

## **Considerations for a Regional Database of Annotated Images for Artificial Intelligence in Fisheries E-Monitoring**

### **SPC/FFA Dedicated EM Workshop**

#### **Potential benefits of Regional Annotated Image Database**

- *Scalability*: By creating a large useable training dataset from which AI models can be quickly developed, effectively trained and applied to larger datasets and requirements.
- *Accuracy and reliability of AI models*: Different vessels and conditions create more robust models. The amount of available data is not necessarily as important as the diversity of the data. AI models are far less accurate at detecting and identifying less common events and species (e.g. bycatch) mostly due to smaller available training datasets.
- *Fast-track AI model development*: Speed up the performance improvements of AI systems, accelerating AI model development in the region. Opens opportunities to FFA members to share the costs of developing and maintaining AI models or ML algorithms.
- *Program efficiencies*: Improve efficiencies in EM analysis leading to lower analysis costs (human capacity).
- *Building expertise*: Building expertise within the FFA membership (and regional organisations) regarding AI, ML and data annotation implementation.
- *Regional efficiencies*: Achieving regional efficiencies in fisheries management through the pooling of national and regional resources. This may lead to saving individual members investing in start-up costs and help achieve program efficiencies faster.
- *Digital culture and upskilling*: Contributes to building a digital culture in the Pacific, through digitally upskilling the workforce. It may also include facilitating investment in IT infrastructure sufficient to harness the Pacific's technological innovation potential. This enables the FFA membership to prioritise transitioning and upskilling staff to meet new technological requirements of roles. For example, transitioning observers or data entry officers and to validation officers. For observers, this also provides opportunities for when at-sea deployment is not possible (logistics, global pandemics, physical injury, carers' responsibilities) and provides an avenue to avoid observer safety risks and poor conditions on longline vessels.

#### **Challenges/Issues listed in the report (from p22)**

- Cost
- Insufficient tech capability
- Maintenance of existing EM programs
- Identifying appropriate partnerships
- Data storage
- National legislation
- Cultural factors
- Common Language
- Data Governance
- Privacy and Ownership

## **Report Recommendations**

1. If FFA members decide to develop and implement a regional annotated image database, recommend FFA members:
  - a. ensure data annotation efforts can produce high-quality, reliable datasets that support effective AI and ML. To achieve this, FFA members should focus investment and planning on skilled personnel, appropriate tools, established processes, quality assurance, clear guidelines, data security, feedback loops, scalability and interdisciplinary collaboration.
  - b. address the key implementation requirements and challenges outlined in this report (Section 10).
2. Recommend FFA members clearly define their EM program objectives (individual and collective) and the specific elements of these objectives that the membership wants AI models to support.
3. Recommend FFA members clearly define their objectives for any EM, AI or ML project they are seeking to implement—including any fisheries management, compliance, and financial requirements—and ensure that any program design, partnership, or contract supports these objectives.
4. Recommend FFA members maintain focus on core elements of current EM program management and implementation to ensure EM programs can sustain AI/ML enhancement.
5. Recommend FFA members explore opportunities, individually and collectively, to access funding and partnerships for scalable cloud-based solutions. For there to be greater economies of scale in the Pacific's use of cloud-based software, a significant capital investment is required in national and regional infrastructure.
6. Recommend FFA members review their regulatory frameworks, including national legislation, to ensure that it is progressive, flexible and not overly prescriptive to allow and facilitate future innovation and the use and uptake of new and emerging technologies.
7. Recommend FFA members explore ways to achieve a common language for engaging in technical discussions regarding information technology business needs, systems, program design and regulations. This will assist the Pacific in achieving targeted program efficiencies in their fisheries management, facilitate constructive and effective commercial provider engagement, and assist members to fully realise the value from its data, derivatives of its data, and any tools developed through use of those data.
8. Recommend FFC include the topic of AI and ML technology uptake within FFC's information subcommittee on information management. This approach could also facilitate the development of a strategic plan (Recommendation 10) that canvasses all elements of information management and governance, including technical, ownership, privacy, governance and staffing elements.
9. Recommend FFA members seek specialised legal advice to explore the ways in which their intellectual property can be protected in relation to AI projects. This advice should consider the range of potential protections available to the membership regarding AI model development, use or other related partnerships. These potential protections should be balanced with FFA members' national and regional objectives (e.g. fisheries, commercial).

10. Recommend FFA members develop a strategic approach or plan for engaging with AI within their regional fisheries management.

This strategic approach should consider:

- The level of investment and ownership FFA members want for uptake and implementation of AI technologies.
- national and regional fisheries management objectives.
- relevant regulatory components such as privacy, confidentiality, and legal requirements (intellectual property).
- current national strategic plans for engaging with AI and ML investment opportunities to support national fisheries programs.
- Relevant regional and sub-regional policies regarding emerging technologies.
- Interaction with FFC's current consideration of information management, including through the FFC sub-committee on information management.
- Cost and financial investment requirements for both development and maintenance.
- The need for AI or ML performance standards.
- Employment and other socio-economic opportunities.