Cloud-Based Exploration Collaboration Tools for Managing Nation-wide Upstream Oil and Gas Exploration Activities

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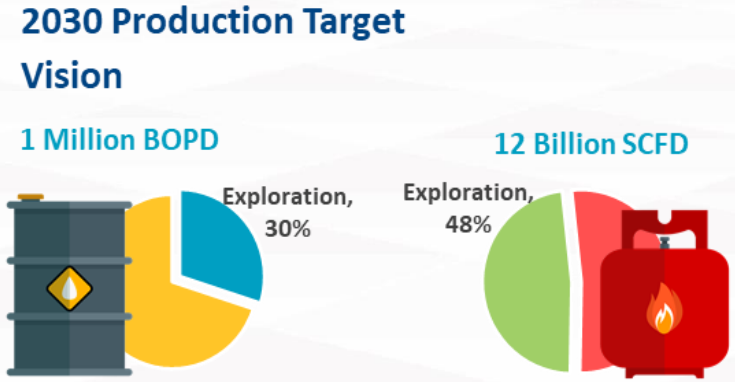
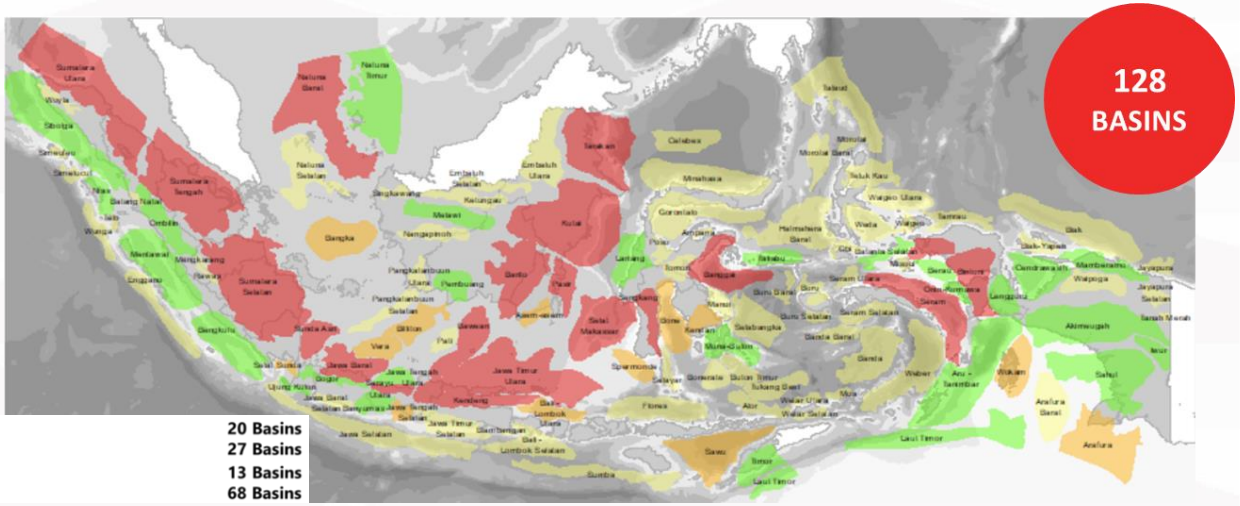
INTRODUCTION

- SKK Migas managed several production basins out of 128 basins across Indonesia, collaborating with more than 100s Oil and Gas Operators.
- Vision of 1 Million BOPD's oil and 12,000 MMSCFD's gas productions in 2030, more than 30% from exploration.
- Strategy to accelerate exploration activity to make the next giant discoveries.
- Need digital solutions to preserve knowledge gathered from Oil and Gas operators' past & present activities, rank prospects, and collaborate with operators to monitor active exploration activities.
  - ➢ Using DELFI Explore Plan (and related softwares) as solutions.
  - ➢ With pilot project for 3 basins.





PROJECT BACKGROUND & BUSINESS PROCESS

Big Subsurface Data

Including wells, seismics, studies data from active blocks, previous blocks, government's surveys and publications.

Borderless Evaluation

Combining and collaborating exploration results in order to get new broader insight from point of view.

