

# Making knowledge flow through knowledge connections

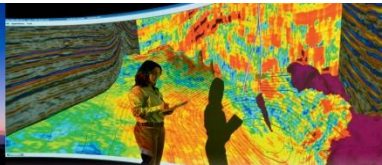
Tim Stouffer and Reid Smith

*APQC 16<sup>th</sup> Knowledge Management Conference*

May 12, 2011

Houston, TX

# MARATHON



# Marathon statistics at a glance



- Recently announced split effective July 1, 2011
  - Pre-split (Upstream + Downstream)
    - Fortune 50 company
    - Established in 1887
    - 4<sup>th</sup> largest US integrated oil & gas company
    - 5<sup>th</sup> largest US refiner
    - Current Market Cap: ~ \$37 billion
    - 2010 Revenues: \$73 billion
    - 2010 Net income: \$1.46 billion
    - Employees: > 30,000
  - Upstream Figures
    - 2010 Net Oil & Gas Production Sold: 391,000 BOE/D
    - 2010 Net Synthetic (Oil Sands) Oil Sold: 29,000 BPD
    - 2010 Net Proved Reserves: 1.638 billion barrels
    - Headquartered in Houston, Texas
    - Employees: ~3,000
  - BIG changes for Marathon!

# Marathon's business segments



*Integrated Gas*



*Exploration &  
Production*

**New  
Upstream  
Company**

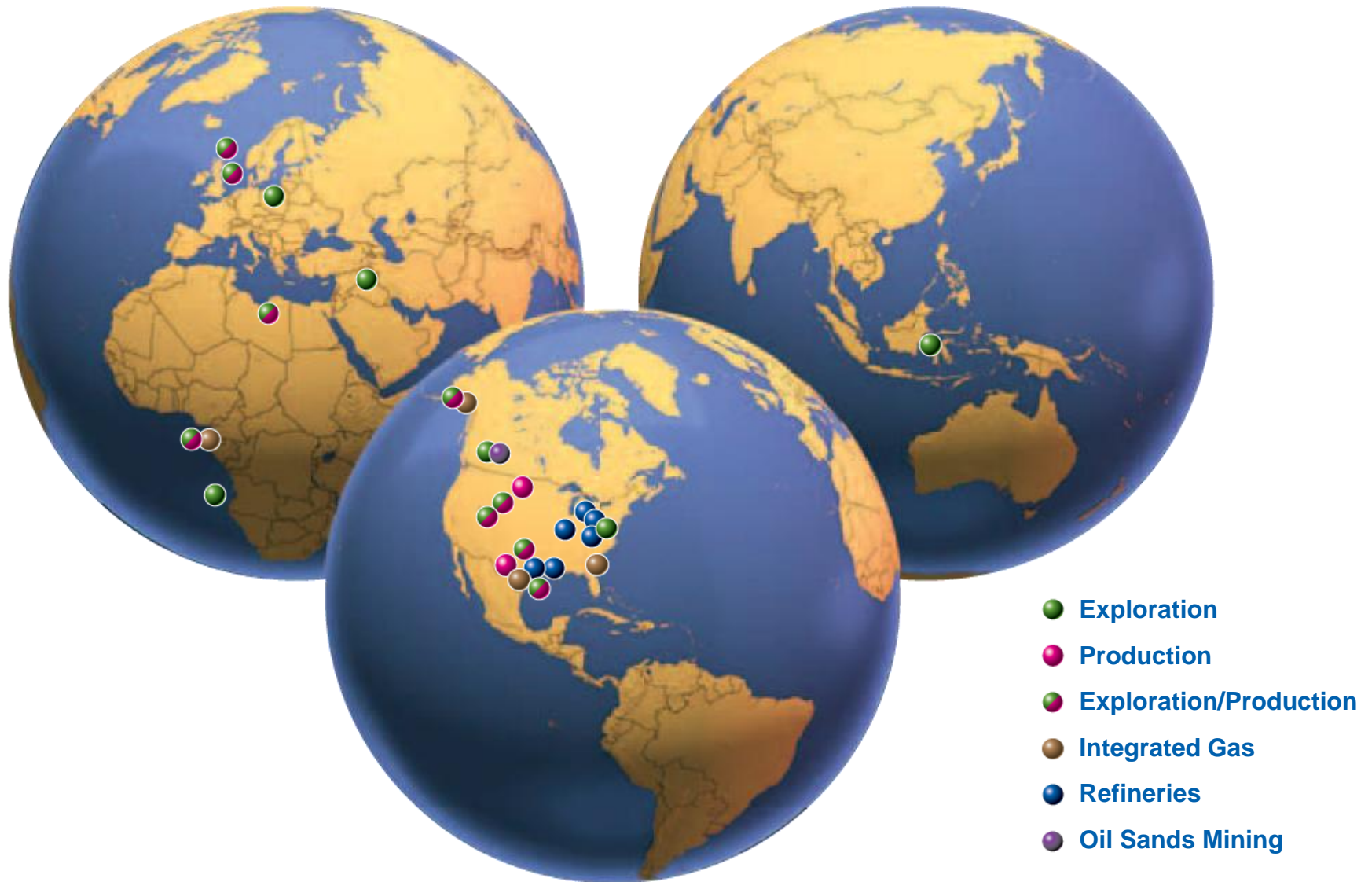


*Refining, Marketing  
& Transportation*



*Oil Sands Mining*

# Global operations



$$v = -\frac{k}{\mu} \frac{\partial p}{\partial x}$$

$v$  – flow velocity

$k$  – permeability

$\mu$  – viscosity

$p$  – pressure

$x$  – distance

— *Henry Darcy*

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**Knowledge is sticky.  
Without a systematic process and  
enablers, it won't flow.**

— *Carla O'Dell*

# Context for the presentation

- **Goals**

- Construct the work platform for the next generation – a new foundation for collaboration and knowledge sharing
- Enable easy-to-use and consistent access to the *relevant, up-to-date and trusted* information needed to monitor performance, to pre-empt potential problems and to take decisions
- Implement consistent records management to ensure we preserve the information required for legal and regulatory compliance
- Make a step change in knowledge sharing

- **Foci**

- Organizational plumbing
- Communities of practice

