

# ESTABLISHMENT OF AN INTERACTIVE DASHBOARD SHOWING THE ACCREDITATION STATUS OF INSTITUTIONS OFFERING SURVEYING IN NIGERIA



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- Conclusion
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# Introduction

- *Data management is the practice of collecting, organizing, managing, and accessing data to support productivity, visualization, efficiency, and decision-making.*
- *Given the pivotal role data plays in an organizational setting, an effective enterprise strategy, and a modern data management platform are essential for data-driven use cases including regulatory compliance, accurate analytics, locational intelligence, proper planning and visualization at a glance.*
- *The modern data management and visualization platform is achieved through the establishment of an interactive ArcGIS Dashboard.*
- *ArcGIS Dashboards is a multifaceted web application where users can visually analyse and interpret complex data.*
- *The information on the dashboards can be enhanced by integrating Geographic information systems (GIS) .*

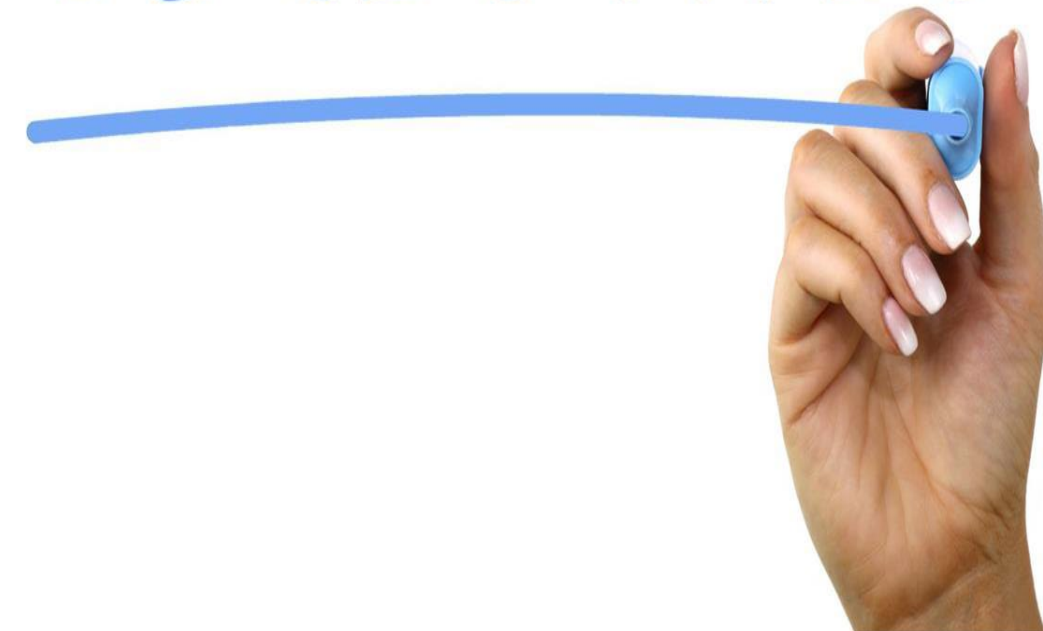




# Objectives of the Research

- *Conducting data collection and research for Collating all necessary attribute data of all institutions offering surveying.*
- *Accurate Mapping of locations of the institutions offering Surveying in Nigeria and linking all necessary attribute data.*
- *Development and configuration of map showing locations of the Institutions.*
- *Creating and configuring an Executive Interactive Dashboard showing the accreditation status of all institutions offering Surveying & Geoinformatics in Nigeria.*

# OBJECTIVES



# The Need for an Interactive Map and Executive Dashboard showing the accreditation status of institutions offering Surveying in Nigeria

- *to monitor and evaluate the accreditation status of institutions offering Surveying programs in Nigeria.*
- *to uphold professional ethics and adopt global best practices by integrating location intelligence and advanced visualization tools.*
- *enhanced decision-making, policy formulation, and stakeholder engagement.*
- *monitor all surveying institution in Nigeria for proper policy and decision making by relevant stakeholders.*
- *ensuring that surveying programs meet the required standards, and producing competent professionals who can deliver quality services.*
- *The accreditation process involves evaluating educational institutions' surveying programs against established standards, ensuring they meet the required criteria.*



