



O&G Data is *Different*

Frameworks and Trends in Modernizing O&G Tech

**SPE Denver – Data Analytics Study Group
January 2022**

OUTLINE

- Orienting yourself in 2022
 - O&G Data is *Different*
 - The Data Pyramid
 - The Software Proliferation Landscape
 - The Big Six
- 2021 E&P Software Survey Results



O&G DATA IS **DIFFERENT**

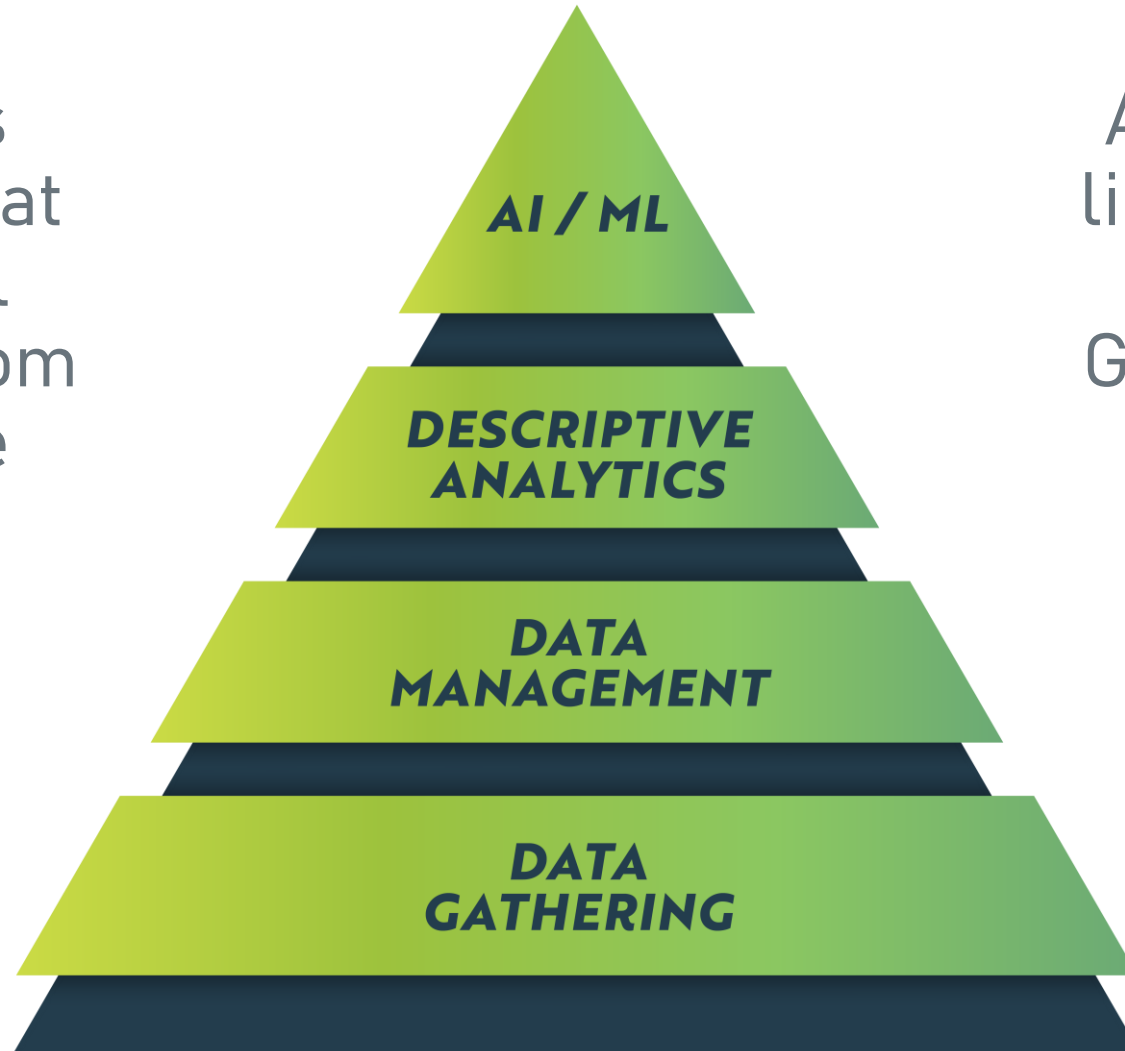


There are some *good reasons* E&P digital transformation has been slow, and they both *dampen* and *differentiate* how O&G can and will change



