

THE FISHERIES MANAGER

Transforming Fisheries Data
into Governance Intelligence

Secure • Interoperable • Scalable



BETTER DATA

Trusted information
for stronger
governance



SMARTER DECISIONS

Insights that drive
effective fisheries
management



GREATER IMPACT

Sustainable outcomes
for fisheries and
communities



A BETTER FUTURE

Healthy resources.
Stronger generations.
Stronger planet.

The Fisheries Manager (TFM)

Transforming Fisheries Data into Governance, Intelligence and Sustainable Outcomes - A Fisheries Governance Whitepaper

REVIEW DRAFT – June 2026

Author

Vilhjálmur Hallgrímsson
Chief Executive Officer
Fisheries Technologies ehf.

Published by

Fisheries Technologies ehf.
Reykjavík, Iceland
June 2026 | Version 1.0

Copyright

© 2026 Fisheries Technologies ehf. All rights reserved.

No part of this publication may be reproduced or distributed without prior written permission from Fisheries Technologies ehf., except for brief quotations used for review, educational, or reference purposes.

Disclaimer

This publication is provided for informational purposes only. The concepts, workflows, and examples presented are intended to illustrate fisheries governance approaches and capabilities available through The Fisheries Manager (TFM). Actual implementations may vary according to national legislation, fisheries management objectives, institutional arrangements, and operational requirements.

Trademarks

The Fisheries Manager (TFM)™, Fisheries Technologies™, and CMM-FG™ are trademarks of Fisheries Technologies ehf.

Fisheries Technologies ehf.

Reykjavík, Iceland info@fishtech.is | www.fishtech.is

Foreword

Fisheries play a vital role in food security, economic development, and the sustainability of coastal communities around the world. Yet despite significant investments in fisheries data collection over recent decades, many fisheries authorities continue to struggle with a common challenge: transforming data into effective governance and informed decision-making.

Across many jurisdictions, fisheries information remains fragmented across paper records, spreadsheets, disconnected databases, and isolated systems. Valuable information is collected every day, yet decision-makers often lack access to a trusted, integrated view of their fisheries. As management requirements become increasingly complex, the need for governance-driven information systems has never been greater.

This paper was written to support policy makers, fisheries directors, government leaders, development partners, and other stakeholders responsible for fisheries governance and investment decisions. It explores how fisheries authorities can strengthen institutional capacity by moving beyond data collection and toward integrated governance, accountability, intelligence, and sustainable management outcomes.

Drawing on international experience and lessons learned from fisheries modernization initiatives, this paper presents a practical perspective on the role of governance, digital transformation, and institutional maturity in modern fisheries management.

We hope the ideas presented here contribute to the ongoing discussion on how fisheries data can become a strategic national asset that supports better policies, stronger institutions, and more sustainable fisheries for future generations.

Vilhjálmur Hallgrímsson

Founder & CEO

Fisheries Technologies

Executive Summary

Sustainable fisheries management depends on effective fisheries governance.

To manage fisheries successfully, authorities must be able to understand fishing activities, monitor resource utilization, assess biological resources, implement management measures, support compliance, and make informed decisions based on trusted information.

Reliable information is therefore one of the most important foundations of sustainable fisheries governance.

However, **collecting fisheries data is only the beginning.**

Many fisheries organizations continue to rely on fragmented information environments characterized by paper-based processes, spreadsheets, disconnected databases, and standalone applications. While these approaches may support individual operational activities, they often create information silos, inconsistent reporting, limited visibility, and challenges in maintaining transparency, accountability, and institutional continuity.

As fisheries management requirements evolve, authorities increasingly require capabilities that extend beyond data collection alone. Modern fisheries governance depends upon the ability to transform information into **management actions, scientific assessments, compliance oversight, reporting, analytics, and evidence-based decision-making.**

This requires a structured **information lifecycle** in which information is designed, planned, collected, validated, governed, analyzed, and ultimately transformed into management intelligence.

It also requires **governance capabilities** that connect information with licensing, authorizations, quota management, spatial management, monitoring, compliance, reporting, auditability, and institutional accountability.

Digital transformation provides an opportunity to strengthen these capabilities. However, successful transformation is not simply about replacing paper forms with electronic systems. It is about building the institutional capacity, governance processes, and information ecosystems required to support effective fisheries management over the long term.

Unlike many large-scale fisheries information initiatives, successful digital transformation does not necessarily require large IT departments, extensive infrastructure investments, or complex implementation programs. Modern cloud-based governance platforms can significantly reduce implementation complexity, operational risk, and long-term ownership costs.

This publication presents a governance-driven approach to fisheries information management and digital transformation. It explores how trusted fisheries information is created through a structured information lifecycle and how that information can be transformed into governance capabilities that support sustainable fisheries management.

The publication further demonstrates how The Fisheries Manager (TFM) supports this approach through an integrated fisheries governance platform that connects fisheries operations, governance processes, monitoring activities, analytics, interoperability, and decision support within a single information ecosystem.

By establishing a trusted information foundation and supporting the complete fisheries governance lifecycle, TFM helps fisheries authorities strengthen governance capabilities, improve accountability, support evidence-based decision-making, and advance toward more sustainable fisheries outcomes.

Ultimately, sustainable fisheries management depends on more than technology and more than data collection.

It depends on the ability to transform:

- 1. Data into Information.**
- 2. Information into Governance.**
- 3. Governance into Intelligence.**
- 4. Intelligence into Action.**
- 5. Action into Sustainable Fisheries Outcomes.**

This transformation represents the central theme of this publication and the foundation upon which modern fisheries governance is built.

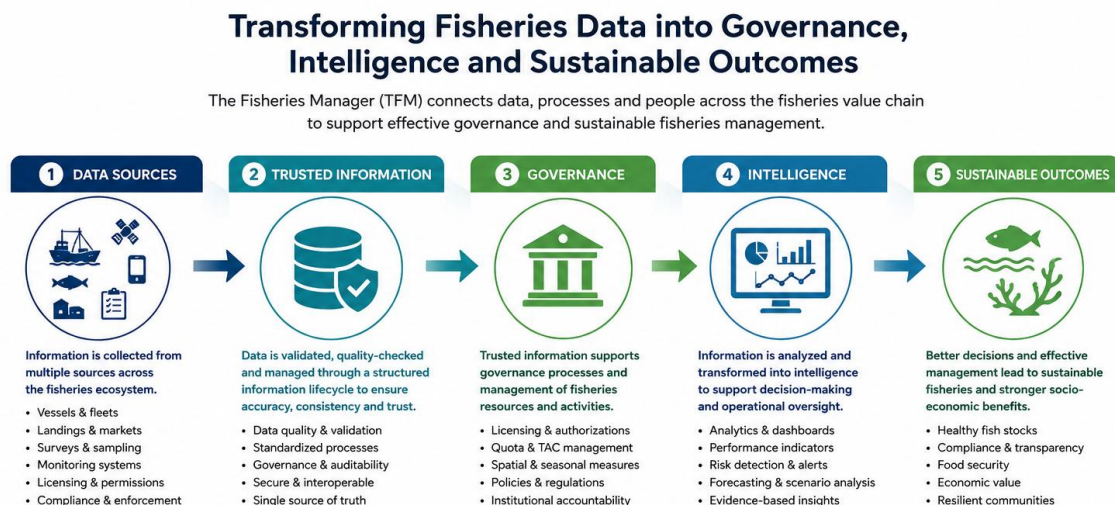


Table of Contents

Part I Foundations	7
1. Why Fisheries Data Matters	8
2. Fisheries Governance Requires More Than Data Collection	9
3. The TFM Approach	11
Part II Information Lifecycle	15
4. Survey Design and Statistical Framework	16
5. Survey Planning and Coverage Management	20
6. Standards, Reference Data and Information Governance	24
7. Field Data Collection	28
8. Data Quality and Validation	34
9. Governance and Approval Workflows	38
Part III Fisheries Governance Capabilities	42
10. From Trusted Information to Fisheries Governance	43
11. TAC and Quota Management	48
12. Spatial Management and Fisheries Management Measures	52
13. Monitoring, Control and Surveillance (MCS)	57
14. Audit and Traceability	63
15. Reporting and Analytics	68
16. Integration and Interoperability	73
17. Artificial Intelligence and Digital Innovation	78
PART IV Governance Transformation	83
18. Supporting FishPath and Capacity Building	84
19. Accelerating Fisheries Digital Transformation	89
20. Fisheries Technologies and Icelandic Fisheries Experience	96
21. Key Takeaways	100
22. Conclusion	104

PART I

FOUNDATIONS

Building the Information Foundation
for Sustainable Fisheries Governance



RELIABLE DATA

Accurate and consistent
data you can trust.



STRONG GOVERNANCE

Policies and processes
that ensure compliance
and accountability.



BETTER DECISIONS

Integrated information
for smarter, evidence-
based decisions.



SUSTAINABLE FISHERIES

Healthy stocks, resilient
ecosystems, and thriving
communities.

1. Why Fisheries Data Matters

Reliable information is the foundation of effective fisheries governance. Without trusted fisheries data, management decisions, scientific assessments, compliance activities, and sustainability objectives become difficult to achieve.

Sustainable fisheries management depends on understanding fishing activity, fishing effort, catches, biological resources, and ecosystem impacts.

Without reliable fisheries data, it becomes difficult to assess fish stocks, evaluate management measures, allocate fishing opportunities, monitor compliance, and measure progress toward sustainability objectives.

Reliable fisheries information provides the foundation for scientific assessment, management decisions, compliance activities, and sustainable fisheries outcomes.

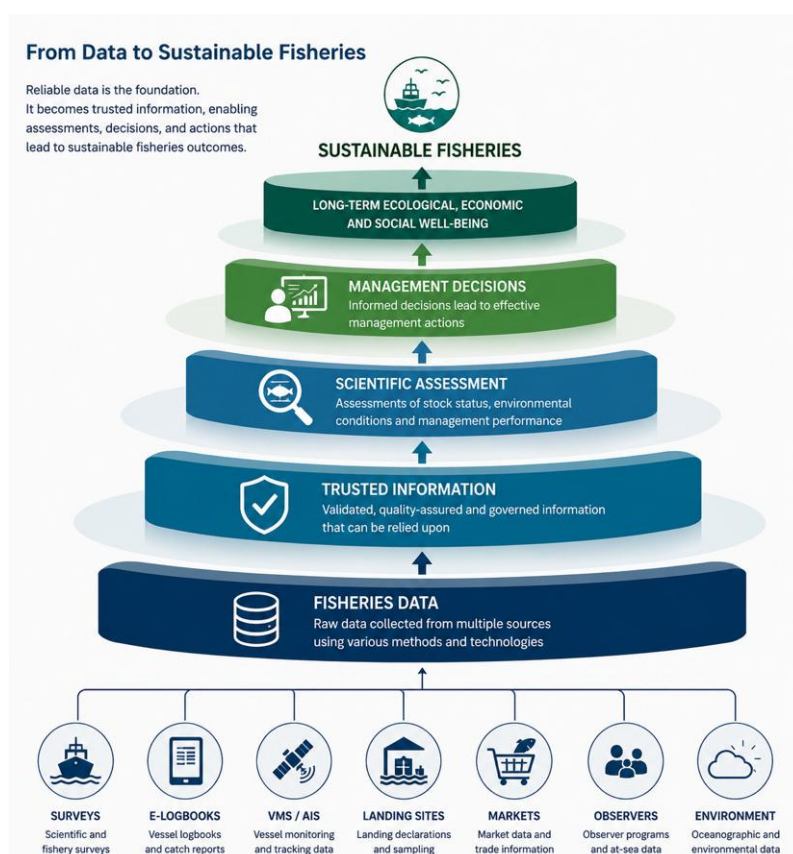


Figure 1 Reliable fisheries information forms the foundation for scientific assessment, management decisions, compliance activities, and sustainable fisheries outcomes.

2. Fisheries Governance Requires More Than Data Collection

Many fisheries organizations have successfully improved data collection. However, the real challenge lies in transforming information into governance. Sustainable fisheries management depends not only on what information is collected, but also on how that information is validated, governed, analyzed, and used to support management decisions.

Reliable fisheries data is an essential foundation for fisheries management. Without accurate and timely information, it becomes difficult to assess fish stocks, allocate fishing opportunities, monitor compliance, evaluate management measures, and measure progress toward sustainability objectives.

However, data collection alone is not sufficient to achieve effective fisheries governance.

Fisheries authorities must be able to transform information into management actions, scientific assessments, compliance activities, and informed decision-making. This requires more than surveys, reports, or databases. It requires governance processes that define how information is collected, validated, reviewed, approved, protected, analyzed, and ultimately used to support fisheries management.

Many fisheries organizations begin their digital transformation journey by addressing immediate operational needs such as landing surveys, catch reporting, fisheries statistics, or electronic logbooks. While these initiatives are important, they often remain focused on individual data collection activities rather than the broader governance processes required to manage fisheries effectively.

As management requirements evolve, fisheries authorities require capabilities that extend beyond data collection. These capabilities include licensing and authorizations, quota management, spatial management measures, compliance oversight, reporting, analytics, auditability, and institutional accountability.

A common challenge is that these capabilities are often developed independently. One system may support surveys, another may manage licensing, another may support vessel monitoring, while separate applications may provide reporting or statistics. Over time, this can create fragmented information, duplicated processes, inconsistent reporting, and limited visibility across the fisheries governance ecosystem.

The result is a governance gap between the information being collected and the decisions that fisheries authorities need to make.



Figure 2 Bridging the governance gap by transforming fisheries data into trusted information, governance capabilities, and management action.

To close this gap, fisheries authorities require a governance-driven information ecosystem that connects data collection with validation, approval, monitoring, reporting, compliance, and decision support. This ensures that information does not remain isolated as raw data, but becomes trusted knowledge capable of supporting scientific assessments, management actions, compliance activities, and sustainable fisheries outcomes.

In this context, digital transformation is not simply about replacing paper forms with electronic forms. It is about building the institutional capability to transform fisheries information into effective fisheries governance.

3. The TFM Approach

TFM is designed to bridge the gap between fisheries information and fisheries governance. By connecting operations, governance, monitoring, and analytics within a single platform, fisheries authorities can transform trusted information into management action, institutional accountability, and sustainable fisheries outcomes.

Fisheries authorities require more than the ability to collect data. They must be able to transform information into governance processes, management actions, compliance activities, scientific assessments, and informed decision-making.

The Fisheries Manager (TFM) has been designed to support this transformation.

Rather than functioning as a standalone survey or statistical system, TFM provides a governance-driven information platform that supports the complete fisheries information lifecycle—from survey design and field data collection to management, monitoring, analytics, and adaptive fisheries governance.

The platform establishes a common information foundation that connects fisheries operations, governance processes, monitoring activities, and decision-support capabilities within a single ecosystem. This enables fisheries authorities to move beyond fragmented systems and isolated datasets toward a trusted source of fisheries information capable of supporting both day-to-day operations and long-term strategic decision-making.

A Governance-Driven Information Lifecycle

At the core of TFM is the principle that fisheries information must pass through a structured lifecycle before it can support management decisions.

Information is planned, collected, validated, reviewed, approved, monitored, analyzed, and ultimately transformed into management intelligence. This lifecycle ensures that fisheries information remains consistent, traceable, auditable, and trusted throughout its journey from field collection to governance action.

By embedding governance controls, validation mechanisms, approval workflows, auditability, and accountability throughout the process, TFM helps fisheries authorities establish confidence in the information used to support fisheries management.

Four Integrated Capability Domains

TFM supports fisheries governance through four interconnected capability domains.

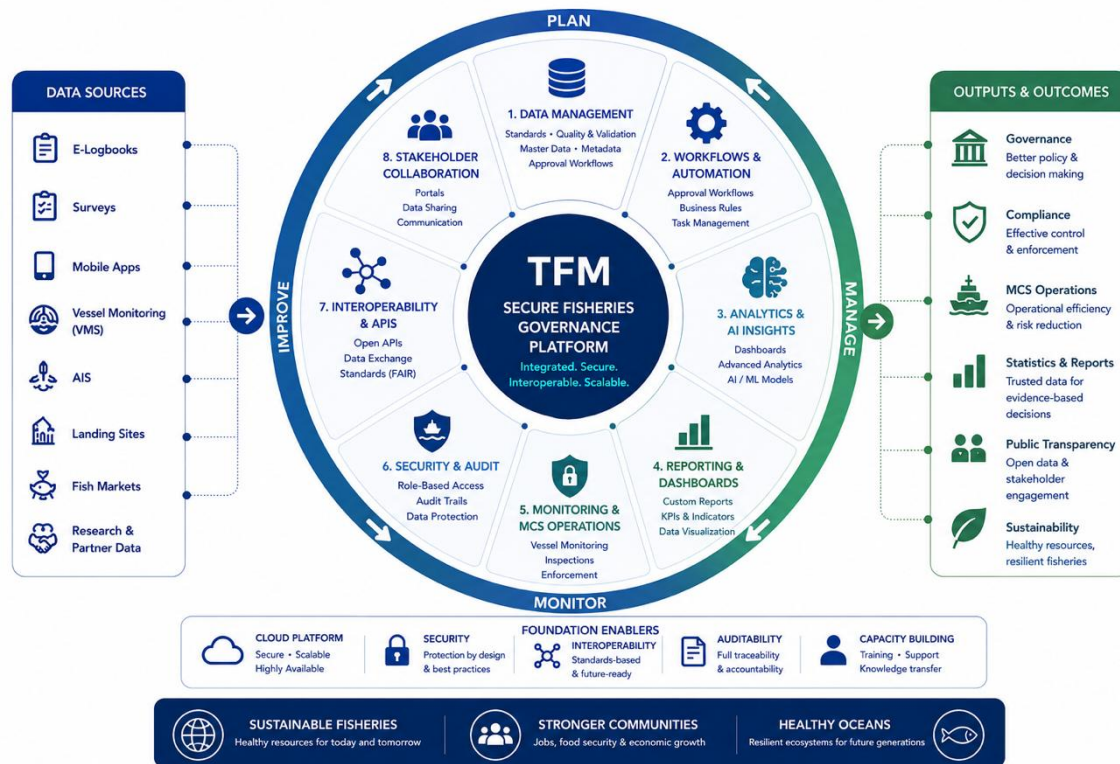


Figure 3 TFM integrates fisheries operations, governance, monitoring, and analytics within a unified fisheries governance platform.

Operations

Operations provide the foundation for fisheries information collection and management. These capabilities include survey design, field data collection, landing declarations, electronic logbooks, biological sampling, processing operations, and other workflows that generate fisheries information.

The objective of the operations domain is to ensure that fisheries information is collected efficiently, consistently, and according to established standards.

Governance

Governance capabilities transform operational information into management controls and regulatory actions.

These capabilities include vessel and fisher management, licensing and authorizations, TAC and quota management, fisheries management measures, spatial management, and other regulatory functions required to manage fisheries resources sustainably.

Governance enables fisheries authorities to translate policy objectives into operational management processes.

Monitoring, Control and Surveillance (MCS)

Monitoring capabilities provide visibility into fisheries activities and support compliance oversight.

This includes vessel monitoring, inspections, violations management, surveillance activities, alerts, and compliance monitoring mechanisms that help fisheries authorities ensure adherence to fisheries regulations and management measures.

The objective is to strengthen transparency, accountability, and effective enforcement.

Analytics and Decision Support

Analytics capabilities transform information into actionable intelligence.

Reporting, dashboards, spatial analysis, performance monitoring, trend analysis, and decision-support tools help fisheries authorities understand fisheries performance, evaluate management outcomes, identify risks, and support evidence-based decision-making.

These capabilities ensure that information collected across the platform can be converted into meaningful management insight.

A Platform That Evolves With Fisheries Governance

Fisheries authorities operate at different stages of institutional development and governance maturity.

Some organizations may initially focus on fisheries statistics and data collection, while others require more advanced capabilities related to licensing, quota management, compliance monitoring, spatial management, and adaptive fisheries governance.

TFM is designed to support this evolution.

TFM is designed to support the governance journey described in the Capability Maturity Model for Fisheries Governance (CMM-FG™), enabling

fisheries authorities to progressively strengthen governance capabilities over time. This allows organizations to advance from basic fisheries data collection and reporting toward increasingly integrated governance, monitoring, compliance, and decision-support capabilities while maintaining a trusted information foundation.

Organizations can begin with the capabilities most relevant to their immediate priorities and progressively expand their governance ecosystem over time without replacing systems, disrupting operations, or compromising information continuity.

This enables fisheries authorities to strengthen governance capabilities incrementally while maintaining a consistent and sustainable information foundation.