Structurized Workflow

A structurized workflow from knowledge to evaluation may assist the regional and nation-wide portfolio analytics become possible to be done as a team.

Prospect Ranking

Optimization of exploration asset portfolio, strategy and activity plan to find the new big discoveries.

CHALLENGES & SOLUTIONS

Strict data-residency regulation

Deployed in in-country cloud and data center.

Data security and assurance

Service Organization Controls type 2 (SOC2) accreditation using proven protect-detect-response approach.

Large volume of digital data

Customized automated data preparation and ingestion workflow to facilitate migration and ease future data management.

Object size limitations

Dedicated storage for seismic data (big size data) management to overcome these limitations.

Data Centralization

Cloud basis data gather, upload, and editing can be accessed by designated user.

Direct Portfolio Analytics

Portfolio analytics can be delivered as dashboard, directly from the result of data evaluation.

DIGITAL TECHNOLOGY SOLUTIONS

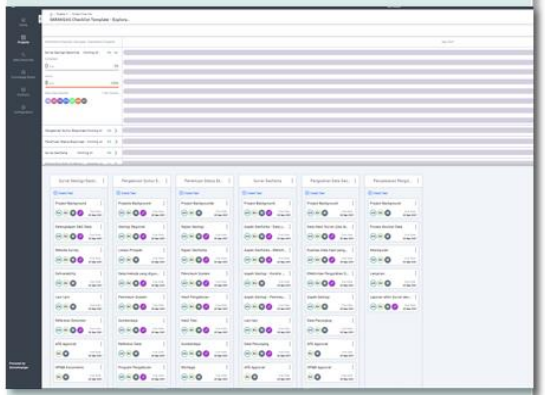
Exploration workflow

Frame & Plan → **Evaluate** → **Decide**

Cloud-native exploration planning tools

PROJECT PLANNING

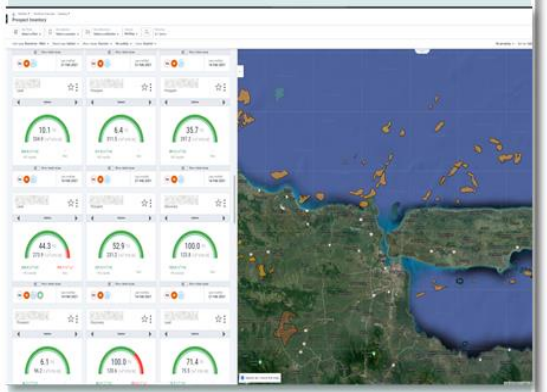
Manage portfolio of exploration projects



Define projects including planning, team, tasks, milestones and deliverables

KNOWLEDGE DASHBOARD & DATA DISCOVERY

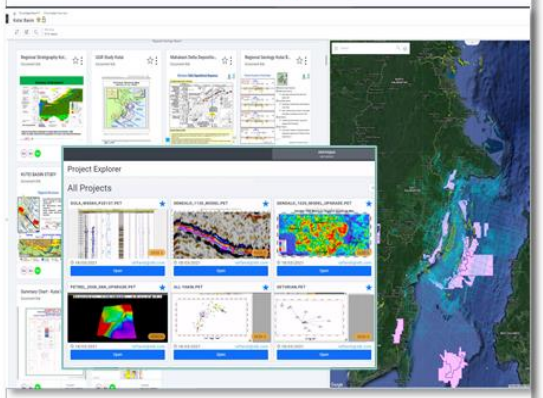
Get instant access to the opportunities inventory



Interactive spatial portfolio view with assessment results (volume, value, risk) & metadata (classification, status)

PETROTECHNICAL EVALUATION & KNOWLEDGE CAPTURE

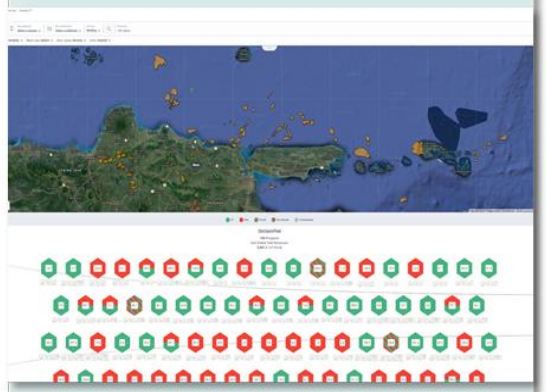
Data evaluation & capture knowledge in an interactive board



