X’ within this report) was selected for this purpose, and the patch was used to deliver a worm into the organisation’s systems.

This allowed the threat to manifest itself differently for each organisation and tailor injects accordingly. The baseline scenario was agreed upon as beginning when a system vulnerability was



discovered in Software Company X and was potentially exploited by a sophisticated threat actor to infiltrate the networks of financial service firms via a poisoned software patch. This led to suspicious system activity and significant processing slowdowns within organizations, amid growing social media reports of a possible cyber-attack on the financial sector.

## The Exercise Specification

The Exercise Specification document defined the fundamental requirements for the WISE 2023 Exercise and the WISE 2023 Programme and was a 'single source of truth' for Facilitators to refer to. It was in part the outcome of programme kick-off discussions during Sprint Week One between 4C and the HKFSBCM Board.

The document provided information, in advance, on programme and exercise scope, intended programme outcomes, roles and responsibilities, the baseline scenario, programme timeline, and exercise format details. It also detailed the evaluation methodology and process for post-exercise analysis. Aspects of this document, such as the evaluation methodology, were also circulated separately to relevant parties.

## Aims and Objectives

4C worked alongside the HKFSBCM Board to consider how best to achieve the 11 Programme outcomes through the setting of the WISE 2023 aims and objectives:

To enhance the incident response capability of the Hong Kong Financial Services industry through the delivery of a Whole Industry Simulation Exercise.

AIM

To assess the ability of participating firms to respond to the systemic impact of cyber and other threats to the financial sector in Hong Kong.

- 1.1 Evaluate the effectiveness of the Crisis Management Team responding to a crisis.
- 1.2 Validate the awareness, understanding, and effectiveness of plans and procedures.
- 1.3 Validate Operational Resilience Plans and Activities

The Crisis Management Capability Maturity Model.

To measure current capability of each participating firm against the industry wide crisis management team capability maturity model.

Assess the ability of the Sector and Financial Authorities to respond collectively to a major operational disruption caused by a cyber-attack, including decision making and collective action.

- 3.1 Test the coordinated response of the CMT with peers in the financial services industry and key third-party suppliers.
- 3.2 Evaluate the role of the regulators and other industry organisations in a sector wide response.

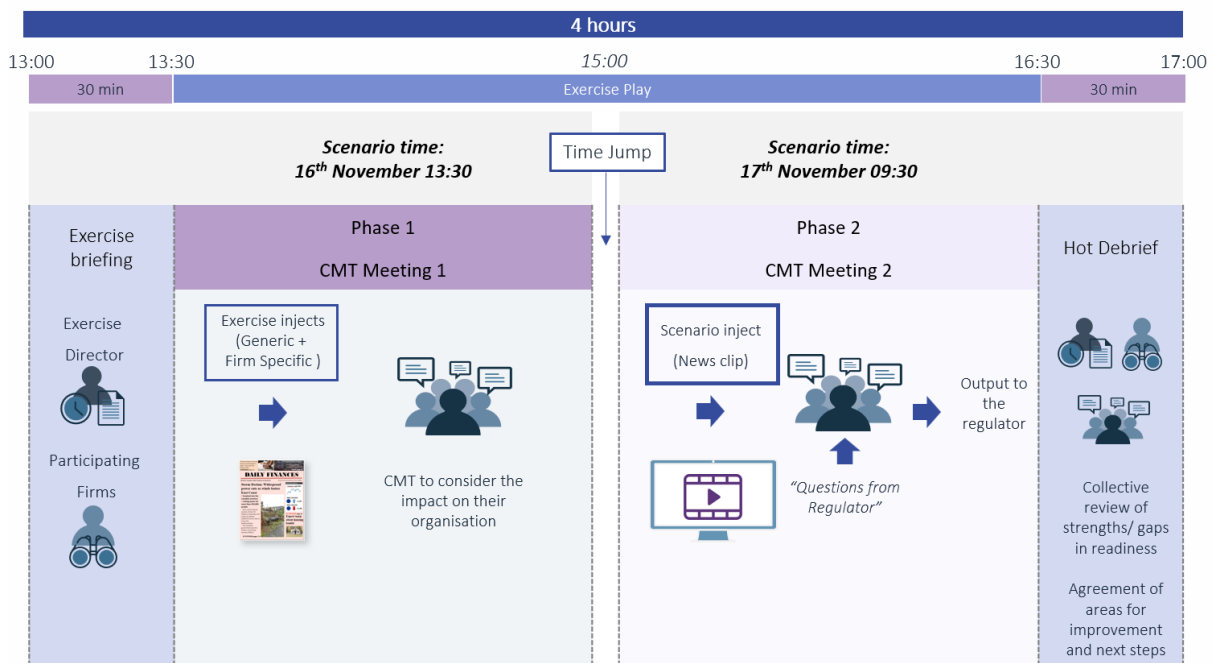
Assess the effectiveness of HKFSBCM participant organisations to formulate a coherent communication strategy relating to a cyber incident.