The governance journey itself is further described in the Capability Maturity Model for Fisheries Governance (CMM-FG™). While CMM-FG provides a framework for understanding governance maturity and institutional development, TFM provides the operational platform required to implement and sustain those capabilities in practice.

A Trusted Foundation for Sustainable Fisheries

Effective fisheries governance depends upon trusted information.

By connecting fisheries operations, governance processes, monitoring activities, and analytics within a single platform, TFM helps fisheries authorities establish a common source of truth capable of supporting management actions, compliance programs, scientific assessments, and strategic decision-making.

TFM is more than a fisheries information system.

It is a fisheries governance platform designed to help fisheries authorities transform information into governance, governance into intelligence, and intelligence into sustainable fisheries outcomes.



Figure 4 Figure 5 Field data collection at a landing site using digital survey tools to capture fisheries information at the source

PART II

INFORMATION LIFECYCLE

From Survey Design to Trusted
Fisheries Information



1. DESIGN

Design surveys and
define data needs



2. PLAN

Plan sampling and
ensure coverage



3. STANDARDS

Apply standards,
reference data and
governance



4. COLLECT

Collect data in
the field



5. VALIDATE

Validate and ensure
data quality



6. APPROVE

Review, approve and
release information



7. MANAGE

Store, manage and
secure information



TRUSTED DATA

High-quality, reliable
and consistent
information.



INTEGRATED PROCESSES

Connected workflows
that improve efficiency
and reduce risk.



QUALITY ASSURED

Robust validation and
standards ensure
information you can trust.



ACTIONABLE INFORMATION

Timely insights that
enable better decisions
and outcomes.

4. Survey Design and Statistical Framework

Reliable fisheries information does not begin with data collection. It begins with the design of a statistical framework capable of producing representative, accurate, and decision-ready information. The quality of fisheries governance is ultimately influenced by the quality of the information framework established before the first record is ever collected.

From Governance Objectives to Information Requirements

Effective fisheries governance depends on reliable information. Before fisheries authorities can collect data, they must first determine what information is required, why it is required, and how it will support management objectives.

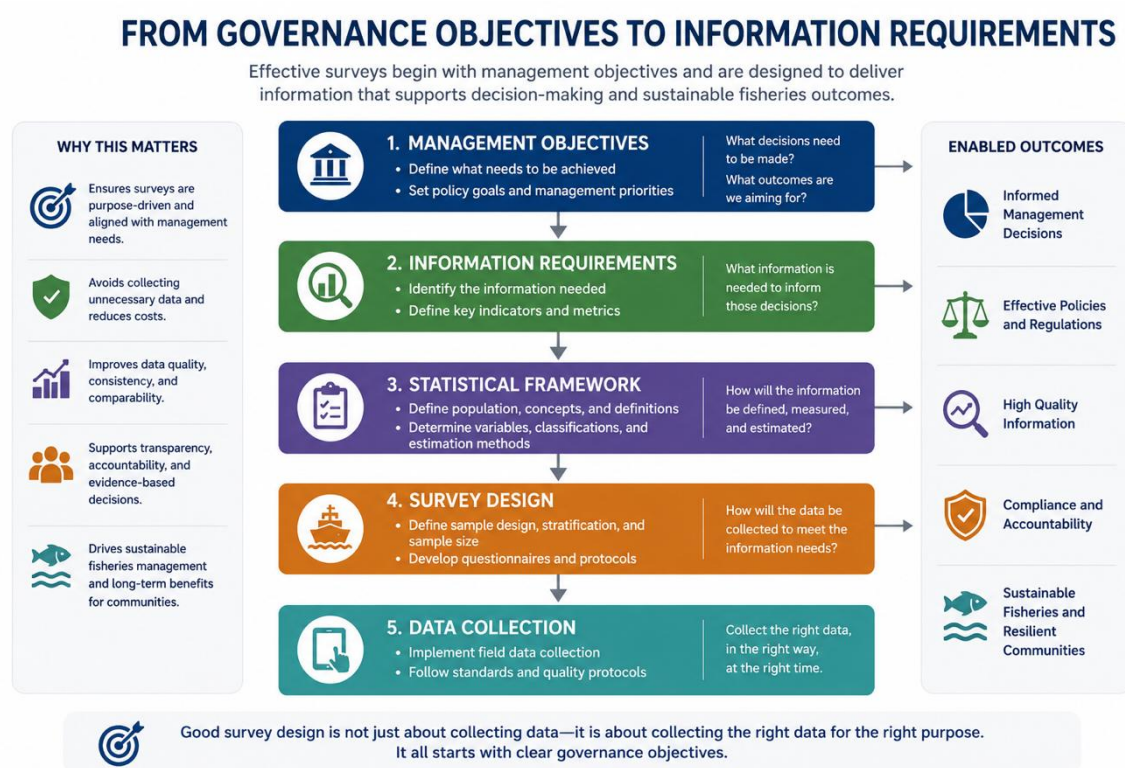


Figure 5 The fisheries information lifecycle from survey design and planning to trusted and actionable information.

Different management objectives require different types of information. Stock assessments may require biological and catch data, while licensing

programs, quota management, compliance monitoring, and socio-economic assessments may require entirely different information structures.

Survey design therefore represents the critical link between fisheries governance objectives and operational data collection activities.

The purpose of survey design is not simply to define what data will be collected. Its purpose is to ensure that the information generated will be capable of supporting fisheries management, scientific assessment, compliance oversight, reporting obligations, and evidence-based decision-making.

Defining Information Requirements

The first stage of survey design is to identify the information required to support management and governance objectives.

Information requirements may include:

- Catch and landing information
- Fishing effort indicators
- Biological and stock assessment data
- Fleet activity information
- Socio-economic indicators
- Compliance and enforcement information
- Resource utilization statistics
- National and international reporting requirements

Clearly defining information requirements helps ensure that fisheries authorities collect information that is both relevant and actionable.

Establishing a Statistical Framework

Once information requirements have been identified, fisheries authorities must establish the statistical framework that will guide information collection.

This framework defines:

- Target populations
- Sampling units
- Sampling frames
- Coverage requirements
- Sample sizes
- Stratification approaches
- Estimation methodologies
- Data quality requirements

These elements provide the foundation for producing representative and scientifically defensible fisheries information.

Without a sound statistical framework, fisheries authorities risk generating information that may be incomplete, biased, inconsistent, or unsuitable for management purposes.

Aligning Survey Design with Governance

Survey design should not be viewed solely as a technical or statistical exercise.

It is fundamentally a governance function.

The information that becomes available for quota management, fisheries management measures, compliance monitoring, reporting, and scientific assessment is determined by decisions made during the survey design process.

For this reason, survey design must remain closely aligned with fisheries policies, management priorities, governance requirements, and institutional objectives.

When governance objectives change, survey methodologies and information requirements may also need to evolve.

Designing for Consistency and Long-Term Comparability

Effective fisheries governance requires information that remains comparable over time.

Survey programs must therefore be designed with consistency, repeatability, and long-term sustainability in mind.

Standardized methodologies, controlled reference data, consistent classifications, and documented statistical approaches help ensure that fisheries information remains interpretable and comparable across years, regions, fisheries, and reporting programs.

This consistency is essential for identifying trends, evaluating management measures, supporting stock assessments, and measuring progress toward fisheries management objectives.

The First Stage of the Information Lifecycle

Survey design represents the first stage of the fisheries information lifecycle.

The quality, representativeness, and usefulness of fisheries information are largely determined before the first record is ever collected.

By connecting governance objectives, information requirements, statistical methodologies, and operational implementation within a common framework, fisheries authorities establish the foundation upon which trusted information, effective governance, and sustainable fisheries management depend.

Key Takeaway

Survey design is not simply a data collection activity. It is the governance process through which fisheries authorities determine what information will be available to support management decisions, scientific assessments, compliance oversight, and sustainable fisheries outcomes.



Figure 6 Collaborative survey design workshop supporting fisheries data collection and management planning.

5. Survey Planning and Coverage Management

Even the most carefully designed survey program has little value if it is not implemented consistently. Effective fisheries governance requires not only sound survey design, but also the ability to plan, monitor, and manage data collection activities to ensure that information remains representative, timely, and reliable.

From Survey Design to Operational Execution

Once a survey framework has been established, fisheries authorities must translate statistical requirements into operational activities.

Survey plans define how, when, and where information will be collected, who will perform data collection activities, and how survey coverage objectives will be achieved.

This process transforms survey methodologies into practical field operations that can be managed, monitored, and evaluated throughout the data collection lifecycle.

Without effective planning, even well-designed survey programs may fail to achieve their intended objectives.

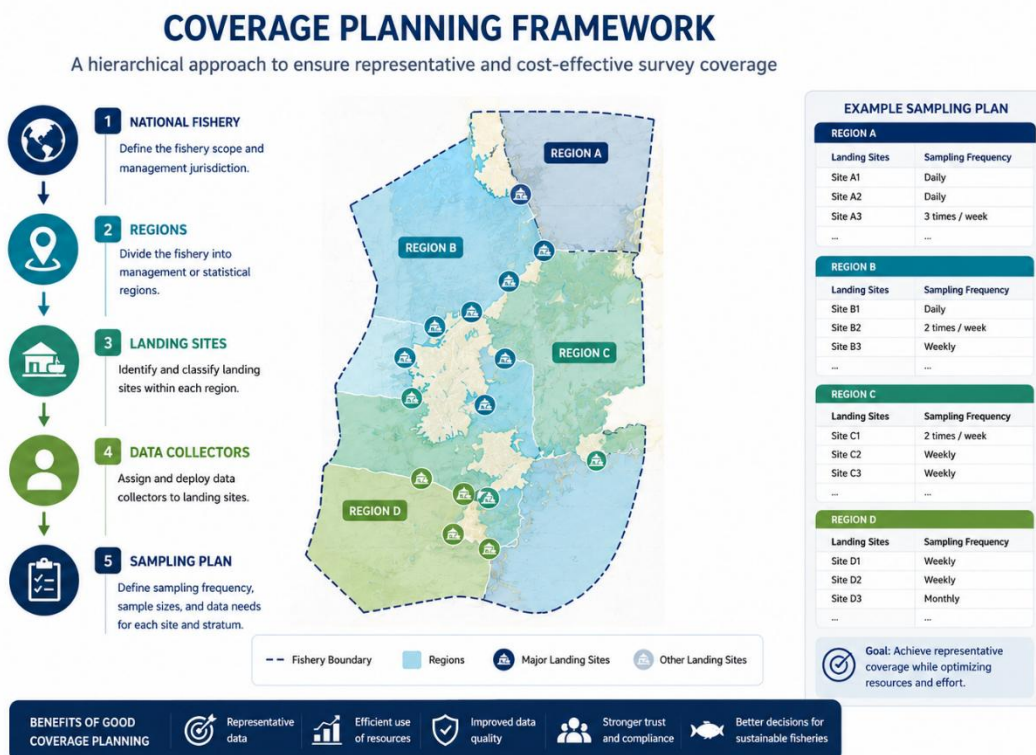


Figure 7 Coverage planning framework supporting representative fisheries survey implementation across regions and landing sites.

Planning Fisheries Data Collection Activities

Survey planning typically involves coordinating multiple operational variables, including:

- Geographic regions and management areas
- Landing sites and sampling locations
- Fisheries and fleet segments
- Sampling frequencies
- Seasonal fishing patterns
- Human resource availability
- Budget and logistical constraints
- Reporting deadlines and obligations

These factors influence both the efficiency of survey operations and the quality of the information ultimately generated.

Effective planning helps ensure that limited resources are directed toward the areas where information is most needed.

Managing Survey Coverage

A common challenge in fisheries data collection programs is maintaining adequate coverage across fisheries, locations, and time periods.

Missed surveys, inconsistent sampling effort, delayed submissions, and uneven geographic coverage can introduce bias and reduce confidence in resulting statistics.

For this reason, fisheries authorities must continuously monitor whether actual survey implementation aligns with planned coverage objectives.

Coverage management enables organizations to identify potential gaps before they affect reporting, scientific assessment, or management decision-making.

Monitoring Performance and Implementation

Survey managers require visibility into operational performance throughout the data collection process.

This includes monitoring:

- Planned versus completed surveys
- Geographic coverage
- Sampling coverage
- Enumerator activity
- Submission timeliness
- Survey completion rates
- Data collection trends
- Operational bottlenecks

Providing visibility into these indicators helps fisheries authorities detect implementation issues early and take corrective action when necessary.

Strengthening Accountability and Reliability

The reliability of fisheries information depends not only on the accuracy of individual records, but also on the completeness and representativeness of the overall survey program.

Survey planning and coverage management therefore play an important governance role by helping organizations ensure that information is collected consistently and according to established methodologies.

By improving visibility, accountability, and operational control, fisheries authorities can strengthen confidence in the information used for scientific assessment, reporting, compliance monitoring, and management decision-making.

Building Confidence in Fisheries Information

Representative information requires representative coverage.

By connecting survey planning, operational execution, performance monitoring, and coverage management within a single framework, fisheries authorities can improve the reliability and consistency of fisheries information throughout the collection process.

This ensures that information generated in the field remains aligned with management objectives and can be trusted to support governance, analytics, compliance activities, and sustainable fisheries management.

Key Takeaway

Survey design determines what information should be collected. Survey planning and coverage management ensure that information is actually collected in a representative, timely, and reliable manner.

6. Standards, Reference Data and Information Governance

Trusted fisheries information depends on consistency. When information is collected across multiple fisheries, regions, landing sites, programs, and organizations, common standards and governance controls become essential for ensuring that information remains accurate, comparable, and usable over time.

Creating a Common Information Foundation

Effective fisheries governance requires a shared understanding of fisheries resources, activities, locations, management concepts, and reporting structures.

Without common standards, fisheries information can quickly become fragmented. Differences in species names, gear classifications, vessel categories, geographic references, units of measure, and reporting definitions may lead to inconsistent statistics, reduced comparability, and challenges in decision-making.

Standards and reference data therefore provide the foundation upon which trusted fisheries information is built.

By establishing a common information framework, fisheries authorities can ensure that information is collected, interpreted, and reported consistently across the organization.

Establishing a Common Fisheries Language

Fisheries governance depends on the ability of different users, departments, and organizations to interpret information in the same way.

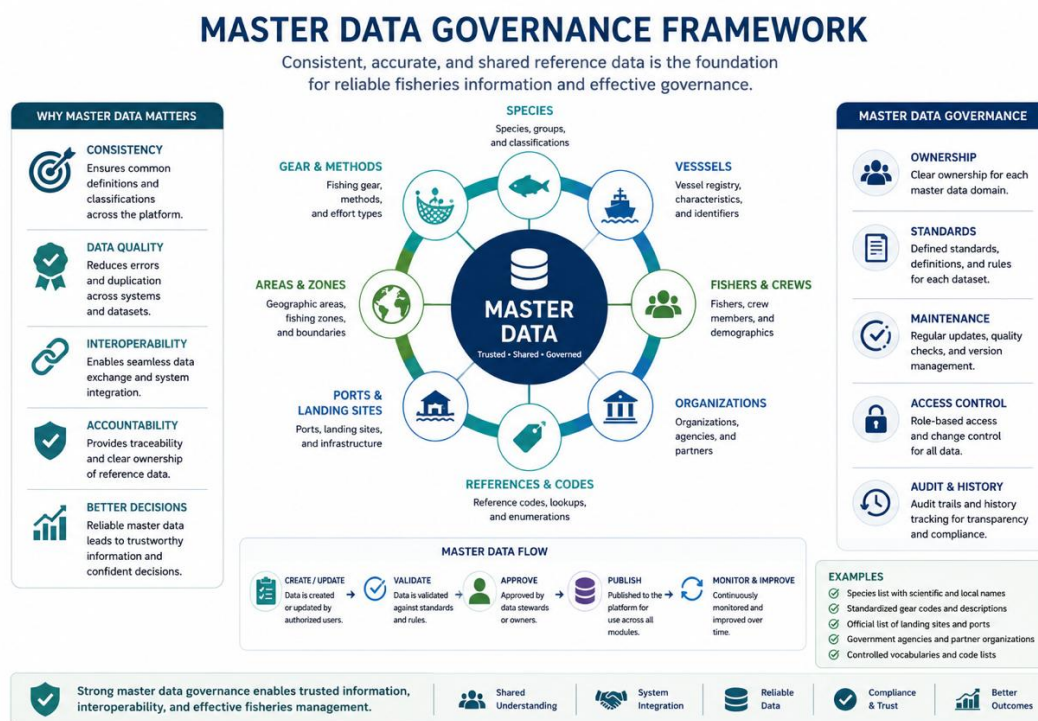


Figure 8 Master data governance provides the standards, classifications, and reference data required for trusted fisheries information.

To support this objective, fisheries authorities typically maintain reference data covering areas such as:

- Species classifications
- Fishing gear classifications
- Vessel classifications
- Landing sites and ports
- Fisheries and fleet segments
- Geographic regions and management areas
- Units of measure
- Licensing categories
- Authorization types
- Survey and reporting classifications

These standards provide a common language that supports consistency across fisheries operations, governance processes, monitoring activities, and reporting systems.

Supporting National and International Standards

Many fisheries authorities exchange information with national agencies, regional fisheries bodies, development partners, and international organizations.

For this reason, information systems should support alignment with recognized fisheries classification frameworks and reporting standards.

Examples may include:

- ASFIS species classifications
- ISSCFG fishing gear classifications
- ISSCFV vessel classifications
- National fisheries reference frameworks
- Regional fisheries reporting requirements
- International statistical reporting standards

Alignment with these standards improves interoperability, reduces ambiguity, and strengthens the comparability of fisheries information across jurisdictions.

Information Governance Beyond Master Data

Reference data is not simply a technical configuration.

It is a governance asset.

Changes to species classifications, management areas, licensing categories, vessel types, reporting structures, or spatial frameworks can have significant implications for fisheries statistics, quota management, compliance activities, reporting obligations, and management decisions.

For this reason, fisheries authorities must establish governance controls that define how reference information is created, reviewed, approved, maintained, and retired throughout its lifecycle.

This ensures that changes are introduced in a controlled and transparent manner while preserving the integrity of historical information.

Managing Change and Traceability

As fisheries governance evolves, standards and classifications may also change.

New fisheries may emerge. Management areas may be modified. Reporting requirements may evolve. Species classifications may be updated.

Without appropriate governance controls, these changes can undermine consistency and make historical information difficult to interpret.

Effective information governance therefore requires:

- Version control
- Change management
- Approval workflows
- Historical traceability
- Documentation of changes
- Clear ownership and accountability

These controls help maintain confidence in fisheries information while supporting long-term continuity.

Enabling Interoperability and Consistency

High-quality analytics, compliance monitoring, quota management, scientific assessment, and reporting all depend on consistent underlying information structures.

By combining reference data management with governance controls, fisheries authorities create a common information foundation that supports interoperability across systems, departments, and stakeholders.

This enables information to be collected once, understood consistently, and reused confidently across multiple governance and management functions.

A Foundation for Trusted Information

Standards and information governance play a critical role in transforming data into trusted information.

By establishing common definitions, controlled reference data, governance processes, and traceable change management practices, fisheries authorities can improve information quality, reduce ambiguity, strengthen accountability, and support evidence-based decision-making.

These capabilities provide the stable information foundation required for effective fisheries governance and sustainable fisheries management.

Key Takeaway

Reliable fisheries governance depends on more than collecting information. It requires a common information foundation built upon standards, controlled reference data, and governance processes that ensure information remains consistent, traceable, and trustworthy over time

7. Field Data Collection

Field data collection is where fisheries activities are transformed into structured information. The quality, timeliness, and reliability of the information collected at this stage directly influence the effectiveness of fisheries governance, scientific assessment, compliance oversight, and management decision-making.

Transforming Fisheries Activities into Information

Fisheries governance depends on understanding what is happening within a fishery.



Figure 9 A multi-channel field data collection ecosystem supporting surveys, mobile applications, web forms, and electronic reporting.

Authorities require reliable information about fishing effort, catches, biological resources, fishing locations, vessel activity, resource utilization, and compliance with management measures. Much of this information originates in the field, where fisheries officers, enumerators, observers, inspectors, fishers, and other stakeholders record operational activities as they occur.

Field data collection therefore represents the point at which real-world fisheries activities are transformed into structured information capable of supporting governance processes and management decisions.

The quality of information generated at this stage has a direct impact on all subsequent activities within the fisheries information lifecycle.

Supporting Multiple Information Collection Programs

Fisheries authorities often operate multiple information collection programs designed to support different governance, management, scientific, and reporting objectives.

