

GUIDELINE

GNNNN ON REMOTE TRAINING IN VTS

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1 INTRODUCTION

A major factor in the effective delivery of Vessel Traffic Services (VTS) is the competence of its personnel. VTS personnel should only be considered competent when appropriately trained and qualified. It is recommended that competent authorities and VTS providers implement and establish VTS training and certification in a standardized and harmonized manner in accordance with guidelines and model courses.

Remote training has become a key part of modern education and professional development, offering accessible, flexible learning opportunities that helps VTS personnel stay skilled and maintain competency. It provides an alternative way to deliver training and ensures that all students, regardless of location, are appropriately trained and qualified for their VTS duties.

Advancements in technology, the drive to reduce operational costs and a growing focus on environmental sustainability have also played a significant role in its use.

Remote training also brings challenges which need to be considered when preparing and conducting remote training such as keeping learners engaged, peer-to-peer interactions, maintaining the integrity of assessments and bridging gaps in access to technology.

This guideline is designed to address these issues, providing a framework to create and deliver effective remote training programs in VTS.

1.1 PURPOSE

The purpose of this document is to provide guidance to training organisations and VTS providers when preparing and conducting remote training for VTS personnel.

This Guideline is associated with Recommendation R0103 Training and Certification of VTS Personnel, a normative provision of Standard 1050 Training and Certification. To demonstrate compliance with the recommendation the practices described in this guideline should be taken into account.

1.2 TERMS AND DEFINITIONS

Remote Training is any training interaction where the instructor and student are not in the same physical location, using online or offline methods and tools to achieve learning objectives. It can be delivered synchronously or asynchronously and may take the form of fully remote, blended or hybrid delivery.

For the purpose of this Guideline, the following definitions apply.

1.2.1 SYNCHRONOUS TRAINING

Synchronous means ‘at the same time’. Synchronous learning refers to a situation where instructors and students gather at the same time and (virtual or physical) place and interact in ‘real-time’. For remote synchronous learning the training relies on technology to support real-time interaction.

1.2.2 ASYNCHRONOUS TRAINING

Asynchronous means ‘not existing or occurring at the same time’. Asynchronous learning refers to a situation where students access materials independently, regardless of time and place, within a specified timeframe during which the materials are made available.

1.2.3 BLENDED DELIVERY

Blended delivery combines traditional face-to-face instruction with online learning. This approach uses the strengths of both methods to create a flexible and effective learning experience.

1.2.4 HYBRID DELIVERY

Hybrid delivery is where participants may be both in a traditional face-to-face classroom situation with some students or instructors online. This can also include online tools to support the learning, such as cloud-based simulation used by students who are physically within the same training environment.

2 BENEFITS AND CHALLENGES

Remote training in VTS brings a number of benefits and challenges, which differ depending on the type of training and how it is delivered, see Table 1. These differences have implications for the skill sets required by instructors, see Section 4.

Table 1 Benefits and challenges of remote training

Element/category	Benefits	Challenges
Geographical Aspects	Students in different locations, who are unable to be present at a training site, can still participate	Locations may be on different time zones/ fatigue issues with synchronous training sessions in different time zones
Training tasks (asynchronous)	Provides an alternative approach when students are unable to rearrange schedules	While providing opportunity to learn in a self-directed manner, some students may struggle to find the time or have the discipline to complete tasks outside of a formal training environment
Training tasks (synchronous)	Supports independent learning (adult training concepts)	Some students may struggle to complete the task as expected by the instructor
Cost	Reduced costs for e.g. travel, accommodation, training venue	Costs related to provision of technology, which may include a student's own technology, internet connection and access to other tools such as printers
Training resource sharing	Ability to use the technology in an effective manner, with sharing of training materials and resources, increasing digital intelligence and confidence	Asynchronous approaches may increase time to respond when questions on resources arise, some participants may feel overwhelmed by technology
Special Circumstances	Opportunity for continuity of training in special circumstances, such as limitations on travel or gatherings in the same physical space	Could be difficult to provide practical experiences, requires revised approaches and specific instructor skill sets
Social interaction	Supports family life/ less disruptive to family and social network Opportunity for interaction through digital tools, including national and international participation	Ensuring engagement between students / between students and instructor(s) requires specific instructor skill sets Reduced interaction in a physical environment, i.e. interaction out of class, could lead to feelings of isolation among learners

