HOW DATA SCIENCE & ADVANCED ANALYTICS CAN TRANSFORM THE E&P LANDSCAPE

May 2019

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Over Twenty Years of Innovation

**Founded:** 1998

**Employees:** 300+

**Organization:** Staffed like an E&P company with basin-specific analyst teams comprised of CFAs, economists, engineers, data scientists and analysts.

**Technically-driven intelligence and advanced analytics**

1998 - The Ross Smith Energy Group is founded to provide deep dive reserve and financial audits based on public data.


2008 - The RS Activity Map series is launched, allowing clients to customize geological, economic and activity layers.

2009 - RS Research™ publishes on emerging Bakken play and RS Advisory™ initiates boots-on-ground leasing effort in Marcellus.

2011 - RSEG purchased by ITG.

2015 - RS Energy Group (RSEG) carves out from ITG with financing from Warburg Pincus.

2016 - RS Energy Group (RSEG) acquires completions data company, NavPort to kick-start development of RS Data™

2017 - RS Data™ launch allows clients to interact with underlying production, permit and completion data.

2018 - RS Core™ provides clients with access to type curves, economics and decades of energy analytics.

2019 - RS Research™ introduces Capital Markets, Services and Demand verticals.

2021 - RS Energy Group (RSEG) acquires completions data company, NavPort to kick-start development of RS Data™
Energy Investments are **DEEPLY UNLOVED**

Source: FactSet
Energy Investments are **DEEPLY UNLOVED**

<table>
<thead>
<tr>
<th></th>
<th>10 Yrs Ago</th>
<th>5 Yrs Ago</th>
<th>4 Yrs Ago</th>
<th>3 Yrs Ago</th>
<th>2 Yrs Ago</th>
<th>1 Yr Ago</th>
<th>Today</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Weight of S&amp;P 500</td>
<td>12.86%</td>
<td>10.51%</td>
<td>8.06%</td>
<td>7.16%</td>
<td>6.23%</td>
<td>6.26%</td>
<td>5.02%</td>
</tr>
</tbody>
</table>

Data Source: FactSet
To **THRIVE** we must **TRANSFORM** .... into technology companies that produce oil and gas, or service the energy sector, versus industrial energy companies that use technology ....

- **Lyft** is a technology company that provides transportation services
- **Airbnb** is a technology company that provides access to hospitality services
- **Netflix** is a technology company that provides entertainment services
Technology is NOT A TOOL
Technology is NOT Something YOU USE
Technology is a way of organizing your productive environment to optimize your objectives.
It’s Happening…But It’s Still Early
Oil, Gas Companies Are Far Behind the Digital Revolution....

.... But They Have the Most to Gain
1 Executive Level Mandate
2 Build/Buy/Partner
3 Adopt & Adapt
Exec Level Mandate & Expertise

Business Case

Why BoDs & Execs Need to Make This a Priority
“Transformation to digital oil fields could add nearly $1 Trillion to the world economy by 2025.”

Oxford Economics
Cisco Consulting Services
“By 2020, data-driven businesses will gain $1.2 trillion annually over businesses within the same industry.... For the energy industry, ... those who are data-driven will be winners, and those who aren’t will lose out to the tune of $24 billion per year, a sobering thought.”

Forrester Research
The ability to use machine learning and artificial intelligence to analyze data throughout the company could deliver value “easily in the hundreds of millions of dollars.”

Bill Braun
CIO | Chevron
Capital Efficiency of Leveraging Big Data & Advanced Analytics

$1 Million/yr Capex for 1% Improvement
Darcy Partners
Digital Survey of Oil & Gas Companies

82% Percent of oil & gas companies surveyed that have identified digital innovation as a focus

3+ Years Length of “time-to-market” most operators indicated in advanced analytics innovations

25%-30% Top innovators performed better than competitors through price cycles, with 25% higher share price returns since 2016 and 30% higher share price returns since 2014

Source: Darcy Partners, Bloomberg

Average Shareholder Returns (share price indexed to 100 in Jan 2012)

Indexed Share Price Differential between Top Innovators1 and Others2

1 Top innovators as identified by a minimum of two companies that participated in the benchmark survey.
2 Companies in the benchmark survey universe that were not identified as top innovators by two or more survey participants.

Source: Rystad Energy (September 28, 2016)
“In the next decade there will be the technology ‘haves’ and ‘have-nots’ ...”

“There will be a need for competency at all levels.”
Hire a CTO – An Expert

The Science Behind Having an Expert in Technology on the Executive Level
Read This

Unskilled and Unaware of It: How Difficulties in Recognizing One’s Own Incompetence Lead to Inflated Self-Assessments
Journal of Personality and Social Psychology, 77, 1121-1134
What software, tools and services will you need to buy?

Who do you need to partner with to achieve your goals?

What do you need to build on your own? Who are you going to hire?

What risks are we going to take with new technology?

Decisions of The CTO
Buy vs. Build vs. Partner
Energy companies core competencies are **not** cloud computing or big data and analytics.

You need to partner to get these.
Team Structure

The Importance of Adapting
Team Structure | Traditional “Silos”

Information, expertise and data becomes trapped in silos

Highly filtered analysis reaches the CEO
CTO builds and manages the team that runs the technology hub, providing technology services to everyone.

Asset teams with data scientists subscribe to data and publish analytics to a centralized data center that is driven by a cloud computing partner.

C-Suite subscribes to analysis from the asset teams through the data center.

Everyone has visibility into all available data and analysis.
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