

How robotics is reshaping the biopharma value chain

Get ready to power your organization with a digital workforce

The EY logo consists of the letters 'EY' in a bold, white, sans-serif font. A yellow chevron shape is positioned above the 'Y', pointing to the right. The logo is set against a background of a robotic arm in a laboratory setting.

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Building a better
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Working smarter using digital labor

A tireless digital robotic workforce that puts in work 24/7 can bring companies' return on investment (ROI) up to 600% to 800% in three years, according to the London School of Economics.

The emerging robotic workforce is ideally suited to tackling multiple routine administrative tasks that do not rely on human judgment. The total number of these processes is astonishingly large in biopharma, given the numerous clinical and sales call reporting procedures. Automating these procedures will enhance efficiency, reduce operational costs and enable collaboration across the entire biopharma value chain. At the same time, automation of menial tasks will free employees to focus on activities that drive value, including improving customer engagement. Thus, robotic process automation (RPA) not only transforms the efficiency equation, but also directly enhances the customer experience. This disruptive technology can help companies organize themselves for the future, too, laying the foundation for a more autonomous enterprise driven by artificial intelligence.

Embracing RPA is even more critical in today's era of rapid change. Biopharmas are under constant pressure to either improve the success rates of their R&D investments or reduce the cost of failure, while addressing increasing regulatory demands. Meanwhile, the digital economy is altering the expectations of providers and patients alike. Companies need to form new relationships with integrated health care systems, including provider networks, key opinion leaders and hospital management teams, as the point of contact in a value environment shifts away from individual physicians. Only lean and agile organizations will thrive in this era of rapid disruption.

Biopharmas will often argue they have automated the necessary tasks through enterprise resource planning (ERP) and other business applications. But the reality

is that most still suffer from a patchwork of processes and applications that don't communicate, don't simplify the workload and can't easily generate meaningful insights. This results in increased costs, unreasonably high process cycle times, unreliable quality and diminished agility, and outsourcing activities to lower-cost countries is not an answer. The cost arbitrage associated with outsourcing doesn't hold a competitive edge anymore.

In such an environment, RPA is quickly emerging as one of the best solutions to address all of the above challenges. Rather than replacing existing technology, RPA links existing IT assets together to simplify processes, accelerate efficiency and provide flexibility.

To unlock the full value of RPA, it is critical for companies to not only recognize its transformational benefits, but also understand its limitations. RPA can automate rule-based structured processes, but should not be viewed as one-stop solution for complete digital transformation. For business continuity, companies must identify the processes best suited for RPA and continuously manage or upgrade systems. Getting RPA projects right is critical for success. For instance, a rogue chatbot can do actual harm to patients by offering spurious advice, in addition to hurting a company's reputation. Thus, companies must plan ahead for potential challenges and risks and establish a well-defined road map. These steps will help companies effectively implement bots and realize substantial, company-wide benefits from RPA solutions.

Top reasons why pharma companies should embrace RPA:

