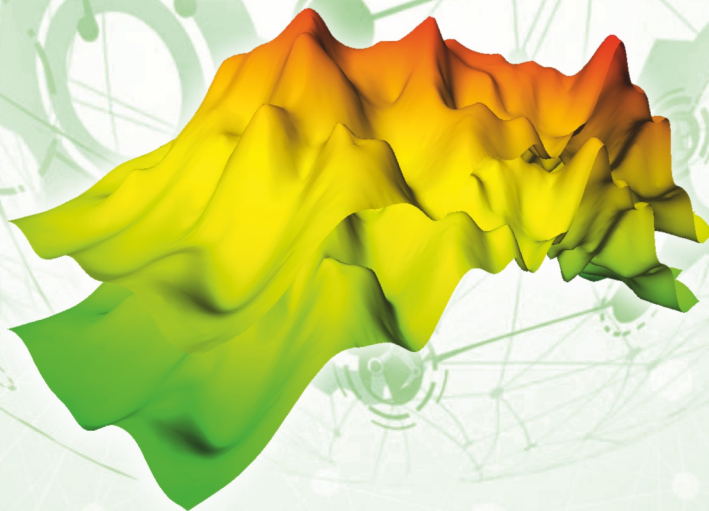


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AI-
BASED

PRIME



SYNOPSIS

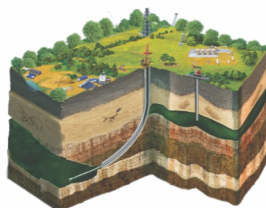
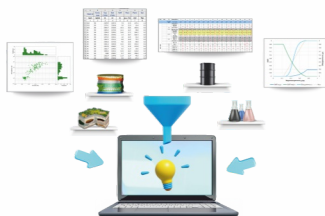
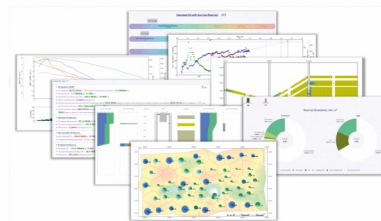
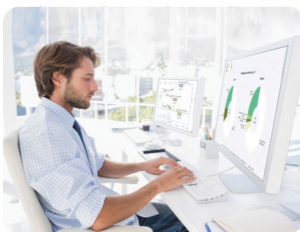
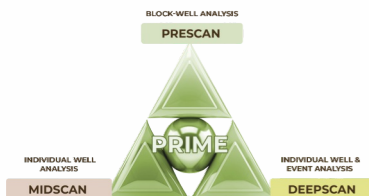
PRIME is an AI-driven service utilizing **PolyPRIME** software for the analysis of hydrocarbon reserves and production history. It provides tailored recommendations for field development and optimizing production.

PolyPRIME incorporates fully automated, AI-assisted suggestions for investing in new well drilling, side-tracks, and optimizing flow profiles (including water shut-offs and stimulations) to boost well productivity and waterflood performance. These recommendations take into account intricate factors such as corporate economics, taxation, hydrocarbon market trends, and inflation, which impact future costs.

Investment scenarios and production opportunities are derived from automated analysis of production history, integrating hundreds of statistical metrics and diagnostic indicators. The system includes over 30 types of maps and cross-sections that dynamically reflect changes over time.

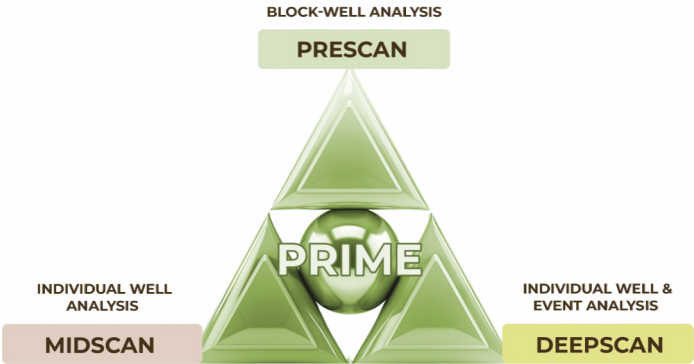
PRIME delivers its analysis outcomes in a structured web report format. This report features interactive live plots and tables that enable direct interaction with the data. Users benefit from expandable tables, sortable columns, zoomable plots and graphs, selectable layers on maps and graphs, and the ability to manually create custom trend curves.

Furthermore, users have the option to download data for re-processing or visualization in other software tools. Additionally, they can convert the web report into static document formats such as PDF, though this format does not support interactive functionalities.



