# Medical Device Interoperability Incubator

AAMI Expo 2014

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# Tomorrow's HealthCare … Today

My name is Scot Copeland. Some of you have never heard of me, while others have heard of me but don't know me. A few of you know me.

I had a presentation that I used to give that ended in all of the things we weren't doing to secure ePHI on our clinical networks; things we couldn't do to make medical devices secure in a hospital network environment. That seemed wholly inadequate for such an occasion as this. Although it does no harm to fully examine where we are, I think this time is better spent on developing a vision of where we need to go and prepare to go there.

Let me give you a bit of background so you can understand why I started this project and what MDNOS and the Medical Device Interoperability Incubator (sponsored by AwareComm®) is all about.

I was trained as a Radio Repairman in the United States Marine Corps back in 1980. As I was released into the reserves, I began working for an independent medical device repair company as a Biomed in San Diego, CA. Through the next 15 years and several acquisitions, I repaired all types of medical devices in hospitals, clinics, doctors' offices, you name it. I even worked for a time for a Radiology equipment company.

When I came to Scripps Health in 1995 I began to specialize in medical device networks, and computerized medical devices. Soon everything was going onto networks and the challenges began.

- How do we get these devices to communicate on the network safely?
- How do we get data safely from one system to another when they are designed differently?
- How do we get the clinical staff to accept the rapid changes in technology?

I began to understand that medical device computer networks and the associated challenges were going to demand an enhanced skill set, so I prepared to get a college degree in I.T. Security. I applied for and obtained a scholarship through Scripps that helped me through each of the four years. On the receipt of one of the scholarships, I was asked to speak and present my concept of MDNOS. The president and CEO of Scripps Health, Chris Van Gorder, acknowledged my vision and encouraged me to follow my dreams.

Through my years of college courses and concentration in the area of medical device network integrations and security, I began to see that there was no single solution to the information security problems with medical devices. Whereas in the I.T. community, there can be one security policy that can be administered across the entire enterprise. There exists nothing like that for the growing population of medical device networks and medical devices. Further, there were new mandates coming down every year governing patient information on the network that we were not able to comply with.

I knew we needed a solution to bring all of the medical devices together on a single management platform, so we could manage all of the necessary security elements.

I discovered Awareness Communication Technology, LLC (AwareComm®), a Research and Development Firm with Microsoft Gold Competency, and began to explore the concept of a Medical Device Network Operating System (MDNOS). This is where the real journey began. I returned to Chris Van Gorder with my findings. He further supported my vision by opening doors to the top executives of Scripps, so that I could develop the most effective application of my opportunities -- for both Scripps and the healthcare industry.

In doing research and exploring opportunities in the field of information security for medical devices, I became part of AwareComm's® Wisdom Incubator 365. The Wisdom Incubator is a place where inter-disciplinary minds are brought together to share ideas, generate innovation and develop an interdependent culture that promotes progress in a focused direction.

The Wisdom Incubator environment helped me understand that I had been focused on the symptoms and not the problems; not focused on that which supports the human application of technology. I began to see that first and foremost, our problem was the lack of interoperability of medical devices. Indeed, I had never understood what *true interoperability* meant.

In short, I discovered that "true interoperability" is not only that one medical device can talk to another, but that on a purely device level all of its information input and output can be available to other devices and systems. On the organizational level, it means that our medical device systems are integrated into the clinical workflow safely, such that the intended benefits are realized from the patient all the way through the EHR and back.

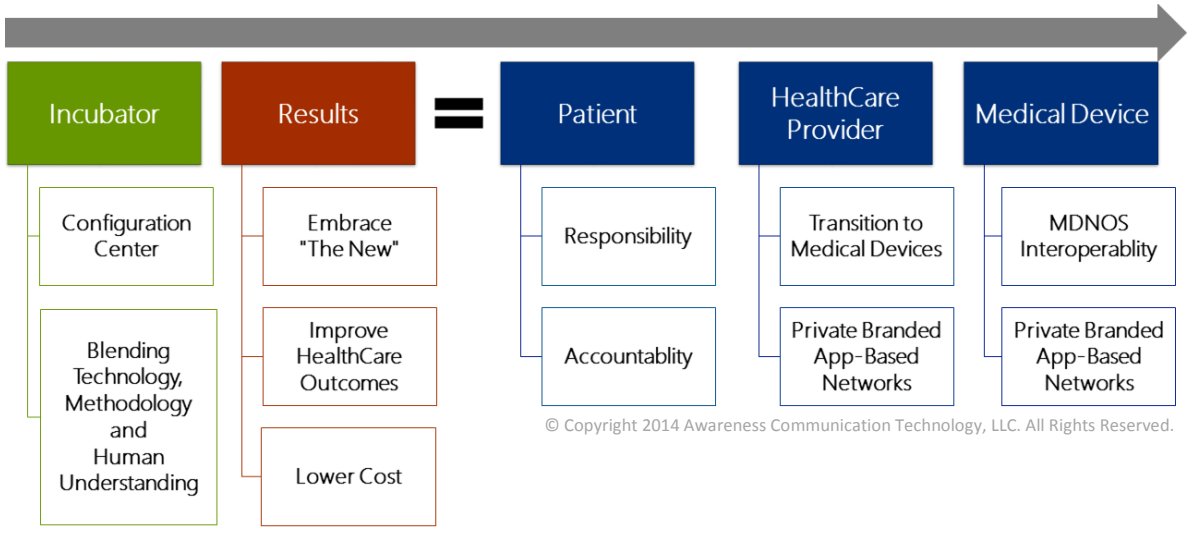
Furthermore, on a human wellness level, there is complete communication and understanding between the healthcare provider and the patient. Thus, the patient is empowered to take full responsibility and accountability for their care. In other words, the healthcare provider is properly and safely integrated into the community.