These programs may include:

- Landing surveys
- Catch assessment surveys
- Biological sampling programs
- Landing declarations
- Electronic logbooks
- Aquaculture reporting
- Observer programs
- Inspection and compliance activities
- Market and value-chain reporting

Each program contributes information that supports different aspects of fisheries governance.

Together, they help build a comprehensive understanding of fisheries activities and resource utilization.



Figure 10 Digital field data collection enables fisheries information to be captured directly at the source.

Collecting Information at the Source

Historically, fisheries information has often been recorded using paper forms and manual processes before being entered into electronic systems.

While these approaches can generate valuable information, they may also introduce delays, increase administrative effort, create transcription errors, and limit visibility into ongoing fisheries activities.

Modern fisheries governance increasingly requires information to be available more quickly and with greater accuracy.

Digital-first data collection approaches enable information to be captured closer to its source through mobile devices, tablets, laptops, kiosks, electronic reporting systems, and web-based applications.

Capturing information at the source helps reduce duplication of effort, improve timeliness, and increase the availability of information for operational and management purposes.

Guided and Standardized Data Collection

Reliable information requires consistent collection practices.

Field personnel must collect information according to established methodologies, standards, and reporting requirements.

Structured collection workflows help ensure that information is recorded consistently regardless of who collects it, where it is collected, or which fisheries program is involved.

Guided questionnaires, predefined forms, centrally managed reference data, and standardized reporting structures help reduce variability while improving information quality and comparability.

This consistency becomes particularly important when information is aggregated across multiple regions, fisheries, and reporting programs.

Supporting Operations in Diverse Environments

Fisheries data collection often takes place in operational environments that vary significantly in terms of infrastructure, connectivity, resources, and geography.

Some activities may occur at major commercial ports with reliable internet connectivity, while others may take place in remote landing sites, coastal communities, inland fisheries, or offshore operations.

Information systems must therefore be capable of supporting a wide range of operating conditions.

Flexible deployment approaches help fisheries authorities extend information coverage across both small-scale and industrial fisheries while maintaining consistency in collection methodologies and governance processes.

Building the Information Foundation

Field data collection is not an isolated operational activity.

It represents a critical stage within the fisheries information lifecycle.

The information collected through surveys, declarations, logbooks, inspections, biological sampling programs, and other operational activities becomes the foundation for validation, approval, monitoring, analytics, scientific assessment, compliance oversight, and management decision-making.

The effectiveness of all downstream governance processes depends upon the quality of information captured at this stage.

Enabling Trusted Fisheries Governance

Reliable governance begins with reliable information.

By supporting structured, standardized, and digitally enabled field data collection, fisheries authorities can improve information quality, increase operational efficiency, strengthen accountability, and expand visibility into fisheries activities.

These capabilities help establish the trusted information foundation required to support effective fisheries governance and sustainable fisheries management.

Key Takeaway

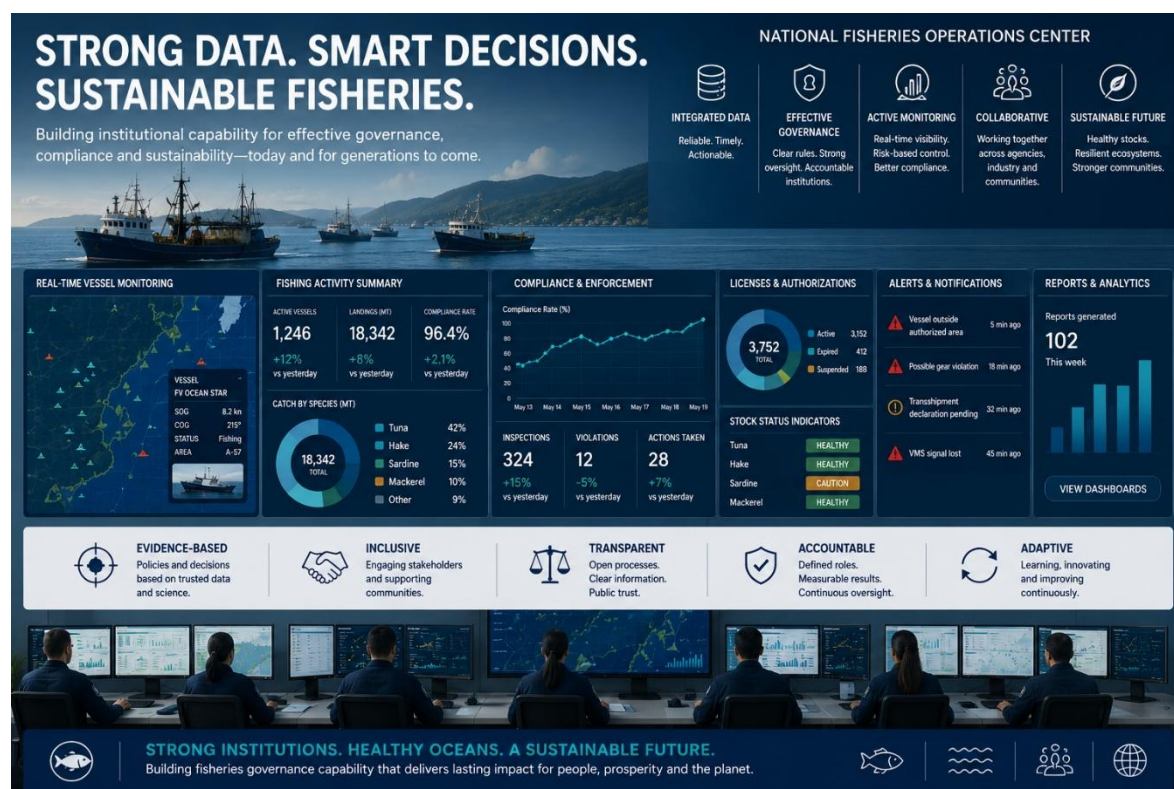


Figure 11 Field operations and fisheries monitoring activities provide the foundation for trusted fisheries information.

Field data collection is the point at which fisheries activities become information. The quality, consistency, and timeliness of information

captured in the field directly influence every subsequent stage of the fisheries governance lifecycle.



Figure 12 Fisheries transshipment activities requiring monitoring, traceability, and regulatory oversight.

8. Data Quality and Validation

The value of fisheries information depends on its quality. Even the most comprehensive data collection programs can produce unreliable outcomes if information is incomplete, inconsistent, inaccurate, or insufficiently validated. Effective fisheries governance therefore requires a structured approach to data quality management throughout the information lifecycle.

Building Confidence in Fisheries Information

Reliable fisheries governance depends on confidence in the underlying information.

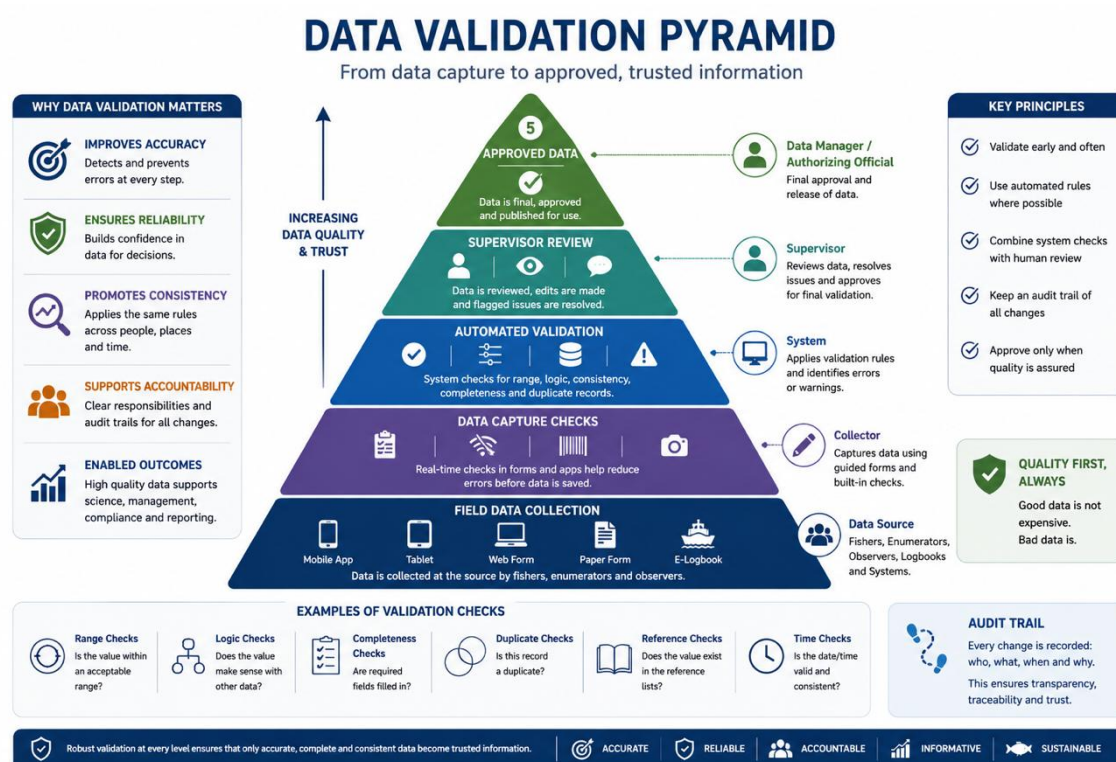


Figure 13 Data quality assurance framework showing the progression from field data collection to approved and trusted fisheries information.

Management decisions, scientific assessments, quota monitoring, compliance activities, reporting obligations, and policy development all rely on information that is accurate, complete, consistent, and fit for purpose.

Without appropriate quality controls, fisheries authorities risk making decisions based on information that may be incomplete, inaccurate, or misleading.

Data quality management therefore represents a fundamental governance function that helps ensure fisheries information can be trusted throughout its lifecycle.

Data Quality as a Continuous Process

Data quality is not achieved through a single validation step.

It is established through a combination of standards, controlled collection processes, validation rules, supervisory review, governance controls, and continuous monitoring applied throughout the information lifecycle.

Quality assurance begins during survey design and continues through planning, field collection, validation, approval, reporting, and analysis.

Each stage contributes to the overall reliability of the information being produced.

This layered approach helps identify issues as early as possible while maintaining transparency, accountability, and traceability.

Automated Validation Controls

Many common data quality issues can be identified automatically during data entry and processing.

Validation controls help ensure that information conforms to established standards, business rules, and governance requirements before it progresses further through the lifecycle.

Examples of issues that may be detected automatically include:

- Missing information
- Invalid values
- Duplicate records
- Reference data mismatches
- Logical inconsistencies
- Out-of-range values
- Calculation errors
- Incomplete submissions

Automated validation improves consistency while reducing the effort required to identify routine quality issues manually.

Supervisory Review and Expert Oversight

Not all data quality issues can be resolved through automated controls.

Certain situations require human review, expert judgment, or additional investigation before information can be accepted for operational, scientific, or management purposes.

Supervisory review processes allow designated personnel to:

- Examine records
- Investigate anomalies
- Verify unusual observations
- Request corrections
- Document findings
- Approve quality resolutions

These activities help ensure that quality assurance remains both systematic and accountable.

Managing Exceptions and Anomalies

Fisheries operations often generate information that falls outside expected patterns.

Unusual catch compositions, unexpected fishing effort levels, atypical vessel activity, rare species observations, or unexpected biological measurements may all require additional scrutiny.

Importantly, unusual information is not necessarily incorrect information.

Exception management processes allow fisheries authorities to investigate anomalies, document findings, and determine whether records should be accepted, corrected, or rejected.

This approach helps preserve potentially valuable information while ensuring appropriate oversight and governance.

Quality Assurance and Governance

Data quality management extends beyond technical validation.

It is closely linked to governance processes that define responsibilities, accountability, and decision-making authority.

Effective quality management requires:

- Clearly defined ownership
- Review responsibilities
- Approval procedures
- Auditability

- Traceability
- Documentation of quality actions

These governance controls help ensure that information remains defensible and trustworthy throughout its lifecycle.

Supporting Evidence-Based Decision-Making

The purpose of data quality management is not simply to identify errors.

Its objective is to increase confidence in the information used to support governance and management decisions.

Reliable information enables fisheries authorities to:

- Improve scientific assessments
- Strengthen compliance monitoring
- Support quota management
- Enhance reporting quality
- Reduce operational risk
- Improve decision-making

As confidence in information increases, confidence in governance outcomes also improves.

A Trusted Information Foundation

Data quality management plays a central role in transforming collected data into trusted information.

By combining automated validation, supervisory review, exception management, and governance controls, fisheries authorities can establish a robust quality assurance framework that supports transparency, accountability, consistency, and evidence-based decision-making.

The result is an information foundation that can be relied upon across fisheries operations, governance processes, monitoring activities, scientific assessments, and strategic decision-making.

Key Takeaway

Data quality is not achieved through validation alone. It is the result of a continuous governance process that combines standards, controls, review, accountability, and oversight to ensure that fisheries information remains accurate, reliable, and trustworthy throughout its lifecycle.

9. Governance and Approval Workflows

Trusted information requires more than data collection and validation. Before information can support fisheries governance, scientific assessment, compliance activities, and management decisions, it must pass through structured review and approval processes that establish accountability, transparency, and institutional confidence.



Figure 14 Structured approval workflows establish accountability, transparency, and trust throughout the fisheries information lifecycle.

From Validation to Trust

Validation helps ensure that information meets defined quality standards. However, quality assurance alone does not necessarily establish organizational trust.

Fisheries authorities often require additional review processes that verify information, resolve outstanding issues, document decisions, and confirm that information is suitable for operational, scientific, regulatory, or management use.

Governance and approval workflows provide the mechanisms through which organizations transform validated information into trusted information.

These workflows establish accountability for decisions while ensuring that information is reviewed by the appropriate personnel before being used to support fisheries governance activities.

Establishing Accountability

Effective fisheries governance depends upon clearly defined responsibilities.

Different individuals and organizational units may participate in the collection, review, validation, approval, and management of fisheries information.

Approval workflows help define:

- Roles and responsibilities
- Review authorities
- Escalation procedures
- Approval requirements
- Separation of duties
- Information ownership

By establishing clear accountability, fisheries authorities can improve confidence in both the information itself and the decisions derived from it.

Supporting Multi-Level Review Processes

Many fisheries information programs require information to be reviewed at multiple organizational levels before it is accepted as official information.

For example, information may be reviewed by:

- Enumerators or field officers
- Supervisors
- Fisheries statisticians
- Data managers
- Scientific personnel
- Fisheries managers
- Regulatory authorities

Each level contributes additional oversight and helps ensure that information is complete, consistent, and appropriate for its intended purpose.

Structured review processes reduce the risk of errors while increasing organizational confidence in the resulting information.

Managing Exceptions and Decision-Making

Not all information follows a straightforward approval path.

Quality issues, unusual observations, incomplete submissions, conflicting information, or exceptional circumstances may require additional investigation and decision-making.

Governance workflows provide mechanisms for:

- Rejecting submissions
- Requesting corrections
- Escalating issues
- Documenting decisions
- Recording justifications
- Managing exceptions

These processes help ensure that governance decisions remain transparent, consistent, and traceable.

Auditability and Transparency

One of the most important objectives of governance workflows is to provide visibility into how information was reviewed and approved.

Organizations must be able to demonstrate:

- Who performed a review
- Who approved information
- When actions occurred
- What decisions were made
- Why decisions were made
- How issues were resolved

This audit trail strengthens accountability and supports transparency across fisheries operations, governance processes, compliance activities, and reporting programs.

Supporting Institutional Governance

Approval workflows are not simply administrative procedures.

They represent an important component of institutional governance.

By embedding review processes, accountability structures, decision controls, and auditability into the fisheries information lifecycle,

organizations can strengthen governance maturity while reducing operational risk.

These capabilities become particularly important when information supports high-value decisions such as quota allocation, fisheries management measures, licensing decisions, compliance actions, stock assessments, and national reporting obligations.

Transforming Information into Organizational Knowledge

The purpose of governance workflows is not merely to approve records.

Their purpose is to establish trust.

Once information has passed through validation, review, approval, and governance controls, it becomes trusted organizational knowledge that can support management actions, scientific analysis, compliance oversight, and strategic decision-making.

This transition represents a critical milestone within the fisheries information lifecycle.

A Foundation for Trusted Governance

Governance and approval workflows provide the bridge between information quality and institutional trust.

By combining accountability, review processes, decision controls, transparency, and auditability, fisheries authorities can ensure that information used to support governance activities remains reliable, defensible, and trusted.

These capabilities help transform validated information into a foundation for effective fisheries governance and sustainable fisheries management.

Key Takeaway

Validation ensures information quality. Governance and approval workflows establish organizational trust. Together, they transform collected data into trusted information capable of supporting fisheries management, compliance oversight, scientific assessment, and evidence-based decision-making.

Once information has been designed, collected, validated and approved, it becomes the foundation for operational fisheries governance.

PART III

FISHERIES GOVERNANCE CAPABILITIES

Transforming Information into
Management and Oversight



TAC & QUOTA MANAGEMENT

Set, allocate and monitor
quotas with transparency
and control.



SPATIAL MANAGEMENT

Define areas, apply
measures and protect
sensitive ecosystems.



MONITORING, CONTROL & SURVEILLANCE (MCS)

Detect, monitor and
enforce compliance
effectively.



REPORTING & ANALYTICS

Generate insights and
support evidence-based
decisions.



AUDIT & TRACEABILITY

Ensure accountability
through audit trails and
full traceability.



INSTITUTIONAL ACCOUNTABILITY

Strengthen governance,
transparency and public
trust.



STRONGER GOVERNANCE

Clear policies, effective
oversight and consistent
enforcement.



BETTER DECISIONS

Timely, accurate information
enables smarter, faster
and more confident
decisions.



SUSTAINABLE FISHERIES

Healthy stocks, resilient
ecosystems and long-term
benefits for communities
and generations.

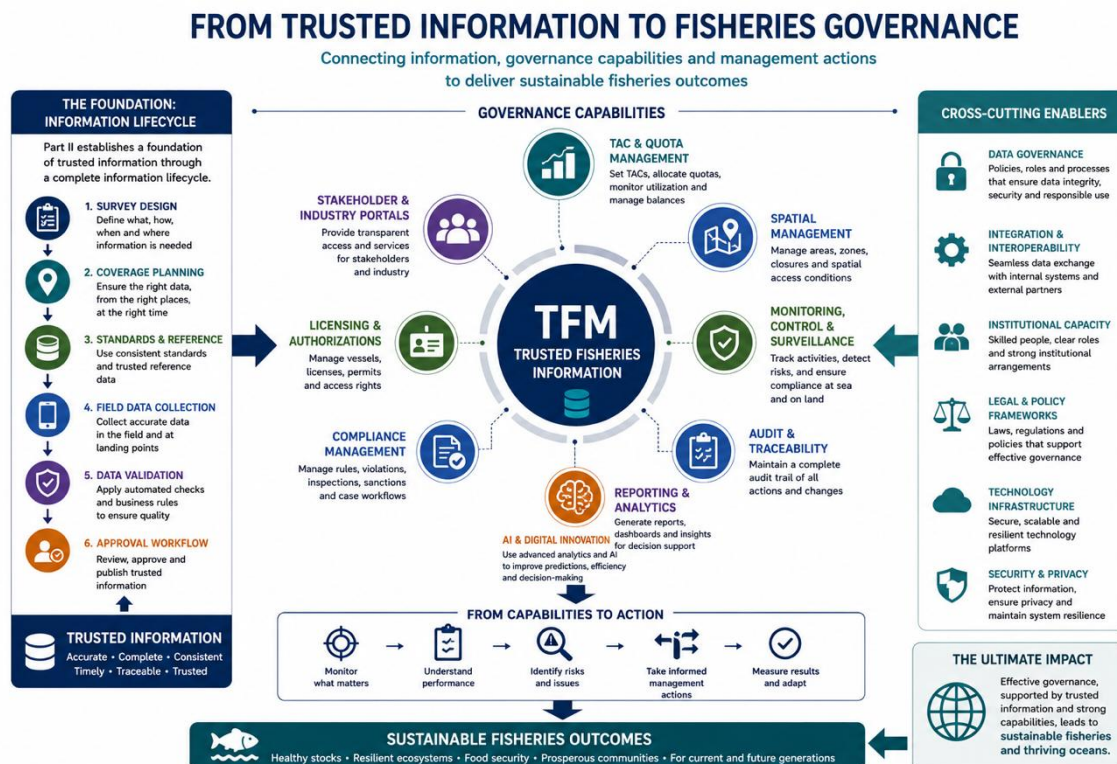


STRONGER INSTITUTIONS

Capable institutions
deliver lasting results
and stakeholder
confidence.