# Methodology

Data cleaning and Pre-processing

Database Design

Geocoding and Data Visualization in ArcGIS Pro

Publishing to ArcGIS Online

Dashboard Configuration

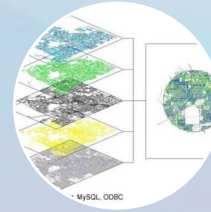
- *This study involved the cleaning, structuring, visualization, and dissemination of data from the Surveyors Council of Nigeria on institutions offering surveying programs and their accreditation status.*
- *Comprehensive data collection and research to compile detailed attribute data of surveying institutions.*
- *The final phase culminated in the successful development and deployment of an executive interactive dashboard, offering stakeholders the ability to monitor trends, evaluate accreditation statuses, and make informed decisions effectively.*





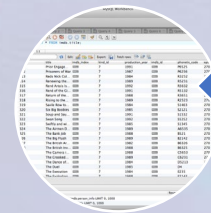
# Data Cleaning & Pre-processing

- The raw data, obtained from the Surveyors Council of Nigeria in csv. file format, contained records of Institutions offering surveying programs, their accreditation statuses, and associated metadata. The dataset was saved in tabular format (Microsoft Excel).
- The following steps were implemented to ensure data quality:
- **Validation and Standardization:** Full Accreditation, Interim Accreditation, and Failed categorization of data.
- **Error Handling:** Geocoding missing coordinates, removal of duplicate future names.
- **Formatting:** uniform date format, case variation and stripping extra spaces.



## Validation and Standardization:

- **Standardization of Column headers**  
to align with geospatial database conventions (e.g., `Institution_Name`, `Accreditation_Status`, `Address`).



## Error Handling:

Duplicates on the feature names were identified and removed based on unique combinations of institution names and accreditation dates.



## Formatting:

- **Date fields** were converted into a uniform Date format, displaying MM/DD/YYYY
- **Text fields** were stripped of inconsistencies such as extra spaces or case variations.



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# Data Cleaning & Pre-processing