# Organizational plumbing

## ■ Dimensions

- Policies
- Roles & Responsibilities
- Processes
- Technology
- Ongoing Support

## ■ Stakeholders

- Business
- Law
- HR
- Internal Audit
- Finance
- Public Affairs
- IT, ...

**The Power of**

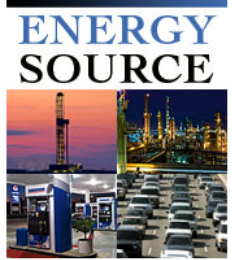


**Channels**

- Business Expenses
- Business Integrity
- Corporate Policies
- Diversity
- HES&S
- MaraLearn
- MConnect
- myMarathonBenefits.com
- My Career
- My Performance
- OurEnergyVoice.com
- People Search
- SAP On-line Services
- Service Desk
- Software Catalog
- Thrift Plan - Fidelity
- Travel
- Wellness

**Tools**

- Submit New Article
- Submit Improvement



**Spotlight: New MaraLearn Training Program: The Power of i**



Managing information in today's business environment is a critical component of success. This new training program introduces the roles, policies, processes and tools that support our ability to create, find and share information.

[Read More >](#)

**Company**



**New Email Anti-Spoofing Service**

The IT Security team is implementing a new feature on April 15 that will strengthen email security by reducing the potential for identity theft by hackers and spammers who could alter emails so they appear to have been sent from an internal email address. [More >](#)



**Venture**

Garyville Major Expansion featured in latest Marathon Venture. [More >](#)



**Join The Fight!**

Speedway SuperAmerica launches 'Fight Swipe Fees' petition campaign. [More >](#)



**Preventive Law News - 1st Quarter Preventive Law Newsletter**

In the Feature Article, Tim Berry, General Attorney, writes about the internal resources available to help assist with questions related to copyrights, patents, trademarks and trade secrets. [More >](#)



**Capitalizing on our Knowledge--Knowledge Management Connects People-to-People and People-to-Knowledge**

This is the fourth in a series of articles on Marathon's Upstream Technical Excellence Group. It features the department's focus on knowledge management to enable the free flow and capture of information across the Upstream. [More >](#)



