Leveraging Global Talent for Effective Agility

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*Collaborative Applications – Data Management – Modern Platform – Expert Services*

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**Geosciences**

- **BASIN**
- **GEOPHYSICS**
- **GEOLOGY**
- **EARTH MODELING**
- **FIELD PLANNING**
- **SIMULATION**
- **DESIGN**

**Reservoir**

**Drilling and Completions**

**Production**

**DecisionSpace Platform**

**Data Management**
Nexus Reservoir Simulation

- Next Generation
  Reservoir Simulation
Petroleum Reservoir Simulation
System Workflow

User Interface → Graphical Pre-Processing → High Performance Cluster → Graphical Post-Processing
Computing Challenges

Some Simulations take hours or even days, or even …

Our Testers are Petroleum Engineers, not Test Automation Specialists

Numerical Simulation is an approximation and as such is subject to round-off and/or perturbation differences
Managing the Coming Storm

Inside the Tornado

**Project Kickoff**
When will we get the requirements?
All in good time, my little pretty, all in good time
But I guess it doesn't matter anyway
Just give me your estimates by this afternoon

**Team Unity**
Not so fast! Not so fast! ... I'll have to give the matter a little thought. Go away and come back tomorrow
No, we need something today!
Ok then, it will take 2 years.
No, we need it sooner.
Doesn't anybody believe me?
I already promised the customer it will be out in 6 months
You're a very bad man!
We’re not in Kansas Anymore

**Developer Hero**
I may not come out alive, but I'm goin' in there!

**Reorg**
The Great and Powerful Oz has got matters well in hand.

**Testing**
Hee hee hee ha ha! Going so soon? I wouldn't hear of it! Why, my little party's just beginning!
Lan Cao - Estimating Agile Software Project Effort: An Empirical Study

2X Uncertainty.
System Workflow

User Interface -> Graphical Pre-Processing

Graphical Pre-Processing -> High Performance Cluster

High Performance Cluster -> Graphical Post-Processing

Graphical Post-Processing
Test Automation Workflow

Input → Simulate → Output → Difference Engine → Report

Baseline
Testing and Automation Strategy

Complexity of Tests

<table>
<thead>
<tr>
<th>Customer Models</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekly</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Breadth of Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoke Tests (manual)</td>
</tr>
<tr>
<td>GUI Tests (automated)</td>
</tr>
<tr>
<td>Developer Tests</td>
</tr>
<tr>
<td>Every Checkin</td>
</tr>
</tbody>
</table>
Simulator Regression Tests over time

Regression Tests

- Customer X
- Customer Other
- Mid Tier
- Dev Tests
Global Expertise
(Houston, Bucharest, Ho Chi Minh City)

15 Dev
6 PE Test
2 Pgm Mgr
2 Prod Mgr

3 Dev
3 PE Test

4 Auto Test

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The Bottom Line

Defects Found in Beta

2010: 36
2009: 222

Known Issues at Ship

2010: 3
2009: 104

97% Reduction
Distributed Teams
Context Leadership Model

![Graph showing the relationship between Project Complexity and Uncertainty. The x-axis represents Project Complexity (Low to High) and the y-axis represents Uncertainty (Low to High). The graph indicates that when Project Complexity is Low, Uncertainty tends to be High, and when Project Complexity is High, Uncertainty tends to be Low.]
Context Leadership Model

- **Colts**: Simple, young projects. Need agility. Tight Teams.
- **SheepDogs**: Laissez faire.
- **Bulls**: Agility to handle uncertainty. Structure to cope with complexity.
- **Cows**: Complex, mature market. Need defined interfaces.
Partitioning

Search for Loose Coupling and Strong Cohesion
## A Tale of 4 Projects within a Program

<table>
<thead>
<tr>
<th></th>
<th>A Cow</th>
<th>A Colt</th>
<th>A SheepDog</th>
<th>A SheepDog</th>
<th>A Bull Program</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Team Size</strong></td>
<td>20</td>
<td>8</td>
<td>2</td>
<td>5</td>
<td>35 (4 teams)</td>
</tr>
<tr>
<td><strong>Distributed</strong></td>
<td>Global (3 sites)</td>
<td>Global (2 sites)</td>
<td>Local</td>
<td>Global (4 sites)</td>
<td>Global (4 sites)</td>
</tr>
<tr>
<td><strong>Scrum</strong></td>
<td>3/week</td>
<td>Daily</td>
<td>Daily</td>
<td>2/week</td>
<td>none</td>
</tr>
<tr>
<td><strong>Iteration Length</strong></td>
<td>3 weeks</td>
<td>1 week</td>
<td>1 week</td>
<td>Iterationless</td>
<td>3 weeks</td>
</tr>
</tbody>
</table>
Outsourcing Challenges
Outsourcing Challenge: Proprietary Data
Outsourcing Challenge: Time Shift

8 hours

12 hours
Outsourcing Challenge: Xenophobia
Key Take Aways

- Find and Correct Defects Early to Reduce Uncertainty
- A Testing Strategy Helps to Maximize Efficiency
- Test Automation Helps to Maintain Velocity
- Outsourcing Can Work When Used Judiciously.
- Treat Outsourcer as a Partner
- Cost Effective Global Talent
- Distributed Teams Can be Effective
- Test Automation Does not Replace Exploratory Testing
Leverage Global Talent
Think Globally and Optimize the Whole
Automate – Automate - Automate
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STAND BACK AND DELIVER

ACCELERATING BUSINESS AGILITY