

The art of delivering actionable insights using geospatial data

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SOUTHERN AFRICA ESRI USER CONFERENCE 2025

Introduction

“Create unique and powerful user experiences that help users understand complex data and insights through ready-to-use applications”.

Questions for the audience

- How can I minimize the time it takes to run my workflows in ArcGIS?
- Can I use my existing knowledge of other software to leverage my insights?
- What are the best practices when it comes to designing effective experiences?
- How do I translate my data and insights into actionable insights that my manager will understand?

Program

1. Creating the right data, minimizing impact (Arcade and Runtime processing)

Tendai Dupwa – Programme Coordinator and Senior Geospatial Training Consultant, Midrand

2. Collaborating around GIS data using familiar tools

David Barkhuisen – Project Manager and GIS Specialist, Midrand

3. Making better maps with Esri: Cartographic principles for the information age

André Cloeté – Geospatial Consultant, George

4. Creating a narrative with well-crafted Storymaps

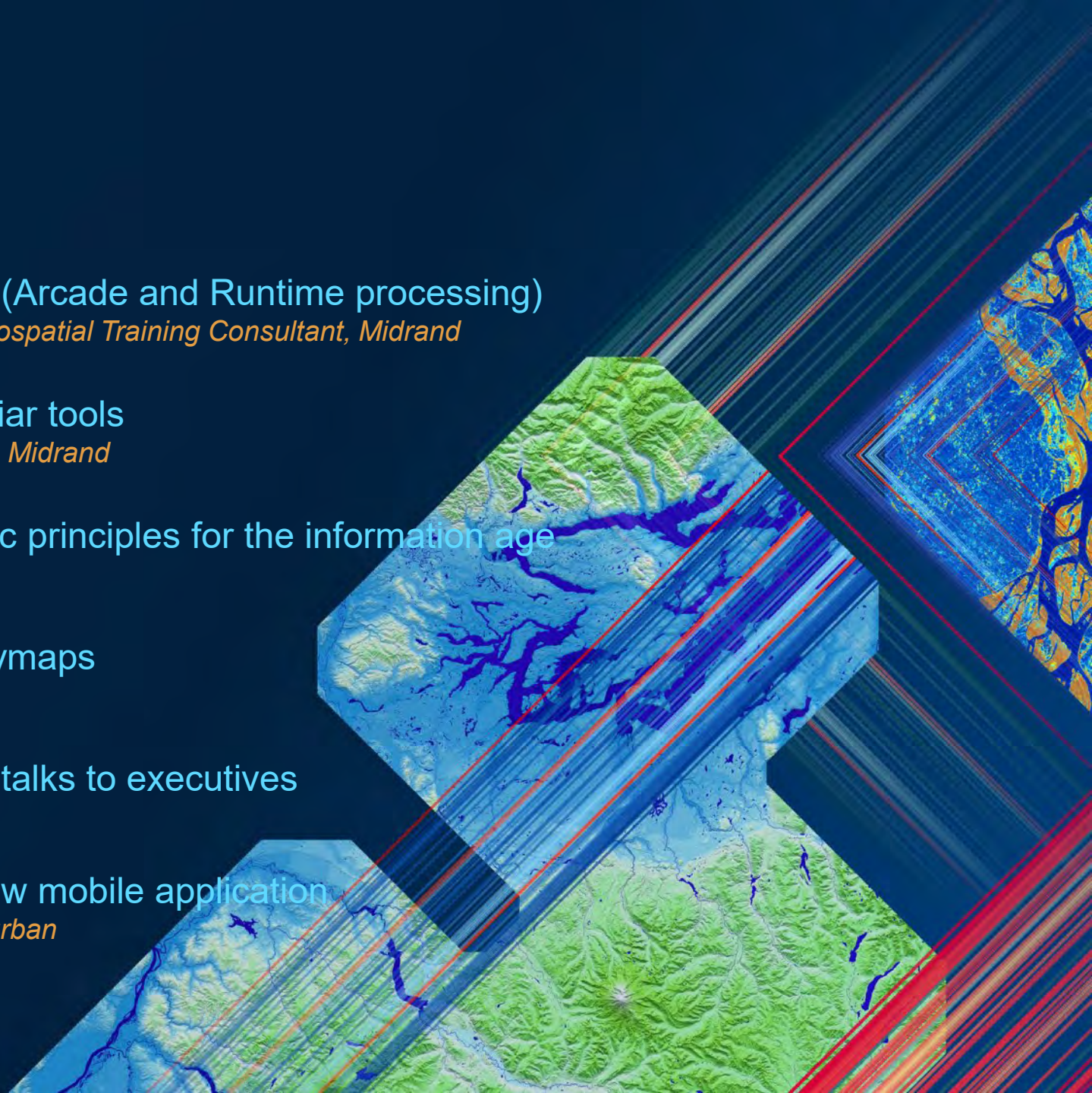
Joshua Manamela – Geospatial Consultant, Midrand