10.From Trusted Information to Fisheries Governance

Trusted information creates value only when it is used to support governance. Once fisheries information has been collected, validated, reviewed, and approved, it becomes a strategic asset capable of informing management decisions, supporting compliance oversight, strengthening accountability, and improving fisheries outcomes.



Transforming Information into Action

The previous chapters described how fisheries authorities establish trusted information through survey design, planning, standardized collection methodologies, quality controls, and governance workflows.

These processes are essential, but they are not the ultimate objective of fisheries information management.

The true purpose of fisheries information is to support governance.

Information becomes valuable when it helps fisheries authorities understand fisheries activities, implement management measures, monitor

compliance, evaluate outcomes, and make informed decisions that contribute to sustainability objectives.

The transition from trusted information to governance therefore represents one of the most important stages within the fisheries information lifecycle.

Beyond Data Collection

Many fisheries organizations begin their digital transformation journey by focusing on data collection and statistical reporting.

While these capabilities are important, effective fisheries governance requires a broader set of institutional functions.

Authorities must be able to:

- Regulate access to fisheries resources
- Manage fishing opportunities
- Implement management measures
- Monitor compliance
- Evaluate outcomes
- Support scientific assessment
- Produce reliable reporting
- Demonstrate accountability

These responsibilities extend beyond information collection and require governance capabilities that can transform information into management action.

Four Governance Capability Domains

Modern fisheries governance relies upon multiple organizational capabilities working together within a common information framework.

Within TFM, these capabilities are organized into four interconnected domains.

Governance

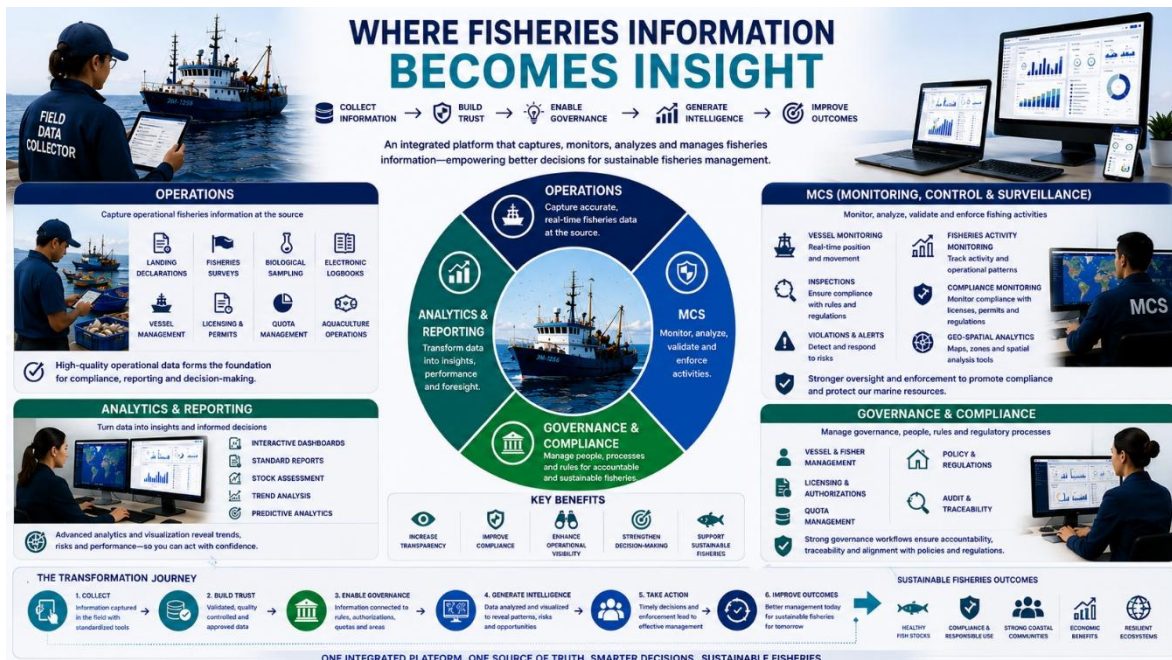
Governance capabilities provide the regulatory and management mechanisms used to manage fisheries resources.

These capabilities support activities such as:

- Vessel and fisher management
- Licensing and authorizations
- TAC and quota management

- Fisheries management measures
- Spatial management
- Resource allocation

Governance capabilities translate fisheries policies and management objectives into operational controls.



Monitoring, Control and Surveillance (MCS)

Management measures are effective only when compliance can be monitored and verified.

MCS capabilities provide visibility into fisheries activities and support oversight through:

- Vessel monitoring
- Inspections
- Surveillance activities
- Violations management
- Alerts and notifications
- Compliance monitoring

These capabilities help fisheries authorities strengthen transparency, accountability, and enforcement effectiveness.

Analytics and Decision Support

Information becomes intelligence through analysis.

Analytics capabilities help fisheries authorities understand fisheries performance, identify emerging risks, evaluate management effectiveness, and support evidence-based decision-making.

Examples include:

- Reporting and dashboards
- Performance indicators
- Spatial analysis
- Trend analysis
- Fisheries statistics
- Management intelligence

These capabilities transform information into actionable insight.

Institutional Governance and Accountability

Effective governance requires more than management and monitoring.

Organizations must also demonstrate accountability, transparency, traceability, and responsible stewardship of information.

Audit trails, workflow controls, historical records, governance policies, and information management practices help establish trust in both the information itself and the decisions supported by that information.

These capabilities strengthen institutional maturity and support long-term governance effectiveness.

Building an Integrated Governance Ecosystem

Historically, fisheries authorities have often implemented governance functions through separate systems and disconnected processes.

One application may support surveys. Another may manage licensing. A separate system may provide vessel monitoring, while reporting and analytics may exist elsewhere.

Over time, this fragmentation can create operational inefficiencies, inconsistent information, duplicated effort, and limited organizational visibility.

An integrated governance ecosystem helps address these challenges by connecting information, processes, users, and decisions within a common framework.

This approach enables fisheries authorities to establish a single source of trusted information while improving coordination across operational, governance, compliance, and analytical functions.

A Continuous Governance Cycle

Fisheries governance is not a linear process.

Information supports management actions. Management actions influence fisheries activities. Fisheries activities generate new information. This information is then analyzed, reviewed, and used to refine future decisions.

As a result, fisheries governance operates as a continuous cycle of information, action, evaluation, and improvement.

Organizations that successfully manage this cycle are better positioned to respond to changing conditions, strengthen resource stewardship, improve compliance, and support long-term sustainability objectives.

Enabling Sustainable Fisheries Outcomes

The ultimate objective of fisheries governance is not simply to collect information or operate information systems.

The objective is sustainable fisheries management.

Trusted information enables governance.

Governance supports informed decision-making.

Informed decisions improve fisheries outcomes.

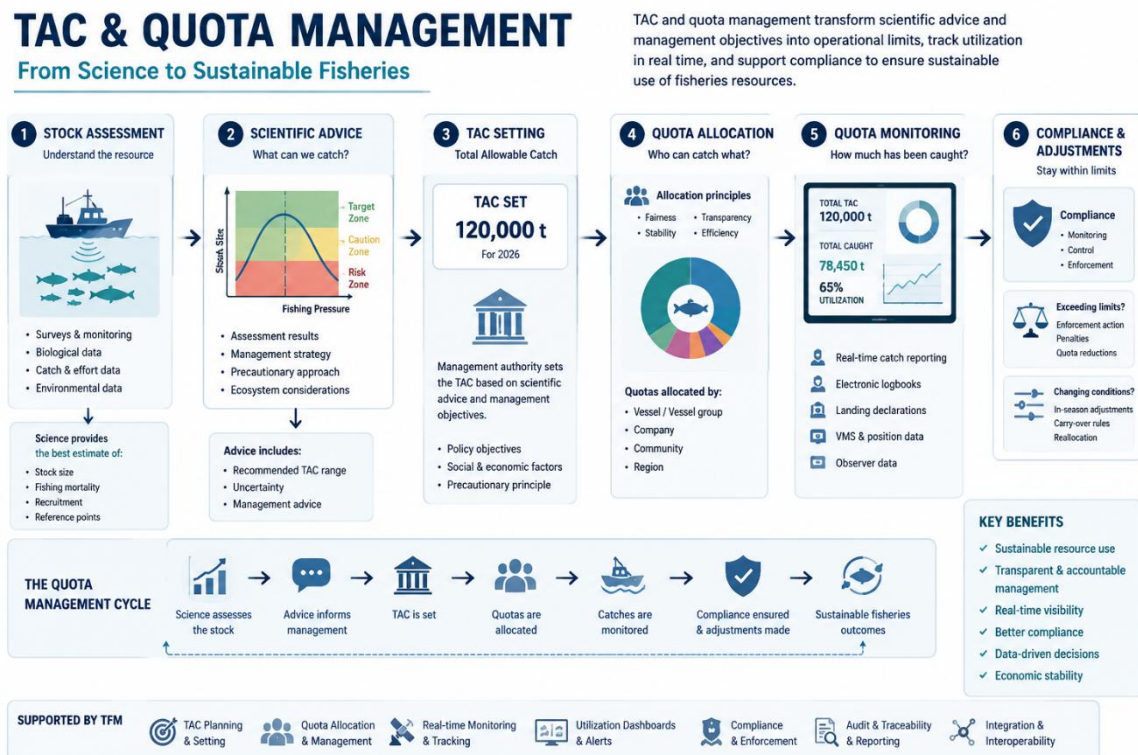
The following chapters describe the governance capabilities that help fisheries authorities transform trusted information into effective management, compliance oversight, accountability, and sustainable fisheries outcomes.

Key Takeaway

Trusted information is only the beginning. Its value is realized when it supports governance processes, compliance oversight, management decisions, and continuous improvement. Effective fisheries governance transforms information into action, action into intelligence, and intelligence into sustainable fisheries outcomes.

11.TAC and Quota Management

Effective fisheries management requires more than understanding how much fish is being caught. Fisheries authorities must also be able to determine how much fishing activity can occur, allocate fishing opportunities fairly, monitor utilization, and respond when management limits are approached or exceeded. TAC and quota management provide the governance framework through which fisheries resources are managed sustainably.



From Scientific Advice to Management Action

One of the primary objectives of fisheries governance is to ensure that fishing activity remains consistent with long-term sustainability objectives.

Scientific assessments, stock monitoring programs, fisheries surveys, and other information sources help fisheries authorities understand the status of fisheries resources and evaluate the potential impacts of fishing activities.

This information supports the development of management advice and ultimately informs decisions regarding Total Allowable Catch (TAC), effort controls, harvest strategies, and other fisheries management measures.

The transition from scientific information to management action represents a critical governance process within modern fisheries management systems.

Establishing Harvest Limits

Many fisheries management frameworks rely on harvest limits to control resource utilization and reduce the risk of overexploitation.

These limits may be established in different forms depending on the management approach adopted by the fisheries authority.

Examples include:

- Total Allowable Catch (TAC)
- Species-specific quotas
- Effort limitations
- Vessel allocations
- Community allocations
- Sector allocations
- Regional allocations
- Seasonal harvest limits

Regardless of the management method used, fisheries authorities require reliable information and governance processes capable of supporting allocation, monitoring, and compliance activities.

Allocating Fishing Opportunities

Once management limits have been established, fisheries authorities must determine how fishing opportunities will be distributed.

Allocation mechanisms vary significantly between jurisdictions and fisheries.

Fishing opportunities may be allocated to:

- Individual vessels
- Fishers
- Fishing cooperatives
- Communities
- Companies
- Fleet segments
- Geographic regions
- Fishing sectors

Allocation decisions often involve regulatory, social, economic, and sustainability considerations.

As a result, transparency, traceability, and accountability are essential components of quota governance.

Monitoring Quota Utilization

Effective quota management requires continuous visibility into resource utilization.

As fisheries activities occur, information collected through surveys, landing declarations, electronic logbooks, inspections, and other reporting mechanisms contributes to an understanding of quota consumption and fishing activity.

Fisheries authorities require the ability to:

- Monitor quota utilization
- Track remaining allocations
- Identify potential overages
- Detect unusual activity
- Evaluate fishing performance
- Support regulatory compliance

Timely access to utilization information enables organizations to make informed management decisions before sustainability thresholds are exceeded.

Supporting Adaptive Fisheries Management

Fisheries management is dynamic.

Resource conditions may change. Fishing patterns may evolve. Scientific advice may be updated. Environmental conditions may influence stock productivity.

As a result, fisheries authorities require governance processes that allow management measures to be reviewed and adjusted when necessary.

Quota management therefore functions not only as a control mechanism but also as an adaptive management tool that helps organizations respond to changing conditions while maintaining sustainability objectives.

Transparency, Accountability and Governance

Quota management often involves high-value resources and significant economic interests.

For this reason, fisheries authorities must be able to demonstrate how allocations were determined, how utilization was monitored, and how management decisions were made.

Governance controls such as approval workflows, audit trails, allocation histories, utilization records, and decision documentation help strengthen transparency and accountability throughout the quota management lifecycle.

These controls increase confidence among stakeholders while supporting responsible resource stewardship.

Connecting Information and Management

Effective quota management depends upon trusted information.

Information collected through fisheries operations and validated through governance processes provides the foundation upon which quota decisions are made and monitored.

By connecting information, allocations, utilization monitoring, compliance oversight, and governance controls within a common framework, fisheries authorities can improve visibility, strengthen accountability, and support sustainable resource management.

Supporting Sustainable Fisheries Outcomes

TAC and quota management transform fisheries information into one of the most important governance functions within modern fisheries management.

By establishing harvest limits, allocating fishing opportunities, monitoring utilization, and supporting adaptive decision-making, fisheries authorities can balance resource sustainability with economic and social objectives.

These capabilities help ensure that fisheries resources remain productive and available for future generations.

Key Takeaway

TAC and quota management provide the governance mechanisms through which fisheries authorities translate scientific information and management objectives into sustainable harvesting practices. Effective quota governance depends on trusted information, transparency, accountability, and continuous monitoring of resource utilization.

12.Spatial Management and Fisheries Management Measures

Fisheries management decisions are often applied within specific geographic areas. Effective fisheries governance therefore requires the ability to define, manage, monitor, and enforce spatial management measures that support sustainability objectives, resource protection, compliance oversight, and adaptive fisheries management.

Managing Fisheries Across Space

Fishing activities occur within geographic environments that vary significantly in terms of resource abundance, ecological sensitivity, fishing pressure, and management priorities.

As a result, fisheries authorities frequently implement management measures that apply to specific locations, regions, fishing grounds, marine protected areas, or other defined geographic zones.

Spatial management provides the governance framework through which these areas can be defined, monitored, and managed.

By linking fisheries information to geographic locations, authorities gain a deeper understanding of where fishing activities occur and how management measures influence fisheries performance.

Building a Spatial Governance Framework

Effective spatial management requires more than recording geographic coordinates.

Fisheries authorities must establish a structured framework that organizes fishing activities within meaningful management areas.

These spatial entities may include:

- Fishing spots
- Landing sites
- Ports
- Fishing grounds
- Statistical zones
- Management regions
- Exclusive Economic Zones (EEZs)
- Marine protected areas

- Seasonal closure areas
- Conservation zones

Together, these spatial layers provide a common geographic framework that supports fisheries governance, monitoring, reporting, and decision-making.

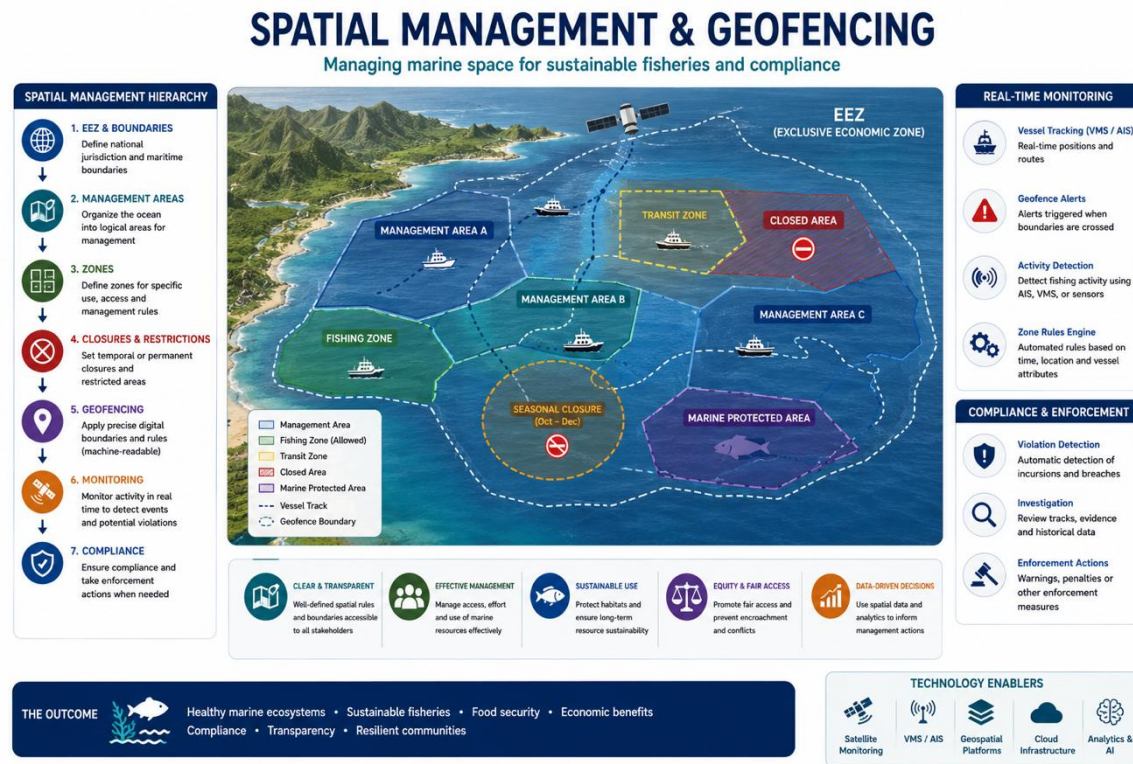


Figure 15 Spatial management measures and geofencing support adaptive fisheries management, conservation objectives, and regulatory compliance

Fisheries Management Measures

Spatial management becomes particularly valuable when fisheries authorities implement management measures designed to influence fishing activities within specific areas.

Examples include:

- Area closures
- Seasonal closures
- Protected habitats
- Species protection zones
- Gear restrictions
- Access restrictions
- Effort controls
- Spatial quota allocations

- Conservation measures

These measures help fisheries authorities balance resource utilization with sustainability objectives while protecting sensitive ecosystems and critical habitats.

Dynamic and Adaptive Management

Modern fisheries governance increasingly requires the ability to respond quickly to changing conditions.

Environmental events, stock movements, spawning aggregations, compliance concerns, and emerging scientific information may require management measures to be introduced, modified, or removed within relatively short timeframes.

Digital spatial management capabilities support this adaptive approach by enabling fisheries authorities to update management measures, communicate changes, and monitor implementation more efficiently.

This flexibility helps organizations respond to evolving fisheries conditions while maintaining transparency and accountability.

Geofencing and Compliance Monitoring

Spatial governance becomes significantly more powerful when management measures can be linked directly to monitoring and compliance activities.

Geofencing capabilities enable fisheries authorities to define geographic boundaries and automatically identify activities that occur within, outside, or across managed areas.

These capabilities can support:

- Closed-area monitoring
- Restricted zone enforcement
- Protected area management
- Spatial compliance verification
- Automated alerts and notifications
- Risk-based monitoring activities

By connecting spatial management with compliance oversight, fisheries authorities can improve enforcement effectiveness while reducing manual monitoring effort.

Spatial Intelligence and Decision Support

Geographic information provides important context for fisheries management decisions.

When fisheries activities, catches, effort, compliance events, and biological information are linked to spatial frameworks, fisheries authorities gain access to powerful analytical capabilities.

Spatial analysis can support:

- Fisheries performance evaluation
- Fishing effort distribution analysis
- Resource utilization monitoring
- Habitat protection initiatives
- Compliance risk assessment
- Management measure evaluation
- Scientific assessment activities

These insights help organizations better understand the relationship between fishing activities, resource conditions, and management outcomes.

Connecting Space, Governance and Sustainability

Spatial management is not simply a mapping function.

It is a governance capability that helps fisheries authorities translate management objectives into geographically defined management actions.

By connecting fisheries information, management measures, geofencing, compliance oversight, and spatial analytics within a common framework, fisheries authorities can strengthen accountability, improve resource stewardship, and support adaptive management approaches.

