

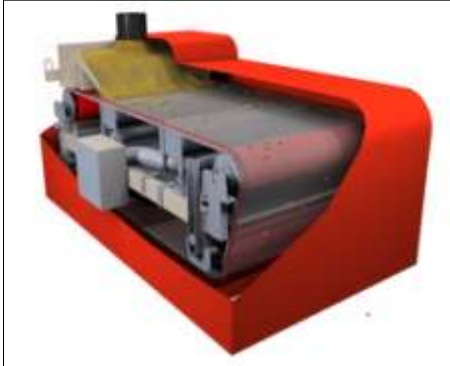


Parallels of technology
investments and
exploration success

Finding Petroleum
Conference
21ST January
by Greg Herrera

energy ventures 

Energy Ventures has a strong capital base and invests in upstream technologies



Strong Management

- Industrial foundation
- Excellent network
- Technology understanding
- Relevant experience
- Business acumen

Industry Trends

- Growth in demand
- Oil and gas remain main sources of energy
- E&P activity slated to grow
- **Technology - key to bridging the energy gap**



Three energy sector
VC funds with total
commitments of
NOK 2,300 / USD 410 million

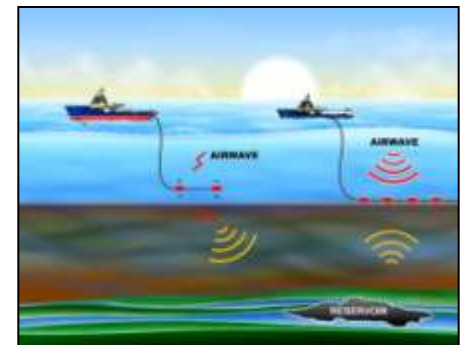
Main Focus

- High growth oil and gas technology companies
- Unique technology solutions
- Combination of capital and competence to create value for investors



Main Investors

- | | |
|------------------------|----------------|
| • Ferd | • IKM Group |
| • Temasek Holdings | • Storebrand |
| • LGT Capital Partners | • Jebsen |
| • Gjensidige | • Umoe |
| • KLP | • Klaveness |
| • DnB NOR/Vital | • Hoegh |
| • Argentum | • Schlumberger |



The Team: Bringing Global Experience & Knowledge

A world map showing the global presence of the team. Orange dots mark office locations in Houston, Aberdeen, and Stavanger. Blue dots mark representative offices in Rio and the Shoaiabi Group. Portraits of team members are arranged in a grid around the map, with orange-bordered portraits for primary offices and blue-bordered portraits for representative offices.

