



DECISION SUPPORT SYSTEMS, inc.

D S S I

METATEMPO: SURVIVING GLOBALIZATION

RECONSIDERING HEALTHCARE

A PROCESS-ORIENTED APPROACH

MICHAEL WILSON

DECISION SUPPORT SYSTEMS, INC.

INFO@METATEMPO.COM

[HTTP://WWW.METATEMPO.COM](http://www.metatempo.com)

COPYRIGHT 1999-2001. ALL RIGHTS RESERVED

RECONSIDERING BUSINESS PROCESSES

The following outline is an example of how old industries could undergo a reconsideration of their business process and economic model, thus more effectively take advantage of enabling information technology and the emerging digital economy.

Healthcare, which could be viewed as being established by Galen some 1800-1900 years ago, is a significant example; the service industry of healthcare is, in fact, segmented by 'operational tempo' and application of data, information, knowledge, and wisdom (DIKW). Medicine, instead, labors under a number of legacy models and systems that significantly impact on the financial health of the sector and physical health of the population.

One such limiting legacy system is the pervasive 'marginal costing' or 'marginal cost accounting' approach: capitation, and the view that most of the corporate enterprise is running at a fixed cost, and therefore providing service for individuals is only a marginal increase to the overhead cost.

A number of industries do, in fact, view the customers as interchangeable units: airlines don't particularly care who fills in a seat, and the marginal additional cost is essentially trivial compared to the total necessary overhead (the plane will fly with 'n' or 'n + 1' passengers); health clubs; amusement parks; etc. Note, however, that the necessary knowledgebase and skill level at the point of service and throughout the entire business process is, when averaged, fairly low (other than technical support staff, like the pilot). Healthcare, on the other hand, is not factoring overhead against more customers when they fill a bed, they are instead assuming additional liabilities, taking on more risk.

The insurance industry is 'way ahead' here—actuarial analysis makes fairly fine distinctions between the risk attached to an individual: automobile insurance, healthcare coverage, business insurance, etc. In fact, the insurance companies could be viewed as being engaged in knowledgebase arbitrage: they've got a better handle on risks and cost metrics, set the reimbursement for healthcare services, and stick it to healthcare providers and patients alike when they don't conform to the models.

Even knowing this, healthcare providers don't follow a 'minimax' (minimize the maximum possible exposure) strategy, don't focus on their tempo, and have even reduced skilled staffing levels—to cut costs—that would be capable of making continual timely assessments and decisions to resolve cases.

Marginal cost accounting still lingers as a legacy system in many other places where a 'pure metric' approach misses the point of a tempo-driven, knowledgebase-required, risk-fraught marketplace: productivity analysis; comparison of proposals in non-commodity sectors; personnel interchangeability and tackling project implementation (Brooks' 'Mythical Man Month' writ large); the 'low bid' process for supply networks; etc.

A properly reconsidered business will find itself healthier, better able to cope with shifts in the marketplace and technology, and will make investments where they count: not in 'reinvention' or 'business process reengineering' but in the skilled staff and supporting infrastructure that make a responsive, effective financial entity.

STATE OF THE HEALTHCARE INDUSTRY

Healthcare is facing increasing pressures from a number of directions. Scientific advances and applied technology have profoundly changed the practice of medicine. Finance and management science demand the integration of cost and profitability factors into the healthcare system. With increasing regulation and legislative controls, healthcare professionals have to be more concerned about risk and liability, and pay

more attention to social and ethical considerations. The industry now requires real-time management of complexity. Thus, it would be useful for us to reassess and reconsider what healthcare really is.

HEALTHCARE: A SERVICE INDUSTRY

Conventional services such as repairing automobiles or 'food service' are oriented at creating something uniform. Health care isn't so lucky, for the following reasons:

- A healthcare customer is the patient, who is a unique collection of processes—biological, social, financial, environmental, behavioral, legal, etc.
- An individual patient is a healthcare customer because something has gone wrong—a system failure, a traumatic event, a congenital defect, etc.
- Healthcare professionals provide real-time intervention to keep a patient alive, functioning, and eventually returning to normal life. The process of intervention is easier said than done, since the spectrum of crises or events ranges from rapidly changing to resolution; unrealistic expectations on recovery often increase faster than the actual process.

