Independent Review of Domestic Commercial Vessel Safety Legislation and Costs and Charging Arrangements — Phase 2 Consultation Aid

November 2022

Overview

The Australian Government has commissioned an Independent Review of Australia's Domestic Commercial Vessel Safety Legislation and Costs and Charging Arrangements (Review). The terms of reference for the Review can be found here.

The Review is to consider whether Australia's legal framework for the safety of domestic commercial vessels (DCVs) is fit for purpose, whether the framework is being delivered efficiently and effectively, and options for future funding arrangements for the National System.

Since mid-2018, Australia's national regulatory framework to ensure the safe design, construction, equipping, crewing and operation of DCVs (National System) has been delivered by the Australian Maritime Safety Authority (AMSA) under the Marine Safety (Domestic Commercial Vessel) National Law Act 2012 (National Law) and related legislative instruments.

Phase 1 of the Review commenced in January 2022. It focussed on whether the National Law framework is fit for purpose in achieving safety outcomes. A Draft Interim Safety Report (draft Report) was published on 8 August 2022 and is open for consultation until 30 November 2022. The Independent Review Panel (Panel) has made recommendations in the draft Report aimed at improving safety outcomes and regulatory efficiency.

Phase 2 of the Review is now underway. In this phase of the Review, the Panel will consider the costs of delivering the National System under the National Law and options for future funding arrangements. Key issues relevant to this consideration are:

- What are the efficient and effective costs for delivering the National System?
- What are the delivery cost challenges and opportunities for the DCV industry and AMSA under the National System?
- What are the options for potential future industry charges and the relative merits of those options?
- What are the charging challenges and opportunities, including implementation challenges and opportunities to support safety outcomes?

The purpose of this consultation aid is to assist you in providing feedback on these issues.

Informed by stakeholder feedback, it is anticipated that a draft Report with draft recommendations to Government on resourcing and options for future funding of the National System will be released in early 2023 for further public comment.

Making a submission

You are welcome to provide your views on the consultation questions in this document, as well as any other relevant views you have on costs and charging arrangements for the National System by 27 January 2023. Please email written submissions to dcvsafetyreview@infrastructure.gov.au or submit online at www.infrastructure.gov.au/have-your-say.

The Panel is holding targeted public consultation sessions in the coming months. You can register your interest in attending one of a series of planned meetings with the Panel by emailing dcvsafetyreview@infrastructure.gov.au.

There will also be an opportunity to comment on the Phase 2 draft Report.

National System—costs

The objectives of the National Law are to provide a single national framework for ensuring the safe operation, design, construction, crewing, and equipping of domestic commercial vessels, to facilitate the development of a safety culture, and to provide an effective enforcement and compliance regime.

AMSA has a range of functions it delivers under the National Law to meet these objectives, including:

- to make and maintain Marine Orders;
- to develop and maintain national standards, guidelines and codes of practice relating to marine safety;
- to issue unique identifiers and certificates and perform other functions in relation to such identifiers and certificates;
- to survey vessels and deal with matters relating to the survey of vessels by accredited surveyors;
- to accredit persons and approve training organisations for the purposes of this Law;
- to undertake investigation, monitoring and enforcement activities under or for the purposes of this Law;
- to consult appropriate authorities of the States and Territories, and other persons, associations and organisations, on matters related to the activities of the National Regulator;
- to collect and distribute information, and provide advice, to the Commonwealth Minister; the States and Territories; and the public on matters related to the activities of the National Regulator and the operation of this Law;
- to develop or commission education programs relating to marine safety; and
- to collect, analyse and disseminate data relating to marine safety.¹

To perform these functions of the National Law, AMSA undertakes a range of activities. These include:

- education and provision of guidance to regulated entities;
- standards and policy development;
- administration and maintenance of the regulatory framework; and
- compliance, monitoring, and enforcement.

For example, among other things, AMSA staff respond to calls and emails from operators, owners and crew, assist in the completion of applications, respond to accidents and incidents, provide support for coronial and other inquests, carry out targeted routine compliance monitoring activities (including inspections) and 'onwater' and 'alongside' compliance, develop and maintain service level agreements with jurisdictions, provide safety advice to industry, deliver safety education training, develop policy and standards, provide general regulatory and policy advice, verify Safety Management Systems as needed, accredit and audit oversee the marine surveyors accreditation scheme and take enforcement action under the National Law.

