neXus
data solutions, llc.

PSMFC Proposal

Data Management Systems Support, Development, Analytics, and Reporting

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June 21, 2024

Michael Arredondo
Pacific States Marine Fisheries Commission
205 SE Spokane St. Suite 100
Portland, OR. 97202

RE: Bid Proposal for PSMFC Data Management Systems Support, Development, Analytics, and Reporting

Dear Mr. Arredondo,

Please find the attached bid proposal for providing data management systems support, development, analytics, and reporting to the PSMFC FIN programs.

neXus Data Solutions, LLC is the premium choice for fisheries technology and data analytics implementations on the West Coast. Our employees have over fifty collective years of experience supporting data management systems and developing reports and analytical solutions for the PSMFC and its partner agencies. When you choose neXus, you choose a resolute team of professionals whose technical focus is steeped in ocean sciences and whose team members have a long history of serving the Pacific fisheries.

Our woman-owned, Alaskan software development firm includes a core team of expert-level programmers whose distinctive skillsets are clearly demonstrated through the support we provide to the Regional Fisheries Councils (NPFMC and PFMC), NOAA Offices of Law Enforcement, and the NOAA Fisheries Science Centers (AFSC, NWFSC, SWFSC, and PIFSC). We integrate seamlessly with the FIN program staff and serve our clients with the best quality and value in data analysis and programming services.

By providing superior data products that support climate-ready fisheries, we demonstrate our capability and dependability offering the best combination of technical skill with fisheries expertise. I am authorized to represent neXus Data Solutions, LLC and can be reached at (907) 350-6024 or at camille@nexusdatasolutions.com. Thank you for considering our firm.

Best Regards,

Camille Kohler
President

neXus Experience and Expertise

The neXus team presents a suite of technical services with a breadth of knowledge in fisheries analytics, data management, quality assurance, reporting and analytics, application development, tech support services, database and server administration, and end-user support. Since our founding in 2014, we have developed a niche for working with fisheries-dependent and independent data. Our programmers and analysts are intimately familiar with the PSMFC FIN data warehouses and as well as the many agency-sourced databases that feed their repositories to include commercial, recreational, subsistence, production, observer, and electronic monitoring information as well as those fisheries independent sources like environmental and socioeconomic indicators. Much of neXus' project work with PSMFC requires not only the programming analyst work on relational and dimensional database development, but also includes:

- Fisheries and business analysis.
- Project management and Atlassian JIRA administration.
- Server and database administration and configuration.
- Documentation, diagramming (i.e., ERD, data flow, and use case), and Atlassian Confluence integration.
- Ongoing technical and end-user support.

The following is a sample of representative projects that demonstrate neXus' experience and capabilities in providing fisheries data management, reporting, and analytical services.

neXus Details			
Contact:	Camille Kohler, President, and Founder		
Certified:	Disadvantaged Business Enterprise (DBE)		
NAICS:	541511—Custom Computer Programming		
Entity ID:	J8QGZPZZ5VG4		
DUNS:	079577327	**Cage Code:**	7AW30

Eastern Bering Sea Crab Estimates

Alaska Fisheries Science Center (AFSC), 2015

neXus worked with AKFIN and AFSC analysts to convert a set of R-scripts into an analytical solution in the database to provide Catch per Unit Effort (CPUE) and Relative Population Number (RPN) indices from the Eastern Bering Sea (EBS) crab survey. The logic was converted into a series of automated extraction, translation, and load (ETL) procedures that generate a series of datamarts for reporting. The database model and ETL package was first developed in the AKFIN Oracle environment and then handed off to the NOAA Fisheries Monitoring and Analysis (FMA) division where it currently resides and runs on a routine basis against the incoming survey data. The final product is pushed to AKFIN from FMA, and the results are modelled into an Oracle BI repository and reported on a series of confidential Oracle Answers dashboards to support Stock Assessment and Fisheries Evaluations (SAFE) for the crab team.

Technologies: Oracle Database, SQL, PL/SQL, Business Intelligence Suite (OBIEE), and R for analysis

Socioeconomic Data Repository

Southwest Fisheries Science Center (SWFSC), 2016

Building on prior experience from a 2012 project with the AFSC, neXus worked with PacFIN and SWFSC social scientists to build out a dimensional data model and ETL process to support a communities indicator data repository. This model consolidates and summarizes several collections sourced by external Application Programming Interfaces (API) or web services to include:

- US Census Bureau Decennial Census Statistics
- US Census Bureau American Communities Survey Statistics
- Bureau of Labor and Statistics Employment and Compensation Indicators

These fisheries independent data are validated, standardized, and merged with commercial fisheries statistics to provide a more holistic view of a fishing community. The final data is available via secure online data query on Oracle APEX-based dashboards for both AKFIN and PacFIN. Additionally, a proof-of- concept mapping dashboard is in progress to display the data spatially using ESRI's Experience Builder tool.

