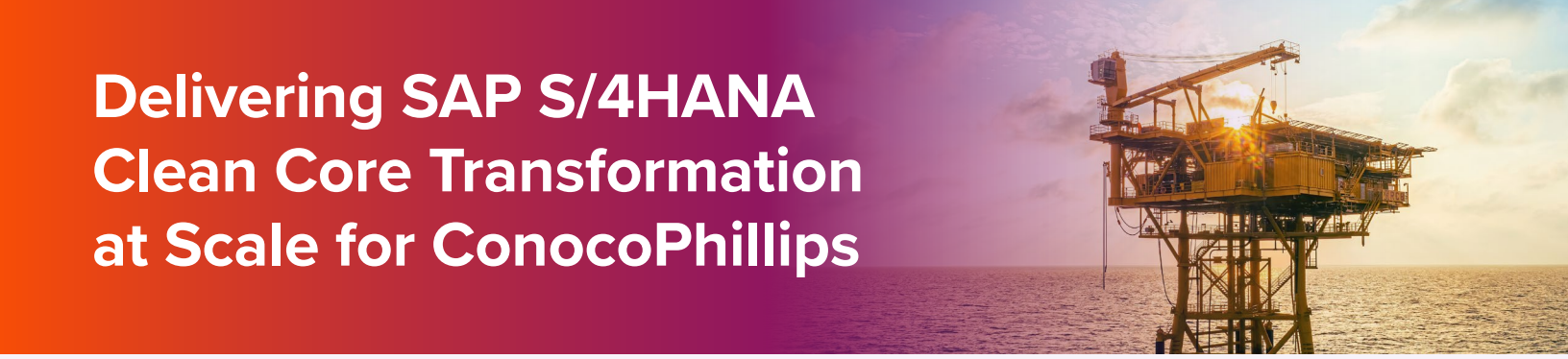
Delivering SAP S/4HANA Clean Core Transformation at Scale for ConocoPhillips



Robert Stephens
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Robert Stephens has spent 35 years in oil and gas, where a system glitch can do more than dent the bottom line; it can put people at risk. For the past decade, he has been a Principal at PwC U.S., guiding SAP programs for the company's clients with those stakes in mind.

At ConocoPhillips, Stephens led the transition from SAP ECC to SAP S/4HANA with a clean-core mandate: strip out millions of lines of custom code, keep processes fit to standard, and shift the few necessary extensions onto SAP BTP. The effort also consolidated 25 separate legacy data warehouses into a single global cloud-based instance on Microsoft Azure and expanded the use of digital twins to reduce time spent on high-risk assets.

The result, Stephens argues, is proof for other SAP customers that clean core is not a limitation but a foundation that can lower cost to serve, steady operations, and create room for growth.

Below, Stephens discusses the undertaking at ConocoPhillips, providing an inside look at the transformation.

This interview has been edited and condensed for length and clarity.

Q: With regard to the wider picture at ConocoPhillips, what was driving their decision to embark on a business transformation in the first place?

So that was twofold, one part business-driven and the second part technology-driven. On the business side, their cost to serve and cost to produce were growing at a faster rate than production was.

Let me rephrase that: they wanted to look at ways to drive SG&A cost out of the equation. A big part of their SG&A cost was IT cost. That led to what they needed to do from an IT perspective to be a lower cost to serve their internal constituents, serve the company, and ultimately help serve their shareholders.

From another outside influence, SAP announced the move to SAP S/4HANA. When this project was in its infancy, before it had a name or a clear direction, the first target was 2020, the first time SAP announced that all customers had to be off SAP ECC by 2020. As we got to the 2016 to 2017 timeframe, SAP moved the end date for standard support for SAP ECC out to 2025.

Then it became 2027. This ongoing saga of SAP moving the SAP ECC end date drove the timing of the project. When they decided to fund the project in 2021, it was about getting to a lower cost to serve. One of the key drivers was getting back to fit-to-standard across their application portfolio and adopting cloud technologies. They felt those two things were fundamental to establishing a technology foundation for growth at a reasonable rate of investment.

Request for Proposals (RFPs) to the software vendors and to the System Integrator (SI) vendors went out in 2020. Selections were made, and the project started in September 2021.

Q: In our previous conversation, you talked about the principles of on time, on budget, and no operational impact. How did those play out in practice and guide your approach?

The timeline often drives the budget. You have scope and you have a timeline, and those are the key factors. The scope was relatively constant across the program, but the timeline had one major adjustment. During the competitive phases, we laid out a program we thought was right for ConocoPhillips at somewhere between 36 and 39 months.