5. Design principles for creating content that talks to executives

Danika Saayman – Geospatial Consultant, Midrand

6. Customer Showcase: KZN Health Overview mobile application

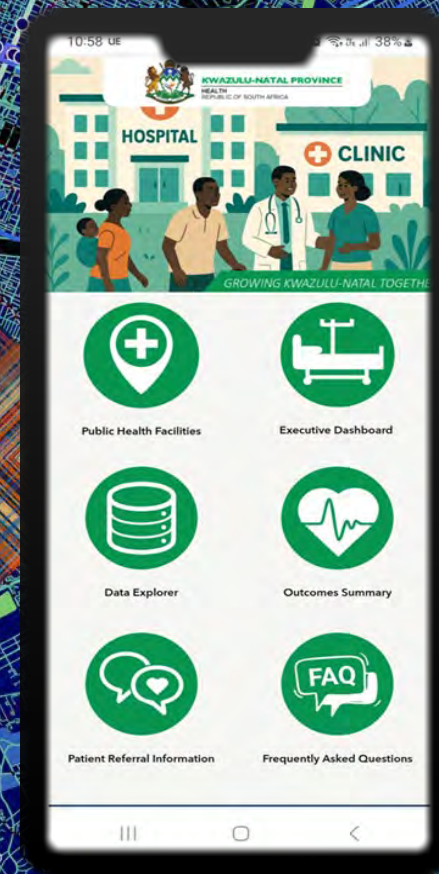
Leigh Thomas – Senior Geospatial Business Analyst, Durban



Customer Showcase: KZN Health Overview Mobile App

Leigh Thomas – Senior Geospatial Business Analyst, Durban

“Designed to empower non-GIS managers and decision-makers with easy access to key health indicators across the Kwa-Zulu Natal province, this application provides a high-level overview of departmental Key Performance Indicators (KPIs) by District, Municipality and Facility, enabling users to monitor health trends, assess program effectiveness, and make informed decisions quickly and efficiently.”



Introduction

Problem:

- Existing DHIS (Database) System is cumbersome and only accessible to certain employees, needing a login and password for access
- Data is downloaded from the DHIS, cleaned and presented to executives in lengthy excel spreadsheets which are cumbersome, making it difficult to pinpoint specific statistics
- Executives don't have instant access to insights in meetings or when pressured to provide answers quickly
- DHS data provided to executives is a “snapshot” , not live

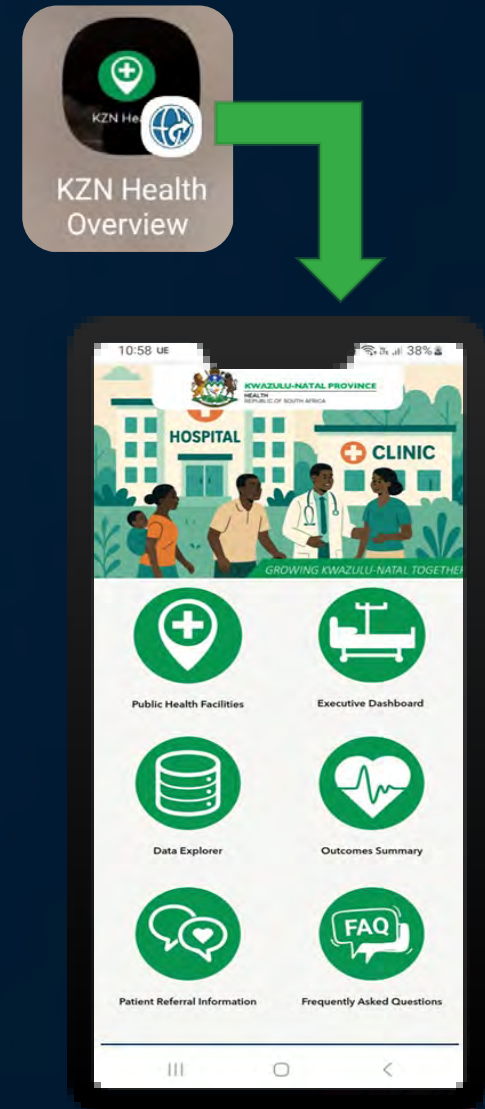
Annual Report Data, Population: 2024/25 Financial Year - Province