- 4.1 Evaluate the effectiveness of communication between participating financial institutions, regulator(s) and third parties during crisis situations.
- 4.2 Evaluate the firm's ability to Communicate effectively and rapidly during uncertainty with the media.
- 4.3 Evaluate the firm's ability to identify key audiences so that communications are co-ordinated, consistent, and controlled.

### Exercise Format

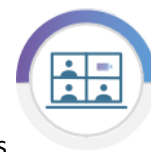
The parameters of the exercise were established from the outset of the programme. To minimise disruption to business-as-usual, the exercise was to be no more than 4 hours total length. To exercise operational resilience components as part of WISE, the exercise needed to ensure that impact tolerances, the majority of which sat between 4 and 12 hours, had the opportunity to be played out within a compressed timeline. The Board suggested the inclusion of a simulated time jump built into the exercise to create a simulated two-day time period for the crisis to unfold. Day One included discovery of the initial cyber-attack and the immediate repercussions, and Day Two was simulated as 16 hours later at market open on the second day of the crisis. This time jump enabled Scenario Leads to compare disruptions to their important business services against their pre-defined tolerances and reflect on the material impact of the crisis on consumers, market integrity, and eventually the financial stability of firms and the sector.

The exercise format and timeline can be seen in the illustration below.





## Develop



The focus of the develop phase was to produce an exercise scenario which was plausible, consistent, credible, and relevant in order to appropriately challenge the Players. This involved three key deliverables:

### Scenario development

*Working alongside HKFSBCM Board and SMEs from the participating firms, the scenario was developed via a series of workshops to ensure it reflected the challenges facing the industry.*

### Scenario validation

*Working alongside the SMEs from the participating firms in a workshop, the scenario was validated by going through a methodology for ensuring the plausibility, consistency, and realism of the course of events.*

### Training sessions

*As part of developing the exercise there were multiple training sessions delivered, to ensure all stakeholders involved had the skills and knowledge to deliver in line with their role and responsibilities.*

## Scenario Development

The 4C methodology for scenario development allows buy in to the scenario at all levels of participation through series of scenario development and validation workshops.

### Scenario Development Workshops

With the baseline established and introduced to the training audience, 4C ran two scenario development workshops with the Scenario Leads. The first of these was in person during Sprint Week One, and the second conducted remotely in the weeks after.

The purpose of these workshops was to ensure that there is a touch point in the scenario with every participating organisation, and that the scenario development process captured the specifics of each exercising firm whilst maintain focus on the sector wide impact of the cyber event. This involved gathering expert input from Scenario Leads (BCM SMEs) on how the event may unfold within the Hong Kong financial services sector.

Some firms had fewer resources at their disposal to develop firm specific inject content. To mitigate differences between firms, the 4C Scenario Manager drafted a 14 baseline injects (not including Pseudo Media injects) with common wording for firms to personalise. Scenario Leads could make these injects as benign or as disruptive as they chose within the parameters of the scenario or choose to leave them as standard.

## Pseudo Media

To increase situational awareness and immersion into the exercise, 4C produced three pseudo media video clips simulating news reports from the fictional news programme. These realistic clips worked alongside the firm's injects to provide a sense of how the crisis was affecting the general public and the market, making Players aware of the public and media sentiment. This increased the pressure on communications teams and CMTs to respond with an official statement. The video clips were accompanied in each instance by two digital media articles for fictional news websites that provided different angles to the media's take on the crisis.

To further enhance the Player experience and to enable firms to better meet the exercise objectives, 4C deployed a social media simulation platform as part of the Exonaut Exercise Management Suite. This platform provided a means by which the fictional public and exercising firms could communicate, and the responses on both sides were real time. The fictitious avatars were controlled by a trained 4C social media Team who reacted to every post by participating firms conveying the real-time impact of service outages.

