

INNOVATION IN THE OIL PATCH

TIPRO SUMMER CONFERENCE
AUGUST 10, 2017

A black and white photograph of an oil pumpjack in a field. The pumpjack is the central focus, with its long arm and counterweight visible. It is surrounded by a metal fence. The background shows a flat landscape under a cloudy sky.

SCF PARTNERS

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SCF PARTNERS OVERVIEW

Energy Service, Products, and Technology

sole focus of
investment

28 Years Since Inception

oldest energy-focused
private equity firm

Hybrid Between Private Equity and Operating Model

trend-based buy and
build strategy

3.9x / 29%

ROI / IRR on realized
investments

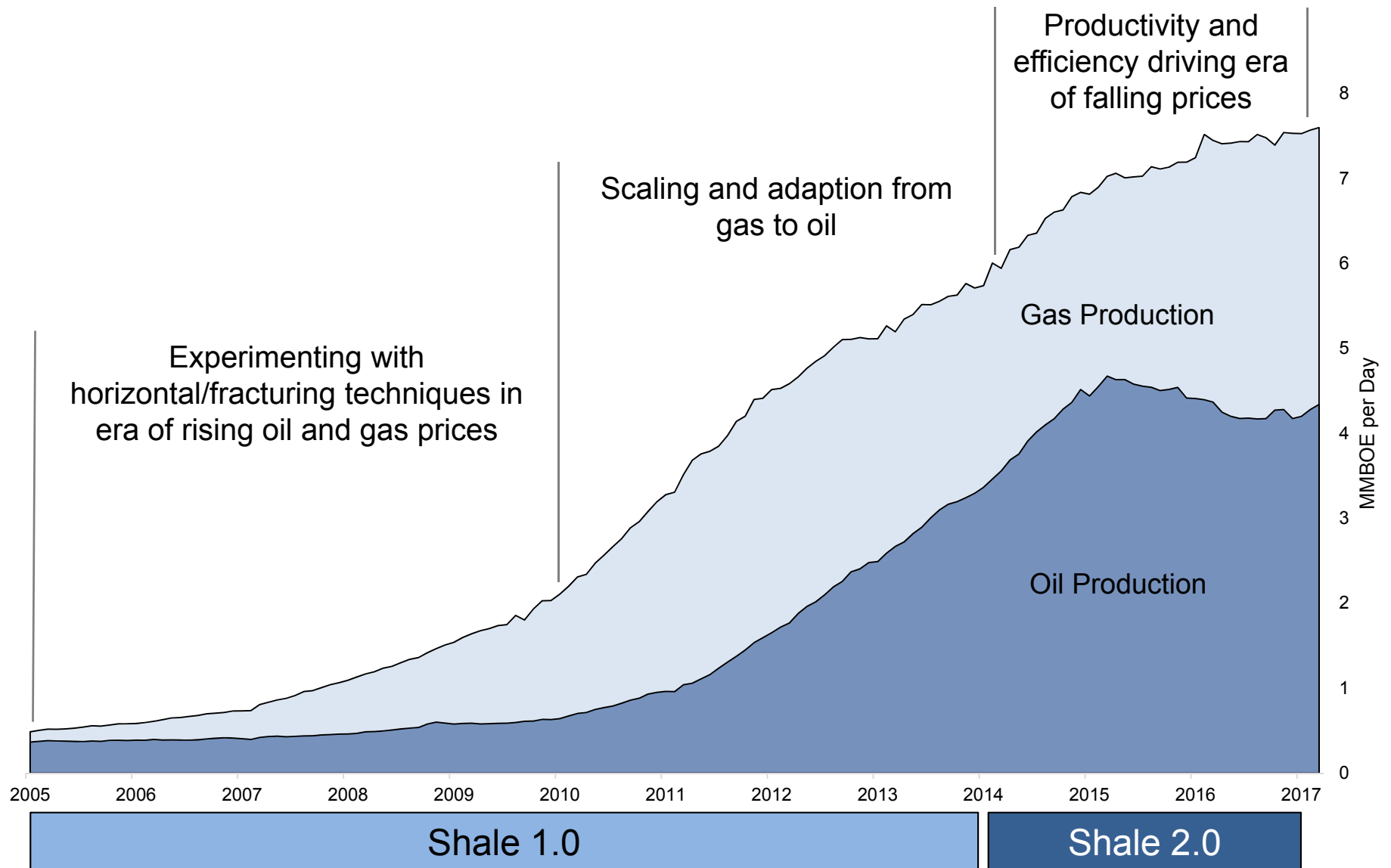
16 Consecutive Years

of distributions
exceeding investments

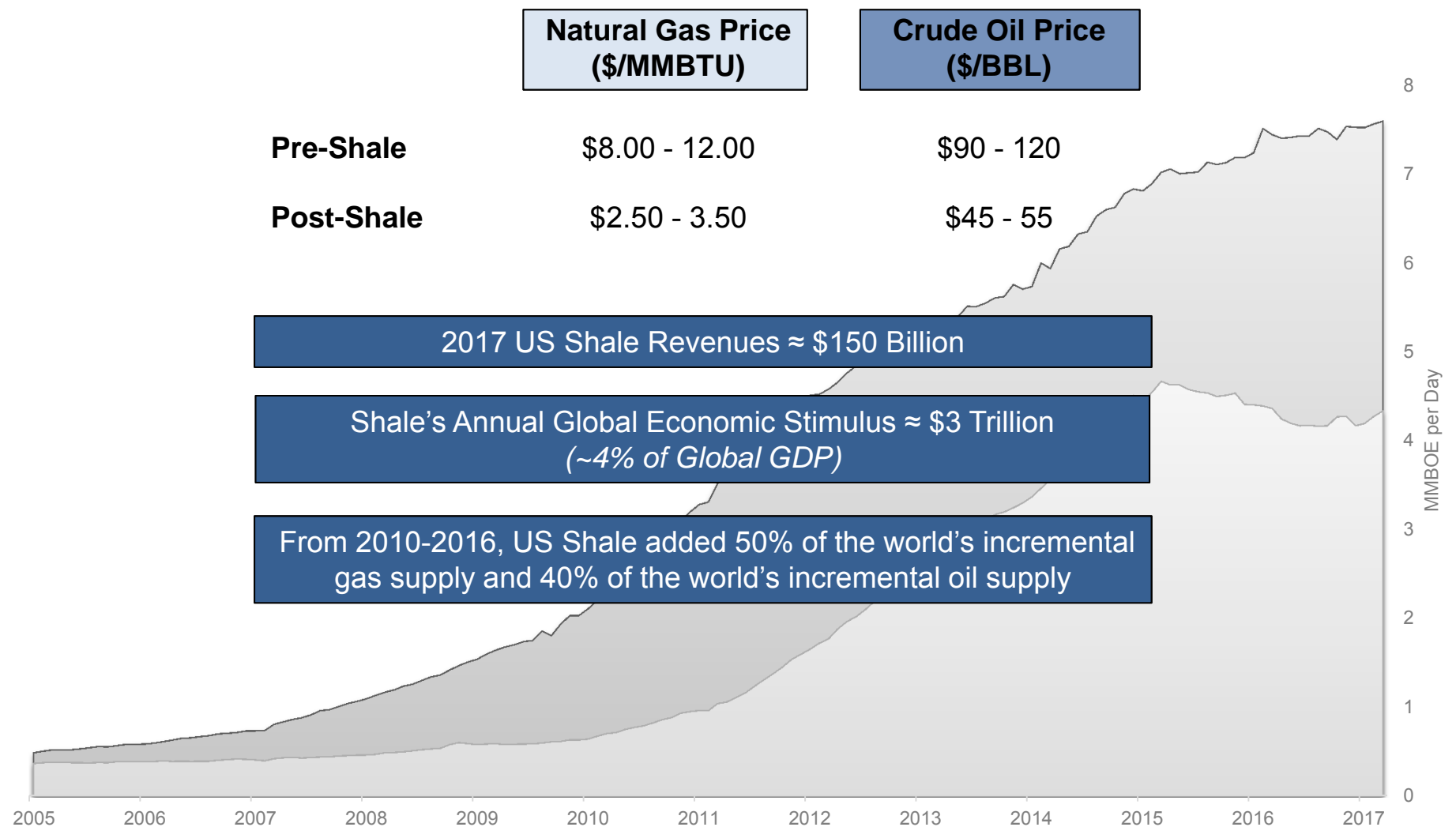
14 IPOs

created industry
leaders

US OIL AND GAS SHALE REVOLUTION

