# The Medical Device Marketer's Guide to Digital Transformation

The idea of artificial intelligence (AI) is not a novel concept: as early as the 1950s, scientists and mathematicians were exploring the ability of machines to learn and make decisions.[1] According to Google co-founder Larry Page, "Artificial intelligence would be…the ultimate search engine that would understand everything on the web. We're nowhere near doing that now. However, we can get incrementally closer to that, and that is basically what we work on."

While artificial intelligence is not yet a perfect science, the explosion of data coupled with increasingly precise analytics is transforming healthcare and life sciences in meaningful, practical ways. Marketers' ability to ensure that information is delivered to the right person, in the right place and at the right time, is becoming increasingly possible, *and important*. AI and machine learning (ML) enable med tech to make data usable, and to augment processes throughout the relationship with healthcare providers (HCPs) and patients.

Now is the time for medical device companies to ready themselves to harness the power of AI and machine learning. Just as these capabilities enable new means of targeting and reaching customers, deploying them successfully requires a new approach to content, processes, and technology. In this report, we'll dive deep into best practices and actionable tips for:

- Understanding AI and ML
- Setting the stage for successful integration of AI and ML into your marketing strategy
- Applying AI in key areas for life sciences organizations

[1] Anyoha, Rockwell, "The History of Artificial Intelligence," Science in the News, Harvard University.

# What's in a Name? Understanding AI and ML

Thanks to the digitization and capture of consumer data, marketers across all industries are able to deliver relevant content to highly defined segments while reducing spend. Prior to diving into AI in its many forms and why it's essential to modern marketing, it's important to discuss what the common terminologies related to AI actually mean.

Artificial intelligence is the ability of machines to perform tasks that require cognitive abilities, such as making decisions based on a set of choices, or automatically surfacing deep insights based on meaningful data. The use, research, and development of AI has exploded recently due to the convergence of:

- Massive amounts of useful, connected data generated by smartphones and connected devices
- Exponential growth in processing power
- Cheaper, faster data storage
- An increase in Internet connectivity speed
- The emergence of new and powerful algorithms like deep neural networks

Machine learning is a vast and important area within the field of AI. Many of the important advances in AI are possible because of ML. In its simplest form, machine learning can be defined as the ability of machines to learn by using data but without the need for explicit, rule-based algorithms. An ML-based system continuously adjusts itself based on new data. To obtain high-quality datasets, it must be regularly cleaned and organized in a standardized way. This enables ML-based systems to develop new insights that drive actionable outcomes.

Machine learning-driven solutions can be categorized into two large segments: **prediction** and **recommendation**. Predictive systems are used to *predict* outcomes based on data. Recommendation systems are used to *recommend* actions to influence the outcome toward a desired direction. Amazon's recommendation engine is a prime example of such a system.[2]

[2] To discover more artificial intelligence lexicon and learn additional commonly-used terms, visit this glossary.

# How Machine Learning Optimizes Biopharma Marketing

## Enabling an AI-ready Infrastructure

Fundamentally, AI's core advantage is its ability to sift through volumes of data and detect patterns, which reduces subjectivity. By automatically connecting the dots between every piece of customer data we have at our disposal, AI can immediately target compliant content based on a deep understanding of customer need. To ensure they are AI-ready, life sciences companies will require the right data, the right content, and the right organizational approach.

## Getting the Right Data

Implementing AI requires a commercial foundation that can deliver business insights faster. With the rapid growth of data and complex analytical needs of modern enterprises, many organizations today are not prepared to leverage the benefits of AI and analytics.

AI-driven recommendations require that data from all sources is cleansed, rationalized, and ready for analysis. Legacy data structures were not designed for the variety of today's data inputs. Life sciences companies require a commercial data warehouse with an industry-specific data model and standard data connectors to unify their most important data sources, such as prescription, sales, CRM, and claims data, including regional data sources.

With an industry-specific, cloud-based data warehouse, there's great potential for commercial teams to deliver new content experiences. It also provides the proper foundation for AI to make next-best-action, channel, and content recommendations. This requires seamless integration across the data warehouse, CRM, HCP-facing channels, and content management systems. This would enable marketers, for example, to gain insight into content performance across channels directly in their digital asset management system. Teams could also bring content and channel-related data together with their claims and sales data to tie materials all the way to business results.

Taken one step further, the next frontier for AI/ML in commercial life sciences is bringing more personalization to interactions between sales reps and healthcare providers. Between multichannel interaction data, claims information, demographic data, and detailed customer profiles, life sciences companies know their customers in depth. The challenge is unlocking this information from silos and making it actionable. This is where AI comes in.

Based on rich customer information captured in CRM and other systems, AI can not only provide recommendations on the next best follow-up action and channel—but also provide customized content such as a tailored sales aid. Knowing that Dr. Smith is interested in cardiac resynchronization therapy, for instance, led a session at the American Heart

Association, and tends to click on links in educational emails in the afternoon between patients, it will be possible to automatically generate the right piece of digital content and deliver it at exactly the right time. Once companies are ready with a data foundation, providing highly relevant customer experiences will depend on having compliant content available to fuel the AI engine.

