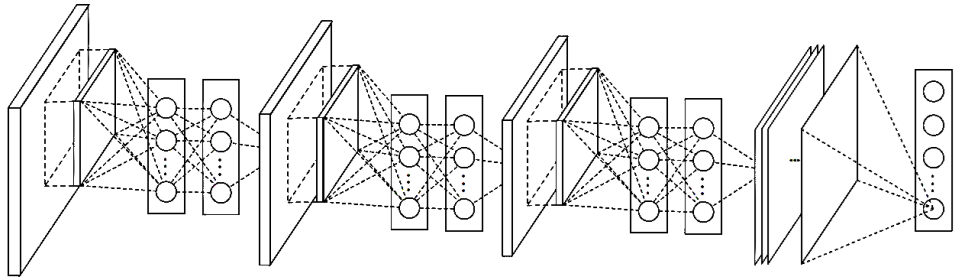
Arturo Klie

aklie@deepcast.ai

Why We Are Here

We live in two worlds

Requires tons of data



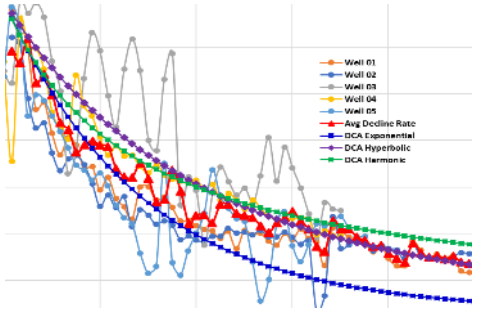
AI / Machine Learning World

Black-Box
Not interpretable physics

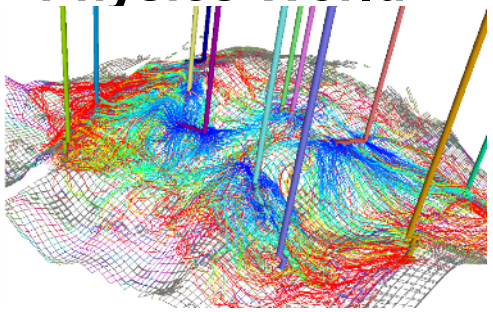
Efficient, Insightful
Robust, Easy

Lack of Generalization
for new scenarios/events

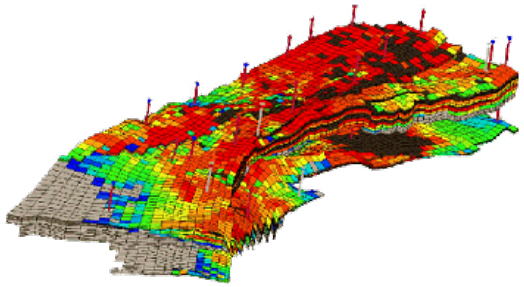
Physics World



Analytical Models



Reduced Physics Models



Full Physics Models

Simple, Fast, Low Fidelity

Complex, Slow High Fidelity

Inflexible, Manual, Error Prone, Costly, Limited Data

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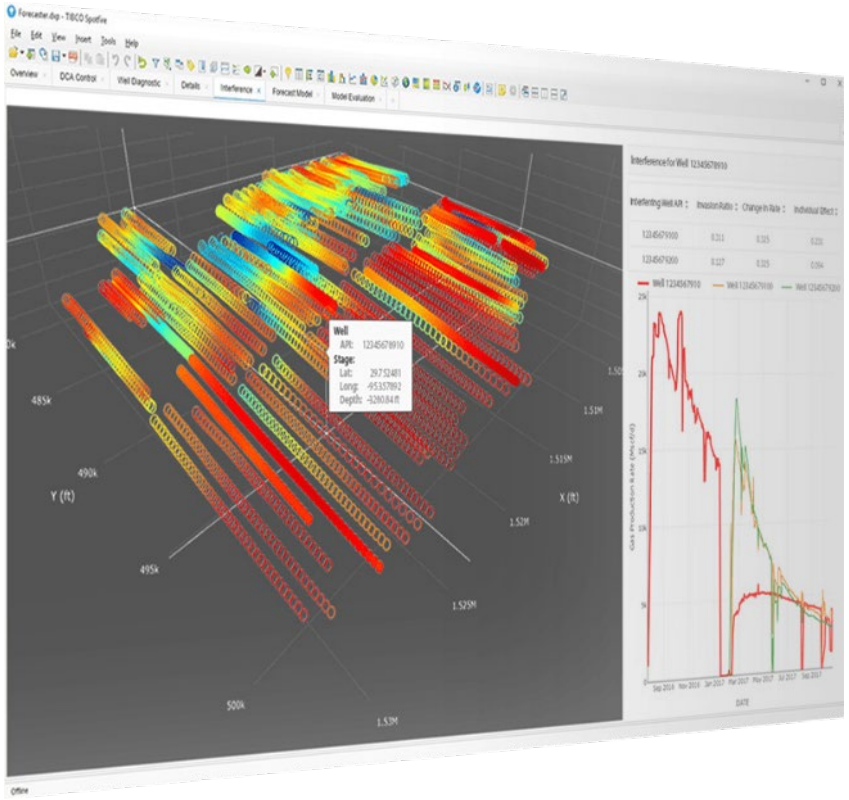
Our Solution