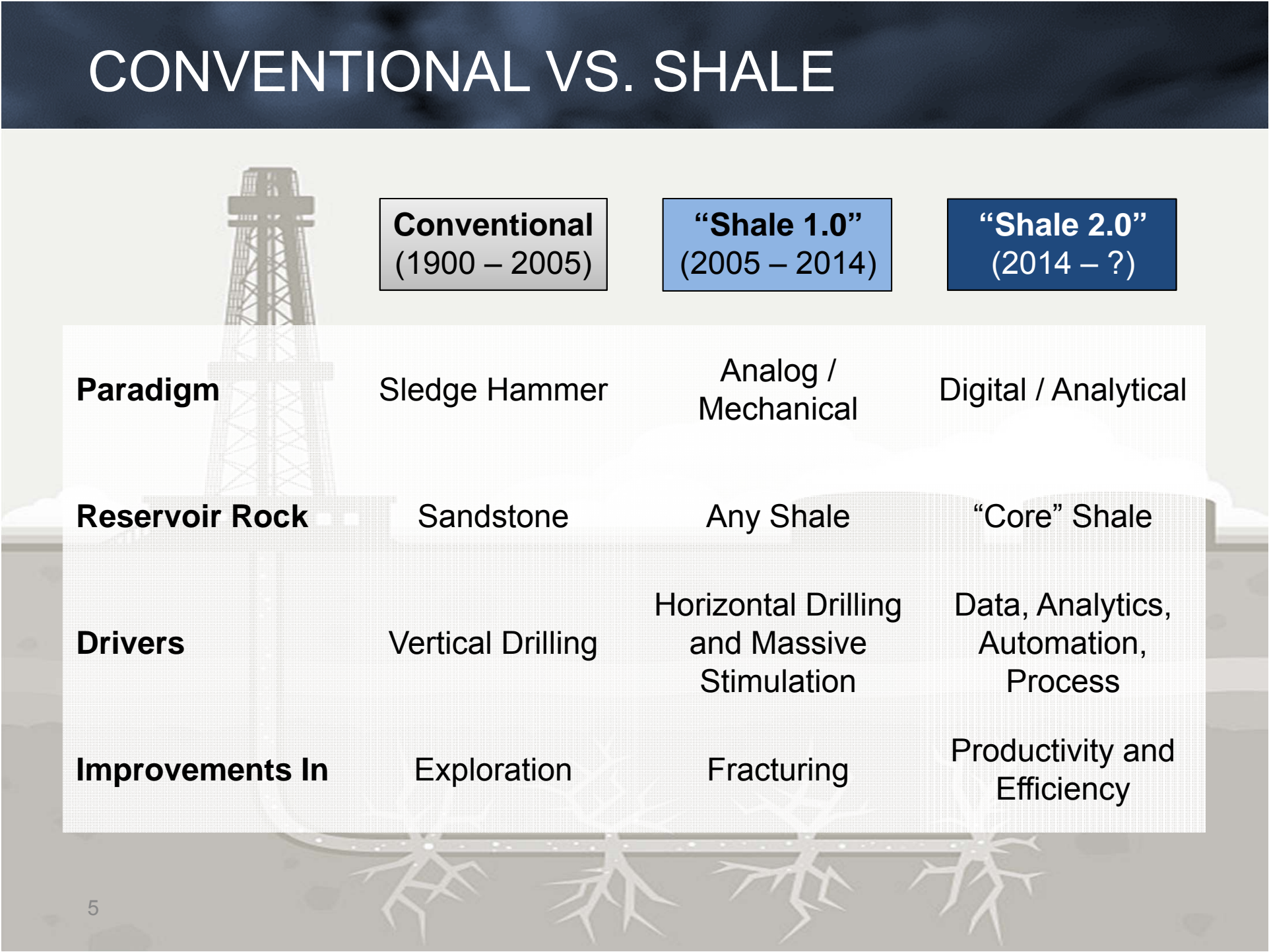


US OIL AND GAS SHALE REVOLUTION



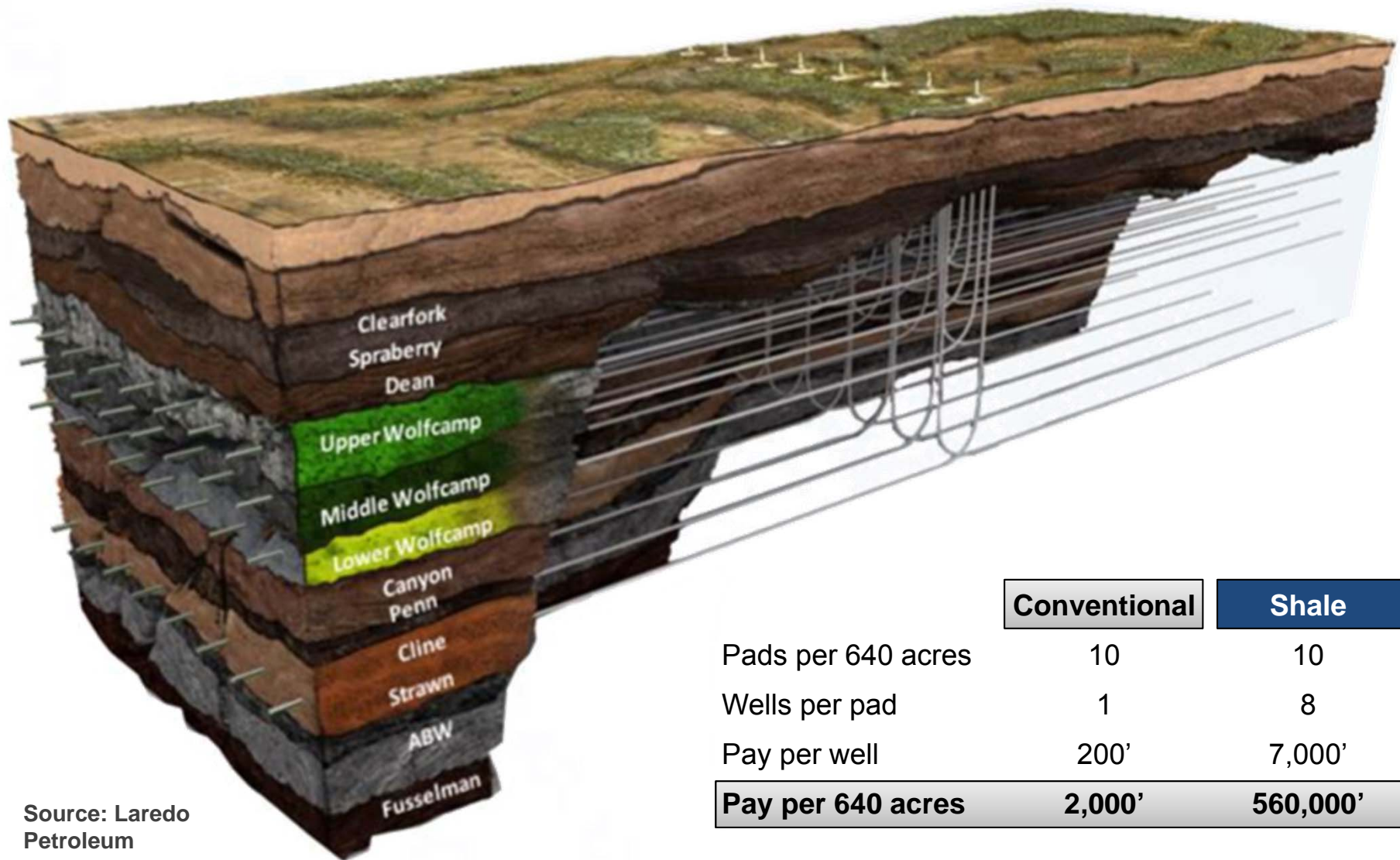
Sources: EIA, BP

CONVENTIONAL VS. SHALE



	Conventional (1900 – 2005)	“Shale 1.0” (2005 – 2014)	“Shale 2.0” (2014 – ?)
Paradigm	Sledge Hammer	Analog / Mechanical	Digital / Analytical
Reservoir Rock	Sandstone	Any Shale	“Core” Shale
Drivers	Vertical Drilling	Horizontal Drilling and Massive Stimulation	Data, Analytics, Automation, Process