	C	D	E	F
1	Institution	Address	Type	Institution Type
2	FEDERAL POLYTECHNIC OFFA, KWARA STATE	FEDERAL POLYTECHNIC OFFA, KWARA STATE	Federal	Polytechnics
3	FEDERAL POLYTECHNIC, BIDA, NIGER STATE.	FEDERAL POLYTECHNIC, BIDA, NIGER STATE.	Federal	Polytechnics
4	FEDERAL POLYTECHNIC, ADO-EKITI, EKITI STATE.	FEDERAL POLYTECHNIC, ADO-EKITI, EKITI STATE.	Federal	Polytechnics
5	FEDERAL POLYTECHNIC, BAUCHI, BAUCHI STATE.	FEDERAL POLYTECHNIC, BAUCHI, BAUCHI STATE.	Federal	Polytechnics
6	FEDERAL POLYTECHNIC, ILARO, OGUN STATE.	FEDERAL POLYTECHNIC, ILARO, OGUN STATE.	Federal	Polytechnics
7	FEDERAL POLYTECHNIC, EDE, OSUN STATE	FEDERAL POLYTECHNIC, EDE, OSUN STATE	Federal	Polytechnics
8	THE POLYTECHNIC, IBADAN, IBADAN, OYO STATE.	THE POLYTECHNIC, IBADAN, IBADAN, OYO STATE.	Federal	Polytechnics
9	FEDERAL POLYTECHNIC, IDAH, KOGI STATE.	FEDERAL POLYTECHNIC, IDAH, KOGI STATE.	Federal	Polytechnics
10	KADUNA POLYTECHNIC, KADUNA, KADUNA STATE.	KADUNA POLYTECHNIC, KADUNA, KADUNA STATE.	Federal	Polytechnics
11	FEDERAL POLYTECHNIC, DAMATURU, YOBE STATE.	FEDERAL POLYTECHNIC, DAMATURU, YOBE STATE.	Federal	Polytechnics
12	FEDERAL POLYTECHNIC, NASARAWA, NASARAWA STATE	FEDERAL POLYTECHNIC, NASARAWA, NASARAWA STATE	Federal	Polytechnics
13	WAZIRI UMARU FEDERAL POLYTECHNIC, BIRNIN KEBBI, KEBBI STATE.	WAZIRI UMARU FEDERAL POLYTECHNIC, BIRNIN KEBBI, KEBBI STATE.	Federal	Polytechnics
14	AUCHI POLYTECHNIC, AUCHI, EDO STATE.	AUCHI POLYTECHNIC, AUCHI, EDO STATE.	Federal	Polytechnics
15	FEDERAL POLYTECHNIC, MUBI, ADAMAWA STATE.	FEDERAL POLYTECHNIC, MUBI, ADAMAWA STATE.	Federal	Polytechnics
16	FEDERAL POLYTECHNIC, NEKEDE, OWERRI, IMO STATE.	FEDERAL POLYTECHNIC, NEKEDE, OWERRI, IMO STATE.	Federal	Polytechnics
17	FEDERAL POLYTECHNIC, OKO, ANAMBRA STATE.	FEDERAL POLYTECHNIC, OKO, ANAMBRA STATE.	Federal	Polytechnics
18	YABA COLLEGE OF TECHNOLOGY, YABA, LAGOS.	YABA COLLEGE OF TECHNOLOGY, YABA, LAGOS.	Federal	College
19	ABIA STATE POLYTECHNIC, ABA, ABIA STATE	ABIA STATE POLYTECHNIC, ABA, ABIA STATE	State	Polytechnics
20	KWARA STATE POLYTECHNIC, ILORIN, KWARA STATE.	KWARA STATE POLYTECHNIC, ILORIN, KWARA STATE.	State	Polytechnics
21	ADAMAWA STATE POLYTECHNIC, YOLA, ADAMAWA STATE	ADAMAWA STATE POLYTECHNIC, YOLA, ADAMAWA STATE	State	Polytechnics
22	KANO STATE POLYTECHNIC, KANO, KANO STATE	KANO STATE POLYTECHNIC, KANO, KANO STATE	State	Polytechnics
23	KENULE BEESON POLYTECHNIC BORI, RIVERS STATE	KENULE BEESON POLYTECHNIC BORI, RIVERS STATE	State	Polytechnics
24	RUFUS GIWA POLYTECHNIC, OWO, ONDO STATE.	RUFUS GIWA POLYTECHNIC, OWO, ONDO STATE.	State	Polytechnics
25	AKANU IBIAM POLYTECHNIC UWANA, AFIKPO, EBONYI STATE	AKANU IBIAM POLYTECHNIC UWANA, AFIKPO, EBONYI STATE	State	Polytechnics
26	PORT HAR COURT POLYTECHNIC, RUMUOLA, RIVERS STATE	PORT HAR COURT POLYTECHNIC, RUMUOLA, RIVERS STATE	State	Polytechnics
27	AKWA IBOM STATE POLYTECHNIC, IKOT OSURUA.	AKWA IBOM STATE POLYTECHNIC, IKOT OSURUA.	State	Polytechnics

Institutions



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# Data Cleaning & Pre-processing

GIS dashboard Showing the Accreditation Status of Institutions Offering Surveying in Nigeria



