



Leveraging the ArcGIS platform for mining

A Common Geo-information Framework

Richard Kaufholz | Practice Lead: Mining

7 February 2020 | Cape Town

ArcGIS for Mining

Intelligent Spatial Mine

Our Human Footprint Is Creating Many Challenges . . .



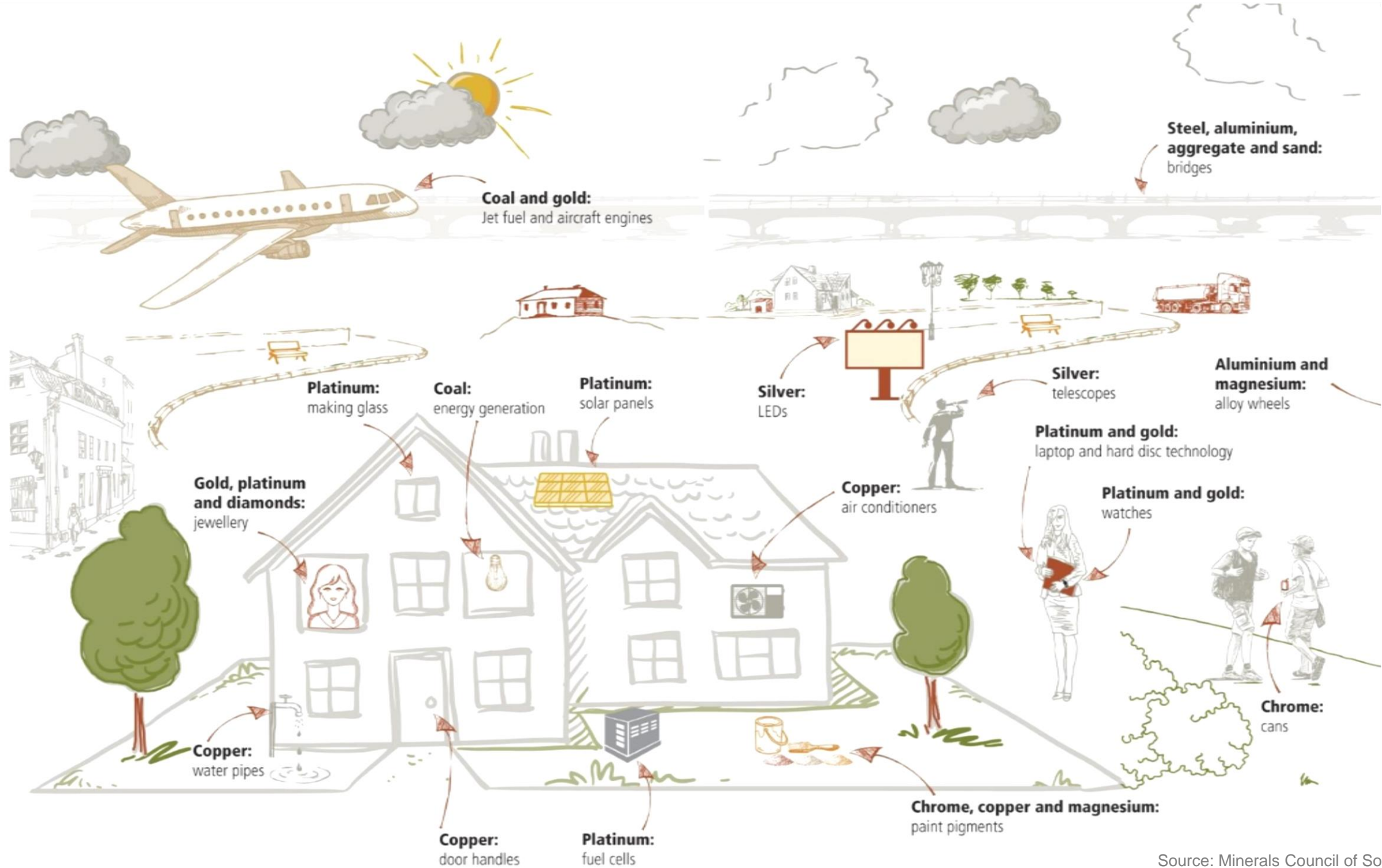
. . . Creating an
Unsustainable Future

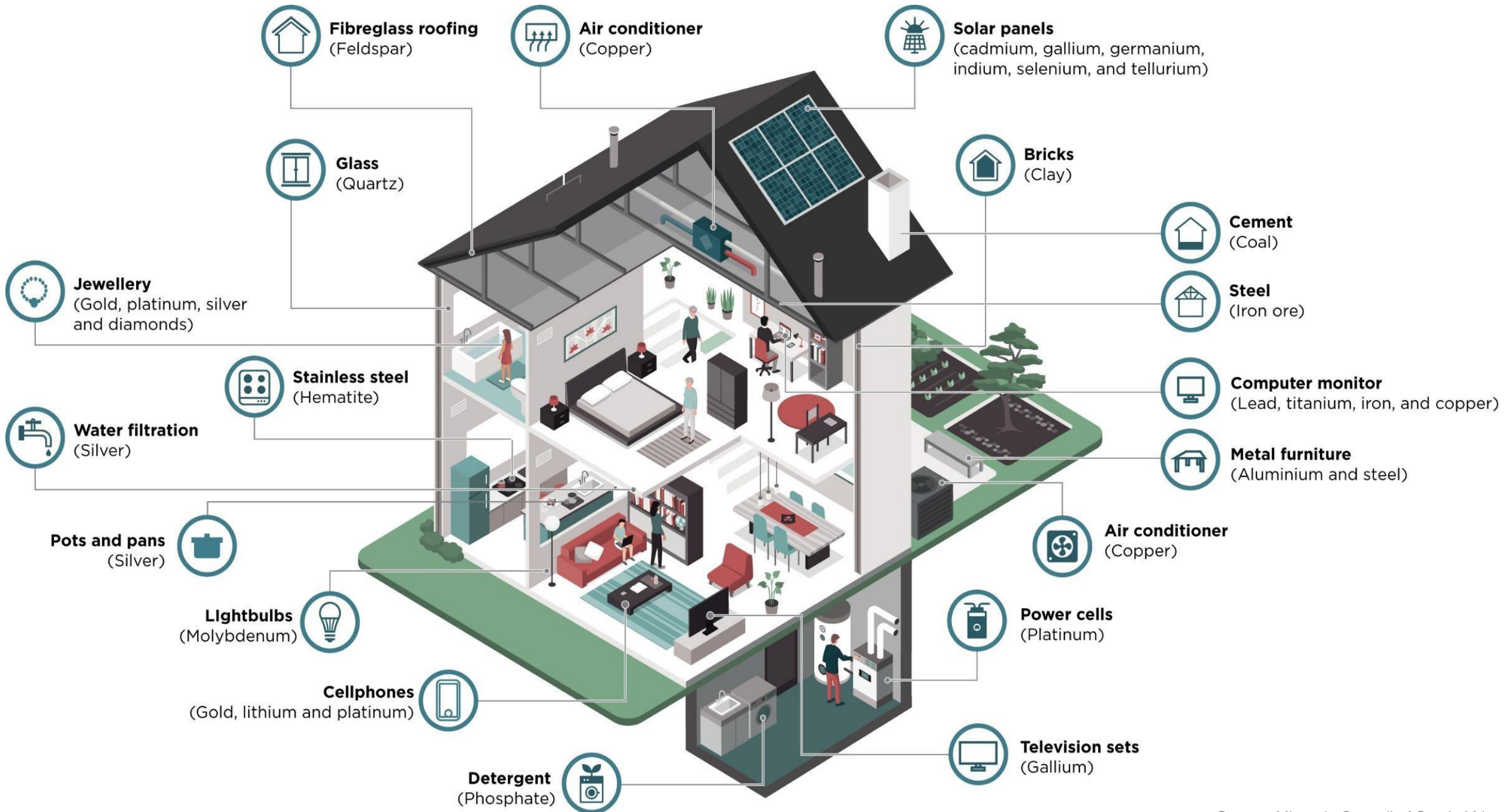
Our Human Footprint Is Creating Many Challenges . . .



4IR

. . . Creating an
Unsustainable Future

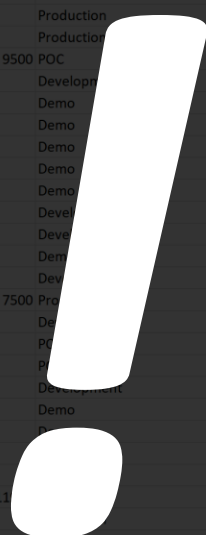




“But Mining is already under pressure!”

- **Reduce cost**
- **Eliminate safety incidents**
- **Reduce legal liability**
- **Increase profit margin**
- **Manage labour expectations**
- **Cater for fluctuating demand**
- **Improve efficiency**
- **Deliver to shareholders**