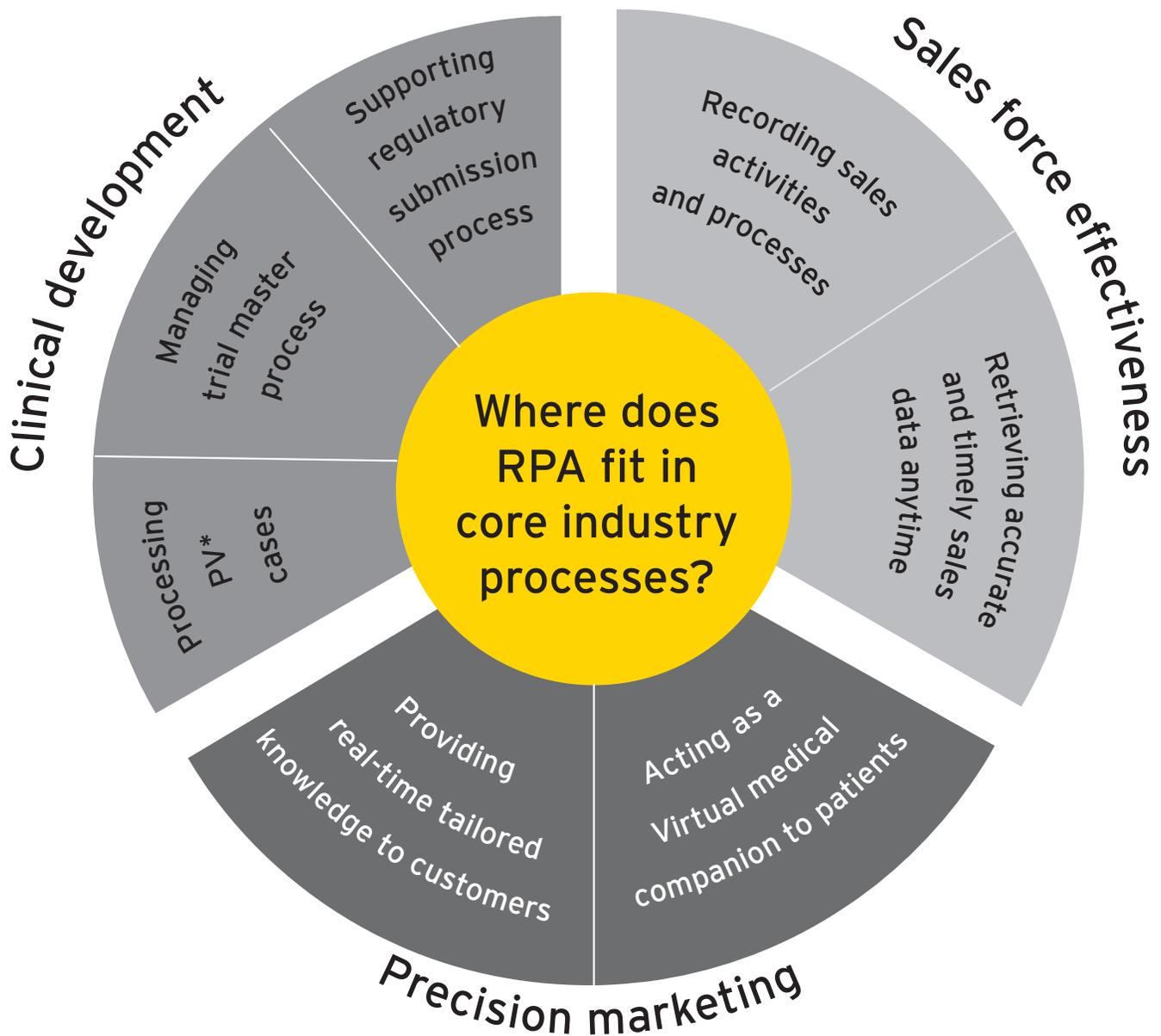
- Increasing number of tasks that can be automated
- Changing rules of customer engagement with more informed patients and physicians
- Rising annual cost of compliance and steep fines for noncompliance
- Hiring more people isn't effective

ROI of implementing robotics solution

- 1 Time:**
 - End-to-end processing
 - Reduces process cycle time
 - Has 24/7 potential with flexibility in scalability
- 2 Quality:**
 - Highly secure and controlled
 - Reduces errors and enhances compliance
 - Automation of repeat processes without radical transformation
- 3 Cost:**
 - Reduces full-time employee (FTE) headcount – One
 - One robot costs one-third of one FTEAdaptable to change
 - Adaptable to change
- 4 Value:**
 - Provides data-based insights
 - Allows retained staff to focus on more complex tasks

How can life science leverage RPA beyond back-office operations?

The potential utility of RPA to automate repetitive, data-intensive back-office processes, such as finance and human resources, has already been talked about at length. But automation is about creating and maintaining efficiency. RPA's ability to quickly integrate data to enable agility in complex environments make it a technology relevant to the middle and front office, too. Here are some of the many benefits RPA can provide in core industry processes across the life sciences value chain:



*PV = Pharmacovigilance

1

Clinical development: facilitating faster clinical trials and drug approvals

Challenges to the traditional path

Clinical-stage studies (phases I–III) cost an average of \$1.1 billion over 6.6 years. The clinical development stage is thus one of the most expensive and critical in the life sciences value chain. While the science underpinning the molecules being tested is very sophisticated (and so, too, are some of the clinical trial designs), the actual oversight process is highly manual and paper-based – despite the use of sophisticated software to track data from multiple sources. In many instances, these clinical processes are the remit of contract research organizations (CROs) based in countries with lower costs. As such,

there is an increased risk that trial procedures will be noncompliant or contain errors due to data mishandling across multiple systems.