Houston

Aberdeen

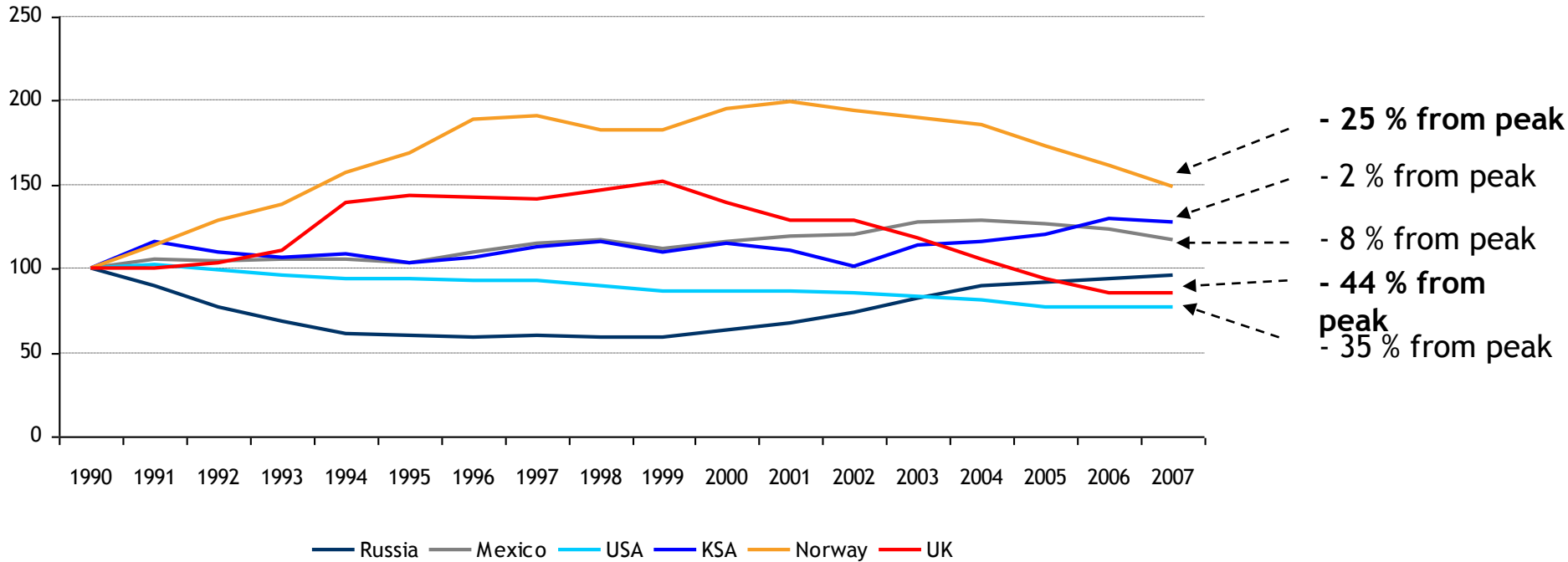
Stavanger

Rep office Rio

Representative office Shoaiabi Group

The Backdrop: Production dropping in key oil provinces

Historic oil production (rebased 1990)

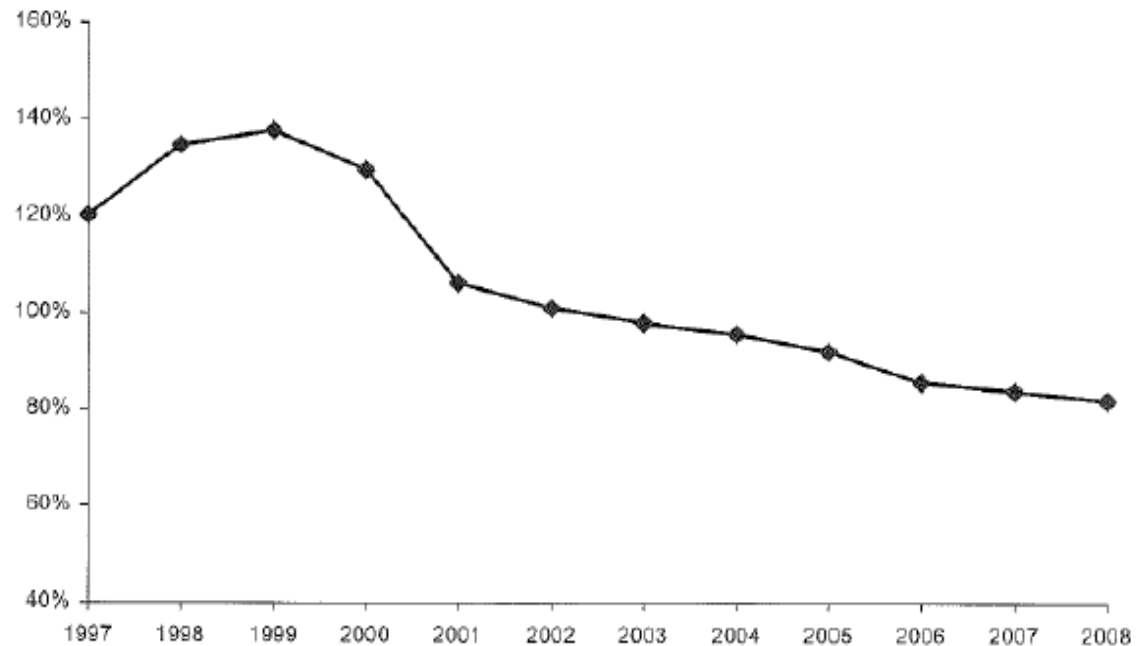


The Backdrop: Pareto Reserve Replacement Ratio Analysis is Frightening

- We are finding it increasingly hard to replace reserves
- RRR is below 100% (organic) since 2003!