PackageID	CustomerID	PackageType	Summary	Description	PricingType	Price	EnvironmentType	StartDate	EndDate	PrimaryURL	LicencingType
{f1a8b0af-b247-4528-8639-3540c3b6863b}	{baf4335d-ed25-4c64-Custom	CSG Prototype Viewer	Strategic project (Patrick approval)	Unbillable	POC			01 05 2018	01 01 2030	https://csg.esri-southafrica.com/sp	Esri
{e11ee094-9675-457b-a5f0-d8f56cd956fd}	{238d8e21-b200-4ab Custom	Esri South Africa Public Website		Unbillable	Production			01 01 2018	01 01 2030	https://www.esri-southafrica.com/NA	NA
{3e77fc57-89ac-4500-b430-cc3d4a658116}	{b48f7bca-0def-4c93 Custom	Image Server	Data team image server	Unbillable	POC			01 01 2018	01 01 2030	https://imagery.esri-southafrica.co	Esri
{88727103-4805-45cf-b36e-1c0e16fafc94}	{5ff40e3c-85e0-4535 Custom	College (moodle)		Unbillable	Production			01 01 2018	01 01 2030	https://moodle.esri-southafrica.co	NA
{e6c42ac1-26ab-444b-8235-03c196d3da9b}	{238d8e21-b200-4ab Custom	Esri Southern Africa Public Website		Unbillable	Production			01 01 2018	01 01 2030	http://www.esri-southernafrica.co	NA
{f3a6a5de-a688-4855-82b4-4dd1b6ba27fd}	{bb483bd0-57f9-42a-Custom	Tourism Experience	Uthukela had extra budget and pu	Billable	Production	3888.89		01 01 2018		http://www.uthukelaexperience.c	BYOL
{5f3ae9ef-f8dc-425d-8b3e-80b69f5be4f5}	{238d8e21-b200-4ab Custom	EIS Africa Website	Supporting NGO all costs paid by	Billable	Production	166.67		01 01 2018	01 01 2030	https://www.eis.africa/	NA
{a3777dfb-ad03-4e54-9348-a2182f6294ea}	{658101a3-672a-4d5-Custom	All of Dave's stuff	Agreement with Patrick. gillittsgu	Unbillable	Production			01 01 2018	01 01 2030		NA
{b29dd20b-59ad-4755-a3eb-3af2b20b0253}	{238d8e21-b200-4ab Custom	Esri South Africa Intranet Website	Created New wwwdev and www	Unbillable	Production			01 01 2018	01 01 2030	http://intranet.esri-southafrica.co	NA
{8a5a471d-2a94-4a8a-96cd-02eb35af0ecf}	{53cdc94a-a5d3-4e0-Custom	WCG Cube Model (VPN + Remote D	Billable	POC	9500			05 07 2019	05 07 2020		NA
{645ca088-2046-4e89-a8af-04cd87017ba}	{baf4335d-ed25-4c64-Custom	NSPDR (dev)	Development environments (2 VM	Unbillable	Develop			01 01 2018	01 01 2030		Esri
{ce11c224-ff8d-4e60-ad8c-66fa68809420}	{ce2acc19-5d68-4c6f Custom	AFLA Demo	Created for use by Esri South Africa	Unbillable	Demo			01 01 2018	01 01 2030		Esri
{a82c258a-a0b8-4368-ad05-a3e93bc5f56e}	{ce2acc19-5d68-4c6f Custom	AFLA Drive	Created to allow SMME, Partners, Un	Unbillable	Demo			01 01 2018	01 01 2030		Esri
{da3e986b-3502-4440-ab62-a4e746b11582}	{ce2acc19-5d68-4c6f Custom	AFLA Playground	Created to allow SMME, Partners, Un	Unbillable	Demo			01 01 2018	01 01 2030		Esri
{e3900014-770a-4c6d-b7fa-8986cab4ca01}	{ce2acc19-5d68-4c6f Custom	AFLA Showcase	Show casing all the AFLA modules	Unbillable	Demo			01 01 2018	01 01 2030		Esri
{69591ac9-b9dd-4957-9138-083a7a1d4fd5}	{6fb29584-66a7-44d-Custom	ArcGIS for Insurance		Unbillable	Demo			01 01 2018	01 01 2030	https://insurance.esridev.co.za/po	Esri
{e05a2e64-dfb7-4e93-a3e4-799ee741e530}	{f37cbe17-d9dd-4fac Custom	REMIS Mobile	Development environments (5 VM	Unbillable	Deve			01 01 2018	01 01 2030	https://dvw-remis-mobile.esridev	Esri
{82ea8719-92ab-4ea0-acfe-213a0ce774ac}	{e9302a67-f69b-4934 Custom	Geoevent Prototype	This is for SIMINE (Mining Simulat	Unbillable	Deve			01 01 2018	01 01 2021		Esri