**Employee Update on Health Care Reform**

Historic health care reform legislation has been passed by Congress and signed into law by President Obama over the past few days. A summary of the major provisions that may have impact to employees is available here. [More >](#)



**2009 Living Our Values Awards Winners Announced**

Congratulations to the many employees, organizations, contractors and suppliers who were recognized from more than 107 nominations. [More >](#)



**Marathon Response to EPA Endangerment Finding**

The U.S. Environmental Protection Agency (EPA) recently issued a finding declaring that greenhouse gases (GHGs) endanger public health. Having issued such a finding, the EPA is now prepared to undertake regulation of GHGs under the U.S. Clean Air Act. [More >](#)

**Industry**



**API SmartBrief 04/07/10**

"Terminal rack" tax is proposed for climate bill [More >](#)



**Morning Markets April 7**

Crude Oil Pushes Past \$87 Briefly [More >](#)

**The Markets**

Wednesday, April 7, 2:59 PM EDT

<b>DJIA</b>	10909.99 (-60.00)
<b>MRO</b>	31.97 (-0.61)
<b>WTI</b>	85.89 (-0.95)
<b>Brent</b>	86.20 (0.00)
<b>Henry Hub</b>	4.019 (-0.077)
<b>3-2-1 Crack Spread</b>	10.34 (-0.33)
<b>LLS 6-3-2-1 Crack Spreads</b>	
Wednesday, April 07, 04:00 AM EDT	
Chicago	4.25 (-0.43)
Gulf Coast	2.38 (-0.60)

**Events**

There are no current events to display at this time.

**Snapshot**



Marathon's significant position in the Bakken play in North Dakota and Montana provides the Company access to promising resources in North America.

**Did You Know...**

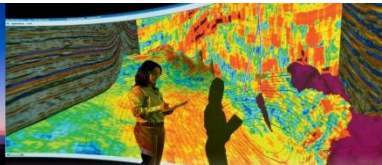
**3-2-1 Crack Spread**

An indication of the average "cracking" refinery gross margin reported in US\$/bbl of crude oil. The average cracking refinery is expected to convert three barrels of light sweet crude into two barrels of gasoline and one barrel of diesel. The exact definition can vary from place to place. MaraView's "The Markets" uses New York Harbor Reformulated Blendstock for Oxygenate Blending (**RBOB**) gasoline, NYMEX **Heating Oil** and NYMEX **WTI** prices.



**The organizational plumbing is in ...  
On to getting knowledge to flow**

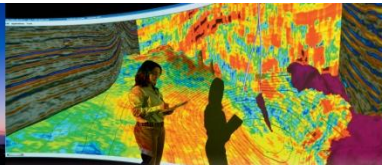
# MARATHON



# The Power of

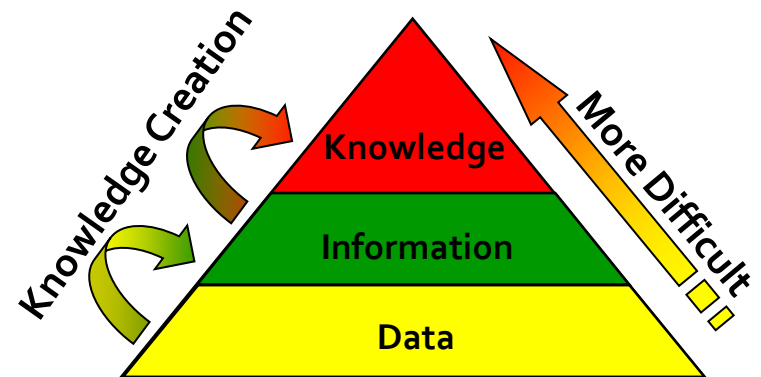


# MARATHON



# Knowledge Premise

- Can we all agree?
  - Knowledge contained in your company adds value to your business
  - Specific knowledge often gives you a competitive edge
- But knowledge is worthless unless it *flows*
  - Flow → re-use
  - No flow → useless
- So how do we get knowledge to flow?
  - It's contained in someone's head – Tacit
  - It's contained in a file (paper, digital) – Explicit



*"If We Only Knew What We Know"*

– Carla O'Dell, APQC

## Back to Darcy's Law...

$$v = -\frac{k}{\mu} \frac{\partial p}{\partial x}$$

$v$  – flow velocity

$k$  – permeability

$\mu$  – viscosity

$p$  – pressure

$x$  – distance

Mechanics:  $F = ma$   
Electricity:  $V = iR$

— *Henry Darcy*

Knowledge is ~~sticky~~. *viscous*.  
Without a systematic process and  
enablers, it won't flow.