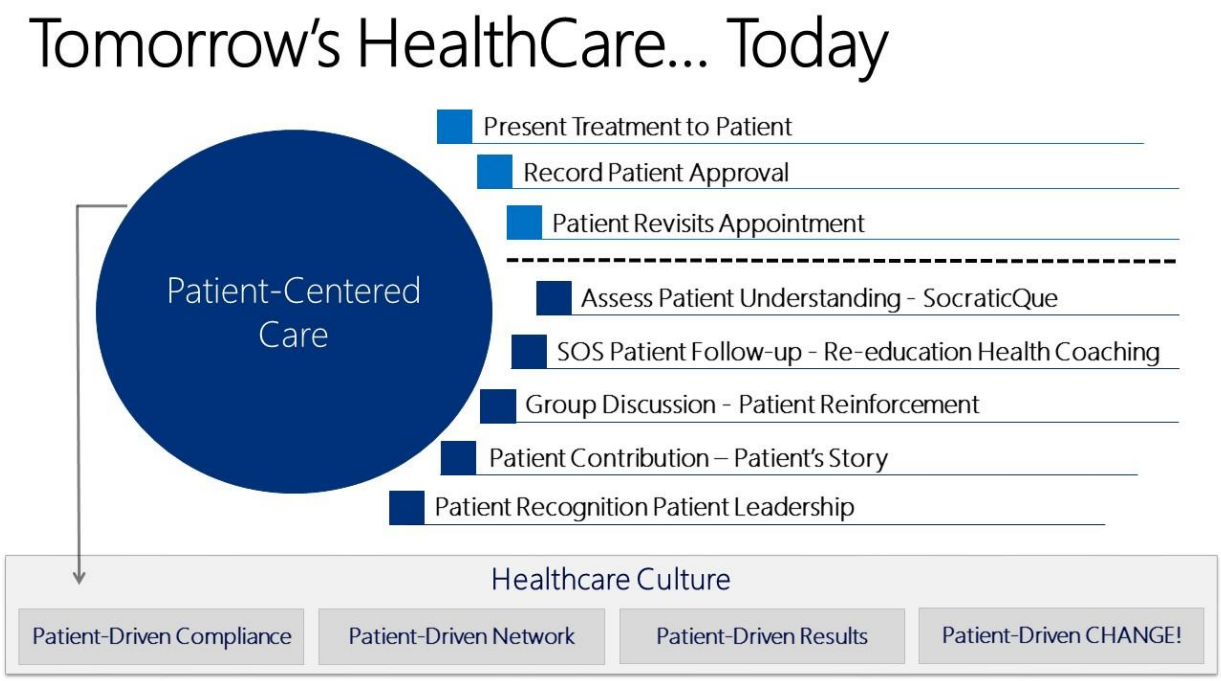
Right now there are shortcomings on every level:

- Lack of interoperability on a device and system level contributes to extremely high costs in medical errors.
- Lack of "interoperability" with the patient community contributes high costs of repeat care due to non-compliance… *just to name the easy ones.*

There are billions of dollars being spent avoiding the problems, indeed part of the market depends on that status quo being maintained. When we solve the same problem over and over we are truly solving the wrong problem. We now have the opportunity to bring effectiveness of technology to healthcare through the development and promotion of the culture of manufacturers, integrators, as well as users of the systems -- even to and from the patients themselves.

***What I have learned in the AwareComm® Wisdom Incubator365 and want to bring to you is a compliment to other's efforts in the field of medical device and system interoperability, and offer you the awareness of direction we as health technology managers need to focus our efforts on, in order to bring about truly patient focused medical device systems.***








## Intention

I want to speak to you with clarity and conviction about what I have learned, so we can work together to bring health and wellbeing to the patient through technology.

# Global Reality

In order to truly see the scope and magnitude of not only the role of technology in healthcare discussed here, but it's impact on a tangible personal level, we are compelled to start with a very broad view of the elements that influence our experience.




## Government

We are a modern self-governing society and have set up institutions, laws, and authorities that form our present day government. One of our government's roles in our society is to develop and institute Monetary Policies. These policies determine the amount of money available in the economy; the countries working capital. It also institutes Fiscal Policies that determine the amount of money collected and spent. This money is generated by the economic activities of our communities. The government extracts money from the community and spends it carrying out its duties. Money that remains in the community can be called disposable or discretionary.

## Market

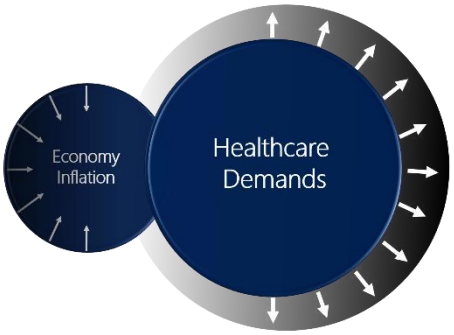
Markets are created from discretionary income in the community. These markets include automobile, fashion, entertainment, housing, and even healthcare. Every market has its own personality or culture. Each culture determines what is necessary, therefore more valuable, and what is optional.

## Business

Business is the exchange of goods and services within a market. Business takes intellectual property and ideas, and develops them into a product. They develop private branded networks to connect their products to the culture that values their products. Successful businesses deliver their products to the appropriate market culture and enter into a relationship with that market in order to ensure their survival. These businesses set up a means to receive feedback from the market and act on it to improve the relationship. The more successful a business is in quickly changing their product to meet the feedback received from the culture, the more loyal and enduring the relationship between business and culture will be.

## Jobs / Economy

When businesses are successful and products and culture grow and develop, jobs are created. The economy of the community expands and generates more discretionary income which then flows back into the community, products and government. Through the positive regeneration and growth of products and services in the community, a healthy economy is perpetuated.

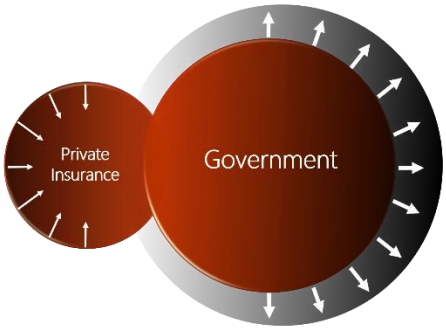



## Economic Structure Changes

No matter the path, we find ourselves in the midst of a fundamental change in the healthcare delivery market. The traditional economic structure necessary to deliver modern healthcare to a diverse society is changing form. In addition, healthcare as a product is in a trajectory to become healthcare as a mandate. Less capital or reimbursement increase innovation in technology, and shifting regulatory mandates are all moving at once, increasing the challenge we face in maintaining the balance needed to be sustainable and maintain patient centered focus.