The most powerful automatic field development platform

- AI-assisted data cleaning
- Automatic field analysis:
  - Automatic labeling, auto-forecasting, and economic
- Automatic infill optimization:
  - Completion design, spacing models, and targeting.
- Proprietary Physics-Informed AI models:
  - 100x faster than conventional simulation
- Self-learning Optimization:
  - Adapts to multiple field scenarios and objectives
- Multi-cloud or hardware agnostic platform

Our Team

Core Team

Hector Klie, Ph.D.
CEO

Arturo Klie
CTO

Duc, Ph.D.
Sr. Reservoir Engineer

Duc, Ph.D.
Sr. Reservoir Engineer

Bicheng, Ph.D.
Sr. Data Scientist

Daniel
Software Engineer

Advisors

Mick Fetkovich
Petroleum Engineer Expert

Yves Chevalier
Exploration Geoscience Expert

Tan Nguyen
Drilling & Production Expert

Reinaldo Gonzalez
Geomodeling & Risk Analysis Expert

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Who We Are

- We are a team of experts with a strong understanding of physics, mathematics, engineering and computer science - a challenging combination to ensemble in the industry

- The company was founded in 2017 by Hector Klie (father, almost 30 years in Oil and Gas Technology) and Arturo Klie (son, PM of Microsoft Bing Ad team for over 3 years).

- Company was founded to significantly improve the efficiency of traditional field development processes through the application of Physics combined with the latest advances in Artificial Intelligence.

- Awarded “Most Promising Company” at both OTC 2018 and Texas Digital Submit 2018.

OTC 2018

TDS 2018

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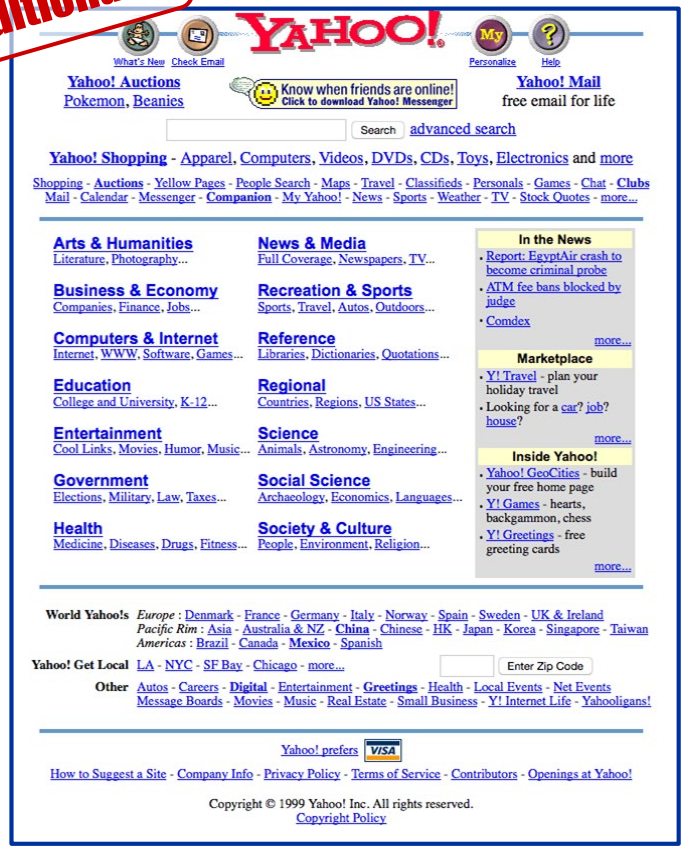
Our Vision