SCOPE OF WORK

FEATURES	PRE SCAN	MID SCAN	DEEP SCAN
High-level block-well analysis	✓	✓	✓
Individual well analysis and recommendations	—	✓	✓
Individual well analysis and recommendations	—	✓	✓
Maps & cross-sections showing initial reservoir properties	—	✓	✓
Maps depicting dynamic reservoir properties and production history	—	—	✓
Multi-model well performance diagnostics	—	—	✓
Performance analysis of well interventions	—	—	✓
Analysis of Pressure/Rate tests and Production Logs	—	—	✓
Advanced individual well analysis and recommendations	—	—	✓



SERVICE DURATION

PRESCAN

- ✓ Duration: 1 day + 15 min per well
- ✓ Example: 2 days for a group of up to 20 wells

MIDSCAN

- ✓ Duration: 1 day + 0.5 hours per well
- ✓ Example: 3 days for a group of up to 20 wells

DEEPSCAN

- ✓ Duration: 1 day + 3 hours per well
- ✓ Example: 50 days for a group of up to 100 wells

Note: The above durations are based on manual data input, which accounts for 90% of the turnaround time.

The process can be accelerated by up to 10 times if the **PolyPRIME** software is locally installed within the corporate network and connected to corporate databases for automatic retrieval of well and reservoir data.



ENGINEERING DOMAIN

Well & Reservoir Management

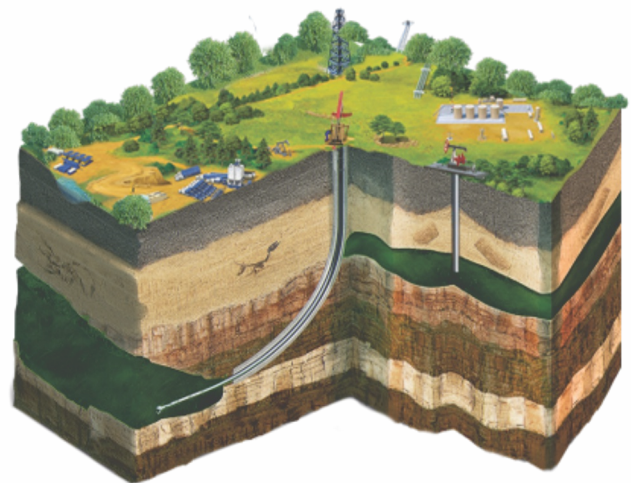
- ✓ Analysis of production history
- ✓ Monitoring of waterflood performance
- ✓ Identification of production enhancement opportunities, including:
 - Converting production/injection well
 - Reactivating shut-in wells
 - Adding and/or plugging perforated intervals
 - Bullhead and downhole selective stimulations
 - Bullhead and downhole water shut-off
 - Well fracking

Production Forecasts

- ✓ NFA (No Further Activities) scenarios
- ✓ Boosting production/injection
- ✓ Depletion infill drilling
- ✓ Balanced Waterflood drilling to maintain reservoir pressure and enhance recovery
- ✓ Repressurizing drilling to increase reservoir pressure and improve production efficiency

Field Development Planning

- ✓ Planning for new wells and side-track placement
- ✓ Upgrading surface facilities



TARGET CONSUMERS

- ✓ **Petroleum Asset Managers**
- ✓ **FDP Managers**
- ✓ **Well & Reservoir Managers**
- ✓ **Reservoir Engineers**
- ✓ **Simulation Engineers**
- ✓ **Production Technologists**



KEY PRODUCT DELIVERABLES

AI-assisted recommendations for:

- ✓ Drilling and side-track operations
- ✓ Controlling flow profiles
- ✓ Enhancing well productivity (including the well fracking)
- ✓ Improving waterflood processes, including production and conversion activities

AI-assisted diagnostics of:

- ✓ Remaining reserves: recoverable, drainable, and profitable
- ✓ Reserves energy distribution against expectations
- ✓ Current and cumulative thief water production and injection
- ✓ Non-uniform production profiles in multi-layer reservoirs
- ✓ Well productivity and injectivity against expectations
- ✓ Waterflood efficiency, including coverage and displacement