## Getting the Right Content

Due to regulatory requirements, it can be more difficult for device and diagnostic companies to get content to market as rapidly as organizations in other industries. However, the effectiveness of AI will depend on creating a full pipeline of digital content to use across channels. Particularly in the age of social media, the ability to join the conversation quickly can make a huge difference in driving the perception of a modern brand.

Companies can create evergreen content that is ready to deploy at any time. Key areas to prioritize include medical information, FAQ responses, and digital sales aids: materials companies are likely to be in the process of creating but may need to think about differently. Modularizing medical information into bite-size chunks that can be delivered by a chatbot, for instance, can help close the loop between med tech companies and customers who require instant responses. And before content even gets approved, AI and ML can intervene to speed reviews while reducing compliance risk.

## Reducing Risk With AI

Traditionally a cumbersome process, content review is an area where new technology stands to create a significant impact. As part of the approval process today, for instance, reviewers and agencies read content for risk and manually tag claims. With ML, the system can be trained to identify claims—usually safety and effectiveness statements—and use this to identify new claims within new documents. Further, if the system “knows” what claims have been manually linked in previous pieces (and what reference was used to support the claim), it can use this information to scan new documents for those claims and automatically link them to previously used supporting references.

Artificial intelligence can also potentially intervene in the flagging of risky claims, by learning why content is rejected. This could result in producing a score assessing a piece of content’s risk level. Forward visibility into potentially high-risk materials can help guide content creation and drive decision making on approvers to include in the cycle. For example, a low-risk claim may not require the full bench of legal reviewers that a riskier piece of content would merit. Ultimately, AI can provide the means to automate the creation of finely tuned messages—and drive personalization at massive scale.

## Scaling Personalization and Predictive Modeling

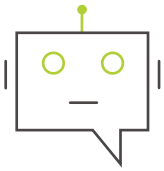
Amazon, eBay, and Netflix employ ML to understand their customers and predict what products and services they might enjoy based on past experiences and similarity to other audiences. These companies use predictive modeling to know their consumers on an intimate level, which results in more personalized experiences and retention on their platform.

Life sciences brands can use ML to scale personalization effectively, targeting customers with ads across platforms to engage them based on their own interests. These ads can use more effective copy and imagery to encourage interested patients and HCPs to learn more about a treatment with a medical device or help existing customers to stay compliant with the use of the device when appropriate. Today, AI-powered platforms built for life sciences can provide banner services enabling refined and targeted search, as well as opt-in resources for additional one-to-one communications via SMS or email.

## Automating and Assisting Customer Service

While ML is not limited to chat interfaces or chatbots, these tools are among the most popular and effective uses for the technology today. It is relatively easy for marketers to start implementing ML to analyze their content and develop tools to point users to the right resources at the right time.

By combining ML with natural language processing, brands can build bots that answer user questions via websites, Facebook Messenger, SMS, Amazon Alexa, and other platforms.

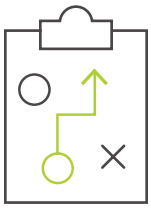


Marketers in the healthcare space are uniquely positioned to develop bots to interact with users or assist customer service agents, since many already have workflows with very specific messaging approved by medical, legal and regulatory teams. Device and diagnostics marketers should take special care to ensure adverse events and product complaints are understood and addressed. When done correctly, ML can make customer service faster, more cost-effective, and create better experiences for the brand and consumer.

One key area where chatbots can make a significant difference to device marketers is re-branding a mature device in market. Device and diagnostic consumers, whether a patient, a surgeon or a clinician, using very mature devices need options to obtain information and resources that help them cope with complexities of treatment.

Enter conversational AI assistants (think Alexa or Siri) facilitating access to content curated especially for the end user's specific experience. Beyond adding a competitive edge, these services can also enable better therapeutic management, providing patients and HCPs with personalized support and information.

## Combining Data to Understand User Behavior



A commercial data warehouse with standard industry connectors allows marketing teams to build profiles based on many data inputs, including CRM databases, social activity, and other data sources. For example, some companies are now leveraging CRM data such as HCP changes in title, recent call activity, and behavior to suggest a best next course of action for the sales rep. Device marketers who are diligent about maintaining databases by adding relevant information over time can build models that allow marketing teams to make data-based decisions when creating their strategy.

# Conclusion

Machine learning and AI can and should become part of how you run your marketing business in order to compete in today's data-rich, real-time-intelligence environment. This technology allows for stronger, more adaptive, directed marketing campaigns. The implementation for ML and AI can be daunting due to the proliferation of content/data, level of effort to build the systems, and the need to approve under multiple contexts, but the end result can make this investment pay dividends.