Science, Service, Stewardship

National Marine Fisheries Service

NOAA Enterprise Data Management Conference:

West Coast Groundfish Trawl Catch Share Program

- Individual Fish Quota System (IFQ)

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Presented by: Richard Kang
Scientific Data Management, NWFSC
Seattle, WA
June 20, 2011

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Welcome to the Information Age

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What is Data Management?

The development, execution and supervision of plans, policies, practices, and programs that control, protect, deliver, and enhance the value of data and information assets.

Data Management Association International (DAMA)

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Vision

NMFS customers can confidently find, access, and use our data.

Mission

"Deliver the right data, information, and services when and where they are needed."

"*To effect a cultural change in which all NMFS data are recognized and managed as a core agency resource, on par with financial and human resources*."

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- The Magnuson-Stevens Fishery Conservation and Management Act – Oct. 11, 1996 and 2006
- NOAA Strategic Plans
- NMFS Enterprise Data Management – Dec. 2008
- NWFSC Data Quality Recommendations – Oct 8, 2008
- NMFS OCIO System Development Life Cycle – June 2, 2009
- **Data Policy Documentation Directive** – March 17, 2011
- Draft NWFSC Data Documentation Implementation Plan – May 2011 (on-going) Centerwide
- NMFS Catch Share Program
- West Coast Groundfish Catch Share Trawl Program or IFQ – Jan 11, 2011 (Example)

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Oracle Beehive Wiki Presentation
June 3, 2011

- Data Documentation Policy Directive Summary
- Roles and Responsibilities
- Rules of engagement
- Data Management Plan
- NWFSC Draft Data Quality Plan Recommendations
- Beehive Collaboration tools

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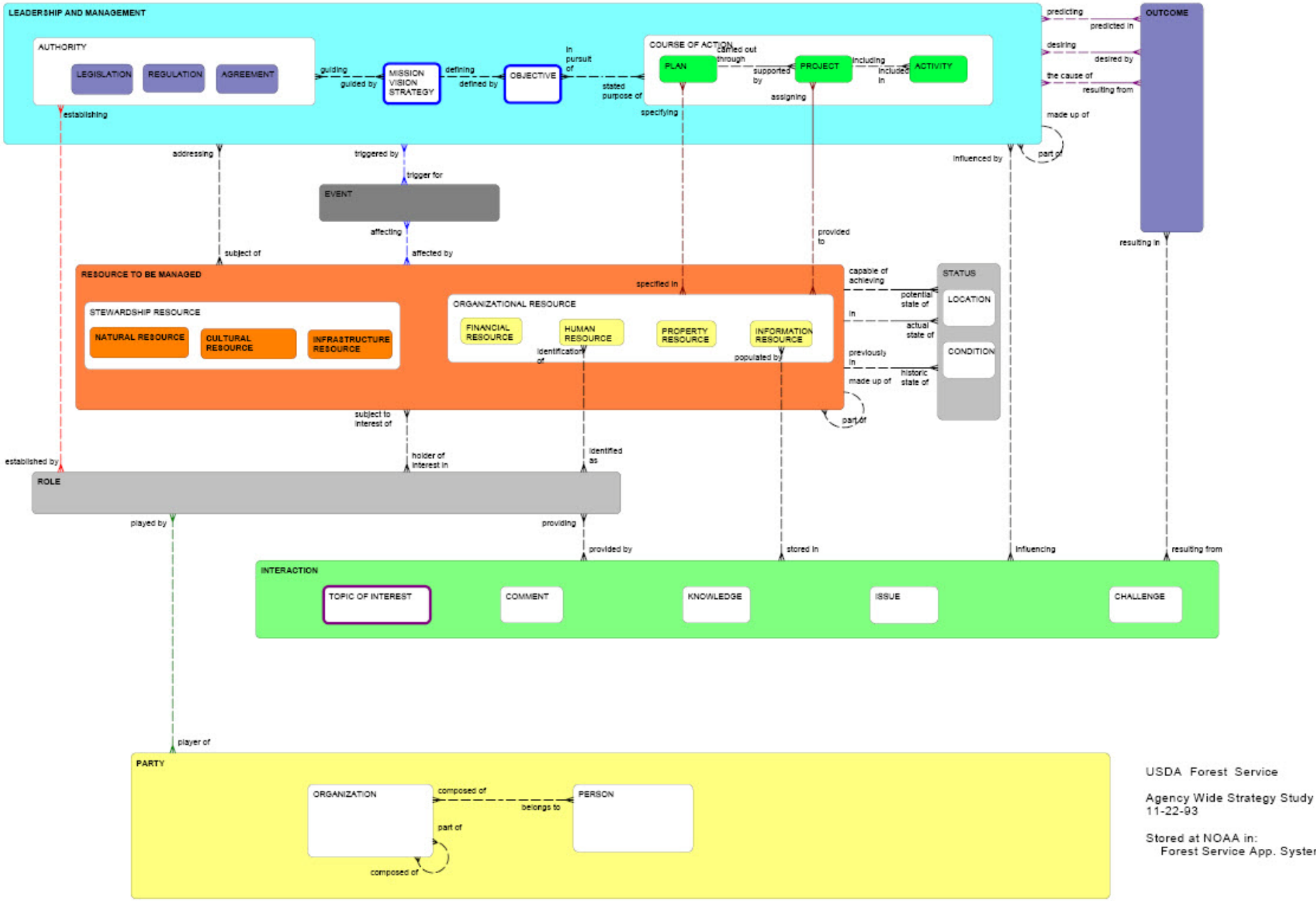
Key Phase I Milestones and Deliverables

- Draft Data Documentation Implementation Plan – Rich, Jeff, and Mindi
- Metadata Survey Questionaire
  - Example: SPS Survey Questionaire

- Inventory Center data by Division/Programs – Core Team
- Published Metadata
  - Data and Supporting Documentation - Core Team

- Inport Metadata demo/training - Jeff
- Fisheries Information Managment Advisory Committee Meeting - 2 days in October at NWFSC (TBD) - Core Team
- Establish Performance metrics and awards – Core team
- Yr. 1 accomplishments - new data – Core team
- Yr. 2 accomplishments - legacy data – Core Team
- Reporting out to Center Executive Panel – Rich

Entity-Relationship Diagram for AWSS



USDA Forest Service

Agency Wide Strategy Study
11-22-93

Stored at NOAA in:
Forest Service App. System

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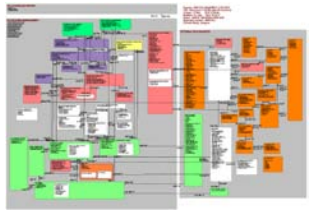
Deliver IFQ Application Database in 6 months by Jan. 1 2011

Federal Register

Legislation, Policy, and Business Rules

Review Existing Systems

Functional Requirements (Use Cases)