{3dc49df2-b33a-45d8-b5e9-96f0bacc90c7}	{238d8e21-b200-4ab Custom	Resource Hub	Generic demo site	Unbillable	Demo			01 01 2018	01 01 2030	https://resourcehub.esridev.co.za/	Esri
{f13cfe5c-a5a1-40f2-926d-eeff2cb206bb}	{aa856e45-8e53-433 Custom	DFA Portal	Development environment (1 VM	Unbillable	Dev			01 01 2018	01 01 2021		Esri
{4f59ffdd-04e5-4600-bc88-8208c948630e}	{5fea943d-f1e8-4939 Custom	Landuse Viewer	Archived and Removed 2020 01 0	Billable	7500	Pre		02 08 2019	30 09 2019	https://maps.mbombela.info/port	BYOL
{4fca0b0-927b-4551-bc99-8cdc330a2e97}	{e4079013-3b16-4b3 Custom	EMS Development	Dev environment for new build of	Unbillable	De			01 04 2019	01 01 2021	https://dev-umhlathuze.esridev.co	Esri
{54821115-f379-40b9-ac6a-4bb88cb3790a}	{b3a3f6f3-046d-4c2d Custom	Absa Workshop	Absa workshop, demo and trainin	Unbillable	De			16 07 2019	01 01 2021	https://dvw-absawork.esridev.co	Esri
{c73a1156-1143-4d32-b4d6-57edf242fb81}	{7089f25d-cc97-421c Custom	Encroachment POC	For development and demo purp	Unbillable	De			03 09 2019	01 01 2021	https://transnet-poc.esridev.co.za/	Esri
{86f3fa5-e92f-483c-b019-844e8b54576}	{d5cd4717-5ddb-436 Custom	PMS Upgrade and DB	eThekweni Municipality PMS Prj	Unbillable	Deve			08 10 2019	08 10 2024		Esri
{c1ebcd13-baf3-4f4b-ad50-8ad95f0943dc}	{85ea1a82-f4a3-4822 Custom	ArcGIS Enterprise Demo Site	Julian Inskip is the main contrib	Unbillable	Demo			01 01 2018	01 01 2030	https://dvw-dfaprtl.esri-southafric	Esri
{c65357fc-cb42-4724-850a-57121b7dd133}	{732968a0-e9cc-4ff7 Custom	ArcGIS Enterprise Demo Site	Portal is being actively used by me	Unbillable	Production			01 01 2018	01 01 2030	https://capetown.esri-southafrica	Esri
{a293dcdf-4a1f-4a81-8b9d-a4e3c8aa86e8}	{c4c6fdb5-7af3-4277 Custom	ArcGIS Enterprise Demo Site	Demo Site for technologies testing	Unbillable	Production			01 01 2018	01 01 2030	https://kzn.esri-southafrica.com/	Esri
{07f478b0-d4b1-41b9-bd7f-0b01b8548765}	{c4c6fdb5-7af3-4277 Custom	ArcGIS Enterprise Demo Site	Portal	Unbillable	Production			01 01 2018	01 01 2030	https://kzn.esri-southafrica.com/	Esri
{c8c4cbe0-4e7a-4716-9343-dad295dd5d27}	{baf4335d-ed25-4c64 Custom	SPLUM Portal	Billable, 14 hours taken from Prof	Billable	11	Pre		01 09 2017	01 01 2030	https://splum.esri-southafrica.com	BYOL
{d764388e-bbae-4837-ae60-7723e92a9588}	{f4213344-bd5a-4651 Custom	File Server		Unbillable	Production			01 01 2018	01 01 2030		NA
{b064355e-2d1d-46bc-85fe-0e84be544c93}	{cfff74bc-e8c2-493c Custom	Demo site	05/12/2019 Ingrid's feedback: Thi	Unbillable	Demo			01 01 2018	31 12 2019		Esri
{6ca37cb4-0c8e-4e5b-a60c-f5a0dade01ad}	{7a711b31-d75c-4da Custom	Portal	Ravi's Feedback: Indiwe has renev	Billable	24000	Production		01 07 2019	30 06 2020	https://indwe.esri-southafrica.com	BYOL
{9ff70539-fac0-45ab-ab0c-ace3bf817cb9}	{ce25ee27-2ddb-4b1 Custom	National Resource Atlas	Annually charged production env	Billable	8333.34	Production		20 03 2019	20 03 2020	https://www.mmp-resourceatlas.o	BYOL
{08b1efb1-cd68-4a12-a682-69ea67733ca4}	{fa709d4d-02ae-48a8 Custom	ArcGIS Enterprise	Client was given access to the ser	Billable	6000	Testing		01 12 2018	31 08 2019		Esri
{7584a31e-2d04-4148-b333-97acc547a63a}	{bfc481f7-9815-4057 Custom	Website	(Dave to Confirm That VM it has b	Billable	4000	Production		01 04 2017	31 03 2020	http://maps.coastkzn.co.za/viewer	BYOL



