SPECIFICATIONS: PHASE 3 WEB-APP AND DATA ANALYTICS SUPPORT FOR THE SPATIAL TAX PORTAL

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1. Background:

South Africa produces regular data on the state of the national economy but very little is known about the economic geography of its cities or regions. Municipal managers and local officials are required to plan for more productive, inclusive and sustainable economies yet lack credible information about the 'what' and 'where' of jobs and investment. Businesses and other local stakeholders lack the evidence base from which to advocate for change or hold leaders to account. Whilst Statistics South Africa collect highly disaggregated household and demographic survey data, such as through the Census, regular sub-national firm-level data does not exist. Yet deep spatial inequalities are an important legacy of apartheid and continue to undermine developmental outcomes both within and between places. Businesses also complain bitterly that local decision-makers do not appreciate or understand the importance of local economic success. Therefore the creation of robust disaggregated and granular economic data are essential for monitoring changing economic conditions and sectoral and spatial shifts over time. Improving the economic performance of every municipality and province would transform national outcomes.

Since 2015 National Treasury and SARS have collaborated with the United Nations University World Institute for Development Economics Research (UNU-Wider) to establish a panel tax data set, created by merging four tax data sources – company income tax data, employee income tax certificate data, VAT data, and customs records. The updated SARS-National Treasury Panel has anonymised firm and individual tax level data, and may be accessed through a secure data facility at the National Treasury as part of further collaboration with UNU-Wider collaboration. National Treasury and SARS also partnered to geo-code the anonymised tax data included in the SARS-NT panel, enabling its utilisation for more granular spatial economic research and analysis.

In July 2021, the National Treasury (NT) and Human Sciences Research Council (HSRC), entered into a partnership, with objective of creating an **open access spatial tax panel** for metropolitan municipalities. The work so far has helped i) demonstrate the potential of the NT-SARS panel for sub-national data ii) reaffirm the large demand amongst policy-makers, practitioners and academics for accessing this type of data iii) confirm the need for training/capacity-building in making best use of the data iv) confirm the need for concurrent intelligence/systematic analysis of the data. The portal is currently available here: www.spatialtaxdata.org.za

2.1 Overview: core requirements

The HSRC seeks to appoint a capable service provider with experience in **web-app development** AND **data analytics** to assist in the *third phase* of upgrading and maintaining the a spatial tax portal.

The core tasks include:

1. **Application Maintenance**: 30 months – Approx 5 hours per month
    a. Monitor and ensure full functionality of the existing web platform including maintenance of: i) map explorer tool ii) dashboard tool iii) database download iv) user registration and database management. See www.spatialtaxdata.org.za
    b. Minor content updates from time to time and maintenance of the Django and Django Rest Framework to ensure that is kept up to date.
2. **UFS DevOps Server Maintenance**: 30 months – Approx 5 hours per month
    a. Application Performance & Application Security of Website Application hosted at University of the Free State. Includes MSSQL database performance and code (React / Python)
    b. Does not include/require: Linux Ubuntu server updates, MSSQL updates and its server security updates maintained by University of the Free State.
3. **Application Reporting**: Quarterly over 30 months – Approx 1 hours per month
    a. Quarterly google analytics reporting which include breakdowns of site traffic,
    b. Also Report on user registrations and data downloads.
4. **End User Support:** 30 months – Approx 4 hours per month
    a. Ensure that end users can register and amend their details in downloading the tax data; ensure automatic email links, forgotten passwords etc are functioning appropriately.
5. **New CSV data updates:** 3 x annual rounds of data updates – Approx 50 hours per annum
    a. Support expansion of databases with each annual addition of a new year of data (2022/23, 2023/24, 2024/25 databases when the data becomes avaialble) as well as adjustments to variable fields and inclusion of new datasets. This requires importing CSV data to MSSQL database which the Map Explorer uses.
    b. In addition, CSV data must be updated in data downloads area on website.
    c. A streamlined and systematic approach should be pioneered to allow for minimal effort in new rounds of database upgrading.
6. **Host Primary domain and light email:** 30 months
    a. Host Primary domain: spatialtaxdata.org.za
    b. Host Email Delivery via team@spatialtaxdata.org.za Email box: < 50 emails per month.
    c. Redirect domain: spatialtaxdata.co.za to spatialtaxdata.org.za
7. **Domain Renewals**: 3 x Annual
    a. spatialtaxdata.org.za
    b. spatialtaxdata.co.za

Note that there will be some flexibility in ensuring a reasonable workload in achieving these outcomes.

