Techinomics

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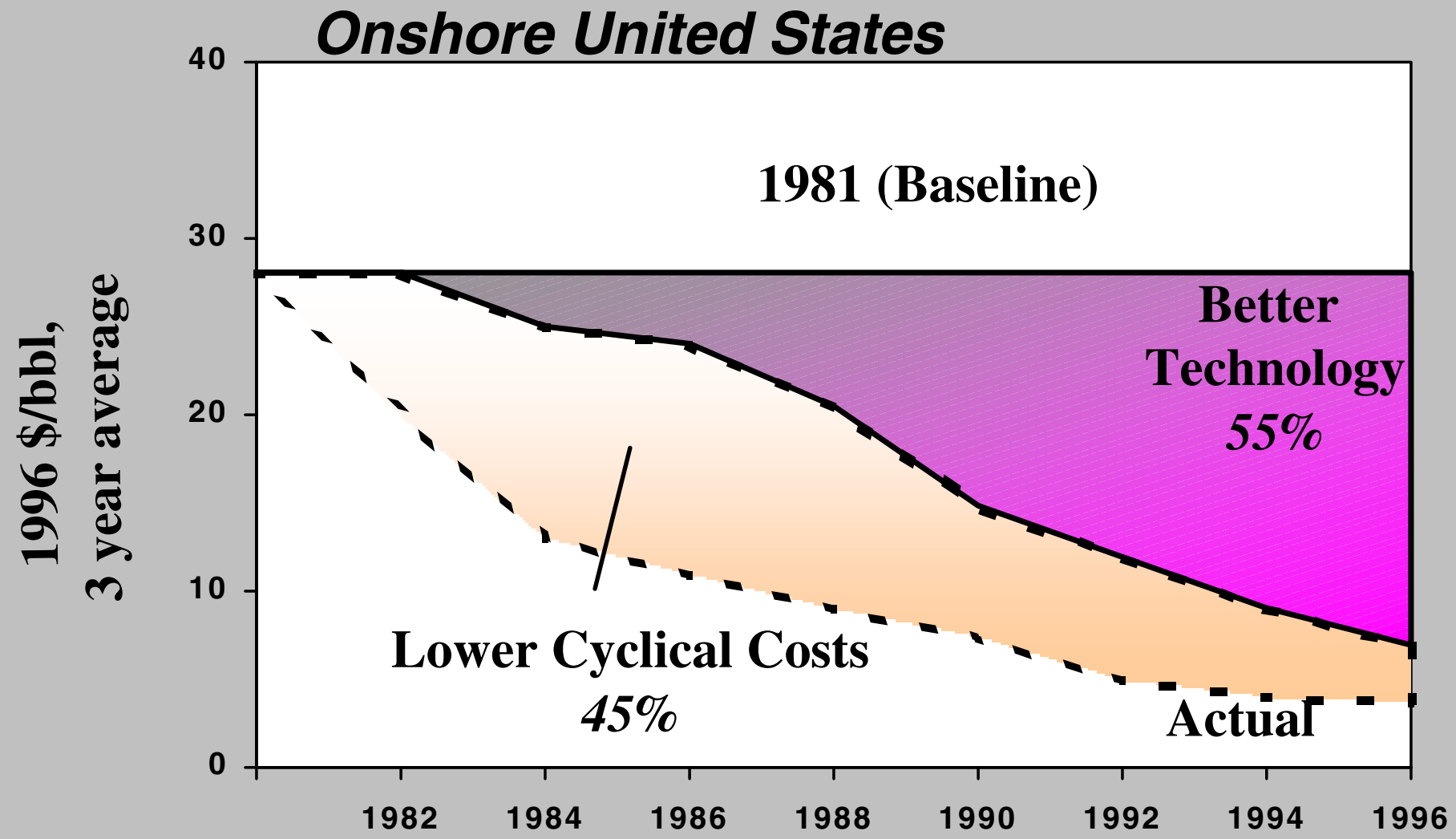
Producer Challenges

- Finding Cost
- Reduce Capital Expense
- Reduce Operating Expense
- Increase Reserves