Improvements In	Exploration	Fracturing	Productivity and Efficiency

WHAT DOES “DIGITAL SHALE” LOOK LIKE?



Source: Laredo
Petroleum

FOUR FACTORS = DIGITAL REVOLUTION

$$\text{Breakeven Oil Price} = \frac{\text{Efficiency} \times \text{Service Costs}}{\text{Productivity} \times \text{Reservoir Exposure}}$$

$$\text{Breakeven Oil Price} = \frac{\cancel{\text{Days}} \times (\$/\cancel{\text{Day}})}{(\text{BBL}/\cancel{\text{Foot}}) \times \cancel{\text{Feet}}}$$

$$\text{Breakeven Oil Price} = \$/\text{BBL}$$

TECHNOLOGY IS DRIVING DOWN COSTS

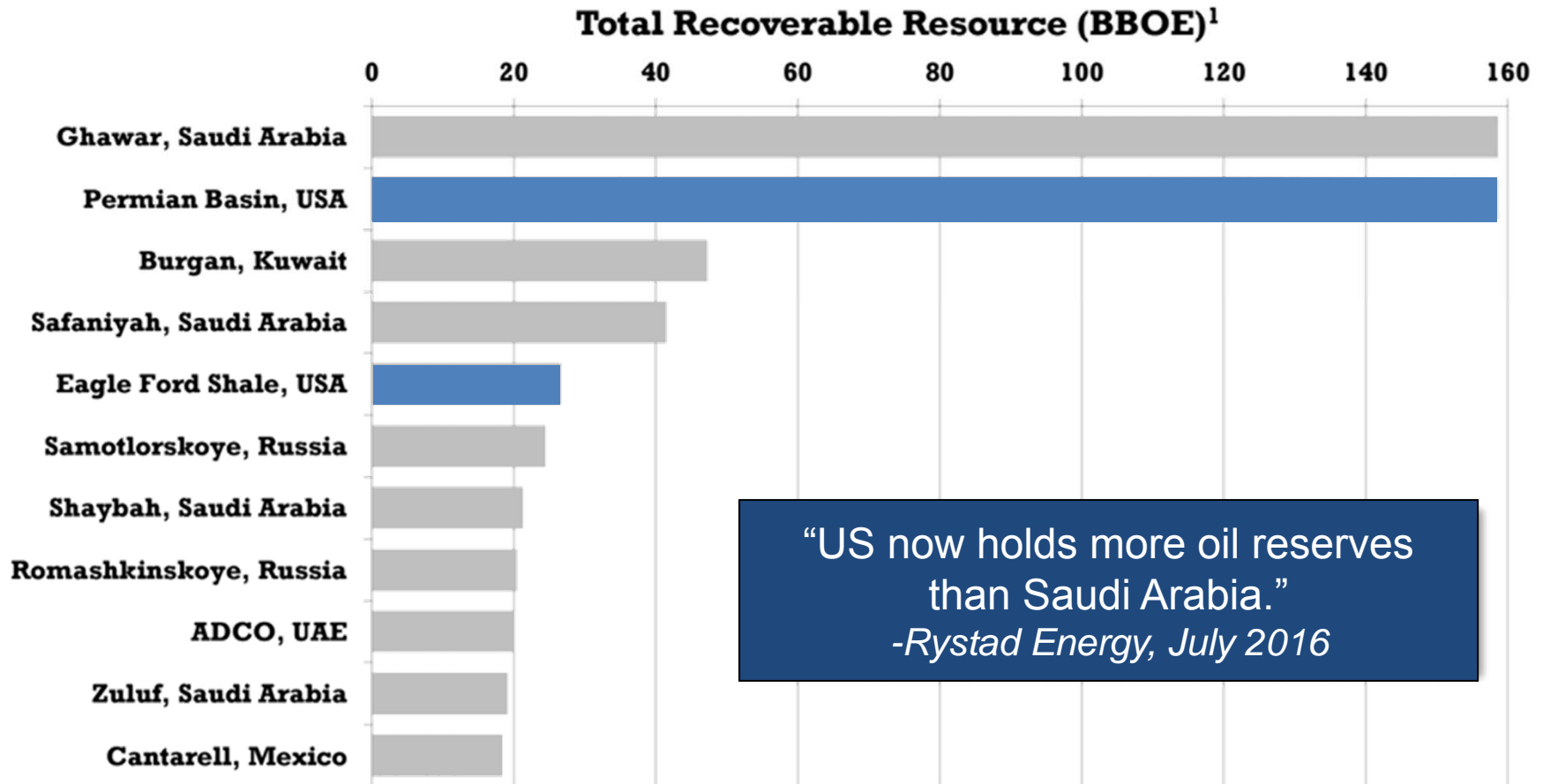
$$\Delta \text{ Breakeven Oil Price} = \frac{\Delta \text{ Efficiency}(\text{days}) \times \Delta \text{ Service Costs} \left(\frac{\$}{\text{day}} \right)}{\Delta \text{ Productivity} \left(\frac{\text{bbls}}{\text{foot}} \right) \times \Delta \text{ Reservoir Exposure}(\text{feet})}$$