This collaborative effort was extended to all communities on the West Coast making these data available to the Economics and Social Sciences Research Program (ESSRP) of all three Pacific science centers, AFSC, NWFSC, and SWFSC to support annual socioeconomic analysis and reporting on fishing communities.

Technologies: Oracle Database, SQL, PL/SQL, APEX, REST Data Services (ORDS), ESRI GIS Experience Builder

Climate and Environmental Indicators
Alaska Fisheries Science Center, 2018

AFSC scientists looked to automate an existing R program that reported on aggregated sea surface temperatures (SST) off the Bering Sea of Alaska. neXus aided in downloading and processing data from a series of API or web services to include the NASA Jet Propulsion Lab Multi-Scale High Resolution (JPL MUR) satellite and NOAA NESDIS STAR Coral Reef Watch program data. The results are aggregated spatially and delivered in several formats to include:

- Database tables that support the AKFIN and PacFIN Comprehensive datamarts.
- Reports delivered via AKFIN's private Oracle Answers dashboards.
- Web services that serve AFSC's scientists and support visualizations for NOAA Fisheries social media.

These routines continue to evolve as we expand the spatial extents evaluated and add new environmental indicators like chlorophyll and

wind speed to support the Ecosystem Status Reports (ESR) and Ecosystem and Socioeconomic Profiles (ESP) for Alaska.

Technologies: Oracle Database, SQL, PL/SQL, Business Intelligence Suite (OBIEE), REST Data Services (ORDS), R analysis, GitHub Integration, and Java

Multi-Regional Social Accounting Matrix Web App
Alaska Fisheries Science Center, 2018/2021

Social scientists from the AFSC developed a Social Accounting Matrix (SAM) that evaluated the effects of external shocks to Alaska fisheries using Microsoft Excel. This tool is used by analysts from the NMFS Alaska Regional Office (AKRO) and the North Pacific Fisheries Management Council (NPFMC) to evaluate the effects of potential management decisions. neXus worked with analysts from both the AFSC and the AKRO to port this complex matrix math-based MS Excel workbook into a web application hosted by PSMFC (https://nwecon.psmfc.org). Following on its success, that application was extended to support analysis of several commodity and industry-based shocks and their effects on both the seafood and non-seafood industries in eight major regions of Alaska along with, Washington/Oregon/California, and the Rest of the U.S.

Technologies: Microsoft Excel VB Analysis, Microsoft IIS and Windows Support, HTML, CSS, JavaScript, ASP.NET, MVC, and React.js

Marine Mammal Protection Act List of Fisheries
NOAA Protected Resources Division, 2018

neXus continues to support the NOAA Protected Resource Divisions of the Alaska and West Coast Regional Offices by updating the annual count of participants for the Marine Mammal Protection Act (MMPA) List of Fisheries. End-user Support,

This work produced several products for the AKFIN and PacFIN systems to include:

- AKFIN List of Fisheries Reporting, 2018 – A versioned datamart and ETL process the reports participants by fishery. These results are reported via the AKFIN APEX portal on a confidential report used to update the NOAA reports.
- PacFIN List of Fisheries Reporting, 2019 – Detailed research to evaluate commercial landings data, state and federal permitting, and associated logbooks to understand and better define the fisheries of the West Coast. This research led to the development of a LOF datamart, ETL process, application to the Comprehensive Fish Ticket datamart, and confidential PacFIN APEX report used to update the NOAA reports.
- Entanglement Gear Guide, 2022 – The Protected Resources Division published the [Guide for Identifying Gear from Marine Mammal Entanglements in the U.S. West Coast and Alaska](#) that describes the characteristics of each fishing gear and fisheries in which they are used. neXus worked with PSMFC GIS staff to generate datasets and maps, based off the List of Fisheries codification, which delineate the major fisheries. Additionally, neXus created a public web portal in Oracle APEX that presents these maps and dynamic reports (https://apex.psmfc.org/pacfin/f?p=501:3001).

The List of Fisheries codes continue to support commercial landings analysis and are used on additional projects for identifying the predominant fishery for vessel trips and incorporating into the PacFIN Fisheries Effort Mapping project for Offshore Wind (PacFEM).

Technologies: Oracle Database, SQL, PL/SQL, APEX, HTML, CSS, JavaScript, R analysis, GIS mapping and spatial data.

NOAA Office of Law Enforcement Support

NOAA Protected Resources Division, 2018

The AKFIN team first developed the Your Online Data Access (YODA) application in Oracle APEX to support OLE analysts who required consolidated commercial groundfish landing, vessel monitoring, and permitting information to find potential violations. neXus extended YODA to support additional fisheries by creating a separate module that processes and identifies potential anomalies in the Saltwater Charter Halibut logbook data.