The operating precept in healthcare currently is to resolve the medical case as quickly as possible, with cost containment.

THE BOYD CYCLE—THE SERVICE HEALTHCARE SELLS

Healthcare depends greatly on methodology developed by the military; trauma medicine, anti-microbial therapy, etc. are prime examples. Colonel John Boyd was a fighter pilot in Korea. Boyd survived (to his surprise) a dogfight in Korea where he went from pursued to pursuer. Figuring out why he survived would save his and fellow pilots' lives in the future. Analysis of his aircraft, enemy aircraft, his experience, and that of fellow pilots yielded an answer: his aircraft had better apertures for visibility, and could respond to maneuvers more rapidly than that of the enemy. Boyd, therefore, could see what was going on better and more continually, and he could respond to situations and change those situations more rapidly and effectively. Boyd's discovery went to create the F-16 fighter, but also the Boyd Cycle—Orientation-Observation-Decision-Action (OODA). OODA is a cycling loop, and the speed or tempo of the cycle is what leads to improved effectiveness. The OODA loop and tempo aren't just for fighter pilots, but for any modern business, including healthcare.

OODA: THE BOYD CYCLE

The Boyd cycle is a behavior process that focuses on being time competitive, able to survive and thrive in confusion, and have excellence in technique.

- **Definition: Observation and Data**
Observation means being there, at the point, of having a proxy you can trust and communicate with, such as equipment (monitors) or staff team members. Observation provides data, raw dynamic facts about what is observed

- **Definition: Orientation and Information**
Orientation is about what you pay attention to in the data, making distinctions, filtering out the relevant from the irrelevant
- **Definition: Decision and Knowledge**
Decision is using judgment to draw conclusions, and put them into practice. The ability to have this sort of critical judgment and decision making capacity comes from education, training, and experience
- **Definition: Action**
Execution of procedures that judgment provides as being appropriate is the essence of action; in time-critical OODA loops, actions are initially 'reaction' intended at survival, getting a handle on the circumstances, and then turning toward having the initiative, making positive progress

Reflective and cognitive skills are as important as reflexive actions developed by experience. Tempo is the rate of activity and the rate at which the OODA loop cycles over; faster isn't always better—tempo is about appropriateness, being effective as often and rapidly as possible. Components of the OODA loop need to be taking place as close to the patient as possible to be effective.

OODA AND HEALTHCARE

OODA is a critical factor in how the healthcare industry differentiates. Emergency facilities and trauma are entirely OODA-oriented. Intensive care and similar units are heavily invested in the Observation-Oriented part of the cycle, with monitoring equipment and high staff-patient ratios. Level of care (LOC) is contingent on the tempo of the OODA cycle necessary for intervention. Acute requires more attention than a step-down unit, or long-term care facility. Length of stay (LOS) is contingent on the OODA tempo. Turnover of decisions requires attention, frequent updates on patient status, on-going assessment and re-assessment using critical judgment, and effective actions for intervention. If nobody is watching the patient, or frequency of assessment is low; then decisions cannot be made or reassessed, actions cannot be taken. All elements of a healthcare system need to operate on an OODA basis to provide effective medical intervention while managing costs and maintaining financial viability/profitability. Medical and nursing staff, therapies, social work, are only part of the puzzle. Business, management, billing, legal, etc.—the 'overhead' part of healthcare—need to also focus on the OODA process and tempo.

OODA AND RESOLVING THE MEDICAL CASE

Unrealistic Expectations: Patients, communities, and society are coming to expect healthcare service as a right. As a right, an entitlement, part of the infrastructure of society, healthcare is coming to be expected as a 'free' service. The "Patients' Rights" movement is a symptom; nobody talks about the obligations of a patient (to take care of themselves, to not engage in risky behavior, etc.) and responsibilities, etc.

Managing the Medical Case with Cost Containment/Control: Reimbursement for services rendered are essentially flat-rate, with a reduction in the rate occurring regularly—an assumption that technology or process improvement is continually occurring. Length of Stay (LOS) troubles occur because the OODA tempo may be too slow. Level of Care (LOC) troubles occur because the patient's OODA tempo requirement is perceived as being lower than where the patient actually is in the provider's system.