How and where can RPA help?

RPA is of greatest value when used for rule-based, repetitive processes in drug development operations. Its use can support consistency in data entry, quality control and audit readiness in several targeted activities comprising clinical, regulatory, safety and laboratory operations. Here are some of the practical examples that demonstrate the value delivered by automation:

1. Processing pharmacovigilance (PV) cases processing:

Pharmacovigilance (PV) is a key area that could benefit from RPA. On an average, a large pharma company processes approximately 700,000 adverse event (AE) cases annually. With pressure to be leaner and more efficient, companies need to be able to process this increased case load while maintaining their current cost base. Fifty percent of PV resources are currently spent on managing cases that require integration of data that varies in quality, structure and format. EY projects that by automating such manual steps the typical top biopharma can reduce time spent on PV by 45%, with potential multimillion-dollar annual savings.

2. Managing trial master process: sponsors can record and integrate all the activities related to a clinical trial, including from multiple trial sites, in a master data repository called a trial master file (TMF). (Since most of these master files are electronic in format, the “eTMF” designation is frequently used.) Although the TMF structure improves audit readiness, sponsors have yet to realize their full value because documents and data are still entered manually at present. Sponsors that use multiple CROs also have to contend with multiple eTMFs that are not fully integrated. This limits insight into the trial master file content and process. In addition, staff must be trained and user accounts maintained and validated for each system. Automation reduces the manual effort associated with data entry and document uploading into the eTMF. EY estimates that RPA could reduce the time spent on data entry by 90%, potentially saving several million dollars a year per clinical trial.

3. Supporting regulatory submission process: the regulatory submission process is time-intensive, requiring biopharmas to carry out activities that include tracking the status of documents and compiling records to create a dossier. EY estimates that RPA could reduce process time by 65% and, thus, reduce the time to market.

Case 1: automation of PV case intake

A major pharma company piloted automation of one of the routes of PV case intake: reporting from physicians by field sales reps using a messaging bot solution. The company created Adverse Drug Reaction forms in a pharmabot. Sales reps were able to capture data (such as critical emergency cases) instantly from physicians in the field, via phones. The company is now virtually automating all other paper-based workflows.

- ▶ Increased real-time reporting
- ▶ Reduced compliance risk
- ▶ Quick resolution of issues

Case 2: automation of trial master files

EY is conducting a proof-of-concept study with a leading pharmaceutical company in helping it meet a compliance requirement in eTMF using bots.

Estimated time and effort reduction (projected by EY) varies from 60% to 90% with several million dollars in savings per year.

Implications for pharma companies

By helping to address some of the key administrative tasks in the clinical process, RPA is gradually enabling pharma firms to focus on bringing safe and effective drugs to market at a lower cost. They can avoid significant market delays and reassign employees to higher-value activities related to core research and development.

2

Sales force operations: amplifying responsiveness and relevance of sales reps

Challenges to the traditional path

Biopharmas use a variety of robust analytics tools from software vendors to improve the speed and flexibility of their sales organizations. Still, studies show 71% of sales reps claim to spend a lot of time on data entry. The most common complaint that salespeople have about customer relationship management (CRM) systems is that they're too time-consuming. That is partly because salespeople must use multiple databases to manage disparate tasks: from tracking records and inventory, to reviewing customer feedback, to managing expenses. Such activities limit reps' capacity

for the higher-value work of interactions with physicians or hospital groups. Indeed, estimates suggest that when it comes to actual selling activities, biopharma salespeople currently spend just 22% of their typical work week discussing their products with buyers.

How and where can RPA help?

Acting as personal assistants, bots are poised to become the new face of enterprise apps, quickly aggregating key data to enable sales people to focus on high-touch customer engagement. Here's how:

1. Recording sales activities and processes: robust CRM and closed-loop marketing (CLM) systems are some of the best ways to achieve sales force excellence. However, remembering to use the CRM consistently and accurately is difficult. A simple bot that integrates into the existing CRM system might offer big advantages. Bots can now manage routine (though still complex) data entry tasks, such as setting up meetings with physician groups, sending intelligent reminders for follow-up emails to prospects and customers, or providing call suggestions.

