

SPE 144334 Automation of the Oilfield Asset Via an Artificial Intelligence (AI) – Based Integrated Production Management Architecture (IPMA)

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Integrated asset management (IAM) requires the combined efforts of several disciplines and technological tools to allow minor issues which result in poor and delayed decision making to be avoided. It is also important to consider that there are increasing information requirements at all business levels e.g process management, marketing, etc. IPMA (Integrated Production Management Architecture) is composed of three layers: connectivity, semantic and management:

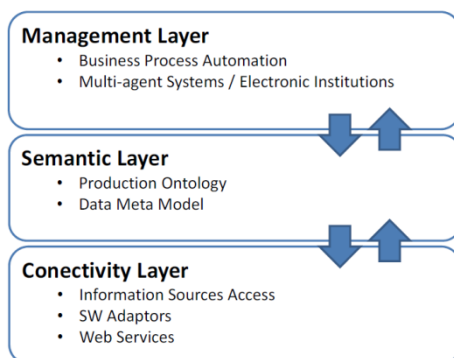


Fig. 1 — Integration Production Management Architecture.

The connectivity layer defines the mechanisms which will allow access to process state information frequently stored in several information sources, its objective being to extract process information from data sources and expose it in a common scheme.

The semantic layer provides meaning to the information exchanged between enterprise applications and render them intelligible for all of the IT platforms and end users.

The management layer provides the workflow automation layer of the oilfield business process.

The benefits of such a system are:

- Standardised mechanism for accessing process state information sources.
- Oil Production Ontology with the main concepts required for information exchange between the production applications.
- Decrease in information search time.
- Flexible and intelligent mechanism for the oilfield business (process automation)
- Business process automation schema result in emerging optimisation mechanisms for oilfield management, providing coordination and negotiation between EI agents in the management layer.