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FID

	C	D	E	F	G	H	I	J	L	M	N	O
	Institution	Address	Type	Institution Type	Type of Instituio	Accreditation Sta	Start date	End date	Website	GlobalID	x	y
1	FEDERAL POLYTE	FEDERAL POLYTE	Federal	Polyte...	Federal Polytech	FULL ACCREDITA	2013	2018	<a href="http://www.fpo">http://www.fpo</a>	e7abab01-277b-	4.71035	8.13262
2	FEDERAL POLYTE	FEDERAL POLYTE	Federal	Polyte...	Federal Polytech	FULL ACCREDITA	2016	2021	<a href="http://www.fedp">http://www.fedp</a>	a5288a0e-dee1-	5.99298	9.08701
3	FEDERAL POLYTE	FEDERAL POLYTE	Federal	Polyte...	Federal Polytech	FULL ACCREDITA	2017	2022	<a href="http://www.fedp">http://www.fedp</a>	f417b18c-e9e7-	5.29655	7.59344
4	FEDERAL POLYTE	FEDERAL POLYTE	Federal	Polyte...	Federal Polytech	FULL ACCREDITA	2017	2022	<a href="http://www.fptb">http://www.fptb</a>	c4a805f5-bff9-4	9.76621	10.25854
5	FEDERAL POLYTE	FEDERAL POLYTE	Federal	Polyte...	Federal Polytech	FULL ACCREDITA	2017	2022	<a href="http://www.fede">http://www.fede</a>	035e092e-6483-	2.99292	6.88694
6	FEDERAL POLYTE	FEDERAL POLYTE	Federal	Polyte...	Federal Polytech	FULL ACCREDITA	2017	2022	<a href="https://www.fed">https://www.fed</a>	b6c9e37e-5d2b-	4.42526	7.73465
7	THE POLYTECHN	THE POLYTECHN	Federal	Polyte...	Federal Polytech	FULL ACCREDITA	2018	2023	<a href="http://polyibada">http://polyibada</a>	5d197620-9797-	3.84992	7.45417
8	FEDERAL POLYTE	FEDERAL POLYTE	Federal	Polyte...	Federal Polytech	FULL ACCREDITA	2018	2023	<a href="http://www.fepc">http://www.fepc</a>	14a17d43-a54c-	6.78895	7.14215
9	KADUNA POLYTE	KADUNA POLYTE	Federal	Polyte...	Federal Polytech	FULL ACCREDITA	2019	2024	<a href="http://www.kadp">http://www.kadp</a>	44f0c237-7894-	7.41598	10.5216
10	FEDERAL POLYTE	FEDERAL POLYTE	Federal	Polyte...	Federal Polytech	FULL ACCREDITA	2019	2024	<a href="http://www.fedp">http://www.fedp</a>	226423ea-f686-	11.98776	11.75063
11	FEDERAL POLYTE	FEDERAL POLYTE	Federal	Polyte...	Federal Polytech	FULL ACCREDITA	2019	2024	<a href="http://www.fedp">http://www.fedp</a>	17af930f-8a4f-4	7.72566	8.56484
12	WAZIRI UMARU	WAZIRI UMARU	Federal	Polyte...	Federal Polytech	FULL ACCREDITA	2019	2024	<a href="http://www.wufp">http://www.wufp</a>	b5cd1609-3ff9-4	4.19628	12.45956
13	AUCHI POLYTECH	AUCHI POLYTECH	Federal	Polyte...	Federal Polytech	INTERIM ACCREI	2017	2019	<a href="http://www.auchp">http://www.auchp</a>	bd1d7848-d84f-	6.26866	7.06414
14	FEDERAL POLYTE	FEDERAL POLYTE	Federal	Polyte...	Federal Polytech	INTERIM ACCREI	2018	2020	<a href="http://www.fede">http://www.fede</a>	c9d3a797-c602-	12.47265	9.299594
15	FEDERAL POLYTE	FEDERAL POLYTE	Federal	Polyte...	Federal Polytech	INTERIM ACCREI	2017	2019	<a href="http://www.fpnk">http://www.fpnk</a>	d7f1a81b-e098-	7.033127	5.434104
16	FEDERAL POLYTE	FEDERAL POLYTE	Federal	Polyte...	Federal Polytech	INTERIM ACCREI	2019	2021	<a href="http://www.fede">http://www.fede</a>	d28c3036-9cc1-	7.10909	6.050f

Sheet1



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## DEVELOPMENT OF DATA SCHEMA

A geodatabase schema was designed to ensure that the data structure supported geospatial visualization, analysis and query operations. The schema was developed in ArcGIS Pro software environment and included the following fields:

**Institution\_Name:** Text field for the name of the institution.

**Accreditation\_Status:** Text field with a coded domain to represent statuses as Accredited, Pending, or Revoked.

**Type\_of\_Institution:** Text field indicating the type (e.g., University, Polytechnic).

**Location:** Geometry field to store point features based on geographic coordinates.

**Comments:** Optional text field for additional remarks.



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# VISUALIZATION IN ARCGIS PRO

Importation of the cleaned dataset into ArcGIS Pro for visualization. A map was designed to depict the spatial distribution of institutions and their accreditation statuses. Key activities included:

## **Symbology Configuration:**

- Unique symbols were assigned to represent type of Institutions
- Graduated symbol sizes were used to emphasize significant Institutions.

