

Engaging Academia & Small Companies

David White
Schlumberger Research
26th September 2005

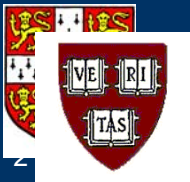


Schlumberger Public

Schlumberger

Schlumberger Profile

- The leading oilfield services company
- Founded in 1927, employs over 52,000 people of more than 140 nationalities working in 100 countries
- Delivers technology through services to oil companies, not sales
- 2004 Revenue: \$11.48 billion
- Annual investment in R&D: \$500 million
 - 5 Research Groups
 - 17 Major Product Development Centers
 - 30 Manufacturing Centers
- R&D Driver: Increase oil recovery factors to 60% (from 35%)



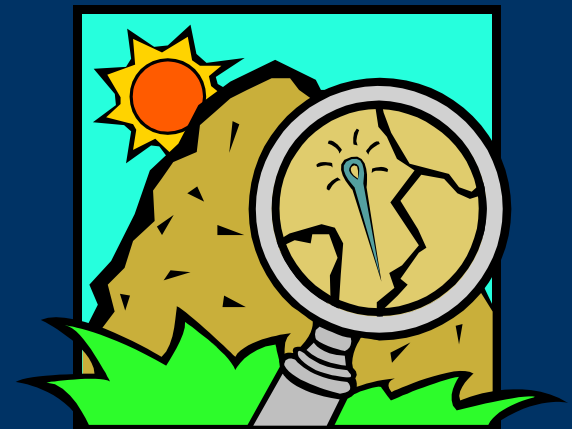
Finding Technologies: The needle in the haystack

- Technology is developed internally and acquired externally
- Searching the haystack: The amount of new information stored on paper, film, magnetic, and optical media has about doubled in the last three years
- 5 Exabytes generated in 2002 *



37,000
Libraries
of Congress

All the words
ever spoken

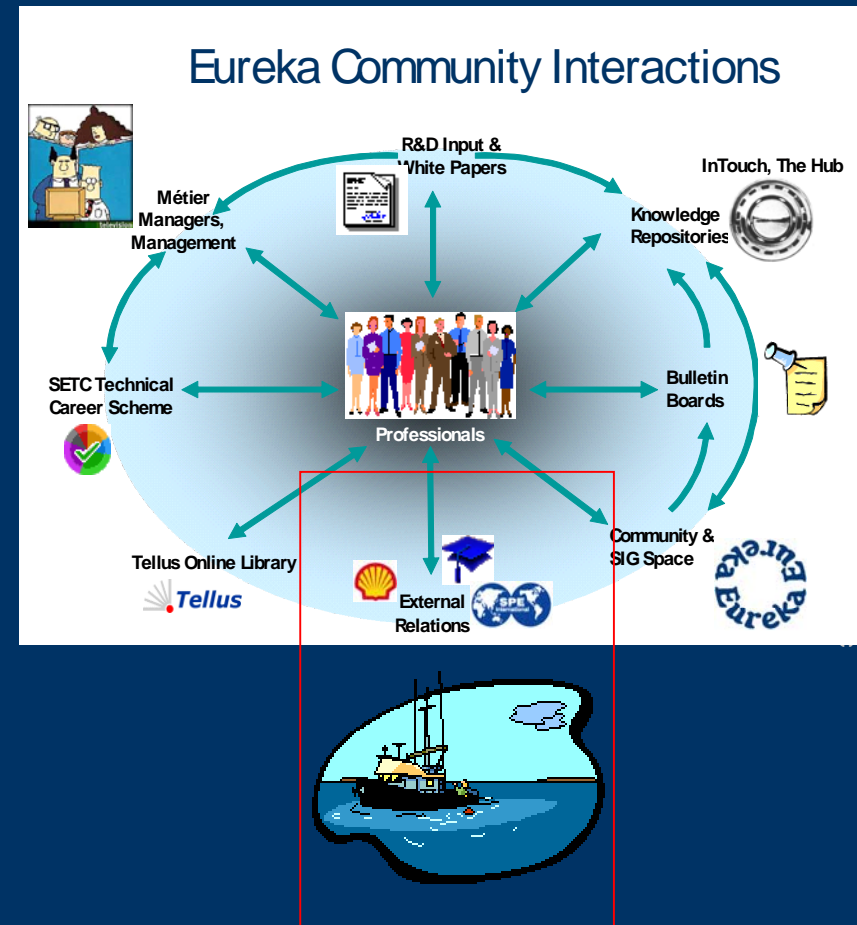


* Source Peter Lyman & Hal Varian, University of Berkley

1 Exabyte= 10^{18} bytes

Networks: Eureka!