## Scenario Validation

Once the Scenario Leads had created their injects, 4C ran a 5-hour in-person scenario validation workshop attended by Scenario Leads. The purpose of this workshop was to validate the scenario injects designed by the respective Scenario Leads and deconflict any crossover in injects which may have derailed the overarching scenario.

Following feedback from this workshop, the scenario was finalised. Each of the Scenario Leads could now focus on ensuring they were familiar with the delivery method for each inject and ensuring the scenario timeline for their firm's injects in Exonaut® Exercise Portal was accurate.

## Training

In response to feedback from previous iterations of WISE, the HKFSBCM Board and 4C delivered a variety of training sessions throughout the Develop phase. These were conducted during Sprint Week Two as well as remotely, often in a one-to-one and classroom-based training format. 4C also facilitated virtual bi-weekly drop-in training sessions and Q&As to ensure that the SPOCs, Evaluators and Scenario Leads had the opportunity to ask questions and test the Exonaut® Exercise Portal. The training sessions provided during and after Sprint Week Two included:

- **Facilitator training:** this was for the benefit of the firm's nominated SPOC responsible for Facilitating the exercise delivery for their firm. The training focussed on the specific responsibilities for this individual throughout the exercise play.
- **Scenario training:** these sessions were run by the 4C Scenario Manager and were aimed at the firm's nominated Scenario Lead. Firms were taught how to develop their own injects, build these injects into the Exonaut Exercise Portal, and how to use the portal to monitor the development of the scenario on the exercise day.
- **Evaluator training:** this was aimed at the firm's nominated Evaluator(s) for the exercise. These sessions provided instruction on how to evaluate the performance of the exercising Players using

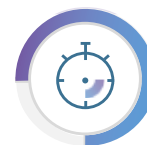
 4C STRATEGIES

best practice methodology from 4C's extensive experience in exercise management. This additional training was valuable for the evaluation phase of WISE 2023 but was also designed to be an additional value-add of the programme by improving the capacity of participants to continue evaluating CMT performance independently.

- **Exonaut Exercise Portal training:** this was provided to all participants who had a touch point with the Exercise Portal. Tailored to each specific use case, the training packages were accompanied by training materials produced by 4C that users could access through the portal and offline on an ad hoc basis.



# Deliver



After months of preparations, the Delivery phase of WISE 2023 began on the day of the exercise: 16<sup>th</sup> November 2023.

## Exercise Control

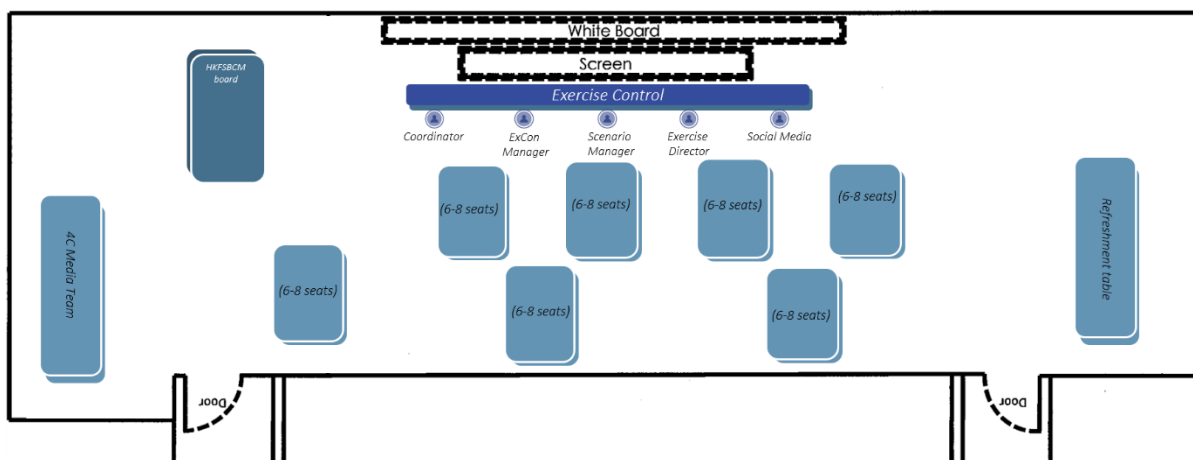
*Exercise Control, including the 4C team, the HKFSBCM Board and Scenario Leads from each participating firm set up the exercise at the exercise control venue at Pico Tower, Hong Kong.*