## **Labelling and Base map Integration:**

- Institution names and their statuses were labelled for easy interpretation.
- A suitable base map (Street map) was added to provide geographic context.

## **Analysis:**

- Preliminary spatial analysis revealed clustering patterns of accredited institutions in urban centres, which were later highlighted in the dashboard.



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# Visualization in ArcGIS PRO

The screenshot displays the ArcGIS Pro interface with a map of Nigeria. The map shows various institutions marked with colored icons. The 'Contents' pane on the left lists the layers: 'SURCON INSTITUTION MAP', 'Institutions', 'Nigeria State Boundaries', and 'Nigeria Local Government Area Boundaries'. The 'Institutions' layer is selected, and its symbology is shown in the 'Symbology - Institutions' pane on the right. The 'Primary symbology' section shows 'Unique Values' for 'Institution Type'. The 'Classes' section shows 5 symbol classes: College, Institute, Survey School, Oyo, Monotechnic; Polytechnics, and University. The 'Table' pane in the center shows the attributes of the selected features.

FID *	S_N	Institution	Address	Type	Institution Type	Type of Institution
1	1	FEDERAL POLYTECHNI...	FEDERAL POLYTECHNI...	Federal	Polytechnics	Federal Polytechnics
2	2	FEDERAL POLYTECHNI...	FEDERAL POLYTECHNI...	Federal	Polytechnics	Federal Polytechnics
3	3	FEDERAL POLYTECHNI...	FEDERAL POLYTECHNI...	Federal	Polytechnics	Federal Polytechnics
4	4	FEDERAL POLYTECHNI...	FEDERAL POLYTECHNI...	Federal	Polytechnics	Federal Polytechnics
5	5	FEDERAL POLYTECHNI...	FEDERAL POLYTECHNI...	Federal	Polytechnics	Federal Polytechnics