— *Carla O'Dell*

# Getting Knowledge Flowing

- Must have the “plumbing” in place to facilitate knowledge flow
- Tools are important, but are *not* the solution
  - If you build it, they won’t necessarily come
  - Good tools help, bad tools hinder
- Focus on the people (customers)
  - What do they want?
  - Spread tacit knowledge (P2P and P2K)
  - Help tacit knowledge become explicit
  - Convince people of the value of sharing knowledge
    - To the company
    - To *themselves*

# Cultural Legacy

- Upstream was a more decentralized organization prior to 2002
  - More employees of all professions located in regional offices: more F2F
  - Virtually all non-operational professions now in Houston: good and bad
- Very open and collaborative culture – but one-to-one
  - Historically this is how everyone was mentored and how knowledge was shared
  - Decentralized structure worked OK for each region
    - What extra value may have been achieved with cross-region collaboration?
    - Some knowledge sharing occurred simply by moving people
- *Visible* knowledge sharing and collaboration needed – one-to-many, many-to-many
  - Learning this new trick...

# Some KM History

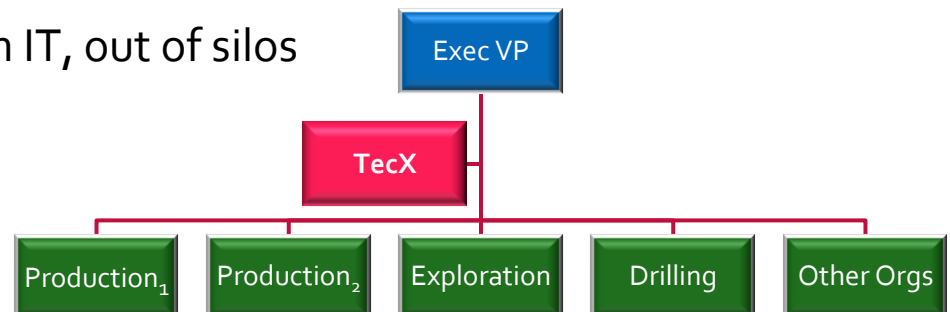
- A few local communities formed in the mid '90s, focused needs
- Formal efforts began in the late 1990s
  - IT initiative
  - Highly structured, multiple locations, highly governed
  - Established numerous Technical Peer Groups (TPGs)
  - Governance and support waned as people moved
- Remnants of the TPG effort persevered through time by
  - Enthusiastic petrotechs with credibility who wanted to lead and/or
  - One IT Business Analyst who provided continuity and support
- New IT tools gradually adopted to enhance collaboration

	BU1	BU2	BU3	BU4	BU..
Job A	Rep	Rep	Rep	Rep	Rep
Job B	Rep	Rep	Rep	Rep	<del>Rep</del>
Job C	<del>Rep</del>	Rep	Rep	Rep	Rep
Job D	Rep	Rep	<del>Rep</del>	Rep	Rep
Job ...	Rep	Rep	Rep	Rep	Rep

# Recent Developments

- Addressing Marathon's *Upstream* business only
  - Fortuitous since company is splitting in two July 1!
- Focus is on petrotechnical professions - ~715 people
- Created a new organization in 2008: Technical Excellence (TecX)
  - Career Development
  - Process Improvement
  - **Knowledge Management**
- TecX reports to Executive VP
  - Independent of business units, not in IT, out of silos