PolyPrime v2.74.0 DEEPSKAN Beta 3.0 SHOT 3_en - Final Report @ 29.11.2024

1. Diagnostics and Recommendations > 1.4. Well Diagnostics > 1.4.1. Producers Diagnostics				Recommendations	
Well ID	Status	Formation Units	Diagnostics Summary	Redevelopments	Surveys
7	ON	↑ @ 12.2025	- Current (@ 12.2025) oil production rate 10.2 m³/d. Average year over year decline 16%. - Current (@ 12.2025) watercut 95%. Average year over year growth 1%. - Current (@ 12.2025) WOR 18.7 frac. Average year over year growth 22%. - Oil depletion = 109% (overdepletion). Cumulative oil production = 188.4 th. m³. - Local oil depletion = 88% (average high). - Drainable remaining OR = 39.4 th. m³ (~ 3 MS). - RPR (drain) = 12 years (medium pace). - Profitable OR = 20.9 th. m³ (~ 2 MS) — 53% of expected drainable OR. - RPR profit = 6 years (high pace). - Non-profitable OR = 18.4 th. m³ (~ 1 MS) — 47% of expected drainable. - Formation pressure (@ 01.2023) = 187 atm — 83% of initial (high). - Formation pressure (@ 01.2023) = 187 atm — 107% of liquid average (matches). - Suspect of thief water production (@ 01.12.2019).	If PLT confirms thief water production water shut-off is recommended.	PTA survey is recommended. Layer oriented PLT is recommended.



KEY ADVANTAGES

- ✓ Highly automated processing of field data and production history data
- ✓ Fully automated data integration and visualisation
- ✓ Fully automated diagnostics of well and reservoir performance
- ✓ Fully automated AI-assisted identification of field development opportunities
- ✓ Fully automated analysis of investment economics



DATA OUTPUTS

DATA OUTPUT FORMAT

The results of **PRIME** analysis are delivered in the form of the auto-generated, structured petroleum asset data summary web-report with interactive plots and tables

WELL & RESERVOIR DIAGNOSTICS

Both featuring analysis against expectations on:

- ✓ Production and recovery dynamics
- ✓ Watercut dynamics
- ✓ GOR dynamics
- ✓ Productivity/injectivity dynamics
- ✓ Production logs
- ✓ Pressure tests

INVESTMENT OPPORTUNITIES

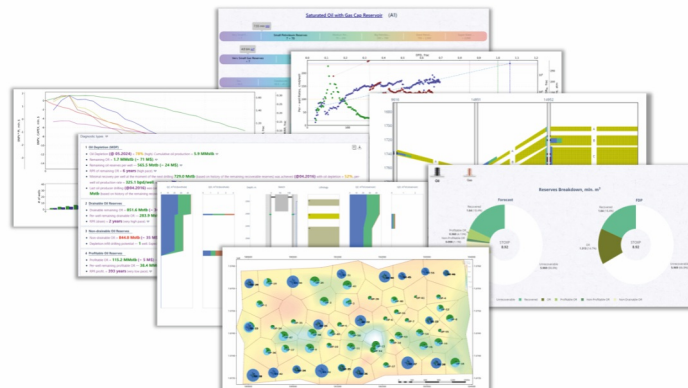
Redevelopment opportunities:

- ✓ New wells and side-track placement
- ✓ Surface facilities upgrade
- ✓ Production/Injection wells conversions
- ✓ Reactivation of idle wells
- ✓ Adding and/or plugging perforated intervals
- ✓ Bullhead and downhole selective stimulations
- ✓ Bullhead and downhole water shut-off
- ✓ Well fracking

Investment economics analysis

Surveillance recommendations:

- ✓ Pressure Tests
- ✓ Production logging



INPUT PROCEDURE

Data Input Methods: Manual and Automatic

MANUAL INPUT

- ✓ Download data from corporate databases
- ✓ Reconfigure data to comply with **PolyPrime** input format
- ✓ Upload processed data to **PolyPrime**



AUTOMATIC

- ✓ Once **PolyPrime** portal is deployed within the Customer's corporate network then users can pull the field/well data from corporate databases via custom-built driver, which substantially improve the turn-around-time of the **PRIME** procedure and increase immunity to human errors in data transmission

PROCESSING PROCEDURE

1. Upload or pull field, reservoir, and production data from database
2. Run **PolyPrime** and review autogenerated QC messages on input data (address anomalies, contradictions, warnings, notifications and error messages) identified by **PolyPrime**
3. Run **PolyPrime** with automatic Training/Validation Dataset selection
4. Check the response and adjust Training/Validation Datasets if needed
5. Run **PolyPrime** with adjusted Training/Validation Dataset
6. Iterate steps 3 and 4 to evaluate training sensitivity
7. Perform adjustments to prioritisation of investment scenarios if necessary
8. Perform the final run and add comments to the final report (if any)



SERVICE FACILITIES

HARDWARE FACILITIES

- ✓ On-premises intranet **PRIME** portal installation on dedicated high-performance multicore workstations.
- ✓ Scalable data processing with multi-server capacity.

ADMINISTRATION FACILITIES

- ✓ Multiple user group administration.
- ✓ Automatic load balancing across multiple servers.
- ✓ Dedicated servers allocated for specific users.



