OPASOL

Enable Your Data

Anomaly Detection on Well Construction Costs

TCC Data Analytics Workshop
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Presented by Sopheap Meas

About OPASOL

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16+ years of experience in drilling and completions, exploration and development, onshore and offshore wells globally. Lead and executed operational performance analytics for major energy company.

Sopheap Meas – CTO / Co-Founder

16+ years of experience in software and data engineering in the Oil and Gas industry. Lead and executed data accessibility, governance, quality, and analytics for major energy company.

OPASOL is a technology company based in Houston, Texas, that provides machine learning and advanced analytic services in cost tracking, cost control, and cost reconciliation for well construction in the upstream Oil and Gas industry.

Why Well Costs?

The biggest cost in an operator's capital expenditures is the well construction (drilling and completions).

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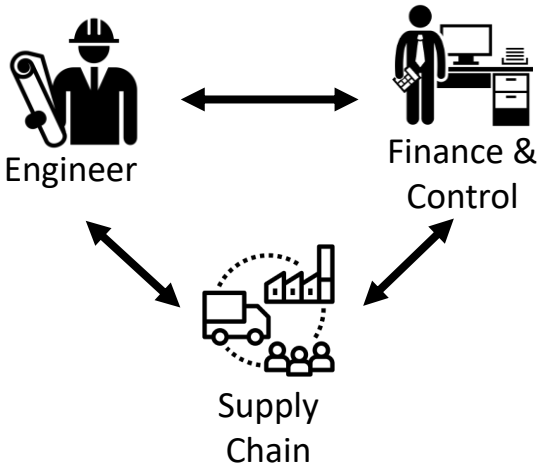
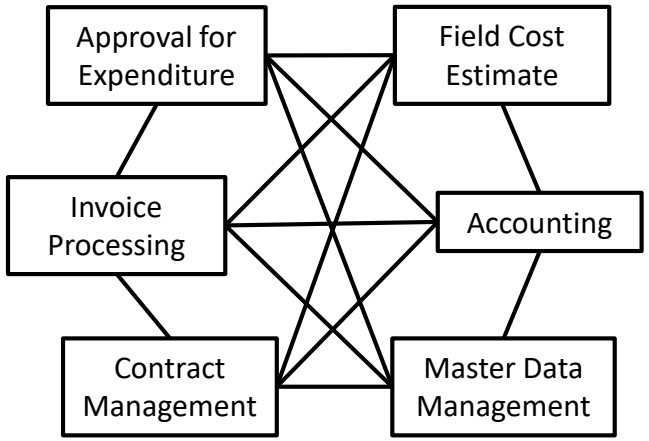
Challenge: Low confidence on well construction costs

Multiple Disciplines



Multiple Systems



Multiple Processes

- Field Cost Capture
- Invoice Capture
- Cost Reconciliation
- Invoice Approval
- Capital Outlook
- Cost Performance
- Planning and Budget

780	Total cost entries from the field (D&C)
450	Invoices submitted
4	Minimum personnel involved in well cost tasks

15%	Erroneous cost entries
6	Months for all invoices to arrive
10%	Standard cost deviation

***Averages are per well, drilling time 21 days, completion time 10 days

Anomaly Defined

"That doesn't look right."

Anomalies in Well Construction costs: A difference in pattern between a subgroup of the data and the rest of the data

Example Anomalies:

- Incorrect cost assignment
- Cost too high / low
- Wrong GL Account
- Wrong vendor
- Wrong service
- Missing cost
- Duplicates

How To Detect Anomalies in Well Costs

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AFTER (Reactive)

- Past data
- Single data source focused
- Fixes are addressed post event
- Basic analysis
- One-off visualization analysis

DURING (Proactive)

- Current Data / Rules
- Single or multiple data sources
- Anomalies detected at time of event
- Data Quality checks; Supervised learning; Past data used
- Regression, Binary Classification

BEFORE (Predictive)

