EHR convergence and interoperability:
A key strategic question for health care providers
Executive summary

Regulatory requirements and industry demands continue to drive consolidation in the health care provider market. Virtually every health care organization is wrestling with the primary strategic question of how to best build scale to cost effectively respond to regulatory and health care consumer demands. However, secondary strategic question of utmost importance lurk close behind: How will the organization drive value in the newly formed organization? And how will technology support driving that expected value? What is the right roadmap for your organization?

Converging to a single electronic health record (EHR) platform can enable smooth sharing of patient data across all entities, but the time and financial investment can be significant. An interoperability solution laid on top of existing systems is a faster and cheaper path to value. However, it may not fully realize the vision behind the original consolidation, or provide the optimal platform for new value-creation opportunities in the newly formed organization. Such opportunities include enabling new revenue avenues, enabling third-party ancillary system rationalization to lower IT support costs, and accelerating the move of application and infrastructure technology portfolio to the cloud, and associated business agility that brings. Beyond IT considerations, human capital challenges will present themselves during the roll-out of IT system changes, including decision governance and change management.

There is no one answer for how an organization should approach consolidation and expansion. However, armed with a solid organizational strategic plan, a structured evaluation process, and with insights into current and future tradeoffs, every organization can plan for, and implement a strategy to enable a successful transformation over the long term.
What’s at stake?

**Ability to capture market opportunities and create competitive advantage**
Health care providers increasingly face pressures from changing health care consumer preferences, changing reimbursement models, frequent legislative changes, rising health care delivery costs, actions being taken by existing competitors, and new market entrants. The industry continues to shift towards a value-based care model. All of these factors have been driving health care organizations to create differentiated capabilities, and grow/scale the market they serve through mergers, acquisitions, and partnerships.

**Interoperability is the key enabler to effectively capitalize on these opportunities**
The health care provider’s ability to succeed and realize value post M&A and partnerships may largely depend upon its ability to manage, act upon, and deliver information in a more meaningful way. Interoperability across a patient’s care continuum requires secure transfer of patient information, ideally with patients at the center of care and in control of their information. In order to portray a longitudinal picture of patient health, rather than mere episodes of care, providers need the ability to seamlessly and securely access health information captured across disparate health IT systems and across care settings. This will enable providers to manage health outcomes as patients traverse different care settings of their choosing to suit their needs. A longitudinal view of all patient interactions, consultations, and medical bills will help medical professionals better anticipate patient needs for both medical and financial support. The Centers for Medicare and Medicaid Services (CMS) now incentivizes this increased coordination across care settings that requires such a longitudinal patient view. In 2016, CMS released a Funding Opportunity Announcement (FOA) for an Accountable Health Communities (AHC) model to support local communities addressing health-related social needs by bridging the gap between clinical and community service providers.\(^1\) There is increased incentive for community clinical engagement, with hospitals to partner with independent providers, social workers, mental and behavioral health services, community health services, home health providers, and hospice service providers. Such partnerships aim to increase clinical benefits through decreased readmission rates, reduced length of inpatient stay, and improved patient adherence to prescribed treatment plans, thus lowering hospital operating costs.\(^2\)

Establishing such community clinical partnerships with hospitals has led to an increased need for proactive patient engagement, increased care coordination, and a need for technology interoperability between partner organizations.

**Competitive advantage through clinical integration**
Smooth patient hand-offs between points of care will only enhance user experience and increase efficiency of revenue cycle management across care settings. Interoperability across a patient’s care continuum requires secure transfer of patient information, ideally with patients at the center of care and in control of their information. In order to portray a longitudinal picture of patient health, rather than mere episodes of care, providers need the ability to seamlessly and securely access health information captured across disparate health IT systems and across care settings. This will enable providers to manage health outcomes as patients traverse different care settings of their choosing to suit their needs. A longitudinal view of all patient interactions, consultations, and medical bills will help medical professionals better anticipate patient needs for both medical and financial support. The Centers for Medicare and Medicaid Services (CMS) now incentivizes this increased coordination across care settings that requires such a longitudinal patient view. In 2016, CMS released a Funding Opportunity Announcement (FOA) for an Accountable Health Communities (AHC) model to support local communities addressing health-related social needs by bridging the gap between clinical and community service providers.\(^1\) There is increased incentive for community clinical engagement, with hospitals to partner with independent providers, social workers, mental and behavioral health services, community health services, home health providers, and hospice service providers. Such partnerships aim to increase clinical benefits through decreased readmission rates, reduced length of inpatient stay, and improved patient adherence to prescribed treatment plans, thus lowering hospital operating costs.\(^2\)