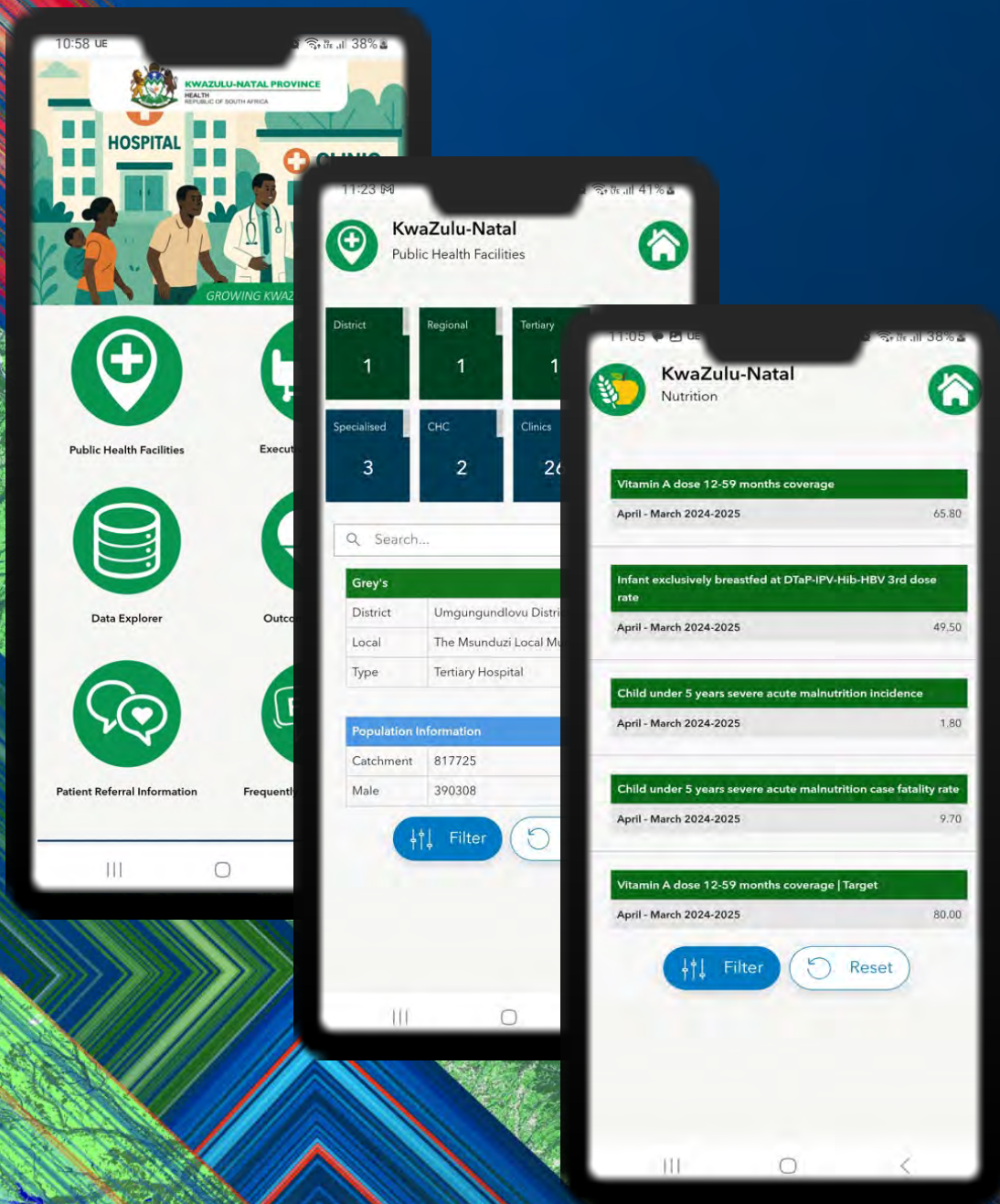
Source: DHIS as at 14 May 2025

		kz eThekwni	kz Harry	kz iLembe	kz King		kz	kz	kz Umzinvathi	kz Uthukela	kz Zululand
Date	orgunitlevel3	organisationunitname	dataname		October 2024	November 2024	December 2024	October - December 2024		April 2024 - March 2025	
	kz Dannhauser Local Municipality	kz Dannhauser CHC	Average length of stay - total		0.3	0.4	0.2	0.3		0.3	
	kz Dannhauser Local Municipality	kz Dannhauser CHC	Inpatient days - total		15	14	9	38		127	
Fe	kz Dannhauser Local Municipality	kz Dannhauser CHC	Day patient - total		7	9	1	17		65	
M	kz Dannhauser Local Municipality	kz Dannhauser CHC	Inpatient separations		56.0	45.0	58.0	159.0		602.0	
F	kz Dannhauser Local Municipality	kz Dannhauser CHC	Inpatient (usable) bed utilisation rate		2.9	2.9	1.5	2.4		2.1	
	kz Dannhauser Local Municipality	kz Dannhauser CHC	Inpatient beds usable - total		21	21	21	63		252	
	kz Newcastle Local Municipality	kz Madadeni Hospital	Average length of stay - total		10.5	10.5	9.7	10.2		10.3	
	kz Newcastle Local Municipality	kz Madadeni Hospital	Inpatient days - total		15526	15107	14655	45288		170092	
HAS	kz Newcastle Local Municipality	kz Madadeni Hospital	Day patient - total		11	9	11	31		117	
	kz Newcastle Local Municipality	kz Madadeni Hospital	Inpatient separations		1481.0	1435.0	1506.0	4422.0		16458.0	
	kz Newcastle Local Municipality	kz Madadeni Hospital	Inpatient (usable) bed utilisation rate		74.3	72.3	70.2	72.3		67.8	
	kz Newcastle Local Municipality	kz Madadeni Hospital	Inpatient beds usable - total		687	687	687	2061		8244	
	kz Newcastle Local Municipality	kz Newcastle Hospital	Average length of stay - total		4.0	3.7	3.6	3.8		3.7	
	kz Newcastle Local Municipality	kz Newcastle Hospital	Inpatient days - total		5822	5083	4889	15794		64451	
	kz Newcastle Local Municipality	kz Newcastle Hospital	Day patient - total		21	35	23	79		350	
	kz Newcastle Local Municipality	kz Newcastle Hospital	Inpatient separations		1456.0	1387.0	1373.0	4216.0		17296.0	