Review and create knowledge in geospatial context;
Access to data, documents, evaluation software & platform

PORTFOLIO ANALYTICS

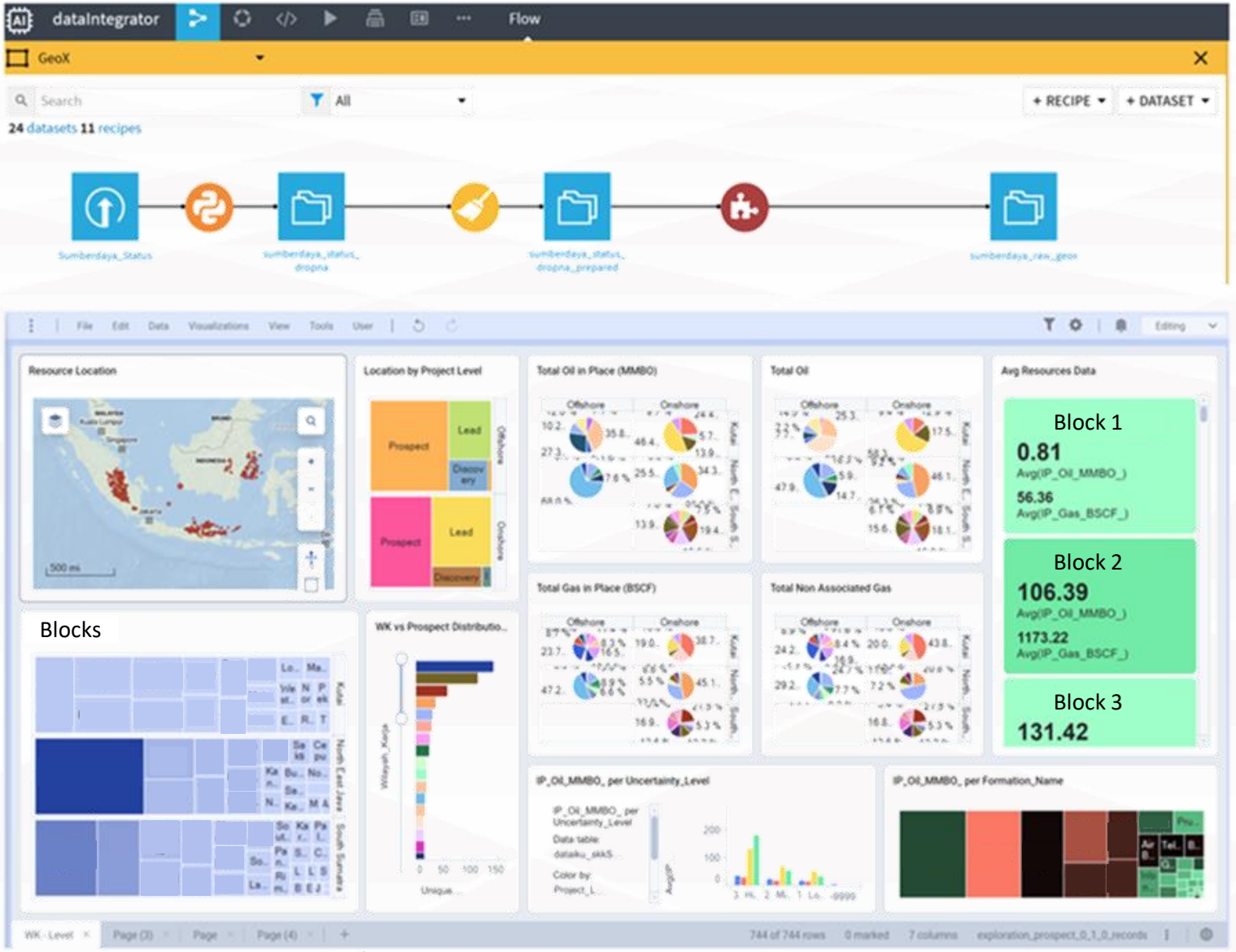
Corporate exploration portfolio funnel & analytics dashboard



