Standards for Electronic Fishery Information Solutions (eFIS)[1]

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The Need for Standards

- Fisheries are evolving toward greater collaboration and self-governance in response to mandates for sustainability, catch shares, cost recovery, and environmentally responsible fishing operations.

- These drivers increase the demand for fast, reliable, and innovative eFIS systems for collecting, storing, communicating, analyzing, and sharing fisheries information.

- However, successful eFIS requires that incentives are aligned, costs and benefits shared, and **rational standards developed and communicated.**

- **Comprehensive standards** can provide the framework, guidelines, rules, and signals to unleash entrepreneurial behavior and support the profitable development of eFIS systems.

Example: Setting Standards for a Fishing Trip

Vessel Activity Flow Chart

Trip Start
- Port, Departure date /time
- Purpose of trip (fishing, non fishing)
- Vessel properties, Gear onboard,
- Other trip related information

Single Fishing Operation: Start
- Fishing method definition
- Start trawling, setting of lines or traps
- Date / time / GPS location
- Gear properties
- Physical and enviromental observations

Single Fishing Operation: End
- Definition
- End trawling, hauling of lines or traps
- Date / time / GPS location
- Gear properties
- Physical and enviromental observations

Catch
- Break down of catch and bycatch by species, grades and products
- Packing information (type of containers, capacity, storage info)
- Discard

CPUE
- Definition of effort
- Catch units to be used (live or processed)
- Mode of calculation

Fishing Trip End
- Landing port date / time
- Catch landed
- Other trip end information

Issues to Consider

Units of measurements and observations made	Regulation of data recording and reporting	Communication technology and protocol
Date/Time	Fishing operation	Methods
GIS	Gear deployment	Security
Physical	Catch	Authentication
Enviromental	Observations	Validation
Catch	Landing	Reporting intervals

Recommendations

- Determine eFIS objectives
- Analyze how alternative standards will impact system design and user behavior in meeting objectives
- Select the institutions, incentives and standards which best achieve objectives
- Monitor, measure, and evaluate the effect of 1) incentives for achieving the standards and 2) standards in achieving information and management objectives
- Revise and adapt if necessary
- Include all key stakeholders in an innovative standards design and evaluation process -- including technology companies -- minimize bureaucratic process, and design standards for key eFIS monitoring and reporting systems

What are eFIS Standards?

Standards are input, process, or performance rules that guide system design and user behavior. In the case of eFIS they include rules on 1) interoperability (API), 2) data definitions, management, and quality, 3) system documentation, validation, and transparency, and 4) privacy and security.

Vision for eFIS Systems

- In the 21st century, U.S. fishing and seafood industries are global leaders in developing and employing innovative and efficient eFIS Systems.
- eFIS are created by designers and entrepreneurs representing a rich marketplace of ideas, missions, and organizations.
- eFIS systems are based on **comprehensive standards that catalyze development** and support seamless storage, sharing, and analysis of data within and across fleets, private and public organizations, and government agencies.
- U.S. fishery management plans incorporate standards-based eFIS in order to achieve management objectives.
- eFIS supports fisheries that are knowledge-based, collaborative, profitable, and sustainable.

1. Based on a concept proposal by Barkai, Amos, Erika Feller, John Lavrakas, and Gil Sylvia. 2013. eFIS: Concept Paper -- Standards for Electronic Fishery Information Systems (available from the authors).