## Exercise Rehearsal, Delivery and Debrief

*On the morning of the exercise, 4C conducted a full dress-rehearsal with all exercise control members. The delivery was done in its entirety through the exercise portal, which included injects, social media simulator, and evaluation. At the end of the exercise day, each firm conducted a hot debrief which was submitted in the exercise portal.*

## Exercise Control (ExCon)

The ExCon location was arranged as per the below diagram. It allowed for tables of up to 8 people, with access to power and sight of screens used to show the briefing video, pseudo media clips and dashboards with anonymised data relating to the number of injects sent and observations received. Throughout the exercise delivery most the firms' Scenario Leads were situated in ExCon where they had oversight of the inject pathway from start to finish. This enabled them to promptly relay any questions from the training audience to the Exercise directing staff for a quick answer. Some participants joined remotely through a Zoom link with access to the Exonaut Exercise Portal.



## Exercise Rehearsal and Delivery

### Exercise Rehearsal

In the period that preceded the start of the exercise, 4C gathered the Scenario Leads in ExCon to conduct an exercise rehearsal. This two-hour period was an opportunity for any last-minute training, questions, and a full walk through of the Exercise and what was expected of the scenario leads. This was conducted both in person and remotely for Scenario Leads who were based outside of Hong Kong.

### Briefing – 30 minutes

The exercise began with a collective exercise briefing, delivered by the 4C Exercise Director via a video in the exercise portal. The briefing covered the exercise ground rules, logistics, set up and everything else needed to play. Local Facilitators were then on hand in each location to answer any specific questions from the Players. Some Facilitators used the briefing period to show the exercise briefing video alongside an accompanying deck to answer any questions from their CMTs.

### The Exercise – 3 hours

The Exercise Director officially started the exercise by instructing the Scenario Leads to release the first injects to all participants and begin the exercise play period. The exercise play was divided into two 90-minute phases (which equated to two simulated days). Scenario Leads had to be tactical with their use of injects to ensure that they revealed the scenario in full without overwhelming the CMT.

- **Phase 1:** focussed on the organisation's internal response to the cyber event, and involved measures to understand the characteristics of the crisis, its impacts, and the consequences.
- **Phase 2:** encouraged participants to focus on the effect the cyber-attack is having on the industry and respond to the regulators injects. 4C and the HKFSBCM Board worked alongside the HKMA and the SFC to ensure that Scenario Leads were provided with a set of questions in line with real-life expectations for this type of scenario, as well as an exercise specific email address for firms to respond to.

### Debriefing – 30 minutes

At the conclusion of exercise play the Exercise Director notified all participants that the exercise had officially ended. At this point, immediately after the exercise each participating firm's SPOC or Evaluator (depending on the level of participation) had 30 minutes to conduct a Hot Debrief with the participants. This information was sent to the WISE 2023 Exercise control via the Exonaut exercise portal before the end of the day. This was an important opportunity for the Evaluator or SPOC to capture exercise sentiments in close to real time.

# Evaluate

The Evaluate phase was the final stage of WISE 2023. Firms were tasked with self-assessing current crisis management capability against the CMCMM and the remaining objectives. Performance evaluations were then pulled together in the Firm-specific and Sector-wide Reports.



### Analysis of collated observations and performance data

*The data submitted during and after the exercise was analysed through the lens of the Hong Kong Financial Sector, enabling identification of sector wide lessons for improvement.*

### Firm-specific Post-exercise Reports

*Each Firm received their own PER, with the assessments and evaluation done by their Evaluators. The reports were only shared with the respective firm and SPOC/Evaluator.*

### Sector-wide Post-exercise Report

*This report contains extensive description of the WISE 2023 programme as well as the lessons identified and suggestions for improvements.*

The exercise evaluation was guided by the Evaluation Framework, including the CMCMM. The Evaluation Framework was a vital outcome of the WISE 2023 Programme. When evaluating a crisis management team, the Evaluation Framework was used to ensure that the evaluation was as objective as possible across the sector by providing clear guidance for what to look for and what was expected to be demonstrated by the team.

## Objectives and KPIs

In the Design period, it became clear that a level of granularity in firm-specific feedback, in addition to higher-level of sector-wide performance feedback, was desired by the HKFSBCM Board and its members. Thus, the Evaluation Framework was designed to be tiered, firms were encouraged to make observations during the exercise against each of the high-level objectives, with the option to consider the related sub-objectives, and a further list of associated indicators and checks for the Evaluator. This comprehensive list of questions guided Evaluators to consider what should be demonstrated in the response, and what ‘good’ looks like for each objective.