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**Informed care decisions and patient outcomes with information sharing**
In the Medicare Access and CHIP Reauthorization Act of 2015 (MACRA), Congress declared interoperability a national objective to achieve widespread exchange of health information through certified EHR technology by December 31, 2018. According to a joint Office of the National Coordinator for Health Information Technology (ONC) and American Hospital Association (AHA) annual survey 2008-2015, the percent of US hospitals that electronically find patient health information, and send, receive, and use patient summary of care records has steadily increased.\(^3\) However, hospitals’ use of patient data from outside providers for patient care is low, with only 18.7 percent of hospitals reporting “often”
using these data, indicating a need to rethink how interoperability can enable specific strategic outcomes. The most common reason cited for not using such information is the inability to access it from within the hospital’s EHR, whether due to limitations in clinical workflow or to the inability to integrate data from outside sources into the EHR. About half (46 percent) of hospitals reported experiencing greater challenges exchanging data across different vendor platforms.\(^4\)

CMS’s increased focus on value-based care and quality based payments has led provider organizations to increasingly evaluate their data sharing capabilities. Payment models such as Merit-based Incentive Payment System (MIPS) and Advanced Alternative Payment Models (APMs) focus on tracking quality of the delivered care, advancing care information sharing to better care coordination, patient and clinician shared decision making, and expansion of practice access. These drivers have increasingly led provider organizations to choose convergence and/or interoperability to address complex MIPS/APM reporting requirements.

**Considerations driving integration decisions**

The decision to converge to a single technology platform versus enabling interoperability is largely driven by the type of consolidation and/or partnership model. Considering interoperability in a provider merger and/or acquisition: the decision may be to standardize capabilities across the health system through implementation of a single technology platform. Moving to centralized platforms may be an ideal strategy for enabling people, process, and data standards across the new entity, and application rationalization, but it comes with some significant challenges:

1. Integration is labor and cost intensive, and typically takes two to five years to implement.
2. Integration requires intensive data migration located across disparate legacy IT systems to a single platform.

Vertical integration often results in organizations converging towards a single platform. Successful innovation through convergence is evident in companies whose offerings are typically based on a core platform that allows them to launch many different applications and products.\(^5\) A vertical integration or partnership model with people, processes, and data-sharing obligations leads to other specific integration challenges:

1. Participating organizations may not arrive at a single preferred platform due to various operational or financial constraints.
2. Differing reporting and regulatory requirements across hospitals and outpatient care facilities may drive separation between hospital and physician practice systems.
3. Lack of industry operational practice and interoperability standards limits the ability to harmonize and aggregate information across participating organizations.
4. Once operational practice and interoperability standards are established, they may limit a network’s ability to scale by adding new partner organizations due to differences in underlying IT platforms.
5. Core platforms result in a highly orchestrated maintenance strategy for participating organizations, with all participants required to take code updates versus an “opt out” for any future release updates.
6. Integration decisions are not always handled in a way that enhances value to the relationships between hospitals, labs, physicians, and other services.
7. Disagreement over degree of control held by entities involved can slow progress.

To realize the full potential, health care providers should focus on costs and benefits of opportunities driving the need for interoperability versus convergence, as well as think through long-term implications of the challenges posed by each approach.
Our take

Convergence vs. interoperability: Evaluating your strategy
Convergence to a single system platform allows for seamless patient information exchange between participating organizations. Standardized processes, platforms and data and resulting rationalized application inventories across participating organizations enables higher levels of integration while simultaneously lowering costs for maintenance in the long run.

On the other hand, interoperability makes it possible for disparate, heterogeneous systems to share patient-related information to support clinical workflows and business processes across the health system and organizational boundaries. Interfacing—a loosely coupled, asynchronous form of application integration—is at the heart of health care interoperability. At the highest levels of interoperability, semantic interoperability provides ability to not only exchange information through interfacing, but also enable actionable insights and outcomes from the use of the exchanged information. The health care organization’s challenge is to create a practical, yet forward-looking foundation for a semantic interoperability from a patchwork of available options.

There are several factors that an organization should evaluate when deciding which strategy to pursue:

Time and cost to achieve
Among the primary considerations in IT system convergence discussions is balancing the tradeoffs among cost, time, and expected benefits.

For large, geographically distributed organizations considering M&A or partnership plays, we have seen the Total Cost of Ownership (TCO) for EHR convergence range between $150M and $500M or more. The complexity of these implementations frequently requires organizations invest resources for 18 to 24 months or longer.6 The need for legacy data conversions of the core convergence platform further increases up-front implementation costs.