In 2021, our team worked with PacFIN staff to implement a similar Oracle APEX application to support the West Coast OLE office. Two additional modules were developed: one that processes disparate commercial landings, VMS, and permitting sources to identify potential violations for those not accurately reporting their VMS location, and a second that reports on an Artificial Intelligence (AI) predictive analytics model that identifies vessels potentially operating in closed areas. Both apps continue to support both the Alaska and West Coast NOAA OLE offices.

Technologies: Oracle Database, SQL, PL/SQL, APEX, HTML, CSS, JavaScript, REST Data Services (ORDS), Python, and Linux Support

Fisheries Management Team Development

Pacific Fisheries Management Council and West Coast Regional Office, 2019

Our team began providing data analytics and reporting services to the Highly Migratory Species management team in 2019 and continue to work with the Pacific Fisheries Management Council (PFMC), NMFS regional offices (WCR and PIRO), and science centers (PIFSC and SWFSC) to modernize their data management processes. An example of these include:

- Economic Stock Assessment and Fishery Evaluation (SAFE), 2021 – PFMC economists publish the Economic SAFE on an annual basis.

For many years, the reports were generated from PacFIN's Oracle BI repository and Answers dashboards. These reports were exported from Answers, manually manipulated in Google Sheets, and then linked to the council website. neXus automated this process by developing a datamart and ETL process that outputs data and visualizations to a web-based portal in APEX.

- Regional Fisheries Management Organization (RFMO) Reporting, 2021 – Partner agencies are required to produce regular submissions to various RFMO on a routine basis. An effort was undertaken to automate compilation of a complex requirement, the Western and Central Pacific Fisheries Commission (WCPFC) Category 1 report. This report brings together several disparate datasets from the West Coast, Hawaii, and Tropical Territories providing a full picture of commercial HMS data via private Oracle APEX report.
- Reports Coordination and Workflow Application, 2023 – neXus worked with the HMS Professional Specialty Group to build a workflow application, using Oracle APEX, which allows for registering and tracking report obligations for the RFMO. This JIRA-like tool not only supports task management and coordination but might also be expanded upon to support automated data compilation and reporting in the future.

Technologies: Oracle Database, SQL, PL/SQL, APEX Business Intelligence Suite (OBIEE), HTML, CSS, and JavaScript

AFSC Data Management, Analytics, and Reporting
FIN Programs, 2019

neXus worked with the AFSC to develop the Alaska Data Management Application to support upload, consolidation, and reporting on several sources that support Stock Assessors and their analytical needs. This Oracle APEX-based app includes three modules:

- Ecosystem and Socioeconomic Indicators - Over 30 data providers upload contributions of over 120 indicators of data and metadata used by the Ecosystem and Socioeconomic Profiles (ESP) for the annual fisheries evaluation process. The data are uploaded via the tool, consolidated, and delivered via web service to support an R-markdown process that automatically compiles the final report.
- Stock Assessment Results Archive – The results of each year's Stock Assessment Fisheries Evaluations (SAFE) are uploaded, consolidated, and delivered via web service to support a series of R-generated data visualizations and reports to both the North Pacific Fisheries Management Council (NPFMC) and NOAA Headquarters for required annual reporting.
- Stock Assessment Surveys – Stock assessors download, process, and re-upload several data sources to include IPHC survey information that supports the annual evaluation process.

Technologies: Oracle Database, SQL, PL/SQL, APEX, Business Intelligence Suite (OBIEE), REST data services (ORDS), and R-markdown integration, HTML, CSS, and JavaScript

FIN Quality Assurance and Quality Control (QA/QC)
PSMFC FIN Programs, 2019

The QA/QC practice is an important one that ensures the FIN data systems are running and populating as expected. neXus continues to work on several internal FINSmart projects that improve data efficiency and support the review and validation of logs, metrics, and metadata to

inform staff and stakeholders on the state of the FIN databases. These include:

- Metrics Application – Revamped an existing application that supports the run, archive, and collection of metrics queries in the FIN's data management systems. The results of these metrics are then reported on and visualized in several applications.
- Data Source and Product Registrations – Developed an internal application to collect metadata about each load process and associate them with their target objects. Doing so allowed neXus to link the source loads logging and metrics into reports and visualizations that show the status of each table in a load.
- Data Steward Dashboards – Currently working with RecFIN to develop a Data Steward Dashboard that reports logging and metrics results to agency data providers and other interested parties.

Technologies: Oracle Database, SQL, PL/SQL, APEX, HTML, CSS, JavaScript, and GitHub integration

AI and Machine Learning Support
AFSC and PSFMC FIN Programs, 2022

The neXus team has been a part of several Artificial Intelligence (AI) and Machine Learning initiatives helping the coordinated effort for the NOAA OLE YODA application as well as aiding with:

- Electronic Monitoring Shark Data Management – neXus is routinizing a pre-built machine learning and computer vision process that extracts still images from Electronic Monitoring (EM) videos to identify shark species and eventually provide and their length to researchers and assessors. Our team is working with AKFIN, AFSC and developers from the University o f Washington to configure the PSMFC SkyNet Linux server, obtain and manage the relevant EM videos and data, and run and manage the

Python-based modeling scripts. neXus will support the hosting and maintenance of this code on the PSMFC GitHub repository.

