**Expertise**  
*This field is limited to 120 characters.*

Software engineering (Analysis, Design and Development), Development techniques like TDD, Agile software development

## Technical Understanding

Understands relevant  
context of work in  
GeoMarket or REMS center

### Architectural process in the context of Abingdon Technology Centre

* As Asset Modeling Architect I provided the high level architecture and requirement plans for 2016.1 deliverable for Asset Modeling.
* As IX-FM architect and Asset Modeling Architect I have contributed to the architectural risks, mitigations and contingencies document for INTERSECT 2013.1, 2014.1, 2015.1 and 2016.1 releases.
* I made the initial version of the software architectural considerations document that is part of the AbTC Local Procedures page.
* I have reviewed the architecture of geo testing plugin, RapidPlan and Digital Rock projects. I also helped Krzysztof Sitkowski identify and retire technical risks in the Digitial Rock architecture. <http://teamspace.slb.com/sites/abtcanswerproducts/GeoTesting/ArchitectureWorkshop/Lists/Issue%20Log/AllItems.aspx>

Reviews own and others’  
decisions to ensure business  
needs are met efficiently

### Technical understanding of network simulators and coupling.

* I reviewed the network topology as it existed before 2014.1 in IX. I used my understanding of network topologies in GAP, PIPESIM classic, PIPESIM (Stingray) and ENS to propose, design and deliver a redefined network topology in FM. The proposal improved the usability of the Network coupling solution offered by INTERSECT FM. This is part of the 2014.1 release of IX.
* I have worked closely with the PIPESIM engine team to couple Intersect FM with PIPESIM for the 2012 release of IX. As part of my work I have reviewed the PIPESIM engine API and influenced its evolution by taking part in FTR’s related to PIPESIM development.
* I continue to work closely with the PIPESIM team (2015-2016) (a recurring fort-nightly conference call) to shape their new PIPESIM engine API and PIPESIM model API services. The goal for this development is to enable a friction free coupling to PIPESIM using either the FM or R2SL coupling technologies while providing a more responsive system. The delivery is planned for release in 2017.

Understands projects from  
different technical  
approaches and can  
explain/teach the different  
approaches to team  
members.

### Asset modelling, coupling simulators and Field development planning.

* I have a good understanding of Asset Modeling and the approaches required to couple multiple simulators together. As such I proposed a road map and steps for the IAM team and FM team to make FM the coupling engine within IAM. The road map addressed issues around usability, deployment and job scheduling which were not looked at in 2013.1. I presented the road map as part of Asset Modeling Program to upper management in 2015 June. Due to lack of resources, this requirement has been pushed back to 2017.1 release of IAM.
* I reviewed the design proposed for the external controller in INTERSECT that is part of the 2016.1 INTERSECT release. I am assisting the IAM team to use this solution to connect IAM to INTERSECT for the 2015.3 release of IAM. This is planned for release in the third quarter of 2016.
* I demonstrated my knowledge of IAM and end to end workflow by reviewing the proposed Architecture for providing a solution for Petronos IO. My contribution to this requirement was to assess if the team required to use ECL libraries to manipulate ECLIPSE decks and to review their case management workflow.
* In 2013, I coordinated with the IAM team for them to couple IAM with FM. The effort was to identify a mechanism to consume and specify an IX-FM field development plan from IAM. As part of the effort we (Simon Yam (Principal Developer, John lee, Ben Wells and me) had to analyze and propose a way of consuming a Field development plan using IX-FM. I discussed coupling strategies and proposed solutions for IAM to be not always connected to FM. I also highlighted that the assumptions of execution of the field development plan with IAM is different from that of IX-FM. This leads to an additional step of reverse engineering IX-FM into IAM. I also suggested that it may be beneficial to move away from using AMS (asset management rules in IAM) to something that allowed them to define IX-FM specific rules initially. I also helped Simon Yam in writing a FM controller for IAM by explaining him the working of the Python controller within IX.

### Software languages, frameworks and technology

* I am currently (April 2016 - ) part of a transformation team that is tasked with providing an infrastructure that enables developers to write micro services and continually deploy them. As part of this team I have worked with gradle, node stack (express, typescript, grunt), docker. I have also reviewed various C++ HTTP server frameworks such as Proxygen, CPPRESTSDK and POCO. I have authored my experiences using the frameworks.
* I have used C++ to deliver solutions that required
  + me to use Inter process communication to connect IX-FM to PIPESIM engine which Is written in FORTRAN. (See solutions experience)
  + me to transform the OpenPipesim solution into an MPI enabled solution.
  + Me to use C++ 11 constructs such as lamdas, threads and chrono to design a library that enabled simultaneous processes to read and write from a file based database (SQLite) (see solution experience)

The above examples prove that I understand thoroughly relevant technical work required to provide a cross platform performant solution in C++.