Review and analyze the exploration portfolio & decide on actions to address the business need

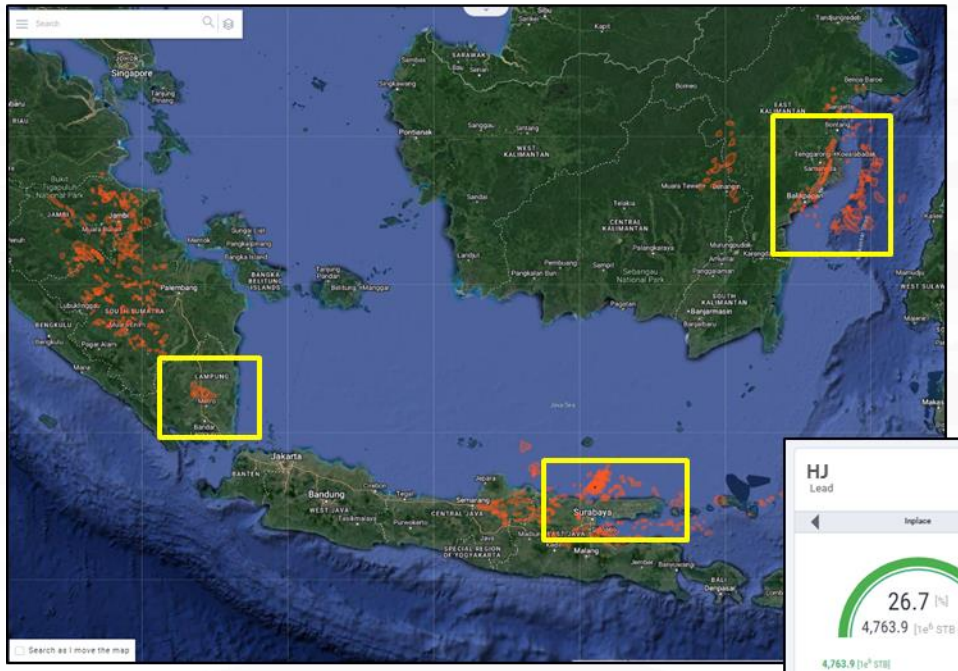
AI-SUPPORTED DATA ANALYTICS

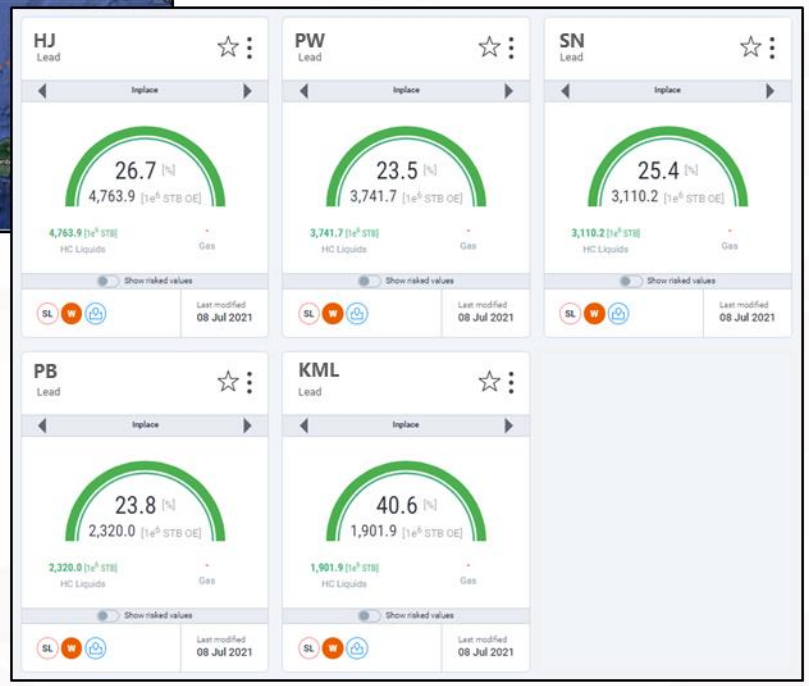
- All data, interpretations, evaluations and risking results are stored in the data ecosystem – available for instantaneous data mining and analytics.
- Enables data visualization to get insights from the entire portfolio.



