

# Uncovering Hidden Value in a Clean Water Act Negotiation

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## Smartsettle Infinity Simulation

Presented by

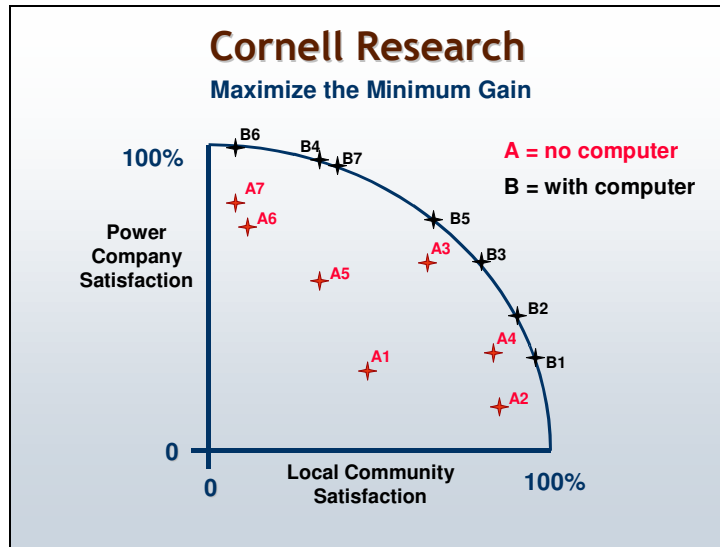
Bob Wheeler, Triangle Associates Facilitator  
Cole Gainer, Triangle Associates Facilitator  
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Carissa Boynton, Certified Smartsettle Facilitator  
Paul Miniato, Certified Smartsettle Facilitator  
Ernest Thiessen, iCan/Smartsettle President

on June 18, 2008 for the

7<sup>th</sup> Annual International Forum on Online Dispute Resolution  
Victoria, BC Canada

The participants in this case study simulation were guests of Colin Rule, Chairman of the session on ODR and Environmental Concerns at the Forum. The simulation context is a negotiation that occurred in 2007 between various parties in government and industry to improve the US Clean Water Act regulations. The results of that negotiation were submitted as recommendations to the US Environmental Protection Agency in December 2007.

Smartsettle Infinity is a comprehensive eNegotiation system designed for complex multi-party negotiations. The following illustration shows data from Thiessen’s research at Cornell University using an algorithm called “Maximize the Minimum Gain”. A number of dyads were assigned roles in a negotiation between a power company and a local community. Half of the dyads negotiated with computer assistance and half negotiated without that assistance. Those that used the computer produced agreements on the efficiency frontier.

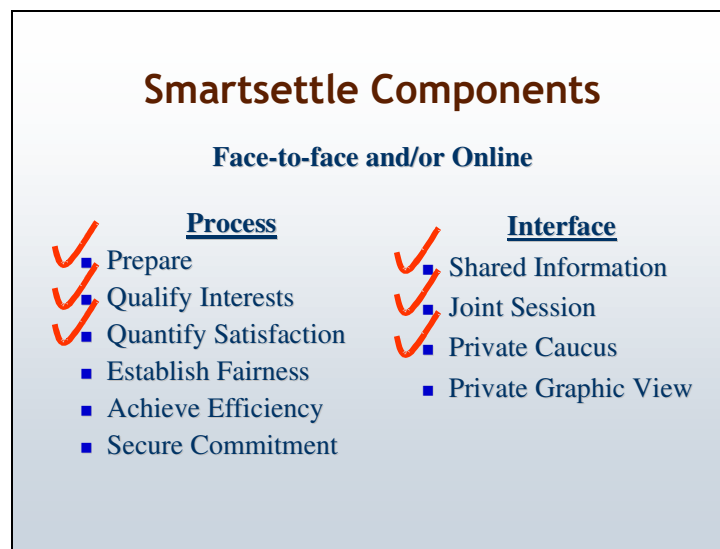


On average, those that used the computer achieved 16% better outcomes for each party than those that did not use the computer. Note that the gains measured in this experiment did not include any time-savings.