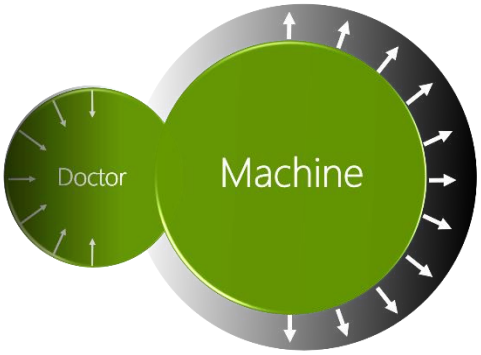
## HealthCare Access Methods Changing

As modern healthcare became more costly, market methods of cost sharing in the form of "health insurance" became the predominant financial resource in the market. This market method of cost sharing is being replaced by government cost controls and subsidies. Once the current method becomes unsustainable by removal of participants in the cost sharing market there will only be a single non-market participant financial resource. Market generated revenues, resources, innovation and efficiency will decrease and be replaced by increasingly conditional reimbursements.




## Human to Device Transition

Increasing demands on physicians both financially and clinically are creating an opportunity for technology to enhance or even replace some clinical decision making. Interpretive ECG, computer arrhythmia analysis and predictive pulmonary function testing have been in existence for quite some time providing essential diagnostic data. This Evidence Based data becomes a basis for building a diagnosis and treatment plan. Full multidisciplinary integration of healthcare diagnostic systems and clinical databases will afford similar opportunities for a more holistic approach to diagnosis and treatment. If all of the information from all systems are available at once on-line, protocols may be devised to promote quicker and more accurate diagnosis, reduce diagnosis to treatment time and enhance effectiveness of intervention. Commercial market devices such as cell phones, PDA and tablets are now being designed to support personal healthcare devices and body-area networks. However, as a natural progression of bringing healthcare technology gets closer to the patient, the distance from the doctor increases.



# HealthCare Reality

The HealthCare Industry is transcending from *Professional Services* to *Medical Device Technology Interoperability*.

When it comes to the world of technology, we have focused on "user friendly"… we have focused on "intuitive" … we have focused on "user experience" and other sorts of psychological words. However, a major element has been overlooked -- the key element of individual and collective HUMAN UNDERSTANDING (Culture). This critical element addresses far more than just "what" needs to be done. There needs to be a shift in our culture from resistance to acceptance -- in not just embracing "The New" but of "HOW" it is embraced.

## HealthCare Transition: Interoperability – Technology, Staff and Patients

HealthCare (Medical and Mental) is experiencing major demands:

- New Medical Breakthroughs Extend Life to New Possibilities
- Exploding Senior Population (50+)
- Rising HealthCare Costs
- Medical Errors (6th Leading Cause of Death)

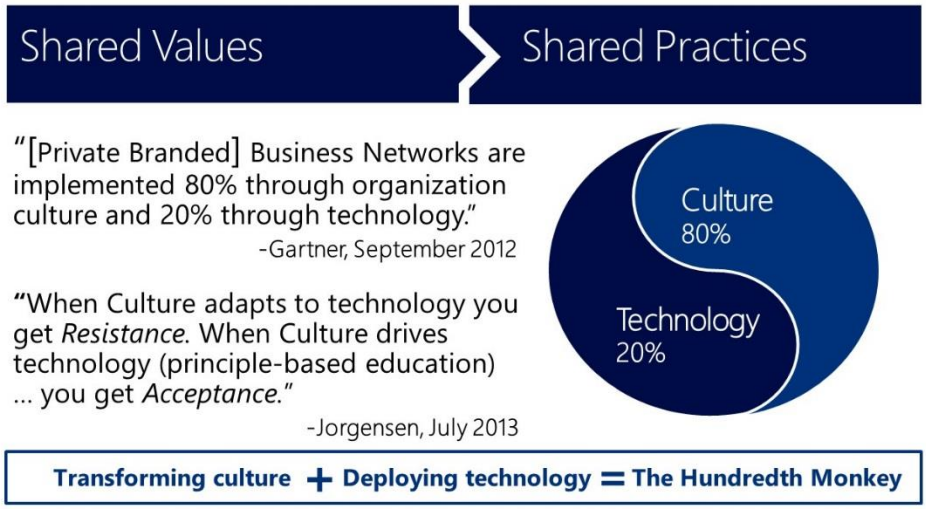
**HealthCare and HealthCare Technology Research create new and better solutions… *which is what change is all about*. If changes is to be embraced, the Industry Culture must lead technology, not be reactive to technology.**

The Industry Culture either adapts to technology or drives technology.

***"It would be a mistake to think of the CIS as a technology system that by itself brings benefits."***

Explore an Article

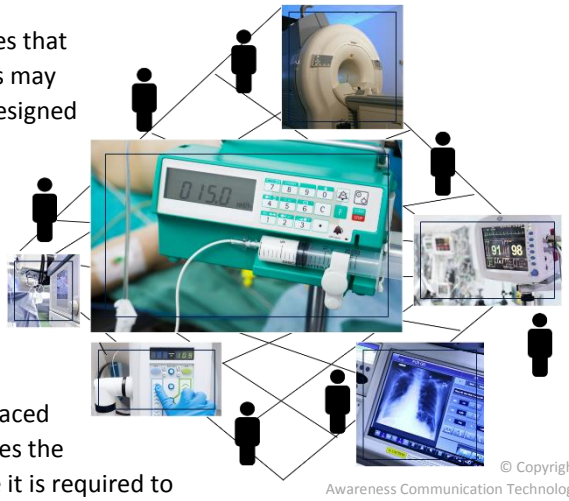
***"Interoperability is a huge space still under development,"***
***said AAMI President Mary Logan.***
***"It will take multidisciplinary commitment and collaboration***
***to achieve meaningful management of the space and the issues."***



## Security – Big Holes

The first “networked” systems for physiological monitors used proprietary communication protocols, delivery methods and operating systems. Although there has mostly been an acceptance of modern network connectivity technology i.e., Ethernet, TCP/IP, there are still proprietary operating systems available including embedded/custom operating system flavors and protocols, some which are specific to healthcare only (DICOM, HL7).

FDA 501K is the premarketing submission to the FDA of medical devices that requires significant controls focused on “safety for indicated use”. This may include clinical trials, extended system testing, and Assurance Cases designed to leave no stone unturned in verifying patient safety and device efficacy. These well intended activities, however, may result in extended product development lead times. Often a new medical device design reaches the market with only a few years until the I.T. technology employed in the device is obsolete.



