

Will You Be Left Behind?

"We are seeing unprecedented innovation; yet, few mid-sized companies are keeping pace with the changes."



By 2025, the way we work will be dramatically different. A number of corporations are well underway in implementing Industry 4.0; however, smaller organizations and business units often lack the management bandwidth to keep pace. These companies risk the same fate that small booksellers experienced in the face of Amazon's rapid growth and innovation.

It was only 20 years ago when we received our first cellphones, and merely 10 years ago when we touched our first smartphones. We barely used the functionality of our smartphones back then and now we can't live without them.

Similarly, over the last few years, the pace of innovation has accelerated, and what took 10 years to develop will move much faster today. Yes, we will experience periods of extreme hype. Uber, Tesla and Bitcoin have all had their moments in the public limelight. But beyond the hype, our lives and the way we work will change forever.

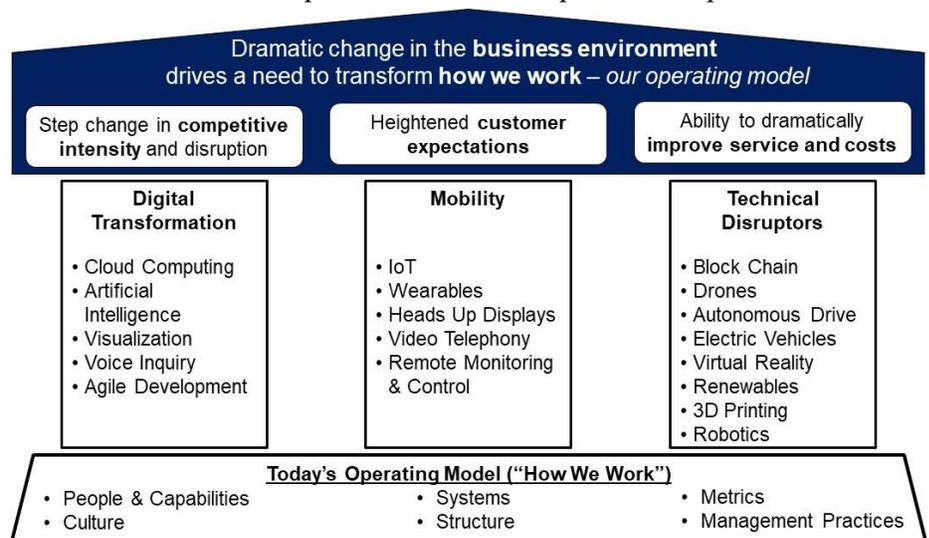
At Lion & Stutz, we see three forces shaping how we will work and compete in the future (*for a table of terms and implications contact jvl@lionstutz.com*).

1. **Digital Transformation:** Legacy IT was designed around expensive data storage and computing power. Today, both are dirt cheap and data is recognized as the real source of

value. Data will be shared more broadly and artificial intelligence (AI) will be used to tease out new insights hidden in the data. Advanced visualization tools will help us see "what the data is telling us." Companies are using *digital twins* of real world systems to optimize processes and model new approaches. For example, Foroil is applying machine learning and reservoir physics to optimize hydrocarbon recovery in mature oil fields. Soon, we will use voice (i.e. Alexa) to query data in real time, perhaps in the board room or at a management meeting.

This transformation should not proceed as one mega-project, but rather, the tools and value will be created continuously and organically by employing agile development techniques such as hack-a-thons.

2. **Mobility:** Mobile devices impact us in so many ways today, but we are only seeing a fraction of what's still to come. Cheaper sensors, edge computing, greater connectivity and wearables will all combine to make mobile technology a pervasive and indispensable aspect of our



industry. No longer will an expensive engineer need to travel to a remote location to troubleshoot equipment. Rather, expertise will be accessed with a video feed or a heads-up display. Cheaper sensors and edge computing



– commonly known as IoT – will both increase our knowledge of plant and field operations, as well as our ability to remotely intervene from anyplace in the world. Major oil companies like BP and Shell are centrally monitoring field operations today, thus removing costly personnel from offshore platforms to the safety of shore bases. BP claims a one-third reduction in visits to well sites through advanced monitoring practices. And wearables will increase worker safety by monitoring both vital signs as well as spatial location.

3. **Technical Disruptors:** Many technologies, which previously existed only in the laboratory or on tax-subsidized life support, have started to become economically feasible. Renewables are now financially attractive without subsidies. Drones, robotics and 3D-printing have been around for years, but recent breakthroughs are increasing the feasible solutions. Electric vehicles and autonomous drive will transform our personal and professional lives as the technology is proved out. Block chain – popularized by Bitcoin – will streamline legal forms of exchange while greatly reducing transaction costs. Working groups are already evaluating how to deploy blockchain technology to revolutionize trading in oil, gas and chemicals.

Path Forward

Companies and business leaders have three paths forward:

1. **Front of the Pack:** Many companies have appointed Chief Digital Officers and digital teams. However, several organizations have stumbled and been penalized for getting out in front of the technology – remember BP Solar or NRG. Many companies have also engaged outside IT providers in major transformation programs. We caution against getting too far ahead of the technology and innovation. Business 2025 (aka Industry 4.0) is a moonshot and we don't even know where the moon will be. Why pay to train external IT resources? The

Silicon Valley model is more applicable -- agile development with largely internal resources.

2. **Wait and See:** The vast majority of organizations are running lean and focusing on meeting customer needs. Either by default or by conscious decision, they are waiting it out. Unfortunately, innovation is happening at breakneck speed. Technologies like mobility and robotic process automation (RPA) could have immediate and profound effects on operations and performance. Some first movers are building significant leads over their more hesitant competitors.
3. **Get in the Game:** Other organizations are starting small and building internal awareness of how innovative solutions can impact their business. They are experimenting with technologies with immediate application and expecting real, bottom line impact as well. These companies are engaging their Millennials in hack-a-thons. They also realize they need to provide air cover for experimentation so that progress is not snuffed out. And, they are preparing to ramp up to counter competition.

The New Reality for Oil & Gas

Digital transformation, mobility and disruptive technologies will have a profound impact on the entire hydrocarbons chain. Artificial intelligence will be tapped to better model formations which will ultimately improve how we drill, complete and produce hydrocarbons. A 10% increase in EURs wouldn't be out of the question. The innovation will increase plant uptime and reduce windshield time. Finally, the electrification of the transportation fleet will change oil demand forever.

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This wave of innovation has created one of the most challenging and exciting times to be in industry. Enjoy riding the wave. It's a great time to have a job as long as you embrace the change.

Lion & Stutz is dedicated to assisting oil & gas companies to accelerate cash flow generation.