* The 2016.1 Event canvas requirement required me to provide a solution that optimized insertion times for the simulators as well as optimizing query times for Petrel. The solution required us to support near real time updating of events in Petrel. Given the constraints I needed to demonstrate a thorough understanding of Databases and SQLite functionality to achieve the business goal in time.
* I am well versed in scripting languages having used Python to automate building tools in INTERSECT. The script is currently part of TeamCity. I have also used Python to automate building of CSMI. I have used JavaScript (Bootstrap, node.js, socket.io, d3js) to prototype a web based real time summary viewer.
* I Introduced google mocks to IX framework and started using it to bring FM-PIPESIM connector under test. I mentored team members to use google mock and it is now used extensively within FM and Framework to provide mock implementations. I have also given a lightning talk about GMock to the centre around the end of April 2013.
* I learnt CMake while working on IX. My experience of CMake includes building FM-PIPESIM connector along with IX, building gmock libraries, building OpenPipesim targeting the MPI and boost versions of IX. Building CSMJ As part of my self-study, I have read the documentation for CMAKE and looked at CMAKE implementations used in google test as well as the port from gyp to CMake in the chromium project.
* I also wrote an MSBuild script that targets a script that compiles the google mock and OpenSim libraries on TeamCity.

### Analysis and Design

* I designed the architecture for the Event Canvas requirement. This requirement was a cross product development that targeted Petrel RE, E100, E300, IX. The requirement was successfully delivered in 2016. As mentioned earlier the requirement needed us to design a solution that interfaced with FORTRAN and C++. It targeted different compiler setups. It had to standardize messages across E100, E300 and IX. It also needed to scale even when dealing with datasets that could generate Databases in the order of gigabytes. The solution needed to support complex types without imposing custom persistence.
* I took over the task of fixing the remoting implementation in IX which is responsible for coupling multiple reservoirs after the feature was broken during the ixe port. This was delivered successfully for the 2016 release of IX. This demonstrates my ability to review others decisions and understanding of INTERSECT framework.
* I designed and delivered the migration of the network topology in IX-FM for the 2014.1 release of IX. This was done without breaking any existing functionality. See solution experience.
* In 2015 as part of the Rules to code by initiative, I conducted a course explaining different Design and Architectural approaches. (See Mentoring and Community Leadership ). This demonstrates a thorough understanding of design principles and the ability to communicate nuances to an audience.

### IPC technologies.

* In September 2015, I evaluated 0MQ with gRPC as a proposal to improve the remoting architecture and connectivity into IX. The evaluation document for this technology and for Protocol Buffers, which was proposed as the serialization technology can be found at.

https://teamspace-sec.slb.com/sites/abtcengineering/architecture/Shared%20Documents/Simulators/0MQ-gRPC-3rd%20Party-Component-Selection-G5913\_F01\_v1.xls

https://teamspace-sec.slb.com/sites/abtcengineering/architecture/Shared%20Documents/Simulators/ProtoBuf-3rdParty-Component-Selection.xls

* In August 2013, I investigated middleware technologies as a means to standardize inter process communication. As part of this investigation I looked at messaging technologies such as 0MQ, AMQP, DDS, Boost.Asio and serialization options such as Protocol Buffers, Apache Thrift and Apache Avro. I passed on the sample project using 0MQ and the relevant documents to Martin Guapaas (Senior Software Engineer) from the FrontSim team who adopted 0MQ as an IPC mechanism between Petrel and the FrontSim simulation engine.
* I also proposed to the Geo Testing team to adopt 0MQ as a means of communicating between their TSSolve engine and the Petrel UI. This was later abandoned as it was found by Steve Aston that the amount of effort required in moving the TSSolver engine out of the Petrel process would be too much to fit into the development cycle.

## Solutions Experience

### Solutions provided for the EventCanvas workflow.

* **Size on disk** - It was observed that the database output from INTERSECT was significantly large. Sometimes twice as large as the previous Database Implementation. The reason for this was that INTERSECT messages are stored in the new databse as JSON objects, an open format. The solution I provided was to replace repetitive strings with stored identifiers. This reduced the size of the database significantly with the new storage format beings consistently smaller than INTERSECT’s previous database format.
* **Total elapsed time** - It was observed that the elapsed time for INTERSECT runs increased especially for cases run of a shared storage. The reason for this was that the SQLite implementation was writing each message to disk and this meant that the implementation was dependent on the disk write speed. I implemented a time based cached transaction which wrote messages in intervals of a second. This drastically reduced the time taken to write to disk.
* **Read performance in Petrel –**
* **Option to view events/messages while Simulation was running -**

### Solutions provided for FM-PIPESIM

* **Managing conflicting licensing and PVT libraries between PIPESIM and IX**

It was observed that running a coupled solution coupling IX to PIPESIM on Linux would hang after an update was made to the PIPESIM engine libraries in June 2013. This was caused by a decision taken early on in the project to load the PIPESIM engine libraries in memory. I analyzed the issue and traced it the loading of conflicting versions of licensing library by both the IX framework and PIPESIM. The issue was also there for PVT libraries and was seen when running the compositional workflows. I realized that the only solution available was to move the PIPESIM engine libraries to be out of process. I created an executable (OpenPipesim) that communicated with FM-PIPESIM connection using boost TCP. I also created the framework for it to be built on Teamcity on platforms supported by IX.

