DEPARTMENT OF TOURISM
DEVELOPMENT OF AUTOMATED ONLINE TOURISM INFORMATION SYSTEM AND DASHBOARD PHASE 1

TERMS OF REFERENCE / PROJECT BRIEF

I. Background:

The Department of Tourism (DOT) - Statistics, Economic Analysis and Information Management Division (SEAIMD) produces the essential monthly tourism indicators, travel characteristics and compiling data from accommodation establishments. SEAIMD also compiles data from the local destinations thru the Regional Offices (ROs) and Local Government Units (LGUs). Mainly, these are administrative data from accommodation establishments and tourist attractions. ROs and LGUs are also capacitated to do the local visitor sample surveys, however, the implementation depends on the availability of resources of both the ROs and the LGUs. Hence, DOT do not have any information that can be used to analyze the tourism products that the local destinations are offering as well as the market that experience or buy them.

Further, DOT has been using systems made from outdated programming languages like Foxpro. It is also offline and aggregation is done from submissions using document format like excel, CSV, and even word at times. Reporting is meanwhile done thru paper submissions or thru electronic formats via email.

The disadvantage of such systems was highlighted during this year's community quarantine. There is a need to upgrade the systems being used more so now to make it more resilient, and at the same time, more adapted to the technologies being used now by stakeholders especially the private sector.

The problem then is that the DOT gathering systems are incomplete and is not anymore responsive to the need of the data users in terms of efficiency and effectiveness on data gathering, encoding, consolidation, processing and publication.

II. Objective

The project aims to develop online and cloud-based systems and webpages for the three tourism information systems of DOT that has the following features:
1. survey tool
2. encoding and compilation tool
3. report template generation
4. reports generation
5. Interactive dashboard for statistics and other tourism information
6. Business analytics tool for DOT and other stakeholders.

III. The three (3) Modules of tourism Information System

1. Tourism Product Market Survey (TPMS) System

1.1 Business Process

The TPMS is a visitor sample survey that can be implemented by the regional offices as well as LGUs. Enumerators will be assigned to interview on tourist attractions or give instruction to visitors for online self-administered responses. Responses shall become part of the central database wherein data users can process reports and analysis.

The survey is intended to be administered nationwide.

1.2 Survey Tool

Please see attached TPMS Questionnaire

1.3 Module Requirement

1.3.1 Survey Application capable of being administered online and offline based on the TPMS Questionnaire
1.3.2 Online database
1.3.3 Online data processing tool
1.3.4 Online Data reports and analytics tool
1.3.5 Online Dashboard

1.4 System Users/Level and User Type per Level:

1.4.1 Survey Implementation

a. Survey Enumerator – Encode, Edit
b. Survey Data Verifier – Edit, Delete, Verify, Report Generation

1.4.2 Survey Processing

a. TPMS Regional Data Manager – Encode, Edit, Delete, verify, report generation for their region,
b. TPMS Central Data Manager – Encode, Edit, Delete, Report Generation up to the national level
c. TPMS system administrator – Report Generation, Survey and report template editing and creation

2. Hotel Data Management System (HDMS)

2.1 Business Process

The HDMS is an online automated version of the current Regional Travelers Statistics that DOT is using. It is a compilation of administrative data from accommodation establishments (AE) that are reported to LGUs and DOT Regional Offices. The indicators that come from this system are number of rooms and establishments, number of employees, visitor arrivals, average occupancy rates, average length of stay and average person (occupant) per room.

2.2 Standard Forms

Please see attached forms of DAE series, SAE series, VAR series, and Form A series for workflow and data requirement

2.3 Module requirement

2.3.1 Online Encoding System
2.3.2 Data Capture system

2.3.3 Online Database
2.3.4 Online data processing tool
2.3.5 Online Data reports and analytics tool
2.3.6 Online Dashboard

2.4 Intended Module Process

2.4.1 Accommodation Establishment Level

Accommodation establishment shall be asked by LGUs and DOT to submit the required data. Each accommodation that will agree to submit data shall also be able to generate reports regarding their AE and will automatically be in the mailing list for the aggregate reports from LGUs and DOT. They shall be asked to choose their method of submission, which they will have three (3) options:

2.4.1.1 Hotel Online Logbook Entry – if AE does not have any accommodation management system, they will be allowed to enroll and use the Hotel Online Logbook Entry (HOLE) module. AE can use this online module to log daily guests. It shall contain all the usual information entry points that hotel registration has:

a. Full Name
b. Sex
c. Birthdate
d. Address (City, Province, Country)
e. Nationality
f. Contact Numbers
g. Email address
h. Room Companions (with Nationality, Birthdate, and Sex)
i. Check-in date
j. Room Assignment
k. Room Rate
l. Meals / Food Service
m. Other fees incurred
n. Check-out date
o. Electronic Signature (if applicable)

The HOLE Module shall save an offline database in the local AE machine or their cloud-based drive. The data needed by DOT shall be saved automatically on the DOT server. Only items b, c, d, e, h (not including names), l, j, and n shall be forwarded to the DOT server.

If during registration, HOLE goes offline, data requirement shall be sent when the machine goes online again.

The use of the HOLE Module should be based on the availability of internet connection and dedicated machine for Hotel Registration.

2.4.1.2 Data Online Monthly Submission - AE management shall agree to fill up Data Online Monthly Entry (DOME) module. During an agreed day after the month, AE should encode monthly data in the online module:

a. Total Guest Arrivals and Guest Nights per Country of Residence (for foreign guests) / per province (for Philippine residents guests) per Sex.
   *Guest Nights for guests that are still occupying rooms during the reporting days shall only be counted up to the last night of the month.
b. Total Rooms Occupied.

2.4.1.3 Manual Monthly Data Submission – AE shall submit data by encoding it on a prescribed template that they can email or submit in-person to municipal or city tourism data compiler.

b. Total Guest Arrivals and Guest Nights per Country of Residence (for foreign guests) / per province (for Philippine residents guests) per Sex. *Guest Nights for guests that are still occupying rooms during the reporting days shall only be counted up to the last night of the month.
c. Total Rooms Occupied.

2.4.2 Municipal / City Level

The Municipal tourism data compiling office, which is usually the Tourism Office, shall have an account on the HDMS. They shall verify and complete submissions of AE in their level. They shall certify completeness or end of the compilation period for the month or quarter. They will have three (3) roles/assignments:

a. Verification of data – the municipal tourism data compiling office shall validate data submitted by AE in their locality. They shall look for possible errors. They are also the ones who will put the e-signature that shall certify completion and verification.
b. Encoding of manual monthly data submission of AEs
c. Generation of City and Municipal Summary Reports.

2.4.3 Provincial Level

The Provincial tourism data compiling office, which is usually the Tourism Office, shall have an account on the HDMS. They shall verify and complete submissions of municipalities and cities in their province. They shall certify completeness or end of the compilation period for the month or quarter. They will have three (3) roles/assignments:

a. Verification of data – the provincial tourism data compiling office shall validate data submitted by municipalities and cities in their province. They shall look for possible errors. They are also the one who will put the e-signature that shall certify completion and verification for the province

b. Encoding of manual monthly data submission of AEs in LGUs that did not agree to submit data monthly.
c. Generation of provincial City and Municipal Summary Reports.

2.4.4 Regional Level

The officer that handles statistics in the DOT regional office shall have an account on the HDMS. They shall verify and complete submissions of all LGUs, if needed. They shall certify completeness or end of the compilation period for the month or quarter. They will have three (3) roles/assignments:

a. Verification of data
b. Encoding of manual monthly data submission of AEs in LGUs that did not agree to submit data monthly.
c. Generation of all regional Summary Reports, including provincial and city/municipal.

2.4.5 National Level

In the DOT central office, the project officer will have to makes sure that all regional offices are complying with the system. Along with the statistical reports, they will have to make system assessment reports.

2.5 System Users/Level and User Type per Level:

2.5.1 Accommodation Establishment
a. AE Data Encoder – Encode, Edit
b. AE Data Verifier – Edit, Delete, Verify, Report Generation

2.5.2 Municipal / City Tourism Office
a. LGU Data Encoder – Encode, Edit
b. LGU Data Manager – Encode, Edit, Delete, Report Generation
c. LGU Data Verifier – Edit, Delete, Verify, Report Generation

2.5.3 Provincial Tourism Office
a. Provincial Data Encoder – Encode, Edit
b. Provincial Data Manager – Encode, Edit, Delete, Report Generation
c. Provincial Data Verifier – Edit, Delete, Verify, Report Generation

