

Practical Steps for Smart Connected Operations

by David Comerford, Michael Glessner and Joe Dury

Digital technologies including cyber-physical systems, the Internet of Things (IoT) and cloud computing have the potential to affect every aspect of manufacturing. In the information age, data is the new oil, with the ability to provide value at every step of the product lifecycle if extracted effectively. Yet many businesses do not have the processes and systems in place to collect and analyze data, determine critical relationships and generate insights that lead to actionable results.

If you read our first article, [Getting Started with Smart Connected Operations](#), you know that Smart Connected Operations (SCO) leverage leading-practice emerging technologies to generate insights at scale. With game-changing technologies like IoT, machine learning, visualization and the cloud, companies can improve operational performance and create new business models.

In this piece, we will provide practical steps to equip you with the knowledge and insight needed to advance an SCO initiative within your organization.

Understand the Hand You've Been Dealt

Manufacturing companies grapple with many challenges, including the lack of visibility and asset traceability across the value chain, balancing preventative maintenance with throughput, managing skills gaps on the factory floor, and adhering to regulatory guidelines. Transformative technologies and end-to-end digitization of manufacturing processes - the modern solution to these age-old pain points - pose new complexities business leaders must address, such as data storage and network security.

Nearly a quarter of businesses investing in smart connected technology report that understanding where to get started and changing current state business processes and work flows represent the two primary impediments holding them back¹. Lacking clear goals, plans and value chain alignment will make it nearly impossible to reconcile value from your digital investments.

Start with the following questions to assess your current digital maturity as you position for success:

1. **Desired Business Results:** Have we identified our core business needs and potential opportunities?
2. **Smart Operations Strategy:** Have we created a SCO strategy built around our business imperative?
3. **Organizational Construct:** Do we have the organizational construct to support a SCO initiative?

A technical assessment of your capabilities will also be critical in understanding the baseline you will build from. Some questions to evaluate the state of your core system infrastructure include:

1. **Enterprise Data:** Is our data system clean, well-governed and capable of supporting this initiative?
2. **Smart Connected Technology:** Are our sensors, devices and machines networked in a manner to support the scale of this initiative?
3. **Data Visualization:** Can our data be pulled into real-time views to enable rapid decision making?
4. **Machine Learning:** Can we leverage analytics to generate insights beyond those known today?
5. **Enterprise Integration:** Are we utilizing all necessary tools such as a cloud system or our own enterprise architecture to reduce our data center footprint and storage costs?
6. **Cybersecurity:** Have we secured our systems to safeguard our data from malware, phishing and other cyberattacks?

Careful consideration to each of these elements will shape a personalized roadmap that maximizes speed of value creation and minimizes implementation risks. Success required speed of implementation along with lasting results and the organizational ability to absorb and support the technological changes.

Play Your Hand to Perfection

As you enter your SCO planning stages, conduct a divergent thinking process where you envision what your mature SCO environment would look like. Develop hypotheses for leveraging SCO across the product lifecycle and theorize strategic experiments. As you do this, look for ways to match potential SCO capabilities with current business needs. If the executive team has committed to delivering specific business results, tying SCO investment to those commitments could fuel funding for the effort and narrow contributor focus on the result sought.

Ante up additional investments into successful or promising experiments that can translate into scalable initiatives. Reference [How it Works: Hands Free Visualization of Shop Floor Information](#) & [How it Works: Instant Notification of Design Changes to the Shop Floor](#) to get an idea of technical starting points you can take to work toward the [Practical IoT Use Case](#) and [Factory of the Future](#) examples we mentioned in part one of the series.

From start to finish, your SCO transformation will be unique to your business needs and goals. Paying close attention to your capabilities, capacity and clock speed will be essential to a successful initiative. Does your organization have the competencies and SCO experience to lead the transformation? Keep in mind that this will include choosing and implementing specific technologies, upgrading existing system architecture and managing significant organizational change. If you have the necessary competencies, do the critical persons who will be leading the change have the flexibility to push the effort forward in a timely fashion without negatively impacting other areas of your business? Recall that implementation speed will be critical to capturing a competitive advantage.

If the answer to any of these questions is no, you are not alone. According to a recent study, only 15% of executives believe that their company has the skills and capabilities to execute on their digital strategy². Draw from ecosystem partners at each step of the process to tip the odds of successful implementation in your favor.

Achieve Cross Organizational Buy-In

Close interaction with your organization at every step will be the key driver behind all your efforts. Transformational change will disrupt the status quo and resistance to adopting new technology and processes should be expected.

Consider using the following steps to facilitate your organization's understanding of the initiative scope, short-term implications and long-term value proposition:

- **Business Case:** Develop a business case to win over executives and establish value realization metrics to identify gateways to making a positive return on your investment
- **Steering Committee:** Formally establish a governance model and steering committee to set organizational expectations and accountability
- **Stakeholder Adoption Approach:** Develop a meaningful stakeholder adoption approach that considers all aspects of the value chain and prioritizes needs
- **Ecosystem partners:** Supplement your internal team and fill your implementation gaps (capability, capacity, clock speed) with trusted partners like solution providers, service providers, academia and consortiums
- **Communication Campaign:** Develop an active, visible and creative communications program to build excitement around the cause and create change awareness and acceptance
- **Feedback:** Engage stakeholders at each step of the project to assess solution progress and iterate on feedback until all key user needs and desires are met

As you sell smart connected operations within the organization, always lead with the why. SCO is the gateway to insights at scale that could uncover new business models while redefining optimal operational performance. It will do this by leveraging emerging technologies in a way that connects and extracts valuable information at each step of the product lifecycle.

The time for investment is now. Assess your current situation. Envision a future state. Build a roadmap to navigate forward. Test and iterate within the roadmap. Manage change early, often and with purpose. As you enter this journey, speed and clarity of direction will be your allies. Stay mindful of ways to avoid common implementation pitfalls, secure your smart operations network and accelerate your transformation.

Developing a comprehensive framework that balances your future goals with actionable steps will be the first critical step your organization can take to create lasting results.

1. <http://www.rockwellautomation.com/resources/downloads/rockwellautomation/pdf/capabilities/connected-enterprise/mpi-iot-study.pdf>

2. <http://www.experienceinfosys.com/bedigital>

Read more about smart connected operations:

[Getting Started with Smart Connected Operations](#)

[Securing Smart Operations](#)

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About the Authors



David Comerford

david.comerford@kalypso.com

David is a business analyst at Kalypso. He loves spending time outdoors, most notably around the water with his family. When not skiing, playing sports or out with friends, David can be found reading, writing or geeking out over fantasy sports.



Michael Glessner

michael.glessner@kalypso.com

Michael is a Director with Kalypso. His areas of expertise include new product development, business and innovation strategy, large-scale organizational change leadership, and open innovation. Michael recently restored a 1969 Camaro that he has owned for years.



Joe Dury

joe.dury@kalypso.com

Joe has over 30 years of industry and client service experience working as an executive and advisor at Fortune 500 companies to deliver results by combining strategic planning and implementation of new process and technology to transform the business.