* **Providing a Linux solution for FM-PIPESIM Connector**

The initial solution of PIPESIM was targeting the Windows platform and it was believed that a multi-platform solution would provide a business edge over other competitors such as GAP. The solution required the PIPESIM engine team to provide a shared library install on PIPESIM on Linux. There were subtle naming differences in the PIPESIM API that had to be managed within the FM-PIPESIM connector. While testing the FM-PIPESIM run in May 2013 I observed a memory increase in the FM-PIPESIM coupled workflow. I used valgrind run of OpenPipesim and IX memory profiling to identify the issue to and communicated the findings to the PIPESIM team who resolved the issue (SWAT 10024221).

* **Implementing PIPESIM to run in parallel.**

One of the major features of the 2012.1 PIPESIM engine team was to provide a parallel solver. I introduced this feature in 2013.1 FM-PIPESIM connector. I modified the OpenPipesim executable I had written earlier to be MPI aware. I did this by linking the executable with Intel MPI libraries. I also re-designed the back end architecture of OpenPipesim to handle execution constraints set by the PIPESIM engine team when executing their parallel API. The constraints were to communicate with the MPI root process for the gets and with the MPI root and MPI child processes for the sets. There were also some complications for the get/set workflow when dealing with compositional fluids that I over came by discussing the workflow with the PIPESIM engine team.

### A method to re-structure the network topology within Field Management.

The network topology in Field Management used a notation (branch and node) that differed from the industry standard. It also meant that the user would need to interact with artificial entities created by FM when it adapted the network topology of network simulators such as GAP to its own. This was a usability issue with the Network API in FM. As the network API was going to be commercialized in 2014.1 it was essential that the API would require minimum modifications in the future. However, the adaptors that coupled FM to PIPESIM, GAP and ENS network simulators were developed with the branch based notation. It was a considerable risk in the given amount of time to modify the adaptors to the new network topology.

To mitigate the risk of modifying the adaptors and to also produce a usable, consistent API to the user, I introduced a proxy layer for the 2014.1 IX release that adapted the branch based network model to the equipment based one.

The proxy layer was seen as a success and the port to the equipment based network topology was seen as more usable. It also allowed the code to be redesigned giving FM the flexibility to develop independent of the adaptor implementation.

### Solutions to improve code robustness and quality through build and testing frameworks.

* I wrote a test framework that allowed the PIPESIM engine team to test the PIPESIM engine API in isolation. The framework allowed the user to dump the communication between IX-FM and PIPESIM engine. This dump could then be replayed and matched for differences to guarantee the API functionality. I did this as the PIPESIM engine API and the FM network API were evolving and one of the problems we faced when developing the coupled solution for FM and PIPESIM was to ensure that the PIPESIM engine API would not break its implementation. This work was done In January 2014 and is currently executed.
* Providing unit test coverage to the FM-PIPESIM connector to ensure the robustness of the PIPESIM implementation of the FM OpenSim API. I introduced unit tests for PIPESIM in February 2012 to validate the calls the FM-PIPESIM connector would make to the PIPESIM engine. I wrote a framework in June 2012 that would setup a PIPESIM input case with expected values that would allow me to query it back to test the validity of the PIPESIM engine API. This allowed me to generate fake PIPESIM tests. In October 2012, I introduced google mocks to IX and PIPESIM adaptor. I then went about extracting a PIPESIM engine interface and then mocking it allowing me to test the FM-PIPESIM connector code in isolation. This allowed me to remove the fake implementation which was getting too complicated.

### Automating tools building

It required the efforts of a developer to build the libraries for OpenPipesim and GMOck whenever a new version was available. It also meant that these libraries are built targeting a particular machine and this could lead to a tainted build. There was also the issue of documenting the build process. I believed that a script would document the built better than a document.

To mitigate the above issues, I introduced a python script to build tools such as OpenPipesim and GMock in July 2013. This helped reduce time spent in building the libraries after an update. I then sold the idea to the framework team who extended the script to include Parmetis, boost, HDF5 among others.

This assisted in the porting of IX 2015.1 to the RH6 builds.

### Refactoring and redesigning components.

* Design pro – Slide validation (September 2011)
* Design pro – Pvt Wrapper (August 2011)
* Design Pro – Access to OneCAT (October 2011)
* Re-designing the network coupling solution to make it more robust.
* The FM-GAP and FM-PIPESIM connectors contain duplicate code especially related to IPR curve validation and manipulation. These bits of code were fragile. Fixes made to one had to be copied across to the other adaptor as well. To improve the quality of this code, I moved the code into a shared implementation. I started the refactoring effort in March 2013 by writing characterization tests to describe the existing behavior. Then I implemented the utility classes and ported the connectors to use it.
* This code is currently used and is under unit test coverage. It has also enabled us to add more IPR manipulations to improve the network coupling behavior.