- Live data
- Integrated data sources + meta data
- Catch anomalies before they happen, then trigger events
- Supplier data, contract terms, operations data, and unstructured data
- Multi-classification, Deep Learning

Examples from Real Results

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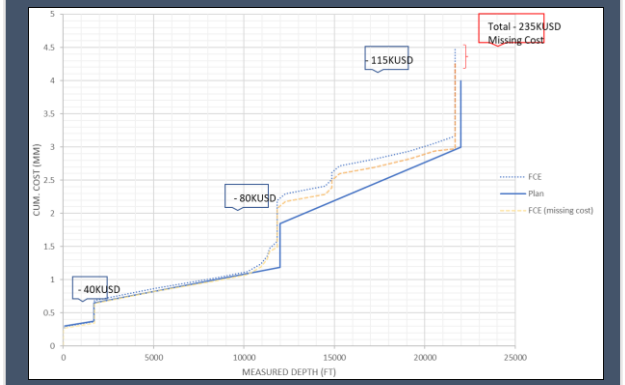
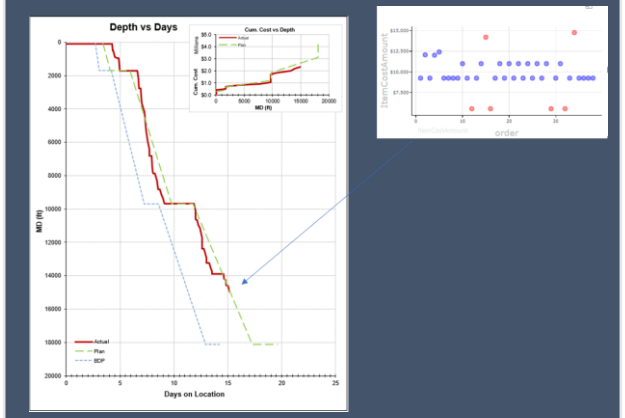
Missing Costs

- ✓ What: Cost not captured for a service that happened
- ✓ Impact: Differences between expected and actual cost
- ✓ 50% of the anomalies



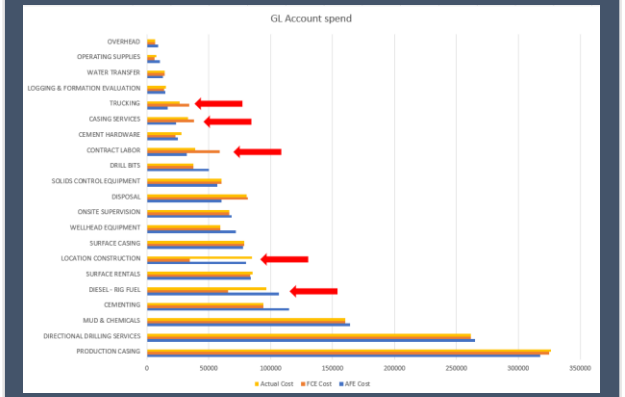
Cost Too High / Low

- ✓ What: Cost is above/below the normal
- ✓ Impact: Unexplainable cost amounts
- ✓ 21% of the anomalies



Wrong Account

- ✓ What: Invalid allocations of the cost item
- ✓ Impact: Reconciliations not correct
- ✓ 10% of the anomalies



Impact of Detecting Anomalies

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SPEND LESS

- Reducing time the Engineer spends verifying cost recording and coding
- Reduce the time the approver spends approving and validating invoices
- Reduce costs through continuous monitoring
- Reduce time finding and managing the data
- Reduce efforts in monitoring of vendors, GL accounts, Services
- Reduce cost allocation errors

DO MORE

- Increase the quality of cost data input from the field
- Focus on Health, Safety, and Environment
- Focus on engineering
- Increase spend visibility faster
- Compare suppliers quicker
- Forecasts of expected capital spend
- Decision making with the simplified user interface and analytics
- Strategic Procurement

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Contact Us

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