

Dynamic models have an additional benefit in their ability to range rapidly across many orders of magnitude of space or time, from the microscopic to the regional. As is illustrated in the following review of a South Texas Prospect, this type of dynamic integration is not possible with conventional planar 2-D maps (Figures 17-20).



Figure 17. Overview evaluation of a Hidalgo County gas prospect, showing integration of the location map and a geologic cross-section across the top of the prospect with subsurface data.



Figure 18. Flying to the prospect, with production (green) and a proposed offset well (yellow).

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Figure 19. Looking underneath a seismic attribute based interpretation of sands at the prospect.



Figure 20. Dissolving paper seismic sections to show dry holes (blue), historical wells for the field (red), other known production (green), and a geologic cross-section.

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Although immersive reality is a subset of the geotechnologies to be used in evaluating the Gulf Coast AOI, it is very visual, and illustrates the power of Dynamic's approach. Therefore, two other examples are included. First (Figure 21-24) shows additional images from the South Texas database study introduced in Figure 14 above.



Figure 21. Area covered in Texas Railroad Commission District 4, the southern tip of the Gulf Coast AOI, which is basically south of Corpus Christi and which extends to the two South Padre Island AMI's introduced above in Figures 2 and 3.



Figure 22. Note the gaps in production around the King Ranch in Kennedy County and up the center of the map offshore from Wilcox production (Violet), and geologically before Vicksburg (Yellow) and Frio (Green) production.

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Figure 23. The gap between the Wilcox (Purple) and the Vicksburg (Yellow) shows a slope turbidite play, comming.off of the Wilcox (Violet) in onshore South Texas, which was formed by identical geologic processes as current (expensive) Deep Water plays.



Figure 24. Integration of porosity (Orange spheres) with Stratigraphic Play Types (Blue cones) and with existing production (Wilcox is the Purple discs closes to the front).

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The last Immersive Environment example (Figures 25 and 26) illustrates more details of the East Cameron South Addition AMI, introduced above in Figure 1.



Figure 25. A screen capture off of an interpretation off of a Landmark workstation, showing the salt weld at the top of the prospective section, the salt wing, which is attached to the salt mass, and the up-dip salt mass, which acts as the trapping mechanism.



Figure 26. The proposed well path, through the salt weld and underneath the salt mass, as displayed in a human scale immersive environment.

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# **People**

Dynamic Resources Corporation accomplishes projects with team members who have a proven track record in the area they are being asked to perform in. The process Dynamic uses to form and dissolve a Project team is a key competitive advantage. The process includes the following steps:

- D1 Define AMI
- D2 Form Project Team
  - D21 Identify Required Skills
  - D22 Select Skills
  - D23 Organize Project Team
    - D231 Select Team Leader
      - D232 Select Team Members
        - D2321 Pick Team Members
        - D2322 Train Team Members
      - D233 Define Working Procedure
        - D2331 Set Project budget
        - D2332 Set Project Schedule and Milestones
        - D2333 Define Deliverables
        - D2334 Identify Enhancements and New Opportunities
  - D24 Reconfigure Entities
- D3 Find Leads, Define Prospects, and Determine Strategic Fit with Stakeholders
- D4 Deliver Results and Obtain Customer Acceptance
- D5 Dissolve Project Team and Document Work
  - D51 Capture Contributions of Project Team Members
  - D52 Disband Project Team

The reason this process works is because of people concepts (or soft concepts) like trust, reputation, professional ethics, integrity, and track record. Each Team Member involved in a specific AMI has agreed to this funding proposal, has agreed to participate in "Dynamic Professional NetWork" (NetWork), has or will execute the NetWork Confidentiality Agreement, has or will signed the Confidentiality and AMI Agreement for the area(s) they are working (see Appendix), and have agreed to the terms of the Performance Bonus or Overriding Royalty Agreement. In positioning to keep up with the speed and pressure of today's work world, Dynamic has focused on process and relationships, as well as integrity and trust, and strongly believes the company is built on the proven principles which truly matter in developing a long-term successful professional organization.