- Chumputer Vision/Scale Image Aging – We are working with AKFIN and the AFSC Genetics Program to develop and train a machine learning process that analyzes digital images of Chum salmon scales. These scale images are cropped, enhanced, and examined using Python to create and train models that will determine the number of annuli on a scale used to estimate salmon ages.

neXus' developers are working with PSMFC IT Staff to identify the best way to implement these AI and machine learning processes on the Linux-based SkyNet server.

Technologies: Oracle Database, SQL, R analysis, Jupyter Notebook, Python, GitHub integration, and Linux Support

neXus Personnel

neXus Data Solutions' developers have decades of experience working on fisheries-focused IT projects throughout Alaska, the West Coast and beyond.

Core Development Team

This Core Development Team comprises senior-level programmers with an un-compared depth of experience for providing technical solutions to the PSMFC and its partner agencies. This team will remain available to the FIN projects as long as they are in neXus' employment.

For additional details on our team member experience, please see *Appendix A: neXus Core Development Team Resumes.*

Camille Kohler
Chief Data Wrangler

Camille Kohler is the founder and President of neXus Data Solutions, LLC as well as the Contract Administrator and Sr. Project Manager/Sr. Programming Analyst for all efforts taken on for the PSMFC. Having worked for the FIN programs for over 23 years, Camille gained a breadth of knowledge in fisheries and socioeconomic data management, analytics, and reporting that cannot be matched. Having filled the roles of Project Manager, Sr. Programmer/Analyst, and Business Analyst on many Oracle database, business intelligence, and analytics and reporting projects for the West Coast FIN programs.

Bob Nigh
The Techy Guy

Our Sr. Technical Lead/Sr. Programming Analyst has a range of technical skills and a knack for finding practical solutions for the most difficult problems. He has an un-matched understanding of data analysis, database development, and BI tools as well as a familiarity of the Alaska and West Coast fisheries. He offers expert-level support in the areas of Python development for statistical analysis and system integration as well as Oracle APEX and JavaScript experience that would serve the commission well. Bob has worked on projects that support the PSMFC mission for over 15 years.

Frank Orozco
Designer Extraordinaire

Frank is a Sr. Programming Analyst who loves to design and code solutions. His passion lies in front-end development and UI design with a great wealth of knowledge in HTML/CSS/JavaScript and Oracle Application Express. He is a lifelong learner and continues to develop his skills in the Oracle back-end suite with SQL and PL/SQL and provides oversight to all front-end system development. After 4 years of providing support the FIN development teams, Frank has gained a good understanding of the Alaska and West Coast fisheries.

Jared Fuller
Fishy Expert

Jared is a creative problem solver interested in supporting biology and the oceans through well integrated data. He brings over 10 years of fisheries experience working aboard commercial fishing vessels to collect data, developing, and implementing electronic monitoring programs domestically and abroad, and earning a master's in Ocean Food Systems. Jared combines deep passion, transdisciplinary communication, and technical knowledge to build efficient solutions to wicked problems. This Sr. Programming Analyst brings quality and value to every fishery and technical project he works on.

Additional Resources

In addition to our Core Development Team, neXus provides access to other programming and data support services as needed. Current members include:

- **Lorelie Enos** – A former AKFIN employee, this Sr. Programming Analyst has fisheries and database development, design, and analysis experience. With over 23 years in the industry, she is a valuable resource to the neXus team.
- **Jordan Demientieff** – This Programming Analyst specializes in AI and machine learning and is pursuing a Master of Arts in Data Sciences. He has provided support to several notable AI projects including Chumputer Vision/Scale Image Aging.
- **Jalen Martinez** – Jalen is a Junior Programming Analyst who is honing his skills in Oracle database and APEX development. He acts as Frank's go-to person in providing well designed web applications and reporting solutions.

neXus References

Our team has collaborated with scientists and fisheries managers from West Coast Regional Fisheries Councils, NOAA Regional Offices, and Science Centers. The following project sponsors can speak to our depth of knowledge, capabilities for working with fisheries data, and dependability when it comes to delivering sound technology and data solutions.