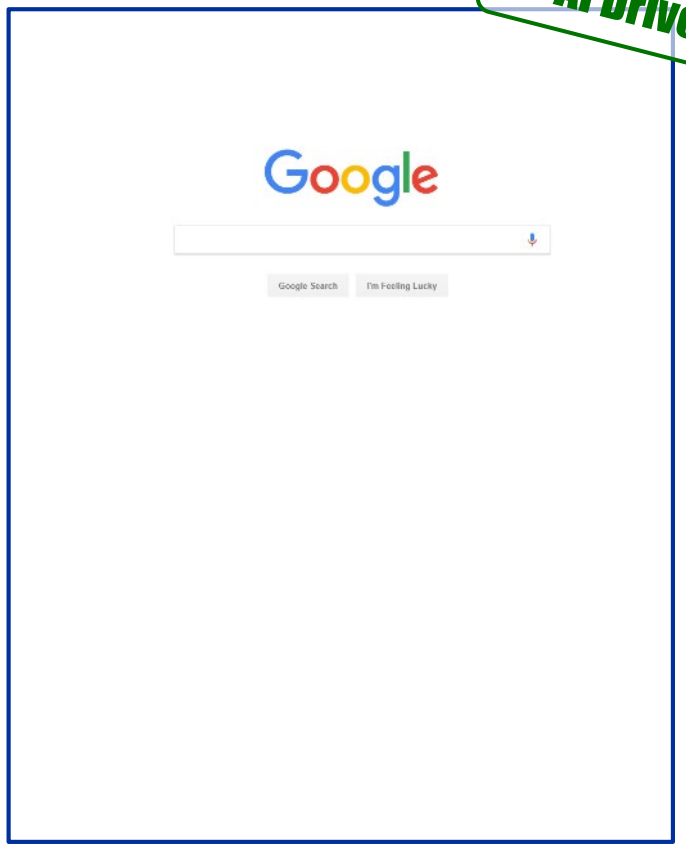
Simplify and Automate Operations Through Innovations in Physics and AI

Traditional



Hard, Slow, Fragmented, Static

AI Driven



Simple, Fast, Consolidated, Smart

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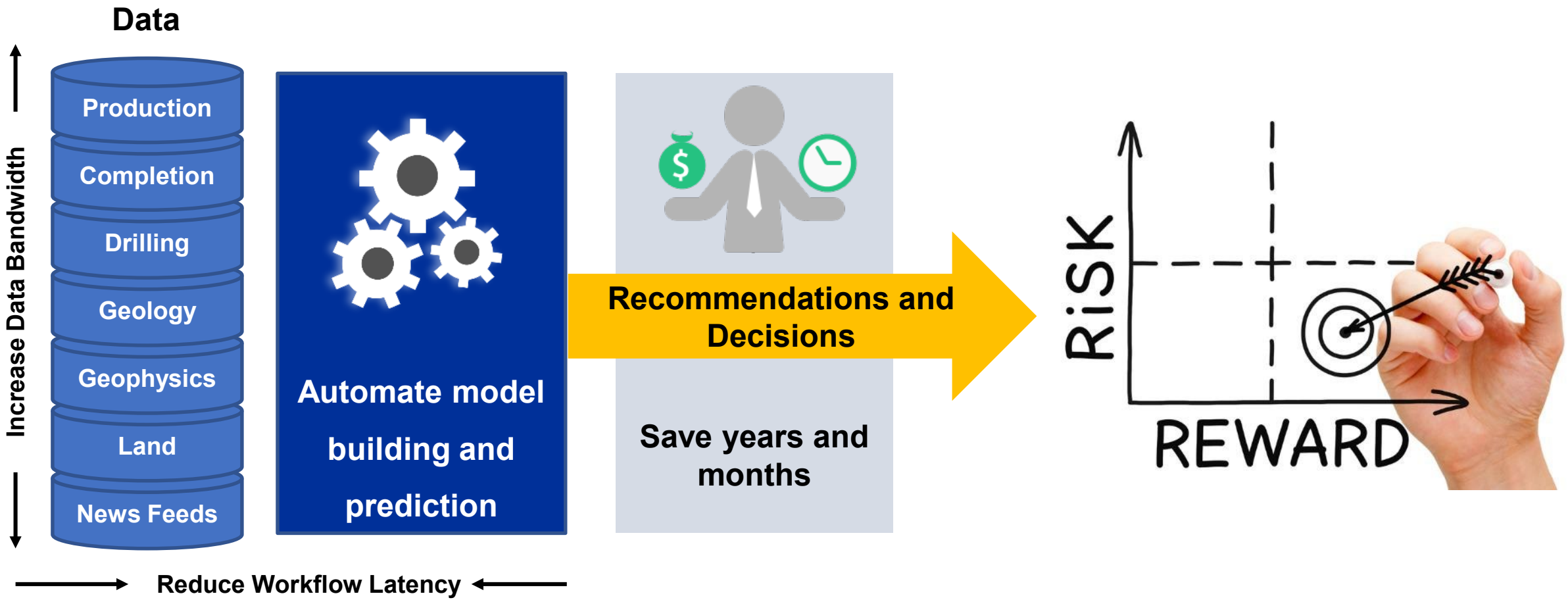
Our Mission