Paradigms for establishing healthcare OODA are well known. Fee-for-service had no practical OODA elements—you stayed in a healthcare provider's system until you were 'well,' and there were few

concerns for costs. Managed care began to impose an OODA tempo—case turnover and cost containment became elements in proving healthcare. Case management makes the 'case manager' responsible for monitoring the OODA cycle and tempo. 'New' metaphors such as standard protocols, care paths, or disease management are attempts to impose standards on unique individuals with a variety of problems in an effort to provide a way to track and compare against a baseline metric the OODA cycle and tempo, and keep the case inside of certain tolerances (or have an explicit mechanism for handling exceptions). From admit to discharge or case resolution, OODA tracking (process, tempo, appropriateness of judgment and action, feedback) is going to be the only way to achieve the required continual improvement. This is the meta-ODA loop, with observation to provide metrics, orientation to filter effectiveness against benchmarking, and decisions/actions toward improved metaphors, a 'best practice'.

OODA AND HEALTHCARE FINANCE

Sunk Costs: Healthcare physical plant and material costs are expensive; operating costs per square-footage is a complex mire, from fixed costs to unknowns such as a 'current potential liability'. Cost shifting has become the mechanism for coping with the societal expectation of free healthcare. Case turnover tempo is essential for the necessary operating cash flow, but at the potential expense in risk management and compliance.

Overhead Management: Healthcare is a service industry, so the effective point-of-service is with the personnel. Staff commoditization has been one approach. Physicians worry about the 'doc-in-a-box' approach, or about 'gatekeepers'. Nursing staff and assisting personnel are increasingly less educated, with system shifts toward the use of specialized technicians, to reduce point-of-care costs. OODA cycle and tempo, as it provides effective care, and impacts LOS and LOC, translates to continual assessment, judgment, and decision tempo, from admission to resolution. Commoditized and staff with less education, experience, and judgment skills cannot adequately maintain the requirements of an effective OODA cycle and tempo. Processes cannot be improved or optimized when the information, judgment, and communication skills necessary for feedback are lacking or absent. Risk management is a case of 'pay now or pay later'. A healthcare system can pay the costs in assessment and judgment by having adequate and appropriate technology, and view staff education as an investment. A healthcare system can pay the costs for lack of assessment and judgment by having attorneys on retainer, paying out settlements, and management of public perception through active 'public relations' programs.

Competition: A healthcare provider, given the 'local' nature of the service provided, has a 'captive market,' but is also captive to the market. Competition is a zero-sum game; a patient in one system is the loss of a potential patient to another. Selection of patients has become an issue of going after customer profiles: demographics, 'means testing,' and other ways to control the elements of the process. Optimize the patient base towards those who require less healthcare, less costly healthcare, or for whom reimbursement isn't as much 'an issue'. Healthcare systems have an edge in the market by having an economy of scale (decreasing expenditures on materials, diversity and size of potential patient population), centralization of business and information services, and enhanced ability in OODA cycle management (larger bodies of data for metrics, enhanced baselines for analysis, ability to make 'best practice' rapidly portable inside the healthcare system).

HEALTHCARE ORGANIZATIONAL STRUCTURES

The meta-ODA process, the ability to make effective changes in how the healthcare system functions from a medical and business perspective is complex. Continual improvement is demanded, not just be reimbursement pressures, but because of the changing nature of the science/technology of medicine. Factors resisting change in any system are present, but more-so in healthcare:

- Training turn-over is long, because the education and training cycle on physicians, nurses, and skilled personnel are traditionally long
- Organizational fluidity is minimal because of the embedded nature of unions, collective bargaining, and physician behavior
- Regulation and legislation downshifts the operational tempo of medicine as a whole, from approval cycles on pharmaceuticals to the overhead burden of compliance with finance/reimbursement parties
- Risk management is a significant concern; errors or delays from new systems and processes, or during the transition period, impact on human lives, a direct disincentive