### Builds and Scripts.

**Porting the merge tool to IX SDK.**

The IXF merge tool was initially written by Hicham Abbas using Python. The script allowed the users to import the Field Management logic from various reservoirs when a coupled reservoir case was created. Though the script worked, every time there was a schema change it had to be updated. It also meant that we had rolled out yet another custom parser to read the IXF files. I realized that porting the python script to use the new IX SDK was the right way to go. I started the porting in December 2012. This resulted in identifying a few gaps in the IX-SDK implementation that I reported back to the framework team. After the SDK fixes work on the SDK based merge tool started again in 2014.1 and the merge tool executable is to be commercialized in 2015.1.

## Input to Business Strategy

### Adoption and execution of coupled workflows and a FDP for an Asset Model.

Asset model vision requirements with Daniel lucas clements, Rong XU

Coupled workflows through IX-FM Through IX requirement FTR’s I have conveyed in 2013.1 the need to add performance tests around the coupled models and to reduce technical debt on the network adaptors. For the 2014.1 requirements I raised concerns over the document suggesting that the multiple reservoir workflow should target IAM as its commercial environment. The document was later updated to remove this dependency. For the 2015.1 requirement FTR, I raised concerns about the multiple reservoir merge workflow. The requirement was then modified to emphasis the need for the user to create couple reservoir models that can be run with as little modifications as possible.

### Proposed change in the way networks are viewed by FM.

PIPESIM (Slb network simulator) moved away from displaying a network topology in branches and nodes. I believed that it was important for the network topologies to be aligned as it would give the user a more consistent experience when he is writing a field development plan that connects PIPESIM or GAP to IX. Hence, I raised an architectural risk of commercializing the FM-Network with a topology that was different from other network simulators such as GAP and PIPESIM. To address this risk we introduced a new requirement to modify the FM network topology and bring it in line with PIPESIM 2014.1 and GAP.

This requirement was worked on and commercialized in IX 2014.1.

### Managing IX-FM requirements through architectural input.

For the 2013.1 release cycle one of the requirements was to couple Field Management with the managed API of PIPESIM for PAM (Petrel Asset Management). I raised an architectural risk saying that the technical direction for this is not clear as moving towards using the managed API would prevent us from running a linux only coupled workflow. I had also raised that the network descriptions were not aligned. It was also communicated that there was no GUI workflow that allowed the user to create or launch multiple reservoir workflows. I also raised that there may be overhead introduced by the chattiness of the OpenSim interface that might debilitate its performance. Based on my input the requirement to couple IX-FM to the PIPESIM managed API was dropped.

The major requirement for FM for the 2014.1 release cycle was to commercialize FM surface network and multiple reservoir coupling workflows. I raised multiple risks with the major one being that it is not possible to commercialize all functionality maintaining the quality requirements of IX. This lead to the requirement being altered to commercialize the surface network coupling workflow. I raised risks around the maintainability of the connector code and as part of risk mitigation we added tasks that allowed us to reduce code duplication within these connectors. I also raised performance related risks and this resulted in identifying and resolving two areas that had poor performance. The change to the network topology was a task that resulted from the risk of commercializing the surface network workflows with divergent network topologies.

One of the major requirements for FM for the 2015.1 release cycle is to retire the merge script that allowed the user to couple one or more single reservoirs and create a field development plan for the coupled workflow. I provided an elaboration that allowed the portfolio to understand the effort required and proposed a multi-year plan to move towards a more usable coupled workflow. This is on schedule for 2016.1

### Technical input to SIS projects

* I was involved in the ECL 2014 FTR and raised the issue of custom branches of ECL that are currently in use and that a plan should be taken to retire such customized branches, this has led to a review of the dependent projects on the ECL code base.
* For the 2014.3 FTR, I have highlighted that some of the coupling requirements targeted within Petrel are multiyear requirements which lead to the portfolio clarifying the priority and the schedule of these requirements. I have also questioned if there are performance tests capturing the IX-FNS workflow from within petrel.
* For the PAM FTR, I raised concerns over the FM documentation containing references to GAP. These references were removed after the concern. I also highlighted in this FTR, the inability to couple PIPESIM with FM on a Linux environment. This was communicated to the PIPESIM engine team and a FM-PIPESIM Linux workflow was possible for 2013.1 IX.
* For the 2015 Petrel requirement, I clarified the need to ocean API for FM strategy and the need to couple to PIPESIM. The portfolio have clarified that these are part of the long term requirements

### Technical input to Answer products

* Digital rock - I was the mandatory reviewer for Digital rock architecture and. I raised concerns over a possible chatty interface for digital rock which lead the team to re-evaluate the communication in their workflow
* Geo testing architecture - For the geo-testing architecture I raised concerns over running their TS-Solve engine in the same thread as the Petrel process. An architecture workshop was run over to assess the risk and it was decided that it was acceptable to run the TSSolve engine in Process in Petrel.
* Rapid plan – performance

### Technical input to Production platform

I was a mandatory reviewer for the PIPESIM 2015 requirements FTR. I raised concerns over Linux and Parallel support provided by their managed API. It was clarified to me that IX-FM would continue to run on the existing PIPESIM engine API with the 2015.1 PIPESIM API release targeting only the managed, single execution workflows.

