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IMPROVING GEOMODELING PROJECTS WITH TEAM MANAGEMENT TECHNIQUES

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When one thinks about geomodeling, one pictures well data, geophysical data, geological concepts and engineering measurements successfully combined together thanks to complex integration techniques and advanced geostatistical methods. The result is the geomodel, a coherent static model of the reservoir. Numerous papers have been published and will continue to be published about those aspects of the geomodeling.

Beyond that, and maybe more fundamentally, geomodeling is about a set of specialists asked to join a team – a geomodeling team – with the goal of creating the geomodel. If those specialists can't work well together, by aligning their respective visions about the reservoir and their respective objectives for the geomodel, the integration of the static and dynamic data will not be optimal.

In the same way that a geomodeler will improve his/her model through a deeper knowledge of the data and the science, the authors believe that a geomodeling team can be made more efficient by applying team management techniques. This presentation will describe the three main challenges that the authors faced in the geomodeling teams they joined: structure of the team, conflicts between tenants of different techniques and communication around the notion of uncertainty. Each challenge will be illustrated with several concrete examples. Some suggestions will also be given on how to avoid or fix each problem.

The first main challenge is to decide whom to integrate within the team, what amount of time they will have to spend on the project and how they should interact one with the other.

Do we need a geomodeling expert or will the geomodeling tasks be completed by the geologist, the geophysicist or the engineer? In the early days, it was often the task of the geologist. Nowadays, geomodeling teams tend to involve a specialist whose only job will be to create the geomodel.

Will the team consist only of the geomodeling expert, with a minimum involvement from the other experts, or shall we book our other experts (geologist, geophysicist…) for a large amount of time as well? At first, geomodeling was simply about loading data

interpreted before the project started. However, with the advance in geomodeling packages, geomodeling projects involve more and more some level of re-interpretation of the data during the project itself. This re-interpretation can create frustration for some experts who thought that they joined the geomodeling project with an already complete interpretation. They don't expect their work to be reviewed and even less criticized in view of the other available data. Some experts might be reluctant at joining a geomodeling team because of the fear of seeing their input scrutinized and edited.

How can we integrate a geomodeling consultant within our team? Many companies don't have an in-house geomodeling expert so they will hire a consultant for the time of their project only. On one hand, the team will have limited time to integrate efficiently this outsider. On the other hand, the geomodeling consultant must also be very cautious at not just getting the data and doing his job in isolation. He/she must make the effort to integrate within the team as well.

The second main challenge is the opposition between some adepts of old-school techniques, which were developed before geomodeling grew as a science over the last 30 years, and some adepts of geomodeling itself. This problem expresses itself through comments such as "Why do we need geomodeling? We did well without so far" or as "The geomodel will replace the results done by hand in the past: we can ignore those from now on". The consequence is endless discussions about the pros and cons of each approach, based on the idea that one vision should win over the other. It creates resentment between the team members as well as delay in the delivery of the model. The solution is often to define a middle ground that combines both set of techniques together. It is for example the case of the integration of pre-existing geological contour maps in a geomodel, or of the integration of geometrical shape factors techniques into a geomodeling project.

The third main challenge is the lack of communication between the different experts about the limits of the data and interpretation they each provide. For example, geomodelers often ignore the uncertainties hidden within the logs they receive from their petrophysicists. They focus their work on modeling the uncertainties between the wells, instead of also looking at the uncertainty of the log values themselves are. Similarly, geomodelers create numerous, equiprobable representations of the reservoir. But they often end up providing only one grid to flow simulation, thereby losing all the static uncertainty they so carefully documented.

These three challenges illustrate how team management techniques can be applied to the geomodeling team. These techniques will allow the team to create an environment favourable to analyzing the data together and finding the best techniques to build the 3D model.