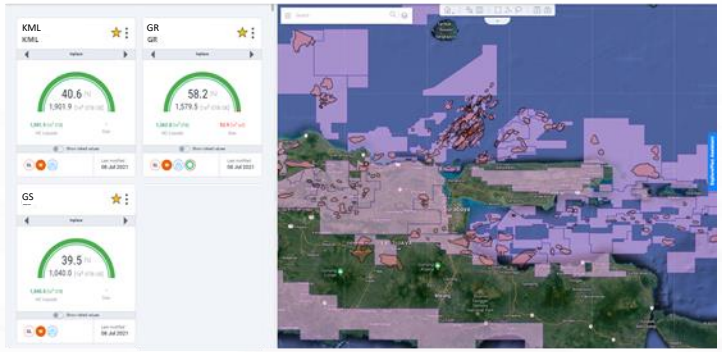
PROSPECT RANKING

Top 5 P&L in Indonesia from 3 Basins

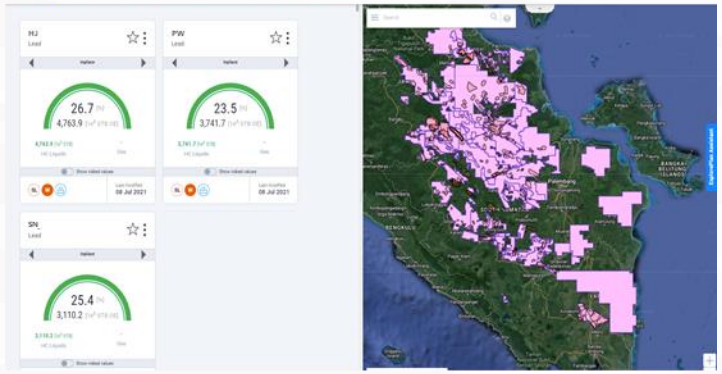




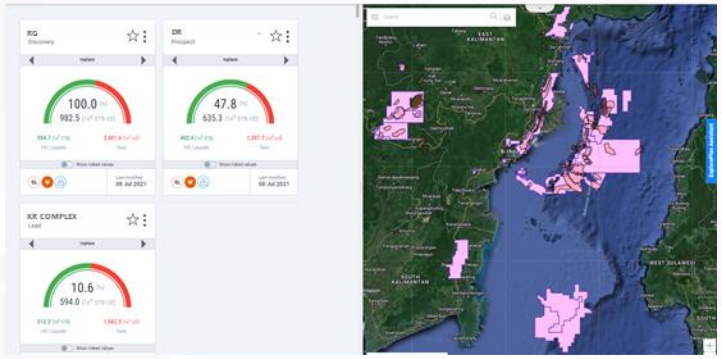
Top 3 P&L in NE Java Basin



Top 3 P&L in SS Basin



Top 3 P&L in Kutai Basin