Element/category	Benefits	Challenges
Sustainability	Remote training can support sustainability initiatives, with reduced carbon footprint through reduced or no travel	Energy consumed for technology to support training environment
Monitoring and Assessing	Those students who may feel intimidated by group settings have opportunity to excel, reduced stress for monitoring and assessing	Some students may fall behind through misunderstanding or in ability to express themselves through the online tools Additional tools may be required to ensure authenticity and effectiveness of assessments
Technology	Provides opportunity for enabling learning in digital intelligence, increased comfort level with technology	Technical issues and connection problems may disrupt the learning experience

3 APPROACHES TO REMOTE TRAINING

There are different approaches that can be used to support remote training. Efficient use of training tools is essential to an effective training program.

Table 2 provides a comparison of different aspects of training between synchronous, asynchronous, recorded content and in-person training. This comparison considers: timing, interaction, engagement, structure, facilitation needs, flexibility, technology, provision of feedback, assessment, accessibility, options for 'best use', strengths and limitations.

Annex A.1 provides approaches to address the challenges when implementing online training.



Table 2 Comparison for different approaches to training

Aspect	Remote Synchronous (live online)	Asynchronous (self-paced)	Recorded Content	In-Person (Traditional)
Timing	Real-time, fixed schedule	Anytime, self-paced	Anytime, on demand	Real-time, fixed schedule
Interaction	Chat, polls, breakout rooms, white-boards	Forums, quizzes, peer feedback, instructor follow-up	Minimal unless paired with activities	In person face-to-face, informal exchanges
Engagement	Moderate–high, but screen fatigue risk	Moderate, depends on activity design	Low unless supplemented	High — natural energy & presence
Structure	Short blocks (60–90 min max at a time), structured schedule	Modular, flexible pacing	Bite-sized clips	May include short or longer blocks
Facilitation needs	High — requires online facilitation skills	Low once designed	Very low once recorded	High — classroom management
Flexibility	Limited (time zones, bandwidth)	Very high (anytime, any pace)	Very high (on-demand, repeatable)	Limited (location & time dependent)
Technology	Stable conferencing tools	Learning Management Systems (LMS) or online platform	Hosting platform, captions	Venue, AV, materials
Feedback	Immediate (Q&A, polls)	Delayed (automated or instructor)	None unless linked externally	Immediate, verbal, non-verbal
Assessment	Quizzes, group tasks, breakout activities	Online quizzes, assignments	Linked quizzes or worksheets	Role-play, simulations, observed tasks
Accessibility	Dependent on internet, devices, time zones	Flexible; design-dependent	Subtitles, transcripts, multi-device	Travel & venue accessibility
Best Use	Interactive workshops, discussions, coaching	Knowledge-building, reflection	Scalable explainer content	Hands-on practice, networking
Strengths	<ul style="list-style-type: none">• Real-time engagement• Instant feedback• Collaboration opportunities	<ul style="list-style-type: none">• High flexibility• Self-paced• Good for global learners	<ul style="list-style-type: none">• Scalable & reusable• Consistent quality• Easy to update small pieces	<ul style="list-style-type: none">• Real-time engagement• Instant feedback• Strong relationship building
Limitations	<ul style="list-style-type: none">• Screen fatigue• Time zone barriers• Requires strong facilitation	<ul style="list-style-type: none">• Risk of learner isolation• Delayed feedback• Challenge for motivation	<ul style="list-style-type: none">• Low interactivity• Passive learning risk• Quality depends on design	<ul style="list-style-type: none">• Logistically demanding• Less flexible• Resource-intensive

3.1 TRAINING TOOLS

The tools available for training in both blended and hybrid environments continue to evolve. Any tools selected should support the objectives as identified in the model courses. The training tools used should reflect the objectives of the training program and be suited to the approach for the training, i.e. synchronous/asynchronous, hybrid or blended learning.

Examples of training tools may include:

- e-learning platforms
- multi-point audio/video conference
- multi-point online communication
- online screen sharing
- online streaming media, including sharing of video and sound
- online assessment
- recording
- file downloading/uploading
- email
- instant messaging
- file sharing
- simulation training (cloud based).

Guideline G1027 Simulation in VTS Training provides further guidance on the use of simulation to support VTS training, including the use of cloud based or virtual simulation allowing online and remote training.