Functions and Entity Analysis

User Acceptance Review

IFQ Pilot Year Jan. 11, 2011

Discoverable Metadata In InPort

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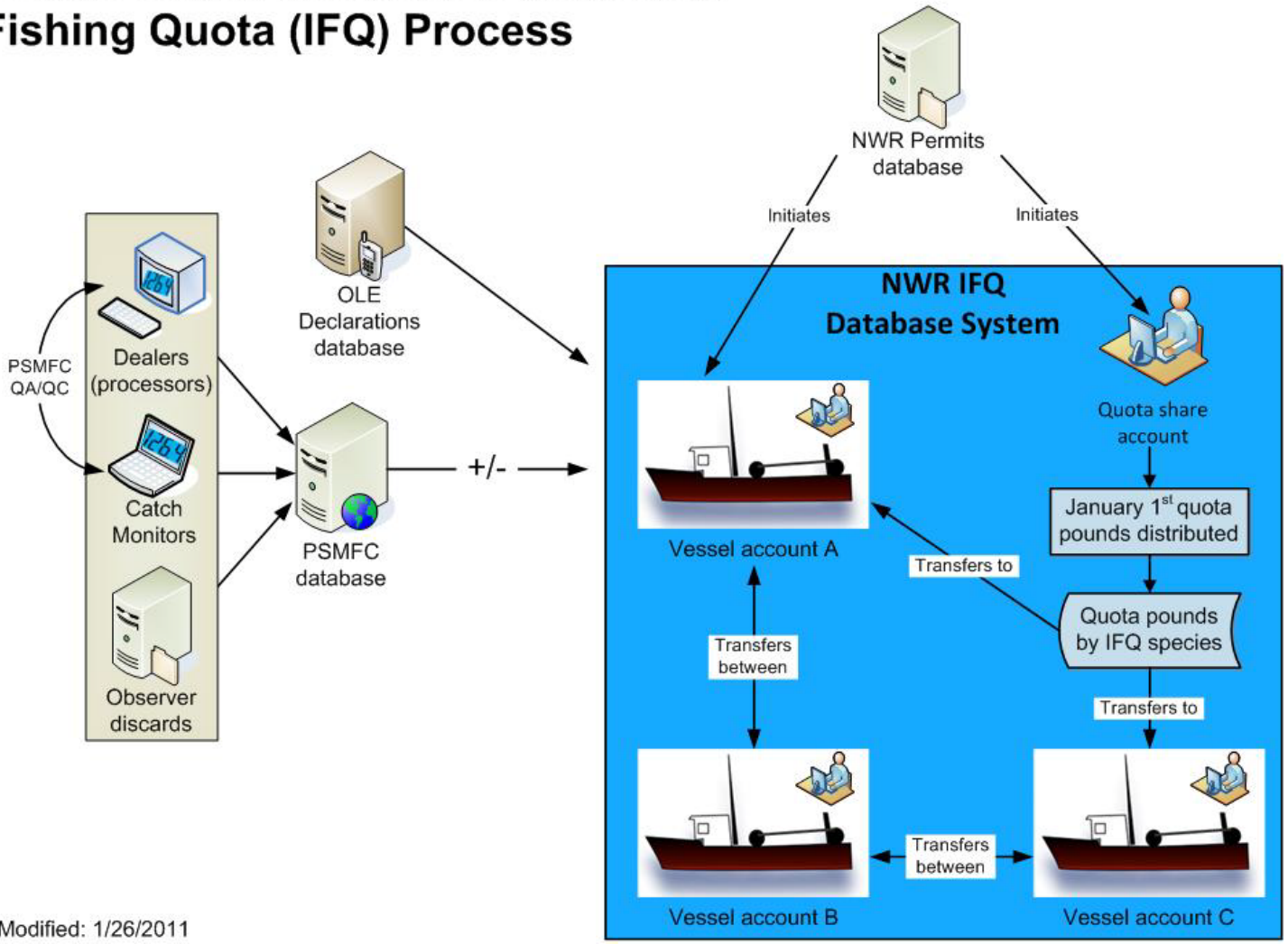
Pacific Coast Groundfish Individual Fishing Quota (IFQ) Process



Modified: 1/26/2011

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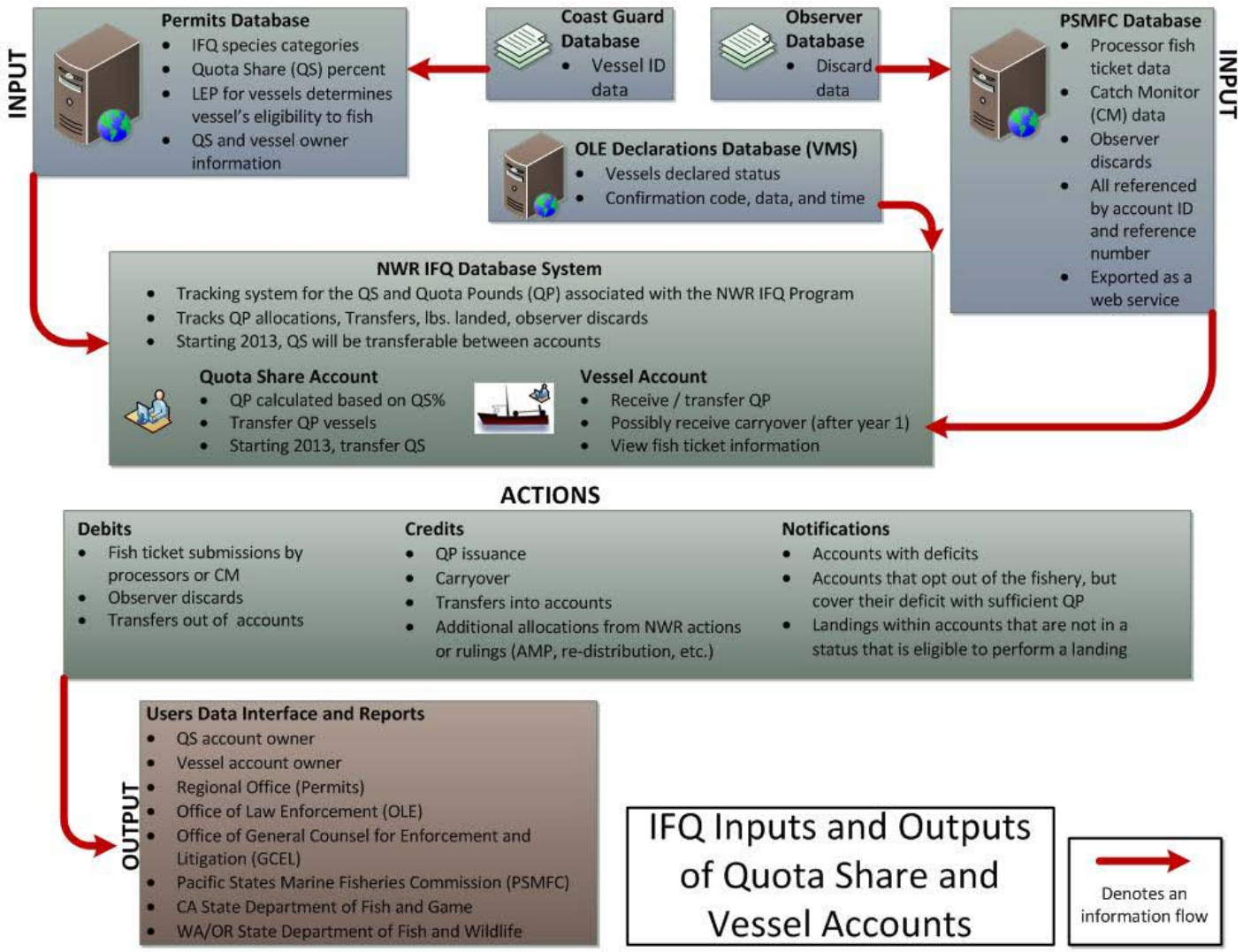
Data Flow Process



