



Opportunity Assessment

A Search for Value

Complexity Science

- Complex operations can be modeled, simulated, and optimized using Complexity Science, a type of artificial intelligence technology
- The techniques we use come from the study of Complex Adaptive Systems and
- Nature's own complex systems such as a swarm of bees, colony of ants, flock of birds, school of fish, or a termite mound

Opportunity Assessment

- The first phase of a VGO project is an assessment of the opportunity to create value for the client
- Assessments may be the most powerful tool for qualifying projects and developing solutions



Opportunity Assessments

- Interview all persons concerned with the potential project
- Include representatives of the affected groups in the assessment project team
- Plan how project might go
- Predict major risk factors and uncertainties
- Predict how risk might be mitigated
- Estimate the financial benefits of the project
- Write summary report that includes a qualitative model or design

The Assessment Report

- Contain all original prose (no boilerplate)
- Can be 40+ pages in length or a set of slides presented in a last-day briefing
- Describe multiple focused projects that could produce great value
- Lay out how those projects could go forward
- Present a conservative business case for each
- Discuss work process change as well as optimization

Financial benefits

- Use conservative estimates of project potential
- Make sure the people who will be affected by the project agree with the estimates
- Our default goal: find projects that pay back ten times as much per year as their one-time cost
 - Approval thresholds are generally lower than this, so the major question given the estimate is whether the deciders believe us

Estimating Financial benefits

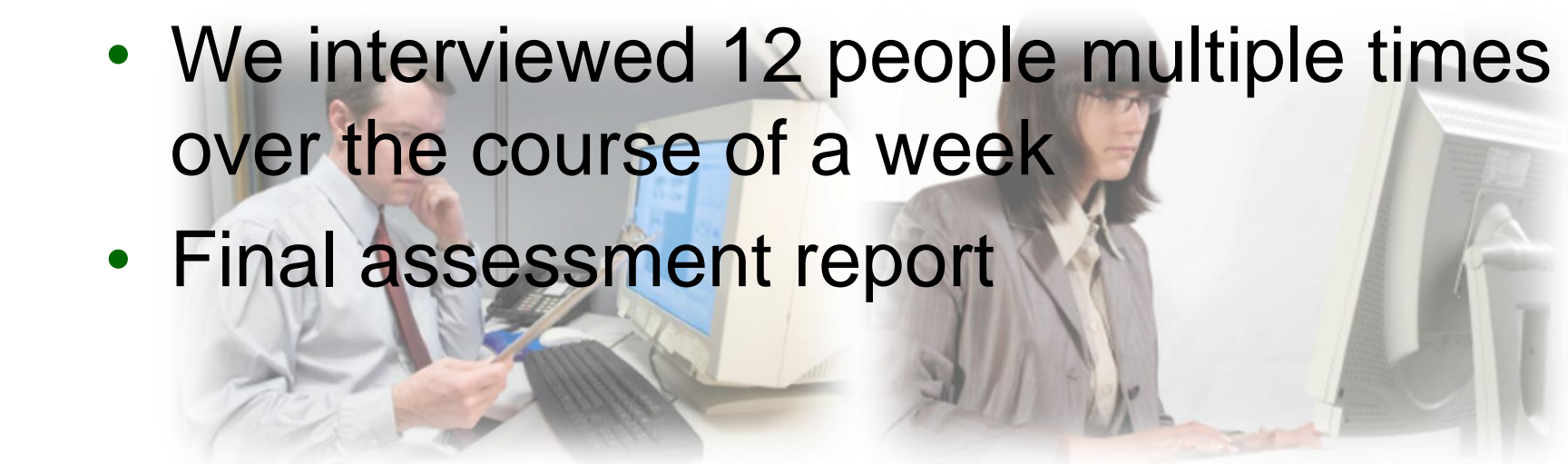
- Include costs to the company in the estimates
- Refer to prior projects to support estimated benefits
- Don't forget ongoing maintenance costs
- Don't ignore the costs and risks of work process changes

Three Example Assessments

- Example assessments
 - Office equipment company
 - Oil field
 - Manufacturing company

Office Equipment Company

- Primarily a data mining assessment, with some complexity science potential
- Team included two of us and two representatives of the client group
- We interviewed 12 people multiple times over the course of a week
- Final assessment report



Office Equipment Company

- There was no tight focus before the assessment began. The purpose was to identify good data mining possibilities
- We asked each person we interviewed, “If the quality of your data were not an issue, what questions, if answered from your data, would most impact your profits and work processes?”

Office Equipment Company cont.