Streamline Data, Models and Field Development and Management Decisions



What We Want to Achieve

An automated field management platform that relies on fast, accurate and interpretable models.

Self-Learning Optimization

Captures human insights and infers optimal search patterns under uncertainty.

+

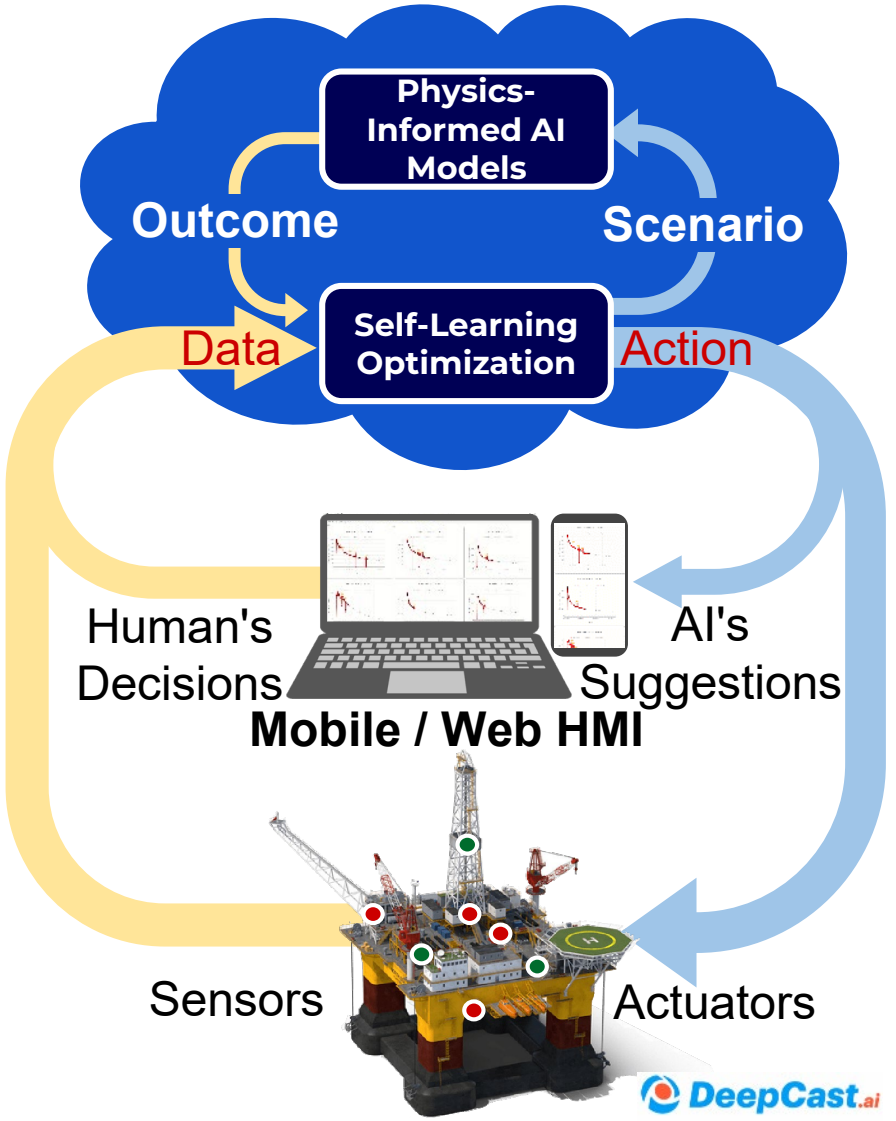
Physics-Informed AI Models

Builds on the discovery of production drivers and first principles in reservoir dynamics

→

Truly Real-Time Field Management

Well targeting, completion design, scheduling, # wells & pads, history matching.