3.2 ADAPTING EXISTING TRAINING FOR REMOTE TRAINING

Adapting existing training to remote training needs to consider the learning objectives. It may be relatively straightforward with 'like for like' options, or there may be a requirement to identify more creative responses.

Some possible options for remote training are provided in Table 3.

Table 3 Physical training requirements with remote training option

Physical Training	Remote Equivalent
Training space with reference materials	Virtual learning space with reference materials
Classroom interaction	Virtual classroom with video and audio feeds
Small group discussion/ activities	Breakout room option within the virtual classroom tool
Brainstorming activities using whiteboards or flip charts	Whiteboard feature in virtual classroom tool, use of mindmap software shared online
Demonstration of information / sharing of ideas using whiteboards or flip chart activities	Collaboration tools in virtual classroom tool e.g. annotate feature / whiteboard
Guest lecture/ expert presenters	Guest lecture/ expert presenters

Physical Training	Remote Equivalent
Ongoing review of content presented and preparation for tests	Verbal and breakout room review activities, online 'quizzes' (e.g. Kahoot, Mentimeter or other quiz software)
Student interaction/ sense of being part of a cohort (incidental learning during breaks, after hours)	Creating opportunities for interaction, sharing knowledge and experience in breakout groups, creating online 'groups' (e.g. instant messaging groups)
Simulated VTS Decision Support Tool	Simulated VTS Decision Support Tool
Simulated VHF radio	Simulated VHF radio
Simulated telephone lines	Simulated telephone line
Time of day activities – adjustable clock in simulator	Time of day activities - adjustable clock app in the simulator
Training spaces for: <ul style="list-style-type: none"> • VTS Centre • Simulation control room • Outside world/ Port Team 	Breakout rooms in virtual classroom for: <ul style="list-style-type: none"> • VTS Centre • Simulation control room • Outside world/ Port Team
Peer Monitor (Student as Peer Monitor sits in the simulated VTS centre and monitors the activity, making notes as per Peer Monitor Form)	Peer Monitor (Student as Peer Monitor monitors the activity in the simulated VTS centre, making notes as per Peer Monitor Form)

4 INSTRUCTOR SKILL SETS FOR REMOTE TRAINING

Developing and delivering effective remote training, using blended and hybrid approaches, requires specific skill sets in addition to traditional instructional skill sets. (Figure 1 refers)

A summary of the skill sets is provided in Table 4. This has been developed based on Analyse, Design, Develop, Implement and Evaluate (ADDIE), a standard approach to Instructional Systems Design (ISD).

Table 4 Instructor skill sets for remote training

Element	Traditional approach	Remote training approach	Comments
Analyse	<p>Face to face workshops with VTS providers</p> <p>Meeting to identify requirements</p> <p>Training gap analysis based on information provided</p>	<p>Online session with VTS providers</p> <p>Online meeting to identify requirements</p> <p>Training gap analysis based on information provided</p>	<p>All aspects can be completed in a similar manner, using tools available</p> <p>Gap analysis referring to documents provided, prior learning assessment, etc. has little or no change in approach</p> <p>Skill set on how to run online meetings and workshops</p>

Element	Traditional approach	Remote training approach	Comments
Design	Design training program, with SMART objectives, to address the results of the analysis	Design training program, with SMART objectives, to address the results of the analysis	No change in approach
Develop	Training activities to address the objectives, focus on in-classroom activities; simulation; group work and presentations	Training activities to address the objectives, focus on virtual class activities (synchronous); self-learning/group activities (asynchronous); online breakout group activities; presentations	Instructors need to be aware of the tools available, with a skill set to develop effective learning interventions using online tools for both synchronous and asynchronous
Implement	Instructor in the classroom, managing the students based on the lesson plan Traditional skills to use tools in the classroom, classroom management techniques	Instructor online, or instructor/students in class with others online (hybrid) Evolve traditional instructional skills, making best use of tools to ensure interaction, confirm learning and manage the class in an online environment	Similar skills to implement a learning program Specific skills to use online tools, manage multiple screens, share screens and sound, effectively use different digital tools to create an effective and interactive learning environment
Evaluate	Summative and formative evaluations carried out Summative evaluations with instructor supervising on site Assignments provided and marked Formative evaluation based on ongoing assessment of performance	Summative and formative evaluations carried out. Summative evaluations with instructor monitoring remotely, with means to ensure student identity and assessment environment Assignments provided and marked Formative evaluation based on ongoing assessment of performance	Similar skill sets to evaluate Specific skills to use online validation tools for summative assessments; online learning management systems for assignment submission/ marking; means to verify participation and ongoing (formative) evaluation

4.1 INSTRUCTIONAL SKILL SETS FOR TRADITIONAL AND REMOTE LEARNING

Whether teaching in a traditional face-to-face environment or in a remote learning environment, there are core skill sets for all instructors. The provision of synchronous remote training requires additional skill sets, see Figure 1.