Modified on 1/24/2010

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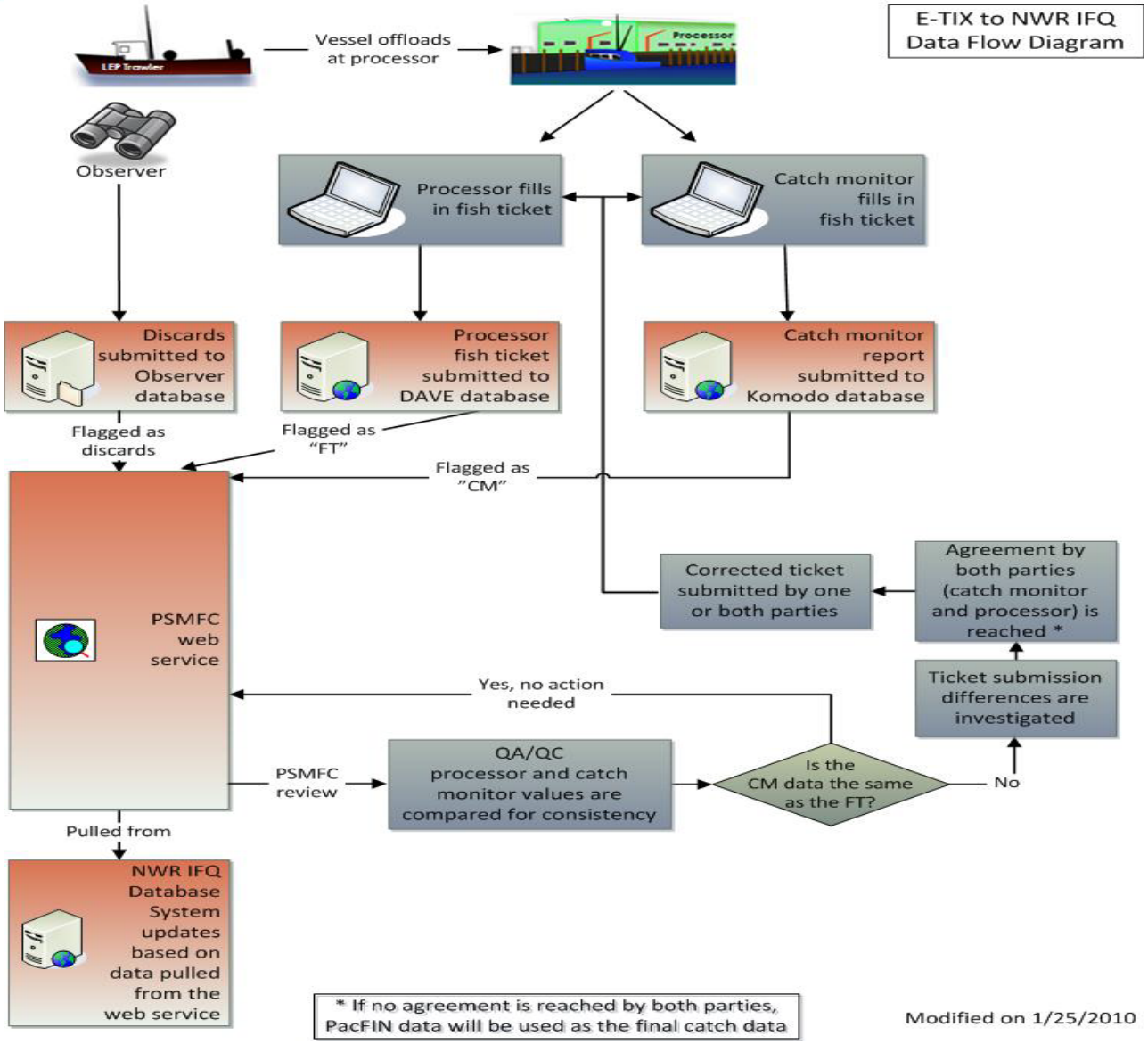
QA/QC Process



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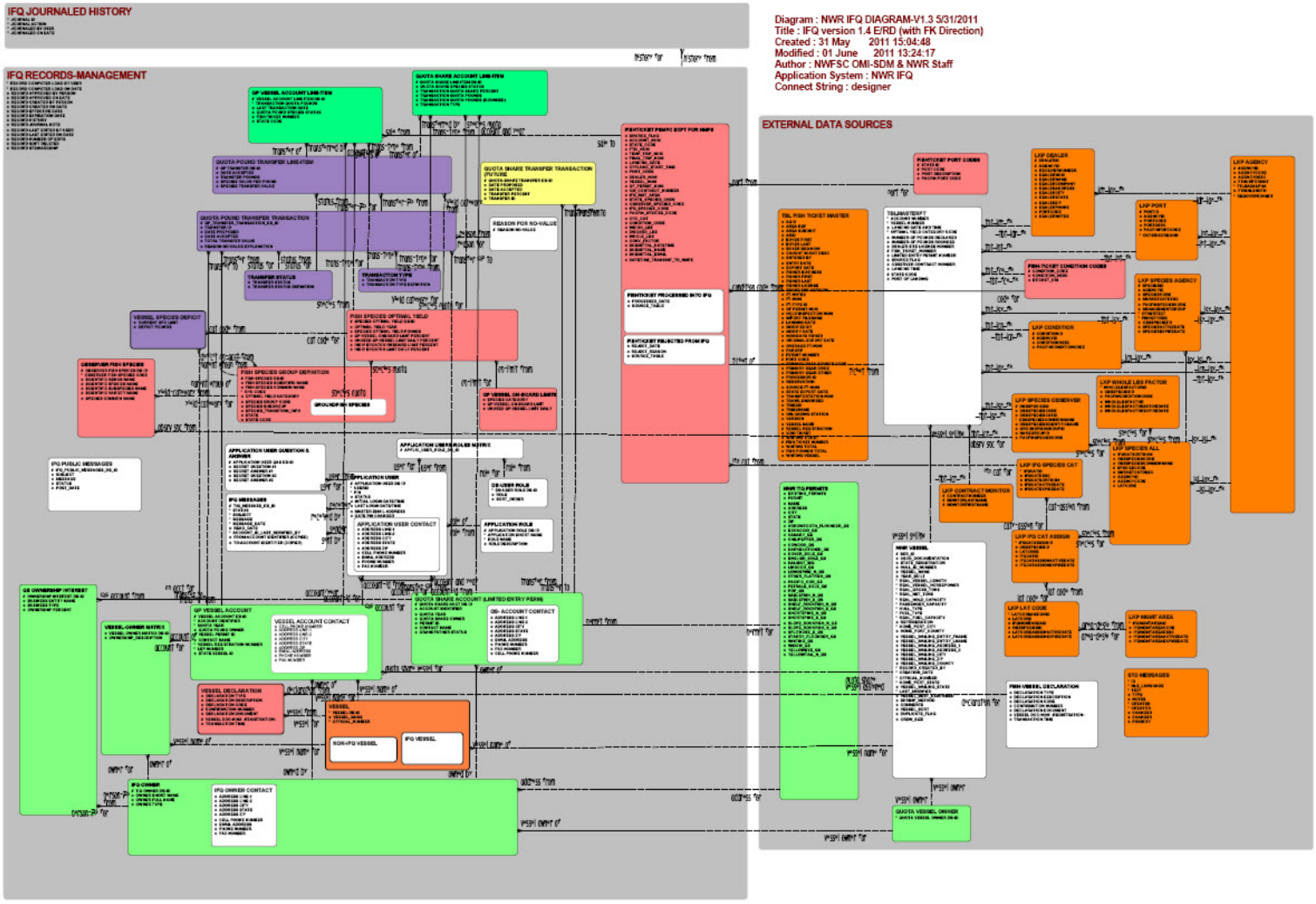
IFQ Entity Relationship Diagram



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Data Dictionary

Field Descriptions

1. Source Flag, *Data source identifier*, Text (2)
   Recommended Use: Internal identifier

Source	Value
Fish Ticket Database	FT
Catch Monitor Database	CM
Observer Discard Database	OD

2. Reference Number, *Unique Ticket identifier as generated by PSMFC server on first submission*, Integer
   Recommended use: Primary key to uniquely identify FT and CM tickets.
   1. FT: Required – internal, system-generated number.
   2. CM: Required - internal, system-generated number.
   3. OD: N/A.

3. Submit Type, *Data submission identifier*, Text (10)
   Recommended use: Identify voided and IFQ records that would otherwise not be included in the feed.
   1. FT: Required – internal, system-generated value.
   2. CM: Required - internal, system-generated value.
   3. OD: N/A.
   4. Values:
      - Normal IFQ records "Standard"
      - Void FT or CM records "Void"
      - Non-IFQ record that previously was submitted as IFQ "Prior-IFQ"

4. IFQ Account Number, *Unique Account identifier as generated by the IFQ system*, Text (8)
   Format is 4 alpha followed by 4 numeric characters. The first two characters will always be "VA".
   Recommended use: Calculate vessel account balance.
   1. FT: Required for all IFQ landings.
   2. CM: Required field.
   3. OD: Required field.
   4. Value Example: VAXY1234

5. State Code, *Two character code*, Text (2)
   Recommended Use: Display to vessel account owner - combine with state specific codes to derive lookup values; Audit trail.
   1. FT: Derived from the type of Fish Ticket. See Appendix B – Fish Ticket Types.
   2. CM: Derived from First Receiver/Dealer location (First Receiver List is provided to CM's)
   3. OD: Can be derived from Dealer if they are unable to send it.
   4. Lookup Values See Appendix A – Agency State Codes.