Our Technology

Speed

+100x faster than traditional simulation methods

Forecast Production Data

Basin	Wells	CPU Time
Eagle Ford, USA	14,290	1h 48m
Permian, USA	3,761	28m
Vaca Muerta, ARG	443	3m
All Basins, MEX	20,450	2h 35m
Total	**38,944**	**4h 55m**

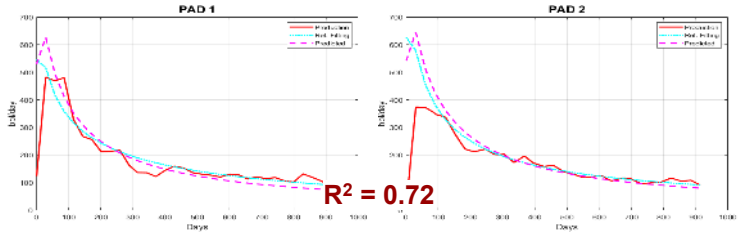
Predict Reservoir Dynamics

Model	Training	Prediction
Coupled FLow / Geomechanics Sim	-	8hr (1k cases)
Physics-Informed AI	1hr (1k cases)	~20 sec (1k new cases)

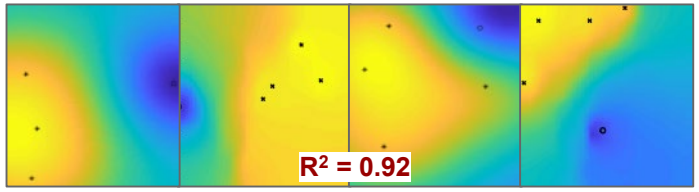
Accuracy

Significantly more accurate for short-term and long-term predictions

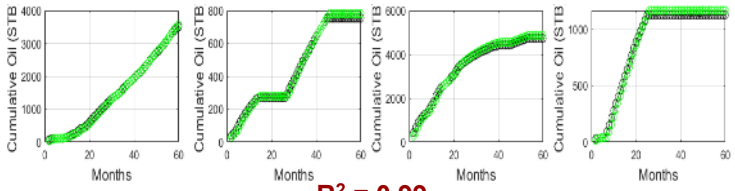
3yr Forecast for Prospect Unconventional Wells



Pressure Field for New Injectors & Producers



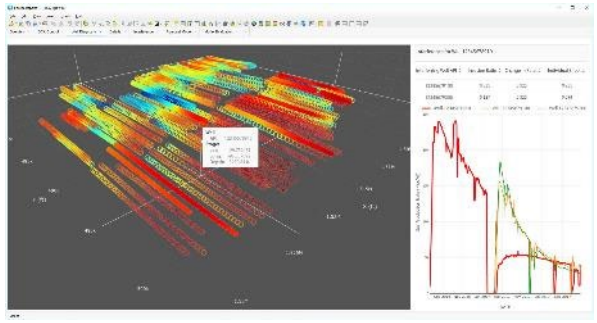
6.5 yr Forecast for Existing Unconventional Wells