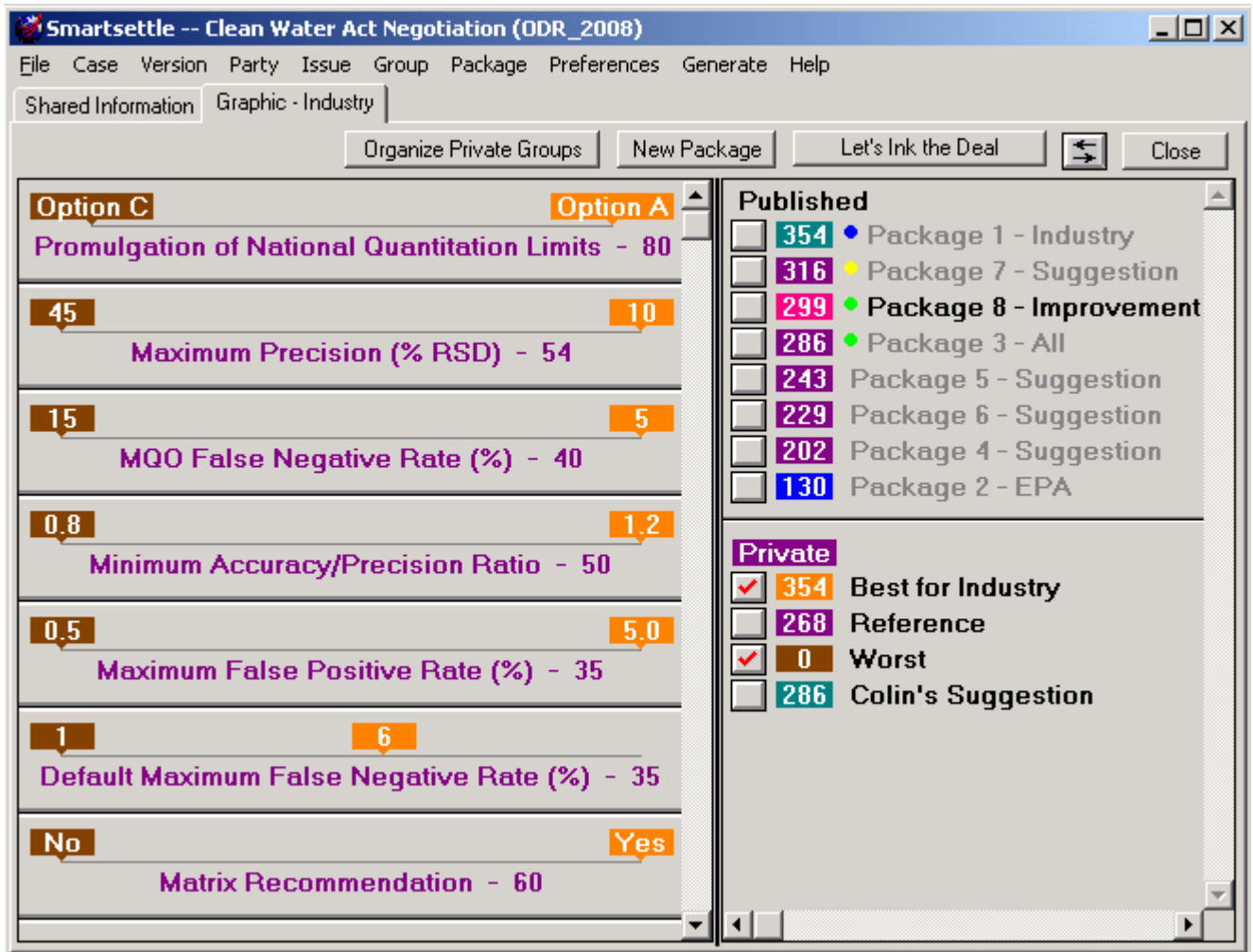
The simulation conducted for the session at the 2008 ODR Forum sought to validate the results of Thiessen's previous research. This simulation was simplified to two parties; EPA and Industry. The objective was to negotiate better criteria for the Clean Water Act. A Reference package was created by setting values approximately at the middle of the identified bargaining ranges. The goal of the simulation was to reach an agreement that would be better for each party than the Reference package.