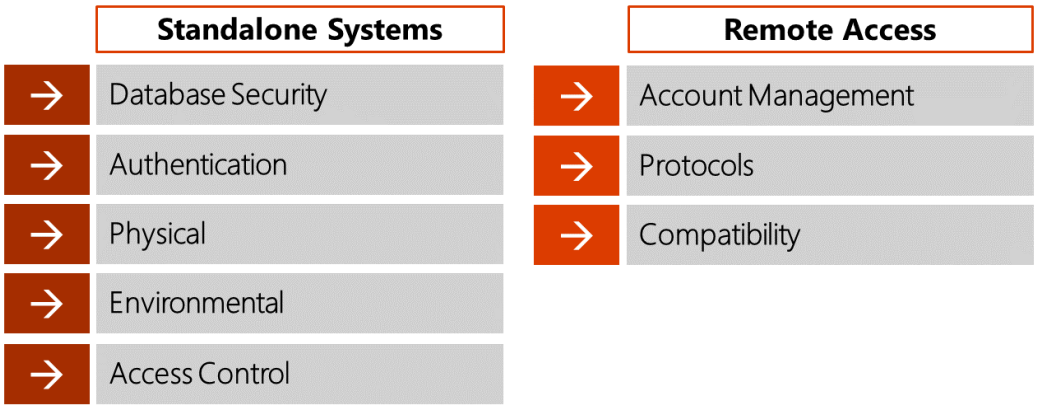


Once a medical device is certified by the FDA for market, certain significant changes in its design or construction may call for a recertification. A medical device manufacturer in this environment is faced with the prospect of attempting to create an assurance case that proves the device is safe and effective for its intended use while at the same time it is required to operate in a network environment out of their control.

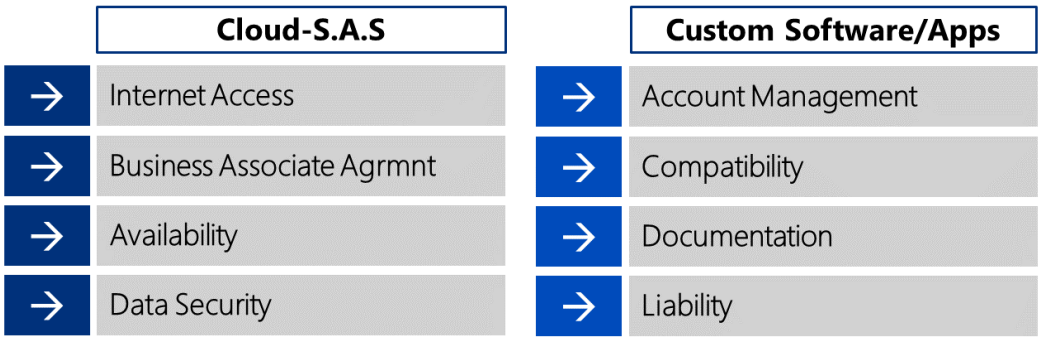
The outcome of these and other factors make secure integration difficult if not impossible. Medical devices are not designed to be “open ended.” They will not work in any integration. Many will only integrate with an I.T. system designed by the same manufacturer. There are still many isolated medical devices and LANs that are unintegrated due to these factors.

The I.T. industry in healthcare has accepted standards that require the latest information security assurance methods and technologies. Most entities employ a security management structure standard that all computing devices must adhere to and participate in and have integrated tools and methods to administer these standards. Everything from IDS/IPS to server logging to Anti-Virus, firewalls, access control, all that is applicable.

| Operating Systems | Networks |
|---|---|
| → Obsolescence | → Data Integrity |
| → Interoperability | → Authentication |
| → Malware | → Redundancy |
| → FDA Constraints | → Authority |
| → Environmental | → Configuration |
| → Physical | → Environmental |








## Example

For example, how do we integrate an x-ray machine wirelessly that has been FDA certified with hardware that cannot meet the infrastructure wireless security standards? The old answer was “it won’t happen”. The new answer is that is must happen and because of this we may be introducing vulnerability into our I.T. system. Multiply that by every medical device type designed to interface to I.T. systems across every healthcare system. This is a giant problem and no solution other than to wait for medical device lifecycles and technology evolutions to catch up. It never will because there is no single focus for security. Many healthcare groups are now scrambling to implement complicated VLAN and firewall solutions to help reduce the risk but this is cumbersome, inefficient and costly to manage.

# Urgent Need

We have an urgent need to maintain Confidentiality, Availability and Integrity of medical device information.

- **Technology** – No common foundation Protocols, API or Standard OS for manufacturers to build their software upon for their devices that can allow for interoperability between the Medical Device and the Device User Systems and interfaces i.e. interface to EMR… no True Interoperability.

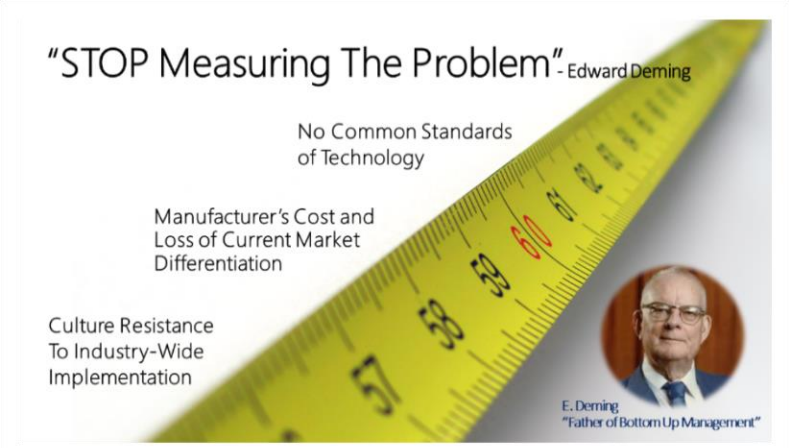
- **Manufacturer's Cost and Loss of Current Market Differentiation** - No real incentive for the Manufacturers to change:
    - Due to Cost of FDA Requirements and Recertification of Devices
    - Potential Loss of Propriety System Which Creates Currently Marketed Competitive Edge
    - Software Change May Requires Pulling Current Devices From The Market and Recertifying Device

- **Culture Resistance to Industry Wide Implementation** – The bigger problem is the implementation of change: "NIH," resistance, sabotage, and the need for cultures to prepare to be responsive to change in:
    - Manufacturer Environment
    - Destination Environment i.e. HC Providers and the Regulatory Environment
    - Patient Environment

## Stop Measuring the Problem – Deming "Father Of Bottom Up Management"

W. Edward Deming's PDCA (Plan-Do-Check-Act) method of quality improvement is built into many of our management and policy structures in healthcare. From Safety Committees to Nursing Workgroups we are adept at applying and documenting our process improvements. Although familiar in principle we may want to involve one of the greater proposals Deming promoted and that is to make change! Health Technology Managers are expert measurers. We can identify a problem, define and categorize it, but often we don't feel empowered or comfortable implementing a solution, as if it were the purview of those specifically anointed to do so. We often omit the fact that we, having more fully defined the problem, have it half-way solved. Our efforts should begin there, not end.