Operate in:  
10 States  
10 Countries

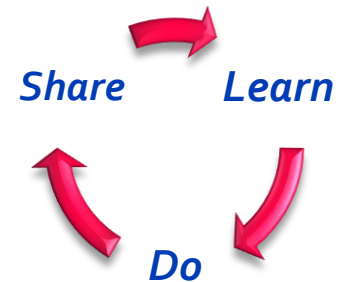




# TecX KM Activities – 1

- Knowledge Management group given goals, funding and support
  - Manager selected for knowing corporate culture first
  - Having KM awareness second (not vice versa)
- Aware of existence of 6 Communities of Practice (CoP)
  - One in the morgue
  - One in intensive care
  - Four in varying degrees of health
- Went to “school” on knowledge sharing
  - KM conferences (especially APQC’s)
  - Industry practices suited to Marathon
  - Met with other companies for BPs and LLs

Found legacy KS “mantra” ...



...and reiterated this theme

## TecX KM Activities – 2

- Began to implement knowledge sharing “no-brainers”
  - Saw value in CoPs as the main KM platform
  - Got CoPs to a healthier state by “pushing” and publicizing activity
  - Identified credible CoP Leaders and got their supervisors’ buy-in (for time)
  - Developed simple CoP “portal”  $k$  – permeability (increased)
  - Aligned CoP goals with business needs  $p$  – pressure (increased)
- Working with Marathon’s “plumbing” group (ECM), created a CoP portal
- KM Concepts and language new for most
  - CoP leaders and members
  - Management
- Obtained management support, got some trickle down, ...  $p$  – pressure (increased)

## TecX KM Activities – 3

- Learned of 6 “Advisory Groups” set up in business units
  - Convinced them they were essentially CoPs
  - Provided resources to help them collaborate better
- Had several groups come forward suggesting CoP formation
  - Stress tested whether they should be CoPs
  - Facilitated new CoP formation and existing CoP health

- Introduced “MConnect”



- Intranet portal for CoPs
- Share news, **Success Stories**, all things KS *k* – permeability (increased)
- Repository for wiki
- In one year MConnect generally recognized as *the* place to go for KS

# MConnect View

To the Wiki...

Easy to Join

Discussions facilitate  
KS and sense of  
community

Not a Member?

While all Marathon employees are able to view content on MConnect, participating in community discussions and contributing to MWiki requires membership in a Community of Practice. Request membership by clicking below.

REQUEST MEMBERSHIP

Latest News

MConnect news articles and case studies. Contact [Tim Stouffer](#) for article submissions.

One Question Demonstrates  
the Power of We!

If you're running economics on how best to produce from a new asset, who better than to ask than those who have experience doing something similar?



Drew Domalakes is a reservoir engineer for Marathon's Eagle Ford Asset Team, with some previous experience in production and completions, and wanted to evaluate artificial lifting options for economic benefit. Specifically, he had a question about how hydraulic jet pumps might be a solution for the pad-style, high-deviation wells planned for development. He posted a question on the Production Optimization and Completion Communities of Practice (CoPs) discussion boards via the "cross talk" feature. Little did he know what he was tapping into by simply making his question visible to those

Topical CoP  
news and  
Success Stories

Welcome to **MConnect**, where you can plug into **The Power of We**. This site is a portal to Communities of Practice within Marathon. The continuous sharing allows us to perform with excellence and leads to innovation. Communities are where we ask, answer and share. We go beyond data and information...to Knowledge! This central portal makes it easy to connect or simply see what other communities are doing. With all CoPs on MConnect, the ability to "cross-talk" on subjects is enhanced. We'll also share success stories and highlight community activities and events. *Learn-Do-Share!*

## Latest Discussions

The MConnect Discussion Board is a single repository serving all communities of practice. With the goal of sharing knowledge, the discussions allow members to interact with like minded people within their CoP and others. Below are the most recently added/updated threads.

Thread Title	Replies	Last Updated	Modified By
Aeolian reservoir experience! <b>NEW</b>	3	4/27/2011 10:57 AM	Scott, Erik D.
OPEX expectations for rod pump vs. plunger lift! <b>NEW</b>	0	4/27/2011 7:59 AM	Corbett, Michael T.
Looking at installing a Coalescing Separator. Anyone have experience with them?	2	4/27/2011 7:42 AM	Schilling, John A.
Pindell's GOM reconstructions! <b>NEW</b>	1	4/27/2011 5:26 AM	Blanchard, Robert H.
Instrumentation CoP (ICoP) Logo	6	4/26/2011 2:43 PM	Hall, Chris
Do you want to be alerted to Shale Resources CoP Discussions? <b>NEW</b>	0	4/26/2011 10:47 AM	Stouffer, Tim

(More Items...)