The simulation assumed that the parties had already completed certain steps of the Smartsettle process and had used various interface components as checked in the following illustration.

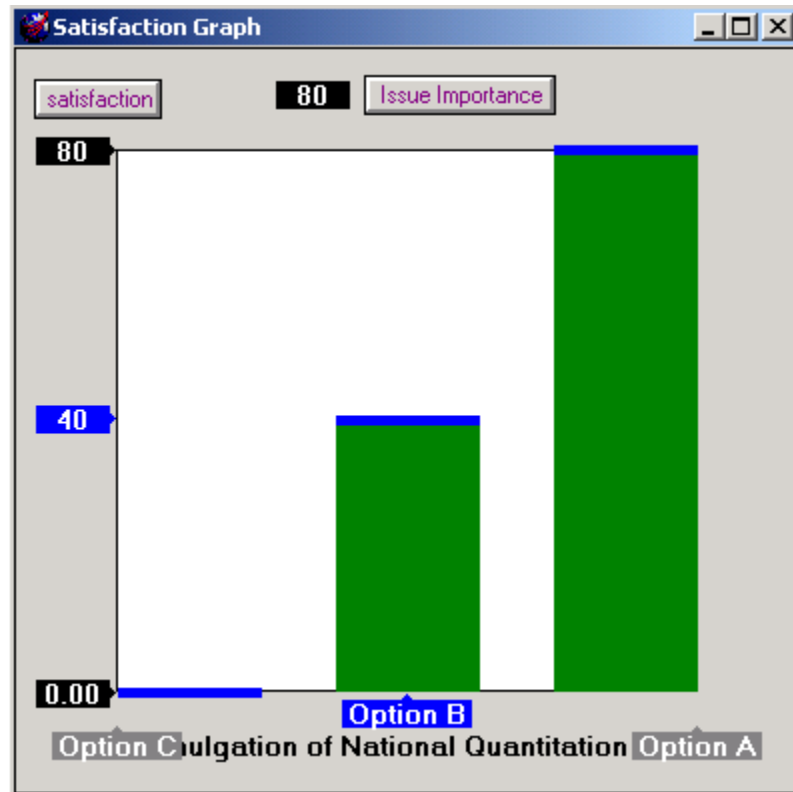


The Framework for Agreement used for this simulation is appended. It was built around seven issues extracted for the purposes of the simulation.

The following screenshot shows Industry’s private graphic view at the end of the simulation. On the left side of the screen are listed the seven issues as detailed in the Framework for Agreement. Beside each issue is shown its importance to Industry. Each point is an arbitrary unit that was set by Industry. The most important issue to Industry, set at 80 points, is worth more than twice as much as the least important issues, worth 35 points. The total number of satisfaction points available amounts to 354, as shown with the orange ‘Best for Industry’ private package.