Traditional instructor skills include:

- knowing the tools being used to training

- ability to convey information clearly and concisely (communication skills)
- use of tonal quality when presenting/ Pitch, Pace, Power and Pause
- maintain instructional energy and learner focus
- encouraging student interaction
- time management
- fatigue management
- cultural awareness

For online or remote training, in addition to traditional skill sets, some specific skills to support online/remote learning include:

- consciously integrating interactions into online activities using breakout sessions
- identifying options to encourage interaction by using different tools (e.g. messaging apps, whiteboards, group activities and presentations)
- demonstrating the ability to use multiple screens when teaching, sharing content both visual and auditory
- identifying additional, sometimes innovative, approaches to achieving the objectives for training
- ensuring a strong online 'presence' using voice and visual presence to convey enthusiasm and energy
- ensuring strong understanding of the online tools being used, with the ability to trouble shoot technical problems remotely
- demonstrating patience with technology, conveying a sense of support even when technology may not work as expected

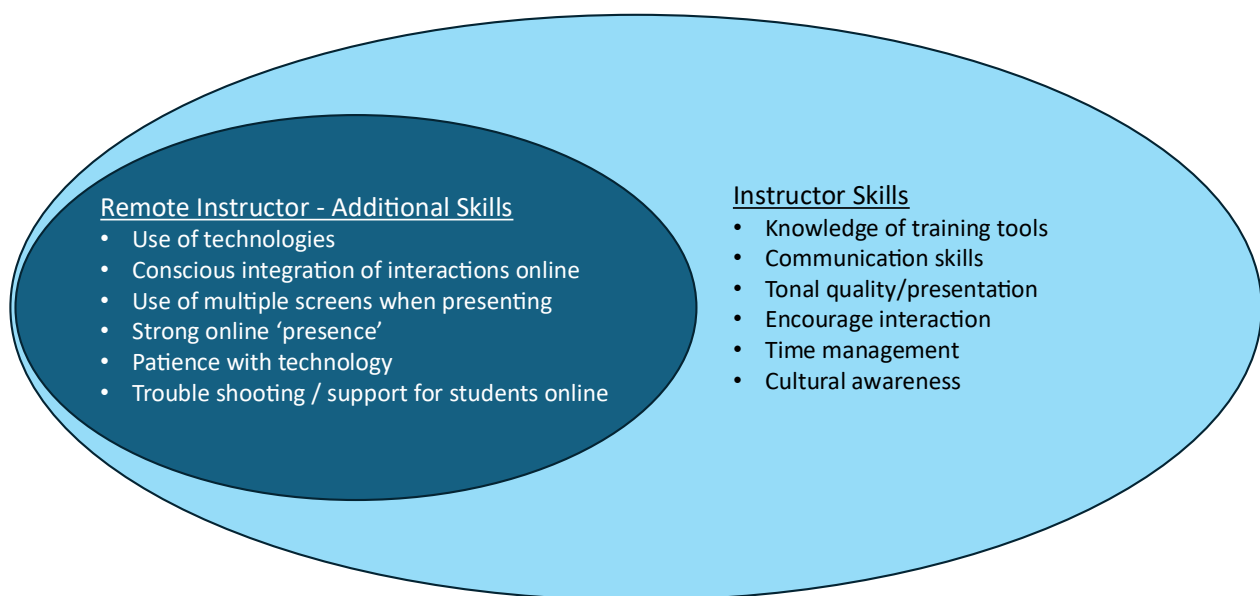


Figure 1 Examples of traditional and remote instructor skill sets

5 PREPARING FOR REMOTE TRAINING

To prepare both the instructor and the student for the course, pre-course sessions, pre-reading and provision of ‘tools overview’ documents prior to commencing the course should be considered.