THE DATA PYRAMID

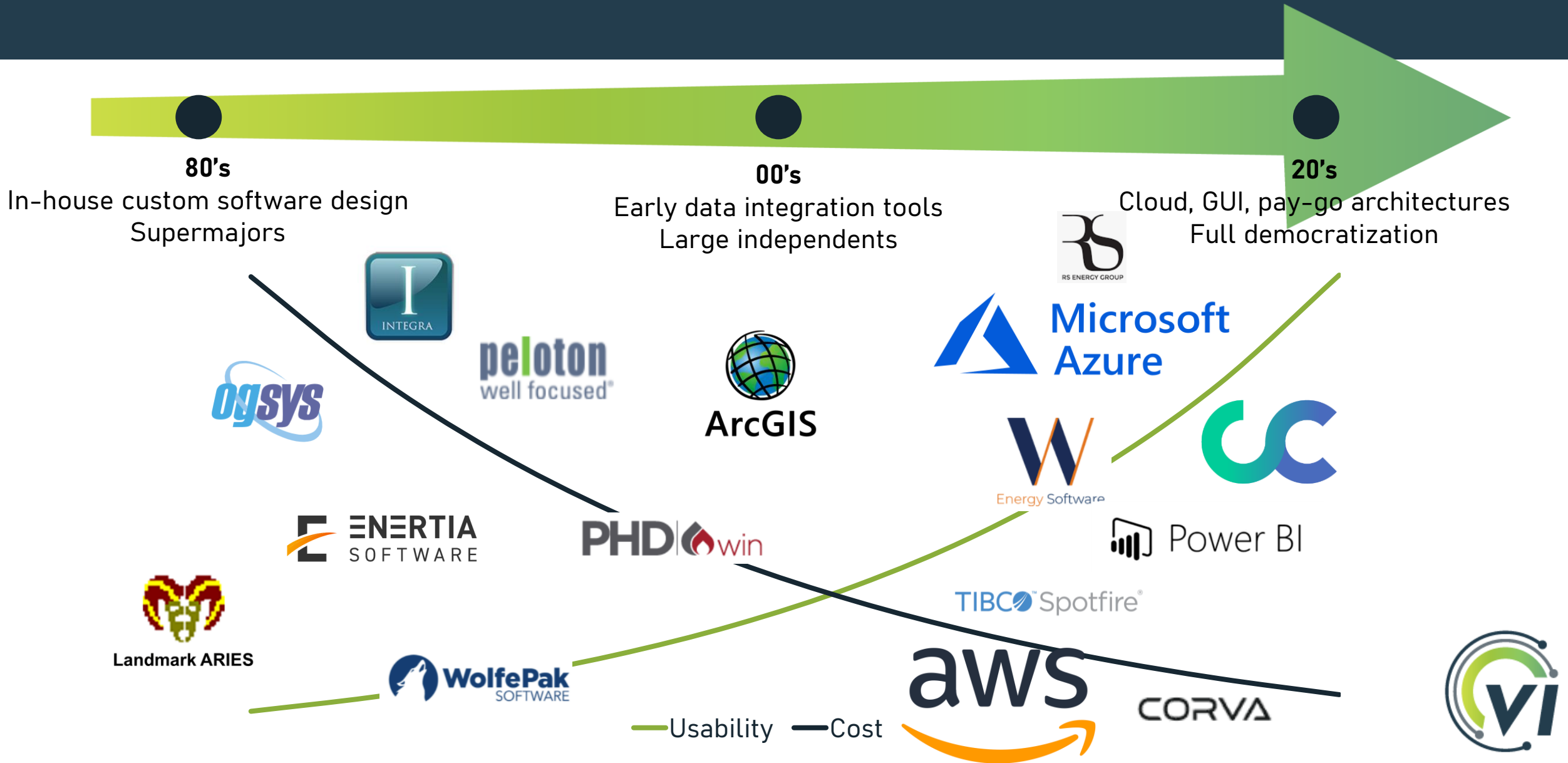
Effort required is arguably smallest at the top – the real work is at the bottom and in the middle



AI and ML are just like other advanced analytical tools – Garbage In leads to Garbage Out