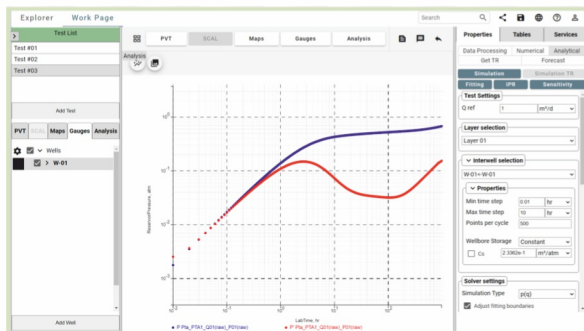
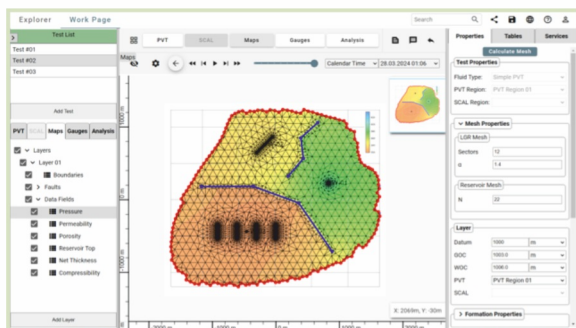
SOFTWARE FACILITIES

- ✓ **PolyGon** software platform:
 - Reservoir and production data input/output.
 - Well-by-well data processing and visualization.
 - Support for custom plug-ins.
- ✓ **PolyPrime** plug-in under the **PolyGon** software platform for:
 - **PRIME**-specific data input and QC.
 - Data processing.
 - Report generation.

TECHNOLOGIES

PolyPRIME software comprises the following components:

- ✓ Base plug-in under the **PolyGon** software platform for general data input, data visualisation, data QC, processing and automated report generation.
- ✓ **ALPHA** (Automated Long-term Production History Analysis) for automated AI-based diagnostics of wells and reservoirs.
- ✓ **DIRECT** (Digital Reservoir Consultancy Technology) for automated AI-based recommendations for redevelopment.



DIAGNOSTICS TECHNOLOGIES

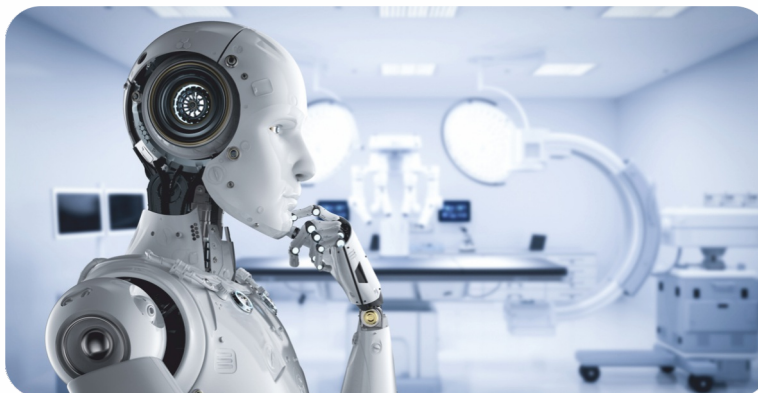
ALPHA software facility performs a comprehensive analysis of the current structure of initial and remaining reserves, including their spatial distribution and energy.

ALPHA provides estimation of well's productivity/injectivity and analyses its dynamics against expectations.

Additionally, **ALPHA** provides estimation of the current and cumulative thief production and injection, assess non-uniformity of production and injection profiles across multi-layer reservoirs, and evaluate waterflood efficiency in terms of coverage and displacement.

ALPHA features:

- ✓ Automatic multilayer geological 2D+ proxy modeling
- ✓ Material Balance modeling
- ✓ ANN-based cross-well interference modelling
- ✓ Decline Curve Analysis (utilizing multiple analytical models and ANN)
- ✓ Watercut modeling (employing multiple algorithms)
- ✓ Productivity/Injectivity Index modelling
- ✓ Waterflood efficiency modelling
- ✓ Decision Tree Diagnostics
- ✓ AI-assisted diagnostics
- ✓ Enhancement of AI diagnostic capabilities by integrating field experience into the AI's digital framework



RECOMMENDATION TECHNOLOGIES

DIRECT software facility browses through the multiple field development scenarios and generates the economically prioritized list of recommendations on:

- ✓ locations and completions for new well drilling and/or side-tracking.
- ✓ individual well workovers targeting flow profiles and production objectives.
- ✓ well-by-well surveillance program.



DIRECT features

- ✓ Automated creation of investment packages from a prioritized list of redevelopment opportunities
- ✓ Multi-component Production Economics with Financial Statements for selected investment scenarios
- ✓ AI-assisted screening of investment scenarios based on redevelopment opportunities



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