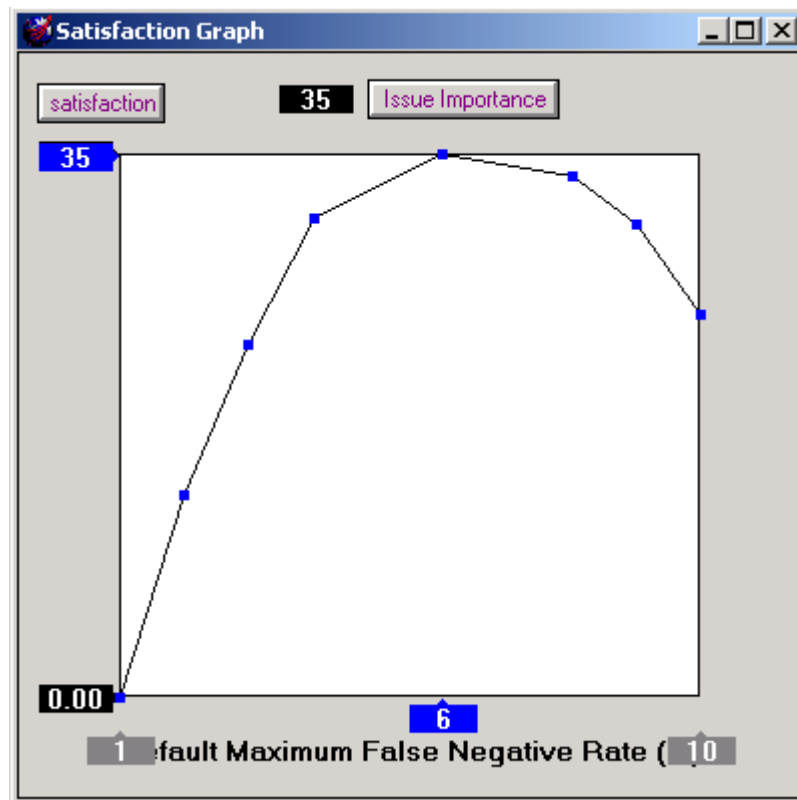


The following screenshot shows the satisfaction graph for Industry for ‘Promulgation of National Quantitation Limits’. There are three possible outcomes to this issue. Option B would be worth 40 out of a total of 80 points.



The two least important issues to Industry are each worth 35 points. On the following page is the satisfaction graph for ‘Default Maximum False Negative Rate’. This graph peaks at 6%, which would be the best outcome for Industry, therefore garnering all 35 points. A higher or lower percentage would produce less points.

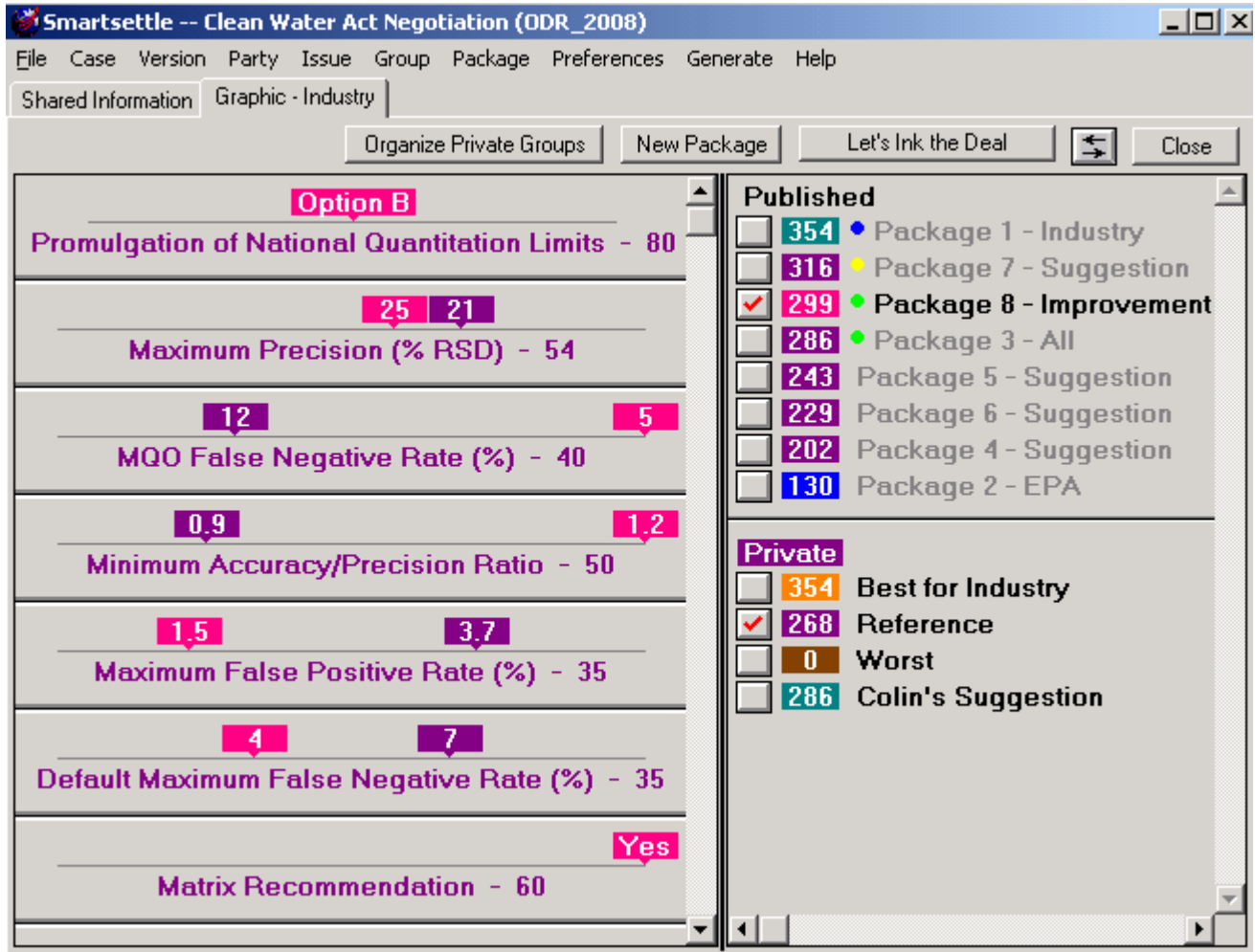
On the right side of Industry’s private graphic view are shown two groups of packages. The Private Group, used for Industry’s planning purposes, holds four packages. Two of these packages, labeled ‘Best for Industry’ and ‘Worst’, are displayed in the private graphic view for Industry shown above. The scales have been adjusted so that the Worst package is worth zero. ‘Best for Industry’ is then worth 354 points, which is the same as the total importance for all the issues. By default, Smartsettle orients the bargaining ranges so that the most preferred outcome is on the right-hand side of the bargaining range in each party’s private view. The satisfaction graph for ‘Default Maximum False Negative Rate’ is an exception because it peaks in the middle of the range at 6%.