Supporting Sustainable Fisheries Management

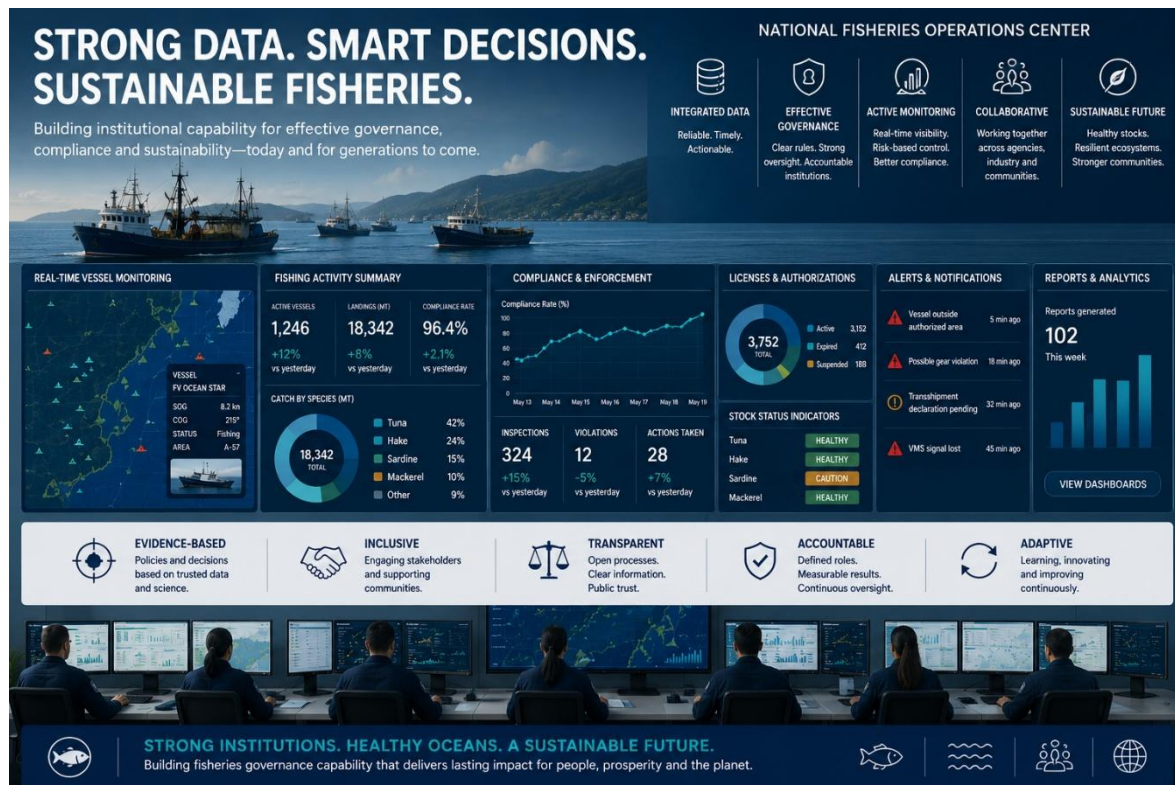
Many of the most important fisheries management decisions have a geographic dimension.

Whether protecting spawning areas, managing fishing effort, enforcing seasonal closures, allocating access rights, or monitoring compliance, spatial governance plays a critical role in achieving sustainability objectives.

Effective spatial management helps fisheries authorities ensure that management measures are implemented where they are needed, monitored effectively, and evaluated using trusted information.

Key Takeaway

Spatial management transforms geographic information into governance action. By combining management measures, geofencing, compliance monitoring, and spatial analytics, fisheries authorities can implement adaptive, transparent, and effective fisheries management strategies that support long-term sustainability.



13. Monitoring, Control and Surveillance (MCS)

Modern fisheries governance requires more than collecting information and producing reports. Fisheries authorities must also be able to understand what is happening across their fisheries in near real time, identify emerging risks, monitor compliance, and respond effectively to operational events as they occur.

The Role of Monitoring, Control and Surveillance (MCS)

Monitoring, Control and Surveillance (MCS) represents one of the most important governance functions within modern fisheries management. While scientific assessments and management measures help define sustainability objectives, MCS provides the operational mechanisms required to ensure that fisheries activities remain consistent with those objectives.

Effective fisheries governance depends not only on establishing regulations, quotas, licenses, permits, and management measures, but also on the ability to verify that these measures are being followed in practice.

MCS provides this capability.

Traditionally, MCS has been defined through three complementary components:

Monitoring involves the continuous collection and analysis of information related to fishing activities, resource utilization, fishing effort, vessel operations, catches, and compliance indicators.

Control refers to the regulatory framework through which fisheries authorities manage access rights, licenses, permits, quotas, fishing seasons, spatial management measures, and other management controls.

Surveillance includes the operational activities used to observe, detect, investigate, and respond to potential non-compliance, including inspections, patrols, vessel monitoring, electronic reporting, observer programs, and intelligence-led enforcement activities.

Together, these functions help fisheries authorities protect fisheries resources, strengthen accountability, improve compliance, and support sustainable fisheries management.

Moving Toward Intelligence-Led MCS

Historically, many fisheries authorities have relied heavily on manual monitoring processes, paper-based reporting, and resource-intensive inspection programs.

As fisheries become increasingly complex, these approaches may no longer provide sufficient visibility into fisheries activities.

Modern MCS programs increasingly depend on integrated information systems capable of combining information from multiple sources, including:

- Vessel Monitoring Systems (VMS)
- Automatic Identification Systems (AIS)
- Electronic logbooks
- Landing declarations
- Catch reporting programs
- Licensing and authorization systems
- Inspection and boarding reports
- Observer programs
- Spatial management measures
- Compliance and violation records

When these information sources are connected within a common governance framework, fisheries authorities gain the ability to identify emerging risks, prioritize enforcement resources, support intelligence-led inspections, and improve operational effectiveness.

This transition from reactive enforcement toward intelligence-driven governance represents a significant advancement in fisheries management capability and is an important characteristic of mature fisheries governance systems.

The Command Center

The Fisheries Command Center provides a centralized operational environment that transforms fisheries information into situational awareness, operational intelligence, and coordinated decision-making. By bringing together monitoring data, governance information, compliance activities, spatial management measures, and operational alerts within a single platform, fisheries authorities gain a comprehensive view of fisheries activities across their jurisdiction.



Figure 16 The Fisheries Command Center provides operational visibility across fisheries activities, monitoring, compliance, and decision support.

Creating a Common Operational Picture

Fisheries information is often distributed across multiple systems and operational programs. Vessel monitoring systems, electronic logbooks, landing declarations, inspections, licensing systems, quota management programs, and compliance activities may all generate valuable information independently.

While each information source provides important insight, effective operational management requires these information streams to be viewed together.

The Fisheries Command Center establishes a common operational picture by consolidating information from multiple governance and monitoring programs into a single environment. This enables fisheries managers, monitoring officers, compliance personnel, and decision-makers to understand fisheries activities as they evolve and maintain visibility across the fisheries governance ecosystem.

Monitoring Fisheries Activities

Effective management depends upon visibility.

The Command Center provides a real-time and historical view of fisheries activities, helping authorities monitor fishing operations, resource utilization, compliance status, and operational performance.

Capabilities may include:

- Vessel tracking and movement monitoring
- VMS and AIS integration
- Fishing activity visualization
- Landing site activity monitoring
- Inspection and surveillance oversight
- Compliance monitoring
- Alerts and incident management
- Operational performance indicators

By consolidating these information sources, fisheries authorities can improve awareness, strengthen coordination, and support more informed operational decision-making.

Geospatial Awareness and Fisheries Management

Location plays a central role in fisheries governance.

Fishing activities occur within management areas, closed zones, marine protected areas, seasonal restrictions, and other spatial frameworks that support fisheries management objectives.

The Command Center integrates fisheries information with geospatial intelligence, enabling authorities to visualize vessel activity in relation to:

- Fisheries management areas
- Spatial management measures
- Closed and restricted zones
- Geofenced boundaries
- Ports and landing sites
- Patrol areas
- Environmental information layers

This capability helps fisheries authorities understand not only what is happening, but also where it is happening.

Supporting Compliance and Enforcement

Management measures are effective only when compliance can be monitored and verified.

The Command Center supports Monitoring, Control and Surveillance (MCS) activities by providing visibility into potential compliance risks and operational exceptions requiring further attention.

Examples may include:

- Vessel activity within closed areas
- Unauthorized fishing operations
- Expired licenses or permits
- Potential quota exceedances
- Missing reports or declarations
- Inspection findings
- Vessel movement anomalies
- Other management-defined alerts

By identifying potential issues early, fisheries authorities can prioritize enforcement resources and strengthen compliance oversight.

From Monitoring to Operational Intelligence

The objective of the Command Center is not simply to display information.

Its purpose is to transform information into operational intelligence.

By combining fisheries governance information, monitoring data, compliance activities, spatial awareness, and operational alerts within a unified environment, fisheries authorities can identify risks, evaluate situations, coordinate responses, and support more effective fisheries management.

This enables organizations to move beyond passive reporting toward active operational management.

Strengthening Transparency and Accountability

The Fisheries Command Center provides a transparent operational environment where activities, alerts, decisions, and responses can be monitored and reviewed.

This visibility strengthens accountability while helping organizations demonstrate effective oversight of fisheries resources and management measures.

As governance requirements evolve, the Command Center becomes an increasingly important capability for supporting institutional coordination, operational control, and evidence-based decision-making.

Enabling Adaptive Fisheries Governance

Fisheries management is dynamic.

Environmental conditions, fishing behavior, resource status, compliance risks, and management priorities continuously evolve over time.

The Command Center provides fisheries authorities with the visibility and operational awareness required to adapt to changing circumstances while maintaining effective oversight of fisheries activities.

By connecting trusted information with monitoring, compliance, and operational decision-making, fisheries authorities can strengthen governance capabilities and respond more effectively to emerging fisheries management challenges.

Key Takeaway

The Fisheries Command Center transforms fisheries information into operational intelligence. By providing a unified view of fisheries activities, vessel operations, compliance status, spatial management measures, and emerging risks, it enables fisheries authorities to strengthen oversight, improve coordination, support enforcement activities, and make more informed operational decisions.

14. Audit and Traceability

Effective fisheries governance requires more than accurate information. It requires the ability to understand where information originated, how it was modified, who made decisions, and why those decisions were made. Auditability and traceability provide the transparency and accountability necessary to establish trust in both information and governance processes.

Building Trust Through Transparency

Fisheries management decisions often carry significant ecological, economic, social, and regulatory implications.

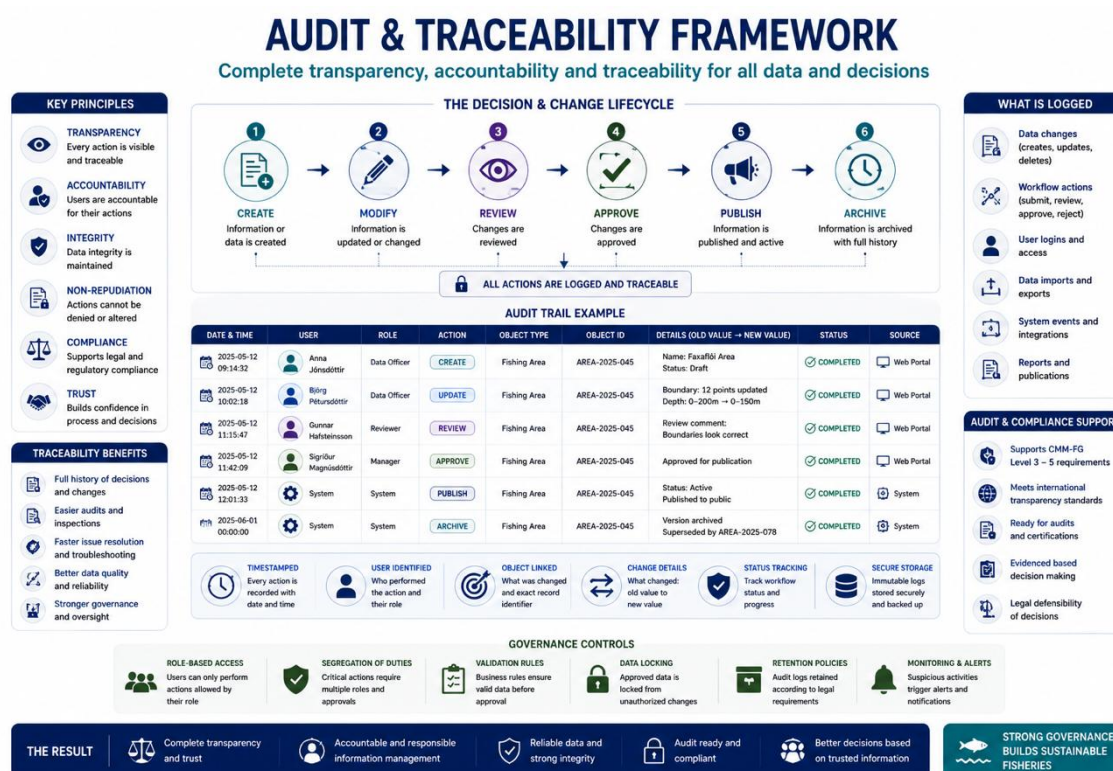


Figure 17 Audit trails and traceability ensure transparency, accountability, and confidence in fisheries information and governance processes.

Quota allocations, licensing decisions, fisheries management measures, compliance actions, scientific assessments, and reporting outputs may all be subject to scrutiny by stakeholders, governments, auditors, development partners, and the public.

For this reason, fisheries authorities must be able to demonstrate not only the outcomes of decisions, but also the processes through which those decisions were reached.

Auditability and traceability help provide this transparency.

By maintaining a clear record of information, activities, and decisions throughout the fisheries information lifecycle, organizations can strengthen accountability and build confidence in governance outcomes.

Tracking the Information Lifecycle

Information passes through many stages before it supports management decisions.

Records may be collected, reviewed, validated, corrected, approved, analyzed, reported, and ultimately used to support governance actions.

Throughout this process, it is important to maintain visibility into:

- Who created information
- When information was created
- What changes were made
- Who performed those changes
- Why changes were made
- How information progressed through workflows

This historical record helps fisheries authorities understand the complete lifecycle of information while preserving organizational accountability.

Supporting Governance and Decision-Making

Auditability extends beyond data changes.

Governance processes themselves should also be traceable.

Organizations may need to understand:

- Who approved a survey submission
- Who authorized a license
- Who modified a quota allocation
- Who approved a management measure
- Who resolved a compliance issue
- Who generated a regulatory decision

Maintaining visibility into these actions helps ensure that governance decisions remain transparent, defensible, and accountable.

Strengthening Compliance and Oversight

Many fisheries authorities operate within regulatory environments that require evidence of compliance with policies, procedures, and reporting obligations.

Audit capabilities help support:

- Internal reviews
- Management oversight
- Regulatory inspections
- External audits
- Donor reporting requirements
- Information governance initiatives

By maintaining a complete and accessible history of actions and decisions, organizations can reduce risk while improving operational transparency.

Preserving Historical Context

Fisheries governance is a long-term activity.

Management decisions made today may need to be reviewed years later.

Spatial management measures may evolve. Quota allocations may change. Reference data may be updated. Policies and procedures may be revised.

Without traceability, organizations may struggle to understand how historical information relates to current information.

Historical context allows fisheries authorities to preserve institutional knowledge while supporting continuity across changing management environments.

Accountability Across the Governance Ecosystem

Modern fisheries governance involves many participants.

Data collectors, supervisors, statisticians, fisheries managers, licensing officers, compliance personnel, scientists, and administrators may all contribute to the fisheries information lifecycle.

Auditability helps ensure that responsibilities remain visible and accountable throughout the organization.

This transparency strengthens governance maturity while supporting collaboration across operational, regulatory, scientific, and management functions.

Supporting Digital Transformation

As fisheries authorities modernize their information systems, auditability becomes increasingly important.

Digital governance requires organizations to trust not only information, but also the processes through which information moves across systems, workflows, integrations, and decision-making environments.

Comprehensive audit capabilities help ensure that digital transformation strengthens governance rather than reducing visibility into how decisions are made.

A Foundation for Institutional Trust

Auditability and traceability provide the mechanisms through which fisheries authorities demonstrate accountability, transparency, and responsible stewardship of information.

By preserving the history of information, actions, approvals, and decisions, organizations can strengthen confidence in governance processes while supporting compliance, oversight, and long-term institutional effectiveness.

Key Takeaway

Auditability and traceability transform governance processes from opaque activities into transparent and accountable processes. By preserving the history of information, decisions, and actions, fisheries authorities can strengthen trust, support compliance, and improve long-term governance effectiveness.

Fisheries
Manager

Dashboard

Surveys

Landings

Catch Documentation

Monitoring

Reference Data

Reports

Audit Trail

Users

Settings

S. Johnson

Data Manager

Audit Trail

Complete history of all data changes, validations, and system actions

01 May 2025 - 16 May 2025

All Modules

All Actions

Filters

Export

12,842

Total Events

All system actions

4,256

Users & Actors

Who made changes

6,499

Update Events

Records modified

1,385

Delete Events

Records deleted

1,660

Login Events

User logins

Date & Time	User	Role	Action	Module	Record Type	Record ID	Details	IP Address
16 May 2025 09:41:32	D. Merch	Data Manager	Updated	Landing Survey	Catch Record	LS-2025-01087	Catch weight updated from 120 kg to 145.5 kg	192.168.40.18
16 May 2025 09:30:15	K. Applah	Supervisor	Reviewed	Landing Survey	Catch Record	LS-2025-01087	Record reviewed and sent for approval	192.168.40.18
16 May 2025 09:28:47	K. Applah	Supervisor	Approved	Landing Survey	Catch Record	LS-2025-01087	Record approved	192.168.40.18
16 May 2025 09:15:03	S. Mensah	Data Collector	Created	Landing Survey	Catch Record	LS-2025-01087	New catch record created	192.168.40.18
16 May 2025 09:12:11	D. Merch	Data Manager	Commented	Landing Survey	Catch Record	LS-2025-01086	Requested correction for species identification	192.168.40.18
16 May 2025 08:45:33	D. Merch	Data Manager	Updated	Landing Survey	Vessel Information	VSL-015	Vessel length updated from 9.2 m to 9.5 m	192.168.40.18
16 May 2025 08:32:22	S. Grant	System	Validated	Landing Survey	Catch Record	LS-2025-01086	Record passed all validations	System
16 May 2025 07:21:05	K. Applah	Supervisor	Rejected	Landing Survey	Catch Record	LS-2025-01086	Record rejected: Weight exceeds allowed range	192.168.40.18
16 May 2025 07:04:18	S. Mensah	Data Collector	Created	Landing Survey	Catch Record	LS-2025-01086	New catch record created	192.168.40.18
16 May 2025 07:04:48	A. Boosteng	Data Collector	Created	Landing Survey	Landing Information	LAND-0104	New landing information created	192.168.40.18

Load More

Audit Trail Highlights

Complete Transparency

Every action is logged with user, time, and details

Accountability

Clear tracking of who did what and when

Traceability

Full history of changes from creation to reporting

Data Integrity

Tamper-proof audit log protects data integrity

Compliance Ready

Meet reporting and audit requirements with confidence

Immutable Audit Log

All audit events are permanently recorded and cannot be altered or deleted. This ensures a complete and trustworthy history of all system activities and data changes.

The Fisheries Manager (TFM) | Fisheries Technologies

REVIEW DRAFT

67

15.Reporting and Analytics

Information creates value only when it supports understanding and decision-making. Reporting and analytics transform trusted fisheries information into actionable intelligence that helps fisheries authorities monitor performance, evaluate management outcomes, identify emerging risks, and support evidence-based governance.

From Information to Intelligence

The fisheries information lifecycle generates large volumes of operational, governance, compliance, and management information.