	kz Newcastle Local Municipality	kz Newcastle Hospital	Inpatient (usable) bed utilisation rate		70.2	61.4	59.0	63.6		64.8	
	kz Newcastle Local Municipality	kz Newcastle Hospital	Inpatient beds usable - total		273	273	273	819		3276	
	kz Emadlangeni Local Municipality	kz Niemeyer Memorial Hospital	Average length of stay - total		4.1	4.4	3.5	4.0		4.2	
	kz Emadlangeni Local Municipality	kz Niemeyer Memorial Hospital	Inpatient days - total		795	869	745	2409		10421	
	kz Emadlangeni Local Municipality	kz Niemeyer Memorial Hospital	Day patient - total		0	2	3	5		37	
	kz Emadlangeni Local Municipality	kz Niemeyer Memorial Hospital	Inpatient separations		195.0	199.0	215.0	609.0		2457.0	
	kz Emadlangeni Local Municipality	kz Niemeyer Memorial Hospital	Inpatient (usable) bed utilisation rate		52.3	57.2	49.1	52.8		57.2	
	kz Emadlangeni Local Municipality	kz Niemeyer Memorial Hospital	Inpatient beds usable - total		50	50	50	150		600	
k	kz eThekwni Metropolitan Municipality Sub	kz Addington Hospital	Average length of stay - total		6.6	6.1	6.1	6.3		6.3	
	kz eThekwni Metropolitan Municipality Sub	kz Addington Hospital	Inpatient days - total		9697	9046	8126	26869		110277	
	kz eThekwni Metropolitan Municipality Sub	kz Addington Hospital	Day patient - total		137	118	118	373		1615	
	kz eThekwni Metropolitan Municipality Sub	kz Addington Hospital	Inpatient separations		1481.0	1487.0	1343.0	4311.0		17516.0	
	kz eThekwni Metropolitan Municipality Sub	kz Addington Hospital	Inpatient (usable) bed utilisation rate		68.6	64.0	57.5	63.3		65.0	
	kz eThekwni Metropolitan Municipality Sub	kz Addington Hospital	Inpatient beds usable - total		468	468	468	1404		5616	
	kz eThekwni Metropolitan Municipality Sub	kz Clairwood Hospital	Average length of stay - total		16.9	17.6	14.3	16.2		15.9	
	ART child on third-line regimen (TLR)		1					1			
	ART child naive start (TOT)		548	514	502	415	1,979				
	ART child cumulative transfer out		105	104	101	98	408				