IAM

### Participation in center initiatives

* KPO’s

As part of the Abingdon architects group I had influence in setting the performance based KPO’s. KPO’s are a way of rewarding and managing the focus of the engineering effort within the tech center. The architects group wanted to highlight the focus on performance and setting performance related KPO’s was one way of influencing the business strategy.

* Process Compliance Team. ISO

I was part of the process compliance team that reviewed an engineering team’s compliance with the software métier guidelines. These guide lines allow an engineering team to adhere to a process. This checklist was updated to include some center specific initiatives such as code reviews and performance specific objectives that needed to be recorded.

<http://teamspace.slb.com/sites/abtcquality/ISO/ProcessComplianceRecords/default.aspx>

* Exploration Projects (Cloud)

As part of looking at the reservoir simulation as services, I have investigated real time streaming of summary vectors which ties in with Martina’s innovation project. I have also had a meeting with Neil Brown who is working on a beta version of IX on the Cloud and Mike Ristic in identifying the network pinch points and to create an IX controller targeting the azure cloud.

* Petrel usability workshop?

<http://teamspace.slb.com/sites/abtcportfolio/ftrs/PetrelRE_2014_3/default.aspx>

* Facilitating Petrel RE-IX Elaboration in 2012

I facilitated the Petrel RE-IX retrospective in 2012 and provided the feedback from the retrospective to the Petrel and IX management for them to implement the actions that were recommended by the team.

## Mentoring and Community Leadership

### Community leadership on adoption and awareness of Rules To Code By.

I have lead the Rules To Code By initiative within AbTC. In this capacity, I have (along with Tim Barnes; INTERSECT Framework Architect) given a one day course on Rules To Code By. This course was attended by developers from both Abingdon and Leeds. I have also run a survey to identify familiarity and knowledge of Rules To Code By within AbTC. This was found to be at more than 80% of the AbTC community, which was the target for 2015. I have also provided feedback to Glen Pezzani (Global software métier and Quality Manager) on the Rules To Code By training quiz.

### Knowledge sharing with peers through presentations.

* PIPESIM engine and integration strategy workshop - I presented about FM network coupling at the PIPESIM engine and integration strategy workshop held in October 2015. The presentation compared the workflow’s involved in setting up and launching FM coupled with GAP and FM coupled with PIPESIM. The goal was to steer PIPIESIM requirements to provide better usability for FM-PIPESIM coupled workflows. It was attended by Yongdong Zeng (Product Line Manager, Production), Rodney Lessard (Senior Scientist, PIPESIM), Lixiang Sun (Project Manager -- PIPESIM), Trevor Graham Tonkin (Senior Software Engineer, IAM), Piotr Szewello (Software Architect), Meyer Bengio (Vice President Production Operations Software Technology ), Mack Shippen (PIPESIM Product Champion), Ravi Chandran (Production & Avocet Platform Engineering Manager), Bob Kiehn (PIPESIM Project Architect ), Joseph Fang (Project Manager - IAM), Daniel Lucas-Clements (Asset Modelling Product Champion), Kwangwon (Kevin) Park (Product Analyst - PIPESIM / IAM ), Steven Smith (Production Portfolio & Avocet Platform Manager).
* Simulation Services Workshop – Jonathan Cox (AbTC Simulators Architect) and I presented about IX – IX coupling and the services required to support this workflow. The workshop was attended by Simon David Bulman(Lead Architect - Reservoir Engineering), Mark Wakefield(Project Manager - IX Client Response), Adam Brown(Petrel RE Architect), Bibek Bhattacharya(Senior Software Engineer), Matthew Brown(PLM - Asset Modeling)
* I introduced mocking frameworks into INTERSECT. I shared my knowledge of GMock and experiences adopting it within INTERSECT by giving a lightning center talk (01/May /2013). The lightning talk was open to the center and gathered an audience of about 30-40 developers.
* I was seen as being knowledgeable about interop technologies and interfacing with C# applications with an extern-c interface of FORTRAN libraries within the Answer Products group. This was because I provided an interop solution to connect Design pro (C#) with the PIPESIM engine (FORTRAN library with extern-c interface). I shared my knowledge of C++/CLI and its usage as an interop mechanism as part of a lunch and learn session on the 14th October 2011. This talk was open to the center and was attended by the Answer products group along with Ruben Gonzalez Gutierrez and Sujaa Rani Mohan from Petrel RE. The session was attended by about 20 developers.