Exploit

Techinomics

Crude Oil Finding and Development Costs



Source:CERA

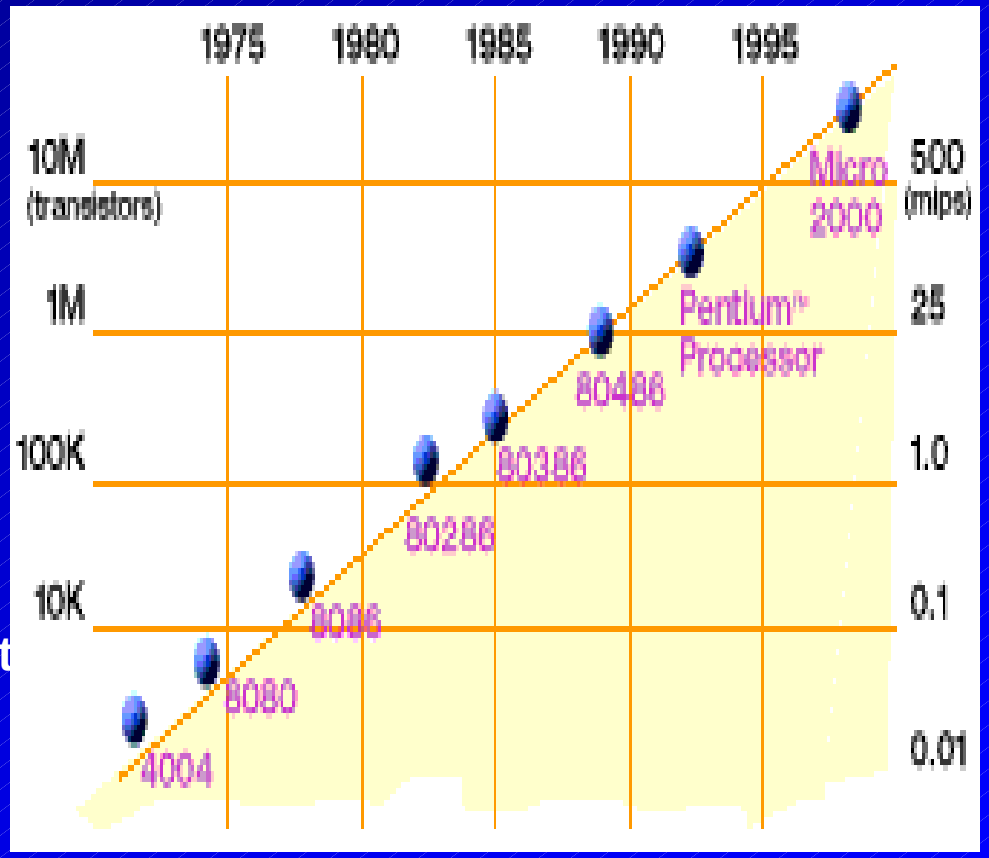
Key Technology that will Drive Change

- Computer Technology
- Telecommunication Technology
- Sensor Technology

Advances in Computer Technology

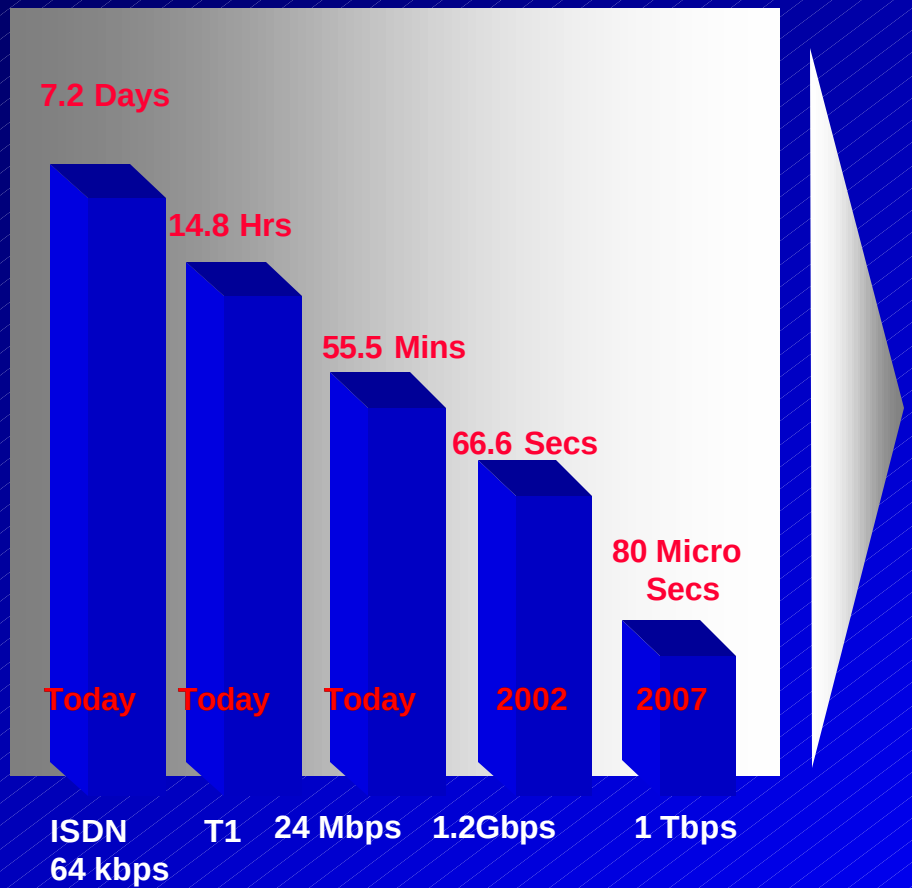
…Quantum Changes in Computing Power

- 3D Seismic
  - Marginal Field Development
  - Characterization of Complex Reservoirs
  - Development of Production Geophysics
- 4D Seismic
  - Improved Recoverability
  - Improved Reservoir management
  - Real Time Solutions
- 3D Visualization