Case 3: managing orders and inventory

A leading medical device company needed a way to improve its customer service to hospitals and automate regional inventory reporting (done manually). The company utilized bots to download current inventory data from the company's SAP (Systems, Applications, Products) system, imported it into a back-end data table, updated queries and then notified support staff of inventories by region.

Seeing encouraging results with inventory reporting automation. The company extended use to 50+ processes, reaping annual cost savings of US\$240,000 from bot implementation.

2. Retrieving accurate and timely sales data anytime: information about past interactions are critical in making future decisions. As the algorithms become more powerful and more nuanced, bots may be able to adopt additional tasks that boost sales force effectiveness. These include assembling different data from the sales force, including past order history and contact information. This can help prepare sales reps for in-person meetings with providers, proactively flag opportunities and send follow-up notification reminders. Even sales managers can gain access to on-demand reports to diagnose and improve pipeline health of their sales team. The key advantage of bots compared with apps is that the information needed to take certain actions is all in one place and does not require shifting from one interface to another.

Case 4: automating repetitive processes of sales rep detailing

A leading biopharma company wanted to automate certain repetitive processes of sales rep detailing, such as informing (sending news feed service, finding related news), sending push notifications (invitations to congress), placing sample orders, etc. EY is currently developing a customized chatbot (conversational bot) on the Facebook Messenger platform.

This will not only aid in freeing up sales rep time for more value-added tasks, but also help in building personalized relationship with a large number of doctors.

Implications for pharma companies

By taking on more menial tasks, RPA allows sales reps to spend more time developing relationships with key providers and payor stakeholders. Sales reps are thus better able to identify how to help customers deliver improved health outcomes to patients.

3

Precision marketing: personalizing customer engagement and experience

Challenges to the traditional path

According to Gartner, *“By 2020, 85% of customer interactions will be managed without a human.”*

The rules of customer engagement are changing. Physicians aren't as accessible to reps, while patients are arming themselves with online medical knowledge. For both customer groups, conversational bots, already used for retail interactions, could play a vital role.

How and where can RPA help?

Chatbots won't just be for used to buy shoes or furniture in the future. In health care, they create a mechanism to connect with key stakeholders.

1. Providing real-time tailored knowledge to customers: chatbots could help enhance the physician experience – for instance, a physician can order a bot to bring up a drug's information related to a patient's specific diagnosis. Instead of being inundated with drug ads published in journals or distributed through streaming media, physicians can tailor subscriptions to only those bots that focus on areas of interest, such as “all drugs for cystic fibrosis” or “new studies on pancreatic cancer.” Many pharma companies use online private messaging tools to invite patients to chat with a nurse about their treatment. But because of the human resources required, this strategy is cost prohibitive. Chatbots can make the process conversational by offering patients and caregivers easier access to complex and sensitive medical subjects. Tailored communications to patients will be key to brand and therapy success in the future.

2. Acting as a virtual medical companion to patients: chatbots can act as virtual companions, checking when medications are taken, recording the latest biometric readings, inquiring about symptoms or making ingredient substitution suggestions to recipes found on the internet. The day may not be far off when a patient gets details from a disease awareness bot on messenger. A branded product information chatbot in a Q&A-style interaction could explain how a drug works and when to take it to avoid interference with other medicines. Robert Palmer, executive vice president and digital innovation officer for Juice Pharma, predicts, “The development and deployment of health bots is rapidly coming on-stream. As patients and providers become more comfortable with automated medicine, and as pharma develops regulatory guardrails that make implementation widespread, health bots will revolutionize patient care.”

Implications for pharma companies

Chatbots need not target individuals. Instead, users utilize chatbots because of a need or desire to get information or complete a task. They hold the potential to provide easier and faster access to health care information, improve response times and patient experiences,

Case 5: providing access to complex medical information easily, quickly and efficiently

A pharmaceutical company launched the first chatbot on Facebook Messenger for physicians in Italy and globally. The chatbot enables delivery of content tailored to each physician's specialization and answers complex questions by accessing data from a health database. In the future, the company plans to integrate the bot with Siri and other voice-recognition systems to improve the interactive experience.