### Architecural Community leadership

* Architectural support to RapidPlan, GeoTesting, Digital Rock.

I have worked and continue to support RapidPlan, Geotesting and Digital Rock teams by reviewing their architecture.

* Community leadership through knowledge sharing about IPC.

I have written a document and a sample project in the architect’s site comparing various middleware options and discussed these options with the architect’s team. I also mentored Maurten Gaupaas (Senior Software Engineer, Frontsim) and helped him choose 0MQ as the IPC option between Frontsim and Petrel.

<https://teamspace-sec.slb.com/sites/abtcengineering/architecture/Shared%20Documents/IPC/Middleware%20Options.docx>

* ISO

I was part of the process compliance team that reviewed an engineering team’s compliance with the software métier guidelines. These guide lines allow an engineering team to adhere to a process. This checklist was updated to include some center specific initiatives such as code reviews and performance specific objectives that needed to be recorded.

* Co-ordinating the MPI version across different simulators

I am part of the team that co-ordinates MPI version updates across ECLIPSE, INTERSECT, FM, IAM, PIPESIM and OLGA.

<https://wiki.slb.com/display/sisarchitecture/MPI>

### Mentoring production team in HtC.

I have communicated with PIPESIM team (Colin Watters, David Peter Bradley) and IAM (Simon Yam and John lee). I have worked with the PIPESIM team explaining to them the various use cases of using PIPESIM connected with FM and was responsible along with Trevor Tonkin in evolving their PIPESIM engine API to include compositional fluid modelling and also Linux support.

I have had brain storming sessions with IAM team members in scoping out how FM can fit into IAM. The conversations with them both in person and through e-mail has helped Simon Yam and John lee to develop a prototype connector to FM.

<https://teamspace-sec.slb.com/sites/abtcengineering/architecture/Shared%20Documents/IAM/Asset%20Modelling.docx>

### Mentoring developers

* **Licensing team**

Bibek Bhattacharya and I were assigned by the architects group to review the licensing library and to propose changes to address security concerns. Bibek and I mentored Harjinder Chandi and assisted him re designing the licensing library which lead to a new version of the Slb.Licensing library being released which addressed some of the concerns that were raised in the RIR.

<http://www.quest.slb.com/quest/RIR/RIRViewExt.asp?QPID=13681977>

* **Mentoring digital rock team on architecture**

I mentored Krzysztof Sitkowski (Developer for the Digital rock plugin to Petrel )in the ATAM process to come up with an architecture for digital rock. I helped him formulate risks and then propose solutions to mitigate the risks. This enabled Krzysztof to write a SAD that enabled the project to be successfully launched.

* **Frontsim team on IPC.**

I have mentored Morten Gaupass from the frontsim (Darwin) team to use 0MQ for their IPC requirement. They have adopted 0MQ for their IPC and construction for this requirement is now complete.

* **IX-FM team on GMock.**

I am recognized as being experienced in using mock frameworks and I have used my experience in writing unit tests and mocks to introduce the GMock framework into the IX project. I have mentored and coached my team members (Arnaud Dessiter, Hicham Abbas and Ben Wells) in writing unit tests and in using the GMock framework.

* I am currently coaching Mahesh Bhanushali (Senior Software Engineer) and am responsible for setting his T&D plan

## Professional Visibility

### Visibility to senior management and PTU.

* Asset Modeling Program Review with Rajesh Puri (Vice President, Petroleum Engineering), Stephen Whitley (VP Technology – SIS**)** – Matthew Brown (PLM Asset Modeling), Daniel Lucas-Clements (Product Champion Asset Modeling) and I presented to Rajesh Puri and Stephen Whitley the Asset Modeling program plan and road map.
* I have also presented FM-PIPESIM connector (2012) and FM Network coupling (2014) to senior management from SIS, Chevron and Total. I have also chommunicated with Total Employees ([Hernani Kalunga](mailto:Hernani%20Kalunga), [Eguono Ob](mailto:Eguono.Obi@total.com)i) and Chevron employees (Baris Guyaguler, Yifan Zhou) as part of the elaboration and construction of network based requirements.
* I have presented a poster at the Petroleum Engineering PTU HQ – 2014. The PTU allows the portfolio from Petrel, Avocet and Reservoir Engineering to present topics about the new and upcoming features within these platforms over five days. It attracts attention from sales, technical services, engineering and commercialization teams from various geo locations in Schlumberger. My poster which describes the coupling ENS solver with IX-FM. It can be found at

<http://www.hub.slb.com/display/index.do?id=id3685724>

### Visibility outside Schlumberger.

* INTERSECT App - Architecture Brainstorming with RMA – I was part of a small group (Mark Wakefield, Simon Bulman, Adam Younger) that reviewed the proposed architecture for INTERSECT Try Me App. The architecture was proposed by the RMA consulting firm (Fiona Pinner, Satinder Ubhi, Harun Hasdal).
* Client visibility - I was the engineering contact during the Woodside evaluation. The evaluation had Jai Louis (Principal reservoir engineer Woodside), Sylvain Ducroux, Kevin Shaw, Dany Rahal and Paul Naccache evaluating the IX as a standalone and IX coupled with FNS as well as GAP.