¹ Section 10, Schedule 1, Marine Safety (Domestic Commercial Vessel) National Law Act 2012 (National Law).

What does it cost?

The Panel is drawing on available information and specialist expertise and will consult with AMSA and the maritime industry sectors, to form its view on the efficient costs² of AMSA's current activities under the National Law.

Who pays these costs?

Prior to mid-2013 state and territory maritime agencies delivered and administered DCV safety regulation. From mid-2013, AMSA commenced as the National Regulator for DCV safety under the National Law and delegated some of its functions to the States and the Northern Territory.

From mid-2013 to mid-2018, the States and Northern Territory continued to deliver services under the National System as AMSA's delegates. Jurisdictional implementation of charging and cost recovery levels varied significantly, ranging from partial cost recovery as low as 5 percent, to a reported 100 percent cost recovery.

From 1 July 2018, AMSA assumed full responsibility of the National System, with regulatory function-based activities funded by a combination of the Australian Government and state and territory contributions.

Some of AMSA's activities have a clear and direct linkage between the costs of the business process and an individual or organisation. AMSA charges fees to industry in order to recover the costs of these activities. These activities are known as fee-based activities. They include:

- certificates of operation, including assessment of applications for an operator to conduct a particular kind of operation, within certain waters;
- certificates of survey, including assessment of applications, and issuing approvals and certificates, to
 ensure domestic vessels comply with the prescribed design, construction, and equipment standards;
- seafarer certificates of competency—near coastal, including approvals, assessing revalidations, issuing certifications, and conducting examinations for recognised marine qualifications;
- marine surveyor accreditation scheme, to accredit and audit the network of accredited surveyors for the National System in the non-government sector; and
- assessment of applications requesting exemptions from the law or an equivalent means of compliance. Currently, AMSA partially recovers its cost of its fee-based activities. It estimated that in the 2021–22 financial year its fee-based activities under the National Law cost approximately \$8.4 million and it expected to recover less than half this amount (\$3.7 million).³

User costs

Available information suggests that the total costs of delivering the National System since 2017–18, prior to when AMSA commenced as the sole National Regulator, have remained relatively stable.

While the movement to an accreditation regime (marine surveyor scheme) may have shifted costs to users in some jurisdictions, overall the move to government funding of AMSA's regulatory function-based activities since 2018–19 is likely to have seen a reduction in costs incurred by the DCV industry. This reduction would differ across jurisdictions due to pre-2018–19 variations in cost recovery and subsidisation arrangements across the various states and territories.

Further, other fees and charges imposed by other Commonwealth agencies and state and territory jurisdictions may also impact on DCV operators (for example, state based marine infrastructure management fees, fees to access marine national parks, etc).

² Efficient costs are the minimum costs necessary to provide the activity while achieving the policy outcomes and legislative functions of the Australian Government.

³ AMSA, Cost Recovery Implementation Statement, Budget 2022–23, page 21, June 2022.

The Panel is interested in understanding not just AMSA's costs but the overall costs borne by the DCV industry from a user perspective. These could include costs imposed under the National Law as well as other relevant costs. The Panel is also interested in understanding if the imposition of any future cost recovery levy would see a differentially significant increase in costs for the DCV industry across jurisdictions (as compared to costs prior to the current arrangements).

Question 1

What is the nature of the costs that you (or your DCV sector) incur? This can include for example charges recovered by AMSA for fee-based activity, any relevant jurisdiction-specific fees and charges, accredited marine surveyor costs, etc and can include one-off and regular costs.

- It would be useful if you could provide an indicative estimate of the current annual costs of a DCV operator within your subsector in your jurisdiction.
- It would also be useful if you could provide an indicative estimate of the percentage increase or decrease in these costs since 2017–2018.
- The Panel is also interested in understanding the annual cost for the same/similar services incurred by you (or your DCV sector) under the pre-National regulator state-based system.

Funding the National System

The costs of delivering the National System in the future could change. For example, technologies and models for delivery may change in ways that are not possible to predict. Longer term economic conditions such as economic growth and employment rates are also difficult to project.

Since 2018, when AMSA took over full service delivery of the National System, the largest source of funding for the National System has been from the Australian Government, supplemented by contributions from state and territory governments. ⁴ A key limitation of this approach to funding is that it is susceptible to competing public priorities and can be potentially less secure.