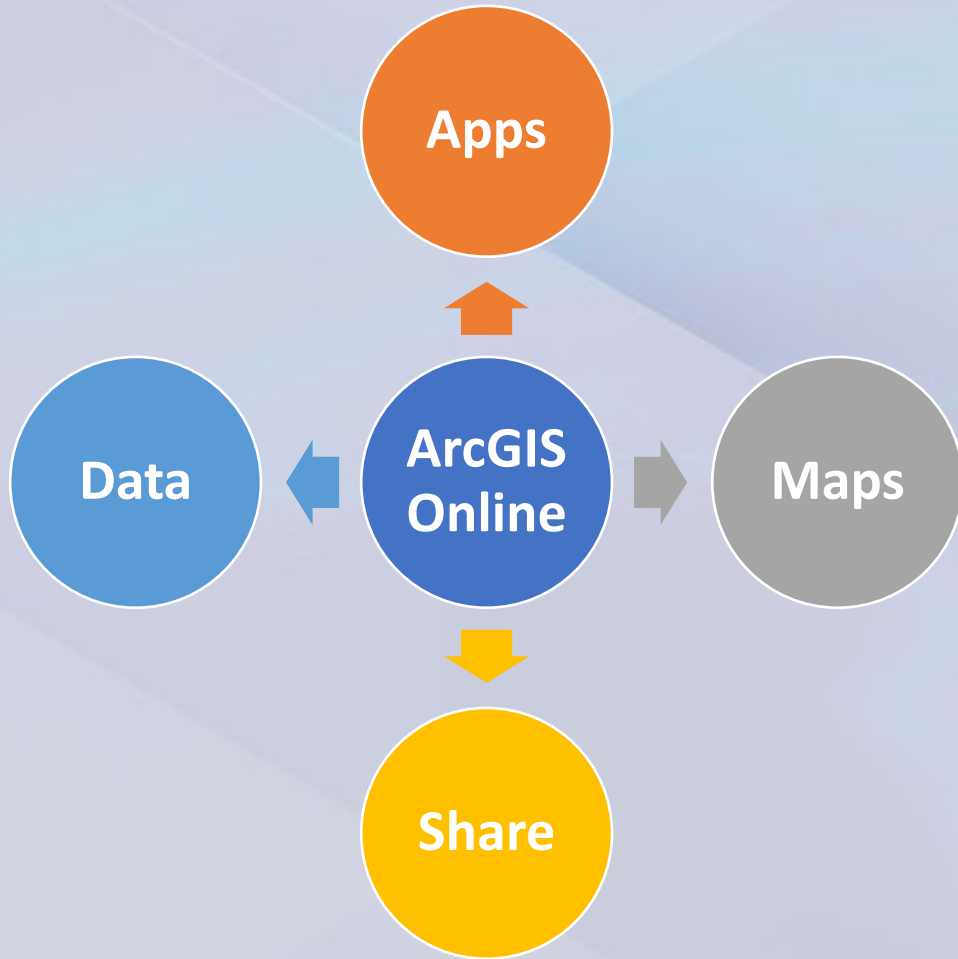


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## Publishing into ArcGIS Online



- *The geospatial dataset was published as a web layer to ArcGIS Online for accessibility and integration into interactive tools with the following steps taken:*
- *The dataset was prepared in WGS 1984 spatial reference to ensure compatibility with web mapping applications.*
- *The dataset was shared as a hosted feature layer, with detailed metadata including title, description, tags, and credits added to enhance discoverability.*
- *Permissions were configured to allow access to authorized users while ensuring data integrity.*



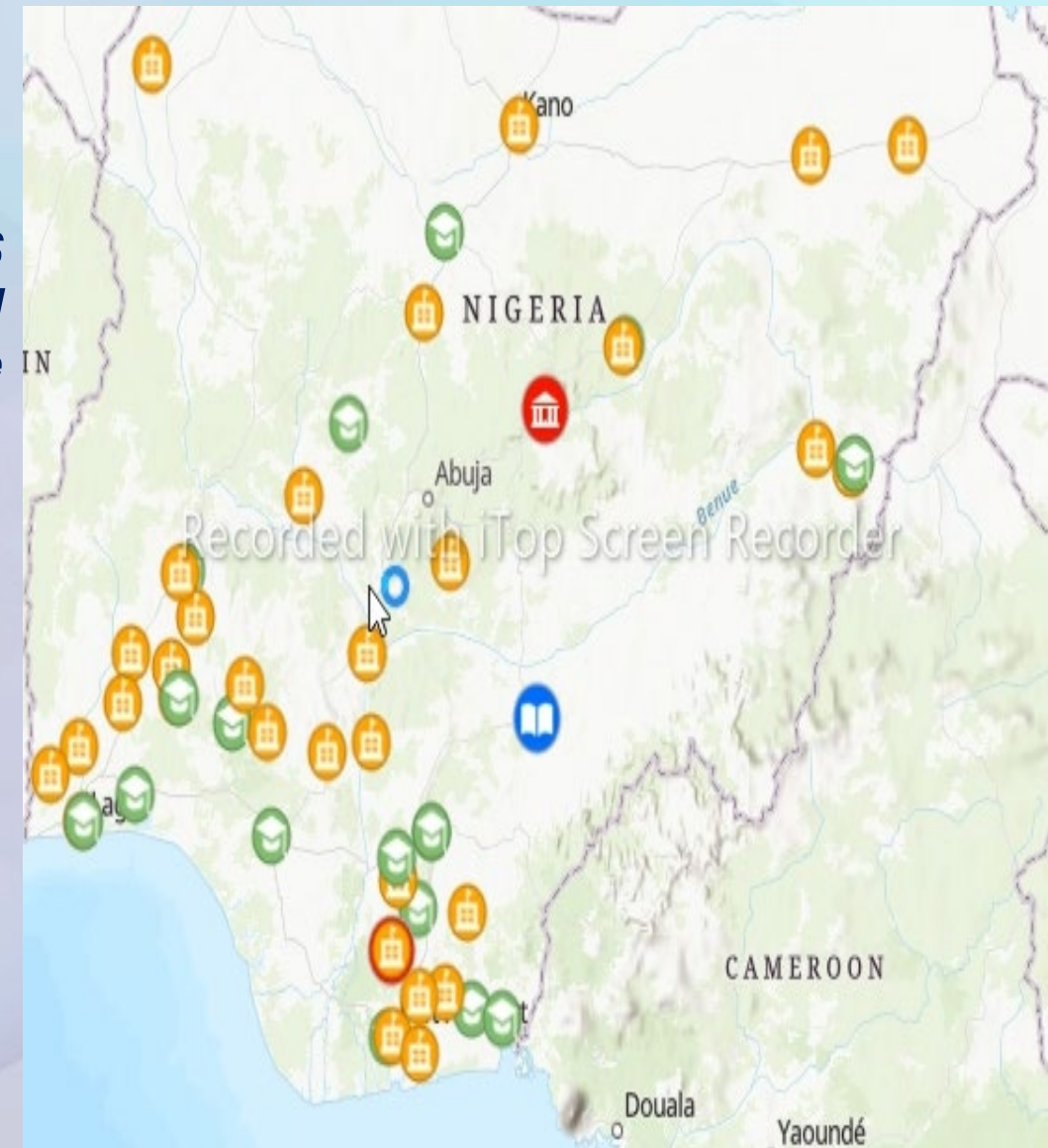
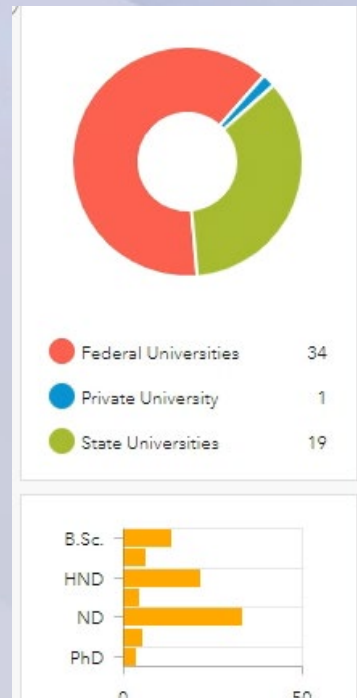
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# Dashboard Configuration