5.1 PREPARATION FOR THE INSTRUCTOR

Effective remote VTS training begins with deliberate preparation by the instructor. Learning objectives are the key to effective training and these should be clearly defined and aligned with VTS competencies and tasks, with a realistic assessment of what can be achieved in a remote environment.

Instructors should confirm whether the session is instructor-led synchronous, asynchronous or blended and ensure content is appropriately scoped to avoid excessive cognitive load or unrealistic expectations of learner performance.

As for all training, the instructor should prepare all learning materials in advance, including presentations, recorded content, scenarios and reference materials. Any demonstrations or screen-sharing activities should be rehearsed to ensure smooth delivery and to confirm that sensitive or operational systems are not unintentionally accessed. Clear session plans, time allocations and interaction points should be established, reflecting a schedule that can manage attention, workload and learner engagement.

Technical and safety considerations are critical. Instructors should test all platforms, audio, video and connectivity in advance and have contingency plans in place for technical failures. Expectations regarding participation, use of cameras and microphones, confidentiality and recording should be communicated clearly at the outset. Instructors should also plan how they will monitor engagement and wellbeing remotely, including scheduled breaks and opportunities for questions, to maintain a safe and effective learning environment.

Instructors should also prepare themselves. This includes ensuring they are technically confident with the delivery platform, mentally prepared to manage dynamic interaction in a remote setting. Consideration should be given to personal workload and fatigue management, particularly during extended or consecutive sessions. Instructors should schedule appropriate breaks, manage cognitive demand and maintain professional presence and energy throughout the training to ensure consistent and effective delivery.

5.2 PREPARATION FOR THE STUDENT

Students should prepare for remote VTS training by ensuring they have a suitable learning environment that supports concentration, safety and privacy. This includes a quiet space free from operational distractions, an ergonomically appropriate workstation, with reliable access to the required technology. It is acknowledged that there may be distractions from home life when students join synchronous online training.

Remote training is a formal learning activity. Students need to have dedicated time set aside and clear separation from live operational duties. Remote training in VTS should not be carried out while on an operational watch.

Before the session, students should familiarise themselves with the learning objectives, agenda and any pre-course materials provided. Completing preparatory readings or viewing recordings can help establish a common baseline. Students should also test their technical setup in advance to minimise disruptions and reduce stress during the training.

Active engagement is an important part of preparation. Students should come prepared to participate in discussions, complete activities and ask questions when clarification is needed. They should be aware of expectations regarding confidentiality, appropriate use of recordings and respectful communication. Taking responsibility for managing personal wellbeing—such as taking breaks, managing screen time and reporting issues that affect learning—supports both individual learning outcomes and the overall effectiveness of remote VTS training.

5.3 SECURITY

Guideline G1182 on Cyber Security Specifics from an IALA Perspective, provides details on principles and best practices from a cyber security perspective. Elements to consider include:

- system security - Training tools that are used should adhere to relevant usage requirements and internet safety practices, being able to address common cyber threats such as viruses and malware
- data security - Training tools that are used should support data backup and protection
- privacy protection - Training tools that are used should ensure that user-generated data when using the platform cannot be accessed by any unauthorized users
- fault handling - Training tools that are used should include fault handling, such as error logs generation, fault counting and analysing, diagnostic testing, error correction

5.4 HEALTH AND SAFETY

Health and safety considerations include:

- physical risk – reduced travel and fatigue from commuting and limited exposure to hazardous environments (e.g. operational control rooms, ports, or severe weather travel)
- wellbeing - participants can train from familiar environments, reducing stress and allowing better rest before and after sessions
- ergonomic risks - home workstations may not meet ergonomic standards, increasing the risk of musculo-skeletal strain during long sessions
- cognitive fatigue - prolonged screen time, especially for complex VTS concepts, can increase mental fatigue and reduce attention

5.5 SAFE AND EFFECTIVE LEARNING ENVIRONMENT

A safe and effective learning environment is fundamental to the successful delivery of remote training for VTS. Remote training must support the acquisition of knowledge and skills without introducing additional health, safety, or operational risks to participants. This includes ensuring that learning activities are conducted in conditions that minimize physical strain, manage cognitive workload and protect the wellbeing of VTS personnel, while maintaining clear separation from live operational duties.