Kalei Shotwell **NOAA Alaska Fisheries Science Center** *kalei.shotwell@noaa.gov*	neXus' programmers have worked with Ms. Shotwell for 12 years implementing data reporting, analytics, and management services that support the Stock Assessment and Fisheries Evaluations (SAFE). We are currently developing and maintaining the AFSC Data Management Application in support of the Ecosystem and Socioeconomic Profiles (ESP) and the Stock Assessment Results Archive (SARA).
Cindy Tribuzio **NOAA Alaska Fisheries Science Center** *cindy.tribuzio@noaa.gov*	The neXus team is currently working with Ms. Tribuzio on the Electronic Monitoring Shark Data Management project, providing programming and technical support to a machine learning project that employs Python models to identify shark species and lengths from still images extracted from Electronic Monitoring videos.
Dan Lawson **NOAA Protected Resources Division** *dan.lawson@noaa.gov*	Mr. Lawson has been the sponsor of several data management projects with the NOAA Protected Resources Division to include the evaluation and reporting for the Marine Mammal Protection Act List of Fisheries as well as the West Coast Entanglement Gear Guide.

neXus Subcontractors

Our team is open to collaborating and working with additional tech firms to extend our capabilities and capacity as needed. We are currently in agreement with Integrated Geospatial, LLC.

Integrated Geospatial, LLC John M. Koltun, Founder and Principal *john.koltun@ integratedgeospatial.com*	Integrated Geospatial, LLC provides a suite of GIS-related services to include systems design, system implementation, technology assessment, and project management. Their services would enhance neXus' capabilities towards providing reporting and analytics using ESRI ArcGIS and other products. *Mr. Koltun's CV is available upon request.*

Rate Proposal

neXus Data Solutions, LLC offers competitive rates when it comes to providing the fisheries technical support required by the PSMFC FIN data management systems, development, analytics, and reporting projects. Our expertise is provided on a time and materials basis at the following rates.

Project Role	Hourly Rate
Sr. Project Manager/Sr. Programming Analyst	$135
Sr. Technical Lead/Sr. Programming Analyst	$135
Technical Lead	$130
Sr. Programming Analyst	$120
Programming Analyst	$95
Jr. Programming Analyst	$75
Intern/Data Support	$55

We present our Core Development Team, whose talent and experience will be augmented by additional team members whose participation may fluctuate as contracts require.

- Core Team
    - Camille Kohler – Sr. Project Manager/Sr. Programming Analyst
    - Bob Nigh – Sr. Technical Lead/Sr. Programming Analyst
    - Frank Orozco – Sr. Programming Analyst
    - Jared Fuller – Sr. Programming Analyst
- Auxiliary Team
    - Lorelie Enos – Sr. Programming Analyst
    - Jordan Demientieff – Programming Analyst
    - Jalen Martinez – Jr. Programming Analyst

As demonstrated in our experience and expertise we have a strong working knowledge of Oracle database products, to include APEX and OBIEE and can provide technical support in many programming languages and software platforms. However, if additional resources are required,

we are happy to explore the addition of team members or look for other subcontractors to fulfill the needs of the FIN programs.

The table below illustrates the number of hours each team member might spend on PSMFC's projects over the next year with our dedicated Core developers and auxiliary team members as needed.

Annual Budget		
	Hours	Cost
Core Team		
Camille	1,560	$ 210,600
Bob	1,040	$ 140,400
Frank	1,820	$ 218,400
Jared	1,820	$ 218,400
Auxiliary Team		
Jordan	520	$ 62,400
Lorelie	520	$ 49,400
Jalen	1,560	$ 117,000
Total	*8,840*	*$ 1,016,600*

The following charts provide an estimate for the percent of total hours and subsequent budget for each team member and their participation in each of the Primary Work Tasks for:

- Database Development
- API Web Services and Data Processing
- Improvements for Data Efficiency
- Data Analytics
- Application Development
- User Support

Resource	Total Hours	Database Development			API/Web Services and Data Processing			Improvements for Data Efficiency		
		Pct	Hrs	Tot	Pct	Hrs	Tot	Pct	Hrs	Tot
Camille	1,560	20%	312	$ 42,120	15%	234	$ 31,590	20%	312	$ 42,120
Bob	1,040	20%	208	$ 28,080	20%	208	$ 28,080	20%	208	$ 28,080
Frank	1,820	15%	273	$ 32,760	0%	-	-	0%	-	-
Jared	1,820	20%	364	$ 43,680	20%	364	$ 43,680	20%	364	$ 43,680
Jordan	520	15%	78	$ 9,360	0%	-	-	0%	-	-
Lorelie	520	85%	442	$ 41,990	0%	-	-	0%	-	-
Jalen	1,560	15%	234	$ 17,550	0%	-	-	0%	-	-
			1,911	$ 215,540		806	$ 103,350		884	$ 113,880

Resource	Total Hours	Data Analytics			Application Development			User Support		
		Pct	Hrs	Tot	Pct	Hrs	Tot	Pct	Hrs	Tot
Camille	1,560	20%	312	$ 42,120	10%	156	$ 21,060	15%	234	$ 31,590
Bob	1,040	20%	208	$ 28,080	15%	156	$ 21,060	5%	52	$ 7,020
Frank	1,820	0%	-	-	75%	1,365	$ 163,800	10%	182	$ 21,840
Jared	1,820	20%	364	$ 43,680	10%	182	$ 21,840	10%	182	$ 21,840
Jordan	520	85%	442	$ 53,040	0%	-	-	0%	-	-
Lorelie	520	0%	-	-	15%	78	$ 7,410	0%	-	-
Jalen	1,560	0%	-	-	85%	1,326	$ 99,450	0%	-	-
Total			1,326	$ 166,920		3,263	$ 334,620		650	$ 82,290

neXus understands the need to be flexible as contract work for the prime fluctuates throughout the year and can adjust accordingly to suit the FIN programs' needs