Dashboard Home Details Model Model Diagram Views src_person src_customer src_package src_server src_software

98.9 GB Free Items: 24

Outerspace 6 - 7pm

eat tacos

PLA hours 7 - 8:50pm

studio time 7 - 8:20pm

go shopping for clay today 6 - 6:50pm

100%

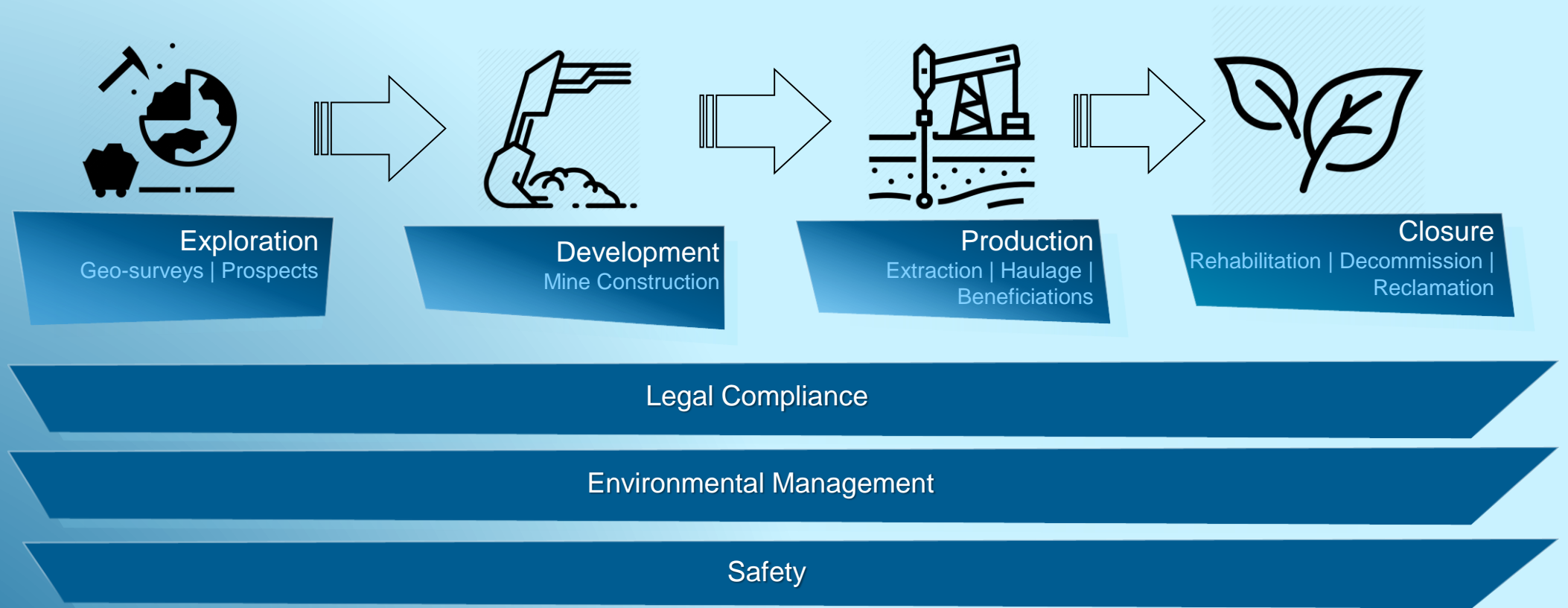
All folders are up to date. Connected to: Microsoft Exchange

2019-08-15 11:54:00 | ARRIVAL | BURNAGE | | LATE | Arriva Trains Northern

2019-08-15 11:53:00 | DEPARTURE | KING EDWARD BRIDGE S. JN | | ON TIME | Arriva Trains Northern

2019-08-15 11:53:00 | DEPARTURE | ALTOFTS JN | | EARLY | Arriva Trains Northern

The Mining Industry is Complex!



We need to work **smarter!**

- Integrates all spatial data into a single source of the truth
- Curated
- Decentralised
- Accessible
- Standardised
- Open and interoperable



COMMON GEO-INFORMATION FRAMEWORK

What can we learn from others?

Intelligent Spatial Mine Enterprise Portal

Home Learning

Enter search terms

Grid Relevance Filter

Filter Edit Defaults

Favourites Jwaneng

Sites

- Debswana DCC
- Jwaneng
- GLDM

MRM

- Geology Production
- Geology REP
- Geotechnical
- Hydrogeology
- Survey
- Systems (MRI)

Updates

Blast Notification

Currently not implemented! Click here to request a new "blast notification capability" in your feed.

20 Nov 2019 | Admin

New app: Survey sites

Mobile app to monitor your survey sites. Click here to open the app.

14 Nov 2019 | Mogapi

System usage

You last used an app 3 months ago.

Want a new app or training?

Admin from Debswana

Write a reply...

Start by searching for data, maps, tools or ideas...

Or scroll to browse hundreds of datasets, new apps, and ideas contributed by the community!