Reserve-Replacement

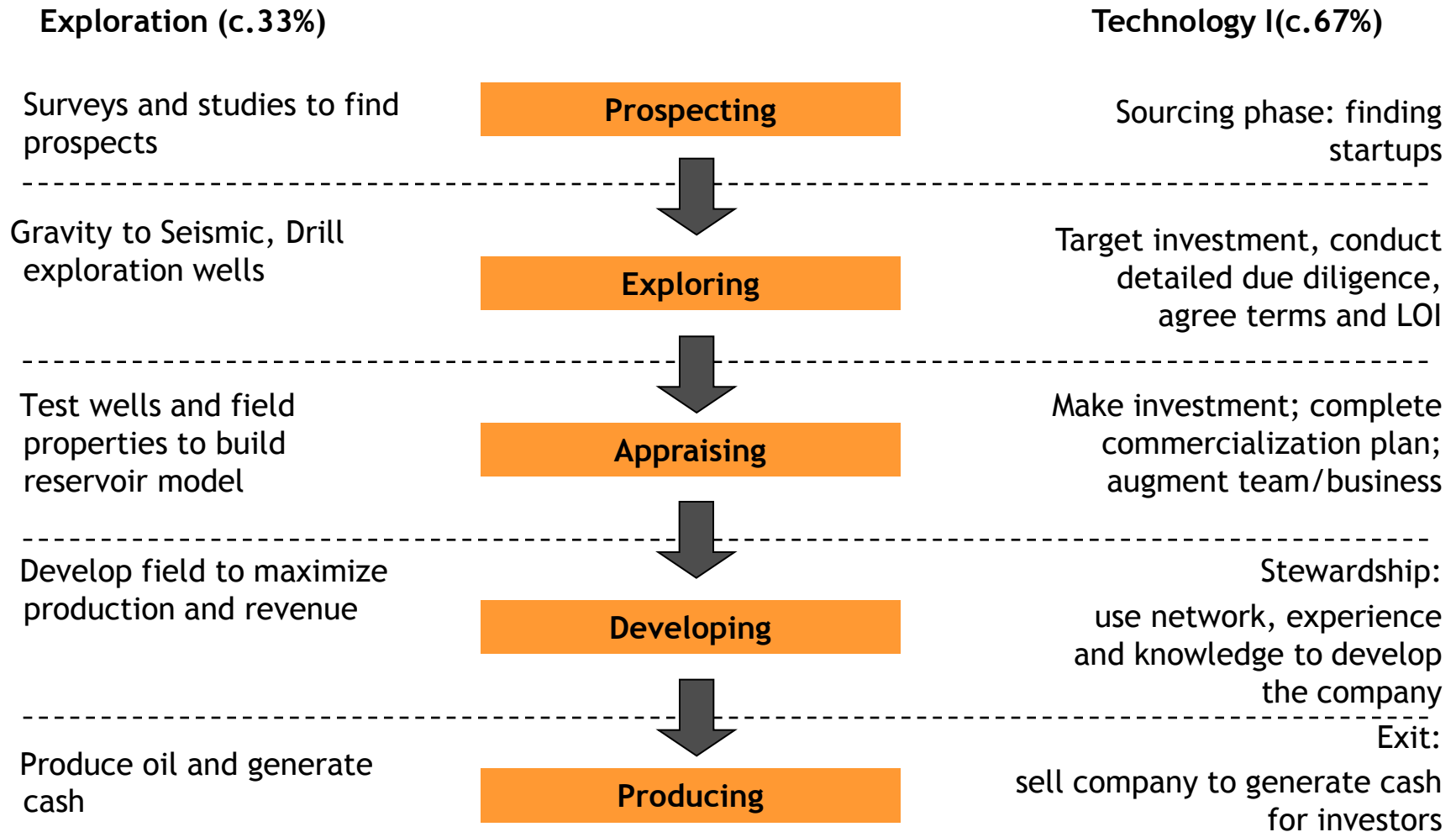
Organic RRR (3 year rolling)



Source: Pareto Research, Company Reports

Source: Pareto (Majors excluding Aramco)

The parallels of technology investment and petroleum prospecting

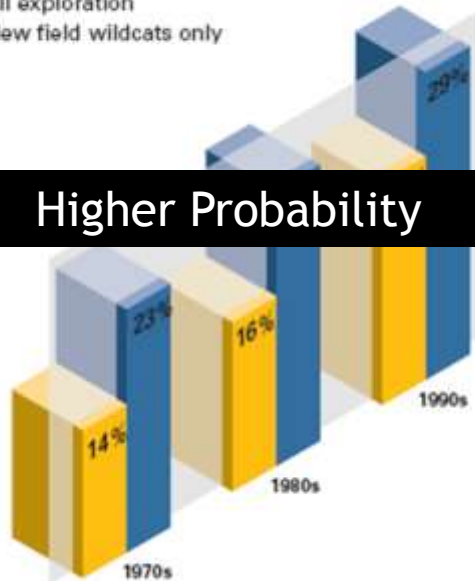


Exploration success improves with innovation in technology investments

Exploration Success Rates

Despite a dwindling resource base, U.S. exploration success rates continue to improve.