## Capability Assessment and Benchmarking

The CMCMM that was used as part of evaluation (under Objective 2) is based on the 4C developed methodology for the 10 fundamentals of crisis management, as per below illustration.





## 4C STRATEGIES

The functions are areas expected to be demonstrated by an effective CM team while responding to a disruption. Behind each function there is a set of performance indicators which define what “good” looks like for that function. As part of the exercise, each organisation was tasked to submit a minimum of two capability assessments against each function.

### Observations

Guided by the Objectives, lessons and outputs from the exercise were captured via three methods:

1. Observations during the exercise made by:
  - a. Facilitators (SPOC)
  - b. Evaluators
2. Hot debrief.
3. Cold debrief.

### During the exercise

Over 500 observations were submitted during WISE 2023, including capability assessments. Firms who used the Exonaut Portal to submit observations were able to make them directly against each of the exercise objectives (or sub-objectives). These observations in turn were analysed and summarised by the firm’s Evaluator into final overall assessments for each objective. This included extracting examples of best practice, processes to be sustained and suggestions for future improvements, which were captured in the Firm-specific Post-exercise Reports.

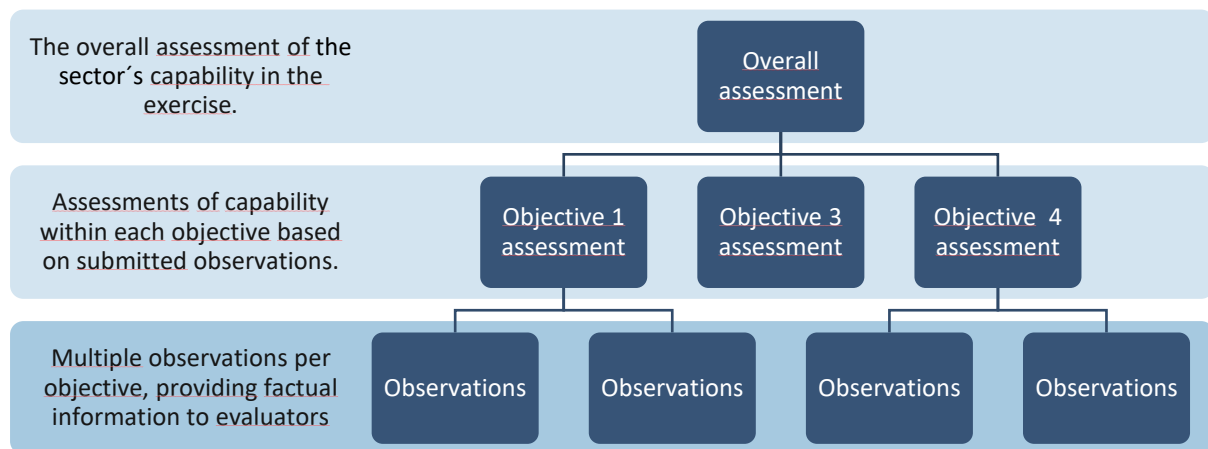


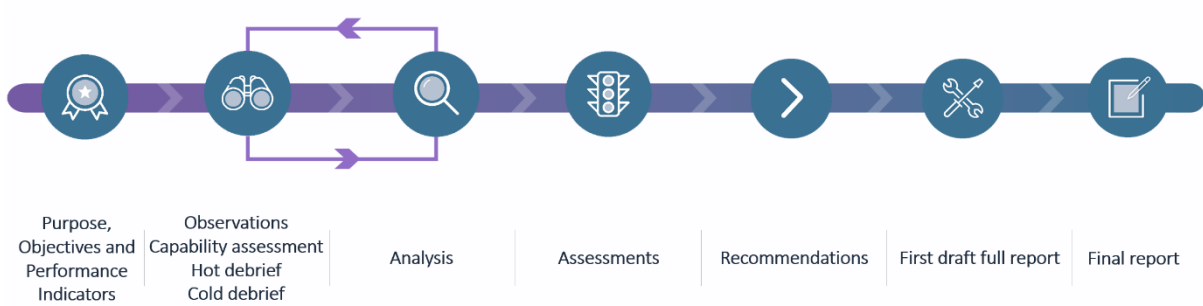
Illustration of objective assessments, excluding Objective 2 (the capability assessment).