We have the responsibility to our peers, loved ones and community - a social responsibility- to make the positive changes we see: to better healthcare overall, to improve patient outcomes, promote sustainability of our healthcare market and protect the patient's individual choices in their own health.






**We must be the driving force to create an idiom within OUR Industries.**
**We must be the driving force behind,**
***The Whole is Greater Than the Sum of Its Parts.***

## Medical Device Integration vs. Interoperability

We currently have the ability to integrate two medical devices and/or information systems, allowing them to talk to each other and transfer data between one another.

> *For example, an EKG machine can be integrated to send a diagnostic study to a management server or data repository, or one prescription to program one infusion pump.*

This is solely a one-way (logical) data path (a device talks to one other device for a single structured event).

There is a single solution/data path (physical) for each integration. If another system needs to communicate with a device, often an additional integration must be performed:

> *Much like running a separate phone wire to each person you want to talk to on a wired telephone.*

There is an immediate need for devices to be designed and built to have real time information sharing no matter the patient care setting to allow information from any device or system to inter-operate with a diversity of other devices (not just one).

**True interoperability** enables system and device information inputs and outputs to be made available to any other systems or devices **as part of the healthcare delivery culture**:

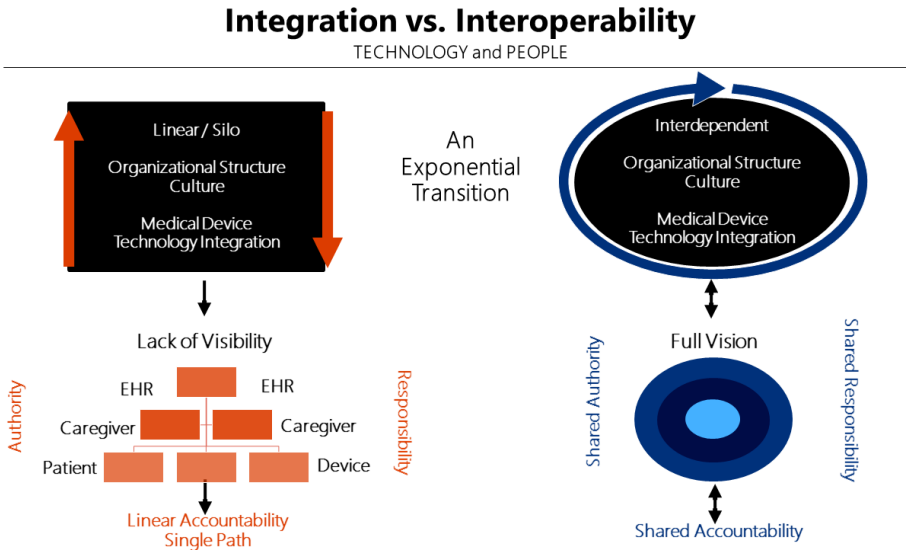
> *Much like seeing a wireless printer available to your laptop on a network, if you have permissions, you can attach the printer and use all of the capabilities it has. So can everyone else on the network.*

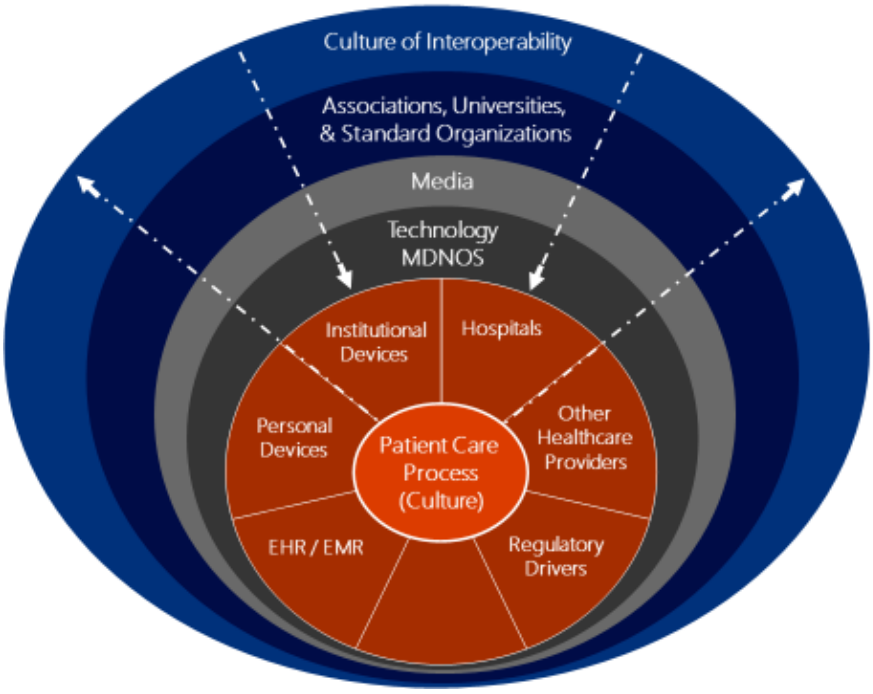
This kind of technical environment supports the open exchange of information with other medical devices and information systems for the purpose of

- ✓ Designing, Gathering, Exchanging and Interpreting Real-Time Evidence-Based Health Data (Not Just Historically Based)
- ✓ Physiological Alarm Management
- ✓ Default User Settings
- ✓ User Auditing
- ✓ Group and User Authentication
- ✓ Device Information Security Management
- ✓ Device Maintenance

The above listed capabilities are what's missing from the device integration status quo and what true interoperability can add to healthcare delivery.

Higher-quality healthcare is at the core of true interoperability as a variety of devices have the ability to interface with a multitude of others devices/systems and the healthcare delivery culture.








## It's Been Done Before – Microsoft Operating System and Device Drivers

Some 25 to 30 years ago the consumer computing market began to take shape with leaders like Apple hardware and software, IBM PC hardware and Microsoft operating systems developing their own proprietary product lines. As the market grew and computer systems found the need to share information, interoperability issues arose. To provide for communication, new networks were developed, to provide for interoperability of hardware devices and peripherals. Common interface standards were agreed upon and implemented within the industry.