Solution: Health Overview Mobile App

- Mobile application available on Manager's phone (Shortcut created from URL)
- Designed using ArcGIS Dashboards and Experience Builder
 - Hosted on the Departmental Enterprise Portal
 - Creator user type to create and maintain
 - Users don't require a license to view or use the app
- Regularly updated by the GIS team
 - Convert and upload the data into uniquely designed schema's
 - Custom scripts and ArcGIS Pro workflows
- Phase 2 – Plan to integrate with DHIS database for live updates





KZN Health Overview Mobile App

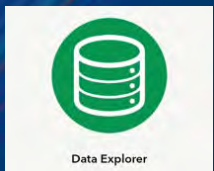
Demo

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Public Health Facilities

- Overview of facilities for the KZN Province, by type
- Filter by: District
- Shows facilities and Population statistics per District
- Home button takes the user back to the Home screen



Data Explorer

- Overview of Nutrition and Teenage Pregnancy Indicators
 - *Phase 2 to include additional key indicator datasets (HIV, TB, MMC)*
- Filter by: Year | District | Local Municipality | Institution



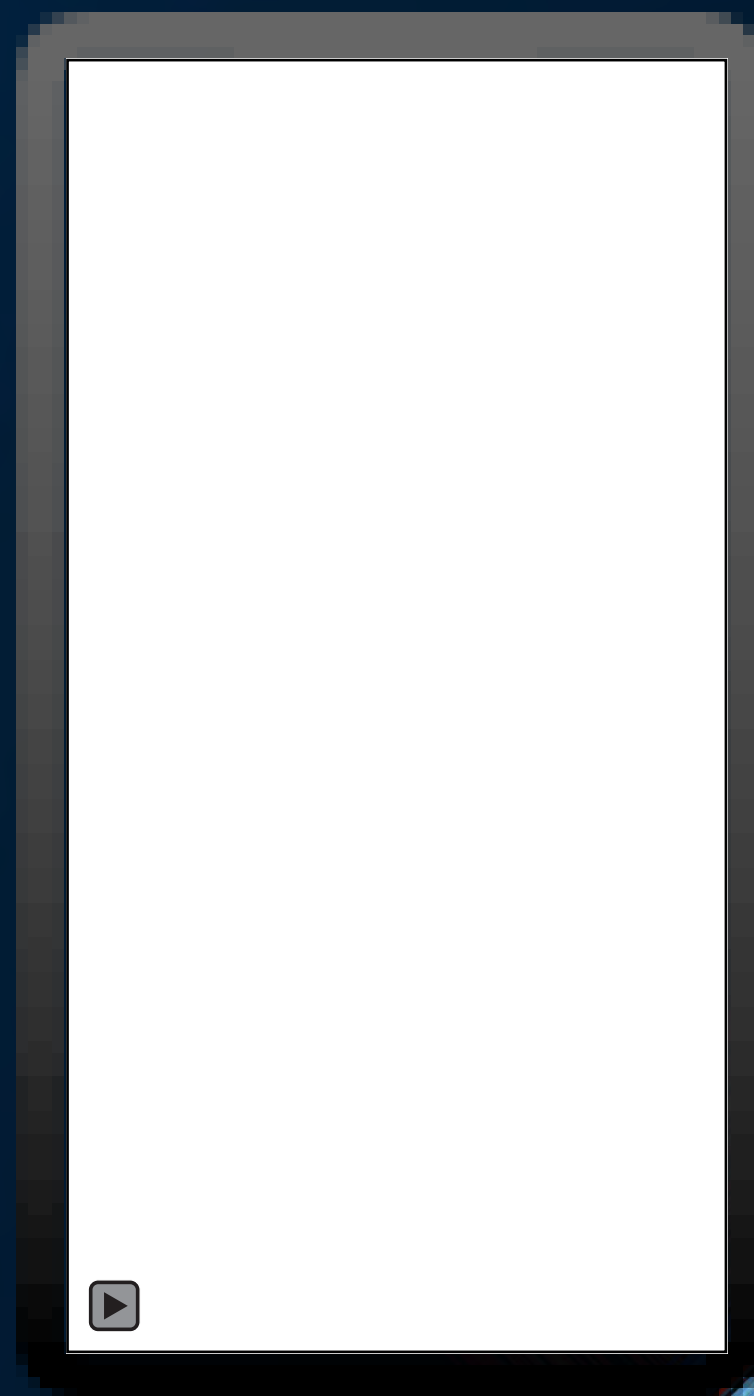
Executive Dashboard

- Overview of Hospital Efficiency Indicators
 - *Phase 2 to include additional key indicator datasets (PHC Utilization Rate)*
- Filter by: Year | District | Local Municipality | Institution



Outcomes Summary

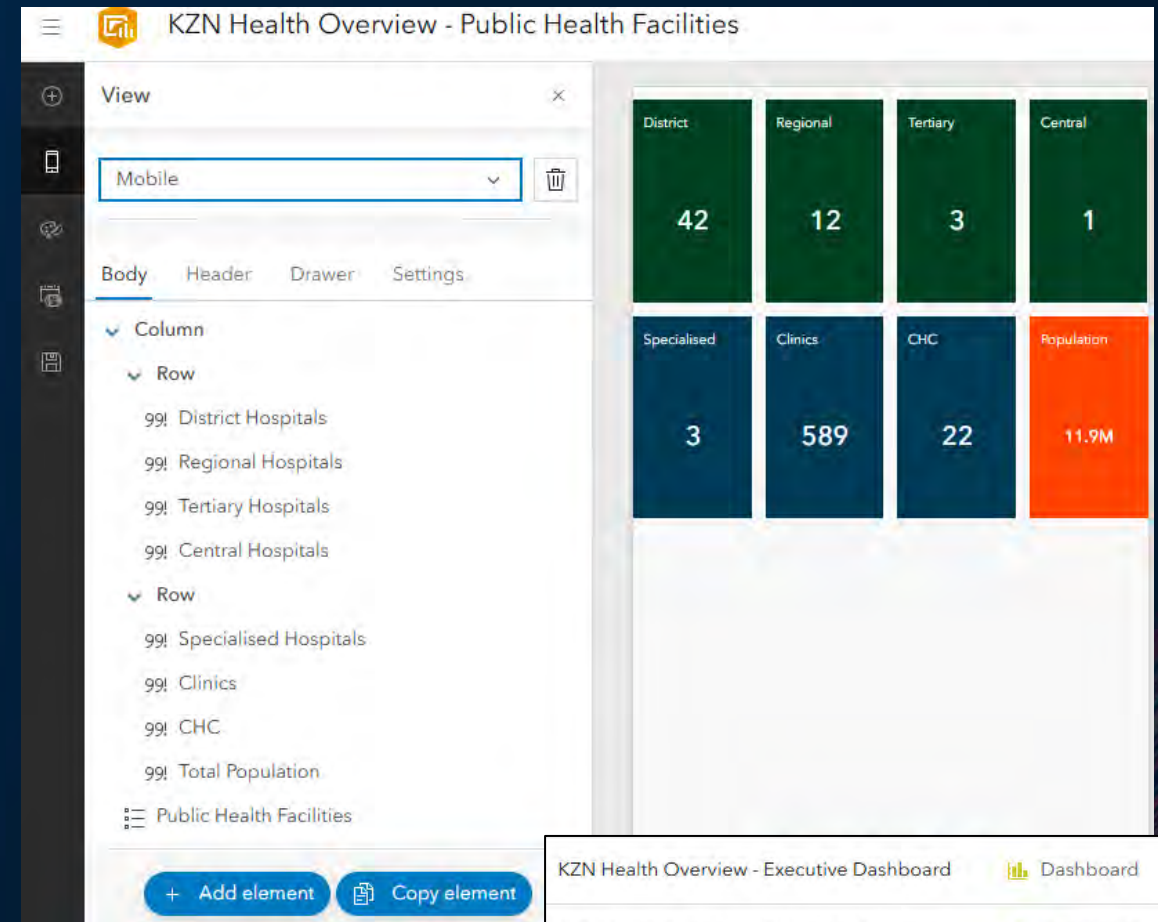
- Overview of Key Indicators across the Province of KZN
- Filter by: Indicator
- Shows historical, yearly statistics
- Important for reporting and insights