	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>
Efficiency		90%	90%	90%	95%	95%
Productivity		105%	110%	110%	110%	110%
Reservoir Exposure		110%	110%	110%	105%	105%
Service Costs		90%	85%	120%	110%	100%
Breakeven Price	<u><u>\$100/BBL</u></u>	<u><u>\$70/BBL</u></u>	<u><u>\$44/BBL</u></u>	<u><u>\$40/BBL</u></u>	<u><u>\$36/BBL</u></u>	<u><u>\$30/BBL</u></u>

TRENDS AFFECTING EACH FACTOR

Factor	Efficiency Gains (Days)	Productivity Gains (BBL / Foot)	Reservoir Exposure (Feet)	Service Costs (\$ / Day)
Influences Lower Breakeven (\$/BBL)	<ul style="list-style-type: none">• Improved Drilling Tech• Pad Operations• “Manufacturing” / Scale	<ul style="list-style-type: none">• Proppant Loading• “Pin-Pointing”• Well Placement• Core Acreage• Big Data	<ul style="list-style-type: none">• Longer Laterals	<ul style="list-style-type: none">• Overcapacity• Automation
Influences Higher Breakeven (\$/BBL)		<ul style="list-style-type: none">• Well Placement	<ul style="list-style-type: none">• Shorter Laterals	<ul style="list-style-type: none">• Undercapacity