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# The Team Leader for the Gulf Coast AOI:

• Dr. Sam LeRoy: Over 20 years experience in the oil and gas exploration and production. Interests and talents are tied to geostatistics, developing new exploration concepts, and finding hydrocarbons. Developed a "Statistical Gravity" modeling method for basin analysis on continental margins and applied it in 5 major oil and gas basins, including offshore Eastern Louisiana. Applied seismic stratigraphic methods, including multi-attribute display and analysis procedures, geopressure detection and modeling, and vertical migration of hydrocarbons in the Gulf of Mexico. Workstation experience on SMT, GeoQuest, and Landmark platforms.

## Alphabetical listing of Gulf Coast AOI Team Members:

- Dr. William M. Benzing: Over 20 years experience with a major oil company integrating conventional oil and gas exploration technology with geointerpretation technology for the purpose of lowering exploration risk and developing new plays. Offshore, these technologies focus on finding new exploration potential in light of geopressure formation mechanisms in thick deltaic systems. By combining integrated geophysical, geological, and geochemical information, this approach aims at discovering new oil and gas reserves through understanding of the interactions between hydrocarbon generation, migration, and accumulation, including the impact of dynamically formed fluid pressure seals within soft sediments.
- Les R. Denham: Over 35 years of experience in geophysical interpretation and research, with an interest and extensive experience with UNIX systems administration, C, Fortran, Perl, SED, AWK, and NAWK programming, as well as seismic and integrated interpretation. Workstation experience on GeoQuest and Landmark Platforms.
- Dr. Robert Ehrlich: Over 30 years experience in geostatistics and exploration. Has developed new methodologies for pattern finding in large data volumes which allow identification of heretofore unexpected geologic relationships.
- Robert W. Horner: Experienced seismic interpreter and processor, with an interest and talent for finding and organizing data. Experienced on GeoQuest and Landmark workstations.
- Ray G. Kozusko: Proven oil finder with over 19 years of oil and gas exploration experience. Solid skills in leading and conducting integrated exploration / exploitation evaluations. Experience includes five years working offshore Gulf of Mexico, two years in the Niger Delta, West Africa, and three years as the senior geologist responsible for subsurface sedimentology and structural geology evaluations throughout the Gulf Coast.
- Richard Nehring: Strategic information specialist for the North American upstream petroleum industry. Since leaving the RAND Corporation and forming NRG Associates in 1983, Richard has collected and packaged relevant, complete, coherent, and consistent data though the Significant Oil and Gas Fields database. His work is shown in Supplement 1: The Past and Future of the Gulf of Mexico OCS Shelf.

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### Alphabetical listing of Offshore Eastern Louisiana AOI Board of Advisors:

- David K. Agarwal: Over 35 years of well rounded oil industry experience in 2-D and 3-D interpretation. Former Chief Geophysicist for Newmont Oil Company and Manager of Technology for Cities Service Company International.
- Dr. Roger N. Anderson: Over 25 years at Lamont-Doherty Earth Observatory of Columbia University in New York, having spent the last 10 summers with oil and service companies in Houston, and the author of more than 150 peer-reviewed scientific and technical papers.
- H. Roice Nelson, Jr.: Over 25 years of experience in exploration interpretation and leading edge technology, including development and commercialization of interactive 3-D interpretation techniques (founder of Landmark Graphics Corporation), hypertext documentation (founder of HyperMedia Corporation), and building and presenting geologic models in immersive reality (founder of Continuum Resources International Corporation).
- Others as work and budgets require and allow.