Equally important is the creation of a psychologically safe learning environment. Remote delivery can encourage participation by reducing perceived pressure associated with classroom or control-room settings, allowing students to ask questions, test understanding and make errors in a controlled setting. Clear expectations, structured facilitation and appropriate use of realistic examples are essential to ensure that students can engage confidently.

To be effective, remote training must also be deliberately designed to support interaction and engagement. This includes the use of structured discussion, case studies, guided exercises and collaborative tools that promote active participation and situational understanding.

When appropriately designed and supported by suitable technology and instructional practices, remote training can provide a safe, inclusive and effective learning environment.

Annex A provides checklists and points to remember when setting up a remote training environment.

6 CONDUCTING TRAINING

Instructional techniques or strategies refer to the methods, techniques or tools that can be used to assist the learning to understand and interact with the content being presented¹. There are many different approaches that can be taken. Some of the most common approaches to training are presented in Table 5.

Table 5 Synchronous and asynchronous delivery

Training activity	Synchronous	Asynchronous	Comments
Lecture	Yes	Possible	Lecture could be pre-recorded for review in asynchronous manner.
Developmental Method	Yes	No	More interactive than lecturing, using questioning techniques.
Brainstorming	Yes	No	Relies on real time interaction to build on ideas within the brainstorm activity.
Case Study	Yes	Yes	Case study reviews include individual reading of the case, with response to structured questions to meet learning objectives.
Games (learning games)	Yes	Possible	Games, with a focus on learning, may lose some impact when done in an asynchronous manner.
Demonstration	Yes	Yes	Demonstration may be both, noting the opportunity to record a demonstration for individual replay.
Role Play	Yes	No	Role play requires interaction within the context of the experience being provided.
Flipped Learning	Yes	Yes	Flipped learning, or the flipped classroom, focuses on self-directed learning where the students take the lead role in the learning process and can be suitable for both.
Structure experience (simulation)	Yes	Possible	While not suitable for asynchronous learning, the asynchronous review of simulations can be effective. In addition, part task simulation may be suitable for asynchronous learning.

6.1 CONSIDERATION OF TEACHING METHODS

Different approaches to teaching and use of various methods should be considered for synchronous and asynchronous training delivery. As technology develops, the opportunity to implement innovative and effective solutions will continue to evolve.

Relevant factors that may be considered for the selection of teaching method include:

1 Network Connectivity

- Applies to both instructors and students;
- Identify minimum bandwidth – usually between 5 and 10 Mbps, depending on the tools being used;

¹ The Simulation Instructor's Handbook, Second Edition, 2024, The Nautical Institute

- Identify opportunities to address variability in bandwidth during the training session;
 - If both parties have sound network conditions, live-streaming would be selected
 - If limitations in bandwidth arise, options for sharing of weblinks in lieu of live streamlining content could be considered
 - If a student has poor internet, offline resources might be provided, or video recorded courses arranged
- Advise technical requirements well in advance of the training session; and
- Provide a pre-course session to better prepare students for the training, including confirming access to the tools.

2 Course Content

- Course content should reflect the IALA Model Courses and comply with any additional requirements identified by the competent authority; and
- Course design should focus on interactive learning using, for example, case study analysis and pre-prepared activities to address specific learning objectives.

3 Skillsets of online Instructors

- Instructors should have skillsets required for online and remote training (see section 4).

4 Time Zones and Schedules

- Applies to both instructors and students;
- It may be possible to align the instructors and students in the same, or similar, time zones when providing synchronous training; and
- If the time zone is significantly different, a 'shift work' approach to training can be applied (supporting the shift environment of VTS) or pre-recorded training (asynchronous) may be used.

5 Use of Artificial Intelligence (AI) in VTS training

- As experience in the use of AI in training is gained, consider options to integrate AI, Chat bot or similar tools in the training; and
- IALA has developed an overview guideline on AI, G1178 – An introduction to AI from an IALA Perspective).

6.2 PREPARING FOR REMOTE SYNCHRONOUS TRAINING

Once the program has been developed, to prepare for remote synchronous training in VTS the following steps should be considered:

1 Develop course timetable

When developing the timetable for synchronous online sessions, consider the needs of the learner, including possible screen fatigue. Using the ultradian rhythms (roughly 90 minutes) with scheduled breaks that are long enough (e.g., 30 minutes) to enable participants to leave the learning space, change their focal length and refresh for the next session can support synchronous remote training that may be delivered over a number of days or weeks. For shorter training sessions, breaks may be identified after 50-60 minutes, with each break being no less than 15 minutes.