On the other hand, the appeal of an interoperability play that connects major systems is that the implementation cost and duration are both less than that of convergence. However, long-term cost effectiveness must be considered. Multiple instances of EHR and ERP systems require multiple licensing fees and IT support teams for each instance. The further the cost/benefit analysis of the IT play is extended into the future, the more costly the IT run cost becomes.

Addressing future state of IT portfolio
Regardless of specific IT strategy, each organization must address its IT portfolio following an M&A or partnership play. Typically, organizations must rationalize the EHR system, ERP system, associated third-party applications, and IT infrastructure core (servers, networks, etc.) components of their IT portfolio; an exercise that will necessitate, and often enable a deeper dive into the host of surrounding systems that enable health care provider operations, and most certainly could accelerate a move to the cloud for some of these tools. Systems supporting functions such as radiology and cardiology imaging, dictation and transcription, vital-sign monitoring, and decision support/cost accounting will likely exist in duplicate or triplicate across the legacy entities of the newly formed organization, which is not only costly from a maintenance perspective, but can also limit the degree of, or pace at which, workflow and data standards can be achieved post-deal. If the same vendor application is used at all entities for a
given function, then multiple instances of the product can be consolidated into one to support the enterprise. The organization should select best practices and workflows across various entities to define new and consistent standards over a single system instance. This approach would require intensive decision making. Effectiveness depends on strong and motivated organizational leadership. If different systems are used for the same function across entities, then a governance and decision-making model will be needed to implement a softer interoperability solution. Organizations would need to evaluate choices such as implementing new platforms over the current application layer, expanding on existing interoperability and HIE standards such as HL7 or DICOM, or considering API push/pull where industry standards fail to address needs.

Driving organizational and data standards
The ability to standardize workflows and drive economies of scale is typically an attractive factor following any M&A play (and perhaps less so in partnerships and affiliations). If this is important to an organization, then it is an essential consideration driving the technology roadmap. Driving organizational standards is more easily accomplished with a true core platform than with disparate systems, even if the disparate systems are connected. Of course, driving organizational standards will also involve a large and notable human capital effort. Differing data definitions between participating organizations makes interoperability plays difficult to attain. In addition to data definitions, there are challenges of identity management, such as lack of enterprise patient identifiers, which make interoperability harder to implement.

Consideration should also be given to data ownership, security, and privacy needs for the resulting organization based on choice of convergence versus interoperability. A clear understanding of what data is generated and shared across organizations is crucial to striking a balance between shared and restricted data. Resulting data strategy needs to augment capabilities and uniqueness of the organization’s data assets to further enhance its competitive position in the marketplace.

Organizational structure and governance
Participating entities largely determine the suitability of convergence or interoperability. Organizations that consolidated as a result of M&A activity are better suited to drive convergence initiatives, as they allow for more structured governance through centralized business and IT functions (as compared to affiliates or partnerships). Legally distinct entities in a partnership may be challenged with coming to consensus on a unified vision for people, processes, and data standards, and the necessary cost sharing, due to competing priorities. As such, they may be better suited for interoperability where integration choices are tactical, lower in cost, and realize benefits, albeit more limited, but in a shorter duration.
Complexities of convergence implementations
Regardless of the decision to converge to a single system platform or to implement an interoperability solution, newly formed health systems may be tempted to approach the resultant IT implementation in the same way as previous rip-and-replace technology implementation projects. While a convergence or interoperability project will follow the same lifecycle as an implementation (vision, plan, design, build, test, activate), it should be treated more like a post-merger integration project as it will entail different challenges. For example:

1. Governance and decision making: Creating an effective structure to facilitate the development of common workflows and practices across entities, with appropriate, diverse, and clear decision-making representatives, all while organizational structure is still being modified in the background. Plan for extended visioning and design phases, which should include extensive operational engagement strategies.

2. Effective application and infrastructure technology rationalization framework: In addition to moving to a single core EHR and ERP system or connecting existing instances of these systems, many, if not all of the related third-party systems will exist in duplicate. True IT efficiency and cost savings will come from a fully rationalized application portfolio and enterprise architecture. Newer, cloud-based offerings could be capitalized on earlier.

3. Evaluation of IT funding: In addition to project funding, advanced IT portfolio management with strong emphasis on cost-benefit analysis of convergence will be required. Identifying strategic opportunities of realizing cost and revenue synergies should be an integral part of decision making.