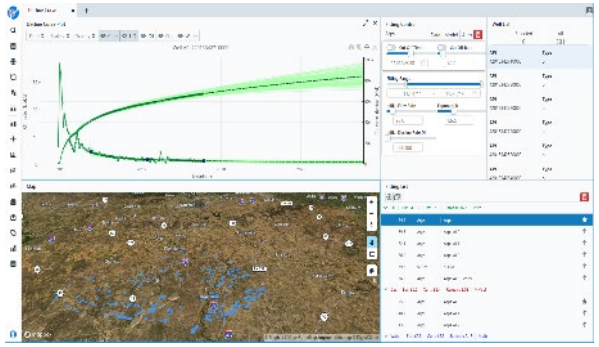
Interpretability

AI outputs physically sound results familiar to engineers

Interpretable Connectivity Model for Frac Hits



Interpretable Forecast Models For EUR Estimation



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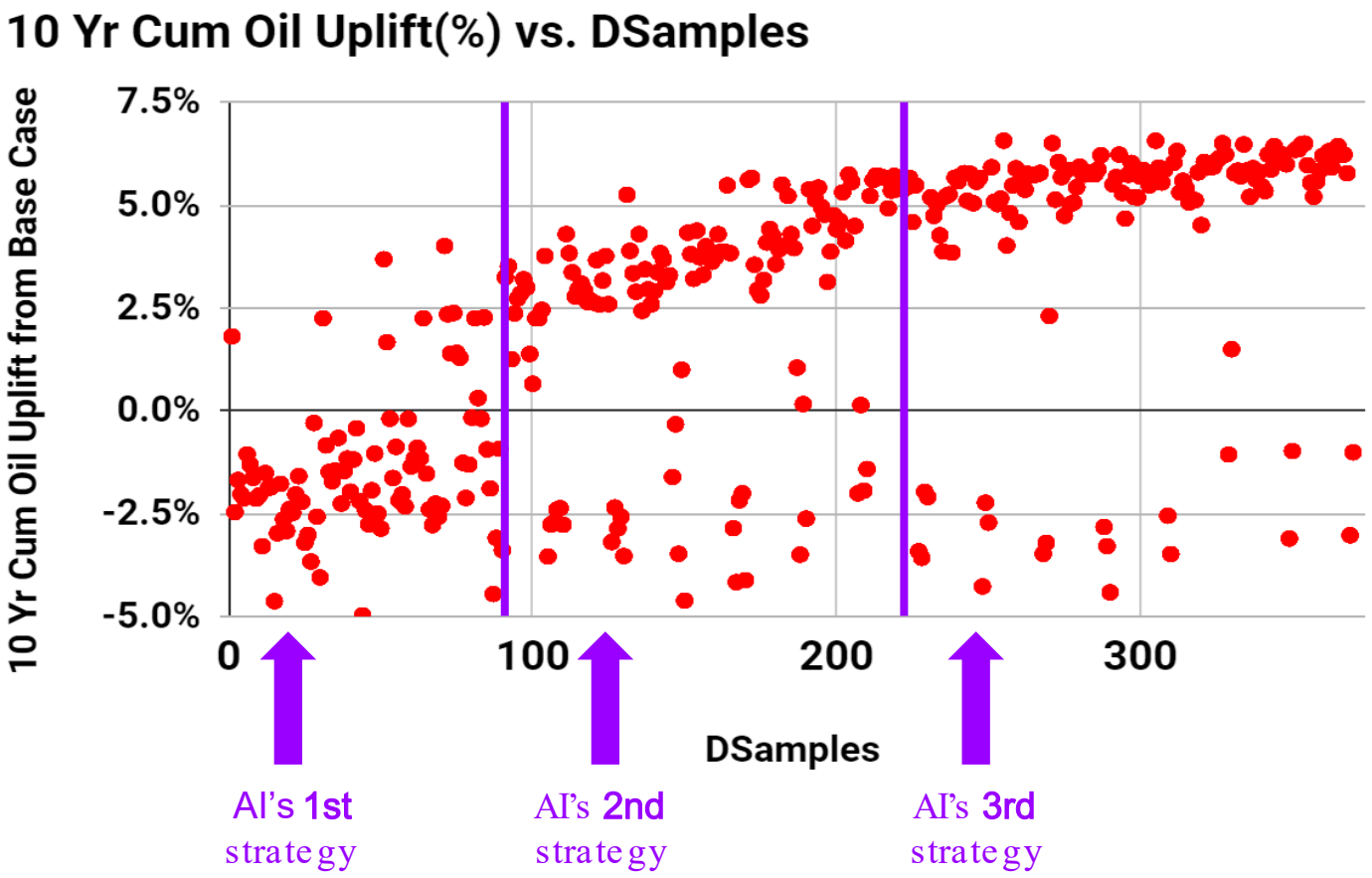
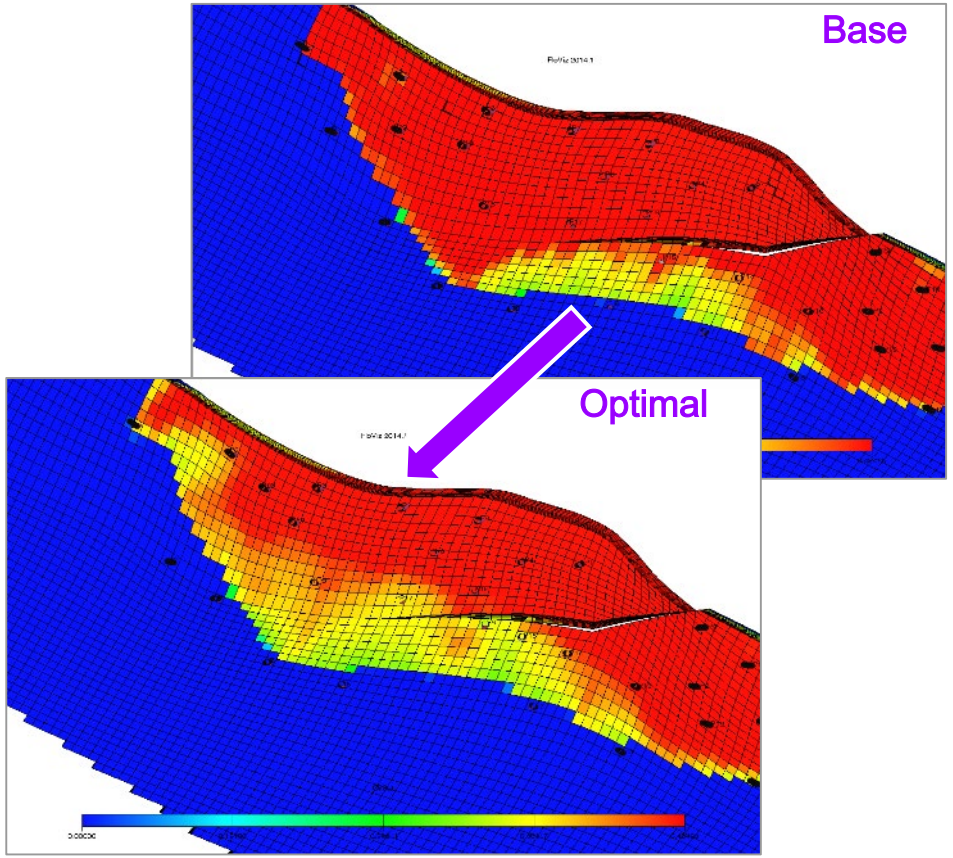
Self-Learning Optimization