California	CA
Oregon	OR
Washington	WA

IFQ Export Dataset

Field Name	NMFS Field Name	Description	Definition	Format	Size	Values	Source
1. SourceFlag	SOURCE_FLAG	Source Flag	Code to indicate the data source.	Text	2	"FT" – Fish Tickets from E-Tix; "CM" - Catch Monitor; "OD" - Observer Discard	FT, CM, OD
2. ReferenceNum	ETIX_REF_NUM	Reference Number	Unique Ticket identifier. Original reference number first assigned to the ticket when submitted via web services.	Integer			FT, CM
3. SubmitType	SUBMIT_TYPE	Submit Type	Identifies the type of data submission.	Text	10	"Standard"; "Void"; "Prior IFQ"	FT, CM
4. AccountNum	ACCOUNT_NUM	IFQ Account Number	Unique Account identifier as generated by the IFQ system.	Text	8		FT, CM, OD
5. StateCode	STATE_CODE	State Code	2 character code indicating the state the Dealer is located in.	Text	2	"CA", "WA", or "OR"	FT, CM
6. FTNum	FTIX_NUM	Fish Ticket Number	Number pre-printed on Fish Ticket forms as entered by Dealers and Catch Monitors. Unique within each state.	Text	8		FT, CM
7. TempTripNum	TEMP_TRIP_NUM	Temporary Trip Number	Unique Trip identifier generated by NMFS Observer Database.	Integer			OD
8. FinalTripNum	FINAL_TRIP_NUM	Final Trip Number	Trip identifier generated by NMFS after record review.	Integer			OD
9. LandingDate	LANDING_DATE	Landing Date	Date of Vessel Landing.	Text - "yyyymmdd"	8	FT - Landing Date; CM - Off Load Start Date; OD - Date Returned from Trip	FT, CM, OD
10. OffloadStartTime	OFFLOAD_START_TIME	Offload Start Time	Time Vessel Offloading Began	Text	5	"hh:nn" format (24 hour clock)	CM

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Function Hierarchy

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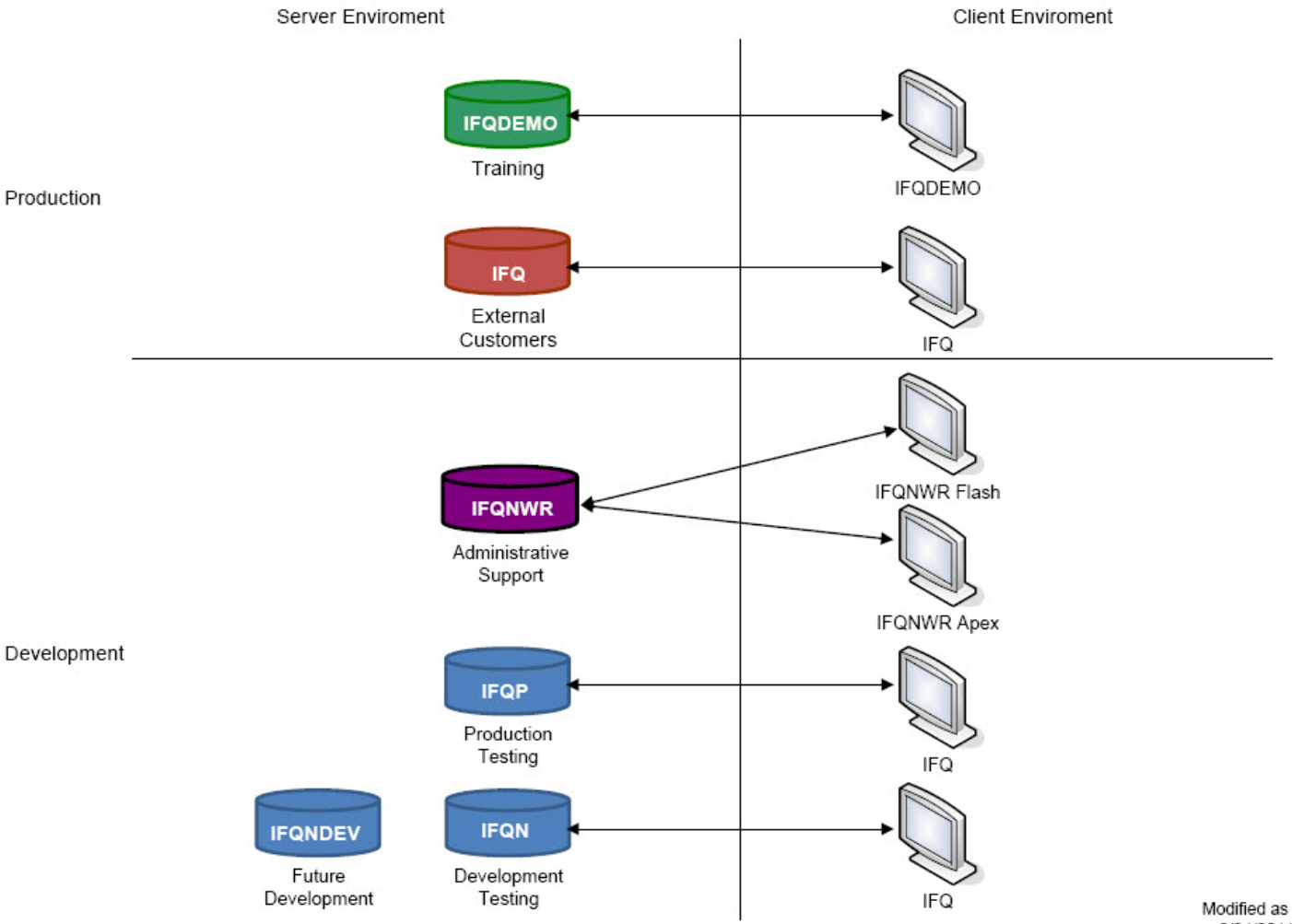
IFQ Environment



Modified as of: 2/24/2011

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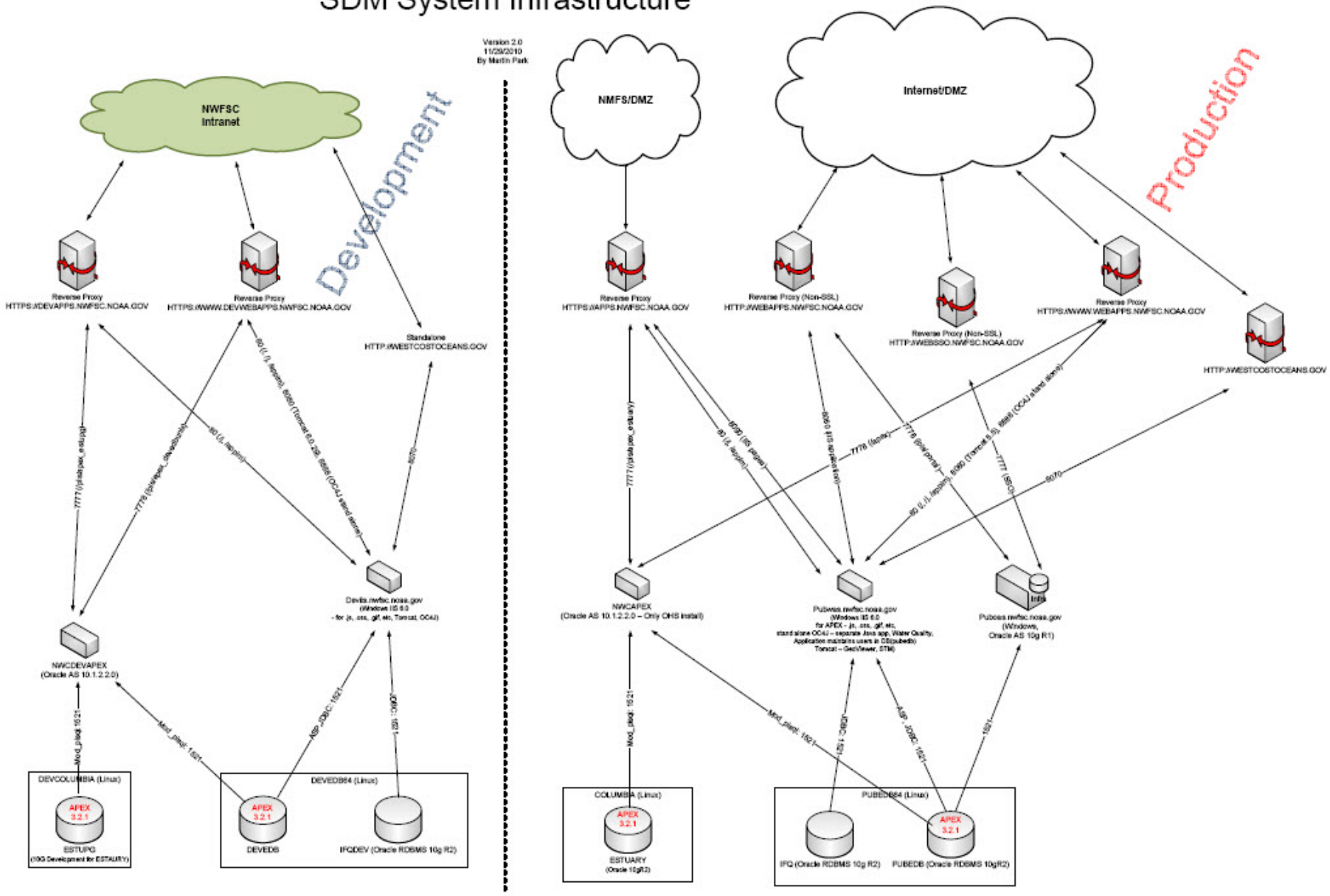
IFQ Release Process