Case 6: acting as “personal health assistants” to patients via real-time connect with simulated physician

A leading biopharma introduced a disease chatbot (Hives), which allows patients to have tricky conversations with a simulated dermatologist. This helps patients to explore issues on a private forum and collect the information they need to take next steps in managing their condition.

and reduce time and cost of service. While many companies have a stand-alone customer service feature in their mobile app, using a chatbot instantly provides access to millions of users.

Recognizing limitations of bots and chabots

RPA offers numerous potential advantages for biopharmas, but there are pitfalls, too. Adopt the wrong system and there will be no use case for the technology. Before embracing bots as a holistic solution, it is critical for companies to understand the limitations of RPA. There are four critical myths related to RPA to consider:

Myth #1

RPA is a holistic solution that can integrate all structured and unstructured data.

RPA won't automate 100% of your processes. RPA should be seen as one component in your organization's digital business toolbox. Few rule-based structured processes can be precisely and completely automated using RPA alone. However, for end-to end process integration, the right combination of tools and technologies (bots, analytics, AI, etc.) are needed. Therefore, identifying the areas in greatest need of automation and assessing which combination of capabilities is most relevant is critical.

Myth #2

RPA, once deployed, can be a finished-and-forget case.

RPA programs need to be managed continuously and new procedures must be continually added or upgraded for business continuity. These changes can add to the cost of RPA.

Myth #3

AI-chatbot virtual assistant can function with 100% independence and completely replace humans.

Chatbots today don't have the flexibility to veer from a programmed script. This lack of human judgment and emotion creates risks when the unexpected occurs. Take an instance of an established technology company, which attempted to launch an AI-based chatbot, however it failed within 24 hours of its release. Though AI-chatbot was designed to

entertain people through casual and playful conversations, some Twitter users fed it racist sentiments. The chatbot started tweeting racist and sexist comments, forcing the technology company to abruptly pull the plug. In the pharmaceutical industry, the potential for a rogue chatbot to do harm is much greater. Spurious advice on health issues could either trigger unnecessary doctors' visits or downplay critical disease symptoms.

As bots become smarter, they will, of course, be able to have more nuanced conversations with patients. Still, companies must understand that bots cannot solve everything, so a seamless and painless way of transitioning between bots and humans should be provided.

Myth #4

Automating activities will save 100% of the time previously devoted to manual processes.

Human FTEs would need to spend time providing inputs (triggers and data) to bots. Thus, the net benefit will always be less than the time spent on automated activities.



Preparing organizations for this massive change

We have seen as many as 30% to 50% of initial RPA projects fail. This isn't a reflection of the technology; there are many successful deployments. Often simple errors can cause delays, with projects that would take two to four weeks to deliver under a high-quality approach rapidly increasing four- or five-fold in cost and duration as a result. Often these avoidable delays give senior stakeholders a

reason to withdraw support from the project. It's therefore important to recognize and mitigate these (and other) common issues in order to facilitate the success of the organization's RPA program.

Getting RPA into mainstream calls for a robust strategy and thorough end-to-end planning. Critical steps for success including:



1. Define a clear strategy and build a governance structure:

It is critical for companies to have a clear strategy at the outset and carry out a rapid company-wide or unit-wide opportunity assessment alongside a proof of concept (PoC). PoCs can automate sophisticated processes in weeks, which is all it takes to perform a solid opportunity assessment and create a detailed business case. Trying to use RPA for a highly complex process is one of the common mistakes that companies tend to make; this typically results in significant automation costs. Low- or medium-complexity processes or subprocesses are generally the best initial target for RPA, with a minimum of 0.5 FTE savings, and preferably more. Ultimately, look for the processes with the best return and the simplest delivery.

RPA is a transformational journey demanding strong leadership buy-in, long-term sponsorship and core digital task force to succeed. It is critical to identify the first set of functional or operational leaders who are excited about RPA and are the supporters of change.

2. Choose your RPA supplier wisely:

Select a partner who will be able to seamlessly bring together end-to-end process and RPA program and change management, and operational risk management capabilities to deliver the program with minimal risk.