- Greek word for “I’ve got it!” (Archimedes, 287-212 BC)
- “Eureka” is the name of Schlumberger’s technical communities program
 - also known elsewhere as “Communities of Practice”
- One component of a Knowledge Management strategy, focused on people
- Unique program because it is self-directed
 - leaders are elected by the community members



Unstructured approach to searching the sea of information

Watching Technologies: Sharing results

SLB TechWatch ResearchMarketing | Eureka | Hub (Research) | Google **Schlumberger**

SEARCH

All Categories

ADVANCED

FRONT PAGE Last Updated: Sep 20th, 2005 - 10:49:22 **Latest Headlines**

New Technologies
San Andreas Earthquake Observatory Achieves Milestone As Drillers Penetrate The Active Fault Zone
The San Andreas Fault Observatory at Depth (SAFOD) reached a significant goal on Aug. 2 when scientists drilled into a seismically active section of the fault approximately two miles below the surface of the Earth. "This is a milestone for SAFOD," says Mark Zoback, a professor of geophysics at Stanford University. "For the first time, scientists have drilled directly into the San Andreas Fault Zone at a depth that will allow us to observe earthquakes up close for decades to come." When completed in 2007, SAFOD will be the only earthquake observatory with instruments installed directly within an active fault where earthquakes form or "nucleate." Scientists also will be able to bring up actual rock and mineral samples from the earthquake zone. [[Visit Website](#)]
Sep 20, 2005, 10:03

Patents
Drilling with Transient EM patent applications from Baker Hughes
Submitted by *Sen. Jefferys*
Method for measuring transient electromagnetic components to perform deep geosteering while
United States Patent Application 20050140374
Itskovich, Gregory June 30, 2005
Method of eliminating conductive drill parasitic influence on the measurements of transient elect
United States Patent Application 20050167100
Itskovich, Gregory B. August 4, 2005
Sep 20, 2005, 09:28

New Technologies
'Quasicrystal' Metal Computer Model Could Aid Ultra-low-friction Machine
Duke University materials scientists have developed a computer model of how a "quasicrystal" metal behaves at high temperatures and pressures. Their advance could contribute to wider applications of quasicrystals to such as ball bearings and sliding parts. [[Visit Website](#)]
Sep 20, 2005, 06:21

New Technologies : Technology Themes
Danish Researchers Reveal New Hydrogen Storage Technology
Submitted by *Jahir Faibon*
The idea described in this article is to store the hydrogen in the form of ammonia (NH3) efficiently as a solid form (with the corresponding huge savings in space requirements). The authors mention that ammonia decompose it back to obtain free hydrogen. Though no details are given on the specific

Small Companies in the news
QinetiQ develop world's first fibre optic seabed acquisition system
Submitted by *Lidia Amone via TwSB*
QinetiQ, along with DP, Shell, Chevron/Texaco and ConocoPhillips are developing the world's first low cost fibre optic seabed acquisition system. The system looks to lay new generation optical sensors to acquire full wave seismic data from the seabed to develop high resolution sub-surface images that better pinpoint subtle structural and stratigraphic features along with fluid type and movement.
Sep 12, 2005, 18:01

Small Companies in the news
Stainless steel nanopowder
Conventional process methods for steel powders produce micron-sized particles. The Tesima process, however, that was developed by Nanomaterials Limited, Hampshire, UK, generates nanoscale stainless steel powders. The process recently yielded, Tesimorph ES-25, a magnetic stainless steel material with a 25-nm particle size. Such nanoscale materials are suitable for ultra fine filter and metal injection molding applications. [[Visit Website](#)]
Sep 1, 2005, 10:48