### Hot debrief

Each Facilitator (SPOC) conducted an internal hot debrief at the conclusion of the exercise to capture immediate thoughts and reflections from participants. Material and training to conduct the hot debrief was provided prior to the exercise day to the Evaluator by 4C. This data formed a portion of the overall Post-exercise Report for their organisation. Key themes from all Firm-specific Reports were captured by 4C and added to this report.

### Cold debrief

Each participating firm was asked to submit a cold debrief survey on behalf of their organisation within two weeks of the exercise. The aim of the cold debrief was to gather as much feedback as possible regarding lessons identified to ensure continuous improvement. This feedback was also incorporated in this report, as per the illustration below.



## Appendix D – The Exonaut® Exercise Portal

To facilitate an exercise with the size, scale, and complexity of WISE 2023 it was essential to have the right tools and methodologies in place from the start to enable the process to be as smooth as possible. With Facilitators, scenario SMEs, Evaluators and Players all based across the APAC region in different locations (both remote and on site in offices), the Exercise Portal provided a single source of truth and key exercise tool that ensured the overall success of the exercise. It enabled all 42 participating firms to plan, deliver and evaluate the exercise for their own organisation.

By digitalising the process through the Exonaut® Exercise Portal the project ensured.

- **A single source of truth:** As all information about the exercise was developed and delivered through the portal via permission-based interfaces, there was a clear and reliable point of reference for obtaining accurate and consistent information.
- **Safe document storage:** With the high level of information security required as well as the amount of material produced and distributed it was important to ensure that all documents and materials were stored in a safe and permission-controlled location.
- **Information security:** The Exonaut system is security classified at the highest level, including NATO Secret and Unclassified security accreditation as well as IASME Cyber Essentials Plus. Ensuring that the exercise information did not leave this controlled environment until the defined exercise time was paramount to preventing the scenario being leaked and information spillage outside of the exercise environment.
- **A maintained player bubble:** Through clear interfaces such as the player portal, evaluation workspace and SPOC workspace it was possible to maintain several environments at the same time as well as enabling ExCon to monitor the overall process.
- **Role based interaction and workspaces:** With each participating firm having a minimum of four roles working in the system (SPOC, Evaluator, Scenario Lead and Player) it was essential to have a system in which they can all see and do what they should be seeing and doing within the system. For example, ensuring that the Players could not see the full scenario in advance of exercise play.
- **Real time overview of performance:** Through real time data visualisation and data collection the portal provided a live overview of current performance as well as sector wide capability.
- **A common tool:** With an exercise of this scale involving participants geographically located in different countries, all using different systems and networks as well as operating in different security constraints, it was vital for the success of the exercise to have a common tool to operate in. This was necessary to avoid confusion and fragmentation throughout the planning and execution.

## Planning

The planning phase of the exercise can be broken down into three key parts.

- (1) The planning and coordination of key activities and deliverables and
- (2) The scenario development,
- (3) Evaluation

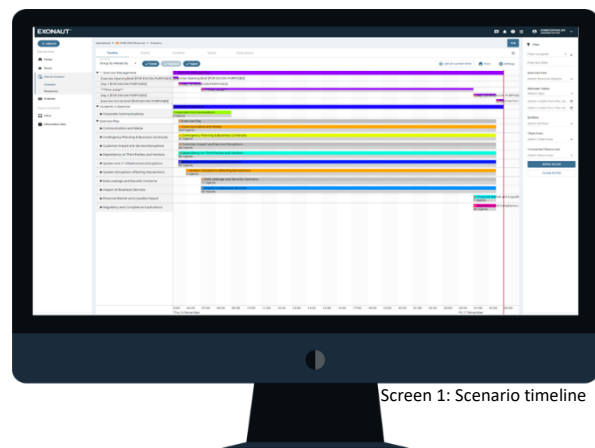


Divided into separate workspaces for each of the roles involved in the exercise (SPOC, Evaluators and Scenario Leads) and accessed through an intuitive landing page, the portal provided a means for the planning and coordination to take place in a secure environment.

The exercise scenario consisted of one main course of events with over 500 injects and each firm being impacted to different extent. To fully develop the scenario to the pre-defined level of detail 4C facilitated several scenario

development workshops. By developing all the injects in the Exercise Portal, the scenario manager could provide real time support to all participating firms through the scenario development process by reviewing the information provided as well as keeping all the communication in one place and avoiding information overload and confusion.