US SHALE RESOURCE IN PERSPECTIVE



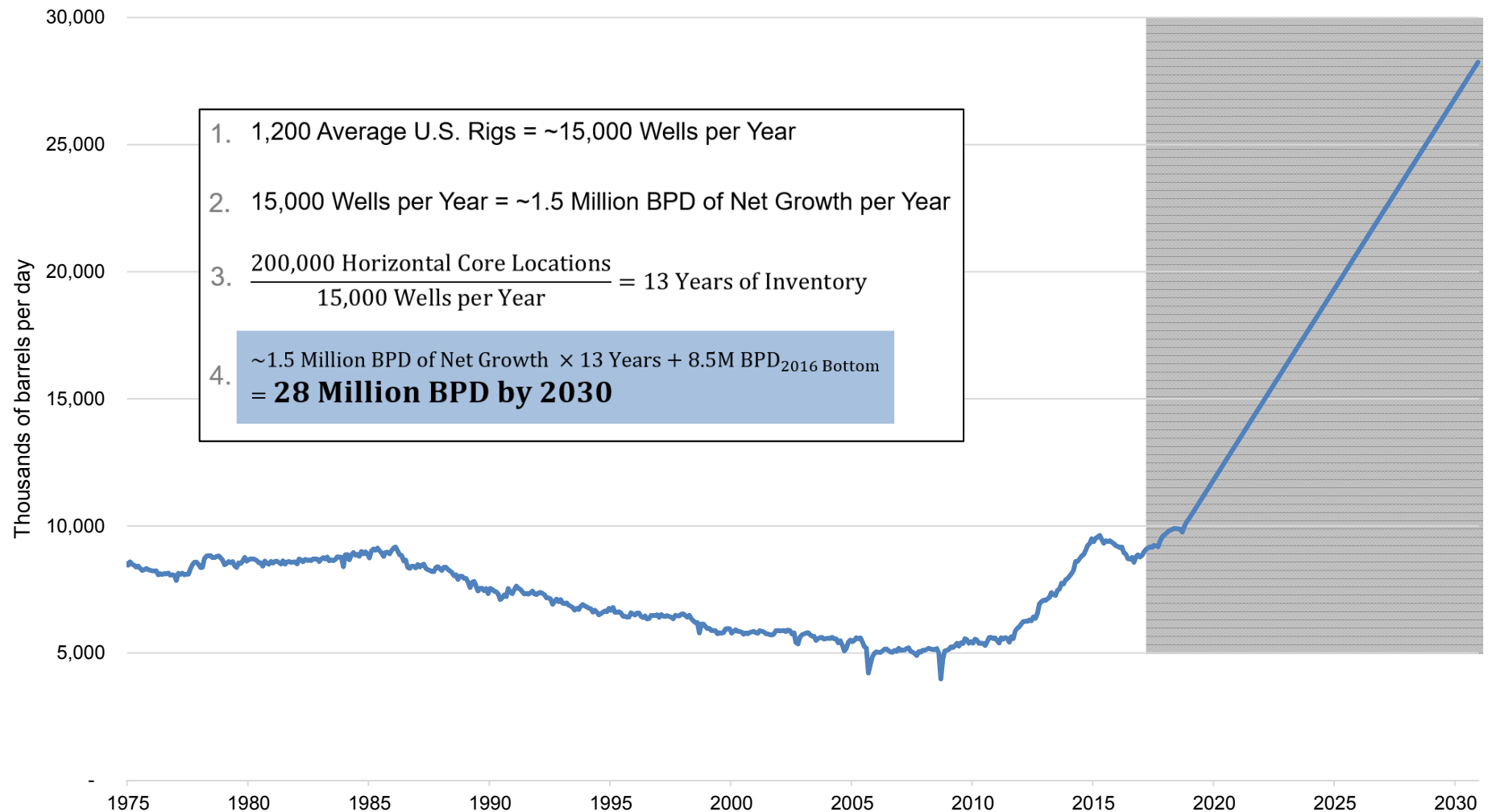
“The Permian Basin holds the largest number of undrilled, low-cost tight oil locations in the Lower 48. No other region comes close.” –Wood Mackenzie