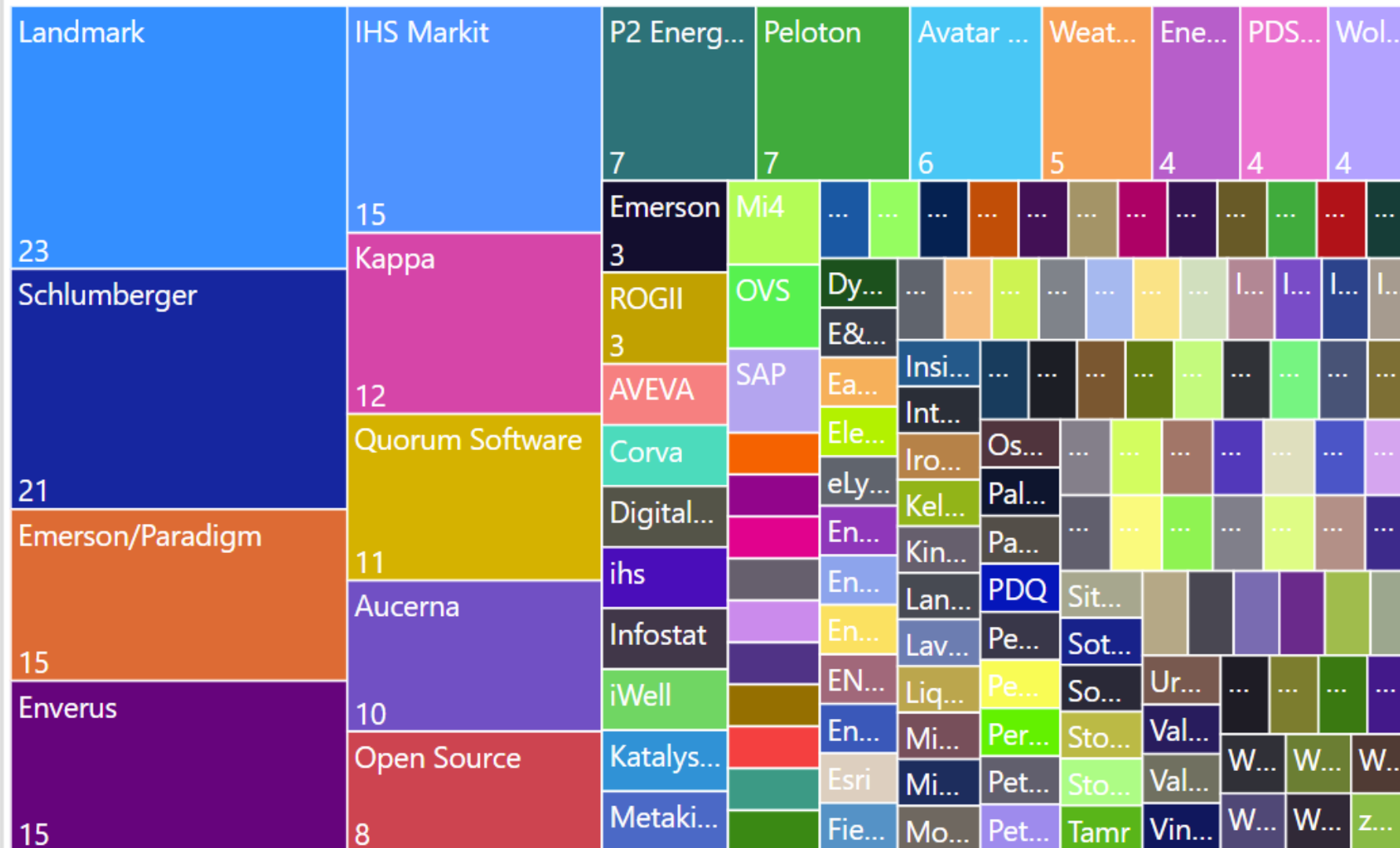


THE SOFTWARE PROLIFERATION LANDSCAPE



SOFTWARE INVENTORY – 300 AND GROWING

Tool count by vendor



Vendor	Count
Landmark	23
Schlumberger	21
Emerson/Paradigm	15
Enverus	15
IHS Markit	15
Kappa	12
Quorum Software	11
Aucerna	10
Open Source	8
P2 Energy Solutions	7
Peloton	7
Avatar Systems	6
Weatherford	5
Enerpact	4
PDS Energy	4
Wolfepak Software	4
Emerson	3
ROGII	3
AVEVA	2
Corva	2
Digital Oil & Gas Solutions	2
ihs	2
Infostat	2
iWell	2
Katalyst Data Management	2
Total	309



THE BIG SIX



- 1) Highly integrated with the rest of the Big 6
- 2) Central to the basic functions of an E&P
- 3) Expensive to Rip & Replace



THE HEART OF AN E&P



ERP – Enterprise Resource Planning

What it does: Accounting, workflow management, and much, much more

Examples: SAP, Enertia, Quorum, Integra, Bolo, Excalibur, OGSYS, JD Edwards, etc., etc., etc.