The published group holds published Proposals and Suggestions. After each party submitted their best package as an optimistic Proposal, Suggestions were published. The Suggestions were either generated by Smartsettle or published by the parties directly. Coloured dots are used to indicate acceptance and package status. Industry's first proposal (Package 1) is indicated with a blue dot. A yellow dot beside a package indicates an acceptance that is hidden from EPA. Such a package could potentially become an agreement if EPA were to accept the same package. A green dot is used to mark a package that has been accepted by all parties and selected by Smartsettle for agreement. Package 3 labeled 'All', and marked with a green dot, was originally a Suggestion published by Colin Rule representing Industry. This Suggestion became the first tentative agreement when EPA also accepted it. Subsequently, an Improvement was generated by the system (Package 8), which became the final agreement after both parties accepted it.

On the following page is another screenshot of Industry's private graphic view showing the Final Agreement (Package 8) compared to Industry's private Reference Package. The values set on each issue for each package are displayed on the left side panel. The table below shows the satisfaction ratings derived for each party for the Reference Package and the Final Agreement and calculates a percentage improvement for each party.

The distribution of gains for each party was determined largely by Package 3, which was suggested by Industry and became a tentative agreement when EPA accepted it.



The screenshot shows the Smartsettle software interface for a 'Clean Water Act Negotiation (ODR\_2008)'. The main window displays 'Option B' with several parameters:

- Promulgation of National Quantitation Limits - 80
- Maximum Precision (% RSD) - 54 (with sub-values 25 and 21)
- MQO False Negative Rate (%) - 40 (with sub-values 12 and 5)
- Minimum Accuracy/Precision Ratio - 50 (with sub-values 0.9 and 1.2)
- Maximum False Positive Rate (%) - 35 (with sub-values 1.5 and 3.7)
- Default Maximum False Negative Rate (%) - 35 (with sub-values 4 and 7)
- Matrix Recommendation - 60 (with sub-value Yes)