2.2. Overview of work completed in Phase 1 and 2:

Please see www.spatialtaxdata.org.za

- **Technology Stack**
  - React,js / D3.js / Uber's h3.js hex library
  - Mapbox.gl with Deck.gl
  - Django and Django Rest Framework (DRM)
  - Python
  - MS SQL
- **Features of the Project**
  - Hosting
    - The Primary DNS for spatialtaxdata.org.za is hosted with the current service provider. Application Email Delivery is also handled from this server.
    - The Database and Application Hosting is catered for by UFS - University of Free State (HSRC/UFS Chair in City-region Economies). UFS host and maintain the MSSQL database on a separate server. UFS only run MSSQL. A dedicated Ubuntu server was setup for this project to run on. UFS maintain the Ubuntu box whereas the service provider ensures application performance and application security.
    - Access to the UFS server can only be done via a VDI – Virtual Desk Interface (this is not a VPN). APIs and FE code can only be tested within the VDI. The VDI can access the primary desktop's drive, which allows limited file sharing between the 2 environments, VDI and developer's laptop.
  - Data Architecture
    - There are 86 CSVs currently in use.
    - The largest CSV is approx. 5.4GB
    - Total size of all CSVs is approx. 19GB
    - Total Db size approx. 27GB
    - 43 Hex & 43 Municipal CSV datasets are used when importing data.
    - CSV data is imported into assigned tables within db for each CSV.
    - CSVs can be imported using standard bulk import SQL queries.
    - The same 86 CSVs are also made available for upload through the "Download Data" section of the website. In order to download these CSVs a user will need to log in first.
    - In order to manage the alignment of CSVs, Tables and API querying from the FE a 'Filter Configuration Table' was added to the db to maintain this logic, within which includes the hierarchy drop down levels of the Filter required for the Map Explorer.
  - Django Rest Framework
    - User APIs
      - Login, Registration, Password, Profile.
    - A single API handles all Map Explorer FE calls
    - A data download FE API
      - Zip, CSV, 7z File downloads
      - 'Download History' View

        - 12 Dashboard API's
            - Custom data and custom json structures generated from existing (mostly municipal) tables in db, per dashboard.

- **User UX**
    - User
        - Registration with tokenised email verification and welcome email.
        - Forgot Password with tokenised email
        - Basic profile details management
    - Admin Area
        - Manage Users
        - Download History Report

- **Map Explorer UX**
    - See: https://spatialtaxdata.org.za/tax-data-landing
    - Overview
        - Once the required Filter selections are made, the user can use the Display button to update the Map view.
        - The settings cog on the Colour Legend opens additional options allowing the user to customise the view to their needs.
    - Filter (pivots off 'Config table', required shown with *)
        - Metro* (All or select one of 8 metros)
        - Output* (FTE, Firms, Median, Gini)
        - Temporal* ('year' and 'monthly')
        - Aggregate* (Varies according to upper selections, e.g. None, Industry, Wageband, Agegroup, Gender, and more)
        - View As* (Various, e.g. Absolute (default), Absolute Change, Percentage Change)
        - Year*
        - Second Year (For change based 'view as' selections)
    - Legend
        - Continuous Colour Scale
        - Linear/Log scale toggle
        - Min/Max Slider
        - Opacity Slider
        - 3D toggle
        - Monotone colour toggle
- **Download Data**
    - See: https://spatialtaxdata.org.za/download-data-landing
    - Ability to download bundles of files or individual datasets
        - Find Files:
            - Uses a similar navigation to the map explorer to arrive at the associated CSV.
            - Currently only Hex and Municipal CSVs are available within Zip/ 7z files. No Postal Code Csv datasets.
        - Download All Files: Allows the download of the following within 7z files:
            - Hexagonal Data
            - Municipal Data