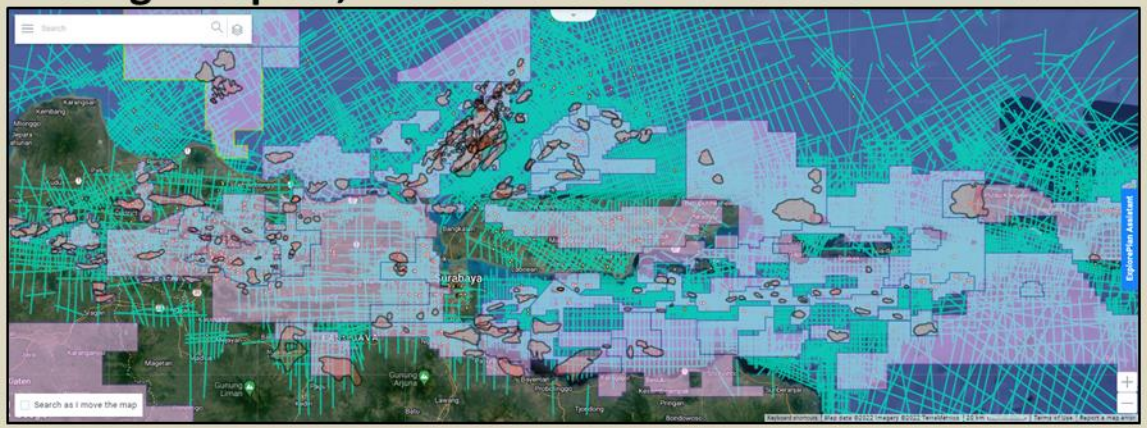
PILOT PROJECT RESULT

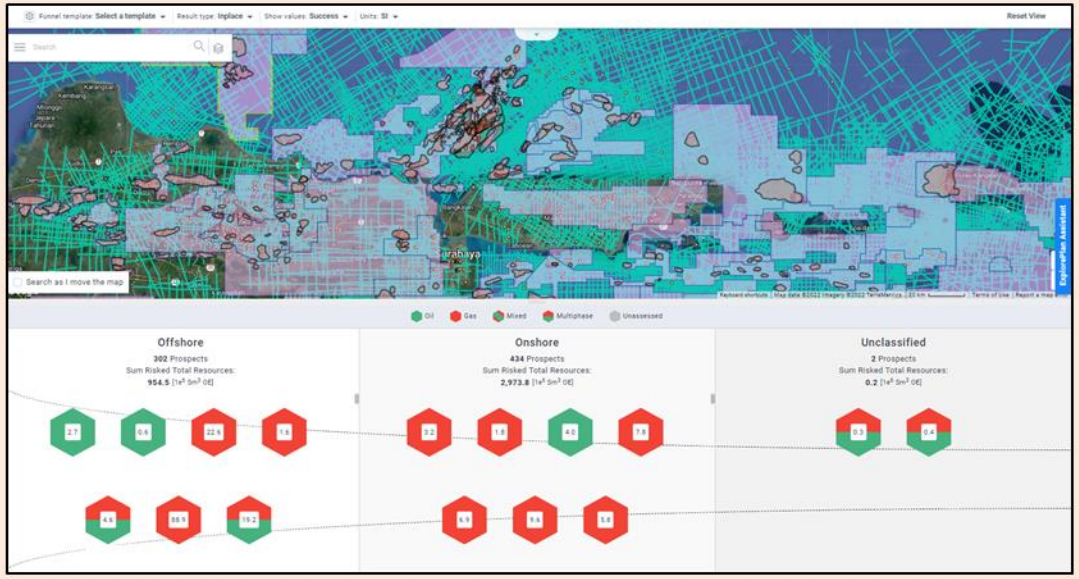
Basin Level

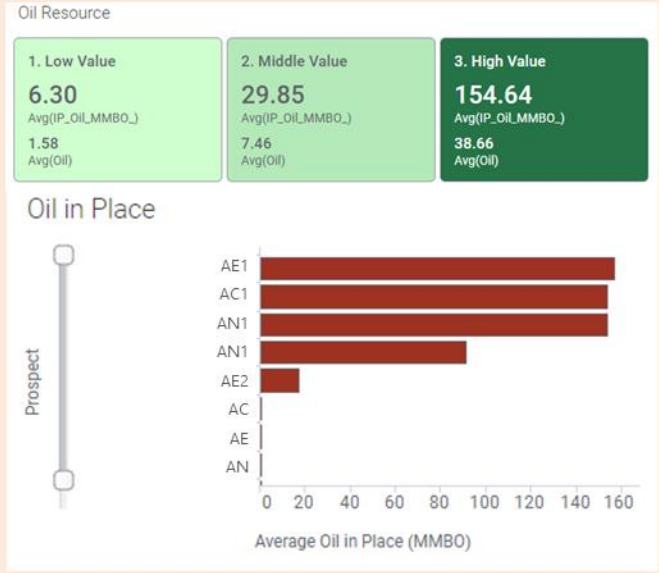
Prospect Ranking

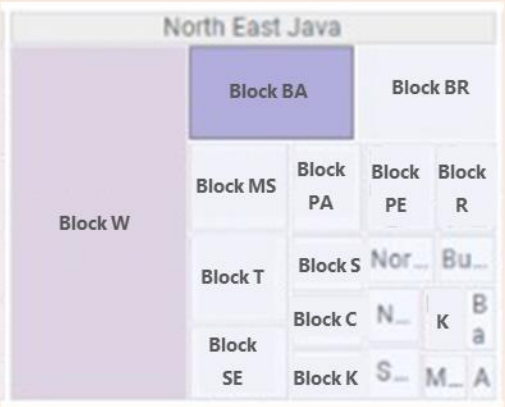
Prospect Collection within NE Java Basin