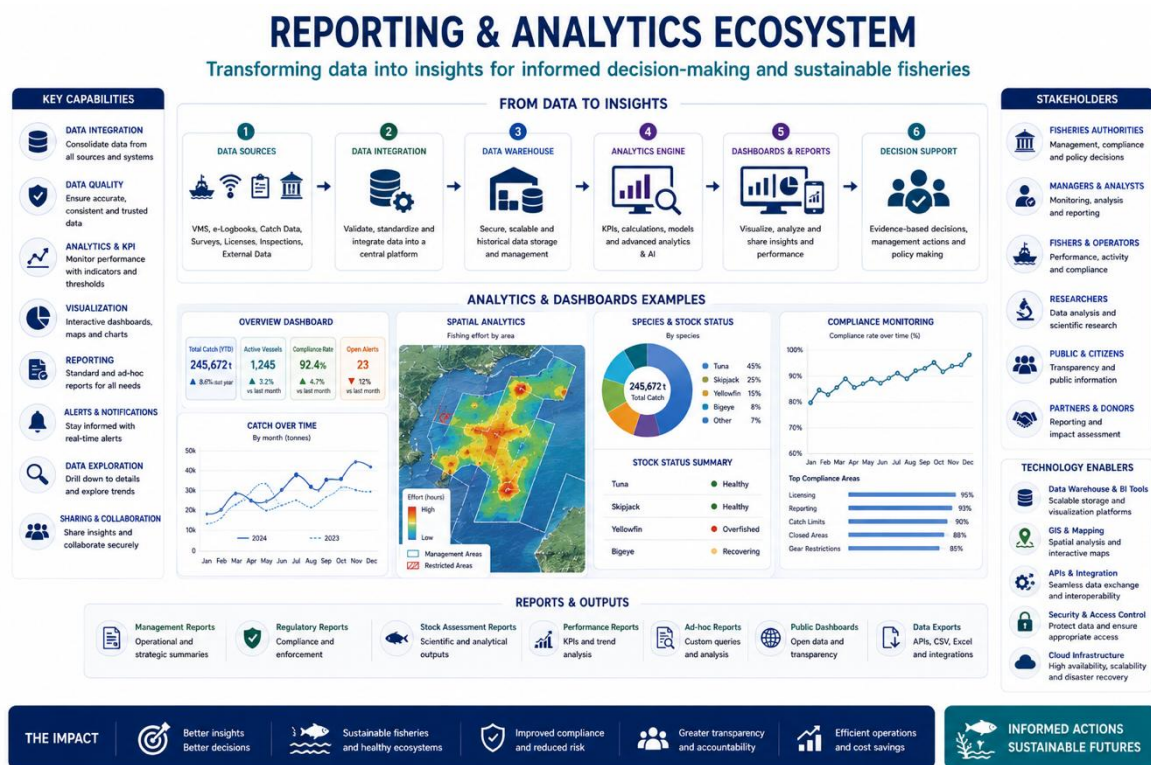


Figure 18 Reporting and analytics transform fisheries information into actionable intelligence for evidence-based decision-making.

However, collecting and storing information is not an objective in itself.

The true value of fisheries information is realized when it is transformed into knowledge that supports planning, management, oversight, and decision-making.

Reporting and analytics provide the mechanisms through which fisheries authorities convert information into meaningful insights.

These capabilities help organizations understand what is happening within a fishery, why it is happening, and what actions may be required.

Supporting Evidence-Based Decision-Making

Modern fisheries governance increasingly depends upon evidence rather than assumptions.

Management decisions related to quota allocation, spatial management measures, licensing, compliance activities, and resource utilization should be informed by reliable information and objective analysis.

Reporting and analytics help fisheries authorities:

- Monitor fisheries performance
- Evaluate management measures
- Identify emerging trends
- Assess resource utilization
- Measure operational effectiveness
- Support policy development
- Inform strategic planning

By providing access to trusted information and analytical insights, organizations can make more informed and transparent decisions.

Operational and Management Reporting

Different stakeholders require different types of information.

Operational users may require visibility into ongoing data collection activities, survey performance, workflow status, and compliance activities.

Managers and decision-makers may require higher-level summaries focused on fisheries performance, quota utilization, management measures, and organizational objectives.

Reporting capabilities therefore typically support multiple perspectives, including:

- Operational reporting
- Management reporting
- Statistical reporting
- Regulatory reporting
- Scientific reporting
- Executive reporting

This flexibility helps ensure that information remains accessible and relevant to different user groups.

Dashboards and Performance Monitoring

Interactive dashboards provide a powerful mechanism for monitoring fisheries activities and governance performance.

Dashboards may include:

- Key Performance Indicators (KPIs)
- Fisheries statistics
- Quota utilization
- Survey coverage metrics
- Compliance indicators
- Licensing statistics
- Management measure performance
- Operational workloads

These capabilities enable fisheries authorities to move beyond static reporting and gain continuous visibility into organizational performance.

Spatial Analytics and Geographic Intelligence

Many fisheries management decisions have a geographic dimension.

Combining fisheries information with spatial frameworks enables authorities to analyze activities across regions, fishing grounds, management areas, and protected zones.

Spatial analytics can support:

- Fishing effort analysis
- Catch distribution analysis
- Resource utilization monitoring
- Spatial compliance assessment
- Management measure evaluation
- Habitat protection initiatives
- Risk identification

These capabilities provide important context that may not be visible through traditional tabular reporting alone.

Measuring Outcomes and Performance

One of the most important functions of analytics is the ability to evaluate whether management actions are achieving their intended objectives.

Fisheries authorities must be able to assess:

- Fisheries performance
- Compliance outcomes
- Resource utilization trends
- Management effectiveness
- Operational efficiency
- Governance maturity

By measuring outcomes over time, organizations can identify areas for improvement and support adaptive management approaches.

Enabling Continuous Improvement

Reporting and analytics do more than describe current conditions.

They support learning.

As fisheries authorities gain greater visibility into operations, governance activities, and management outcomes, they become better equipped to identify opportunities for improvement.

This feedback loop helps organizations refine policies, improve processes, strengthen governance controls, and enhance fisheries management effectiveness over time.

A Strategic Asset for Fisheries Governance

Reporting and analytics represent the point at which trusted information becomes management intelligence.

By combining operational reporting, performance monitoring, dashboards, spatial analytics, and decision-support capabilities, fisheries authorities can transform information into actionable insight that supports transparency, accountability, and evidence-based governance.

These capabilities help organizations move beyond information management toward continuous learning and informed decision-making.

Key Takeaway

Reporting and analytics transform trusted information into actionable intelligence. By providing visibility into fisheries performance, governance outcomes, compliance activities, and management effectiveness, these capabilities enable fisheries authorities to make informed decisions and support sustainable fisheries management.

Collecting fisheries information is only valuable if it can be transformed into insight that supports management decisions, strengthens governance, improves compliance oversight, and contributes to long-term sustainable fisheries outcomes.



Figure 19 Artisanal fishermen in the Caribbean

16. Integration and Interoperability

Fisheries governance relies on information originating from many different sources. To create a complete and trusted view of fisheries activities, organizations must be able to connect systems, exchange information efficiently, and ensure that data can move seamlessly across operational, regulatory, scientific, and management environments. Integration and interoperability provide the foundation for this connected governance ecosystem.

Connecting the Fisheries Information Ecosystem

Modern fisheries authorities rarely operate a single information system.

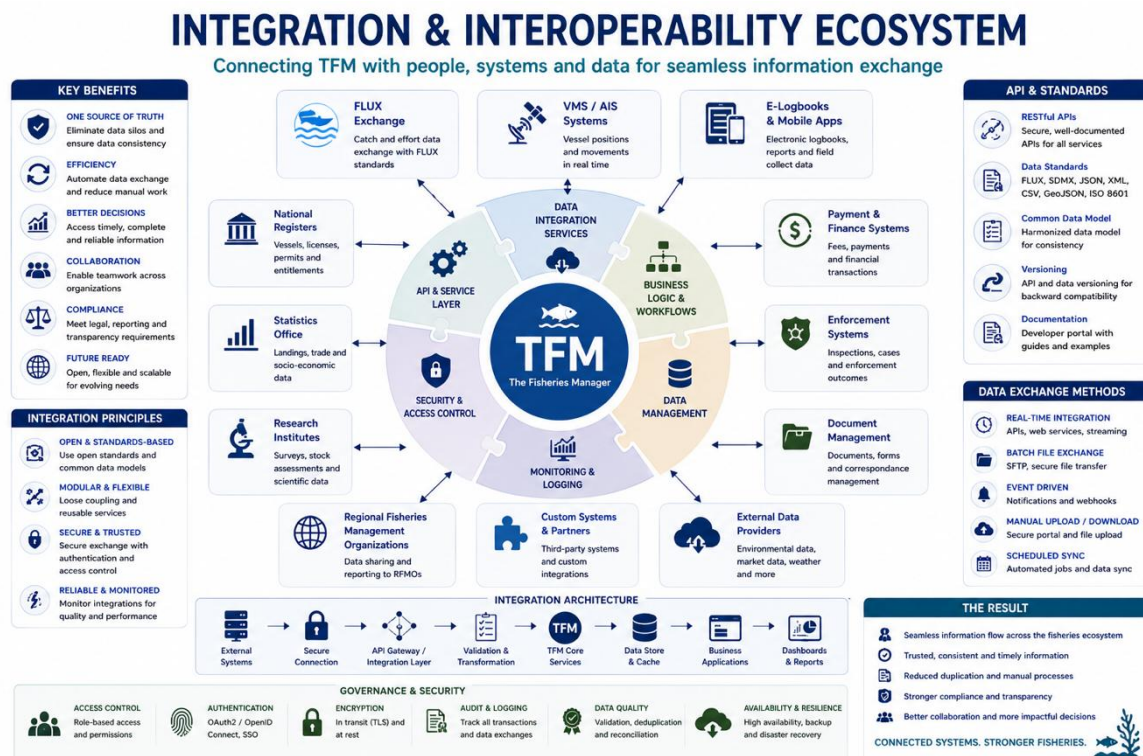


Figure 20 Integration and interoperability connect fisheries information across systems, organizations, and governance domains.

Instead, information is often distributed across multiple operational, administrative, scientific, regulatory, and external systems.

Examples may include:

- Licensing systems

- Vessel registries
- Electronic logbooks
- Vessel Monitoring Systems (VMS)
- AIS platforms
- Compliance systems
- Financial systems
- National registries
- Statistical databases
- Regional fisheries information systems

Each system may support a specific business function, but effective governance requires these systems to work together as part of a broader information ecosystem.

Integration enables organizations to connect information across these environments and reduce fragmentation.

Eliminating Information Silos

One of the most common challenges facing fisheries organizations is the existence of isolated information silos.

When information is duplicated across multiple systems, organizations often encounter:

- Inconsistent information
- Duplicate data entry
- Increased administrative effort
- Reduced visibility
- Reporting discrepancies
- Governance inefficiencies

Interoperability helps address these challenges by enabling systems to exchange information while maintaining consistency across the organization.

This approach improves information quality and strengthens confidence in governance decisions.

Supporting a Single Source of Truth

Effective governance depends on access to trusted information.

Rather than maintaining multiple versions of the same information across disconnected systems, fisheries authorities benefit from establishing a common information foundation that can be shared across organizational functions.

A "single source of truth" approach helps ensure that operational users, managers, scientists, compliance officers, and decision-makers are working with consistent information.

This reduces ambiguity while improving accountability and decision-making.

Supporting National and International Information Exchange

Many fisheries authorities operate within broader governance environments that require information exchange with external organizations.

Examples may include:

- Government ministries
- National statistical offices
- Customs authorities
- Maritime agencies
- Regional fisheries management organizations
- Development partners
- International reporting programs

Interoperability capabilities help fisheries authorities meet reporting obligations while reducing the effort required to share information across institutional boundaries.

Standards-Based Integration

Successful interoperability depends upon common standards and well-defined information structures.

Standards-based integration approaches help ensure that information exchanged between systems remains consistent, understandable, and reusable.

These approaches may include:

- Application Programming Interfaces (APIs)
- Web services
- Structured data exchange formats
- Message-based integrations
- Master data synchronization
- Event-driven information exchange

By adopting standardized integration mechanisms, fisheries authorities can improve flexibility while reducing dependency on proprietary solutions.

Supporting Digital Transformation

Digital transformation initiatives often introduce new technologies, reporting requirements, and governance capabilities over time.

Integration frameworks help ensure that new systems can be introduced without disrupting existing operations.

This flexibility allows organizations to modernize incrementally while preserving information continuity and protecting previous investments.

As governance requirements evolve, interoperability becomes a critical enabler of long-term sustainability and organizational agility.

Enabling Collaboration Across Functions

Fisheries governance involves collaboration between many different stakeholders.

Operations teams collect information.

Scientists analyze information.

Compliance officers monitor activities.

Managers make decisions.

External organizations require reporting and information exchange.

Integration capabilities help ensure that information can flow efficiently between these participants while maintaining appropriate governance controls, security, and accountability.

This creates a more connected and collaborative governance environment.

A Foundation for Connected Governance

Integration and interoperability transform individual information systems into a coordinated governance ecosystem.

By connecting people, processes, information, and technologies, fisheries authorities can improve visibility, reduce duplication, strengthen accountability, and support more effective decision-making.

These capabilities help establish a unified information environment capable of supporting modern fisheries governance and long-term digital transformation.

Key Takeaway

Integration and interoperability enable fisheries authorities to move beyond disconnected systems and information silos. By establishing a connected governance ecosystem and a trusted single source of truth, organizations can improve information quality, strengthen accountability, and support more effective fisheries management.

17. Artificial Intelligence and Digital Innovation

The future of fisheries governance will be shaped not only by better information systems, but also by the ability to transform information into actionable intelligence. Artificial Intelligence (AI) and emerging digital technologies offer new opportunities to improve efficiency, strengthen governance, enhance decision-making, and expand the value of fisheries information throughout the governance lifecycle.

The Next Stage of Fisheries Digital Transformation

Over the past decades, fisheries authorities have invested heavily in digitizing information collection processes and replacing paper-based workflows with electronic systems.

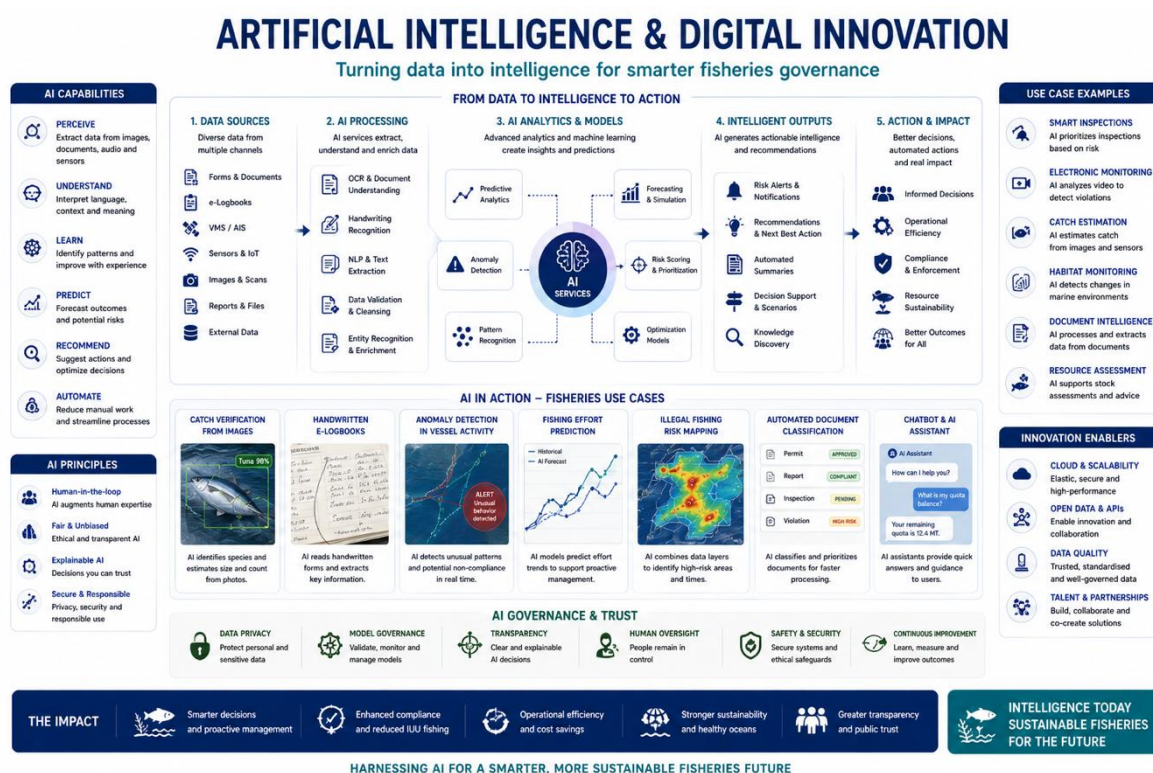


Figure 21 Artificial intelligence enhances data capture, validation, analysis, and decision support throughout the fisheries information lifecycle.

While these efforts have significantly improved information availability, many organizations continue to face challenges related to data processing, validation, reporting, compliance monitoring, and decision-making.

Artificial Intelligence represents the next stage of digital transformation by helping organizations move beyond information management toward intelligent information processing and decision support.

Rather than replacing governance processes, AI enhances the ability of fisheries authorities to manage increasing volumes of information more efficiently and effectively.

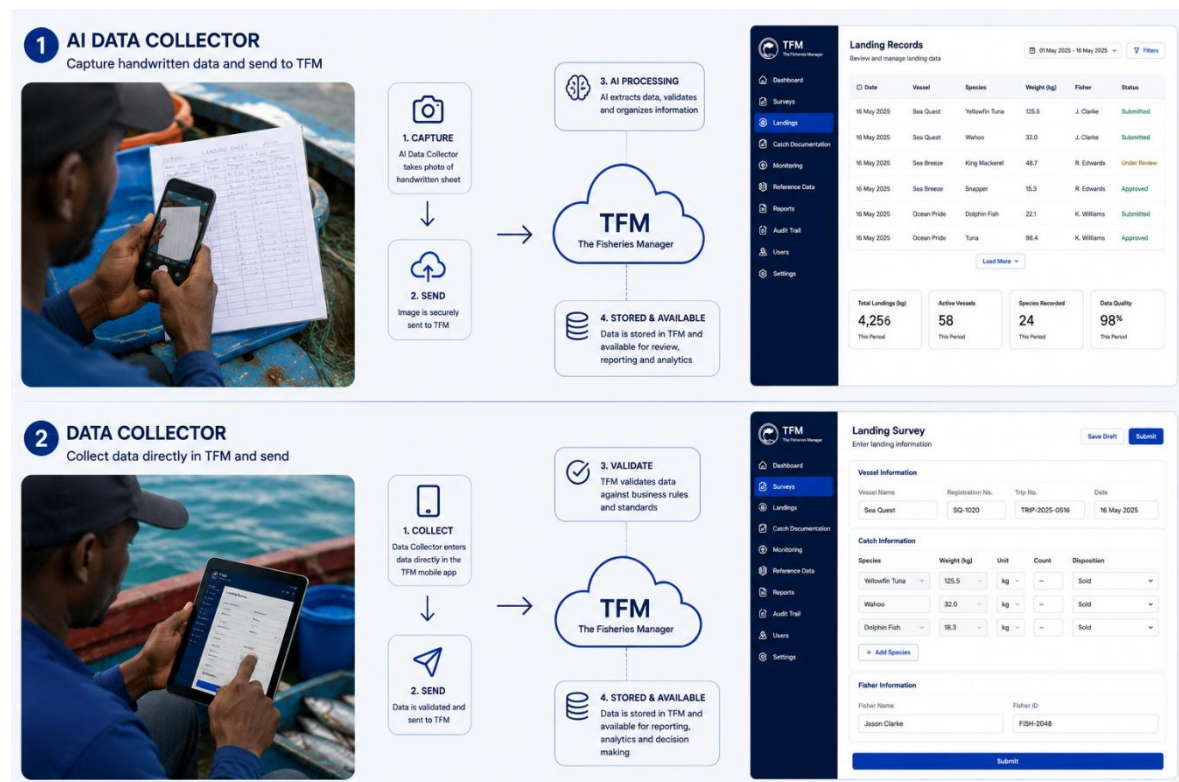
Accelerating Information Capture

Many fisheries programs continue to rely on paper forms, handwritten records, spreadsheets, and other manual information sources.

AI-powered document processing technologies can help accelerate the digitization of these information sources through:

- Optical Character Recognition (OCR)
- Intelligent document processing
- Automated data extraction
- Form interpretation
- Information classification
- Data transformation workflows

These capabilities can significantly reduce manual data entry effort while improving information availability and operational efficiency.



In many cases, information that previously required days or weeks to process can become available within hours.

Improving Data Quality and Validation

Artificial Intelligence can also strengthen information quality by assisting with validation and anomaly detection activities.

AI-supported quality controls can help identify:

- Unusual catch patterns
- Missing information
- Inconsistent records
- Duplicate submissions
- Statistical anomalies
- Outlier observations
- Unexpected operational activities

These capabilities help organizations focus attention on records that may require additional review while improving overall quality assurance processes.

Importantly, AI should complement—not replace—human oversight and governance controls.

Supporting Monitoring and Compliance

As fisheries authorities manage larger and more complex fisheries, monitoring activities become increasingly challenging.

Artificial Intelligence can support Monitoring, Control and Surveillance (MCS) activities by helping identify patterns, risks, and anomalies that may not be immediately visible through traditional monitoring approaches.