- An interactive dashboard was developed using ArcGIS Dashboards to facilitate user-friendly exploration and visualization of the data. The dashboard incorporated the following elements:
- Map Widget
- Indicators
- Charts and Filters
- Interactivity



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# Integration of Survey123 for Updating Data on the Executive Dashboard

- To ensure the continuous accuracy and relevance of the interactive accreditation map of surveying institutions in Nigeria;
- Survey123 was successfully configured and integrated as a data collection and update tool.
- The survey123 connect was used to configure this update.
- This configuration will allow for addition of new records and update of existing records.

The screenshot displays the Survey123 data collection interface. At the top, a green header bar reads 'Surveying Educational Institutions in Nigeria'. Below this, the form is titled 'Surveying Educational Institutions in Nigeria' and includes the following fields:

- Accreditation Status:** A vertical list of radio buttons with the following options: Full Accreditation, Interim Accreditation, Due Visitation, Yet to be Visited, Just Visited, and Failed.
- Start date:** A date picker field showing '2025' with a dropdown arrow on the left and a '+' button on the right.
- End date:** A date picker field showing '2025' with a dropdown arrow on the left and a '+' button on the right.

On the left side of the interface, there is a vertical toolbar with icons for 'XLSForm', 'Update', 'Files', 'Tools', and 'Publish'. At the bottom, a horizontal navigation bar contains icons for 'Form', 'Details', 'Options', 'Map', 'Media', 'Linked Content', 'Scripts', and 'Schema'. The 'Form' icon is currently selected.