An AI optimization tool that automatically learns how to find solutions faster, improve the accuracy of final results, and discover unforeseen opportunities.





6 Well locations & 104 Geological Realizations

10x Faster Convergence & **7.5%** Lift in Production

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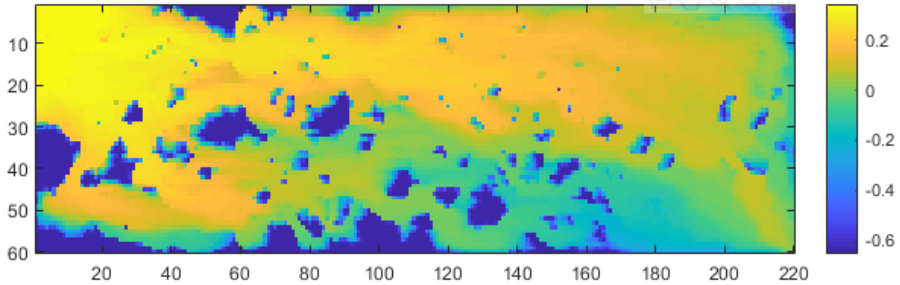
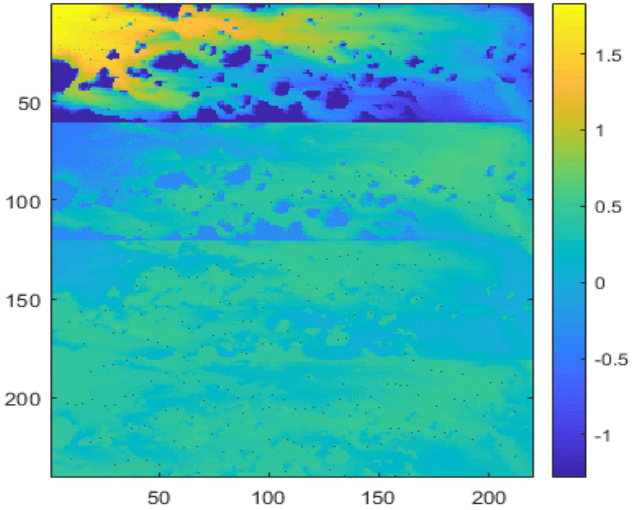
Physics-Informed AI Modeling

A platform that can reconstruct and infer unseen reservoir dynamics from 1st principles and AI