As we were being considered down and selected, ConocoPhillips challenged us to plan around a 30-month implementation. We started global design, moved through global design, and started our global build. As we came up on the first go-live, which was Canada, ConocoPhillips realized after the first 18 months that they could not consume all the change we had introduced from fit-to-standard, cloud adoption, and organizational change.

They asked us to extend the timeline for rollout. We went back, did a rebaseline, and settled on a 39-month program. We added a year to the rollout schedule. Once we rebaselined, we met each delivery milestone, each go-live, and the budget associated with the rebaseline. Although the timeline and budget changed, it was an agreed effort between us as the SI and them as the customer. They could not consume as fast as we could deliver.

Some key data points: ConocoPhillips never stopped pumping oil for a single day due to the SAP project. They paid their vendors, their employees, and their shareholders and royalty owners. There was no impact on operations.

We finished the core program. The last go-live for the major program was Jan. 1 of this year, which was U.S. operations. At the same time, we went live with U.S. operations, and they acquired Marathon Oil. We did the U.S. go-live and started the Marathon integration in parallel.

At the same time, they were doing a shutdown and turnaround of their North Sea operations. We had to carefully plan that. Half of North Sea production was shut in over a 25-day period, and we could not go a day longer. We orchestrated that from the end of May to the end of June. We came out of that shutdown, did a technical upgrade of the SAP environment on June 28, and went live with the Marathon integration on July 1. That orchestration, lasting a 45-day period, was filled with sleepless nights, but we eventually delivered it.

Ryan Lance, the CEO of ConocoPhillips, did the quarterly earnings call and said, “You said we could not integrate Marathon in seven months, and you said we could not deliver a billion dollars in efficiencies, and we just did it at the same time because of our technology platform being in place that allowed us to operate flawlessly.”

Q: What are some of the challenges of oil and gas implementations compared to other industries you have worked with?

I am coming up on my 35-year career anniversary, and I have spent almost my entire career serving the oil and gas industry.

In oil and gas, if we make mistakes, people can get hurt. In consumer goods, if a mistake is made, a store shelf might go empty, but it is unlikely that anyone will get hurt because of that. In oil and gas, utilities, travel, and transportation, if you make a major mistake, people get hurt. That is what you want to avoid. I don't think we are special. We just have to be more careful than some other industries.

Q: You said differentiation is not a free pass for over customizing. How did you communicate the need to fit the standard and avoid unnecessary customizations, and how did you apply that throughout this project?

ConocoPhillips, in one form or another, has been on SAP since 1998. In the SAP R/3 and SAP ECC world, if the business asked for it, they built it in SAP. They ended with somewhere between eight and nine million lines of custom code. This was a philosophical and cultural change to go back to fit-to-standard and clean core.

The environment they were coming from was incredibly expensive to operate, maintain, and upgrade. The only way to drive cost out was to drive customization out. To get to a lower cost to serve, they had to make that change. In our capability-driven strategy, we characterized each business process as differentiating, competitively necessary, or foundational. If it were foundational, there was no question that there would be no customization. We would get back to fit-to-standard. As we moved up to competitively necessary and differentiating, the conversation got deeper, but differentiating did not mean customization.

We challenged them to adopt the mindset that differentiating does not mean customization. We delivered the core program at around 94% standard out of the box. With the most recent upgrade to the 2023 Feature Pack 03, ConocoPhillips is now at 97% standard out of the box.

I would argue that it is top tier in any industry.

Q: Why was SAP BTP part of the core project as a foundational element?

When we did need extensibility, we moved the remaining 3% to SAP BTP to keep the core clean. We took advantage of the platform and moved extensibility out of the core. We did have to build some BAPIs and similar items in the core where things were not yet available. Even in those elements where we had to customize, we followed the SAP clean-core mindset. I believe we have delivered a solution that closely aligns with the high standards expected for a clean core in the industry and private cloud.

Q: Could you talk about having clarity on SAP's direction and communicating that to stakeholders, especially for industries that are not always sure how to stay on the roadmap?

We embraced SAP as part of our core project team. They did not have a huge number of people on the team, but they had members in key areas where we were pressing the limit.

A new product released in 2021, field logistics, replaced the old remote logistics management solution. It was a complete rewrite by SAP. We had the product team embedded in our delivery. Rather than developing the product in a black box, they sat in the facility with us, and we showed them how we needed to use the solution. We benefited from the solution working the way we needed it to, with SAP doing product development at the back end. That was fundamental.

We also had Peter Maier and Juergen Eisele on our executive steering committee. Each time we reviewed a deviation from standard functionality, the first question to SAP was whether it was on the roadmap. If yes, when? Then we could decide whether to put a workaround in place, do custom development, or do a hybrid while waiting for standard functionality.

