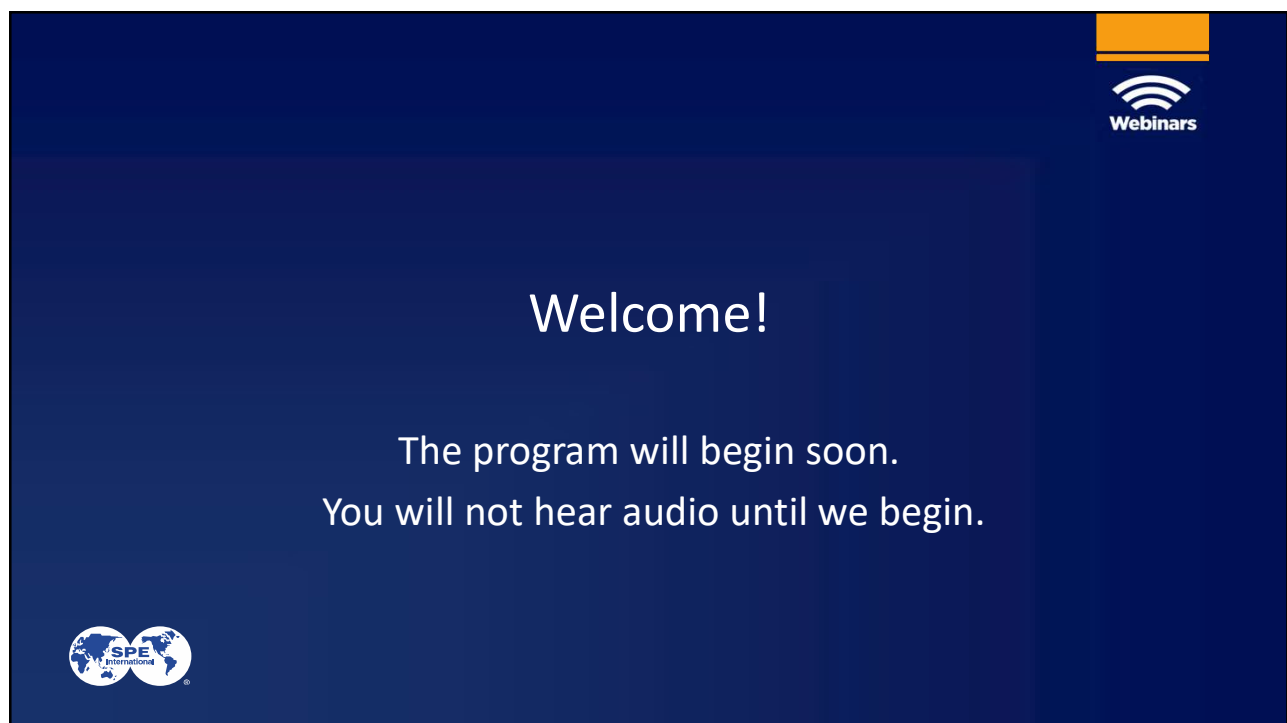




A dark blue rectangular slide with a lighter blue rectangular area in the center. In the top right corner, there is an orange square above a white Wi-Fi symbol and the word "Webinars". In the bottom left corner, there is a logo for SPE International featuring two globes. The central text is white and reads: "Welcome!" followed by "The program will begin soon." and "You will not hear audio until we begin."

Webinars

Welcome!

The program will begin soon.
You will not hear audio until we begin.

SPE International



Integrating an automation platform with a rig control system

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Austin Groover
12/12/2022





Agenda



- Drivers for implementing automation on a rig
- Integration methods
- Lessons learned from integration
- Results from integration



Drivers for implementing automation on a rig



Increased BHA Reliability

Increased process control helps to reduce downhole dysfunction and cumulative shocks.



Consistent Execution

Automating routine processes with best practices enables consistent execution.