3. Make risk management a key piece of the deployment strategy:

A successful RPA program is a business-led initiative with strong partnership from employees, IT, cyber, security, risk, HR and other enterprise functions:

- ▶ Make IT an integral part of your automation journey: RPA is definitely a business-led program, but keeping IT involved from the beginning of journey is imperative to success. Since RPA just takes weeks to go live, IT should also be nimble enough to set up the right environment and the bots in real time.
- ▶ Involve employees early, imparting the right training and rewarding positive behaviors: the biggest mistake in change management that companies make is assuming that skills needed to create a PoC are good enough for production automations. Companies should work on the basis of needing at least two weeks of classroom training, then two to three months of hands-on project delivery with supervision and coaching before an analyst can deliver production-quality automations. Cutting corners on workers' training opens up companies to new risks and potentially damages the brand.
- ▶ Deal with burning issues in Life Sciences industry (risks and regulations): when dealing with the highly regulated pharmaceutical space, there are definite challenges involved in

developing a chatbot that shares disease and treatment-specific content externally. All of the content needs to be reviewed by medical, legal and regulatory divisions to make sure that it adheres to FDA regulations and approvals. User utilization needs to be anonymized, including the specific conversations that take place. Also, as per the Fair Balance Act, content distributed by the pharmaceutical company needs to include a fair balance of information about drug risks, as compared with information about drug benefits.

4. Focus on measuring and realizing benefits:

Ultimate benefits of RPA are derived only when automation reduces the number of FTEs. When these savings are reaped, business teams should look at redeploying or reskilling employees to deliver improved customer experiences. The following are some of the areas in which the measurements can be done:

- ▶ Bot performance: utilization of allocated bots, average handling time of bot per process, customer conversion rate, increase in brand equity
- ▶ Time saved: number of manual runs vs. bot runs, time and cost savings

5. Manage RPA life cycle:

Companies mistakenly underestimate what happens after RPA has been implemented. Handling frequent process and technology changes is critical for sustainability. This requires building a support mechanism team to provide ongoing upkeep to the RPA system, reconfiguring processes as needed.

Robotics can increase a biopharma's future agility

"RPA has been around since 2005 (initiated by BluePrism).

The technology will be embedded in all of our organizations over the upcoming five years ... You can apply the technology to many situations and scale it very quickly," said Professor Leslie Willcocks of the London School of Economics (2016).

This change won't happen overnight. To best understand the opportunities inherent in RPA adoption, companies should begin to assess which low-complexity tasks are best suited for the technology. Future success using RPA will require a lot of experimentation, as well as some failures. The good news is biopharmas can take advantages of emerging leading practices learned in other industries. Setting reasonable expectations at the start, promoting frequent conversations between developers and users and providing competent training will facilitate the trust needed to achieve the potential of bots in the pharma space.

Further reading from EY Life Sciences



Projections 2018

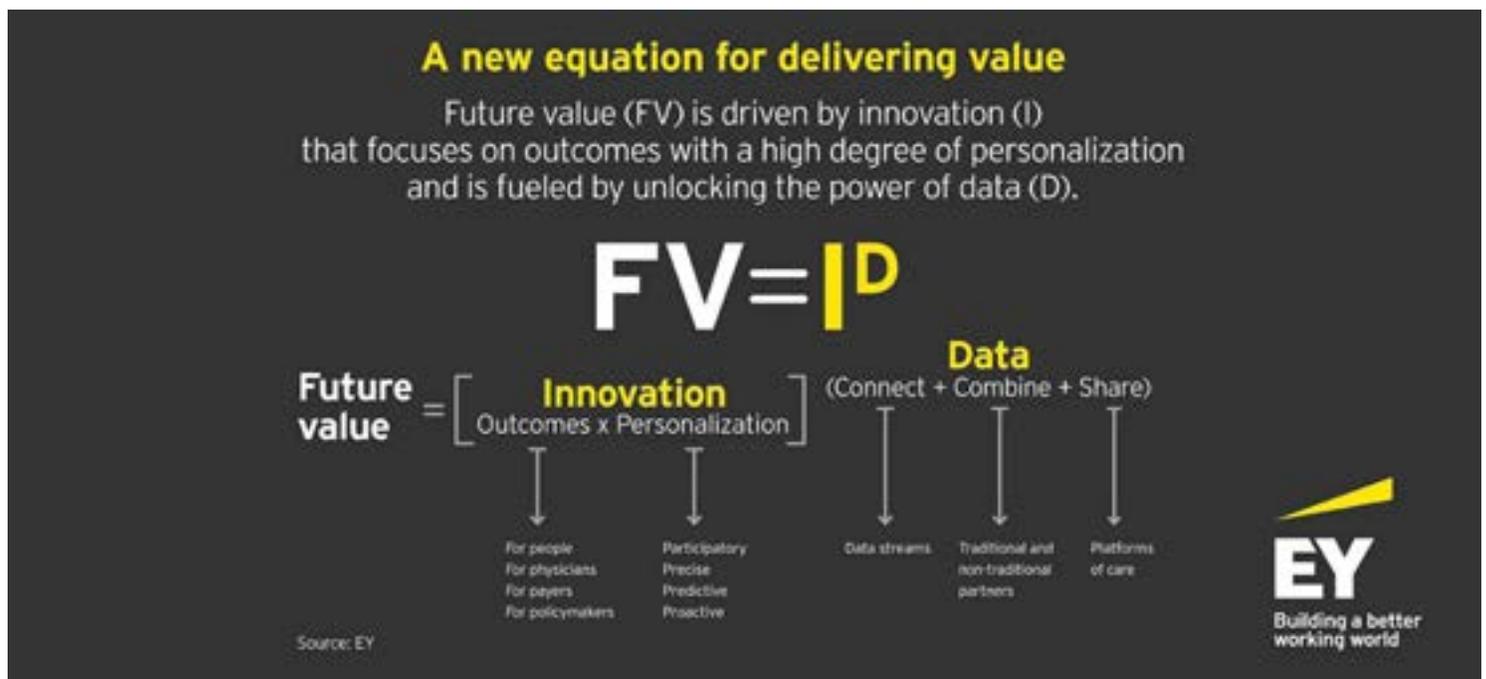
Life Sciences 4.0: securing value through data-driven platforms

