Problem Statement for Data Analytics

Scenario:

Marvel Oil Company (MOC) owns acreage in a conventional oil field and some wells are prolific producing wells and some of the wells are either not producing or not producing up to their potential. There are few water injectors in the field as well. Most of the wells have remedial actions (events) that were done in the past and the consequent effect on production can be observed.

As part of an initiative, MOC wants Schlumberger to identify the low producing wells and recommend actions to bring them back online and also quantify the production increase based on the remedial actions.

There are proven first principle ways in which Schlumberger can ascertain the low producing wells, separate the wells based on reservoir/wellbore issues along with suggesting the remedial actions and quantifying the production increase after implementing remedial action. But this entire process could last weeks in the current tools. Hence we want to partner up with a data analytics company to address this problem in an accelerated manner.

Data:

Data will be provided in the form of an access database.

- Well location
- Oil production rate
- Gas production rate
- Water production rate
- Water injection rate
- Pressures (some wells)
- Date and Events on the well (WO, Acidizing etc.)

More data is available in the access database and can be used to develop models if required.

Success Criteria:

Based on the available data, you should be able to:

1. Correlate the events with production signatures i.e. try to define why a specific event happened in a well in relation with all the production parameters.
2. Quantify the effect of each event type – Did it increase production short term / long term? Did it decrease production short term / long term? If that event didn't happen would the well have produced more or less?
3. Based on the prior findings, for a well, advice which event needs to be implemented and quantify the effect on production with uncertainty ranges associated with the success of that event implementation.
4. Based on the event implementation, rank all the wells based on what event is advisable and what production change to expect after the event is implemented.