- All exploration
- New field wildcats only



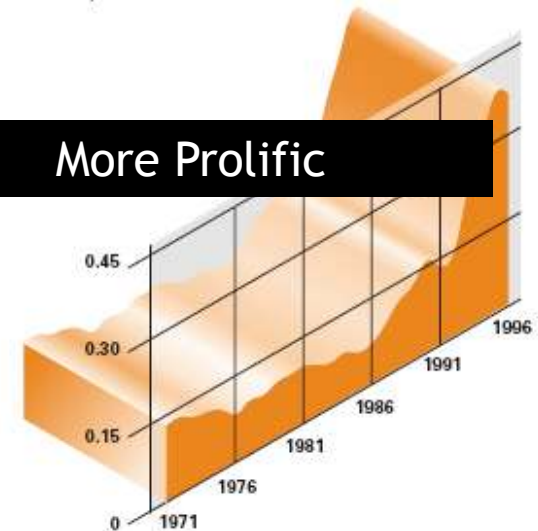
Higher Probability

Source: American Petroleum Institute

BOE New Reservoir and New Field Reserve Additions per Exploratory Well

(Million barrels of oil equivalent per well)

The volume of reserves added per exploratory well has increased dramatically since the 1970s and early 1980s.



More Prolific

Source: U.S. Department of Energy

E & P success due to innovations such as computers, remote sensing, GPS, GIS, 3D-4D seismic, logging technologies, drilling technologies etc.

Oil and gas innovation is a story of successful private investors and entrepreneurs taking risks



Humble beginnings

- James Townsend (Seneca oil) funded Colonel Drake to explore for oil in Titusville. Drake innovated the use of conductor strings to stabilize the earth.
- Marcel and Conrad Schlumberger were funded by their father to invent the first geophysical logging tool in 1923.

-
- Petrel changed the way reservoir modeling is done by simplifying and making it more effective.
 - Reslink ICD making in sand screens.
 - Arkex
 - Slb Seismic



Grand scale

•So what next....

So we know how to....but would it be nice to....

•We know how to

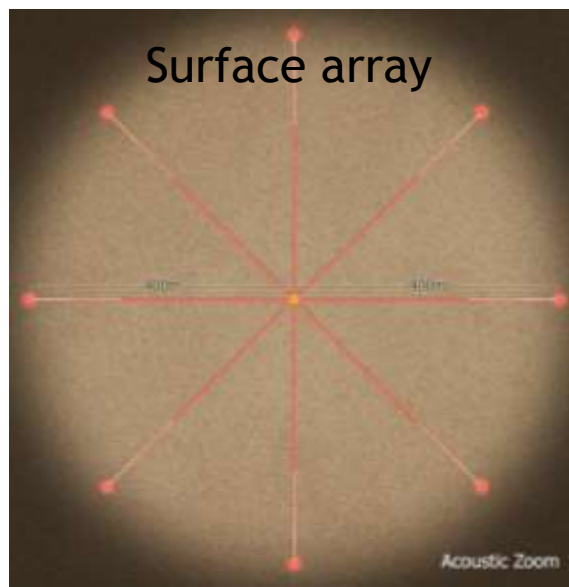
- A do seismic surveys to get a picture of the reservoir.
- B log for rock properties and correlate empirically.
- C do 4D seismic to ascertain the reservoir conditions over time.
- D log wells on a point by point basis.
- E manage with old ESP and coiltubing technology

•Would it be nice to have

- higher resolution reservoir imaging?
- exactly in-situ porosity and permeability measurements in real-time?
- reliable and lower cost permanent seismic monitoring reporting live data on reservoir drainage?
- a new measurement that provides new information on distributed downhole flow
- lower cost, reliable, wireline retrofitable ESPs.
- lower cost coil which reaches further and provides more information?

Deep Earth Telescope

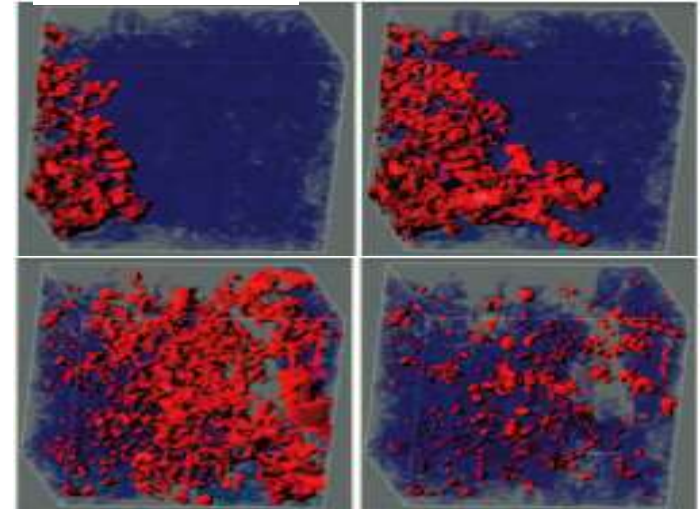
- Coherently captures normal specular and scattered off-specular returns
- Theoretically capable of high resolution acoustic images five to 10 times greater than conventional 3D and 4D seismic