Example Pricing

The PacFIN program would like to create a web-based, public report that summarizes commercial landings in the Highly Migratory Species (HMS) West Coast commercial albacore tuna fishery. The report would be stratified by state, month, and year and would require suppression of confidential data, evaluated at the cell level.

neXus would propose creating an Oracle APEX-based report in PacFIN's existing reporting tool that ties in with their public-facing website and makes use of the existing APEX global template. This template supplies access to a standardized set of filter modals, download features (.csv and .xlsx), metadata reporting, and share functionality. To start, our team will work with the FIN program to ensure our understanding of the requirements and confirm the specifications for reporting and filtering. Our development team would approach this through three high-level task categories.

- **Database Component Development** – Some amount of database analysis and query development might be needed to establish the report query. neXus would assume we are operating off the existing fish tickets data repository where commercial landings are flagged as part of the HMS albacore tuna fishery and desired landings metrics for weight and value are readily available. A SQL query or PL/SQL package might be developed to pull all needed fields for report columns and filters. Depending on the complexity of the confidentiality rules and needs for dynamic month groupings, this report may only require an SQL query. However, if more complexity is needed, we have included an *optional* PL/SQL package to facilitate dynamic month groupings based on the count of vessels and dealers. This package might also be used to more dynamically calculate sub-totals and totals to ensure confidential cell values cannot be back-calculated. For both options, a confidentiality flag will be delivered to the APEX report for evaluation.

- **Oracle APEX Reports Development** – Once the data is analyzed for confidentiality, the query results will be implemented into the public PacFIN APEX reporting system using the application's global template and common reports PL/SQL package.
    - Filters – The year, month, and state agency values will be filtered using the available Filters modal from the global template.
    - Metrics – Key dimension values and landing aggregates will be selected from the SQL query of PL/SQL package.
    - Confidentiality - Cells flagged as confidential will be formatted using HTML, to report three asterisks ('***') values.
    - Exports – The pre-existing export package, made available through the global template, will be implemented to use the standard .csv and .xlsx export options.
    - Registration - Completed reports will be registered through the Database Command Center's Reports Administration tool and documented with the highest-level metadata to include the report title, description, and the "Public" role.
    - Auditing – Using the global template packages, neXus would ensure that reports access Is audited within the PacFIN system.
- **Project Administration**, **Testing, and Documentation** – Additional time is allotted for testing and validation, move to production, and project meetings. The last step of this process will be to add column-level metadata, footnotes, and business rules through the Reports Administration application, providing the final bit of documentation once the reports have been moved into production.

We estimate this work to be completed for between *$8,825* and *$12,425* depending on the optional PL/SQL package implementation. See the table below for an estimate of hours and cost.

Example Pricing Estimate		
Database Component Development		
Data Analysis and Query Development	15	$ 2,025
PL/SQL Package *(optional)*	30	$ 3,600
Oracle APEX Reports Development		
Public Reports Development	30	$ 2,850
Reports Administration	4	$ 380
Project Administration, Testing, and Documentation		
Testing/Validation and MTP	15	$ 1,800
Project Management and Meetings	10	$ 1,200
Metadata and Documentation	6	$ 570
Total Investment	***110***	***$12,425***

Appendix A: neXus Core Development Team Resumes

The neXus Data Solutions Core Development Team includes:

- Camille Kohler - Sr. Project Manager/Sr. Programming Analyst
- Bob Nigh – Sr. Technical Lead/Sr. Programming Analyst
- Frank Orozco – Sr. Programming Analyst
- Jared Fuller – Sr. Programming Analyst

The table below illustrates the experience our core team brings to the dynamic projects we work on for the PSMFC FIN programs.

Technology Experience in Years	Camille	Bob	Frank	Jared
Fisheries Analysis	**23**	**15**	**4**	**12**
Commercial Fisheries	23	15	4	12
Recreational Fisheries	7		3	6
Observer and Electronic Monitoring (EM)	23			10
Subsistence Fisheries	2			
Ecosystem and Socioeconomic	10	8	4	
Application Programming	**9**	**20**	**6**	**2**
C#		15	5	
Java		8	5	
R*	4	4		2
Python		20	4	
ASP.NET	3	12	5	
JavaScript	3	10	6	
HTML and CSS	5	10	6	
Oracle APEX	9	7	5	1
GIS				2