2.5.4 DOT Regional Office
a. DOT Regional Data Encoder – Encode, Edit
b. DOT Regional Data Manager – Edit, Delete, Report Generation
c. DOT Regional Data Administrator – Edit, Delete, Verify, Report Generation

2.5.5 DOT SEAIMD
a. DOT SEAIMD Data Manager – Encode, Edit, Verify, Report Generation, Publishing (online posting in dashboard)
b. DOT SEAIMD Data Administrator – Encode, Edit, Delete, Verify, Report Generation, Report Template Creation and Editing

2.6 Reporting Schedule

2.6.1 Initially, it shall follow the established data reporting from the regional offices to Data to compile monthly:

a. Guest Arrivals
b. Guest Arrivals by Nationality/Residency
c. Guest Arrivals by Sex
d. Guest Nights
e. Rooms Occupied
f. Rooms Available for the Day/Month
g. Number of Employees by Sex
h. Total Guest Arrivals by Age or Age Groups

2.6.2 Indicators generated monthly and annually:

a. Total Guest Arrivals by Nationality/Residency by LGU
b. Total Guest Arrivals by Sex by LGU
c. Top Destinations (baseline: Province / HUC)
d. Average Length of Stay
e. Average Occupancy Rate
f. Average Guest per Room
g. Total Rooms Available
h. Total Accommodation Est. per Type
i. Total Employees by Sex
j. Average age by Nationality or Residency by LGU

3. Travel and Tourism Statistics System

3.1 Gathering/batching of data throughout the reference month up to 7 days after reference month (e.g. a/d cards for the month of August should be completed on September 7);

a. DOT Regional gets the cards from BI Regional and sends them via courier to DOT Manila Office. Then the Data entry provider (encoder) from NAIA picks the cards at DOT head Office;
b. A BI regional personnel sometimes sends the cards via courier to Manila Airport and data entry provider (encoder) picks them up upon arrival at the airport;
c. BI Office sends summary report on arrivals to DOT Head Office either thru fax or sometimes to BI Manila at NAIA then DOT Head Office picks-up the report;

3.2 Encoding of Data in the Arrival/Departure Cards Processing Center (ADCPC) for 37 days and stages of work involve are:

a. collection and retrieval of cards – picked up every other day (for NAIA I, II and III) by data encoder;
b. sorting of cards – 20,000 to 30,000 of cards/day are sorted and arranged into batches according to flight numbers;
c. recording of all flights, input batch header and batch number;
d. encoding of a/d cards – cards will be encoded direct to computer terminals by encoders at NAIA Arrival/Departure Cards Processing Center (ADCPC) room;

e. backup of data encoded – encoded data are backed-up into the hard disk and in to compact disk (CD);
f. checking of data encoded;
g. validation of data encoded; and
h. transmission of encoded cards to the DOT for data treatment and processing – (for daily batch), encoded data was transmitted thru e-mail or in USB flash drive.

3.3 Validation, editing and generation of statistics (DOT Main office) – processed and generated by DOT Main Office personnel.
a. Encoded data submitted to DOT are validated for system and encoding errors using the data validation and conversion programs;
b. Validated data are processed for initial report generation using a DOS – based FoxPro generated program;
c. On review of initial reports, the data are processed once again using the Travel Tourism Statistical System (TTSS) DOS-based FoxPro program to generate all reports.
d. Preparation of report/analysis/memo and dissemination of visitor statistics.

3.4 Module Requirements
a. Online encoding system arrival/departure card and sea manifest.
b. Online Database
c. Online Data processing and generation of reports
d. Online Data reports and analytics tool
e. Migrate existing system / database to the new modules
f. Online dashboard
g. Provide user guide / operational guide and system manual

4. Tourism Statistics and Information Dashboard (webpage)

4.1 Visual Dashboard for primary tourism indicators from the three (3) systems, with interactive report generator for data tagged for public release., and repository for different tourism related management and data information, along with essential links to other information sites.
4.2 GUI and design will have to be discussed during the implementation.
4.3 It should be possible for central data managers to change layout or make it more dynamic to respond to current needs.
4.4 This will be a micro-page in the official tourism website.