Key points to consider include:

- Prepare the timetable to address work/break structure (e.g. 90 min session / 30 min break structure)

- Consider, where possible and practical, different time zones for learners and instructors
- Include sufficient time for peer-to-peer interaction in breakout rooms, or activities
- Schedule in time for reflection on the content presented, work on activities and assignments, or for general questions

2 Schedule the instructors

Noting the instructor skill sets (see section 4) schedule instructors in a way that supports their strengths and enables best understanding of the content.

Key points to consider include:

- Identify and confirm the instructors for the different topics
- Ensure instructors are comfortable with online training technologies and technique
- Provide training sessions for instructors on remote training techniques, if required

3 Confirm teaching methodologies

- Review the course design, ensuring training methodologies are suitable to the content
- Provide alternative approaches to address challenges and ensure deeper engagement with the content
- Vary the delivery with interaction planned every 2-4 minutes and formal break out group work or reflection activities every 40-45 minutes

4 Ensure technology is current, available and functioning

- Review and confirm technology is functioning
- Provide students with detailed instructions regarding the technology requirements
- Verify any passwords or links to confirm they are working

5 Implement a response process to address technical challenges

- Implement an alternative contact method for students and instructors (e.g. a training messaging group)
- Create 'trouble shooting' guides for key technologies
- Identify a point of contact for dealing with technical challenges

7 ASYNCHRONOUS TRAINING COURSE DESIGN

Asynchronous training course design for remote training in VTS includes similar steps, with a focus on the asynchronous element. This includes considering the purpose and operational scope for the instructor and the student such as characteristics and constraints, selecting content suitable for asynchronous learning, providing clear instructions and pathways for the learning, developing and integrating engaging learning activities and incorporating timely feedback to support the learning.

Asynchronous learning content may be incorporated into the wider training program, supporting learning at different levels.

In addition to these six key points, consideration of the accessibility, usability and reliability of the technical platform used for asynchronous learning needs to be considered.

1 Training purpose and operational scope



Start by clearly identifying what the training is intended to achieve and where it sits within the overall VTS training pathway. This includes confirming whether the course supports initial training, refresher training, continued professional development, or preparatory learning ahead of simulator or on-the-job training. Learning objectives should be clearly linked to VTS tasks, responsibilities and decision-making contexts. Outcomes should be limited to those that can be effectively achieved without real-time instructor intervention.

2 Student characteristics and constraints

Understand who the students are and the conditions under which they will complete the training. This includes their VTS experience level, language proficiency, familiarity with digital learning platforms and likely study environment. For asynchronous delivery, particular attention should be given to cognitive workload, expected time-on-task and the need for flexibility to accommodate shift work and fatigue management common in VTS operations.

3 Content suitable for asynchronous delivery

Not all VTS learning is appropriate for asynchronous formats. Content should focus on knowledge acquisition, procedural understanding, regulatory frameworks and concept reinforcement, rather than real-time coordination or high-workload decision-making.

In addition, content should be:

- clearly presented
- self-contained and
- structured so that learners can pause, revisit and reflect without losing continuity

4 Learning pathways and instructions

Organise the course into short, logically sequenced modules with clearly stated objectives and completion criteria. Each module should follow a consistent structure (e.g. introduction, core content, activity, reflection, knowledge check) to reduce cognitive load. Ensure there is clear content navigation with predictable layouts to maintain engagement.

5 Interactive learning activities

Asynchronous courses should move beyond passive reading or videos. Activities may include:

- scenario-based questions
- guided analysis of traffic situations
- short decision-making exercises
- reflective prompts
- quizzes with explanatory feedback

These activities should reinforce learning objectives and encourage active engagement, while remaining achievable without synchronous (live) instructor support. Activities may be submitted for review and feedback or included in an automated feedback mechanism.

6 Feedback and self-assessment

Provide learners with timely and meaningful feedback through automated quizzes, model answers, or guided explanations. Self-assessment tools help learners gauge their understanding and identify areas requiring further study. For VTS training, feedback should emphasise reasoning and situational awareness, working to ensure deeper understanding, not just correct or incorrect answers. As technology develops, asynchronous training can integrate AI in the feedback tools, providing a 'digital instructor' to support the learner.