On the right side, there are two lists of packages:

- Published:**
  - 354 Package 1 - Industry
  - 316 Package 7 - Suggestion
  - 299 Package 8 - Improvement (checked)
  - 286 Package 3 - All
  - 243 Package 5 - Suggestion
  - 229 Package 6 - Suggestion
  - 202 Package 4 - Suggestion
  - 130 Package 2 - EPA
- Private:**
  - 354 Best for Industry
  - 268 Reference (checked)
  - 0 Worst
  - 286 Colin's Suggestion

When generating the Improvement, Smartsettle attempted to distribute the remaining value fairly to each party by using an algorithm called “Maximize the Minimum Gain”.

Party	Reference Package Satisfaction	Final Agreement Satisfaction	Improvement <sup>1</sup>
EPA	129	162	26%
Industry	268	299	12%
<b>Average Improvement</b>			19%

**Conclusion:** Relative to a preset Reference package, Smartsettle Infinity was able to uncover substantial hidden value for each of the parties in this simulation. The average improvement, calculated at 19%, exceeded the research predictions cited earlier in this paper.

<sup>1</sup> This simulation was conducted for illustrative purposes only in order to show Smartsettle Infinity’s potential for uncovering hidden value. The scenario is based on estimated party preferences. Results should not be interpreted for any practical purpose concerning the Clean Water Act regulations.

# Smartsettle Infinity Simulation

7<sup>th</sup> Annual International Forum on Online Dispute Resolution

Victoria, BC, June 18 -19, 2008

## Clean Water Act Negotiation

### Framework for Agreement

#### Objective

Improve criteria for the Clean Water Act

#### Parties

- EPA
- Industry

#### Issues

The Committee recommends the following.

#### 1. Promulgation of National Quantitation Limits (Option A, Option B, Option C)

Does the FACDQ recommend:

- a. That QL methods be promulgated for future methods using the FACDQ recommended multi lab procedure?
- b. That no QL's be incorporated into future or existing methods unless the QL was developed using the FACDQ recommended multi lab procedure?
- c. That QL methods be promulgated for future methods using a procedure other than the FACDQ recommended procedure?

## 2. Limits for QL MQOs for Future Promulgation of New or Updated Methods

The FACDQ recommends the Technical Work Group develop recommendations for target MQO bounds for compliance and enforcement that define Quantitation. The TWG will bring these recommendations back to the FACDQ.

- A. Maximum Precision = \_\_\_% RSD
- B. Accuracy (measured as recovery for single determination) = 20-180%
- C. MQO Maximum False Negative rate = \_\_\_\_\_%
- D. Minimum Accuracy/Precision Ratio = \_\_\_\_\_

## 3. Maximum false positive rate (%)

The Committee recommends that a  $\leq$  \_\_\_\_\_ % false positive rate be used for detection.

## 4. Default Maximum false negative rate (%)

The Committee recommends that for promulgated methods listed in 40 CFR Part 136 without established Measurement Quality Objectives, the initial Measurement Quality Objective for quantitation (upon implementation of the new quantitation procedure) be a specific false negative rate ( $\leq$  \_\_\_\_\_%) to be implemented through a multiplier of the Detection Limit, and that precision and accuracy for individual analytes/methods be generated and promulgated, as the data to support those Measurement Quality Objectives becomes available.

## 5. Matrix Recommendations Industry (Yes or No)

The FACDQ recommends that EPA publish new guidance on matrix effects. At a minimum, the guidance should outline the appropriate level of matrix effects validation necessary for method promulgation for analytical methods to be considered for 40 CFR Part 136. The FACDQ recommends that EPA adhere to this guidance in methods it develops and validates for promulgation in 40 CFR Part 136. This guidance should also address the following:

- Determining the appropriate number of matrices to take into account.
- The level of validation required verses the proposed scope of use for the analytical method.
- Matrix effects validation in the ATP program.
- Impacts for consensus standards methods considered for part 136.