1) Total recoverable resource includes oil and gas for all fields

Sources: Wood Mackenzie, Pioneer Natural Resources

IMPLICATIONS OF HORIZONTAL DEVELOPMENT

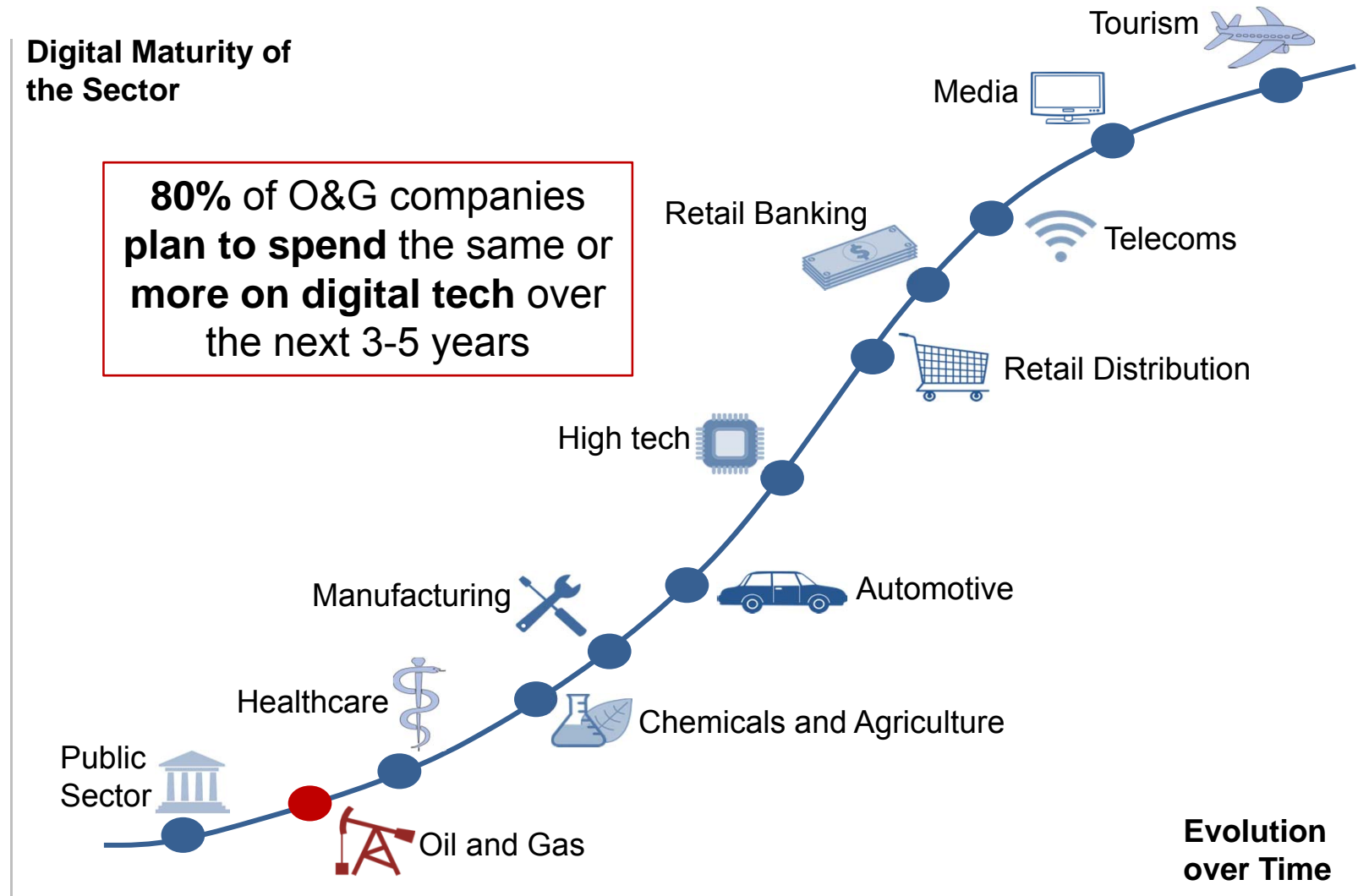
US Crude Production – Implied Forecast Through 2030



SHALE 2.0 – A DIGITAL REVOLUTION

	Shale 1.0	Shale 2.0
Commodity Prices	High	Low
Approach	Trial & Error	Statistical
Engineers' Age	50's	30's
Data	Gigabytes	Petabytes
Driver	Silica Valley	Silicon Valley

ENERGY & TECHNOLOGY – WHY NOW?



WHERE ARE THE PRIMARY OPPORTUNITIES?

Opportunities	“Tech” Solutions				
	Sensors	Big Data	AI / ML	Robotics	Automation
Improve Shale Recovery Factors Above ~12%	✓	✓	✓		
Reduce Costs And Labor Content	✓			✓	✓
Environmental Surety and Safety	✓	✓		✓	✓
Maintenance Of High-Value Assets	✓	✓	✓		
Consolidate Data Across Value Chain		✓	✓		
Improve Logistics Efficiency	✓	✓		✓	✓

US Shale is a huge, untapped, high-value market that will be growing for decades.

CONTACT

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