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## Results and Discussions

**74 Universities Studying  
Surveying  
& Geoinformatics**

**19 Federal Universities**

**10 State Universities**

**16 Federal Polytechnics**

**17 State Polytechnics**

**1 Survey School**

**38 Institutions are fully  
accredited**

**8 Institutions are on interim  
accreditation**

**2 Institution had failed  
accreditation**

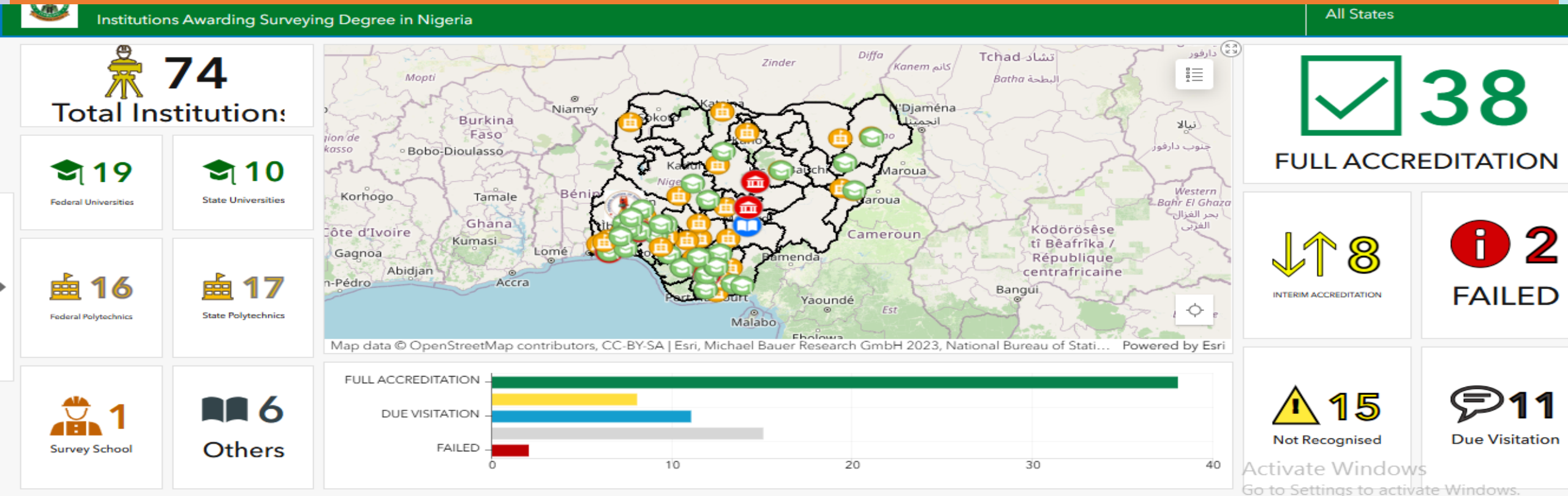


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# Interactive Dashboard showing the accreditation Status of the Institutions Studying Surveying in Nigeria



The link to the interactive dashboard:

<https://africageoportal.maps.arcgis.com/apps/dashboards/3d02f73a461c449084fab12bbb93706b>



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## SURVEYORS COUNCIL


Institutions Awarding Surveying Degree


**74**  
Total Institutions


**19**  
Federal Universities

**10**  
State Universities

**16**  
Federal Polytechnics

**17**  
State Polytechnics

**1**  
Survey School

**6**  
Others

**BANDICAM** UNREGISTERED

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1365x1067 - (2, -302), (1367, 765)

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- General
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Sort by Date


Play Edit Upload Delete


**BANDICUT** >>>


How to upload videos to YouTube from Bandicam


Select a State  
All States

**38**  
FULL ACCREDITATION

**8**  
INTERIM ACCREDITATION

**2**  
FAILED

**15**  
Not Recognised

**11**  
Due Visitation

Activate Windows  
Go to Settings to activate Windows.

## Conclusion

- *This study was able to establish an Interactive ARCGIS dashboard Showing the Accreditation Statuses of Institutions Offering Surveying in Nigeria.*
- *The research Leveraged Geographic Information Systems (GIS) and location intelligence, to provide a real-time platform to monitor institutional performance, accreditation statuses, and key performance indicators.*

## Recommendations

- *This research is recommended to be embedded on the Surveyors Council of Nigeria (SURCON) website for the purpose of digital transformation and the adoption of web mapping in its processes.*
- *The result of this research would foster innovation, improving governance, and strengthening the profession's impact in Nigeria and beyond.*



# Thank You



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