Ingrain - Digital Rock Physics

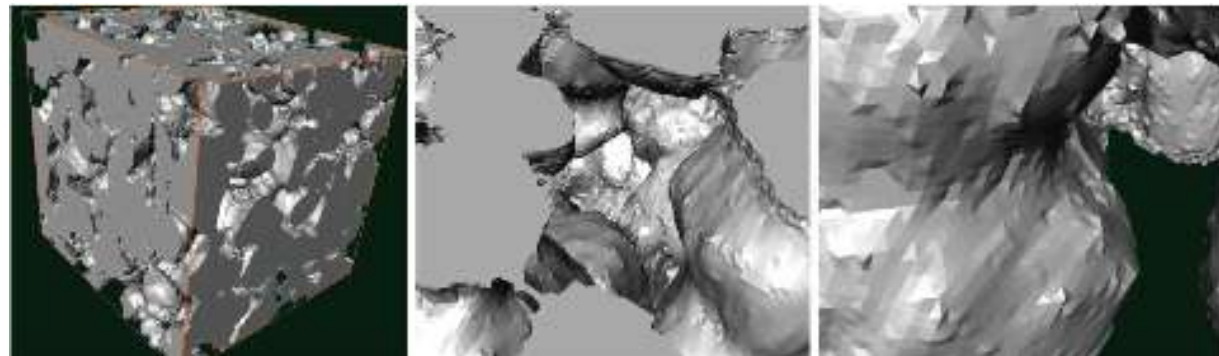
- Near-real-time measurements of reservoir properties from cores and drill cuttings
- Uses MRI/CT scan technologies together with proprietary computational methods to create complex 3D images of the rock samples.
- Accurate in difficult formation types (oil sands, shales, low perm rocks)
- Deliverables include absolute and relative permeability, porosity and elastic properties.

INGRAIN

Relative Permeability
from cores or cuttings

Ingrain's digital rock physics lab reduces drilling risk, improves reservoir models and improves net recovery of oil and gas.

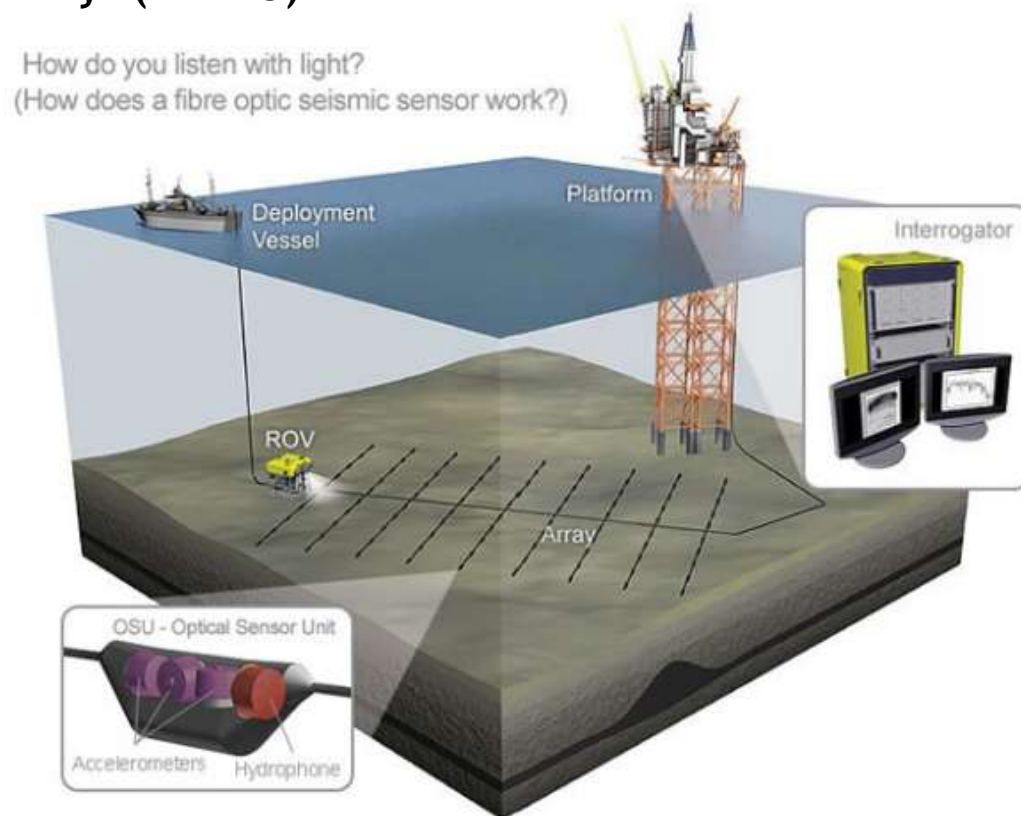
Micritic carbonate imaged at increasing magnification. The images are (left to right) about 20, 8, and 2 microns across.