USA Geology Units

USA Coal Fields

USA Coal Bed Methane Basins

Geology

Feature Layers

Tile Layers

Map Image Layers

Imagery Layers

Tables

Date Modified

Date Created

Shared

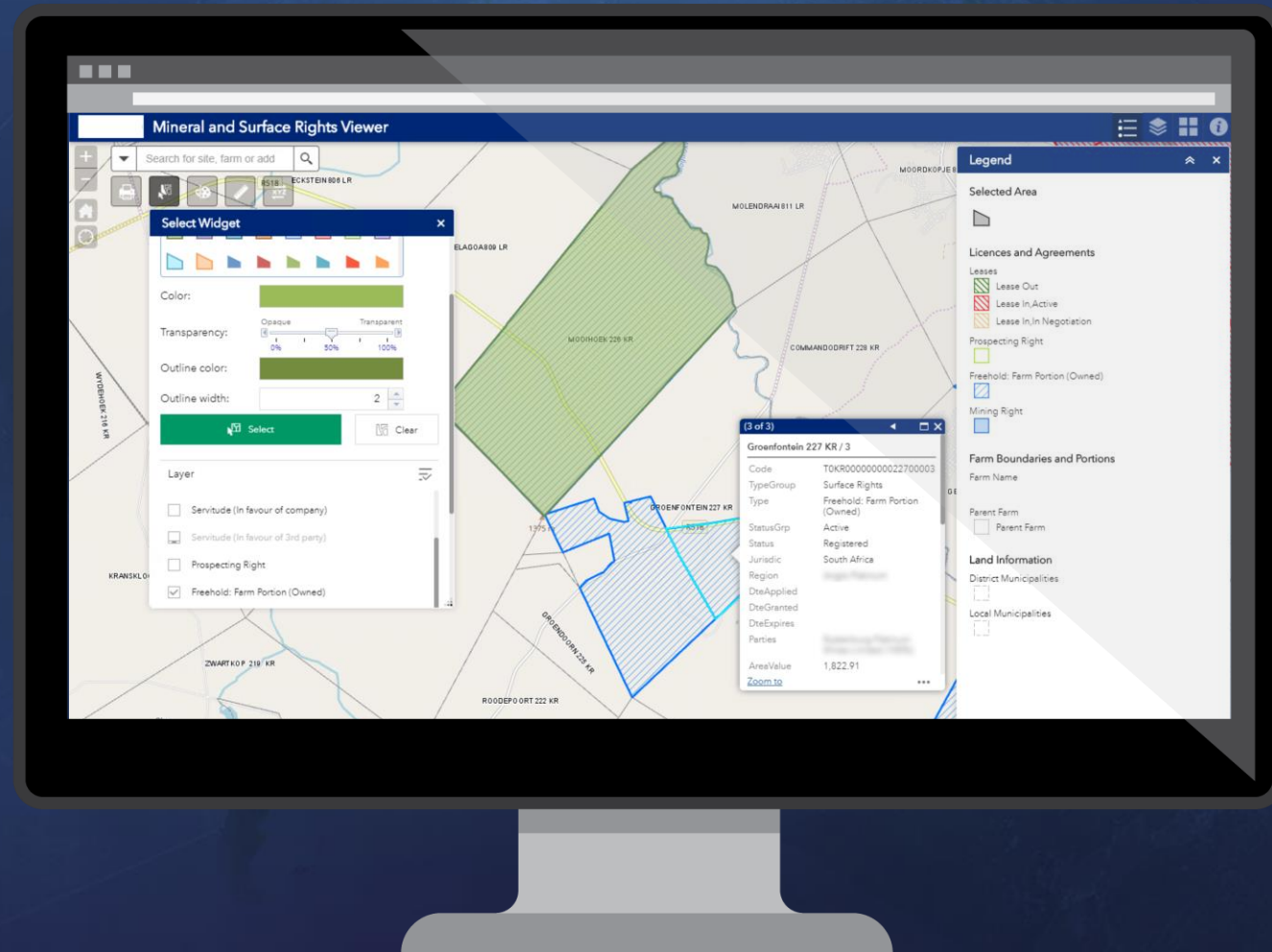
Status