Examples include:

- Risk-based compliance monitoring
- Vessel activity analysis
- Behavioral pattern detection
- Geofencing alerts
- Compliance risk scoring
- Automated exception identification

These capabilities help organizations allocate resources more effectively while strengthening oversight and enforcement activities.

Enhancing Analytics and Decision Support

AI technologies can help fisheries authorities derive greater value from existing information assets.

Advanced analytical capabilities may support:

- Trend identification
- Predictive analytics
- Resource utilization forecasting
- Scenario analysis
- Decision support recommendations
- Performance evaluation
- Emerging risk detection

These insights can help managers and policymakers make more informed decisions while improving responsiveness to changing fisheries conditions.

Human-Centered Governance

While AI offers significant opportunities, effective fisheries governance must remain grounded in transparency, accountability, and human oversight.

Governance decisions often involve ecological, economic, social, legal, and policy considerations that extend beyond purely technical analysis.

For this reason, AI should be viewed as a decision-support capability rather than an autonomous decision-maker.

Human expertise, institutional knowledge, scientific judgment, and governance processes remain essential components of responsible fisheries management.

The role of AI is to enhance these capabilities by providing better information, greater visibility, and faster access to relevant insights.

Building an Innovation-Ready Governance Platform

The pace of technological innovation continues to accelerate.

Fisheries authorities require information platforms that can adapt to new technologies, emerging analytical methods, evolving reporting requirements, and future governance needs.

By providing a flexible and extensible governance platform, TFM enables organizations to adopt new technologies incrementally while preserving information continuity, governance controls, and institutional accountability.

This approach allows fisheries authorities to benefit from innovation without compromising governance integrity.

Preparing for the Future of Fisheries Governance

Artificial Intelligence and digital innovation are creating new opportunities to improve fisheries governance, strengthen compliance oversight, enhance scientific understanding, and support evidence-based decision-making.

Organizations that successfully combine trusted information, effective governance processes, and emerging technologies will be better positioned to respond to future challenges while advancing sustainability objectives.

These capabilities represent an important step toward a more intelligent, adaptive, and resilient fisheries governance ecosystem.

Key Takeaway

Artificial Intelligence does not replace fisheries governance—it strengthens it. By enhancing information capture, validation, monitoring, analytics, and decision support, AI enables fisheries authorities to transform trusted information into deeper insight, faster action, and more effective governance outcomes.

PART IV

GOVERNANCE TRANSFORMATION

From Capability Development to
Sustainable Fisheries Outcomes



CAPABILITY DEVELOPMENT

Build skills, processes
and institutional capacity.



STRONG GOVERNANCE

Implement policies,
ensure compliance and
strengthen institutions.



TFM PLATFORM

Integrated information
for insight, control and
better decisions.



SUSTAINABLE FISHERIES

Healthy stocks, resilient
ecosystems and thriving
communities.



BETTER FUTURE

Long-term value,
food security and
intergenerational equity.

Stronger governance.
Smarter decisions.
Sustainable fisheries.

A better future for all.



RESILIENT INSTITUTIONS

Build transparent,
accountable and
adaptive organizations.



EVIDENCE-BASED DECISIONS

Use trusted data and
analytics to guide
every decision.



COLLABORATION

Connect stakeholders and
strengthen partnerships
for greater impact.



LONG-TERM IMPACT

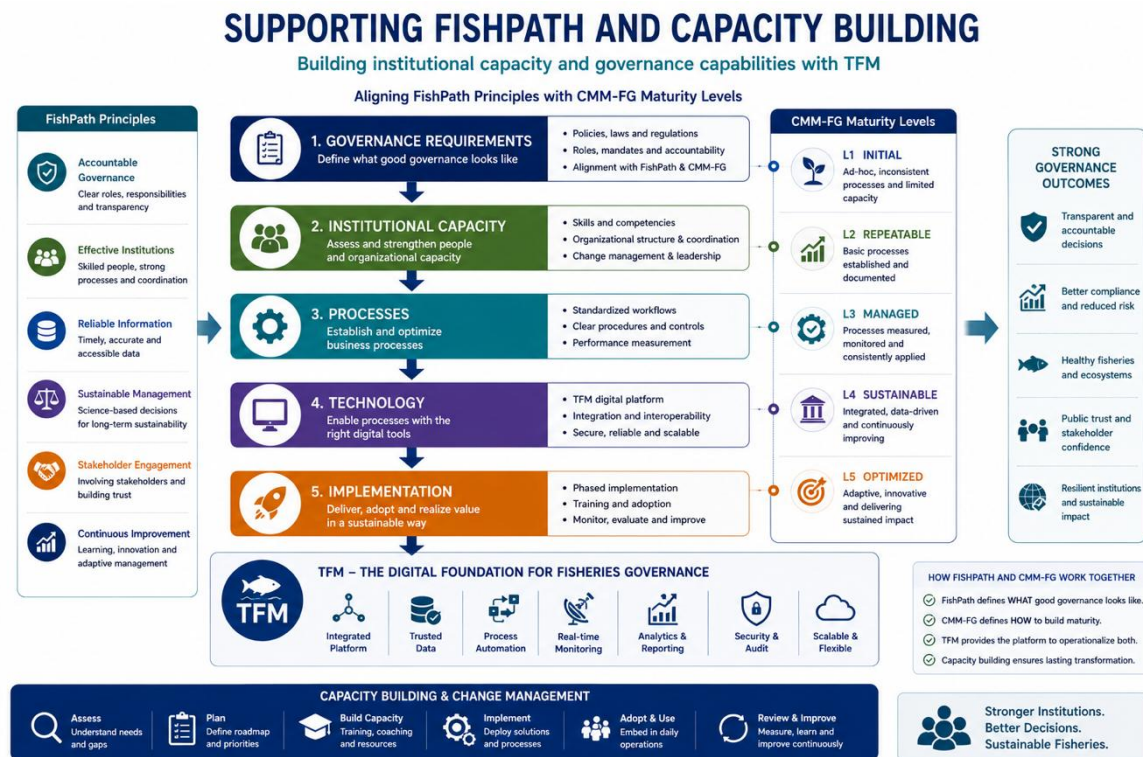
Protect resources today
for future generations
and lasting prosperity.

18. Supporting FishPath and Capacity Building

Technology alone does not improve fisheries governance. Sustainable outcomes require institutions, people, processes, and information systems working together toward common management objectives. Effective fisheries governance therefore depends not only on digital tools, but also on governance maturity, organizational capacity, and the ability to implement and sustain change over time.

Beyond Technology

Many fisheries modernization initiatives focus primarily on implementing new systems and technologies.



While technology plays an important role, successful fisheries governance depends upon a broader set of institutional capabilities.

Authorities must establish:

- Clear management objectives
- Governance processes
- Defined roles and responsibilities

- Sustainable operating models
- Skilled personnel
- Reliable information systems
- Continuous improvement mechanisms

Without these foundations, even well-designed information systems may struggle to deliver long-term value.

Digital transformation should therefore be viewed as an organizational journey rather than a technology project.

Aligning Technology with Governance Objectives

Effective fisheries governance begins with understanding management priorities.

Different fisheries face different challenges, including:

- Limited information availability
- Weak compliance capabilities
- Resource allocation challenges
- Inadequate monitoring capacity
- Institutional fragmentation
- Limited analytical capabilities

As a result, governance solutions should be aligned with the specific needs and priorities of each fisheries authority.

Information systems are most effective when they support clearly defined governance objectives and operational requirements.

Supporting the FishPath Approach

FishPath provides a structured framework that helps fisheries managers identify appropriate management approaches based on available information, institutional capacity, management objectives, and operational realities.

The framework recognizes that there is no single fisheries management model that applies universally across all fisheries.

Instead, governance solutions should be adapted to local conditions and implemented progressively over time.

This principle aligns closely with the philosophy underpinning TFM.

Rather than requiring organizations to implement all governance capabilities simultaneously, TFM supports incremental development and phased adoption of governance functions as organizational capacity grows.

This approach enables fisheries authorities to prioritize immediate needs while establishing a foundation for future capability expansion.

Building Institutional Capacity

Successful fisheries governance depends on people as much as technology.



Figure 22 Capacity building and governance maturity development strengthen the long-term sustainability of fisheries management programs.

Organizations require personnel capable of:

- Collecting information
- Managing data quality
- Administering governance processes
- Monitoring compliance
- Producing analysis
- Supporting decision-making
- Managing organizational change

Capacity-building activities help ensure that governance improvements remain sustainable long after systems have been implemented.

Training, knowledge transfer, operational support, documentation, and mentoring all play important roles in strengthening institutional effectiveness.

Supporting Governance Maturity

Fisheries authorities operate at different stages of governance maturity.

Some organizations may focus primarily on data collection and fisheries statistics, while others may already manage advanced governance functions such as quota management, spatial management, electronic reporting, and compliance monitoring.

For this reason, governance development should be viewed as a continuous progression.

The Capability Maturity Model for Fisheries Governance (CMM-FG™) provides a framework for understanding this journey by describing how organizations evolve from basic information collection activities toward integrated, adaptive, and continuously improving governance systems.

TFM supports this progression by providing a platform capable of evolving alongside organizational needs and governance priorities.

Creating Sustainable Governance Programs

Many fisheries initiatives are launched through externally funded projects or short-term modernization programs.

While these initiatives can deliver important improvements, long-term success depends on the ability of organizations to sustain governance capabilities after project implementation has concluded.

Sustainability requires:

- Institutional ownership
- Operational capacity
- Governance processes
- Reliable funding models
- Ongoing support
- Continuous improvement

Governance capabilities must therefore be designed with long-term operation and maintenance in mind rather than focusing solely on initial implementation activities.

Enabling Continuous Improvement

Fisheries governance is not a static destination.

Environmental conditions change. Fisheries evolve. Management priorities shift. New technologies emerge.

Organizations must therefore be able to learn, adapt, and improve over time.

By combining trusted information, governance processes, capacity development, and continuous performance evaluation, fisheries authorities can establish a culture of ongoing improvement that supports long-term sustainability objectives.

A Partnership for Sustainable Fisheries Governance

Technology, governance, and institutional capacity are most effective when they evolve together.

By supporting governance maturity, organizational development, capacity building, and adaptive management approaches, TFM helps fisheries authorities strengthen their ability to manage fisheries resources effectively and sustainably.

This approach aligns with international best practices and supports the long-term development of resilient fisheries governance institutions.

Key Takeaway

Sustainable fisheries governance requires more than technology. Long-term success depends on the ability of organizations to combine trusted information, effective governance processes, institutional capacity, and continuous improvement within a framework that evolves alongside management needs and governance maturity.

19. Accelerating Fisheries Digital Transformation

Digital transformation is not simply about introducing new technologies. It is about strengthening the institutional capabilities required to transform fisheries information into effective governance, informed decision-making, and sustainable fisheries outcomes.

Beyond Digitization

Many fisheries organizations begin their modernization efforts by replacing paper-based processes with electronic systems.

These initiatives often improve information availability, reduce administrative effort, and increase operational efficiency. However, digitization alone does not necessarily improve fisheries governance.

The true value of digital transformation lies in an organization's ability to use information more effectively to support management decisions, compliance oversight, scientific assessment, and institutional accountability.

For this reason, digital transformation should be viewed as a governance initiative rather than a technology initiative.

Building Governance Capabilities

Fisheries authorities operate within increasingly complex management environments.

Organizations must manage information, monitor resource utilization, implement management measures, support compliance activities, meet reporting obligations, and respond to changing environmental and economic conditions.

Meeting these challenges requires more than information collection systems.

It requires governance capabilities that enable organizations to transform information into management action.

Digital transformation provides an opportunity to strengthen these capabilities through improved workflows, greater visibility, enhanced accountability, and better decision support.

ACCELERATING FISHERIES DIGITAL TRANSFORMATION

FROM FRAGMENTED PROCESSES TO TRUSTED INFORMATION AND SUSTAINABLE OUTCOMES

A proven path to modern fisheries governance with TFM

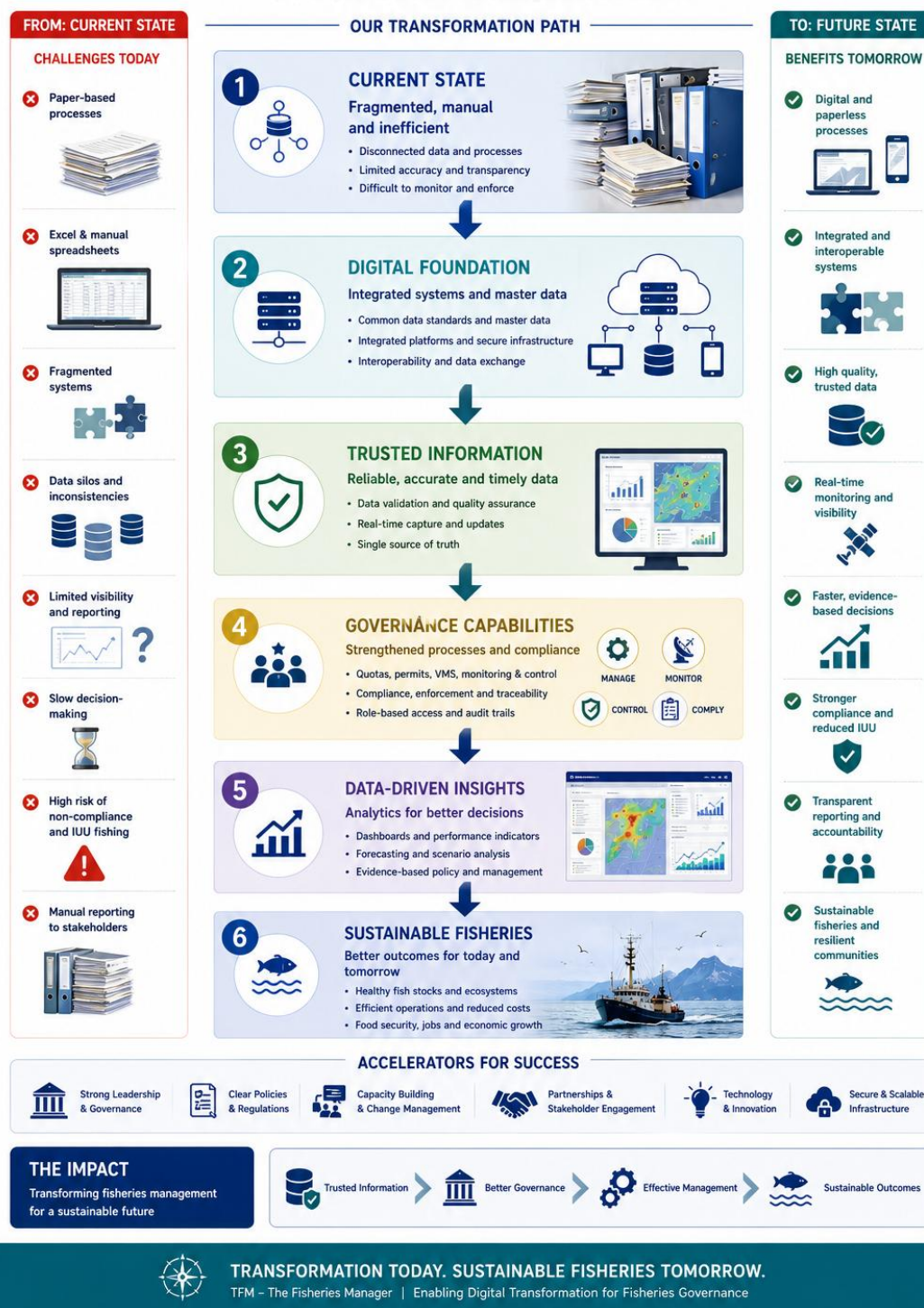


Figure 23 A structured implementation approach accelerates fisheries digital transformation while reducing operational risk.

Moving from Fragmentation to Integration

Historically, fisheries information has often been distributed across multiple systems, departments, and organizational processes.

Data collection programs, licensing systems, compliance activities, reporting functions, and analytical processes may operate independently, creating information silos and reducing organizational visibility.

Digital transformation helps address these challenges by connecting information, processes, and users within a common governance framework.

This integration enables fisheries authorities to establish a trusted information foundation while improving collaboration across operational, governance, monitoring, and analytical functions.

Supporting Progressive Governance Development

Not all fisheries authorities begin their digital transformation journey from the same starting point.

Some organizations may focus initially on fisheries statistics and data collection programs. Others may prioritize licensing, quota management, compliance monitoring, or reporting capabilities.

As governance requirements evolve, additional capabilities can be introduced progressively.

This phased approach helps organizations align investments with management priorities while reducing implementation risk and supporting sustainable long-term development.

Enabling Adaptive Fisheries Management

Fisheries management is a dynamic process.

Resource conditions change, management priorities evolve, regulatory requirements expand, and new information becomes available.

Digital transformation helps organizations respond to these changes more effectively by improving access to information, increasing organizational visibility, and supporting faster and more informed decision-making.

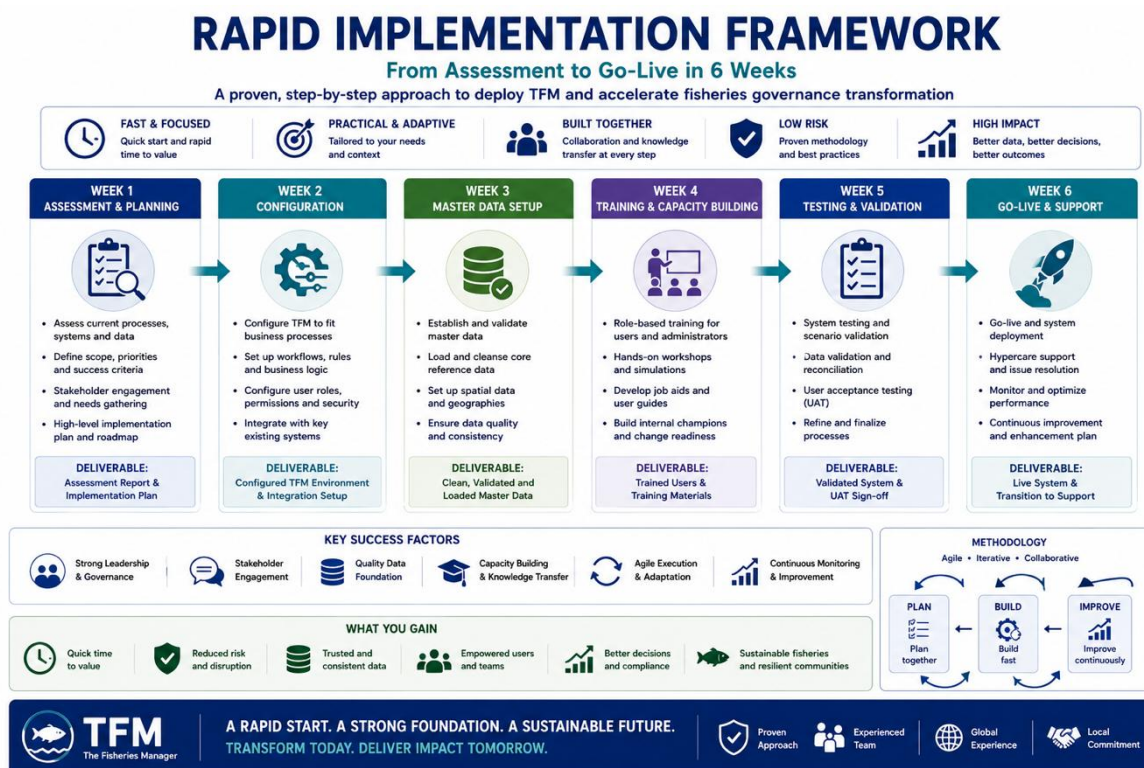
These capabilities contribute to a more adaptive and responsive governance environment.

Creating a Foundation for Innovation

Emerging technologies such as advanced analytics, automation, artificial intelligence, electronic monitoring, and digital reporting systems are creating new opportunities for fisheries governance.

However, these innovations can only deliver value when built upon a foundation of trusted information, governance processes, and institutional capacity.

Digital transformation therefore creates the conditions necessary for organizations to adopt future technologies while maintaining transparency, accountability, and governance integrity.



Supporting Sustainable Fisheries Outcomes

The ultimate objective of digital transformation is not technology adoption.

Its purpose is to strengthen fisheries governance.

By improving information management, enhancing organizational capabilities, supporting evidence-based decision-making, and enabling continuous improvement, digital transformation helps fisheries authorities better achieve their sustainability objectives.

Organizations that successfully combine trusted information, governance processes, institutional capacity, and digital technologies are better positioned to manage fisheries resources effectively and sustainably.