7.1 RECORDED CONTENT

Recorded content plays an important role in remote training for VTS, particularly in asynchronous learning environments. Well-designed recordings allow students to engage with material at their own pace, revisit complex concepts and reinforce understanding without the time pressure associated with live instruction.

Recordings are especially effective when introducing regulatory frameworks, standard operational concepts and procedures and providing foundational knowledge that underpins safe and efficient traffic monitoring and management.

Considerations for effective recorded content include:

- Deliberate designing the content for learning rather than simply capturing live sessions
- Present in a concise, clearly structured manner that focuses on specific learning objectives
- Use realistic visual material to support understanding
- Include demonstrations (e.g. clicking a button or opening a new page)
- Consider cognitive load, ensuring clear audio and simple visuals

When developing recorded content, additional practical tips include:

- Writing the script in a simple, clear language
- Reading the script aloud to check for coherence
- Sending the script to a colleague for feedback

To support recorded content, consider providing asynchronous elements with supplemental material such as printed notes or case studies.

8 DEFINITIONS

The definitions of terms used in this Guideline can be found in the International Dictionary of Marine Aids to Navigation (IALA dictionary).

9 ABBREVIATIONS

ADDIE Analyse, Design, Develop, Implement and Evaluate

AI Artificial Intelligence

ISD Instructional Systems Design

LMS Learning Management System

10 REFERENCES

- [1] IMO. Resolution A.1158(32) Guidelines for Vessel Traffic Services
- [2] IALA. Recommendation R0103 (V-103) Training and Certification of VTS Personnel
- [3] IALA. Guideline G1150 Establishing, Planning and Implementing a VTS
- [4] IALA. Guideline G1156 Recruitment, Training and Certification of VTS Personnel
- [5] IALA. C0103-1 VTS Operators Training
- [6] IALA. C0103-2 VTS Supervisor Training



- [7] IALA. C0103-3 VTS On-the-job Training (OJT)
- [8] IALA. C0103-5 VTS Recurrent, Refresher and Adaptation Training

ANNEX A CHECKLISTS FOR EFFECTIVE REMOTE TRAINING IN VTS

A.1. APPROACHES TO IMPLEMENT EFFECTIVE REMOTE TRAINING

1 Establish clear guidelines

Set ground rules as a group, ensuring active listening and questioning are included (e.g. 'Cameras on', 'We listen to each other' and 'Questions are always welcome.').

Example: Make these guidelines visible to everyone, include in material and 'check in' to be sure they are being followed on a regular basis.

2 Lead by example

Be on time, show respect, listen actively and communicate openly.

Example: Address inappropriate behaviour calmly, respectfully and directly.

3 Encourage collaboration

Use break-out rooms for group assignments and rotate group members.

Example: Monitor activities and ensure all are interacting.

4 Create a comfortable and inclusive learning space

Make sure everyone has what they need to participate.

Example: Pay attention to group dynamics to prevent anyone from feeling excluded.

5 Promote questions and learning from mistakes

Emphasize that making mistakes is part of the learning process.

Example: Acknowledge and appreciate when someone asks a question or tries something new.

6 Encourage an ergonomic workspace

Advise participants to use a good chair, desk and lighting

Example: Send a checklist for a healthy home workspace beforehand

7 Identify procedures to address technical challenges

Agree on what to do in case of technical issues or emergencies

Example: Share a phone number or alternative login link in advance

8 Design in time for breaks and movement

Schedule regular short breaks to move around

Example: 90 minute sessions, 30 minute breaks

9 Confirm accessibility of materials

Ensure all documents are digitally available and easy to open

Example: Share all presentations and handouts in advance via email or a shared folder



A.2. TECHNICAL CHECKLIST

- 1 Digital Safety
 - Use strong, unique passwords for all accounts
 - Keep software and antivirus programs up to date
 - Share meeting links only with participants
- 2 Privacy Protection
 - Check privacy settings before starting sessions
 - Do not share personal information in public chats
 - Use secure platforms that comply with privacy regulations
 - For any recordings or images, confirm privacy settings
- 3 Clear Communication
 - Set clear rules for online behaviour (netiquette)
 - Encourage respectful and inclusive language
 - Provide clear instructions for assignments and participation
- 4 Accessible Materials
 - Offer materials in multiple formats (PDF, video, audio, text)
 - Use captions or transcripts for videos
 - Ensure platforms are accessible for people with disabilities