esri South Africa

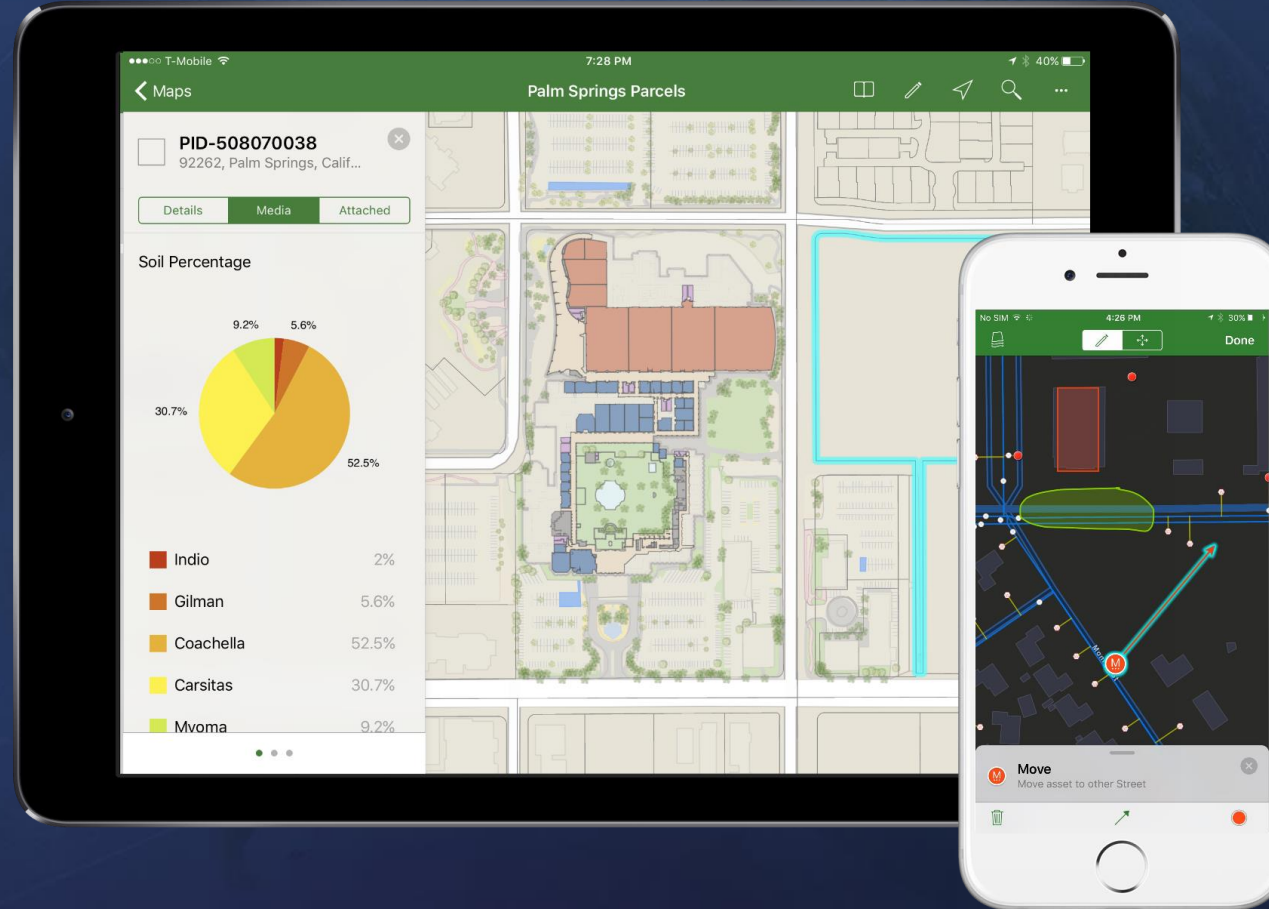
Powered by esri

Cross-industry collaboration nurtures growth

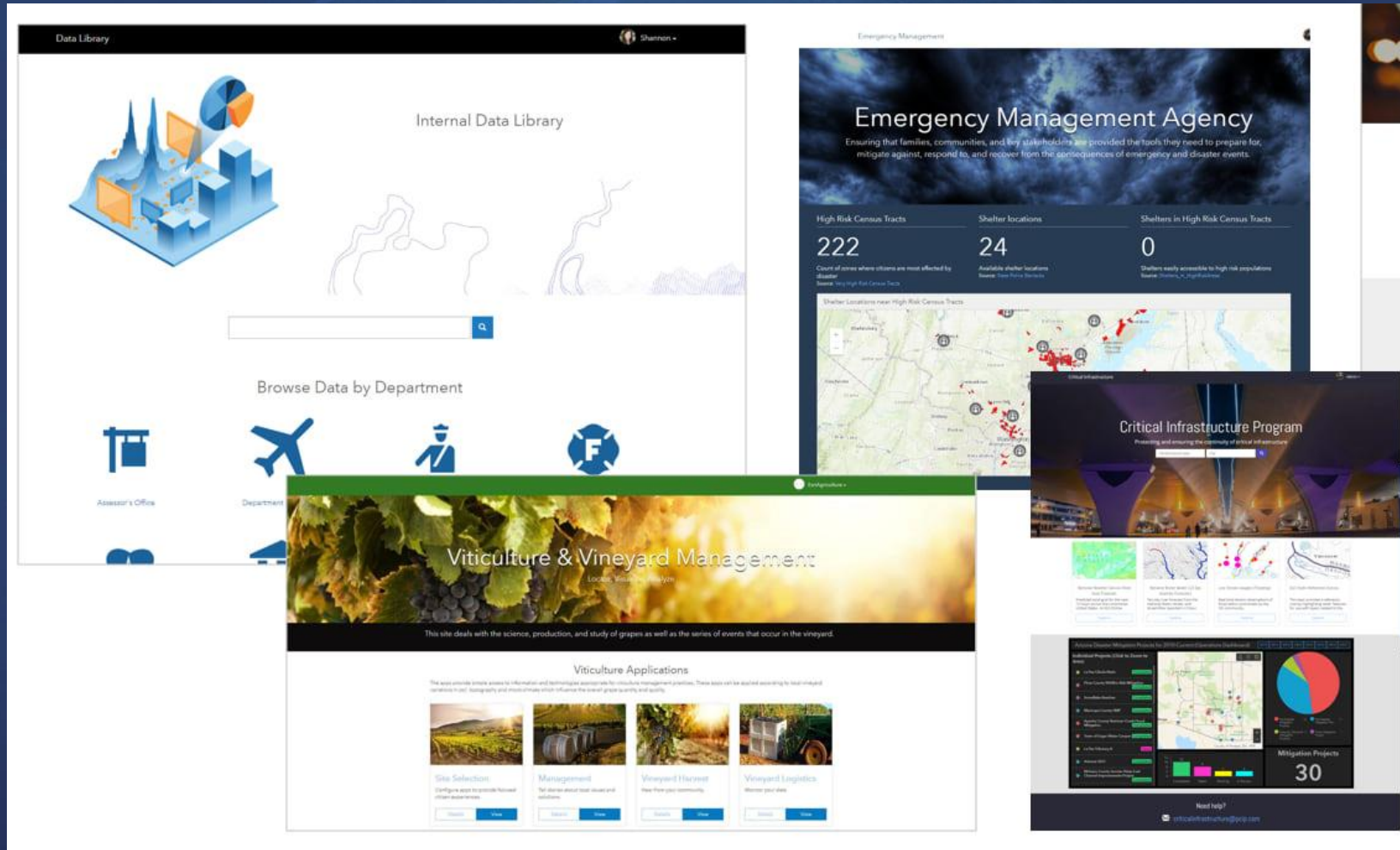
More than just data create a new web visualization tool (viewer)