## Community of Practice and Reference Sites

### Equipment

- Chemicals (ChCP)
- Electrical (ECP)
- Fixed Equipment (FECP)
- Instrumentation (ICP)
- NAPO SCADA (SCP)
- Pipeline (PLCP)
- Rotating Equipment (RECP)

### Subsurface

- Geoscience (GCP)
- Petrophysics Corner (PCP)
- Play Fairway (PFCP)
- Reservoir Management (RMCP)
- Shale Resources (SRCP)
- Technician (TCP)

### Projects

- Project Management (PMCP)

### Wells

- Completions (CCP)
- Drilling (DCP)
- Production Optimization (POCP)

### General

- Library Information Center
- Petrotechnical Computing
- Technical Excellence (TecX)
- Young Professionals (YPCP)
- JIP and Consortia
- APQC Link

### IT (Info for all)

- 

### Quick Links

- All Discussions
- All Events
- All Images
- Membership Request

### My Dashboards

- My Summary
- Resources
- My Action Items

### Default Lists

- Task Items

### Lists

- Announcements
- External Contacts
- Links

Easy navigation  
in two places

# Sample Success Story

A Reservoir Engineer in **Aberdeen** posts a question on the Reservoir Site...



...Most Reservoir Engineers are in Houston. No expertise found among Reservoir Engineers...



## The Power of We

$k$  – permeability (increased)

..... BUT one re-posts the question on the Production Site...



The engineer found company expertise around the world AND just down the hall, via the network!

### Success!!!

...A Chemist in **Aberdeen** sees the post and *has answers* too!

...A Chemist in Equatorial Guinea monitoring the Production site *has answers*, AND re-posts on the Chemical Site...



# Continued Progress

- Performed APOC's self-assessment of KM maturity
  - Some surprises, but mostly confirmed focus areas
  - Get tacit to explicit      $\mu$  – viscosity (reduced)
- Preaching *obsessively* about sharing knowledge **visibly**
  - At CoP meetings
  - Fledgling performance metrics for individuals      $p$  – pressure (increased)
  - Keeping fresh news content on MConnect
- Contracted writing of initial wiki content      $\mu$  – viscosity (reduced)
  - When wiki goes live it will contain magnet content
  - Content based on previous work by internal SMEs
  - Gave wiki a recognizable identity: MWiki



MaraView > MConnect

Welcome Tecstest1 | MaraView | MyView | My Links | Help

**TeamView**

HConnect | News Blog | Communities | MWiki

**Quick Links**

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**MWiki**  
The Power of Knowing

MWiki is the destination for contributing and sharing content for communities of practice. Included are best practices, lessons learned, definitions & terminology, technical articles and more. All wiki entries can be edited by CoP members.