StingRay: Permanent Reservoir Monitoring

Enabling reliable, high-fidelity, cost-effective Permanent Reservoir Monitoring (PRM) using passive fibre-optic sensing arrays (Fosar®)

- Highly reliable system with lower HSSE exposure.
- Faster: ‘Seismic on Demand’
- More cost effective: lower up-front and through life costs than existing alternatives
- Passive sensors with no electronics under water
- Simple components with proven longevity- extremely low failure rates
- Highly scalable, multiplexing greater number of sensors on a lower number of fibres - a cost, reliability and installation advantage

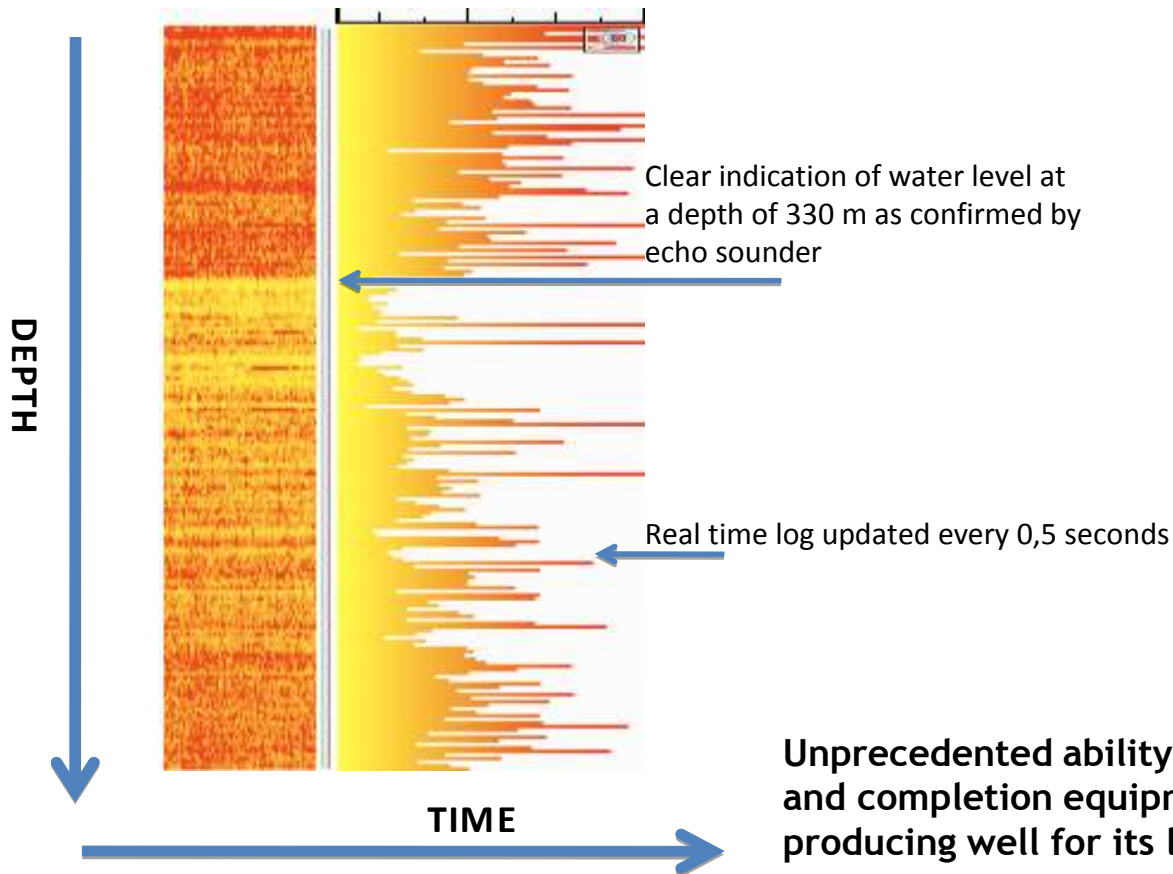


Information is more complete and conveyed faster than conventional 4D seismic - enabling enhanced oil and gas recovery potential