Screen 1 shows a snapshot of all the scenario events and incidents overlaid on a timeline in chronological order. This overview and timeline were later used for the exercise deliver to keep track of the injects as well as the overall pace of the exercise.



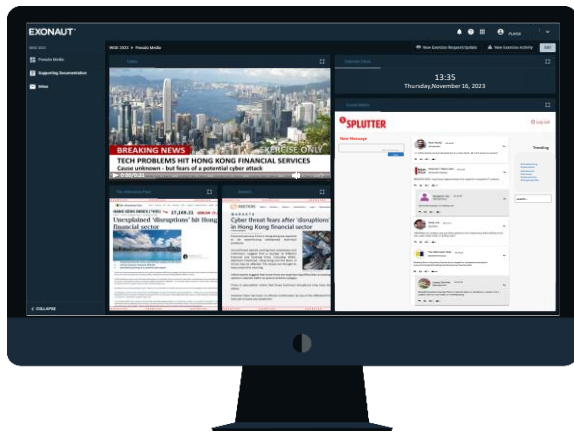
Screen 1: Scenario timeline

In addition to the scenario development component the project utilised the exercise portal for evaluation, which in the planning phase meant the development and implementation of the evaluation framework. The exercise portal was configured to include all exercise objectives and key performance indicators, which enabled the Evaluators to plan for a thorough evaluation of the Players' performance.

To set up the exercise for success, 4C developed and delivered several training sessions and training material for how to use the tool per role (SPOC, Evaluators and Scenario Leads). Included in this was step by step guides for how to access information, develop injects, communicate before and during the exercise and more.



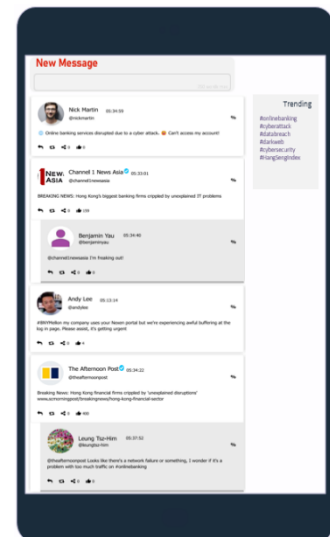
## Delivery



The Exercise Portal played several roles throughout the delivery phase. As has been explored earlier in this report the portal was divided into workspaces for each corresponding role. The Player portal (the player workspace) was the training audience window into the unfolding scenario. Using a social media simulation tool as well as the use of Pseudo Media injects live on the portal the exercise audience was able to use the portal as a ‘window to reality’, ensuring the scenario and exercise play was kept in a secure and safe exercise bubble without

anything leaking outside of exercise play. Injects were made available through the player workspace and Players were able to interact with the scenario through simulated social media as well as pre-defined communication channels. The simulated social media tool allowed crisis communication teams to exercise communication in real time with Exercise Control as well as firm SMEs role playing as part of exercise play.

Through the evaluation workspace on the exercise portal, Evaluators were able to see everything that the Players from their firm could see (injects, communication and pseudo media) and hence make observations real time in the system. Observations were made against the 4 exercise objectives, which included a minimum of two capability assessments. Each observation provided an indication of the level of capability as well as commentary of best practice, areas for improvements and lessons identified. Within the workspace, there were pre-configured templates and forms for how to submit observations as well as the hot and cold debrief.



The streamlined data collection and reporting capabilities of the platform not only improved efficiency but also enabled in-depth post-exercise analysis (hot and cold debriefs), enabling organisations to identify strengths, weaknesses, and areas for improvement as well as assess capability against the industry benchmark.

Key to ensuring the success of the exercise was the set up and running of Exercise Control. While physically located at the Pico Tower in Hong Kong, Exercise Control was run in a hybrid format due to some participating firms being located outside of Hong Kong. With a training audience in different geographies, having a single digital means of command and control was imperative. Using Exonaut, Exercise Control was set up using the portal as the single source of truth, physically displaying the player interface as well as the scenario lead overview of the timeline of course of events and injects in the room. Scenario leads joining remotely dialled in through a virtual meeting link and we able to see what was going on in the room as well as on the screens and the portal. All exercise communication and information was distributed through the portal, including any ad hoc instructions or changes made