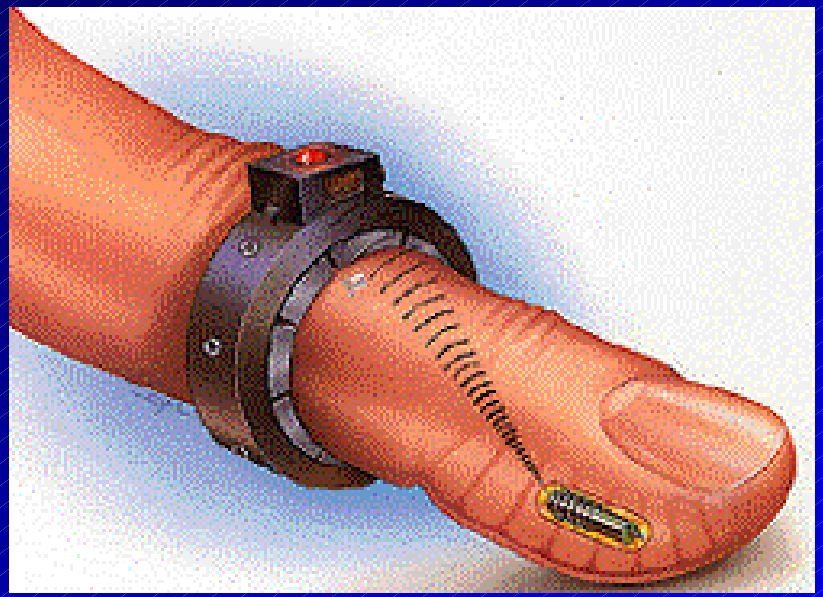
Advances in Telecommunications

Time to transfer 10 gigabytes of data



- Rapid Transfer of New Technology
- Virtual Teams
- Expert Solution In Remote Locations
- Real Time Solutions
- Effective Reservoir Management

Sensor Technology



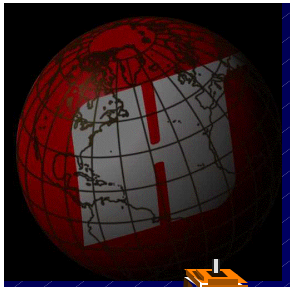
Sensors for Data

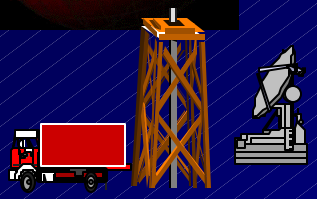
- Fluid Data
- Formation Data

Sensors for Controls

- Surface Equipment
- Downhole Equipment
- Remote Sensing

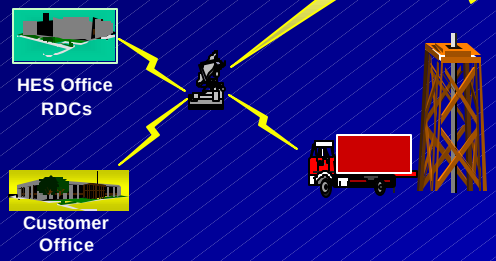
Real Time Reservoir Solution





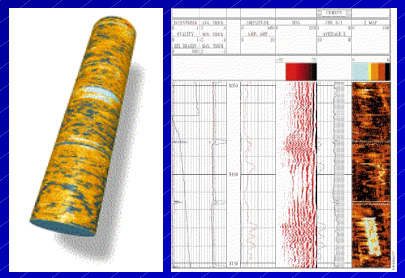
Cementing

Customer

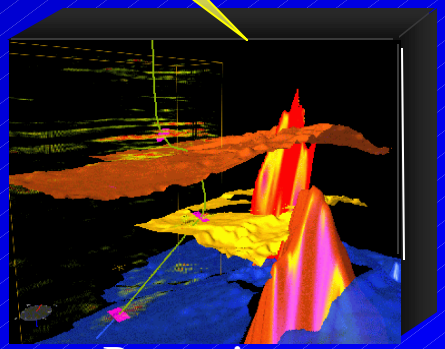


Stimulation

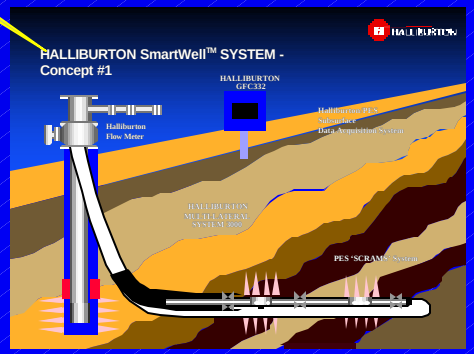
- DRILLING
- TOOLS /TESTING
- COMPLETIONS