Fotech: Fibre-optic Monitoring

Fotech is a state-of-the-art fibre optic start-up providing acoustic, temperature and pressure data

Well started at 120 RPM



- A unique fibre-optic based distributed acoustic monitoring solution that can be used for production optimisation, zonal flow allocation, leak detection and asset monitoring
- Very sensitive, can detect events up to 40 kilometres and with 1 meter accuracy
- Distributed pressure sensing technology under development

Unprecedented ability to monitor hydrocarbon production and completion equipment in real-time throughout a producing well for its lifetime

Better recovery and lower field development cost

Ziebel: ZipLog™ next generation well logging/Intervention, and; Maglev Small Diameter Wireline Retrofittable ESP

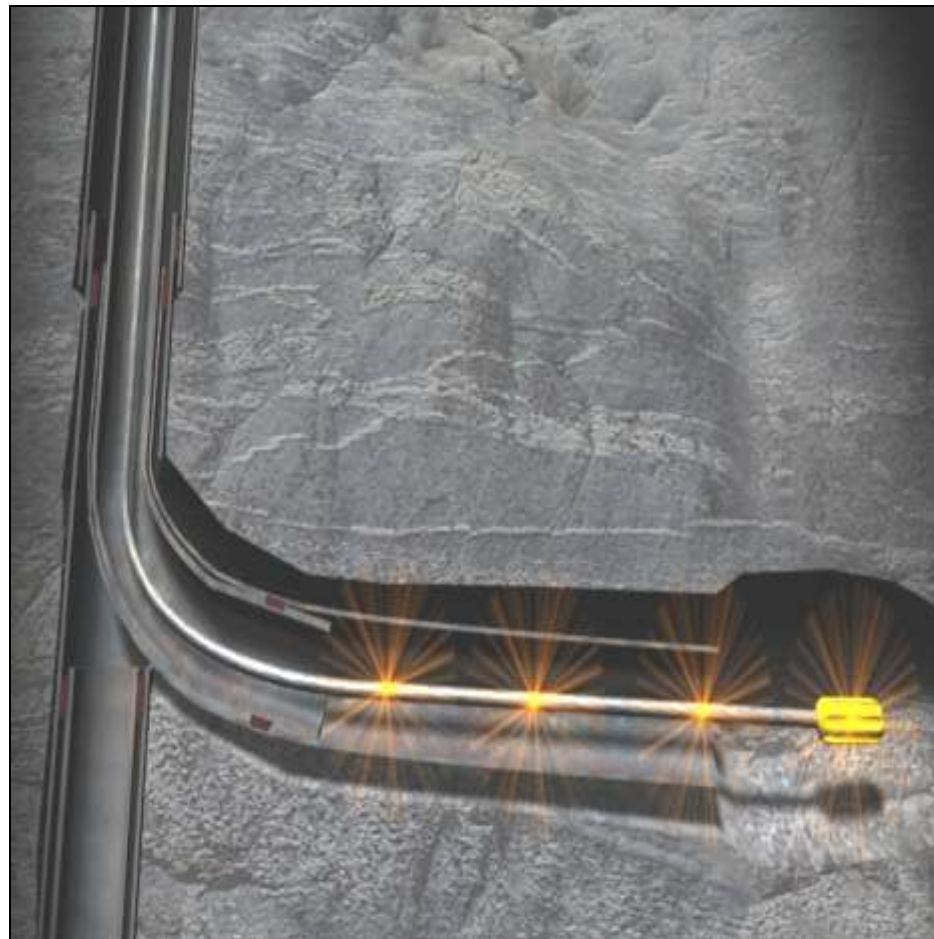
Innovative, lightweight and cost effective log-reach intervention and logging hardware; Unique artificial lift technologies

Ziplog Intervention

- Revolutionary well logging and well integrity control solution
- Better and cheaper extended vs conventional coil, TLC
- Real-time well data monitoring with Distributed temperature and acoustic sensing - No up-down movements to log entire wellbore
- Smaller footprint, requires 5 field engineers compared to other solutions requiring 10-12 engineers for round the clock operation.