Whether the issue was internal PC architecture or external peripheral devices like printers, compatibility and interoperability were the *imperative* that drove change and directed innovation (think USB). Microsoft developed software operating systems to build into computer systems with the interoperability necessary to satisfy consumer and enterprise computing needs.

Concerning the modern medical device industry, there is now the same imperative for interoperability to contain costs, provide for increased patient safety and satisfaction and adhere to regulatory directives. The consumer in healthcare, however, is insulated from the market therefore, cannot drive change. We have been here before and the industry has the ability to provide these critical needs. The industry culture must adjust to drive toward providing the necessary interoperability.

# Reality Check

**A major reality check** is the fact that none of the current projects and options being implemented and explored seem to provide a true systems approach to "True Interoperability," while integrating and considering all stakeholders of the scenario, that is, ***Industry-Wide Cultural Acceptance.***

- **Manufacturers:** prepare for loss of proprietary control of device and systems to embrace a new marketing model.
- **HealthCare Providers:** prepare for staff fear and resistance because of involvement of multidisciplinary teams to support integration, prepare for technology effect on caregiver/patient interface, reduced physician involvement in diagnosis to embraces and drive HealthCare delivery innovation.
- **Patients:** prepare for reduced physician involvement and reduced trust to gain understanding and buy-in for participation and accountability of their treatment plan:
    - It must work for the patient;
    - It must be trusted by the patient;
    - It must be accepted by the patient;
    - It must be communicated by the patient to another patient; and
    - It must become the basis of a supportive community culture.

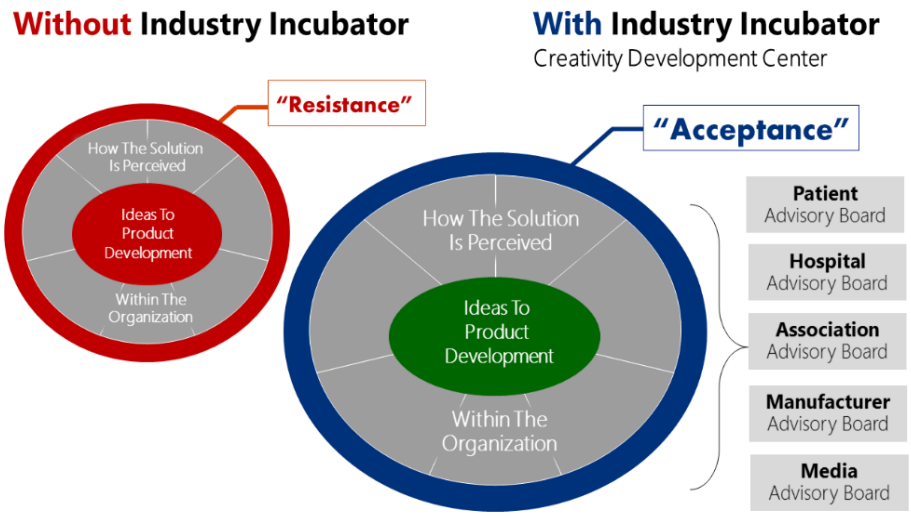
# Solution

***"The answer to any problem can only be found within the definition of the problem."***
**-** *Richard Jorgensen PhD (hc),* Founder and CEO AwareComm®

## Medical Device Interoperability Incubator

Industry Incubator is committed to ignite its industry's: ***Passion, Purpose, Power a**nd Profit.*

In order to implement a fully **integrated technological system**, it must incorporate proven principles of **methodology and human understanding** to all stakeholders involved to create and sustain a true industry network culture that embraces and supports "The New."



**The Medical Device Industry Incubator 365 is created for the purposes of:**

1. **Technology:** Provide a venue to develop and collaborate for true interoperability and the creation of MDNOS
    a. A Medical Device Network Operating System comprised of management servers, medical device secure network clients and drivers for standard API, that can be implemented regardless of network architecture to provide secure interoperability from medical device to EHR and back, regardless of where the patient is receiving care (home/remote clinic/traditional HealthCare settings).
2. **Manufacturers' Costs:** This is predominately an issue of culture.
    a. The decision of whether to be in control of the changes versus the effect of the changes.
        i. The Medical Device Manufacturers (and AAMI) can be the benefactor, by way of being *the drivers of*, rather than *the recipients of*. Alternatively, if these associations choose not to be the drivers, other associations or organizations affected such as AHA may choose engage in the same opportunity.
        ii. To participate in the driving of the change such as a MDNOS which may not require recertification of their Devices.
    b. The need to consider changing their marketing model from property-closed system to feature and benefits
    c. Potential reduction of liability with true interoperability
3. **A Culture Embracing "The New":** Provide the tools to create Private Branded App-based Networks that disseminate information, product knowledge, interactive training and provide communication, while creating a culture of "readiness for change" for all stakeholders ranging from member/staff to customers/patients.
    a. Manufacturers and HealthCare Providers – Participate and contribute possibilities
    b. Manufacturers and HealthCare Providers' Staff – Accept and support change
    c. Patients – Principle-based education and patient contribution
        i. "*If You Don't Understand Why, You Will Not Comply*"