Increased customer expectations and rapid technological advances are disrupting the health care industry, causing power to shift across traditional stakeholder groups and creating opportunities for new entrants. As the data and algorithms that drive patient-centric health outcomes become the ultimate health care products, organizations that harness data-fueled insights will lead in this new industry paradigm.

Life Sciences 4.0 examines this power shift, creates a future vision for the health care industry and suggests how life sciences companies should respond.

To create value now and in the future, biopharmas and medtechs must adopt agile, data-centric business models presently only seen in other industries. That means life sciences companies must build – or participate in – interoperable information systems that deliver data-driven improvements to health outcomes. And they must form agile, often short-term, partnerships and collaborations.

As competition increases and capital becomes scarcer, we expect to see companies narrowing their focus from diversified business models.



“Embracing Life Sciences 4.0 is both a global urgent need and an opportunity. If companies leverage technology to create platform interfaces and combine their proprietary data with those from other health stakeholders, they can position themselves as powerful leaders and capture sustainable future value.”

– Pamela Spence, EY Global Life Sciences Industry Leader

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EY Global Life Sciences contacts

Sriram Shrinivasan

Global Generics & Emerging Markets Leader, Life Sciences

Email: sriram.shrinivasan@in.ey.com

Phone: +91 22 619 20000

Mark Hammond

Executive Director, EMEIA R&D

Email: mhammond@uk.ey.com

Phone: +442079809661

Christopher Aiken

Executive Director, Advisory - Life Sciences

Email: christopher.aiken@ey.com

Phone: +1 216 583 1578

Adlai Goldberg

Digital, social, & commercial innovation, Life Sciences

Email: adlai.goldberg@ey.com

Phone: +1 415 251 8888

Chris McDonnell

Executive Director, Advisory - Life Sciences

Email: chris.mcdonnell@ey.com

Phone: +1 215 841 0373

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How EY's Global Life Sciences Sector can help your business

As populations age and chronic diseases become commonplace, health care will take an ever larger share of GDP. Scientific progress, augmented intelligence and a more empowered patient are driving changes in the delivery of health care to a personalized experience that demands health outcomes as the core metric. This is causing a power shift among traditional stakeholder groups, with new entrants (often not driven by profit) disrupting incumbents. Innovation, productivity and access to patients remain the industry's biggest challenges. These trends challenge the capital strategy of every link in the life sciences value chain, from R&D and product supply to product launch and patient-centric operating models.

Our Global Life Sciences Sector brings together a worldwide network of nearly 17,000 sector-focused professionals to anticipate trends, identify their implications and help our clients create competitive advantage. We can help you navigate your way forward and achieve sustainable success in the new health-outcomes-driven ecosystem.

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