Maglev Artificial lift

- Cheaper more effective ESPs that just work
- Wireline installed equipment, allows for easy retrieval and installation
- Simple design, implies lower failure rate



ZipLog™ - The new generation revolutionary well logging and well integrity control solution

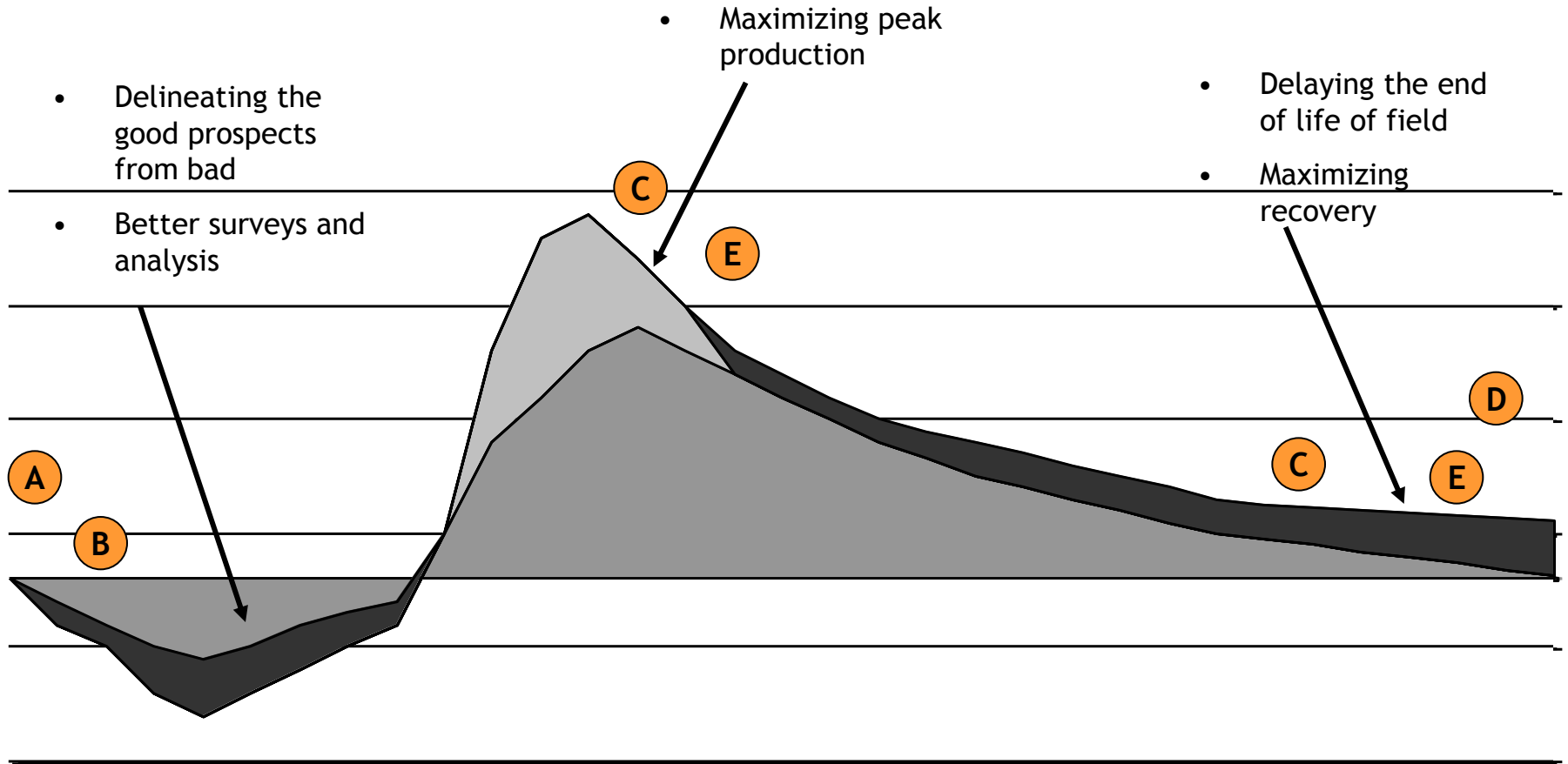


□ Production Wells

- Inflow Performance
 - Flow Allocation (mono- and two-phase flow)
 - Fracture Evaluation
- Productivity Index (PI)
- X-flow evaluation
- Water production evaluation

- | | |
|--------------------|------------|
| □ Results: | Met Client |
| Objectives | |
| □ Number of Wells: | 4 |

EV works across the upstream lifecycle to engender technologies that improve production



EV works across the upstream lifecycle to empower and foster new technology

Exploration and Appraisal

ARKeX

INGRAIN



Field Development



sigma

RealityMobile

Drilling



RealityMobile



NovaDrill

Late Life



Production Enhancement



energy ventures

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