Optimizing Optimization Implementation

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What are we using and where?

Technologies:

- Genetic Algorithms
- Neural Networks
- Simple Statistics
- Data Mining
- Particle swarms

Business Problems:

- Exception reporting
- Scheduling well stimulation
- Parameter estimation
- Asset development optimization
- Maintenance schedule optimization

So what do these projects have in common?

Remember the Goal – It's the business problem stupid.

- The goal is to solve a business problem
- The world's best technical solution that's not used is a failure
- Typically you need to both:
  - Provide a tool
  - Change a work process
- Let the problem drive the method, not the method drive the problem.

Start small – Grow from Success

- When trying to deploy new technology it is better to take small steps first, establish credibility, then take the bolder steps.
- Early success often leads to excited expectation building and scope creep:
  - You want this, but
  - You must control it
  - Phasing can help

No matter how much upfront work you do you won't get it right so…

- Rapid prototyping helps – once people have something to play with you get better feedback
- However don't completely dispense with upfront work, you still need to have robust:
  - Database designs
  - Object interfaces
  - Suitable, flexible architecture
- Your first release may well end up being a throw-away

You can't communicate enough

- Maintain close and regular communication with all the stakeholders especially those who own the existing process
- Ensure the work team is diverse including operations, business unit experts, and technology experts. Include the current process owners early and keep them involved. You need strong interest for a successful change. Finding people with passion is a plus.
- You need to have a person from the business unit to champion and for coordination with the asset and the effort involved is significant. Getting these people and a large portion of their time is a challenge.

The problem you've been given may not be the problem that needs to be solved

- Measurement frequency needs to be in synch with decision frequency. If we only measure weekly we do not have enough information for daily decisions.
- Having large quantities of data does not equate to having lots of information
- Often we derive unexpected benefits just from standardizing the process.

Challenges

- For each of the projects our biggest challenge has been changing the existing business practice.
- As we continue to learn how to implement these changes we need to find ways to reduce cycle time from generation of the idea to adoption of the technology change.
- Staff may be doubtful of these techniques making implementation difficult.
- You must get the buy-in of the right people to achieve success, getting buy-in for new technology is usually difficult. It frequently depends more on your accumulated creditability than on any rational criteria.