Any approach to funding the National System needs to be adaptive and flexible, but also needs to provide reasonable certainty that the National System will be adequately resourced to realise safety and other benefits, now and in the future.

A considered funding approach will:

- promote equity in who bears the reasonable costs of the National System;
- improve the efficiency, productivity, and responsiveness of AMSA's activities and accountability for those activities; and
- resolve long term uncertainty around AMSA's funding and charges for AMSA and industry.

⁴ See Transport and Infrastructure Council, *National Marine Safety Regulation* (Communique, 6 December 2017) available <u>here</u>. The Australian Government extended funding for the National System in the 2020–21 Budget. See AMSA, Update of Cost Recovery Implementation Statement for 2020–21, page 5 (16 November 2020) available here.

Australian Government Charging Policy

The Australian Government Charging Framework⁵ (Charging Framework) which incorporates the Australian Government Cost Recovery Guidelines (Cost Recovery Guidelines) sets out the framework for cost recovery by government entities.

The Australian Government's overarching charging policy is:

Where specific demand for a government activity is created by identifiable individuals or groups, they should be charged for it unless the government has decided to fund that activity. Where it is appropriate for the Australian Government to participate in an activity, it should fully utilise and maintain public resources, through appropriate charging. The application of charging should not, however, adversely impact disadvantaged Australians.⁶

The Charging Framework sets out certain principles for guiding the processes involved in charging for a government activity: transparency, efficiency, performance, equity, simplicity, and policy consistency. See Attachment A for a description of these principles. The Panel will be guided by these principles in developing its approach to funding the National System.

Under the Charging Framework and the Cost Recovery Guidelines, a determination of whether cost recovery for any given activity is appropriate is to be based on a number of considerations, including:

- Who would be charged (i.e. is there an identifiable individual, organisation or group that receives the benefits of the activity or creates the need for it?);
- Any impacts of cost recovery on competition, innovation or the financial viability of those who may need to pay charges;
- Whether it would cost more to administer a cost recovery program than would actually be received; and
- How cost recovery might affect:
 - the policy outcomes for the activity. In certain circumstances, cost recovery may be contrary to intended policy outcomes, such as the provision of community services or industry support;
 - other government policies and legislation (e.g. policies relating to access to essential community services);
 - Australia's obligations under international treaties (e.g. free trade agreements).⁸

Charging should occur only where it is **effective** and **cost efficient**. Once government has decided which activities are suitable for cost recovery, charges should generally be set to recover the full cost of providing those specific activities. Partial cost recovery, which occurs when less than the full cost of a government activity is recovered, may be appropriate in some circumstances, for example when:

- charges are being 'phased in'; or
- the Australian Government has made an explicit policy decision to charge for part of the costs of an activity.⁹

The Panel is interested in hearing the cost recovery considerations (including those discussed above) relevant to the DCV sector you operate in. For example:

- Would changes to cost recovery impact competition, innovation, or financial viability?
- Do the relevant industry activities generate broader public benefits to unrelated third parties or the community, for example activities carried out by research vessels?

⁵ Australian Government Department of Finance, Australian Government Charging Framework, RMG 302 (July 2015) ('AGCF').

⁶ AGCF, paragraph 15.

⁷ AGCF, paragraph 22.

⁸ Australian Government Department of Finance, Australian Government Cost Recovery Guidelines, RMG 304, paragraphs 11, 12.

⁹ AGCF, paragraphs 16–19.

- Are there equity concerns where concessions/exemptions may be appropriate?
- Are there instances where full cost recovery would undermine other objectives, in particular safety objectives?

Question 2: What are the considerations that you believe should be taken into account in determining whether full or partial recovery of the costs of the National System is appropriate, and to determine the level of cost recovery? Please provide examples to support/illustrate your response.

Question 3: What funding approach or mix of approaches do you believe would best achieve secure and stable resourcing of the National System.

Levy model

At this stage of the consultation on costs and charging, the Review Panel has not yet formulated any position on funding options for the National System (including for instance whether it is appropriate to impose any cost recovery levy¹⁰ or the quantum of any such potential levy).

However, to fully inform the Panel's consideration of potential funding options, the Panel is seeking your views on suitable criteria for a levy model that could (to a reasonable degree) relate AMSA's costs for certain activities to the efficient regulatory effort that it expends on those activities.