If it was not on the roadmap, we used the Customer Influence portal to get items added. In some cases, SAP said absolutely not, and in those areas, we had to solve it, defaulting to SAP BTP where possible. The executive steering committee had to sign off on each one of them. In a few cases, the CFO said we were not that special in functions like treasury, and that we should change our process to the standard process and forget customization.

We had a four-layer review from the solution team, program leadership, our decision board, and the executive steering committee. With that many smart people looking at solutions, we came up with good ideas.

Q: How did you approach the rollout sequence, and why did you choose Canada first, then Asia Pacific, then Europe and North America alongside the Marathon acquisition?

We did global design for about nine months, then a global build for about a year, then regional rollouts.

Canada and the U.S. were in the same time zone. The U.S. is the largest business unit. With a brand-new solution, you don't take the largest unit first. We picked the smaller of the two in our local time zone to help stabilize the system. That is why Canada went first.

Next, we looked at the next smaller unit or collection of units. Asia Pacific had one operated set of assets in Australia, with everything else as non-operated joint ventures. That made it easier to consume. Canada went live in August 2023. In January 2024, we went live with Asia Pacific. That left two big units. Norway had a turnaround coming up in 2025, so they needed to go in 2024 to have a full year on the new system before the turnaround. Norway and the U.K. went live on July 1, 2024.

That left the Lower 48 and Alaska, which are separate business units, located in the U.S. We took them live on Jan. 1, 2025. Then the Marathon acquisition was announced. Marathon's asset base was a perfect overlay into the Lower 48, which had just gone live in January, plus assets in Equatorial Guinea that were very similar to Norway's assets. We decided on a large-scale integration in July of this year.

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Q: What can you say about the foundation for data analytics, machine learning, and AI that you built to keep ConocoPhillips competitive for future AI implementations?

The foundation for AI and machine learning is good data. ConocoPhillips, like most organizations, had a lot of data and a lot of duplicates. Their previous strategy had around 25 on-premises legacy data warehouses across the globe. As part of this program, we collapsed those multiple legacy warehouses into a single global cloud instance on Azure. We created a global data warehouse, one source of truth, and used that as the reporting base, plus all the operational data going in there.

We also implemented SAP APM for asset performance management. Historically, they were a planned, scheduled, and reactive maintenance organization. We have laid the foundation for predictive maintenance.

We did not do a lot of the buzzworthy AI things that many people are talking about now, because that trend took off midway through the program. We decided not to disrupt the program to change for AI. We stayed true to our principles and delivered the program. Now they have a platform to take advantage of AI and machine learning.

They have also been big users of digital twins for large assets. Some of that was already in place before the program, and we enhanced it and confirmed they did not lose any digital twin capability across the asset base as we implemented the ERP program.

Q: Why was the digital twin approach so important?

It goes back to putting people on the asset.

People interfacing with the asset are the riskiest part of our business. Putting a person on a platform, a drill pad, or an operating pad is when that person is most exposed. If they have a digital twin, something they can use in the safety of an office to make operational decisions, maintenance decisions, planning, and forecasting from a digital model, we have given them the ability to operate more effectively and safely. That is why they adopted a culture of digital twins.

Q: What are the biggest takeaways, lessons learned, and results you can hang your hat on for ConocoPhillips and for PwC?

This was one of the largest programs PwC had done since we returned to the SI business. The benefit was that SAP S/4HANA was on the horizon. We built our SAP business for the cloud, for SAP S/4HANA, for the future. We were not supporting a legacy SAP ECC business.

ConocoPhillips was the first large-scale implementation we had done since restarting our practice. Oil and gas can be very saturated with SAP. SAP used to publish a statistic that more than 90% of the world's oil production was accounted for in SAP. I am not sure the number is that large now, but it is high. These companies have a long history with SAP.

We showed that you can do SAP differently in an industry saturated with SAP for 20-plus years. The story can be compelling in the industry and across industries. For the foreseeable future, they are in a category of one. They were first to do this, and they have a first-mover advantage. As Ryan Lance said, they did a $23.5 billion acquisition and integrated it in six months because of the investment they made in their technology platform.

It can give others confidence. I talk to a lot of customers. If ConocoPhillips can do it with PwC, why can't I? Customers are thinking differently. In SAP, each customer thinks they are special. That is why they customized their environments. Now they are understanding that you can still be special and differentiated and do great things with a standard product. I was at a large chemical company recently,

competing with another integrator. The other integrator told them that a world-class fit-to-standard would be 85%.

I said that is the old way of thinking. World-class fit-to-standard is 95% plus. I can give you a customer to talk to who is at plus-97%. I said, “Don’t trust me; let my customer talk to you.” That has elevated us to the opportunity to win this global implementation. We are changing the mindset of what good looks like.

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