Logging

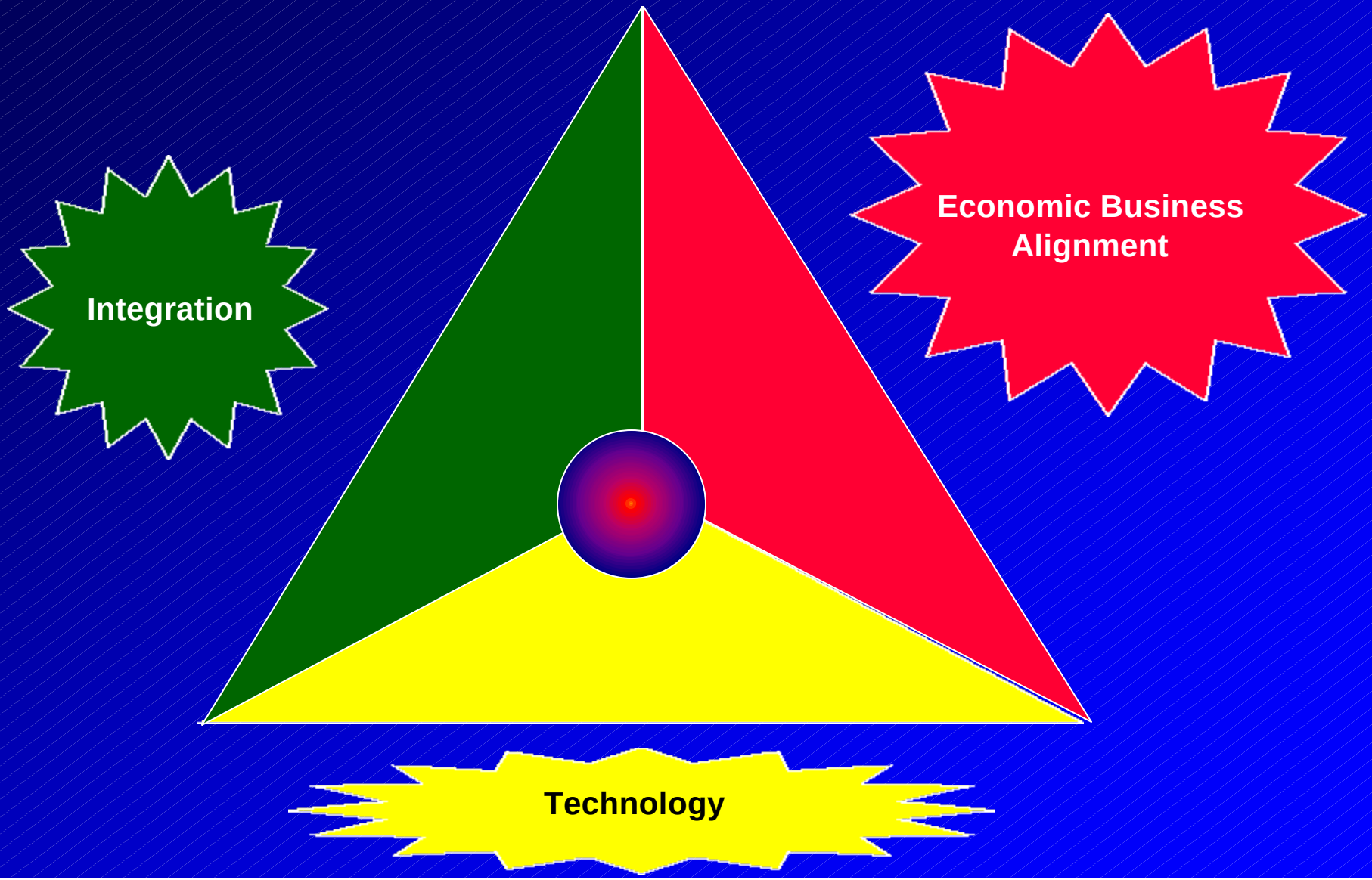


Reservoir



Smart Well

Techinomics…the value growth alliances



Summary: Techinomics

Exploitation of Technology can reduce cost while improving production

Incremental Value can be realized from the Integrated Service Company who can provide reservoir optimization

Alignment of Producer/Service Company commercial terms to share in the created value.