**Recent Activity**  
Recently added or updated MWiki articles. All categories.

Name	Modified By	MWiki Section	MWiki Subject	Modified
Gas Lift <b>NEW</b>	Stouffer, Tim	Wells	Best Practice	4/26/2011 4:28 PM
Plunger Lift	Melendez, Tony	Equipment	Best Practice	3/23/2011 3:18 PM
Drilling Fluid	Stouffer, Tim	Subsurface	Definition/Terminology	3/23/2011 9:47 AM
Creating a new MWiki article	Melendez, Tony	General	Process/Procedure	3/21/2011 11:50 AM
Uploading an image to the Image Library	Melendez, Tony	General	Process/Procedure	3/21/2011 11:26 AM
Creating GEOLOG color-maps	Day, Peter I.	Subsurface	Technical Article	3/17/2011 12:02 PM
Artificial Lift	Stouffer, Tim	Subsurface	Definition/Terminology	3/10/2011 2:16 PM
Zeolites near Salt Structures in the Gulf of Mexico	Stouffer, Tim	Subsurface	Technical Article	3/10/2011 11:03 AM
Pressure Transient Analysis - Characteristic Plots	Broome, Casey B.	Subsurface	Technical Article	2/23/2011 12:22 PM
Abandonment Pressure	Stouffer, Tim	Subsurface	Definition/Terminology	2/17/2011 2:18 PM
Gravity and Magnetics	Bundalo, Neda	Subsurface; Technology	Definition/Terminology	2/16/2011 3:17 PM
Seismic	Blanchard, Robert H.	General	Definition/Terminology	1/20/2011 2:53 PM
4-D Elastic Modeling	Blanchard, Robert H.	Subsurface	Technical Article	1/20/2011 2:07 PM
Anisotropic correction of sonic logs in wells with large dips	Stouffer, Tim	Subsurface	Technical Article	1/5/2011 2:01 PM
Shale Distribution and net-gross from Thomas-Steiber X-plots in Geolog	Stouffer, Tim	Subsurface	Technical Article	1/5/2011 1:38 PM
Use of "Verticalized" Stacking Velocities to Constrain Shale Properties	Stouffer, Tim	Subsurface	Technical Article	1/5/2011 1:36 PM
Statistical Method for deriving permeabilities from Core Porosity and Permeability	Stouffer, Tim	Subsurface	Technical Article	1/5/2011 1:35 PM
New Model for Absolute and End-Point Effective Permeability Estimation	Stouffer, Tim	Subsurface	Technical Article	1/5/2011 1:33 PM
Excel Sheet for Plotting Formation Pressures, Pressure Gradients and Contacts	Stouffer, Tim	Subsurface	Technical Article	1/5/2011 1:29 PM
Gas Saturation Estimation Method Using NMR Data with Uncertainty	Stouffer, Tim	Subsurface	Technical Article	1/5/2011 1:24 PM

**Page Contact:**  
Melendez, Tony  
Knowledge Management Specialist  
713-296 3652

**Guidelines**  
Guidelines for adding and editing MWiki content and frequently asked questions.

- Create a new MWiki article
- Add a MWiki Alert

Who to contact for support:

- Tony Melendez
- Tim Stouffer

**Subjects**  
There are six subject areas of wiki pages. Each subject can contain content from any section.

- Best Practices
- Definitions
- Lesson Learned
- Process/Procedure
- Software
- Technical Article

Done

Local intranet 100%

# Current Status

*p* – pressure (increased)

- Developed CoP award program
  - Rewarding behaviors
  - Coveted year-end awards



- Community of the Year
- Success Story of the Year
- Executive Champion of the Year
- Discussion Post of the Year
- KS Event of the Year
- New Community of the Year
- Leader of the Year



- Capturing and publishing success stories

- Quantifying value whenever possible (time saved, \$ earned, \$ saved, ...)
- Demonstrates individual and company benefits



# Current Status

- Loading and linking initial wiki content
- All CoPs migrated from old sites, facilitating new CoP startups
- Promoting more KS events and activities



Knowledge Sharing  
Event of the Year  
Organizers

- Taking advantage of new features of the plumbing (e.g., cross talk)



$k$  – permeability (increased)

one...

...to many

# Going Forward

- More management interaction
  - Meaningful metrics
- }  $p$  – pressure (increased)
- Add CoPs to new tool as needed
  - Encourage use of Mwiki
  - Continue to improve plumbing
- }  $k$  – permeability (increased)
- Support more KS events (F2F still needed)
  - Support more KS *between* events
  - Investigate additional rewards
- }  $p$  – pressure (increased)

# Conclusions: Get Knowledge to FLOW!

- Getting Knowledge to flow is much like the physics contained in Darcy's Law
- Increase "Permeability"
  - Improve access to knowledge
  - Build knowledge connections: *P2P* and *P2K*
- Increase "Pressure"
  - Management leadership
  - Metrics
- Decrease "Viscosity"
  - Turn tacit knowledge into explicit, actionable knowledge
- Decrease "Distance" (make things easy)
  - Bring people, knowledge and communities closer together

$$v = -\frac{k}{\mu} \frac{\partial p}{\partial x}$$

*v* – flow velocity  
*k* – permeability  
*μ* – viscosity  
*p* – pressure  
*x* – distance

# The Power of



# MARATHON