Technology Experience in Years	Camille	Bob	Frank	Jared
Data Analytics	**23**	**30**	**5**	**7**
MS Access	6	25		
MS SQL Server	7	15	4	
Oracle	23	25	4	7
MS SSIS	1	10		
MS SSRS	1	2		
Oracle BI Suite (OBIEE)	14	2		
Oracle Forms/Reports	2			
PL/SQL	23	25	4	2
SQL	23	30	5	7
T-SQL	7	15		
MS VBA	3	10	2.5	
Systems	**27**	**21**	**5**	**18**
Linux		15		18
Unix	2	5		
Windows	27	21	5	10
Windows Server	2	11		
Mac OS				
Other				
Atlassian JIRA/Confluence	4	4	4	8
REST API's	2	10	5	
GitHub	2	8	5	6
Development Operations (DevOps)	15	21		6
Systems Administrator				6
Database Administrator	4	6		
Providing analysis and support for R, not R development				

Camille Kohler

Sr. Project Manager / Sr. Programming Analyst

Our chief data wrangler with over 20 years of IT consulting experience focused on application and database development with a concentration on business and database analysis, database design and warehouse implementation, reporting and ETL programming using Oracle Database, SQL, PL/SQL, and Oracle Business Intelligence (BI) tools.

Experience

2014 – present

neXus Data Solutions, LLC
President and Founder
Oversee day-to-day business operations and work as contracted developer to provide database design, development, and implementation services. Provide support to the Pacific States Marine Fisheries Commissions and the Alaska, Pacific, and Recreational Fisheries Information Networks (FINs) to develop databases and analytical reporting solutions. Directed fisheries data projects to include:

- PFMC Stock Assessment and Fisheries Evaluation Portals
- NPFMC Allocation and Program Review Portals
- NOAA Office of Law Enforcement Data Application
- PSMFC PacFEM Database for Offshore Wind Analyses
- NMFS Protected Resources List of Fisheries

2001 – 2013

Resource Data Inc.
Project Manager/Sr. Programming Analyst
Developed a fisheries data warehouse used to integrate multiple state and federal agencies data into an analytical database for the Alaska Fisheries Information Network (AKFIN). Worked with the North Pacific Fisheries Management Council (NPFMC), AK Department of Fish and Game (ADF&G), and NOAA Fisheries to perform business and database analysis and design to build a reporting system using SQL, PL/SQL, and Oracle Business Intelligence (BI) tools. Notable projects include:

- Comprehensive Datamarts Design and Develop
- Fisheries of the U.S. (FUS/FOSS/CLS) Reporting
- AFSC Stock Assessment BI Dashboards
- NMFS AKR Regulatory Flexibility Act Analyses
- AFSC Community Profiling Datamart and BI tool

Database Administrator
Oversaw several development and production database servers for the firm to include setting up and maintaining both MS SQL Server and Oracle databases for project use. Responsibilities included importing, exporting, and analyzing data, along with daily monitoring of databases to ensure availability.

Personal Info

Office
Anchorage, AK

Email
camille@nexusdatasolutions.com

Technical Skills

Oracle SQL
Oracle PL/SQL
Oracle Business Intelligence Suite (OBIEE)
Oracle Answers
Oracle APEX
Oracle Database Administration
SQL Developer
MS SQL Server
MS T-SQL
R for analysis

HTML
CSS
ASP.NET
JavaScript

Industries

Fisheries Management
Local Government
Utility Management
Telecommunications
Small Business

Bob Nigh

Sr. Technical Lead / Sr. Programming Analyst

neXus' all-around technical expert with over 30 years' experience in software development. From building back-end database solutions to complex middleware and high-end reporting tools, Bob finds the most innovative solutions to complicated technical problems.

Experience

2016 – present

neXus Data Solutions, LLC
Technical Lead
Lead developer for our consulting firm providing expertise and oversight on web and database application development. Oversees junior developers and finds the most innovative solutions to complicated technical problems. Directed several projects through the Pacific States Marine Fisheries Commission Fisheries Information Network's to include:
- PSMFC eLogbook Application
- NOAA OLE West Coast YODA Application
- AFSC Data Management Application
- AFSC Multi-regional Economic Modeling Software

2019-2016

Resource Data, Inc
Associate Software Engineer
Worked as a consultant for multiple clients with jobs to include writing custom Sharepoint processes, developing and MVC/JQuery applications; writing load processes for work management systems #; developing ETL load processes for the AKFIN Oracle data warehouse; and acting as a temporary Oracle DBA.

2000-2009

General Communications, Inc (GCI)
Contract Software Engineer
Developed several applications to include REST middleware using Python and Apache for a Zope-based web site for live-streaming video; python imaging library-based system to render web advertisements; database for invoicing application; and SQL processes for exporting data for an LDAP server.

1996-2000

SGS Environmental
Software Engineer
Helped to implement Oracle-based laboratory information management system (LIMS) by developing software to facilitate data upload and SQL extraction for reporting. Created a PL/SQL and Visual Basic database abstraction layer to facilitate reporting/data extraction from LIMS.