<http://teamspace.slb.com/sites/INTERSECTDeployment/Woodside/default.aspx>

I have also worked with Alexander Voznyuk (Reservoir Engineer) who works closely with Novatec in resolving issues raised by them.

### Visibility with Production group.

I have worked closely with the PIPESIM team (Colin Watters, David Peter Bradley, Rodney Lessard and others) and with IAM team (Simon Yam, John lee) over the course of the last three years to provide a commercial implementation of FM coupled with PIPESIM as well as scope out FM within IAM.

I have had meetings involving the PIPESIM and IAM teams as part of the collaboration efforts across FM, IAM and PIPESIM. Some highlights include

a meeting with Fabien Houeto, Ivanna J. Albertin, Bob Kiehn, Timothy Roberts, Trevor Tonkin, Simon Yam, Mack Shippen, Bob Sauve, Rodney Lessard in discussing the Field Management prototyping and elaboration wrap up to provide technical requirements to the PIPESIM team that related to FM and IAM; a meeting with Fabien Houeto, Bob Kiehn, Carl Irving, Karen Sun, Simon Yam, Timothy Roberts in April, 2014 to discuss the evolution of the PIPESIM architecture and how it impacts IAM and FM.

I was also involved in brain storming sessions with John lee and Simon Yam when they visited AbTC during the week of 19th Feb 2014.

### Visibility within SIS.

* Asset modelling involves providing a coupling solution across different simulators. This made me visible to members from the Eclipse reservoir simulator team (Adrian Potter), PIPESIM team (Colin Watters), Commercialization (Pierre Amoudruz, Gareth Davies, Yomar Josefina), ECLRun (the library that co-ordinates jobs) team (Mike Ristic, Neil Brown).
* As part of the architects group (2012 - ), I have a monthly meeting with Jonathan Cox (INTERSECT Architect), Dominic Walsh(High Performance Architect), Andrew Round (Petrel Project Architect), Bibek Bhattacharya(Software Architect), Richard Esau (Software Architect, PRE) and James Poll(Software engineer, ECLIPSE) to identify and plan for technical challenges.
* As part of the Process Compliance team (2012- 2013) I have worked with team members from Eclipse and Petrel projects (Sonny Wisaksono, Milan Frank, Alsu Garipova ,Pooja Batra , Zhenning Bao, Radek Pecher ,Mark Gillibrand , Gareth Davies , Yansong Huang , Ian Balanza-Davis) to ensure that SIS software is ISO compliant. As part of this internal audit I have worked with Nicholas Form (Team Lead Petrel Gridding) and Wenyan Ma on a monthly basis to ensure that their projects meet the ISO standard.
* I have worked with
  + the simulator teams (E100, E300, IX), Petrel RE and ECLRUN to deliver the CSMI requirement as part of the Asset Modeling Program.
  + the FrontSim team (Morten Gaupass), helping them with their IPC.
  + the licensing team (Harjinder Chandi) with
* I facilitated a retrospective for the Petrel RE-IX elaboration in 2012 that involved

Kamshat Ussenova; Nigel Lester; Steve Griffiths; Bibek Bhattacharya; David Mansergh; Pierre Amoudruz; Wahab Ahmed; Sheng Hui Yi; Kevin Shaw; Jonathan Morris; Michael Atkinson; Matthew Brown; Richard Asbury

### Visibility outside SIS

* Petronas IO requirements workshop
* Answer products (AbTC)

I have worked closely with Digital Rock, Geo testing and Rapid plan teams helping them analyze their software design. Mention details

**Rules to code by initiative and training**

what you know about them. Just a sentence or two is sufficient. Then make sure to add dates alongside the evidence. Three reasons (1) so the reader can see this evidence is eligible for the current PSE (i.e. < 5 years old, did not occur after the previous PSE was last edited) (2) so that the reader can clearly see that two similar pieces of evidence are different (3) so that evidence in the next PSE is easily distinguished from this one.

TU3 – in addition, give full names (Which Kryztoff?) What did you learn on the course you attended?

TU4 – in addition, when you say “we” – make sure you clearly indicate your contribution

TU5 – mentions builds and C++

TU6 – mentions C++ - could this be part of TU5?

TU7 – mentions builds – could this also be part of TU5?

SE – use a problem-solution-result (or challenge-solution-outcome) pattern … and again – provide dates against instances of evidence within examples – that goes for all examples in the PSE

SE2 – outcome? i.e. did this work? Was it a successful solution

SE3 -  outcome? Emphasise the cross-team nature of this work.