## Medical Device Network Operating System (MDNOS)

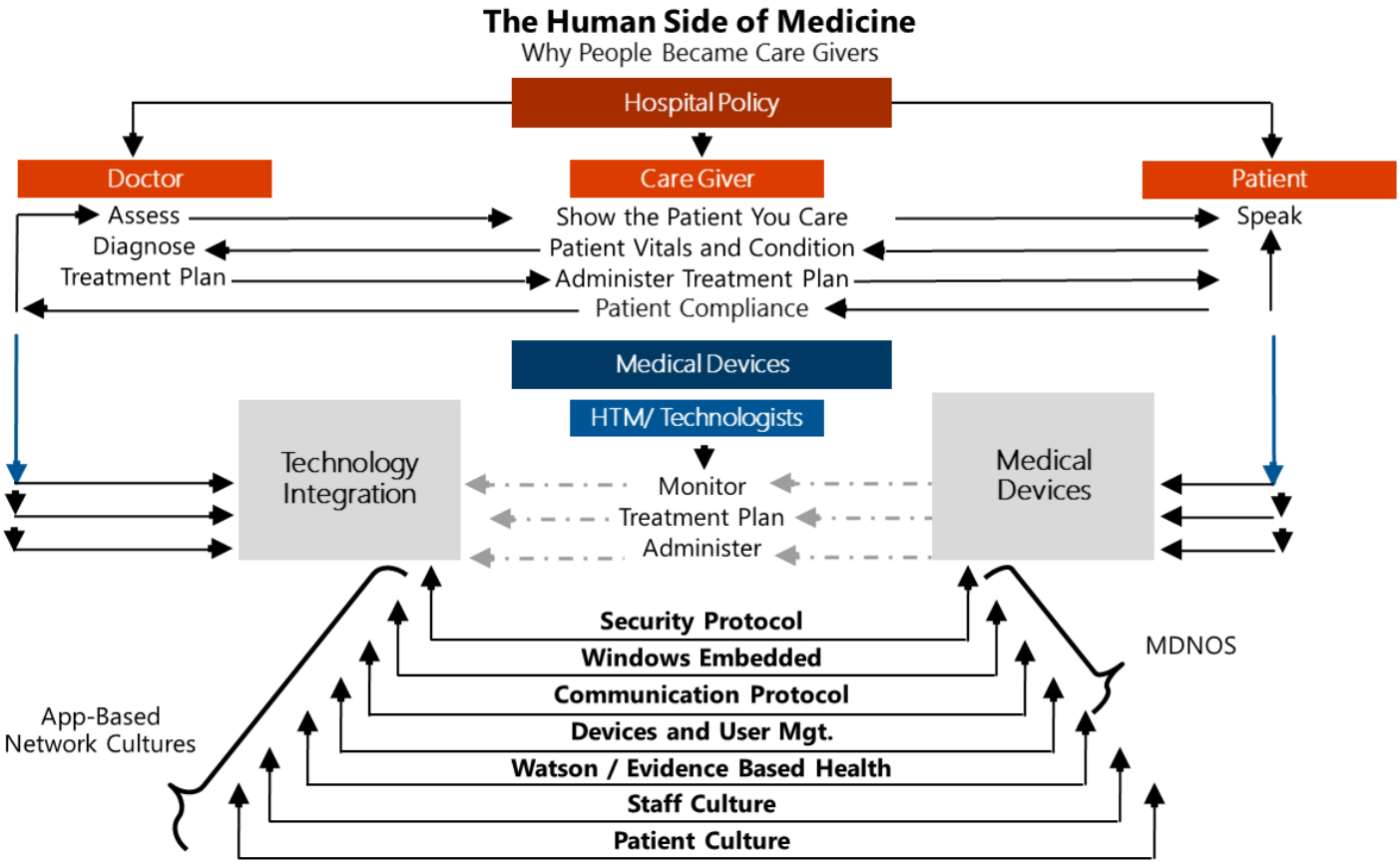
From within the Incubator, Industry Stakeholders have the opportunity to participate in the integration of the Medical Device Network Operating System (MDNOS).

A Medical Device Network Operating System comprised of management servers, medical device secure network clients and drivers for standard API that can be implemented regardless of network architecture to provide secure interoperability from medical device to EHR and back regardless of where the patient is receiving care (Home/Remote clinic/Traditional HealthCare settings).

- Manufacturers' Medical Devices (secure client).
- HealthCare Provider I.T. infrastructures as an Interoperability Management system (server).
- Integration of the MDNOS into the HealthCare Providers IT Infrastructure
    a. A parallel to Microsoft's Active Directory… for Medical Devices via secure client and server entity to administer authentication and encryption to medical device communications. A security standard is now in place that would allow a standard security policy to be administered throughout all equipment classes. Keep common log files, risk register, receive software updates system wide, manage default settings securely remotely program devices, manage user group access to classes of devices.

b. Potentially Reduce the Medical Device Manufacturers' liability. Currently responsible for device and management system promoting proprietary non-interoperable systems. MDNOS becomes security standard that can allow for standard API. Audit trails would increase the accountability of the Hospitals and the individual staff Care givers for medical errors.
c. Once all devices gain secure communication through the MDNOS, "device drivers" can be implemented to achieve true interoperability between medical devices and systems. For example any pharmacy management system could program any manufacturers infusion device, any EHR could receive data directly from any medical device, any physiological alarm management system could monitor any medical device for patient safety; true interoperability.

**Once true interoperability is achieved, the benefit to patient care can be maximized exponentially**.






**Examples:**

**Physiological Alarm Management**

Through ADT (EHR Patient Location) and Physiological Monitoring interface, alarm and alert standards can be implemented according to patient diagnosis automatically, reducing alarm related adverse outcomes. Further, integration of user information will promote accountability of alarms response actions as they could be logged as part of the patient record. (Top 10 Technology Hazards for 2014: ECRI)

**“Automatic” IV Pump Programming**

Interfacing Pharmacy order system (IV Programming) to IV Pump (med device) and reporting back infusion status back to EHR integrated with physiological monitor can provide real-time evidence of efficacy of treatment. Automatic programming removes human bridge reducing transcription and programming errors which account for a large percentage of medical errors. Real-time understanding of IV therapy vs patient condition will become data to support evidence based treatment plans.