#### \$ INVESTMENT \$ Fund Raising: Investors H. Roice Nelson, Jr. Deadlines Project Team Leader: Project Team Leader: Dr. Sam LeRoy **Budgets** Dr. Sam LeRoy Data Selection: William Benzing Integration Geology Data Organization: Pattern Finding Petrophysics Bob Horner Accessibility Geochemistry Data Computer Support: Geophysics Les Denham Support Engineering Pattern Finding: Interpretation Dr. Robert Ehrlich Earth Modeling Data Mining Identifying CLPs: AMI All Visualization Packaging Results: **Board of Advisors** Ray Kozusko Reports Stakeholder RETURN ON **INVESTMENT Exploration-Development Strategy**

### Preliminary Organization and Responsibilities of Project Team Members:

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Dynamic Resources Corporation (Dynamic), which was formed in 1991, consists of geologists, geophysicists, geochemists, geostaticians, petrophysicists, petroleum engineers, computer scientists, and others who are organized into multidisciplinary teams that work on both exploration and production projects. Members of the NetWork have many decades of cumulative experience in the petroleum industry working for major oil companies and independents.

Although some of the state-of-the-art technologies being used appear complicated to the uninitiated, the strategy used by Dynamic and the Network to explore for and develop hydrocarbons is straightforward:

- 1. Identify opportunities in an area with known hydrocarbon production.
- 2. Execute an area of mutual interest agreement (AOI).
- 3. Identify the best experts to manage exploitation of the opportunity.
- 4. Put together a Prospectus
- 5. Identify investors to fund exploitation of existing exploration concepts, leads, or prospects to establish cash flow.
- 6. Collect and capture all relevant data in the AOI or AMI.
- 7. Find patterns in the data.
- 8. Classify the data, identifying by-pass pays, undrilled fault blocks, undrilled deep pay, and other potential leads and prospects.
- 9. Derive geologic and fluid movement processes and new exploration concepts from the classified data.
- 10. Define visualization parameters which allows hydrocarbon generation, migration, and trapping, as well as leads, prospects, to be automatically displayed for multidisciplinary team evaluation and investor presentations in an immersive environment.
- 11. Simulate geologic and production processes.
- 12. Optimize the acquisition and AOI or AMI production plan.
- 13. Present CLPs [Concept(s), Lead(s), and Play(s)] to investors, along with an optimized plan of how to explore, exploit, and develop the AOI or subset AMIs, and obtain funding.
- 14. Acquire or farmin to underperforming fields with a significant potential to increase production, or acquire land and drill low risk prospects to establish cash flow.
- 15. Develop exploration leads and prospects with medium to high reserve potential, recognizing that these usually have medium to high risk using all or part of the initial cash flow to sustain this exploration effort.

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We compete in exploration and production by either using new innovations and technology, or by applying older ideas and technology dovetailed with new approaches. We always emphasize the integration of geophysical well logs, cutting samples and cores, well tests, as well as basic geology, geophysics, and engineering principles. Our strength is in identifying trustworthy experienced experts, and applying integrated technology and concepts to problem solving efficiently.

When we build or help build exploration-development teams and companies, we emphasize the mentor-apprenticeship relationship. This involves having experienced team members work very closely with younger members so there is a true technology transfer of experience. This not only creates a learning environment for the younger members, it results in senior team members honing and expanding their skills. As the younger team members learn and improve their skills, the senior members go on to other projects or AMIs, depending on what is needed by the exploration-development team or company.

Partly because of instant expandability and the ability to simultaneously contract, the Network has worked in most of the major petroleum basins in the world, and yet honors its stewardship by only putting sufficient and sustainable technical expertise on any particular AMI in order to stretch professionals and enable cost efficient results.

Dynamic works with two levels of management: Team Leader and Team Member. Team Leaders are responsible for a project, and they also participate as technical workers. As compensation for work, team members take a reduced fee and a performance bonus or an overriding royalty interest. The success of Dynamic is based on a multidisciplinary data intensive approach, having a very experienced and focused staff who can and will train less experienced staff, low overhead, and no managers.

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