Existing Prospect, Wells and Seismic Location in NE Java Basin





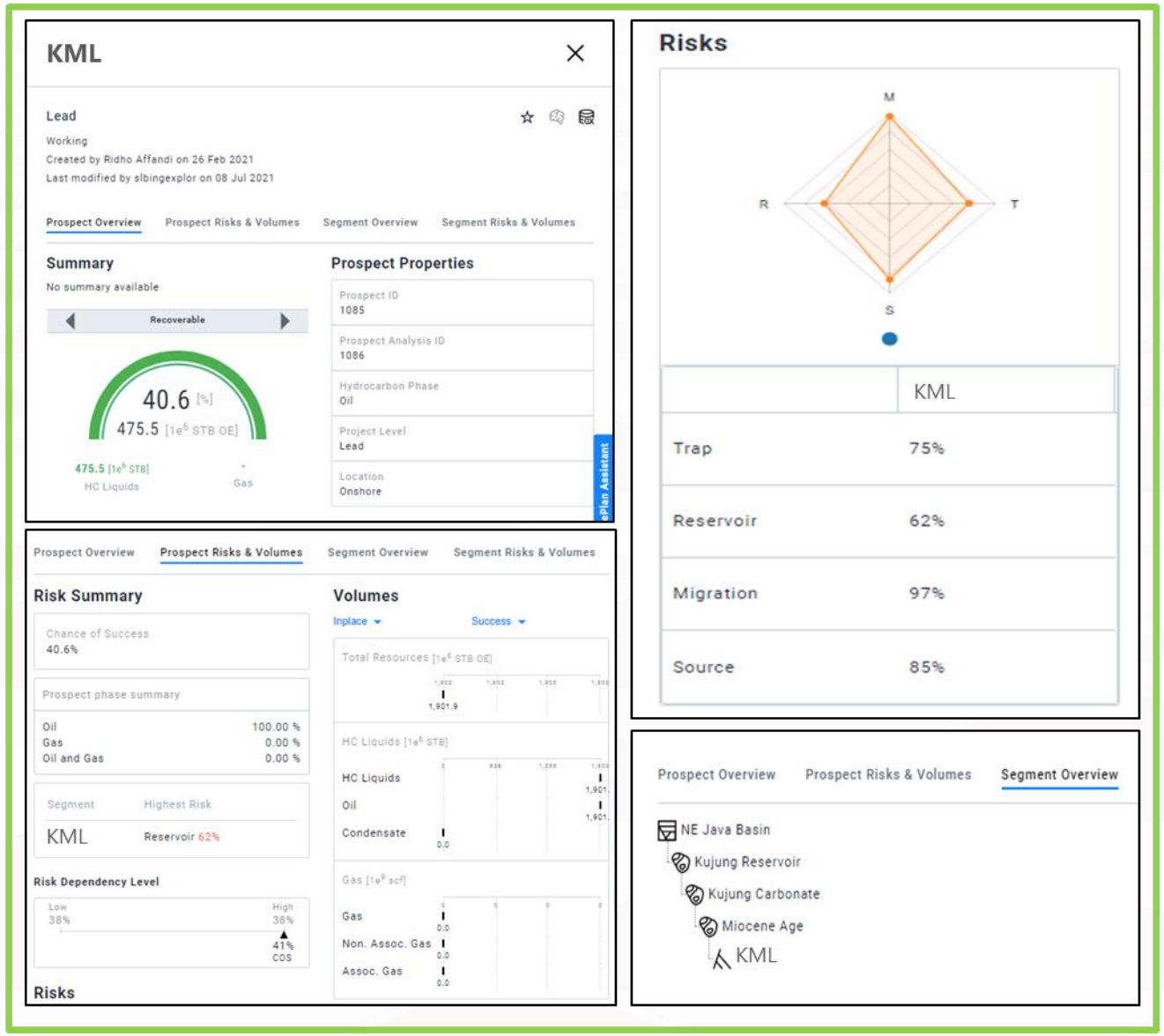




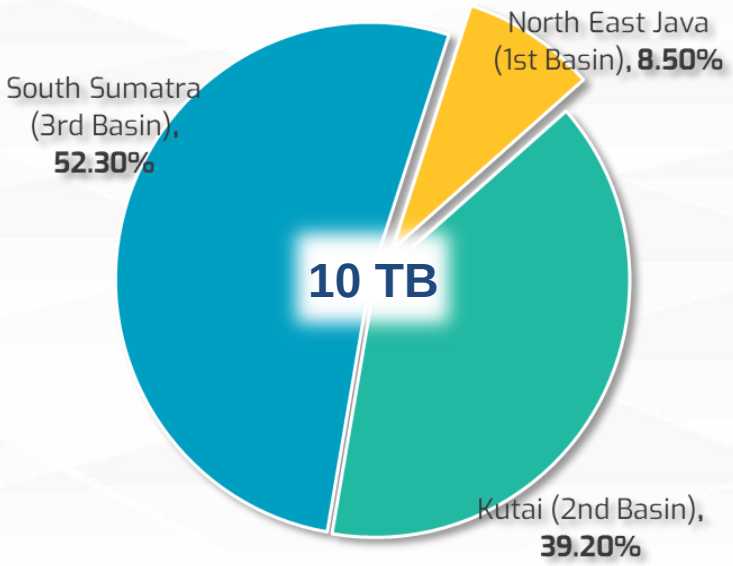
PILOT PROJECT RESULT

Top Prospect in NE Java Basin

	Prospect	Chance ...	Recover...	Gross rock volum...	Net rock volu...	Analysis na...
		Resource Potential		Intermediate		Analysis
☐	KML	41%	475.			Lead
☐	GR	58%	270.6			Lead
☐	R	38%	143.6			Prospect
☐	1	40%	89.1			Prospect
☐	2	37%	69.1			Lead
☐	3	100%	57.9			Discovery
☐	4	17%	20.2			Lead
☐	5	78%	17.9			Lead
☐	6	25%	23.4			Lead
☐	7	9%	13.5			Lead



PROJECT TIME COMPARISON



Previous Projects

- **1 Basin** with the biggest data availability
- **Redundant workflow** of collecting and integrating data.
- Need further effort to combine several projects in order to get nation-wide portfolio.

⏳ **1 Year**

ExplorePlan Project

- **3 Basins** with the biggest data availability
- **One time process** for collecting and integrating data (continuous data update) in Data Ecosystem.
- Integration of several projects can be done seamlessly.

⏳ **~220 days**

CONCLUSIONS

- The quest for substantially increased oil and gas production inspired the need to search for a cloud-based digital solution to assess and manage Indonesia's data and exploration portfolio of 128 basins in the future.
- Key digital tools as part of this solution that have been used to solve the challenges are project planning, knowledge dashboard and portfolio analytics.
- Data and knowledge related to all basins and prospects in Indonesia are captured and stored in cloud-based storage.
- Users can easily access and rank prospects and fields in Indonesia anytime from any location using the cloud-based platform.
- The embedded data AI-supported analytics workspace provides insights into the entire portfolio thus enabling informed portfolio decisions with a complete audit trail.
- **Challenges:** Enhance the technical evaluation with newest data and play concept.
- **Opportunity:**
  - Cloud access allows digital collaboration between SKK Migas and operators and eases the supervision of projects to enable reliable reporting of resources and reserves.
  - Possibility to have data room with investor for the result of regional analysis.

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