IV. Deliverables

1. To design, develop, install, test and deploy a secured web-based and mobile web browser compatible through agile development. Must also support previous version of Internet Explorer, Mozilla Firefox, Google Chrome, etc..

2. Production of a detailed specification (Inception Report) of the system before development to ensure that any major issues are caught at an early stage.

3. The completed system must be configured and installed in the designated server.

4. The supplier will turn over whatever license it will bought during the development of the Tourism Information System to the Information Technology Division.

5. Technical documentation for the application during development and after deployment, vital for the ongoing maintenance and development of the system.

6. Delivery of approved specification which will include a detailed meeting to discuss requirements and the creation of a detailed specification document, outlining both functional and technical details of the system. Approval shall be required prior to addition and customization of the system.

7. Completion report including transfer of all source codes and licenses to the DOT.

8. Provide 3 sets of hard and soft copy of the documentation of the system, to include: policies, procedures, user manual, operations manual, administrator manual, and Frequently Asked Questions manual.

9. Provision to update the system's libraries

V. IT Supplier Requirement

1. Must submit authorized / certification of partnership.
2. Must be in information technology system business for at least 5 years.
3. Must provide at least one (1) technical support number.
4. Must have at least three (3) cloud solution architect. CV and certification of cloud architect must be presented or submitted.
5. Must have at least 4 IT related on-going or completed contracts or notice of proceed with government agencies.

VI. Warranty

1. At least two (2) year warranty period from the issuance of the Certificate of Acceptance. Warranty for the System shall be free of charge.
2. Must successfully install, configure/ setup and implement the TIS features stated in this Terms of Reference.
3. Re/Installation, setup, cabling, and re/configuration of the application to DOT server infrastructure.
4. Shall provide four (4)-hour response time upon receipt of call and next business day on-site visit when necessary.
5. Provide pro-active assistance for two (2) years starting from the date of system implementation.
6. Provide site visits, on-line telephone and e-mail support within the warranty period as needed by DOT. On call support should be available 24/7/365.
7. Provide configuration for standard configuration, performance tuning and disaster recovery support/ warranty period.
8. Bug fixes, corrections and minor adjustments free of charge during warranty period.
9. Winning bidder shall provide a point person to monitor and coordinate with the project team any concerns during the warranty period.

VII. Technical Specification

1. Application Support and Development
    a. Three module for the DOT Information System
    b. Travel and Tourism Statistics System must be three tier architecture

c. Hotel Data Management System must be three tier architecture
d. Tourist Product Market Survey System must be three tier architecture
e. Must have accounts management
f. Must integrate with single sign on
g. Must support scalable architecture to support with the number of concurrent users
h. Must support High Available architecture
i. Must support Disaster recovery architecture when main datacenter is down
j. Must use existing infrastructure of DOT
k. Must have audit logs management
l. Must have backup and restore plan
m. Must be able to integrate to other system from other Gov't agency.

2. Enterprise Data warehouse
    a. Architecture
        - The Analytics Platform product architecture must adopt a truly Massively Parallel Processing (MPP) Architecture that leveraging share-nothing architecture and open source in nature to yield a very good performance.
        - The product architecture must be design with no single point of failure entire system (include hardware level, system level and software level)
        - The product must provide ability to increase computing capacity in a linear fashion by adding new servers to the existing database system with a minimal or no downtime
        - Must be able to access external data sources on cloud and on premise in parallel.
        - The product should be capable of operating in a virtualized environment, public cloud and containers for development/test or Disaster Recovery.

    b. General Product Features

        - The product must provide native functionality to store XML, JSON within the database and support search, query functionalities
        - The product must support procedure language e.g. PL/R PL/Java, PL/C, PL/Perl, PL/Python in database
        - The product must support variance programming languages - R, C, Java
        - The product must support provide both Row-Store and Column-Store (columnar) in the same table.
        - The product must provide federated query options from multiple sources.
        - The product must support machine learning, text/graph/geo-spatial analytics out of box.
        - The product must support GPU's.