Personal Info

Office
Anchorage, AK

Email
rnigh@nexusdatasolutions.com

Technical Skills

Oracle Database
Oracle SQL
Oracle PL/SQL
Oracle DBA
Oracle APEX
MS SQL Server
PostreSQL

Python
Java
Visual Basic
C#
HTML 5 / CSS3 / SASS
JavaScript ES10
.NET Core
Entity Framework Core

Industries

Fisheries Management
Oil and Gas
Telecommunications
Local Government
Small Business

Frank Orozco

Sr. Programming Analyst

A detail-oriented programmer with expertise in both front-end report development and user interface design as well as back-end database. Experienced in developing web applications using Oracle and Microsoft Technologies with proven knowledge in both mobile development, software design, data modeling, data analysis and Agile methodologies. neXus' UIX developer extraordinaire!

Experience

2020 – present

neXus Data Solutions, LLC
Sr. Programming Analyst
Design, develop, test and deploy web applications and reporting tools using Oracle database and Application Express (APEX). Implement data visualizations, interactive reports, and forms. Create client-side applications using JavaScript, jQuery, and React. Backend development applying the best practices to create packages, stored procedures, tables, and dependent objects at Oracle PL/SQL. Notable projects include:

- PFMC Stock Assessment Fisheries Evaluation Portals
- NPFMC Allocation and Program Review Portals
- NOAA Office of Law Enforcement Data Application
- AFSC Data Management Application
- AFSC Regional Economic Modeling Software (MRSAM)

2022 - present

Cigna Healthcare
Contract Software Engineer
Design and develop database objects in SQL Developer (Oracle 19c). Support other developers to implement features in Oracle Application Express. Develop queries and retrieve data from Custom Interactive Reports.

Education

2019

Las Americas Institute of Technology - Dominican Republic
Associates of Computer Science
Included studies in:

- Relational Database Management Systems (Oracle 12c and SQL Server)
- Programming – Mobile App Development with Android Studio and Java
- Object-oriented design and software architecture - Microsoft C#/ .Net Core

Personal Info

Office
Jersey City, NJ

Email
forozco@nexusdatasolutions.com

Technical Skills

Oracle Database
Oracle SQL
Oracle PL/SQL
Oracle APEX
SQL Developer

HTML 5 / CSS3 / SASS
JavaScript ES10
jQuery
React / React Native
React Libraries (Material UI, React Icons, Native Elements)
Redux

.NET Core
Entity Framework Core
Web API
JSON Web Tokens
Microsoft Azure
Responsive UI Design
Adobe XD

Industries

Fisheries Management
Health Insurance
Small Business

Jared Fuller

Sr. Programming Analyst

A passionate and creative problem solver with both a fisheries background and technical expertise to provide quality data solutions. Jared brings former observer and electronic monitoring implementation experience to his database and application design and development projects.

Experience

2022 – present

neXus Data Solutions, LLC
Sr. Programming Analyst
Provides innovative business intelligence, data analysis, and reporting to the Pacific States Marine Fisheries Commission Alaska, Pacific, and Recreational Fisheries Information Network programs (FINs). Develops analytical solutions and provides ETL programming support on such notable projects to include:

- PFMC Stock Assessment and Fisheries Evaluation Portals
- NPFMC Allocation and Program Review Portals
- PSMFC PacFEM Database for Offshore Wind Analyses
- AFSC Shark Electronic Modeling Data Management

2015 – 2022

Saltwater Inc.
Chief Technical Officer
Led the development of an electronic monitoring program on over two hundred commercial fishing platforms. Conceptualized product's hardware and software specifications, providing quality data to fisheries management agencies worldwide. Implementations for:

- NMFS Alaska Region: Alaska Fixed Gear and Trawl
- NMFS West Coast Region: Groundfish Program, Pfleger Institute of Environmental Research Deep-set Buoy Gear
- Southeast Region: Mote Marine Laboratories Bottom Longline and Vertical-line fleet.
- Atlantic Region: Highly Migratory Species Tuna Monitoring Program, New England Atlantic Herring, and Puerto Rican Artisanal fleet.
- Pacific Islands Region: Hawaii Shallow/Deep-set Longline
- International: CCAMLR - Antarctic Toothfish, Secretariat of the Pacific Community - Longline and Distant Water, New Zealand Ministry of Primary Industries – Longline fleet.

2012 - 2014

National Marine Fisheries Service
Observer
Worked independently in a challenging environment on commercial vessels fishing in the Bering Sea, Alaska. Collected, identified, and managed extensive fisheries data. Successfully executed field sampling and technical specimen extraction.

Personal Info

Office
Anchorage, AK

Email
jfuller@nexusdatasolutions.com

Technical Skills

Oracle SQL
Oracle PL/SQL
Oracle APEX
SQL Developer

R for analysis
Python

DevOps
Systems Administration
Linux Certified

Industries

Fisheries Management
Agriculture
Education
Healthcare