Phase I	Enhancements	Video training/script	Council Meeting	25%	Len/Rob/David	20/10/5		Adam/Rod/Maggie
Phase I	**Catch Data**	by Species/Fish Ticket	View done	20%	Vimal/Jeff/David	60		
Phase I	**QS Account Info**	Account Info	Just need to hook up	50%	Vathsala/Vimal/David	4		
Phase I	**VA Account Info**	Account Info	Just need to hook up	50%	Vathsala/Vimal	4		
Phase I	**VA Account Info**	Change Password	Code Done	50%	Vathsala/Vimal	4		
Phase I	**Session Mgt.**	Timeout/Session cleanup	New Research	0%	Vathsala/Vimal	24		
Phase I	**Information Sources**	Declarations	Waiting on agreement/Data	25%	Alicia/Maggie/Jeff	4		
Phase I								
Phase I								
Phase I								
Phase I								
Phase I								

		IFQNDEV			IFQN			IFQP			IFQNWR			IFQDEMO			IFQ		
DB Version	**APP Version**	Action Code	Last DB Date	Last APP Date	Action Code	Last DB Date	Last APP Date	Action Code	Last DB Date	Last APP Date	Action Code	Last DB Date	Last APP Date	Action Code	Last DB Date	Last APP Date	Action Code	Last DB Date	Last APP Date
Target Release: May 9, 2011								23			20			22			21		
Contents: Vessel Account Declarations as well as flagging occurance and resolution of Deficits by Species for each Vessel Account																			
		1	5/16/2011		1	5/16/2011													
		2	5/3/2011		3	5/16/2011		3	5/16/2011										
								4	5/16/2011		4	5/16/2011							
					5	5/17/2011											5	5/17/2011	
					6	5/16/2011		8			7			6	5/16/2011		7		
1.3.3	**1.3.3**							9			Database is copied, with removed passwords, from IFQ each day at 3:00 am.						9		
		10						10									Database is copied, with removed passwords, to		
								11						11					

IFQ Client/Middleware Version No.	Date Originating in IFQNDEV Sdchema	Last Date Applied on IFQN (1)	Last Date Applied on IFQP (3)	Last Date Applied on IFQDEMO (6)	Last Date Applied on IFQ Schema (5)	Last Date Applied on IFQNWR (7)
1.1					1/11/2011	2/23 @ 3:00 pm
1.1.1	1/12/2011		3/2/2011		2/24/2011	2/27 @ 3:00 pm
1.2	2/24/2011				2/28/2011	3/16 @ 3:00 pm
1.3	3/2/2011	3/14/2011	3/16/2011	3/16/2011	3/17/2011	5/1 @ 3:00 pm
1.3.1	3/2/2011	5/2/2011	5/2/2011	5/2/2011	5/2/2011	5/13 @ 3:00 pm
1.3.2	5/3/2011	5/3/2011	5/11/2011	5/11/2011	5/13/2011	5/16 @ 3:00 pm
1.3.3	5/3/2011	5/16/2011	5/16/2011	5/13/2011	5/17/2011	Today @ 3:00 pm
1.4	5/3/2011					

SDM System Infrastructure



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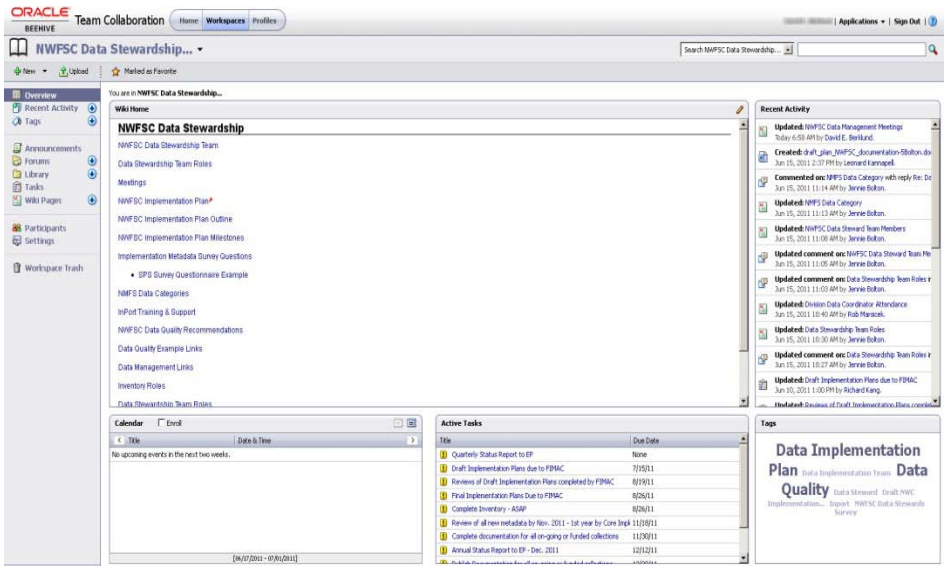
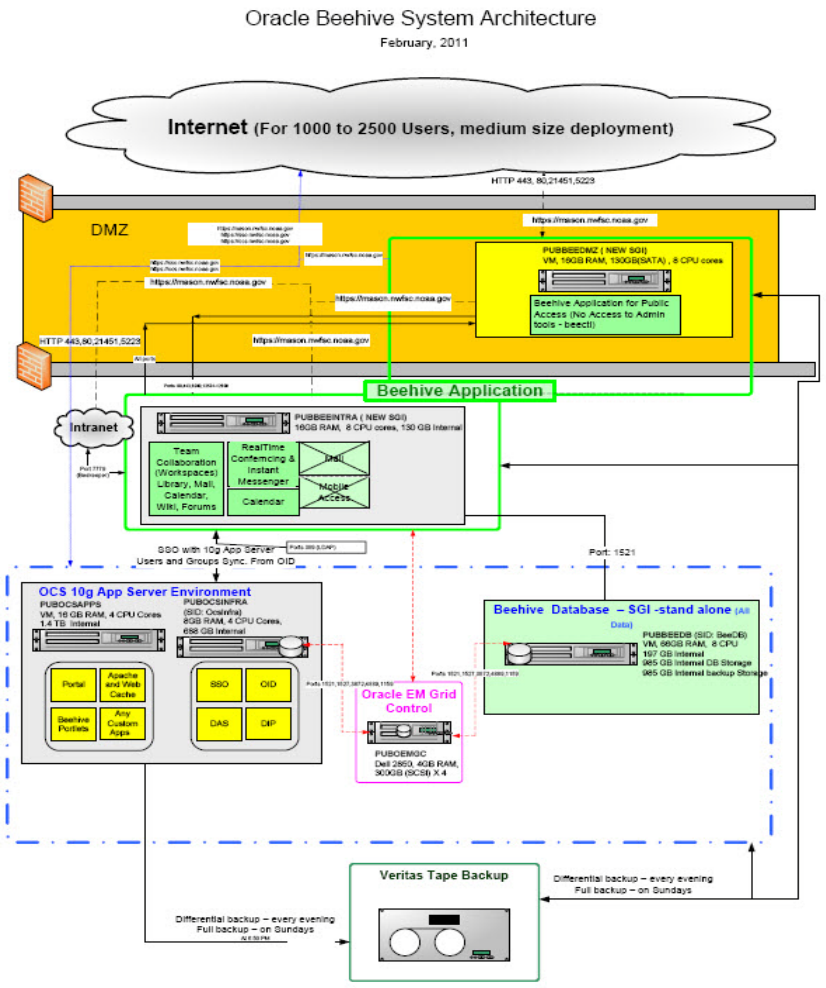
IFQ Collaboration, Document and Content Management