Small Companies in the news
ThermoEnergy Announces Start of \$750,000 Federal Climate Change Grant Program
Submitted by *Karel Benhacour via TwSB*
ThermoEnergy Corporation (OTCBB:TMEN) announced the start of a \$750,000 federally funded program designed to fast track development of its patented new zero air emission technology known as the ThermoEnergy Integrated Power System, or TIPS process. TIPS is an advanced new power plant design that eliminates the atmospheric emissions of mercury, acid gases and particulates from fossil fuel burning power plants. In addition, TIPS captures and recovers carbon dioxide (CO2) in liquid form ready for sequestration or beneficial reuse.
Aug 21, 2005, 09:09

Small Companies in the news
Syntroleum Corporation sign to develop Coal to Liquids project
Submitted by *Karel Benhacour*
Syntroleum Corporation announced that it has signed a memorandum of agreement with Australian-based Linc Energy to pursue the development of a coal-to-liquids (CTL) project using the Syntroleum(R) Process in Queensland, Australia. The agreement integrates Syntroleum's unique air-based Fischer-Tropsch technology with Linc Energy's underground coal gasification expertise.
Aug 16, 2005, 10:21

SLB TechWatch ResearchMarketing | Eureka | Hub (Research) | Google **Sc**

SEARCH

All Categories

FRONT PAGE Last Updated: Sep 12th, 2005 - 10:06:57 **SMALL COMPANIES IN THE NEWS**

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Front Page

Small Companies in the news

Commentary

Client Technology Report

Competitor Technology Report

New Technologies

New Materials

Patents

Tech Center & Hub news

Technology Center Innovation

University/National Labs

Web Sites of Interest

TechWatch BB

Other Technology Watches

Submit an Article

RSS

Newsletters, bulletin boards
Meeting, emails.....

Schlumberger Academic Collaboration

- From very large projects to consultants, consortia & sponsored students
- Global Extent
 - US, EU, Russia
- Co-located Research Centers
- Broad subject range
- Consultation with the worlds top experts
- Ambassador Program

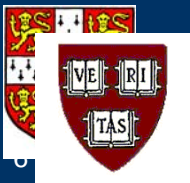
Stanford Global Climate & Energy Project, EU post docs

Over 30 top Universities

Boston, Cambridge, Dhahran, Moscow

MEMS to materials, colloids to chemical sensors

45 Universities in 22 countries



Location, Location, Location

● Research Centers

USA:
Schlumberger Doll Research
MIT, Boston



Norway
Stavanger

UK
Cambridge University



Russia
Moscow State University

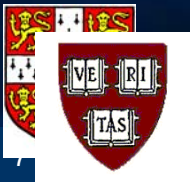


*280 external
scientists in 8
Universities & 14
Institutes*

Saudi Arabia
King Fahd University
Dhahran

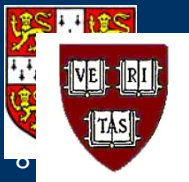


● Plus Technology Hubs:
Aberdeen, KL, Dubai, Mexico



Engaging Universities: a long term commitment

- Seed
 - Providing Internet access to youth in 30 countries, science content in seven languages <http://www.seed.slb.com/>
- The Schlumberger Foundation
 - Supports science and technology education for high school and university students and teachers
- Enhancing the role of women in science and technology
- Schlumberger University Ambassador Program
 - 45 universities worldwide. Ambassadors organize recruiting & petroleum engineering research efforts on these campuses.



ÉCOLE
SUPÉRIEURE DE
PHYSIQUE ET DE
CHIMIE
INDUSTRIELLES

Collaboration Models

- Scientific Exchange *meetings, visits, sabbaticals*
 - Getting to know each other
- Consultants *Domain experts*
- PhD support *Identified projects*
- Sponsored Research
 - Specific topic *Chemical Sensors*
 - Domain *Fatigue failure*
 - Funding of post docs *Breakthrough projects*
- Joint Research (around 60 projects with clients and universities)
 - Developing energy with lower greenhouse gases
Founder of [Global Climate and Energy Project](#) (GCEP) at Stanford University
 - iSimm (EU funding)



Challenges

- Finding the technology
 - Be in the right place, look in the right direction
- Acquisition
 - Timing
 - Personalities & managing expectations
 - Evaluation
 - IP
- Integration of a small company into a large one