SE4 – outcome?

SE5 – emphasise the interaction with the framework team – the fact that the solution is more widely used.

As SE1 contains 3 parts – is there an opportunity to group another pair somewhere to present 5 examples to the reader?

IBS1 – explain how unit tests improve the quality of the code and thus feed on to business strategy – (ability to safely refactor, less buggy code so reduced testing and support effort, …)

IBS2 – use “business”perspective in all your examples – step away from the techy-techy … explain why this was useful from the IBS perspective.

IBS3 – rather than having to read the entire document – tell the reader the highlights (from an IBS perspective) in a sentence or two.

IBS4 – rather than reading 10 FTRs in their entirety, tell the reader about your key business contributions – then stick all those links in CNP and point them there for the full gory details if they are really interested.

IBS5 – explain how KPOs and compliance (etc) feed into business strategy.

MCL – make your titles focus on either mentoring (knowledge sharing) or community leadership

MCL1 - Gmock doesn’t sounds like an MCL activity. This example is all about knowledge sharing through lightning talks and peer to peer mentoring

MCL2 – knowledge sharing with other teams

MCL3 – is this “M” or “CL” – not clear.

MCL4 – sounds like MCL2 if you step away from the techy-techy and think about the mentoring activity

MCL5 – knowledge sharing through document sharing

MCL6 – possible overlap with MCL2.

Is there any “CL” in this PSE – might be seen as a weak area by the committee.

PV3 – talk about the audience to emphasize the visibility aspect

PV4 – call this “Cross project visibility within AbTC”?

PV5 – name names so the reader can see this isn’t just more of the visibility you have already claimed.

PV6 – sounds like an extension of my newly named PV4.

* 1. Licensing

[https://teamspace-sec.slb.com/sites/abtcengineering/seclic/Security%20and%20Licensing%202014%20Cycle/FTR/default.aspx?Paged=TRUE&p\_ID=33&PageFirstRow=31&&View={8689F0B0-D77B-469E-A2EF-EBBC741B85A1}](https://teamspace-sec.slb.com/sites/abtcengineering/seclic/Security%20and%20Licensing%202014%20Cycle/FTR/default.aspx?Paged=TRUE&p_ID=33&PageFirstRow=31&&View=%7b8689F0B0-D77B-469E-A2EF-EBBC741B85A1%7d)

* 1. ECL

<https://teamspace-sec.slb.com/sites/abtcengineering/architecture/ecl/ECL2014FTR/default.aspx>

* 1. Petrel RE

<http://teamspace.slb.com/sites/abtcportfolio/ftrs/PetrelRE_2014_3/default.aspx>

* 1. PAM

[https://teamspace-sec.slb.com/sites/abtcengineering/am/PAMWhitehaven/SRS/default.aspx?Paged=TRUE&p\_ID=30&PageFirstRow=31&&View={6E63DBD6-4576-47D0-834F-BAEFD2CDF2DC}](https://teamspace-sec.slb.com/sites/abtcengineering/am/PAMWhitehaven/SRS/default.aspx?Paged=TRUE&p_ID=30&PageFirstRow=31&&View=%7b6E63DBD6-4576-47D0-834F-BAEFD2CDF2DC%7d)

* 1. PETREL

<http://teamspace.slb.com/sites/abtcportfolio/ftrs/PetrelAbTC2015/default.aspx>

* 1. IX

[http://teamspace-fed.slb.com/sites/Intersect/IX2014/default.aspx?Paged=TRUE&p\_ID=30&PageFirstRow=31&&View={63CCF7F3-ABD8-457B-91AD-F6F0755FB6C5}](http://teamspace-fed.slb.com/sites/Intersect/IX2014/default.aspx?Paged=TRUE&p_ID=30&PageFirstRow=31&&View=%7b63CCF7F3-ABD8-457B-91AD-F6F0755FB6C5%7d)

* 1. PIPESIM

<http://teamspace.slb.com/sites/htcquality/htcproducts/productiongroupsoftware/pipesim2015p1/BoraBora_Sys_Req_FTR_Elab/default.aspx>

* 1. Digital Rock

<http://teamspace.slb.com/sites/abtcanswerproducts/DigitalRock/DR2014ArchiWorkshop/default.aspx>

* 1. GeoTesting

<http://teamspace.slb.com/sites/abtcanswerproducts/GeoTesting/ArchitectureWorkshop/default.aspx>

* 1. Rapid Plan

[http://teamspace.slb.com/sites/abtcanswerproducts/RapidPlan\_4\_Design/default.aspx?View={ea35bff1-5272-4207-b743-7e00c1bfb2be}&SortField=Title&SortDir=Asc](http://teamspace.slb.com/sites/abtcanswerproducts/RapidPlan_4_Design/default.aspx?View=%7bea35bff1-5272-4207-b743-7e00c1bfb2be%7d&SortField=Title&SortDir=Asc)