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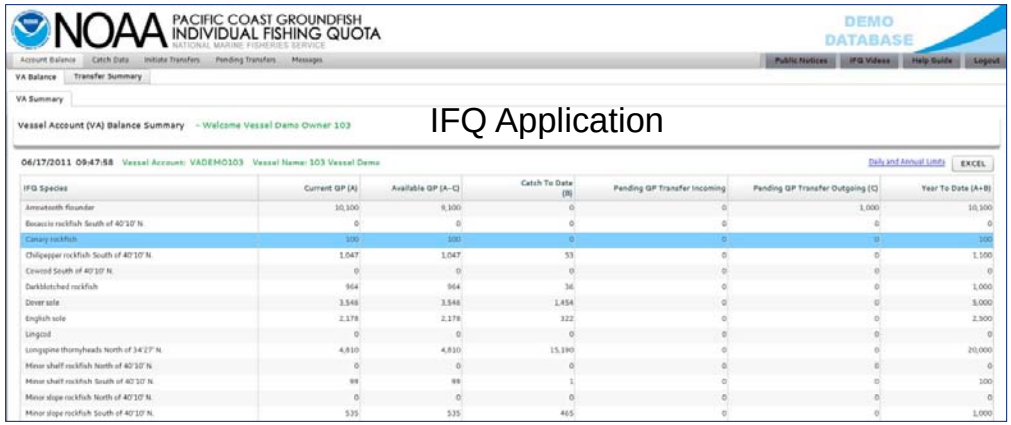
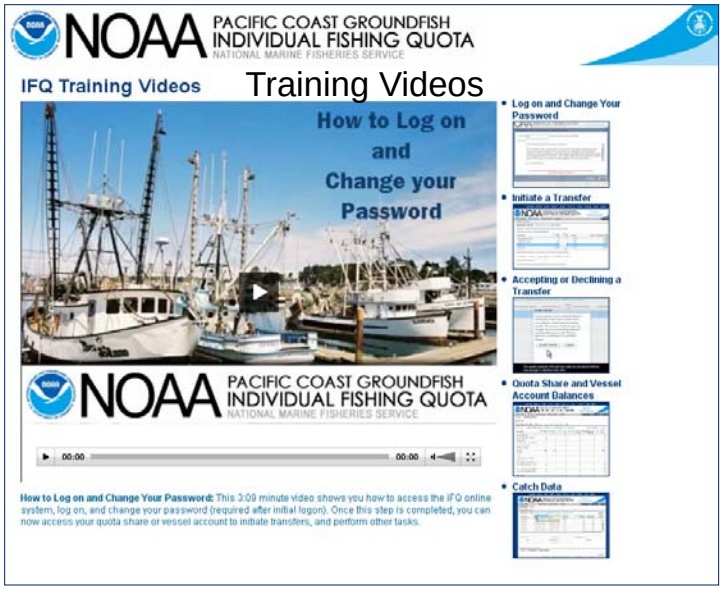
IFQ Production 1.3.3

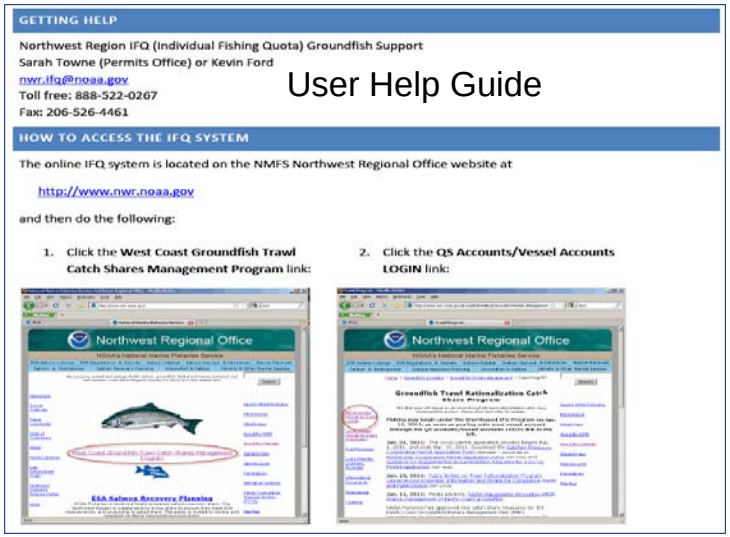


IFQ Application

Query & Search Tool



Training Videos



User Help Guide

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IFQ DOCUMENTATION		
STAGES	**DOCUMENTS/ CHAPTERS**	**STATUS**
	Current Application Version Number	**V 1.3.3**
	SDM Contact and Lead Developer	**Rich Kang / Jeff Cowen**
	BUDGET	Yes
STRATEGY	Scoping Document / Grant Proposal*	Yes
	Project Management Plan	No
ANALYSIS	Functional Requirements	Yes
	System Architecture	Yes
	Workflow Document	Draft
	Functional Specification*	Draft
DESIGN	Logical Design*	Draft
	Crud Matrix	Yes
	Physical Design*	Yes
	Data Dictionary*	Draft
DEVELOPMENT	Milestones	Yes
	Source Code	Subversion
	Unit Testing	Done
DOCUMENTATION	One Page Summary	Yes
	Tutorial	Yes
	User Guide	Yes
	DBA Guide	No
	Help (Context Sensitive Help)	Yes
TESTING	System Test Plan Document	Yes
	Test Cases and Scripts	Yes
	Type of Testing	Manual
DATA QUALITY / ASSURANCE	Data Quality Plan	Draft
TRANSITION	Data Uploading Scripts/ Document	Yes
DEPLOYMENT	SDM Release Document	Yes
	IT Forms: Project Initiation Checklist	Yes
	Web Site Policy Checklist	Yes
	Web Accessibility Checklist	Yes
	Web Application Security Checklist	Yes
	Quality Control Checklist	Yes
	Metadata Published in Inport	Yes

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Next Steps

- Phase II IFQ administrative requirements and enhancements – Summer/Fall 2011
- Account renewals for 2011
- Year 2 rollover on Jan. 1, 2012
- Complete detailed system documentation
- Implement scalable redundant array cluster (RAC)
- Apply lessons learned to on-going projects for further integration
  - Observer database system
  - Economic Survey database system
- Celebrate team successes