Care teams are the direct point of service, and thus the necessary focus for a healthcare system. Because of the nature of the OODA cycle the team is involved in, the foundation of a care team is trust in the judgment and ability of team members, as well as their relationships and communication ability. Human nature being what it is, this is initially a matter of "fake it until you make it," with trust and respect earned over time. Care teams need to orient around their process rolls:

- Teams are cross-disciplinary, but need to be secure in the accuracy of member expectations from other members, an implicit 'contract' of compliance to participate and do the best job possible
- Care teams need to have an internal dynamic that enables rapid team communication and action, but also ability to deal with others
- Patient, other medical staff, management, community (local and national), and the marketplace

Education and experience are essential investments. Skills need to be initiated and cultivated in relevant domains:

- Clinical expertise
- Social and communication skills
- Management skills, particularly in internal promotion:
 - Finance, including disclosure to care teams the financial elements of patient care and providing services; judgment and feedback toward improvement or cost reduction cannot occur without data
 - Legal and ethical issues, an increasing component of 'standard' care
 - Planning skills, to enhance tempo, create effective patient care, and to recognize when variances are outside tolerances or problems occur (and thus such issues can be immediately dealt with)

The business of doing business, supporting the care teams and minding the business case, are essential. The OODA cycle is made possible by the support structure; without it, all activity ceases. Attention to the OODA cycle and tempo by management, finance, social, legal, etc. is directly related to cash flow and profitability of a healthcare system. Information Technology (IT) and technological support systems need to be integrated between all systems of a healthcare system, medical and support. The chart of a patient is the OODA process record. Support staff, while not practicing medicine, should be versed in the language, symbols, terminology, and elements of judgment that are used in communication. While considering privacy issues, IT support of the business OODA cycle should provide some mechanism for the real-time display of essential factors in a case at all levels, in a way that display quickly allows for an assessment of tempo, LOS, LOC, adherence inside or variations outside tolerances to various care metaphors, etc.

Understanding the potential patient population as a statistical demographic body is of significant benefit. Demographic data allows a better focus on directions to focus OODA cycle improvement, target investment, and provide a more effective service. Community outreach is an overlooked component. Earlier intervention would allow better medical and business OODA cycles. Branding is underutilized in communicating with the community what the identity a healthcare system is, and the expectations the public should have. Cooperation and communication between all aspects of the healthcare system are essential to an effective overall OODA cycle tempo and improvement of the meta-OODA cycle.

CONCLUSION

As a service industry, healthcare is selling assessment, judgment, and intervention. The complexity and tempo in healthcare are increasing rapidly.

- OODA cycle tempo impacts on effectiveness, length of stay, and level of care
- The tempo of the OODA cycle is a component of how healthcare providers differentiate
- Resolving a medical case as rapidly as appropriate with cost control/containment is a function of dual medical and business/financial OODA cycles, with communication and cooperation
- OODA cycles are a human function; investment in technology is of help, but diversity and variation in the medical process require educated and experienced judgment from trained staff
- Improvement is difficult since healthcare systems uniquely resist change because of their composition and the nature of the industry, but awareness of the OODA cycle is a powerful tool at all levels

ABOUT THE AUTHOR

With 20 years experience defense, intelligence, information operations, corporate finance, and technology development, Mr. Wilson consults on matters of organizational safety and security, critical infrastructure protection, information security and assurance, intelligence, finance, and technology for multinationals and governments in Europe, Asia, North and South America, and the Middle East. As a pioneer and acknowledged leader in the fields of infrastructural defense, information operations, open-source and next-generation intelligence, Mr. Wilson is the winner of numerous awards, including the US National Defense University's Sun Tzu Award in 1997, and the G2I Intelligence Professional Award for both 1997 and 1998. In corporate finance, he structured multi-billion dollar merger and acquisition transactions for multinational clients. As a technology inventor, his inventions and development of various technologies include: computer security systems, anti-viral computer hardware, cryptographic methods, agent-based modeling, three-dimensional visualization and interfaces, and massively-parallel, massively-distributed processing systems. Mr. Wilson's educational background is in system theory, cybernetics, and general semantics, PERL (political science, economics, rhetoric, law), and physics. A number of his public papers are available at <http://www.metatempo.com/publications.html>. He can be contacted via email at info@metatempo.com.