

## Low-cost Allocation Systems

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Hydrocarbon accounting is the industry term used to describe how ownership of gas and oil is determined and tracked from production to sale. It encompasses several business processes that are usually defined or controlled by sales contracts or operating agreements. The grouping and governance of these processes differs from organisation to organisation but, at its simplest, hydrocarbon accounting can be broken down into data acquisition and validation, allocation calculations and results distribution.

Data acquisition usually involves the collection of measured information about the quantity and quality of oil and gas being produced. This is generally achieved via a combination of electronic interfaces and manual entry by system users. Allocation calculations are those operations that must be performed to properly and equitably determine the ownership of hydrocarbon products. The execution of these calculations is generally a key part of an operator's obligation to their partners, system users and to the relevant governmental bodies. The resulting information is then distributed to those interested parties via the usual spectrum of paper reports, electronic files and system interfaces.

Of course, behind this simple picture lurk some significant complexities and challenges. Not least among these is that of controlling the cost of the necessary computer systems. Forming a gamut of ad-hoc spreadsheets, product-based implementations and bespoke developments, these "allocation systems" tend to be neither as straightforward nor as standardised as one might reasonably expect. Additionally, the many constraints on their function – including stock-market regulations; internal and external audit requirements; and the need to keep multiple, self-consistent versions of data and results – have resulted in a significant gap between their expected and actual cost.

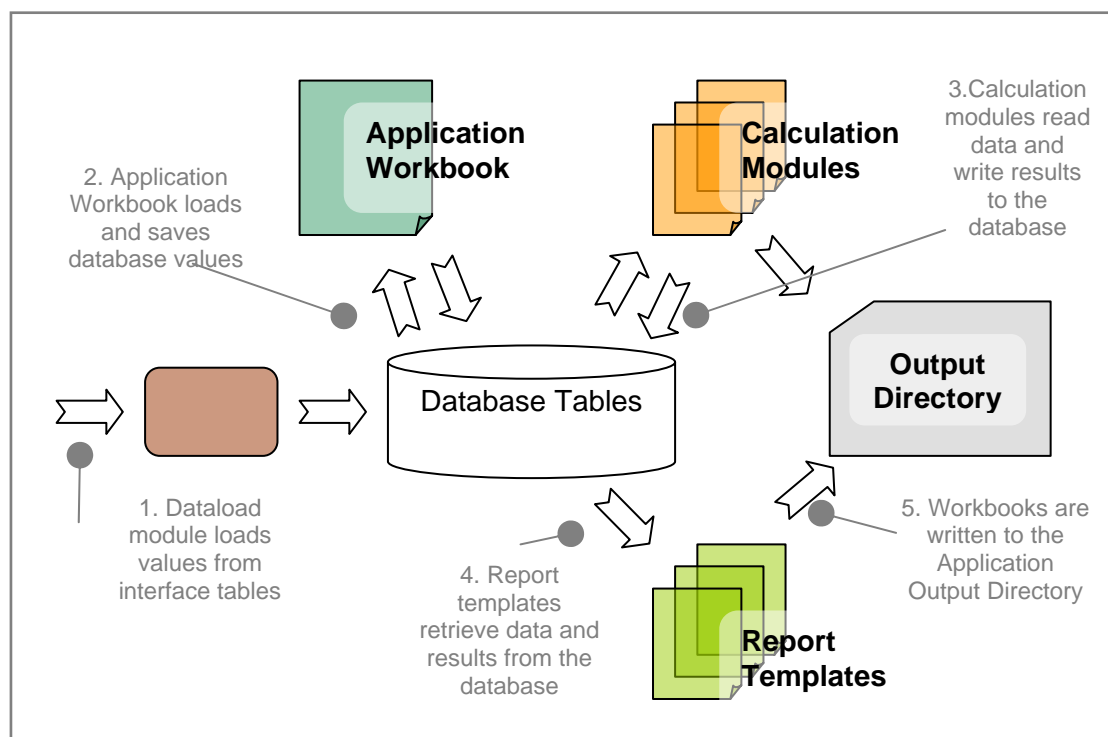
Discrepancies of this nature are not unusual in information technology – a cheaper-than-expected business software solution is a rare thing – but there are effective steps that can be taken to reduce costs with minimal impact on functionality.

Many of these are well illustrated by a recent case in the UK. A North Sea company, operating a multiphase sub-sea pipeline, had a requirement to perform allocation of delivered gas and condensate back to the contributing offshore fields. The project economics precluded both the modifications that would have been necessary to incorporate this with the operator's existing systems and the purchase of a large product-based solution. Looking to the market for a more cost-effective solution that would nevertheless meet their needs, the operator selected an allocation system implementation with the following attributes:

- a vendor company whose primary strength was their business expertise in this area. This allowed for shrewd decision making during system design, maximising overall value-for-money and minimising complexity;
- a software solution based on ubiquitous technologies: in this case Oracle's database product and Microsoft Excel. No licence costs were incurred and no infrastructure changes were necessary. Further, the relevant technical expertise was readily available. It is worth noting at this point that spreadsheet solutions have a poor reputation in this area, generally being regarded as having inferior access-control mechanisms and as being insufficiently robust. While many spreadsheet-based systems conform with this preconception, some do not. It is far from inevitable that a spreadsheet solution will be unsatisfactory. In fact, much of the expense associated with today's hydrocarbon allocation products derives from vendors' attempts to mimic the flexibility of Excel. Much can be saved by following the old cliché and not re-inventing that particular wheel;

- close integration with existing enterprise systems. Capitalising on existing functionality within the operator's systems portfolio minimised the need for complex data acquisition interfaces and sophisticated ad-hoc reporting tools or visualisations;
- complete transparency of calculations. Presenting details of all calculations to system users in a clear and accessible fashion made for highly efficient user acceptance testing and rapid problem diagnosis: no complex or inscrutable log-files were generated;
- a small implementation team. This made it easier to protect the integrity of the system design and allowed unfettered intra-team communication.

Addressing the problem in this way also reduced the burden of two of the other challenges normally present when developing this type of system, namely the availability of sufficient business expertise and access to technical skills. Operator staff with relevant expertise usually have 'day-jobs' which preclude their involvement in projects. Complex technologies, although potentially powerful, necessitate the employment of highly specific – and therefore scarce – IT skills. Reducing complexity ameliorates both of these problems, which has a further positive effect on cost and project timescale.



An architecture for low-cost allocation systems

A simple, transparent approach to implementing allocation systems, and the use of ubiquitous technology can allow operators to liberate perhaps 85% of the available value for some 35% of the cost of typical allocation system implementations. In this time of increasing acquisition and divestment of assets, and with the development of marginal fields becoming more common, ever more operators will be driven to seek low-cost allocation systems. It is reassuring, then, that such things may actually be found.

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