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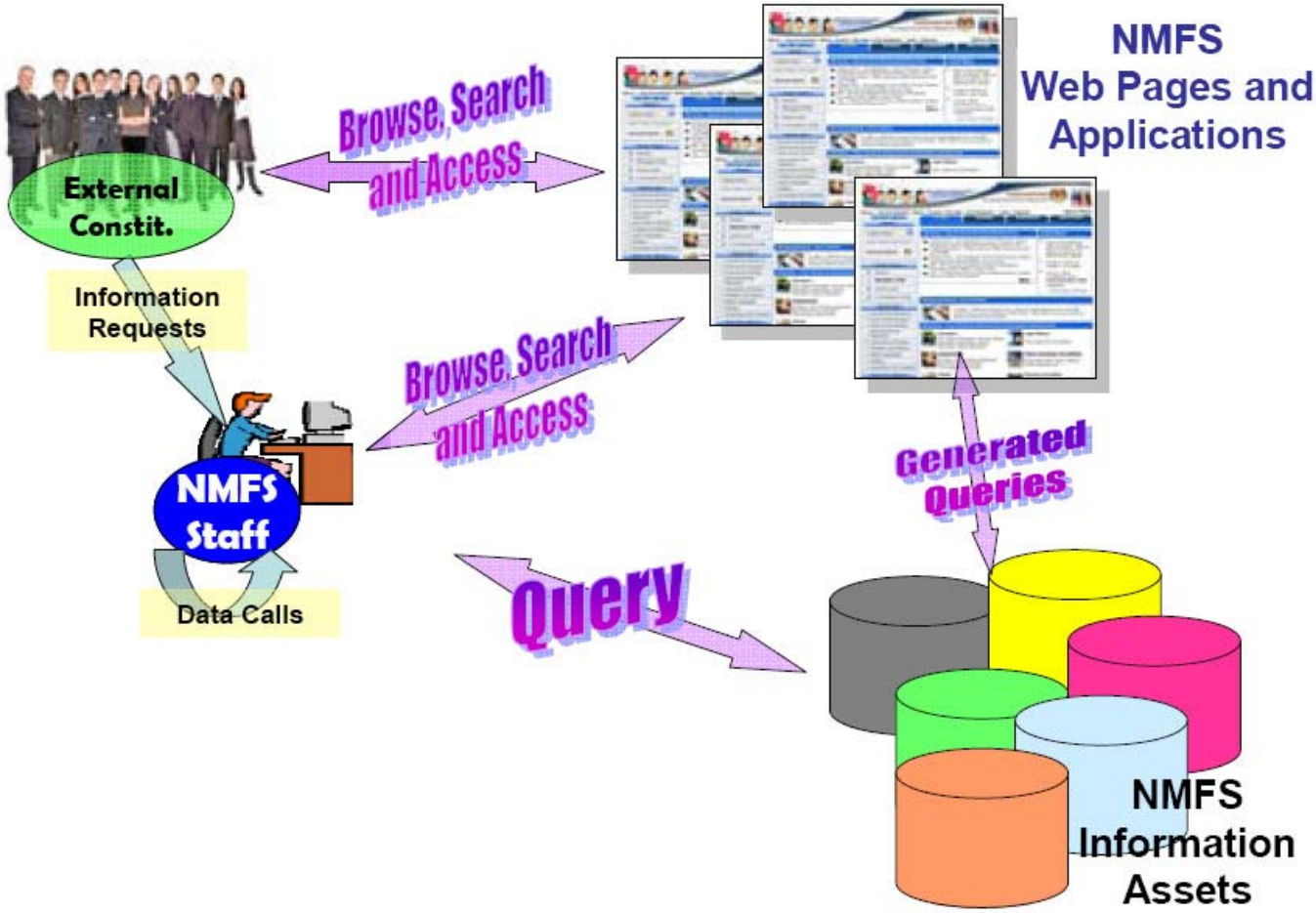
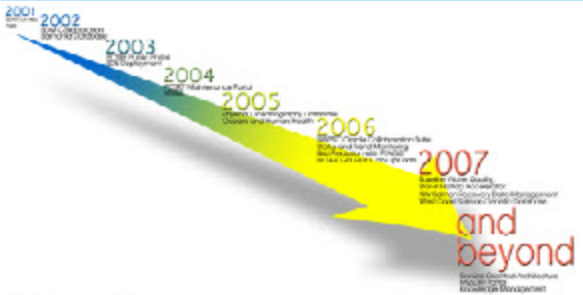


Information Discovery and Access

Scientific Data Management

NOAA Fisheries **Northwest Fisheries Science Center**

Richard*Kang*, Jeff*Cowen*, Rod*Davidson*, Vathsala*Desilva*, Priya*Jhangiani*, Robert*Larson*, Robert*Marsicek*, Adam*Mouton*, Vimal*Nair*, Martin*Park*, Yazan*Suleiman*, Brendan*Sylvander*



ABSTRACT

The Scientific Data Management (SDM) Team, in the Operations, Management, and Information (OMI) division at the Northwest Fisheries Science Center (NWFSC), develops and maintains a coordinated approach to managing data and enabling their use in scientific research related to endangered species recovery and marine species management in the Pacific Northwest. To this end, SDM provides expertise in database design, application development, and Geographic Information Systems (GIS), for desktop clients and over the web. SDM works with internal and external researchers and staff to collect, synthesize, organize and report diverse sets of data, including restoration and recovery project data (PCSRF, PNSHP); monitoring and evaluation data (ISEMP, habitat, water quality); and biological and physical data (salmonid abundance, artificial propagation, genetics, bird predation, oceanographic). Additionally, we offer tools and applications to facilitate analysis and collaboration among Center staff and with external partners (SWAM tool for ArcView, ArcSDE database project space, Matlab/STAR-P modeling and simulation, Oracle Collaboration Suite).

Bio/Physical Data

Genetic Analysis of Pacific Salmonids

Executive Sponsor: Dr. Paul Moran, Conservation Biology Division, NWFSC
Contact: Richard Kang, richard.kang@noaa.gov, 206-860-6768
Website: http://webapps.nwfsc.noaa.gov/GAPS
Description: A pilot database and web application to provide researchers a safe and secure repository for standardized, shared, interagency, spatially-referenced, genetic data.

NWFSC Salmonid Database

Executive Sponsor: Dr. John E. Stein, Deputy Director, NWFSC
Contact: Richard Kang, richard.kang@noaa.gov, 206-860-3433
Websites: http://webapps.nwfsc.noaa.gov/nsd, http://devsan.nwfsc.noaa.gov/nsd (Internal)
Description: NSD includes salmon abundance, hatchery fraction, age structure, harvest series, artificial propagation spawn and release data with spatial links to streams, dams, and hatcheries. The goal is to make the database accessible to NWFSC researchers to support ESA status listings in the Pacific Northwest.

Executive Sponsor: Dr. John E. Stein, Deputy Director, NWFSC, Barry Thom, Deputy Administrator, NWR
Contact: Jeff Cowen, jeff.cowen@noaa.gov, 206-860-3413
Website: http://devsan.nwfsc.noaa.gov/bps (Internal Access)
Related Websites: www.nwr.noaa.gov/Salmon-Recovery-Planning/Recovery-Domains/Willamette-Lower-Columbia/Index.cfm
Description: To support Salmonid Recovery efforts the SDM team is working with NWFSC scientist and Regional Office staff to develop data delivery tools, metadata collection tools, and spatial data layers. SDM is leveraging existing systems such as NSD, PCSRF, PNSHP, STEM as well as new data sources such as GPS to provide critical information to support the NWR Listing Status Decision Framework.

- Salmonid Abundance and Artificial Propagation
- Genetic Analysis of Pacific Salmonids
- Salmonid Abundance Information Systems

Project Tracking Data

Pacific Coastal Salmon Recovery Fund Database

Executive Sponsor: Barry Thom, Deputy Administrator, NWR
Contact: Brendan Sylvander, brendan.sylvander@noaa.gov, 206-860-3252
Website: http://webapps.nwfsc.noaa.gov/pcsrf
Description: Congress established the Pacific Coastal Salmon Recovery Fund (PCSRF) to contribute to the restoration and conservation of Pacific salmon and steelhead populations and their habitats. The states of Washington, Oregon, California, Idaho and Alaska, and the Pacific Coastal and Columbia River tribes receive Congressional PCSRF appropriations from NOAA Fisheries Service each year. Project status and performance information on all PCSRF projects funded to date is housed in the database.

Pacific Northwest Salmon Habitat Project Tracking Database

Executive Sponsor: Dr. Chris Jordan, Conservation Biology Division, NWFSC
Contact: Brendan Sylvander, brendan.sylvander@noaa.gov, 206-860-3252
Website: http://webapps.nwfsc.noaa.gov/PNSHP
Description: In order to evaluate the effectiveness of restoration projects intended to improve the conditions of salmonids throughout the Columbia basin a baseline survey of these projects was completed. The SDM team developed a database address the needs of regional monitoring programs that evaluate the effectiveness of restoration actions.

- Pacific Coastal Salmon Recovery Fund (PCSRF)
- Pacific Northwest Salmon Habitat Project Tracking

Collaboration, GIS & Tools

GIS at NWFSC

Executive Sponsor: Dr. Robert Iwamoto, Director OMI Division, NWFSC
Contact: Brendan Sylvander, brendan.sylvander@noaa.gov, 206-860-3452
Website: http://koala.nwfsc.noaa.gov/webpdata/gis/ (Internal NWFSC)
Description: SDM has been coordinating GIS activities and providing GIS data management support to the NWFSC since 2001.