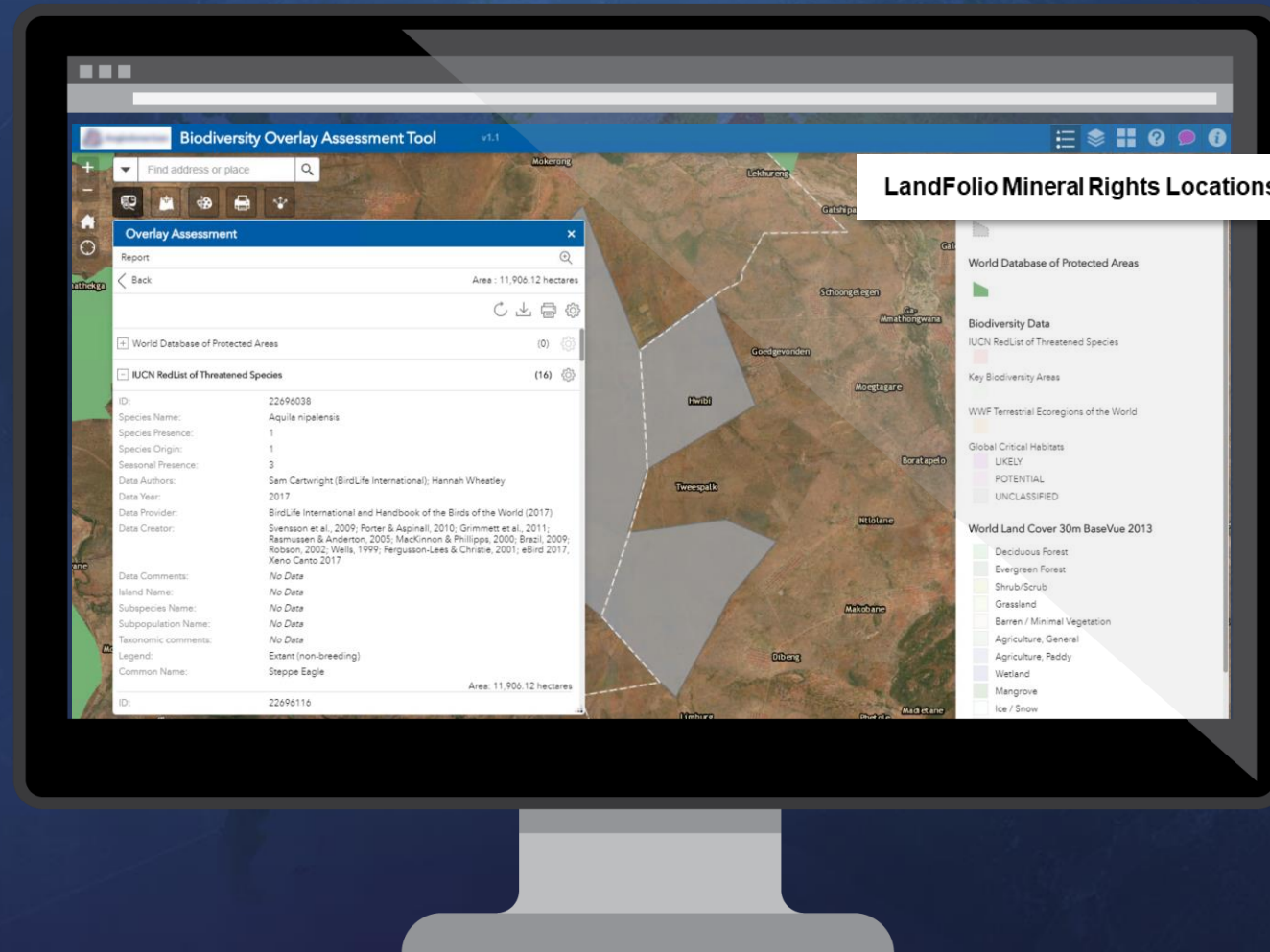
More than just data **access it anywhere, anytime**



More than just data **tailor the user experience to your audience(s)**



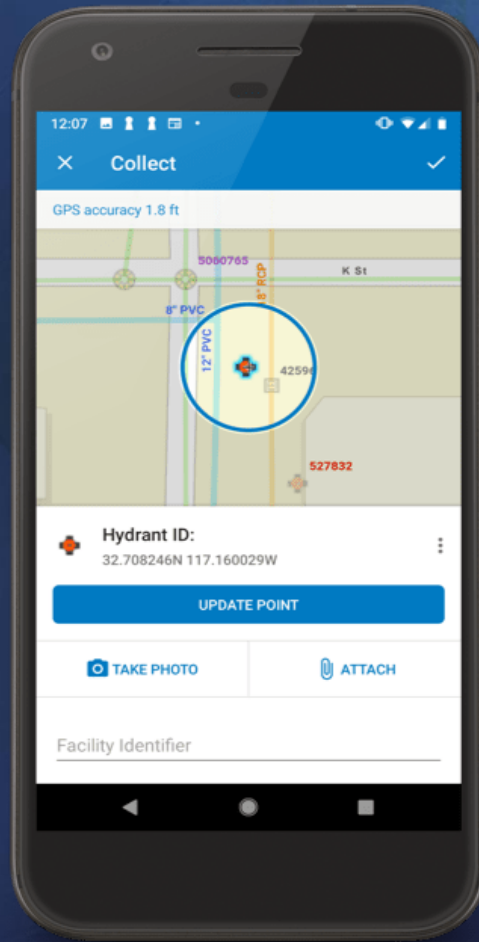
More than just data support other business applications with authoritative rights data