Historically, AMSA's levies have been tonnage-based. The Marine Navigation Levy¹¹ and the Marine Navigation (Regulatory Functions) Levy¹² are based on a sliding scale on the net registered tonnage (NRT) of ships, while the Protection of the Sea Levy¹³ is based on a rate per ton of the tonnage of ships.

Table 1—Calculation Rates of AMSA levies

Levy	Cents per NRT From 0 to 5,000	Cents per NRT From 5,001 to 20,000	Cents per NRT From 20,001 to 50,000	Cents per NRT From 50,001 to ∞
Marine Navigation Levy	23.50	12.00	7.00	2.50
Regulatory Function Levy	17.00	17.10	17.00	15.50
Protection of the Sea Levy	11.25	11.25	11.25	11.25
Levy calculation method for vessels subject to all three levies	51.75c for each tonne	\$2,587.50 plus 40.35c for each tonne over 5,000	\$8,640.00 plus 35.25c for each tonne over 20,000	\$19,215.00 plus 29.25c each tonne over 50,000

Potential levy models to recover costs of the National System could incorporate a range of criteria to more closely reflect resources used by different groups based on their risk and size. There have been previous Government led consultations on levy models, for instance a levy based on length and vessel type (e.g. passenger, fishing), or a levy based on length and vessel category model and area of operation as a proxy for risk.

¹⁰Cost recovery levies are a charge imposed when a good, service or regulation is provided to a group of individuals or organisations rather than to a specific individual or organisation. Levies are imposed via a separate taxation Act. Levies are 'earmarked' to fund activities provided to the group that pays the levy.

¹¹ The Marine Navigation Levy is a charge against commercial shipping used to recover the cost of operating and maintaining marine aids to navigation systems on a user pays basis.

¹² The Marine Navigation (Regulatory Functions) Levy is a charge against all Australian and foreign vessels that call at Australian ports. It is used to fund the cost of AMSA's safety activities such as ship inspections and surveys. These activities support and establish the seaworthiness of Australian vessels.

¹³ The Protection of the Sea Levy is a charge against ships that have the potential to become polluters of the marine environment.

Structure of the levy

The Cost Recovery Guidelines indicate that when designing a levy for regulatory activity, the cost driver should approximate the level of effort used to provide the activity. Depending on the Government's objectives, the levy charges may be calculated on an equal basis (i.e. a flat levy rate) or differentiated levy rates can be used to more closely reflect resources used by different groups based on their risk, size, or other criteria.¹⁴

A key recommendation in the draft Report was that the National Law be amended to allow for a risk based, flexible approach (see recommendation 1 of the draft Report). If this recommendation is adopted by Government, in the longer term this would mean that AMSA expends more effort towards those parts of the industry that give rise to the greatest safety risk. In the short term there may be additional effort targeting the lowest risk tier (for example, development of education material, information and education programs, etc).

The findings and recommendations in the draft Report are subject to further public comment. The Panel will consider the feedback it receives and may further refine the recommendations. However, the Panel would welcome your views on how a levy could be structured so that it closely reflects resources used by different DCV groups under the risk-based model proposed in the draft Report.

Question 4: What are the aspects of a vessel or its operation that could form a suitable basis for levy-based cost recovery?

Question 5: Having regard to Finding 1 and Recommendation 1 of the draft Report, how could a potential levy be structured to better reflect the level of regulatory effort and resources directed towards sectors of the DCV industry differentiated on the basis of risk? Are there sectors, or part of sectors, that should be exempted from any future levy; if so why should they be exempt?

Impact and resourcing implications—draft report recommendations

In the Draft Interim Safety Report, the Panel made a series of recommendations aimed at improving safety outcomes and regulatory efficiency (see <u>Attachment B</u>). As noted above, these recommendations are subject to further stakeholder feedback and consideration by the Panel. They may be refined further or amended.

Grandfathering—Industry assistance fund

Recommendation 2 in the Draft Interim Safety Report proposes the following.