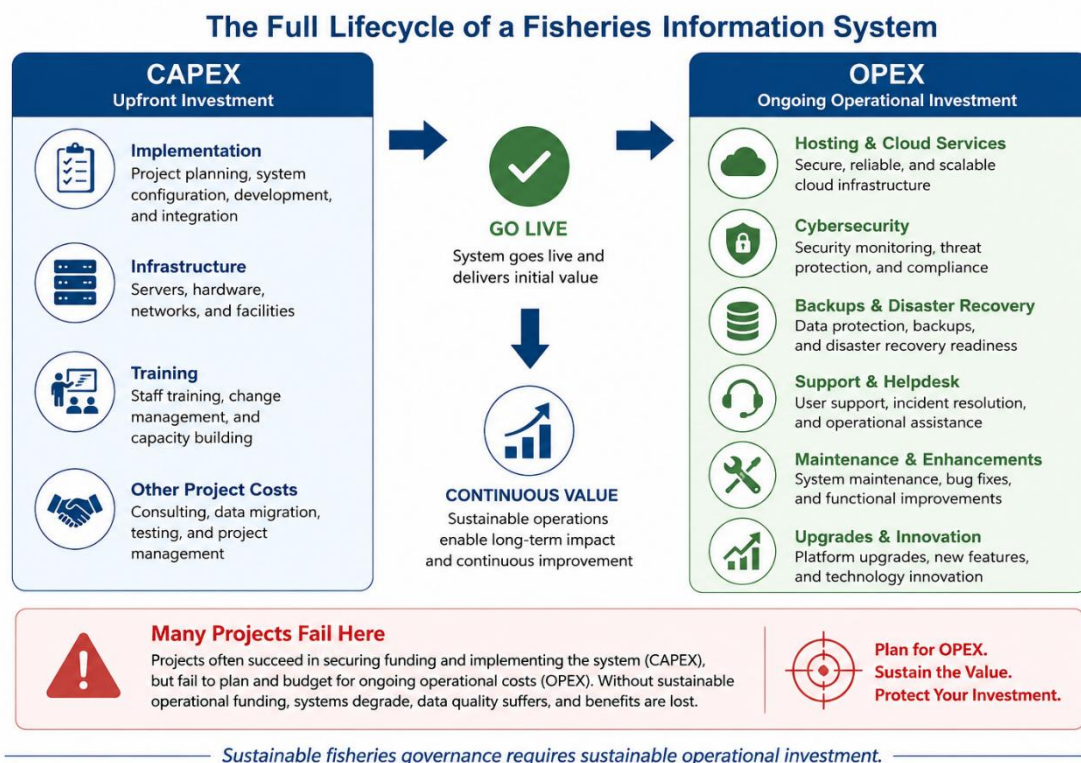


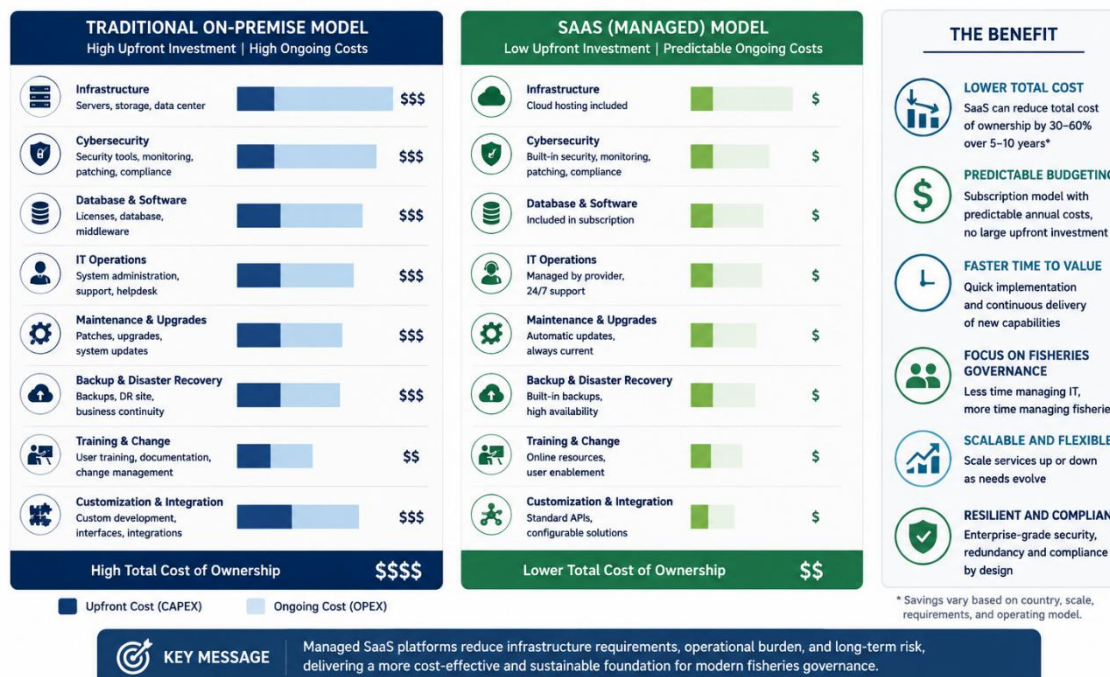
Figure 24 Many fisheries modernization projects successfully fund implementation (CAPEX) but underestimate the long-term operational costs (OPEX) required to sustain governance capabilities after go-live.

Reducing the Cost of Fisheries Digital Transformation

One of the most significant barriers to fisheries digital transformation is not technology itself, but the long-term cost of sustaining digital initiatives.

REDUCING THE COST OF FISHERIES DIGITAL TRANSFORMATION

SaaS Model vs Traditional On-Premise (Total Cost of Ownership)



Many fisheries modernization programs begin with donor-funded projects that successfully finance software development, infrastructure acquisition, data collection initiatives, and implementation activities. While these investments often deliver important short-term results, insufficient attention is sometimes given to the long-term operational requirements needed to sustain these systems after project funding ends.

Operating a modern fisheries information ecosystem requires more than software. It requires secure hosting environments, cybersecurity controls, backup and disaster recovery capabilities, monitoring, technical support, maintenance, upgrades, training, and governance processes that ensure information remains reliable and available over time.

As a result, fisheries authorities may face a sustainability gap where systems are successfully implemented but become increasingly difficult to operate, maintain, and evolve due to limited technical capacity, budget constraints, or infrastructure requirements.

Successful digital transformation therefore requires a sustainable operating model that balances governance objectives, operational needs, and long-term affordability.

A key principle of modern fisheries governance is that organizations should focus their resources on managing fisheries rather than managing technology infrastructure.

Cloud-based and managed-service approaches can significantly reduce implementation complexity, infrastructure requirements, operational risk, and total cost of ownership. By leveraging shared platforms, standardized services, and centrally managed operations, fisheries authorities can access advanced governance capabilities without the need to establish large internal IT teams or maintain complex technical environments.

Experience from digital transformation initiatives across both the public and private sectors has shown that the long-term cost of operating and sustaining information systems frequently exceeds the initial implementation investment. By reducing infrastructure requirements, cybersecurity overhead, database administration, maintenance activities, and technical support burdens, managed SaaS platforms can significantly lower the total cost of ownership while improving long-term sustainability and operational resilience.

This approach allows organizations to progressively strengthen fisheries governance capabilities while maintaining predictable operating costs and reducing the burden associated with infrastructure management, cybersecurity operations, software maintenance, and technical support.

The objective of digital transformation is not to build the most complex technology environment. The objective is to establish a sustainable governance ecosystem that delivers trusted information, supports evidence-based decision-making, and remains operational and effective for many years to come.

Key Takeaway

Successful fisheries digital transformation requires more than implementation funding. It requires a sustainable operating model that minimizes complexity, reduces long-term ownership costs, and allows fisheries authorities to focus on governance outcomes rather than technology management.

20. Fisheries Technologies and Icelandic Fisheries Experience

Effective fisheries governance requires more than technology. It requires practical experience, institutional knowledge, and a deep understanding of how fisheries information supports sustainable resource management. Fisheries Technologies combines modern digital capabilities with lessons learned from one of the world's most established fisheries management systems.

Building on Practical Fisheries Experience

Fisheries Technologies was founded with a clear objective: to help fisheries authorities transform information into effective governance.



Figure 25 Icelandic fisheries experience demonstrates how trusted information supports effective governance and sustainable resource management.

The company combines expertise in fisheries management, information systems, digital transformation, governance processes, and fisheries operations to develop solutions that address real-world fisheries management challenges.

Rather than viewing fisheries information systems as isolated technology projects, Fisheries Technologies approaches digital transformation as a governance initiative that supports long-term sustainability objectives.

This philosophy forms the foundation of The Fisheries Manager (TFM).

Lessons from Iceland

Iceland is widely recognized as one of the world's leading examples of sustainable fisheries management.

Over several decades, Iceland has developed an integrated fisheries governance framework that combines scientific assessment, quota management, licensing, monitoring, compliance oversight, reporting, and institutional accountability.

The success of this approach has been supported by the availability of trusted information and the ability to transform that information into effective management decisions.

While every country operates within its own legal, institutional, and fisheries context, the fundamental governance principles remain highly relevant:

- Decisions should be supported by reliable information.
- Governance processes should be transparent and accountable.
- Management measures should be monitored and evaluated.
- Institutions should continuously improve their capabilities over time.

These principles have helped shape both the philosophy and design of TFM.

From Information to Governance

One of the most important lessons from modern fisheries management is that data collection alone does not deliver sustainable outcomes.

Sustainable fisheries management requires an integrated governance ecosystem that connects:

- Information collection
- Data quality management
- Governance processes
- Compliance oversight
- Scientific assessment
- Reporting and analytics
- Decision-making

This end-to-end perspective is reflected throughout TFM and forms the basis of its governance-driven architecture.

The objective is not simply to collect information, but to ensure that information can be transformed into meaningful action.

Supporting Fisheries Authorities at Different Stages of Development

Fisheries authorities vary significantly in terms of governance maturity, operational capacity, resource availability, and management priorities.

Some organizations may be focused on strengthening fisheries statistics and survey programs, while others may require more advanced capabilities related to quota management, spatial governance, licensing, compliance monitoring, and integrated reporting.

For this reason, TFM has been designed to support a progressive governance journey.

Organizations can begin with the capabilities most relevant to their immediate priorities and expand their governance ecosystem over time as needs evolve.

This approach reduces implementation risk while supporting long-term sustainability.

Combining International Experience and Local Ownership

Fisheries governance solutions are most effective when international best practices are combined with local knowledge and institutional ownership.

Successful implementation requires an understanding of national fisheries, management objectives, operational realities, legal frameworks, and stakeholder expectations.

Fisheries Technologies works closely with fisheries authorities, regional organizations, development partners, and fisheries stakeholders to ensure that governance solutions remain aligned with local priorities while benefiting from international experience and proven practices.

This collaborative approach helps strengthen adoption, sustainability, and long-term success.

A Long-Term Perspective on Fisheries Governance

Fisheries governance is a continuous journey rather than a one-time project.

New management challenges emerge. Information requirements evolve. Technologies change. Governance priorities shift.

For this reason, fisheries authorities require platforms and partners capable of supporting long-term development rather than short-term implementation alone.

Fisheries Technologies is committed to helping organizations strengthen governance capabilities, improve information management, and support sustainable fisheries outcomes over the long term.

Supporting Sustainable Fisheries Futures

The future of fisheries governance will depend on the ability of organizations to combine trusted information, effective governance processes, institutional capacity, and modern digital technologies.

By drawing upon Icelandic fisheries experience, international best practices, and practical implementation knowledge, Fisheries Technologies helps fisheries authorities build governance ecosystems capable of supporting sustainable fisheries management in an increasingly complex and data-driven world.

Key Takeaway

Technology is most effective when combined with governance experience and institutional knowledge. By drawing upon lessons from Icelandic fisheries management and international best practices, Fisheries Technologies helps fisheries authorities transform trusted information into effective governance and sustainable fisheries outcomes.

21.Key Takeaways

The central message of this publication is straightforward: sustainable fisheries management depends on the ability to transform fisheries information into effective governance. While technology is an important enabler, long-term success ultimately depends on trusted information, institutional capacity, governance processes, and informed decision-making working together within a common framework.

Sustainable Fisheries Governance Begins with Information

Reliable fisheries management depends on access to accurate, timely, and representative information. Without trusted information, fisheries authorities face significant challenges in understanding fisheries performance, monitoring resource utilization, evaluating management measures, supporting scientific assessments, and making informed decisions.

Information is therefore the foundation upon which all fisheries governance activities depend.

Data Collection Alone Is Not Enough

Many fisheries modernization initiatives focus primarily on data collection and reporting.

While these capabilities are important, sustainable fisheries management requires more than collecting information. Fisheries authorities must be able to validate, govern, analyze, monitor, and use information to support management actions, compliance oversight, accountability, and decision-making.

The objective is not simply to collect data, but to transform information into governance.

Governance Requires an End-to-End Information Lifecycle

Trusted information is created through a structured lifecycle that includes survey design, planning, standards management, field collection, quality assurance, validation, approval, reporting, and governance controls.

Each stage contributes to the reliability, consistency, and trustworthiness of the information ultimately used to support fisheries management.

Governance outcomes can only be as strong as the information upon which they depend.

Modern Fisheries Governance Is a Connected Ecosystem

Effective fisheries governance requires multiple capabilities working together within a common framework.

These capabilities include:

- Information collection and management
- Licensing and authorizations
- TAC and quota management
- Spatial management and fisheries management measures
- Monitoring, Control and Surveillance (MCS)
- Reporting and analytics
- Auditability and accountability
- Integration and interoperability
- Digital innovation and decision support

When these capabilities operate as an integrated ecosystem, fisheries authorities gain greater visibility, stronger accountability, improved operational effectiveness, and better decision-making.

Digital Transformation Is a Governance Journey

Digital transformation should not be viewed as a technology project.

Its purpose is to strengthen governance capabilities.

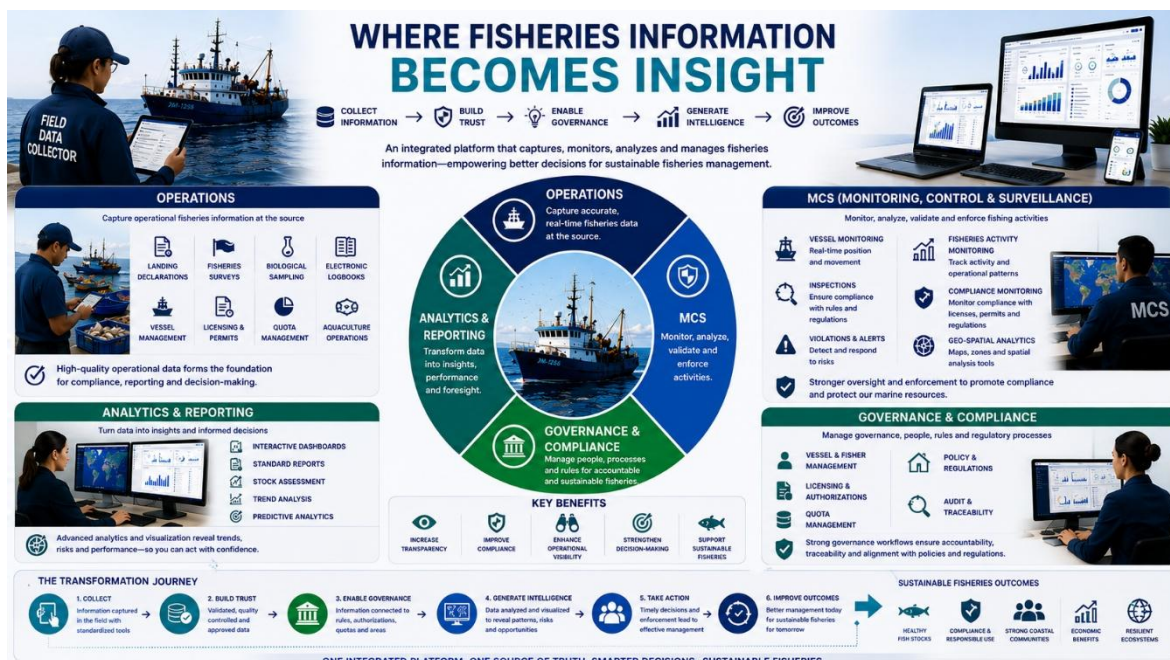


Figure 26 Transforming fisheries data into governance, intelligence, and sustainable outcomes through a connected fisheries governance ecosystem.

Successful organizations progressively develop their information, governance, monitoring, analytical, and institutional capabilities over time while maintaining a trusted information foundation.

Technology enables this journey, but governance remains the destination.

Institutional Capacity Determines Long-Term Success

Technology alone cannot deliver sustainable fisheries outcomes.

Long-term success depends upon institutional ownership, governance maturity, skilled personnel, sustainable operating models, and a commitment to continuous improvement.

Organizations that invest in both technology and institutional capacity are better positioned to sustain governance improvements over time.

The Role of TFM

The Fisheries Manager (TFM) has been designed to support this governance journey.

By connecting fisheries operations, governance processes, monitoring activities, analytics, interoperability, and decision-support capabilities

within a single platform, TFM helps fisheries authorities establish a trusted information foundation capable of supporting modern fisheries governance.

The platform enables organizations to evolve progressively while maintaining transparency, accountability, and operational continuity.

The Central Message

Sustainable fisheries management depends on more than data collection.

It requires the ability to transform:

Data into Information.

Information into Governance.

Governance into Intelligence.

Intelligence into Action.

Action into Sustainable Fisheries Outcomes.

Organizations that successfully manage this transformation are better positioned to strengthen resource stewardship, improve decision-making, support accountability, and achieve long-term sustainability objectives.

Key Takeaway

Trusted information is the foundation of effective fisheries governance. By combining information, governance processes, monitoring capabilities, analytics, institutional capacity, and continuous improvement within an integrated ecosystem, fisheries authorities can create the conditions necessary for sustainable fisheries management and long-term governance success.

22. Conclusion

The future of fisheries governance will depend on the ability of organizations to transform information into action. While technologies, management approaches, and institutional structures may vary between countries, the fundamental principle remains the same: effective governance requires trusted information, strong institutions, and the capacity to make informed decisions.

Throughout this publication, we have explored how fisheries information moves through a structured lifecycle—from survey design and data collection to validation, governance, monitoring, analytics, and decision-making.

At every stage, one message remains clear.

Sustainable fisheries management is not achieved through data collection alone.

Information only creates value when it supports governance.

Modern fisheries authorities must be able to connect information, management processes, compliance activities, scientific assessment, reporting, and institutional accountability within a common governance framework. Organizations that successfully establish this connection are better positioned to respond to changing conditions, strengthen resource stewardship, improve transparency, and support long-term sustainability objectives.

Digital transformation plays an important role in this journey. However, technology should be viewed as an enabler rather than the objective itself. The ultimate goal is not to implement systems, but to strengthen governance capabilities and improve fisheries outcomes.

As fisheries management continues to evolve, authorities will increasingly require integrated governance ecosystems capable of supporting adaptive management, evidence-based decision-making, compliance oversight, and continuous improvement. These capabilities will become essential for addressing the growing environmental, economic, and social challenges facing fisheries around the world.

The Fisheries Manager (TFM) has been designed to support this transformation by providing a governance-driven platform that connects fisheries operations, governance processes, monitoring activities, analytics, interoperability, and decision support within a single information ecosystem.

By combining trusted information, effective governance, institutional capacity, and digital innovation, fisheries authorities can establish the foundation required for sustainable fisheries management in the decades ahead.

The journey begins with information.

The destination is sustainable fisheries governance.

Final Thought

Data informs.

Information enables.

Governance guides.

Intelligence empowers.

Sustainable outcomes endure.

Copyright

© 2026 Fisheries Technologies ehf.

All rights reserved.

No part of this publication may be reproduced, distributed, transmitted, stored in a retrieval system, or translated into any language without the prior written permission of Fisheries Technologies, except for brief quotations used for review or reference purposes.

Disclaimer

This document is intended for informational and discussion purposes only.

The concepts, workflows, screenshots, and examples presented in this publication are provided to illustrate fisheries governance approaches and capabilities available through The Fisheries Manager (TFM). Actual implementations may vary according to national legislation, institutional arrangements, fisheries management objectives, and operational requirements.

Trademarks

The Fisheries Manager (TFM)[™], Fisheries Technologies[™], and CMM-FG[™] (Capability Maturity Model for Fisheries Governance) are trademarks or registered trademarks of Fisheries Technologies ehf.