THE NEXT FOUR

- **Reserves/Planning**
 - Forecasts production and expenses for budgets and valuation
 - Examples: ARIES, PHDWin, Peep, ComboCurve
- **Well Lifecycle**
 - Tracks wellbore events, equipment, and cost
 - Examples: WellView, OpenWells, WELLEZ
- **Production Allocation**
 - Turns oilfield data into daily/monthly allocated volumes
 - Examples: ProdView, Merrick, Energy Component
- **Land (specific to US/Canada)**
 - Stores mineral leasehold agreements and data
 - Examples: Quorum, Bolo, Excalibur, LandView



SCADA, THE NEWBIE



SCADA – Supervisory Control and Data Acquisition

What it does: High-frequency data collection and automated facility control

Examples: Ignition, WonderWare, CygNet, dozens of others



2021 E&P Software Survey Results



2021 SOFTWARE SURVEY – SUMMARY

- Three big themes:
 - *Compartmentalization – by region, size, business model, etc.*
 - *The Long Tail – hundreds of low-utilization tools on the market*
 - *Widespread Dissatisfaction – “I hate it, but we use _____”*
- Barriers to modernization:
 - High cost of ripping and replacing
 - “We’re just about to sell/buy/merge/go bankrupt”
 - Risk aversion
 - Lack of better options



2021 SOFTWARE SURVEY – SUMMARY

- 101 participants, ranging from 1-person companies to supermajors
 - Covers ~65% of US-listed public E&Ps
 - Focused on Lower 48, handful from Europe and Canada
- 497 software implementations
 - Several hundred million dollars in annual software spend
 - 75 separate applications

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for a copy if you participated



ERPs

- SAP dominates large-caps, lower end is heavily compartmentalized

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Reserves/Planning

- ARIES dominates, but struggles to handle full workload
- Lots of companies using multiple tools to accommodate limitations – Enersight, ComboCurve, etc.

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Production Allocation

- Merrick, the unloved market monster

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Well Lifecycle

- WellView nearly owns this space, with WELLEZ as a common entry-level tool

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Land

- Lots of spreadsheets in use, Nonop/Mineral buyers are especially unhappy

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SCADA

- CygNet dominating large caps, lots of smaller players

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SELECTION vs. IMPLEMENTATION



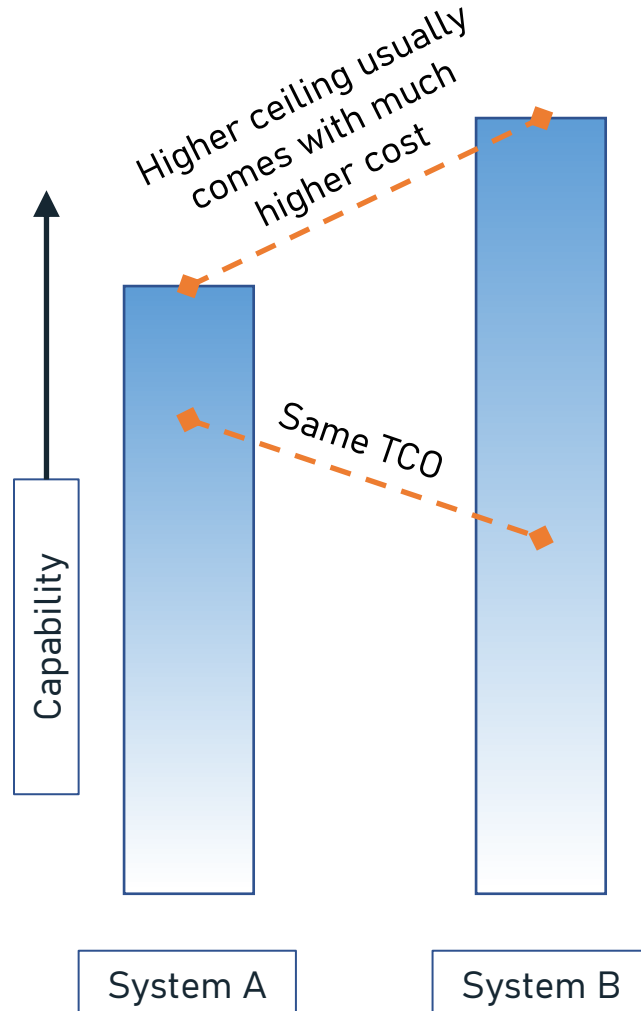
Mercedes E63 AMG Wagon –
4.0L twin-turbo V8, 603 hp



Honda Accord



Ford Pinto



- **Selection** determines your ceiling
 - Range of features
 - Scalability
 - Flexibility
 - All else equal, you get what you pay for
- **Implementation** determines how close you get to the ceiling (or floor)
 - Fully-utilize all the features
 - Ensure accurate data
 - Integrate with adjacent tools
 - Mostly (90%?) soft costs
- ***Functionality is the product of (tool capability) X (implementation quality)***



WHO WE ARE

Full-stack, full-function data management and analytics consulting firm helping with both *advisory* and *implementation* projects



Deep O&G Experience

State-of-the-Art Tools

Real-World Digitalization Experience