The grandfathering arrangements that are a risk to safety should be wound back in accordance with a phased risk-based program:

- All existing DCVs subject to grandfathered design and construction standards should meet acceptable
 baseline set of design and construction standards based on the current 'transitional standards' within
 seven years of implementation of this change;
- DCVs that would be required to be certified under the risk-based regulatory regime proposed under Recommendation 1, and that are subject to grandfathered survey requirements or otherwise subject to grandfathered design and construction standards, should undergo survey inspection to assess gaps and requirements to the baseline design and construction standards;
 - These inspections should occur over a two to five-year period, with higher risk vessels/operations given greater priority for early inspection;
 - Owners should be required to rectify inspection findings within two years of inspection;
- Grandfathered crewing and crew competency arrangements should be phased out within five years of implementation of this change; and
- The Australian Government should establish and fund an Industry Assistance Package with a suite of incentives to assist attaining these standards.

¹⁴ Australian Government Department of Finance, Australian Government Cost Recovery Guidelines, RMG 304 paragraph 94.

The Draft Interim Safety Report acknowledges that the removal of grandfathered arrangements may have a significant impact on the financial viability of some operations. This impact will likely be concentrated in the locations, industries, and operations where grandfathering was most prevalent at the time of the agreement to proceed with the introduction of the National System.

The Panel has put forward its view that the Australian Government should make available some form of financial support to industry to assist the DCV fleet that is impacted by the removal of the grandfathered arrangements to move to more modern safety standards. The Panel has suggested that the assistance could be by way of 'cash for transition', where the Government offers to compensate in full or in part owners who retire older vessels unable to meet modern standards. Alternately, some form of subsidisation of the cost of new vessels, or major upgrades to existing vessels or survey costs may be considered.

While the method and quantum of assistance will be a matter for Government, the Panel would welcome your view on the operations (including locations) that are likely to be significantly affected by the phased withdrawal of grandfathering arrangements, the impacts on these subsectors and how industry assistance can be targeted and structured to fund and assist this process.

Question 6: What are the industry subsectors most likely to be affected by the proposed winding back of grandfathering arrangements?

Question 7: What is the nature of the impacts that these subsectors are likely to experience? For example, survey costs, costs of upgrades to vessels, costs of upgrading crew competencies, difficulties finding crew with requisite competencies, etc.

Question 8: What form/s of targeted support do you consider would be effective in assisting the DCV fleet impacted by the phased withdrawal of grandfathering arrangements?

Other recommendations

The draft Interim Safety Report contains a range of recommendations. The Panel is considering the resourcing or financial impacts of all draft recommendations on AMSA and industry, including the costs of transitioning to new arrangements, and AMSA's future costs under the proposed new arrangements.

One of the recommendations in the draft Interim Safety Report is that the Australian Transport Safety Bureau (ATSB) should be funded by the Australian Government to undertake a no-blame investigation program sufficient to support the identification of systemic DCV safety issues (see recommendation 6). The Panel does not intend that the cost of funding the ATSB for the proposed DCV functions be recovered from industry.

The Panel is aware that other recommendations in the draft Interim Safety Report may have an economic or financial impact on industry The Panel is seeking your views on the economic impacts and costs or resourcing implications of the recommendations in the draft Interim Safety Report.

Question 9: What are the relevant economic impacts and/or costs or resourcing implications (positive or negative) of any of the recommendations in the draft Report that the Panel should consider?

Attachment A—Charging Principles

The principles guide all processes involved in charging for a government activity, from planning and design to review and evaluation. There are six charging principles:

- 1. **Transparency**—making available key information about the activity, such as the authority to charge, charging rates, and, where relevant, the basis of the charges
- 2. **Efficiency**—delivering activities at least cost, while achieving the policy objectives and meeting the legislative requirements of the Australian Government
- 3. **Performance**—which relates to effectiveness, risk mitigation, sustainability and responsiveness. Engagement with stakeholders is a key element of managing and achieving performance. Entities must regularly review and evaluate charges in consultation with stakeholders to assess their impact and whether they are contributing to government outcomes
- 4. **Equity**—where specific demand for a government activity is created by identifiable individuals or groups they should be charged for it, unless the Government has decided to fund that activity. Equity is also achieved through the Government's social safety net, to ensure that vulnerable citizens are not further disadvantaged through the imposition of a charge
- 5. Simplicity—whereby charges should be straightforward, practical, easy to understand and collect
- 6. **Policy consistency**—charges must be consistent with Australian Government priorities and policies, including entity purpose and outcomes. Australian Government agreement may be required for the introduction of new charges and/or changes to charges.