- Municipal Shapefiles
- Hexagonal Shapefiles
- SIC7 Codes
- Metadata
- Release Notes
- User Guide

- **Dashboard UX**
  - See: https://spatialtaxdata.org.za/dashboards-landing
  - 12 dashboards each with unique interactive functionality to give economic insight per municipality.
  - Supporting toggles, navigation and content are in place to ensure favourable UX for each dashboard view.
  - Navigation
    - Select Municipality
    - Navigate each section "Overview, Economic Growth, Industry Diagnostic, Equitable Economies", or use the NEXT PREV navigation.
- **Resources**
  - See: https://spatialtaxdata.org.za/resources
  - Static page including downloadable files and useful external links.
- **About the Project**
  - See: https://spatialtaxdata.org.za/about-the-project
  - Static page about the project
- **Mobile User Notice**
  - See: https://spatialtaxdata.org.za/about-the-project
  - Should a user arrive on Mobile we offer to send an email link to review the site on desktop at a later stage. The site is not designed for mobile currently.

3.1 Mandatory quotation requirements:

Please provide the following in your quotation to qualify for evaluation:

- ***Company experience and examples of any related projects***
- ***Qualifications and experience of the lead developer assigned to this project***
- ***Technical workplan***
- ***Breakdown of prices***

Please note that the HSRC is a research institution and therefore value for money is essential. The facilitation of access to free public data is intended as a public good.

3.2 Timelines

The project will be delivered over a period of 30 months.

3.3 Reporting

The service provider will liaise with Dr Justin Visagie, Senior Research Specialist, Inclusive Economic Development, HSRC

3.4 Evaluation Criteria

The RFQ will be evaluated on the following functionality criteria:
The evaluation criteria for functionality aim to assess the bidder's capability, reliability and ability to execute and maintain a bid and / or contract. The minimum number of points that bidders have to obtain in order to B-BBE and price evaluation is 70. Bids that score less than 70 on functionality will be disqualified and will not progress to evaluation on Price and B-BBEE.

CRITERIA	Weight
Functionality	
Track record of the bidder on web-app development and data analytics The bidder must provide three (3) contactable reference letters to demonstrate track record on web-app and data analytics of a similar scope (public or private) (i.e. relevant reference). The reference letters must be on the bidder's client letterhead, dated duly signed by an authorized person reflecting the level of service and performance provided by the bidder Points allocation: No relevant reference letter = 0 points 1 relevant reference letter = 5 points 2 relevant reference letters = 10 points 3 relevant reference letters = 15 points	15
Company profile which demonstrates the experience of the company in web-app development and data analytics The bidder must provide a company profile in sufficient detail to demonstrate experience in web-app and data analytics development. The profile must illustrate experience of relevant related projects. Points allocation: No similar projects = 0 points One similar project = 10 points Two similar projects = 20 points Three similar projects = 25 points	25
Capacity and experience of the proposed team and project manager The project manager who will be allocated to the HSRC account must have a relevant qualifications with experience in technology/skills as per scope of work (i.e. MSSQL, React.js, NGINX, Python, Django, Django	20

Rest Framework, Mapbox.gl). The experience must be demonstrated by provision of a recently updated CV listing technical skills and work on projects making use of these skills Points allocation (only judged on team leader): Less than three years = 0 points 4 - 5 years = 5 points 6 -10 years = 15 points More than 10 years = 20 points	
Methodology and approach of the bidder The bidder must submit a comprehensive technical workplan where the bidder is required to demonstrate understanding and response to the scope of work and the approach on how the project will be managed through its entire life cycle according to the following key aspects: ➢ Comprehensive workplan ➢ Detailed process mapping methodology which links to required technology deployment (MSSQL, React.js, NGINX, Python, Django, Django Rest Framework, Mapbox.gl) to complete the scope of work Points guidance allocation: Excellent methodology and approach= 40 points Good methodology and approach= 30 points Sound methodology and approach= 20 points Insufficient methodology and approach = 5 points Weak methodology and approach = 0 points	40
TOTAL (Functionality)	**100**

Bidders should obtain a minimum of 70% on functionality in order to be considered for price and B-BBEE.