Adding Process: M&A Group



Identify,
Filter &
Evaluate
Opportunities

Sign
Confidentiality
Agreement

Develop
Preliminary
Business Case
& Integration
Plan

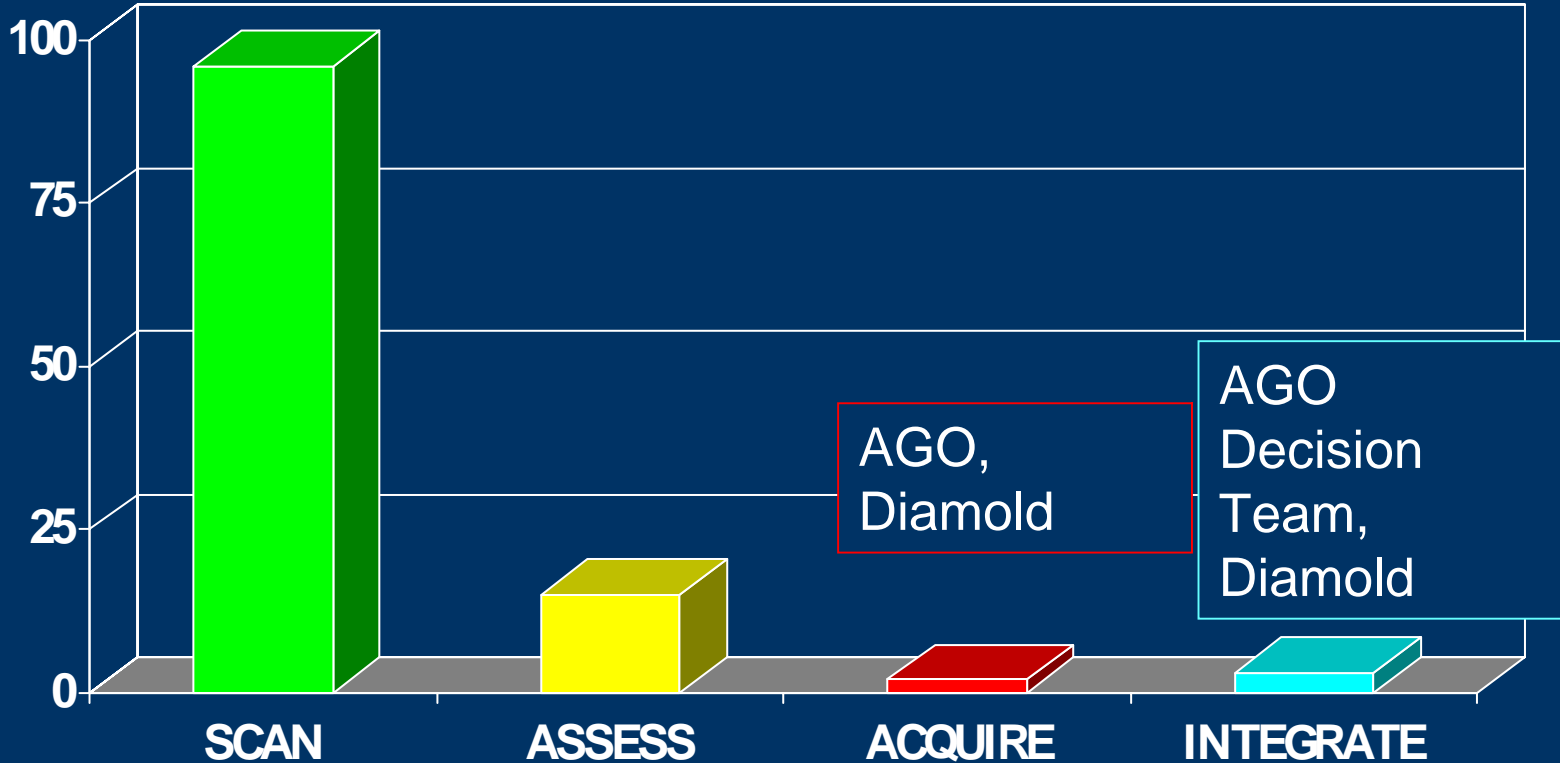
Due Diligence
Negotiate Deal

Detailed
Business &
Integration
Plan

Execute
Business &
Integration
Plan

Monitor
Progress

SLB M&A Activity (last 18-months)



Keys to success

- Extensive network - using & directing all your resources, look & listen
- Communities of interest
- Co-locate people with common interest
- Collaborate
- Be flexible, inquisitive, imaginative & persistent