Solution: Technical Design



- ArcGIS Pro
 - Data preparation & Schema design
 - Data updates/appending
 - Publishing of feature services
- ArcGIS Enterprise
 - Storing of Feature Services
 - ArcGIS Dashboards - Mobile Views
 - ArcGIS Experience Builder – Mobile Interface



- KZN Health Overview - Executive Dashboard Dashboard
- KZN Health Overview - Outcomes Summary Dashboard
- KZN Health Overview - Nutrition Dashboard

Solution: Benefits for Executives/Managers

- Simple Interface – Large Buttons, simple design
- Easy to access on any mobile device
- No login required
- Concise, ready-to-use data formats
- Data and insights available immediately, no sifting through spreadsheets for answers
- Benefits for GIS Staff:
 - Easy to maintain (ArcGIS Dashboards)
 - Customized schema and scripts for data updating
 - Championing the value of GIS to the executive committee

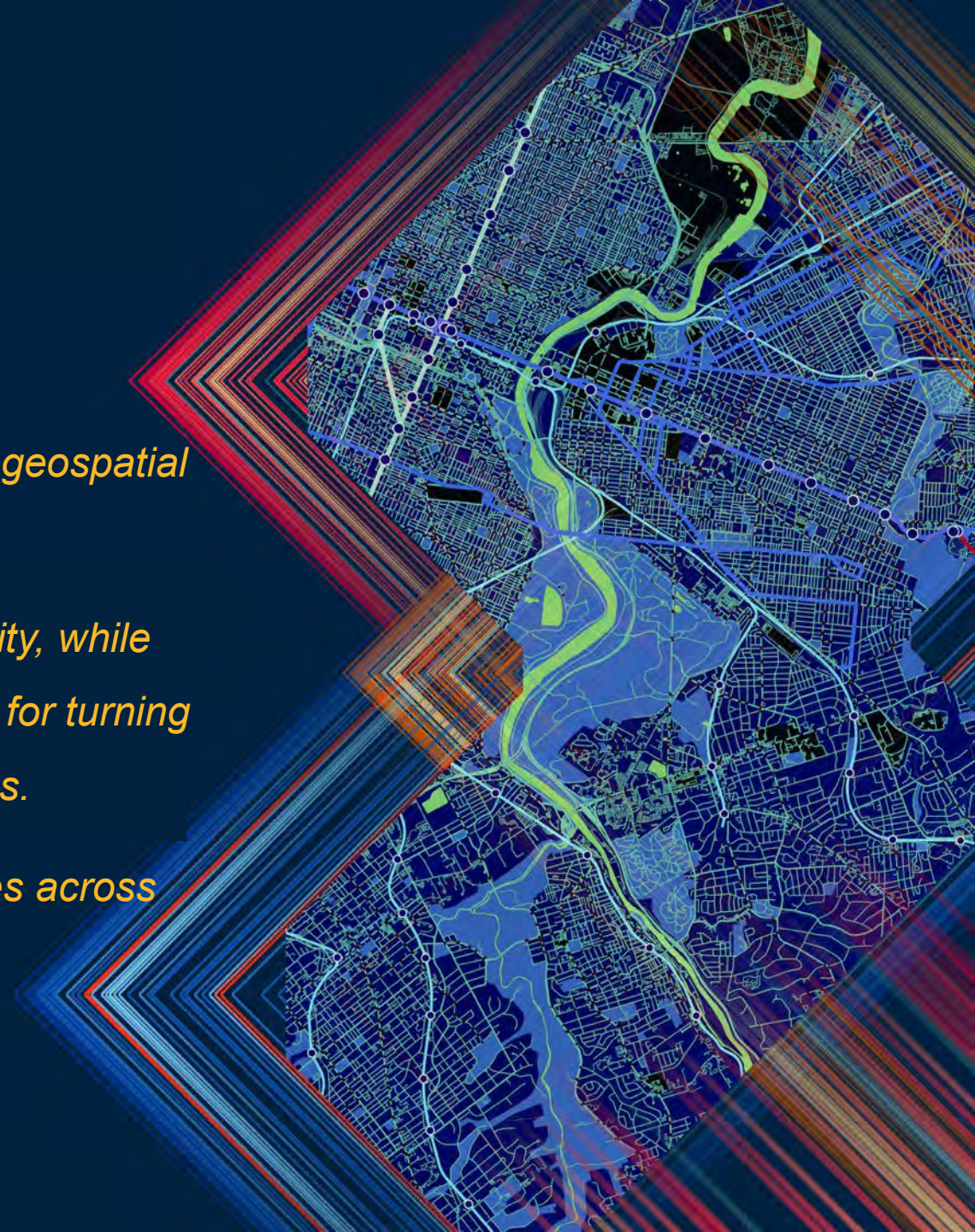


Conclusion

In conclusion, the art of delivering actionable insights using geospatial data lies in balancing efficiency with clarity.

Making data accessible to the layman ensures broad usability, while clean, simple design and intuitive functionality are essential for turning complex spatial information into meaningful, timely decisions.

This approach maximizes impact and drives better outcomes across industries.



Thank you

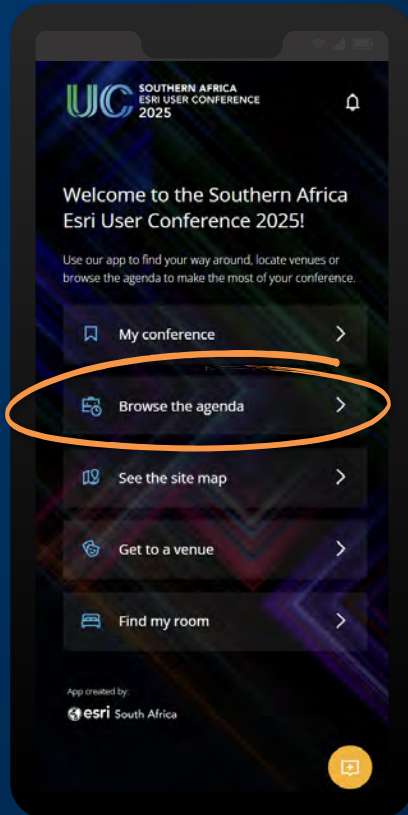


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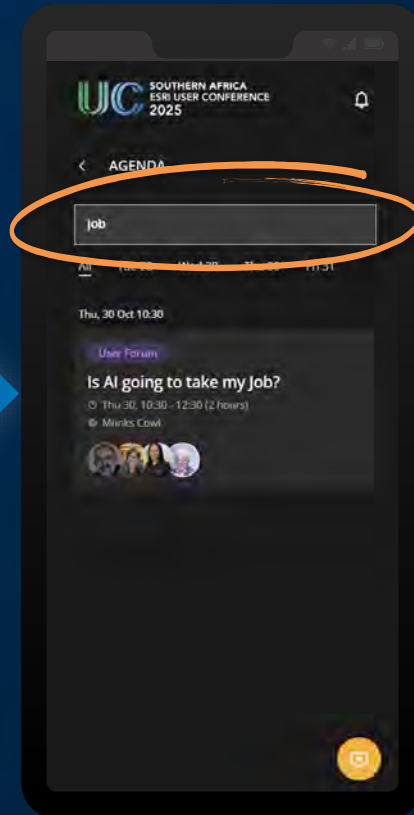
Please share your feedback in the UC app



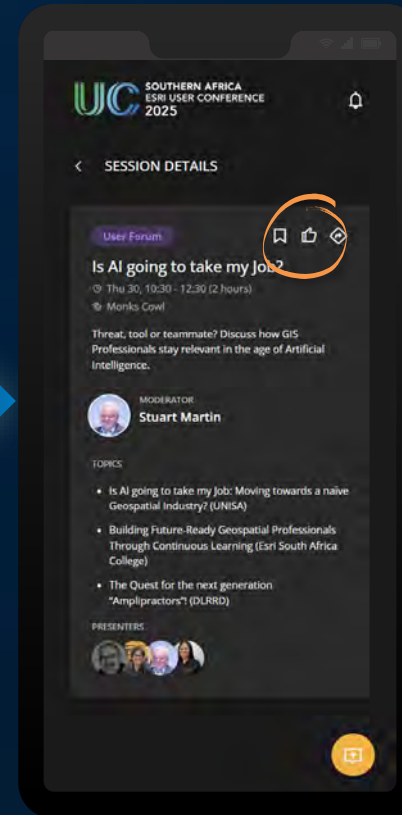
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icon



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