Attachment B—Recommendations of the Draft Interim Safety Report

Recommendation 1: The law should be amended to better reflect a risk-based regulatory model that is flexible and able to adapt to innovation and emerging technologies by:

- retaining general safety duties on all parties that have a duty under the current law;
- removing the universal requirement for all DCV's to have Certificates of Survey and Operations;
- providing that vessels of a type or class specified in the regulations (or Marine Orders) be required to comply with NSCV Standards and/or hold a Certificate of Survey or Certificate of Operations; and
- requiring higher risk vessels to comply with the Navigation Act and associated international standards, including the International Dangerous Goods Code and the Standard of Training, Certification and Watchkeeping.

Recommendation 2: The grandfathering arrangements that are a risk to safety should be wound back in accordance with a phased risk-based program.

- All existing DCVs subject to grandfathered design and construction standards should meet acceptable
 baseline set of design and construction standards based on the current 'transitional standards' within
 seven years of implementation of this change.
- DCVs that would be required to be certified under the risk-based regulatory regime proposed under Recommendation 1, and that are subject to grandfathered survey requirements or otherwise subject to grandfathered design and construction standards, should undergo survey inspection to assess gaps and requirements to the baseline design and construction standards.
 - These inspections should occur over a two to five-year period, with higher risk vessels/operations given greater priority for early inspection
 - Owners should be required to rectify inspection findings within two years of inspection.
- Grandfathered crewing and crew competency arrangements should be phased out within five years of implementation of this change.
- The Australian Government should establish and fund an Industry Assistance Package with a suite of incentives to assist attaining these standards.

Recommendation 3: AMSA should:

- review its Memorandums of Understanding with State and Territory WHS Authorities to include principles to apply to decisions around which regulator is to lead on safety duties held by persons in the maritime industry; and
- reflect these in communications and guidance to industry explaining the rationale for the dual operation
 of the National Law and WHS Law, and how AMSA and WHS Authorities work practically to reduce any
 duplication of effort and regulatory burden, including reporting requirements.

Recommendation 4: The offences and penalties in the National Law should be aligned to those in the WHS law to the extent practical.

Recommendation 5: The National Law should be amended to:

- explicitly refer to an officer's due diligence obligation to ensure that the owner of a DCV complies with their safety duties under the National Law;
- allow scaling of infringement notice penalties;
- fill a gap in the law relating to negligent navigation;
- align the present limitation period on commencement of prosecution action with WHS law; and
- introduce a power for the courts to suspend or revoke certificates.

Recommendation 6: The ATSB should be funded by the Australian Government to undertake a no-blame investigation program sufficient to support the identification of systemic safety issues. The Minister should issue a statement of expectations regarding the ATSB's DCV function.

Recommendation 7: Where a State has its own safety investigator the ATSB may engage it to undertake investigations on its behalf.

Recommendation 8: Safety incidents should be reported to one Commonwealth maritime safety authority only (AMSA or the ATSB) who will take responsibility for sharing it with each other as required.

Recommendation 9: AMSA should establish and support an Australian Government funded long-term safety engagement program with all sectors of the DCV industry to:

- promote the benefits of reporting;
- identify best data collection methods;
- investigate the creation of a 'white card' scheme; and
- develop simple and accessible guidelines for ease of compliance.

Recommendation 10: The marine surveyor accreditation scheme should be reviewed to make it fit for purpose. As part of that review, consideration should be given to introducing (among other matters):

- a tiered accreditation scheme according to size and complexity of the vessel;
- a formal continuing professional development program;
- regular random audits of surveyor approvals and subsequent standards applied;
- increasing the approval powers for accredited marine surveyors;
- greater flexibility in who can be accredited as a marine surveyor, and expanding categories of accreditation to adequately cater for new and emerging technologies; and
- a formal rulings program to provide certainty for surveyors and operators.

The review should consider a reasonable timetable for implementation of the proposed reforms.

Recommendation 11: The current requirement that changes to certain regulations be unanimously agreed by the States and the Northern Territory be removed.

Recommendation 12: AMSA should set up a taskforce to consider how to optimise and future proof the National Law framework to regulate new and emerging technologies.

• The taskforce should consider whether definitions in the National Law remain fit for purpose in the context of development, deployment and operation of new and emerging technologies.