Enhanced Rig Operations

Utilization of smart algorithms to execute safer more efficient processes



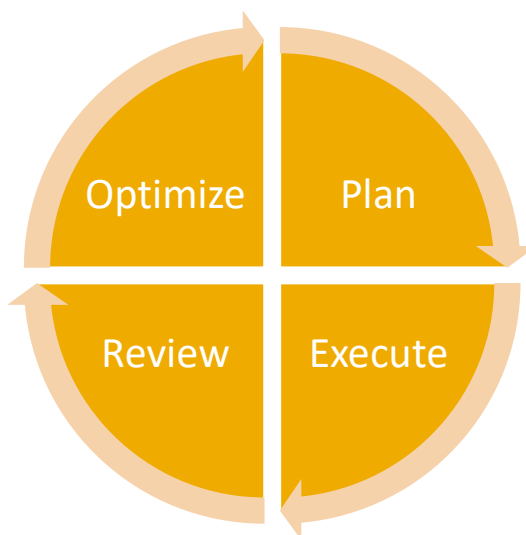
Improved Drilling Connections

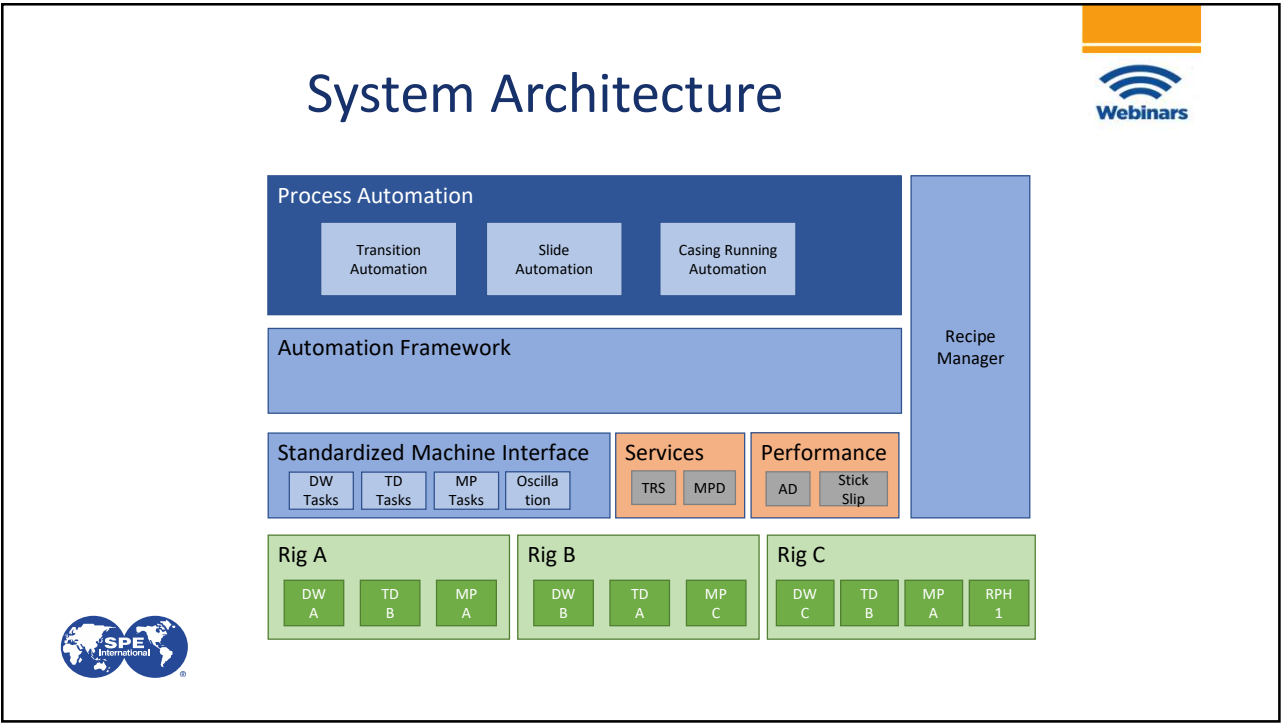
Consistent execution of best practices drives more efficient drilling connections

Drivers for implementing automation on a rig



- Automation simplifies the continuous improvement cycle
- Enables faster deployment of new ideas to the field
- Can scale to multiple rigs easier than training multiple drillers, crews, drill site managers

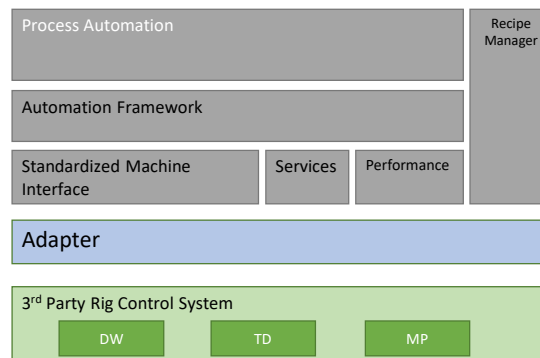




Integration Method A



- Interface with existing rig control system
- Joint development effort
- Standard hardware solution available for deployment to the rig.



Lessons learned from Integration Method A



- Success of the integration is driven by collaboration between the rig development team and the process automation team throughout the lifecycle of the project.
- Rig visits/surveys of the rigs have been instrumental in reducing the time required to install the integration kit.
- Machine automation is not typically available in most rigs and this would require some effort on the Drilling contractor side.



Lessons learned from Integration Method A



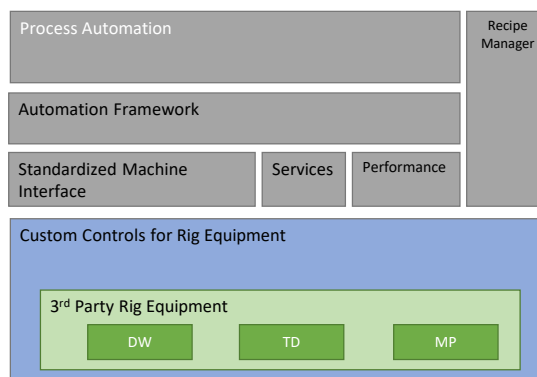
- Machine control characteristics / performance play a significant role in determining the level of impact the process automation has at the rig.



Integration Method B



- Replace existing rig control system
- Complexity and effort varies on available equipment, IO, network, etc



Lessons learned from Integration Method B



- Significantly less involvement required from contractor, but more work from the integration team
- The level of complexity is determined by how much information is available on the machinery and their specs, io etc
- Some systems and/or components might need to be re-engineered to meet the safety and control requirements for the machine.