- Over 70 spatial data layers stored in enterprise spatial database
- Manage ESRI and ERDAS spatial software licenses for NWFSC and field stations
- Provide centralized data storage for project level data
- Work with Northwest Regional Office to coordinate ESU and salmon population boundary updates
- Interactive mapping capabilities for all SDM web enabled projects
- Provide GIS analysis and general help to Center researchers and support staff

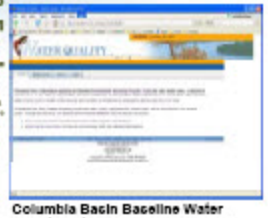
- Spatial Databases, GIS Help Desk and Services
- Oracle Collaboration Suite
- Matlab/STAR-P Modeling

NWFSC Oracle Collaboration Suite

Executive Sponsor: Dr. Robert Iwamoto, Director of Operations, Management & Information Division, NWFSC
Contact: Richard Kang, richard.kang@noaa.gov, 206-860-3433
Website: https://ocs.nwfsc.noaa.gov
Description: The NWFSC Oracle Collaboration Suite (OCS) is a customized commercial off-the-shelf product with real time collaboration and instant messaging capabilities. Custom portals will be designed by SDM to allow Center scientists and researchers to integrate SDM applications and functions into a portal dashboard.

Monitoring & Evaluation

- Integrated Status and Effectiveness Monitoring
- Columbia Basin Baseline Water Quality



Columbia Basin Baseline Water Quality Database

Principle Investigator: Steve Achord, Fish Ecology Division, NWFSC-Pasco
Contact: Yazan Suleiman, yazan.suleiman@noaa.gov, 206-860-3443
Website: http://devsan.nwfsc.noaa.gov/webpdata/cbbwq/ (Internal)
Description: Presented here is information regarding the Baseline Environmental Monitoring Program. During the past several years, a network of autonomous, in situ water quality monitors has been established in the tributaries of the Salmon River in central Idaho.

Status and Trend Monitoring Database Wenatchee Pilot

Executive Sponsor: Dr. Chris Jordan, Conservation Biology, NWFSC
Contact: Jeff Cowen, jeff.cowen@noaa.gov 206-860-3413
Website: http://webapps.nwfsc.noaa.gov/stm/
Description: This database development effort is a component of the Integrated Status and Effectiveness Monitoring Project (ISEMP) at the NWFSC and is intended to store and to provide a retrieval system for habitat characterization, water quality, and fish count data.

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Metadata Card Catalog

InPort

NMFS Enterprise Data Management Program

Search the catalog:

SEARCH

Advanced Search...

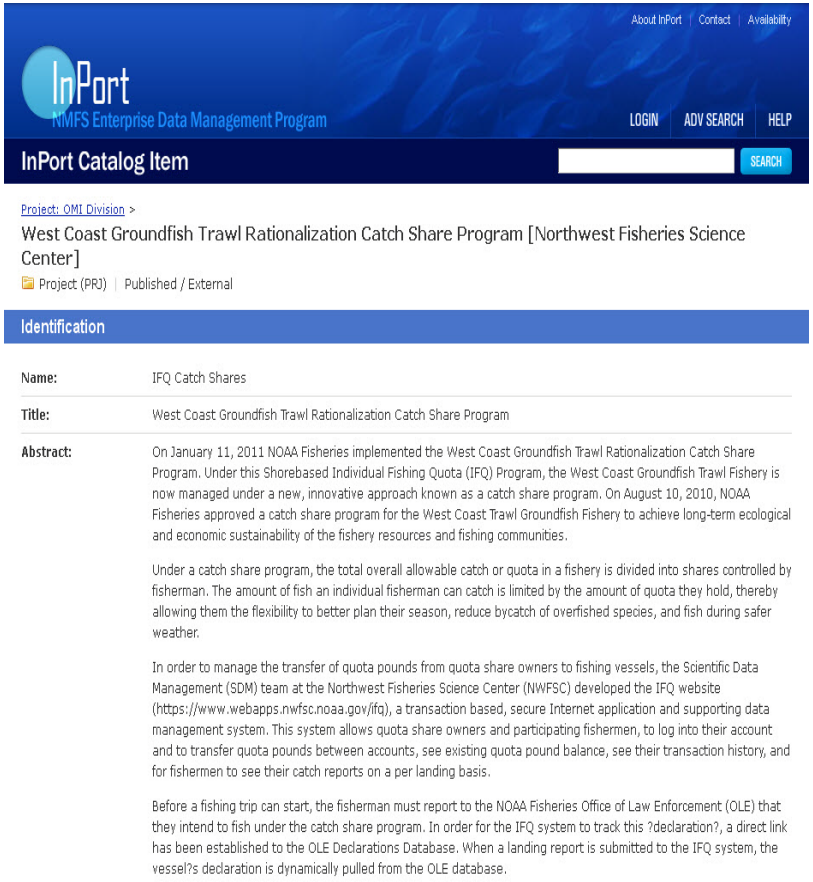
What Is InPort?

InPort is the centralized repository of documentation (metadata) for NMFS data and the tools to access the data, as required by the *Data and Information Policy Directive* and the *Data Documentation Procedural Directive*. As NMFS's official metadata catalog, InPort is the single most important component in NMFS Enterprise Data Management (EDM) architecture which enables our customers to find, access and understand our vast array of data and information.

MORE INFORMATION

Message of the Day

There are no current messages from the InPort administrators.



https://inport.nmfs.noaa.gov/inport/item/11090

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Conclusions

Data management and planning is successful when your project:

- supports agency's high priority mission,
- will result in positive management support,
- sufficient budgets,
- the right people, tools, and methods,
- usually tight timeframes
- appreciative customers,
- lead by successful examples,
- celebrate successes,
- Just Do It and Deliver! We can't plan forever.

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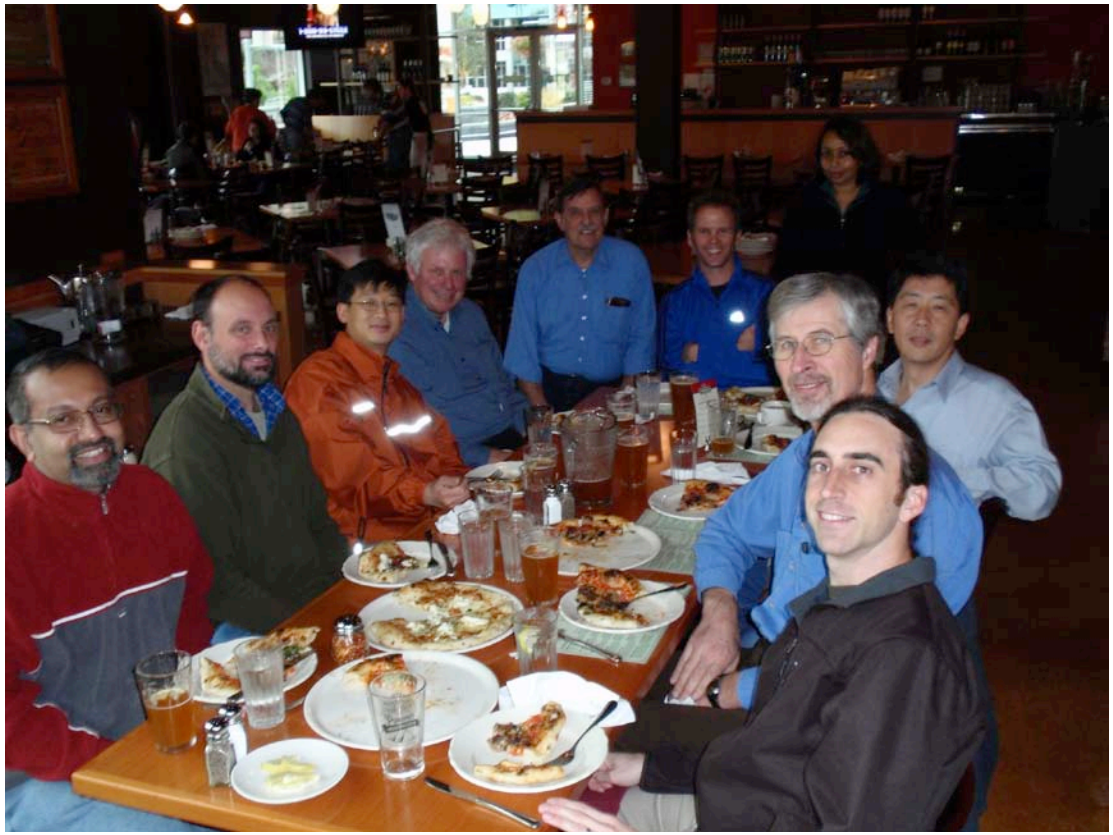
Q & A



Crew for hire.
Will work for beer.
Contact SDM Helpdesk

NOAA FISHERIES SERVICE

Q & A

SDM Website
https://webapps.nwfsc.noaa.gov