- The product must support real-time event processing/streaming.
- The product must support data backups locally, on external systems (such as S3 file system)

c. Integration features
   - The product must have ability to integrate structure data and unstructured data in a single view to enable user explore
   - The product must support data connection via ODBC, JDBC, OLEDB, Python API, Perl API

d. Administration Requirements
   - Provide system administration utilities and tools: to build, govern, access, and administer the platform.
   - The analytical platform shall provide event and performance monitoring tools

e. Reliability Requirements
   - The system shall not have a “single point of failure”, and shall provide complete fault-tolerance with full redundant hardware components.
   - The system shall possess automated recovery mechanisms.
   - The system shall possess automatic failover capabilities, i.e. the system shall continue to run in the event of failure of a hardware-processing unit

f. Security Requirements
   - The product must support variety authentication such as LDAP, AD, Kerberos.
   - The product must support authentication with password file
   - The product must provide full logging information such as system log, database log
   - The product must provide security trail such as access log or audit log
   - The product must support data encryption
   - The product must support password encryption with standard method eg. Md5
   - The product must support SSL data transport security

3. Enterprise Analytics
   a. Smart suggestions guide you towards visualizations that most effectively communicate your data.
   b. Use role-based access control to invite users into certain spaces (and not others), giving them access to specific content and features.
   c. Sharing option. Embed a dashboard, share a link, or export to PDF, PNG, or CSV files and send as an attachment
   a. Capable of analytics aggregations such as but not limited to Cumulative cardinality aggregation, Moving percentiles aggregation, Normalize aggregation, String stats aggregation, etc.

b. Rapidly create dashboards that pull together charts, maps, and filters to display the full picture of your analysis
c. Build customized dashboard-to-dashboard drilldowns that open up additional paths for analysis
d. Explore underlying data with a single click.
e. Must have log analysis
f. Must have infrastructure monitoring
g. Must have business analytics
h. Must have application performance monitoring
i. Must run in clustered architecture

4. Enterprise Search
    a. must perform and combine many types of searches — structured, unstructured, geo, metric
    b. must run in clustered architecture
    c. must be scalable
    d. can add a search box to an app or website
    e. Can Store and analyze logs, metrics, and security event data
    f. Can Use machine learning to automatically model the behavior of your data in real time
    g. Manage, integrate, and analyze spatial information using Enterprise Search as a geographic information system (GIS)
    h. Store and process genetic data using Enterprise Search as a bioinformatics research tool
    i. Full-text search such as but not limited to relevance scoring, highlighting, corrections, suggestions, percolations, query profiler, etc.

5. Platform Compatibility
    a. Must be capable of REST API for deployment management, SQL API, eccl CLI, Golang SDK and other generated SDKs.
    b. Able to integrate query DSL, console, JDBC client, ODBC client and tableau connector
    c. Must have or capable in high availability across zones
    d. Must be capable of automated snapshot for backup and easy configuration.
    e. Must be able to support language such as but not limited to java, .net, ruby, python, etc.
    f. Must be able to integrate to other cloud services such as but not limited to AWS, Microsoft Azure, Google Cloud, etc.
    g. Must be able to integrate to other business intelligence such as but not limited to Algolia, Marklogi, IBM Watson Discovery, elasticsearch, kibana, etc.

6. Security Features
    a. Must be capable of roled-based access control, native authentication, single sign-on, multi-factor authentication, attribute-based access control and custom authentication.
    b. Must have SOC 2 and CSA Star 2 Compliance

c. Must be capable of IP filtering, security information and event management (SIEM), host security analysis, network security analysis, timeline event explorer, detection engine, pre-built anomaly detection jobs, servicenow ITSM,detection rule alerting, malware prevention and data collection.
d. Must be ISO 27001/27017/27018
e. Must have data encryption, node to node encrypted communication, field and document level security.

7. Machine Learning Features
    a. Must be capable of:
        - File import wizard
        - Data Visualizer
        - Anomaly detection on time series
        - Outlier detection
        - Regression
        - Classification
        - Population/entity analysis
        - Log message categorization
        - Root cause indication
        - Alerting on anomalies
        - Forecasting on time series
        - Inference
        - Feature importance
        - Model snapshot management
        - Language identification

5. Project Management

    a. The bidder shall assign a Project Manager who will be the single point of contact (SPOC) for DOT during the actual dev, staging, production and operations of the Host System. The Project Manager shall be responsible for the following:
    b. Monthly Status report within the first week of the following month to DOT Information System end user or representative
    c. Providing problem management and resolution, and troubleshooting
    d. Escalation Procedures and Processes
    e. First Level Helpdesk and Technical Support Services