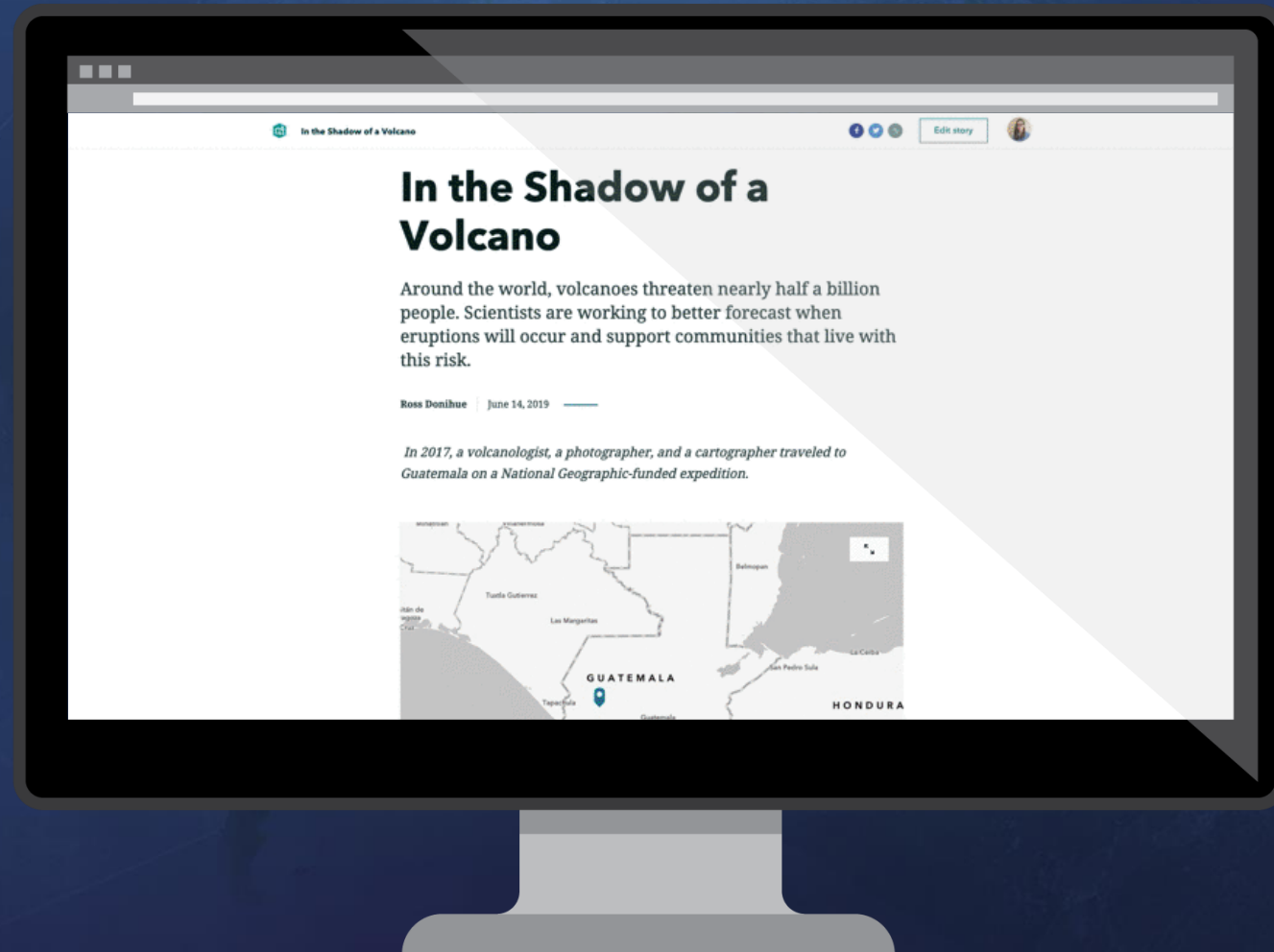
More than just data gain new insights by overlaying it with other data for analysis



More than just data **augment your understanding with data captured in the field**



More than just data collaborate with internal and external stakeholders



More than just data ensure trust by utilizing the authoritative source of rights data

Licenses > Search

Code: [] Jurisdiction: Western Australia Status Group: Active
Name: [] Type Group: Exploration Status: []
Party: [] Type: Exploration (WA) Saved Searches: []

Search returned 25 results (1,271,320.28 Ha)

All	Map	Code	Name	Parties	Jurisdiction	Type	Commodities	Status	Application Date
<input checked="" type="checkbox"/>		E 1600174	Franco	John Smith (100%)	Western Australia	EL	Coal	Active	
<input checked="" type="checkbox"/>		E 1600292	Villa	Dimension Mining Tanzania PTY LTD (100%)	Western Australia	EL	Cu	Active	2016/01/16 00:00:00
<input checked="" type="checkbox"/>		E 2400092	North1	Exploration Resources Ltd (100%)	Western Australia	EL	Au, Cu, Mo	Active	

Generate report
View in map
Export
Excel
Word
Google Earth
File Geodatabase
Shapefile
Extract coordinates to excel
Import



Mineral and Surface Rights Viewer

Select Widget

Color: []
Transparency: []
Outline color: []
Outline width: []

Layer

Servitude (In favour of company)
 Servitude (In favour of 3rd party)
 Prospecting Right
 Freehold: Farm Portion (Owned)

Legend

Selected Area

Licences and Agreements

- Lease Out
- Lease In-Active
- Lease In-Negotiation
- Prospecting Right
- Freehold: Farm Portion (Owned)
- Mining Right

Farm Boundaries and Portions

Farm Name

Parent Farm

Land Information

District Municipalities

Local Municipalities

Greenhulshin 227 KR / 3

Code: T0K800000000022700003
TypeGroup: Surface Rights
Type: Freehold: Farm Portion (Owned)
Status: Active
Juridic: South Africa
Region: KwaZulu-Natal
DnsOwned: No
DnsAcres: 1.822 91
Area: 1.822 91
Zoom: 10

ArcGIS for Mining as a Common GI Framework: *what is the value?*



OPERATIONAL EFFICIENCY

Complete tasks in less time
Streamline processes
Automation



DATA INTEGRITY

Data-driven capture
Standardised data model
Reliable + consistent
reporting



BETTER DECISIONS

Data-in-context
Real-time data
Actionable information



REDUCE COSTS

Reduced risk of failure
Reduce expenses through
optimisation
Avoid legal action



INTEGRATED ANALYTICS

New insights for benefit
Uncover patterns
Inter-discipline relationships

Who is already working smarter?



RioTinto

GLENCORE



Council for Geoscience





esri South Africa

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International Business Gateway | Midrand, Johannesburg | South Africa

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