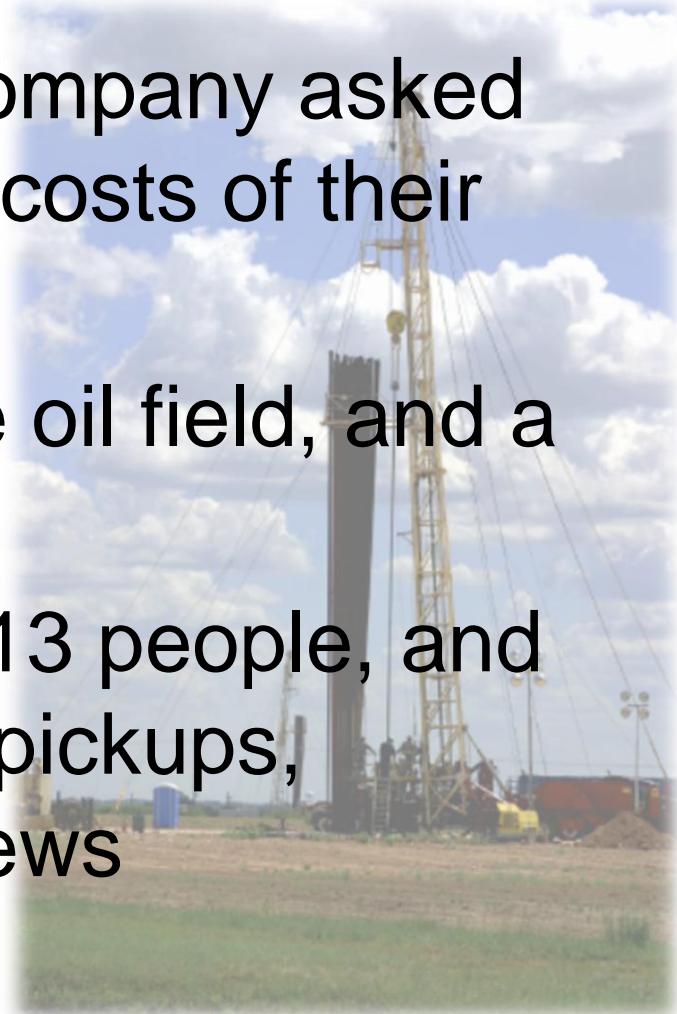
- We received more than 30 questions in the replies
- People interviewed were enthusiastic—like opening up a candy store
- On the last day, a large group sorted the questions into three groups of ten.
- Each had value, and the first group could be attacked immediately

Office Equipment Company Results

- The assessment went quickly to a data mining engagement
- There was alignment on the client side from the start—all the decision makers had been interviewed during the assessment
- The decision makers had helped create the target list of questions to address
- Of the ten questions, the answers to four were unexpected and highly valuable
- The answers to six questions were as expected, but being certain allowed the client to act on those answers

Oil field (well workovers)

- A Houston-based energy company asked us to help them reduce the costs of their well workovers
- We spent two weeks on the oil field, and a week to write up the report
- We interviewed more than 13 people, and spent many hours riding in pickups, observing well workover crews



Oil field (cont.)

- We observed idle time for the workover crews and identified its cause—unexpected repairs
- We helped the company to formulate a new approach to characterizing well workovers—probabilistic descriptions of workover projects

Oil field (cont.)

- The assessment team recommended that the company use a new metaphor for planning well workovers
- The new approach included probabilistic simulations and an optimizer
- The new approach required dramatic changes to the existing work process
- The field crews were in agreement with these potential changes
- The assessment report included recommendations for handling change management

Oil field (cont.)

- The field crews were in agreement with the approach
- A project started within a few months
- The project was successful
- The approach, started in one oil field, is now being implemented worldwide
- The planners now feel that they are correctly planning under uncertainty instead of the constant stress of reacting when the unexpected happens

Oil field Results

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Manufacturing Company

- The problem was highly variable demand forecasts coming from a client company
- We were called in to use our demand forecasting tools to produce better demand forecasts
- The assessment team included two of us and three members of the client company

Manufacturing Company (cont.)

- We spent a week interviewing more than 20 people at eight client sites
- We learned how the entire demand forecasting process worked in the client organization (first time this had happened)
- We ended the week by meeting with a representative of our client's client

Manufacturing Company (cont.)

- The representative agreed that their demand forecasts were bad and suggested, for 75% of the items in question, a coordinated manufacturing system using cards with specifications and requirements
- No demand forecasts were needed for this approach
- For the remaining 25% of items, a different approach would be used

Manufacturing Company Results

- The outcomes of the assessment were interesting:
 - An understanding of the entire demand forecasting and planning process in the client company
 - An understanding of the financial impact of bad demand forecasts in the client company
 - An understanding of the costs and benefits of the new approach to inventory maintenance, which was an entirely unexpected solution

Assessments are the Ultimate Qualifier

- Clients are billed for Assessments
- They often doubt the value of an Assessment before it begins, but never afterward
- Assessments have many valuable outcomes:
 - Plans no one would have thought of in isolation
 - Understanding of the entire work process
 - Integrated approach, with team agreement on costs, risks, and potential benefits

Assessments are the Ultimate Project Identification Tool

- More than 85% of our Assessments lead to further project phases
- No client has ever complained about the value of an Assessment
- Assessments are intense, and so are bonding opportunities
 - The client members of the team get a feeling for how it would be to work with you
 - You get a feeling for how it would be to work with them

Final Word

- Assessments are the perfect tool for
 - Creating a good plan for solving a corporate problem
 - Creating an understanding of the work process related to the problem
 - Estimating the risks and benefits of the plan
 - Building support inside an organization for the proposed solution
 - Qualifying clients for subsequent projects