Acknowledging these differences and including them as inputs to the planning phase of the project should help reduce unplanned delays and increase the likelihood of an effective design phase.
The path forward

As health systems navigate the continuously changing health care landscape to maximize value-based care and patient-driven care across the continuum, organizations need to determine a strategy to address their data sharing and core IT platform needs. Health systems will need to simultaneously maximize their organization’s current market position while positioning their technology capabilities for the future. Throughout this evaluation, health care systems will need to consider the following:

1. Health system strategy assessment:
Evaluating a health system strategy, requires a comprehensive look at the composition of the organization and surrounding marketplace. A health system needs to know who they are today and where their strengths lie to determine their strategy moving forward. (See Figure 1 for examples of factors to consider). If the organization is pursuing a variety of deal types, each with different objectives, each of the objectives will need to be understood to provide the best aligned technology roadmap. The organization should consider its future aspirations, five to ten to twenty years from now.

2. Key strategic capabilities:
Determining the health system’s key capability needs and the corresponding alignment of these capabilities to strategic objectives assists in providing a roadmap. Examples of key capabilities, include:
- Foundational EHR system
- Analytics and data management
- Care tracking and health maintenance
- Revenue cycle integration
- Scheduling and digital notification
- Remote monitoring and telehealth
- Next-generation ERP
- Patient awareness and marketing

3. Strategic alternatives assessment:
One size does not fit all and evaluating a health system’s desired capabilities in comparison to what they currently possess illuminates routes to move forward. This is why evaluating alternatives is critical to enabling informed decisions for a health system. Alternatives to evaluate, include:
- What are the objectives of various strategic growth plans (especially if more than one)?
- What is the cost of implementation (convergence vs. interoperability)?
  - What is the cost of each route?
  - Where can we afford to allocate IT and operational resources?
- How much does it cost to maintain our current application portfolio mix in long-term support?
- What redundancies do we have across the applications/capabilities?
- How much is the desire for change for the standards and desired key capabilities?
- How will the choices enable future aspirations?

4. Contingency planning:
Due to the complexity of merging disparate cultures, policies, and IT platforms, health systems need to plan for pitfalls in their implementation outside of a standard IT core platform. This organizational realignment takes a considerable amount of time and effort to enact the desired model and capabilities. The guidance of leadership is crucial to set standards and the ability to pivot to their evolving infrastructure and governance model. These additional challenges need to be accounted for in time and resourcing for the health system’s IT implementation plan.
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**Figure 1. Factors to consider during a health system strategy assessment**

Evaluating a health system strategy, requires a comprehensive look at the composition of the organization and surrounding marketplace. A health system needs to know who they are today and where their strengths lie to determine their strategy moving forward.

- **Service offering mix**
  - Range and depth of specialty and sub-specialty care
  - Degree of emphasis on unique/differentiated offerings

- **Primary segmentation**
  - For profit commercial
  - State and federal
  - Not-for-profit commercial
  - Integrated delivery networks
  - Academic medical centers

- **Patient mix and population**
  - Condition/diseases cohorts
  - Demographics distribution and segmentation
  - Inpatient/outpatient mix

- **Health system assessment**

- **Overall size and geography**
  - Number of hospitals and clinics
  - Owned entities vs. affiliations/partnerships
  - Degree of regional variation
  - Proximity of facilities to one another

- **IT maturity**
  - Relative standardization of IT processes and tools
  - Data governance and quality
  - Enterprise IT system portfolio management capabilities

- **Human capital**
  - Centralized vs. decentralized governance structure
  - Communication and change management processes
  - Current mix and capabilities of operational and IT resources
The bottom line

As health systems expand their footprint through M&A and partnerships, it is crucial to engage and consult IT early and often. Technology considerations can even be a driver for deal considerations for some health care organizations. IT can help identify opportunities by offering a different lens on the strategic alternatives being considered. It also enables much better clarity in understanding the risk, timeline, and cost associated with a convergence or interoperability approach. Moreover, under the framework of value-based care and patient-driven outcomes, it is essential for health systems to do more with less. This underscores the importance for post-merger entities to share patient information efficiently and effectively. The ability to share this information in real time across the organization enables the health system to reduce operational redundancies and maximize service to their patients.

When making these strategic IT decisions, each health system’s distinct composition needs to be evaluated in the context of the patients they serve, geographic footprint, and overall organizational make-up. This requires health care organizations to critically evaluate their application portfolio, organizational structure, and market position to decide how best to share integral patient information across the health system and serve their patients into the future.
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Endnotes