Normalized Saturation Field

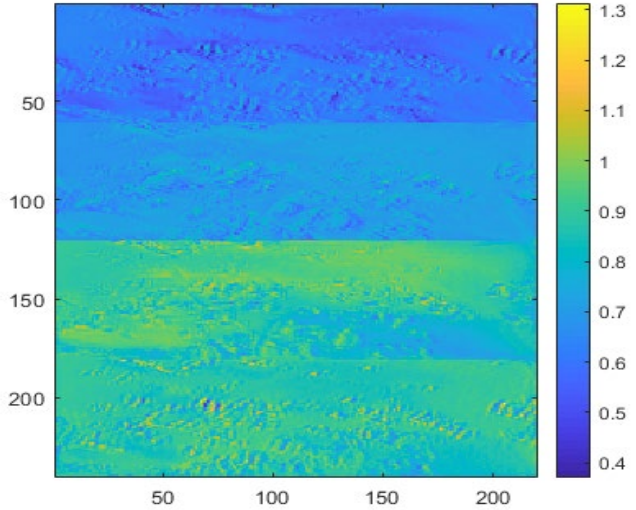


Multi-Scale PCA Modes



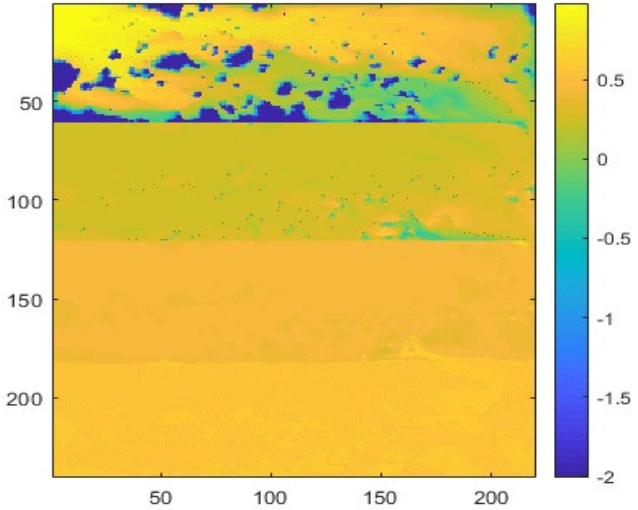
Loss of spatio-temporal coherence

Deep CNN Layers



Black-Box - Hard to interpret

Multi-Scale Physics-Informed AI



Interpretable and keeps spatio-temporal coherence

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How Does It Work

Data Sources

Raw Data

DeepCast Data Wrangler

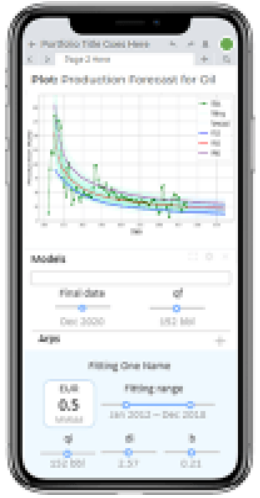
Clean
Consolidate
Standardize

Big Data Database

Clean Data

DeepCast AI Modules

- Self-Learning Optimizer
- Physics-Informed AI Models
- Other Modules...



Mobile, Web, or Spotfire UI

DeepCast Multi-Cloud Platform

On-Premise Hardware

aws Google Cloud Azure IBM Cloud

Multi-Cloud

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Our Market

SOM **$50 MM** — **1% AI Oil & Gas Market**

SAM **$5 B** — **Total AI Oil & Gas Market (by 2025*)**

TAM **$105 B** — **AI Software Market (by 2025*)**
IIoT, Robotics, Smart Systems, Automation

*https://www.tractica.com/newsroom/press-releases/artificial-intelligence-software-market-to-reach-105-8-billion-in-annual-worldwide-revenue-by-2025/

SWOT Analysis

Strengths

- Unique skills in physics + math + AI + software.
- Industry leading tech and models.
- Powerful and modular AI platform.

Weaknesses

- Hardware solutions for increasing the diversity of input data for our models. Partners appreciated.

Opportunities

- Leading provider of Physics-Informed AI models and smart Optimization algorithms.
- Grow a platform that redefines the field development workflows for multiple industries.

Threats

- Market fluctuations in Oil and Gas during early stages.
- Market readiness to adapt to new technologies.

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Action Steps

Interested Operators

Contact us if you would like to:

- License existing products
- Pilot upcoming products

Interested Investors

Contact us if you align with our vision to help us scale and reach more customers.

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More information

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