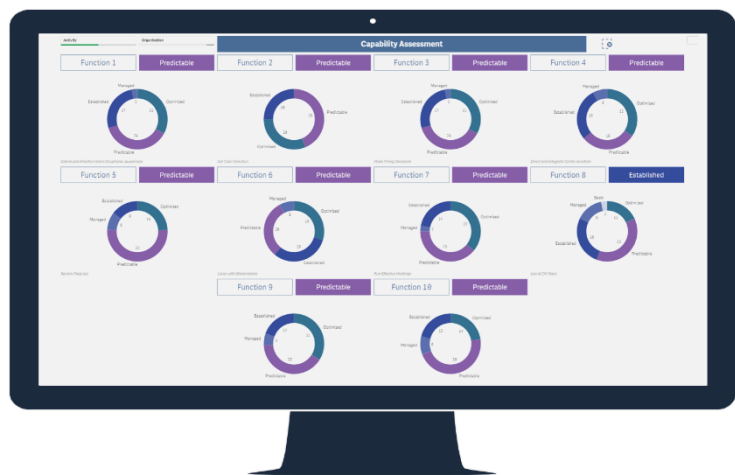
by the Exercise Control Manager. The pace of the exercise as well as the monitoring of tempo and overview of performance across all 42 firms was enabled using key dashboards. The main dashboard used was an overview of the timeline and injects, enabling exercise control to keep track of the injects and what should be played, when and by whom. There were also dashboards visualising the overall evaluation, ensuring that observations were made across the firms as well as providing indications of performance based on the Evaluators feedback. Lastly, one of the main dashboards available for Exercise Control displayed the capability assessment made, and the self-assessed capability per firm, providing Exercise Control with an initial understanding of baseline capability real time.

## Evaluation

To enable a robust and coherent approach to the evaluation, all Firms were using the Exonaut Exercise Portal to submit their evaluation data, namely observations, hot debrief and cold debrief forms. With Firm specific and role specific credentials and permissions, all Evaluators, SPOCs, and Players were authorised to submit observations during and after the exercise day. However, only Evaluators and SPOCs had the ability to submit the hot and cold debrief forms. As a minimum requirement, Firms submitted 6 observations and 2 capability assessments, which were monitored real time by Exercise Control.

By using the exercise portal, Exercise Control was able to see what observations and assessments that were coming in during the exercise, an indication of level (red, amber, and green) as well as track the progress of evaluation. Furthermore, Evaluators and SPOCs were able to conduct the assessment per objective as well as gain an overview of all the observations submitted for that Firm, which was done after the conclusion of the exercise (i.e., once all the evaluation data was in the system, the Evaluators used that as a foundation to write their assessment in the exercise portal).









































Once the Firm had submitted their assessments in the exercise portal, 4C extracted the data into the firm specific PER, which was distributed to each firm individually. Additionally, 4C extracted the Firm specific capability assessment data, benchmarked against the sector benchmark, and added that to the firm specific PER as well.



# Appendix E – Special Thanks

## WISE 2023 Participating Organisations

Many thanks to the participating organisations who ensured WISE 2023 was a success.

	AirStar Bank		Hong Kong Monetary Authority
	Bank of Julius Bär & Co. Ltd		Industrial and Commercial Bank of China (Asia) Limited
	Bank of America		Insurance Authority
	Bank of China (Hong Kong)		J.P. Morgan Chase
	Bank of Communications (Hong Kong) Limited		LGT Bank (Hong Kong)
	Bank Of East Asia Limited		Livi Bank
	Barclays Bank PLC		Mizuho Securities Asia Limited
	BlackRock		Morgan Stanley
	BNP Paribas		Natixis Hong Kong Branch
	BNY Mellon		OCBC Bank (Hong Kong) Limited
	China CITIC Bank (International) Limited		Ping An OneConnect Bank (Hong Kong) Limited
	China Construction Bank (Asia) Corporation Limited		Public Bank (Hong Kong) Limited
	Chong Hing Bank		Securities and Futures Commission
	Citi Hong Kong		Shanghai Commercial Bank Ltd.
	CMB Wing Lung Bank Limited		Société Générale
	Dah Sing Bank, Limited		Standard Chartered Bank (Hong Kong) Ltd.
	DBS		State Street Bank and Trust Company
	Deutsche Bank		UBP SA Hong Kong Branch
	Fidelity International		UBS
	Fubon Bank (Hong Kong) Limited		WeLab
	Fusion Bank Limited		Wells Fargo
	Hang Seng Bank Limited		ZA Bank Limited
	The Hong Kong and Shanghai Banking Corporated Limited		

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### 4C Strategies (Project team)

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## Advisory

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