6. Helpdesk and Technical Support

    a. The bidder's First Level Helpdesk Support, in coordination with the Project Manager, shall provide the following services:
    b. 24 x 7 available helpdesk personnel and network and systems engineers
    c. Single telephone contact information
    d. 24 x 7 available telephone service
    e. Trouble ticket management and escalation service

VIII. Training and Preparation

1. Provide 10 personnel both non-programmer and programmer on python training.
2. Provide 10 personnel with technical and analytics training.
3. The supplier will provide 6 clustered training to DOT Regional Officer with the supervision of SEAIMD and ITD. To train the DOT Regional Officer usually from tourism or planning offices as “TRAINER” on the operation of TPMS, HDMS and TTSS.
4. The next activity would be to orient the Local Government Units (LGU) by the DOT Regional Officer on how to operate the TPMS, HDMS and TTSS with supervision of SEAIMD and supplier.
5. The next activity would be to orient the tourism establishments, accommodation establishments (AE), and tourist attractions (TA) by the DOT Regional Officer on how to operate the TPMS, HDMS and TTSS with supervision of SEAIMD and supplier.

Training		Duration	No. of Attendee
Enterprise Search Engineer	• Enterprise Search Stack Overview • Getting Started with Enterprise Search • Querying Data • Text Analysis and Mappings • The Distributed Model • Troubleshooting Enterprise Search • Improving Search Results • Aggregating Data • Securing Enterprise Search • Best Practices	5 days / 1 batch	10 pax
Data analysts	• Analytics fundamentals • Analytics search • Analytics visualizations • Analytics time series visual builder • Analytics geovisualizations • Analytics dashboards • Analytics advanced tools for analysts • Machine learning fundamentals • Analytics interfaces	5 days / 1 batch	10 pax
Python for non-programmer	• Basic Concepts • Data Types, Evaluations, and Basic I/O Operations • Flow Control – loops and conditional blocks • Data Collections – Lists, Tuples, and Dictionaries • Functions	5 days / 1 batch	10 pax
Python for programmer	• Control and Evaluations • Data Aggregates • Functions and Modules • Classes, Objects, and Exceptions	6 days / 1 batch	10 pax
Clustered Training	• Basic Operation of: o Tourism Product Management System o Hotel Data Management System o Travel and Tourism Statistics System	3 days / 6 batch	25 pax each

4. PROFESSIONAL REQUIREMENTS

Minimum Required Personnel	Minimum Years of Experience in handling related projects
Project Manager	5 years
Business Analyst	3 years
Database Administrator	5 years
Programmer/Graphic Designer	5 years
Quality Assurance	5 years

Criteria for Technical Personnel

- Project Manager
  - With 5 years of work experience
  - At least attended 40 hour of training related to project management.
  - Must be knowledgeable on database such as but not limited to MySQL, MsSQL, etc
- Business Analyst
  - With 3 years of work experience
  - Attended at least 3 training on business analyst in the past 3 year.
- Data Administrator
  - With 5 years of work experience
  - Must be knowledgeable on database such as but not limited to MySQL, MsSQL, OracleDB, etc
- Programmer / Graphic Designer
  - With 5 years of work experience
  - Must be knowledgeable on programming such as but not limited to java, Bootstrap, Javascript, HTML, CSS, etc.
  - Must be knowledgeable on database such as but not limited to MySQL, MsSQL, OracleDB, etc.
- Quality Assurance
  - With 5 years of work experience
  - Must be knowledgeable in software development method.

IX. Project Duration

6 months

X. Payment Terms

Government Procedure

XI. Approved Budget Cost

A budget of Twenty Eight Million Two Hundred Fifty Thousand Pesos inclusive of taxes chargeable against ITD Funds 2020.

Payment Reference	Amount
Inception Report	10%
Delivery of required tables (libraries) and working alpha (first) version of Tourism Information System with testing. Alpha Accomplishment Report	25%
Delivery of Beta Version – improved design and functional. Beta Accomplishment Report	25%
100% Completion of the Project. Accomplishment Report	25%
Training and certificate Documentation Endorsement of Source Code Endorsement of Manual Endorsement of License (if applicable)	15%

Project Officer

MANETTE T. REYES
OIC – SEAIMD

EMMANUEL ALFARO
Supervising - SEAIMD

RAMIL BASUEL
Senior TOO – SEAIMD