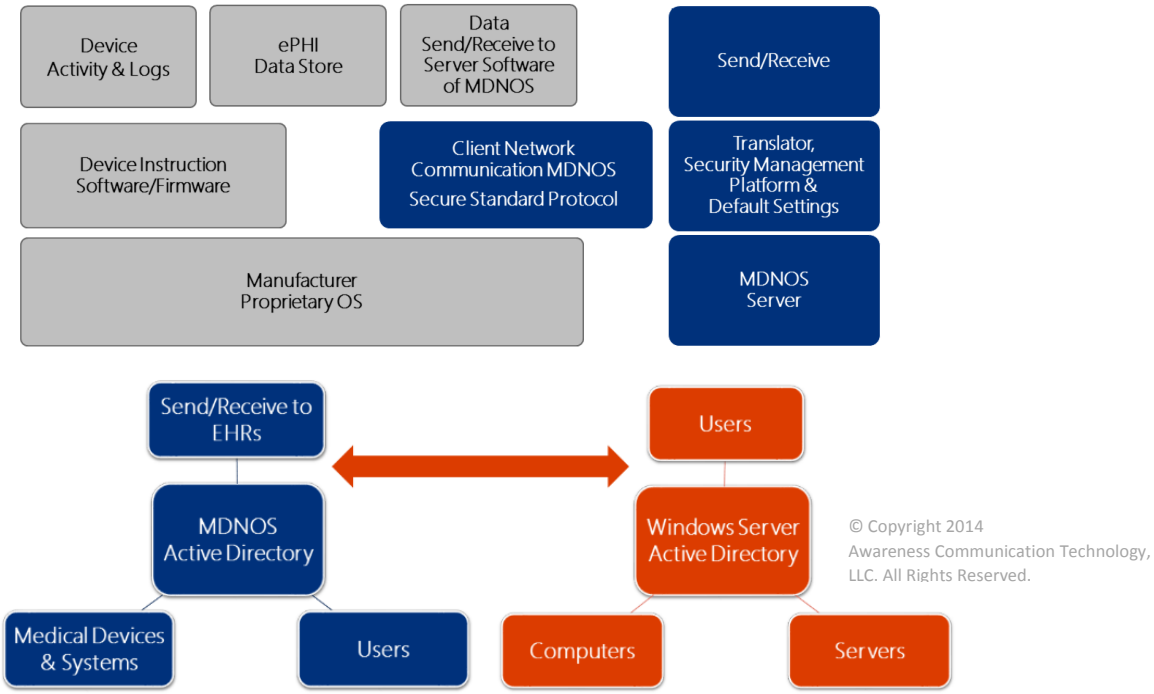
**Digital Health**

Physiological data generated by homecare devices or Body Area Networks (BAN) can be included in the patient record real-time via home network or cellular interface. Response or intervention protocols can take advantage of real-time data.

## Summary of Selected MDNOS Potential Benefits

Selected MDNOS Potential Attributes:

- ✓ Provide user access control to medical device information and programming and outputs
- ✓ Provide Authentication of all medical devices to all necessary systems
- ✓ Provide security auditing even if there is none designed in the medical device
- ✓ Security support for Remote Service
- ✓ Manage software updates/security patches
- ✓ Maintain an Information Security Risk Register
- ✓ Provide a Standard for manufacturers to design their interfaces to
- ✓ Provide a single point of liability for interoperability
- ✓ Network architecture independent
- ✓ Provide a platform for implement user and system auditing
- ✓ Platform for Security Management Program from all network medical devices.



## Culture: Medical Device Incubator Enables the Way for Cultures to Embrace "The New"

***Perhaps you have experienced a roll-out of a process or technology that of itself is proven to work in other installations. However, when implemented in your facility, it experiences problems. Without the critical element of understanding and developing the human culture that the system is being applied within, factors such as authority conflict, "Not-Invented-Here" syndrome and sabotage can inhibit buy-in and contribute to failure.***

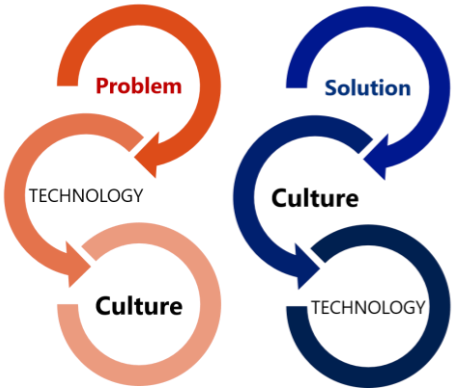
Without a defined principle-based purposeful structure, the implementation of collective ideas cannot evolve to a fully interoperable system.

As stated by Richard Jorgensen PhD (hc), the Founder and CEO AwareComm®, **the Industry Culture either adapts to technology or drives technology:**

When ***Culture "has to" adapts to technology you get Resistance***. *However, w*hen ***Culture drives technology you get Acceptance***.

- ✓ Manufacturers and HealthCare Providers participate and contribute possibilities.
- ✓ Manufacturers and HealthCare Providers' Staff accept and support change.
- ✓ Patients receive principle-based education and learn how to contribute back…

"*if you don't understand why, you will not comply*."






## Embedding App-Based Education, Network Culture Development and Acceptance of "*The New*" into All Delivered Products and Services

The Industry Incubator services its total vertical marketplace and invites its Associations, Educational Institutions, Businesses, Professionals, Media and Publishers to develop and configure Private Branded eMod™ Apps which create Private Branded eMod™ App-based Networks that:

- ✓ Engage the existing customer market and attract and engage new markets.
- ✓ Convert those Markets into A Private Branded eMod™ App-Based Network.
- ✓ Evolve that Network into a Trust-Based Culture the embraces "The New" which is built on solid principles of success.
- ✓ Create buy-in of that results in a "Customers for Life" Culture which Grows Itself, and creates the ability to harness the power of the resulting Network Culture.

Through a guided process, the Industry Incubator introduces a unique balance between science and art, logic and imagination**…** ***bridging theory to practical application:***

> *A place where words and pictures become meaningful solutions, and instructional design is brought to life.*
>
> *A place where methodologies and theories of top 87 professionals in the fields of Philosophy**,** Psychology, Sociology, Education, Theology and Science are integrated into technology.*

Industry Incubators teach and guide Industry Providers of all skill levels how to **quickly and easily develop Content Apps** and distribute those Apps to their existing and prospective audience. Contracting services are also available for those who have the ideas and content but wish to leave the app creation to another party. Within the innate design of the system, Content Apps deliver **effective communication for marketing, solution knowledge, customer training, support and staff training.** Content Apps teach a diverse mass audience "how" to think rather than "what" to think.

- If content is delivered with an intention of "what" an audience should think, it is met with distrust and at best will get compliance and minimal market acceptance.
- However, if content is delivered with an intention of "how" an audience can comprehend, evaluate, analyze, apply and perpetuate the content, it will be met with trust, acceptance, ownership, participation and contribution.

Content Apps make for **better understanding and effective application of content**, and will additionally **strengthen the value of product information and training** while concurrently **changing the culture.**

There are three types of Content Apps:

- Marketing Apps
- Solution Apps
- Customer (Patient) Contribution Apps - For both Internal and External Culture Development

## Lay the Silos of Traditional Organization Structure

As integrations reach traditional boundaries between silos of technologies, clinical disciplines and patients, a veritable event horizon is reached where the differing histories, traditions and cultures of the application of the technologies create critical challenges to the management of risk. No longer does a single silo alone manage its own technological risk in the clinical environment; all disciplines (or none) manage the risk of all of them together. Technological inertia and worldviews need to be overcome in order to render the silos horizontal allowing for the opportunity to blend.

The traditional support and implementation teams of each discipline must become familiar with, and inter-operate with, the culture of the bordering discipline in order to form a true multidisciplinary partnership.

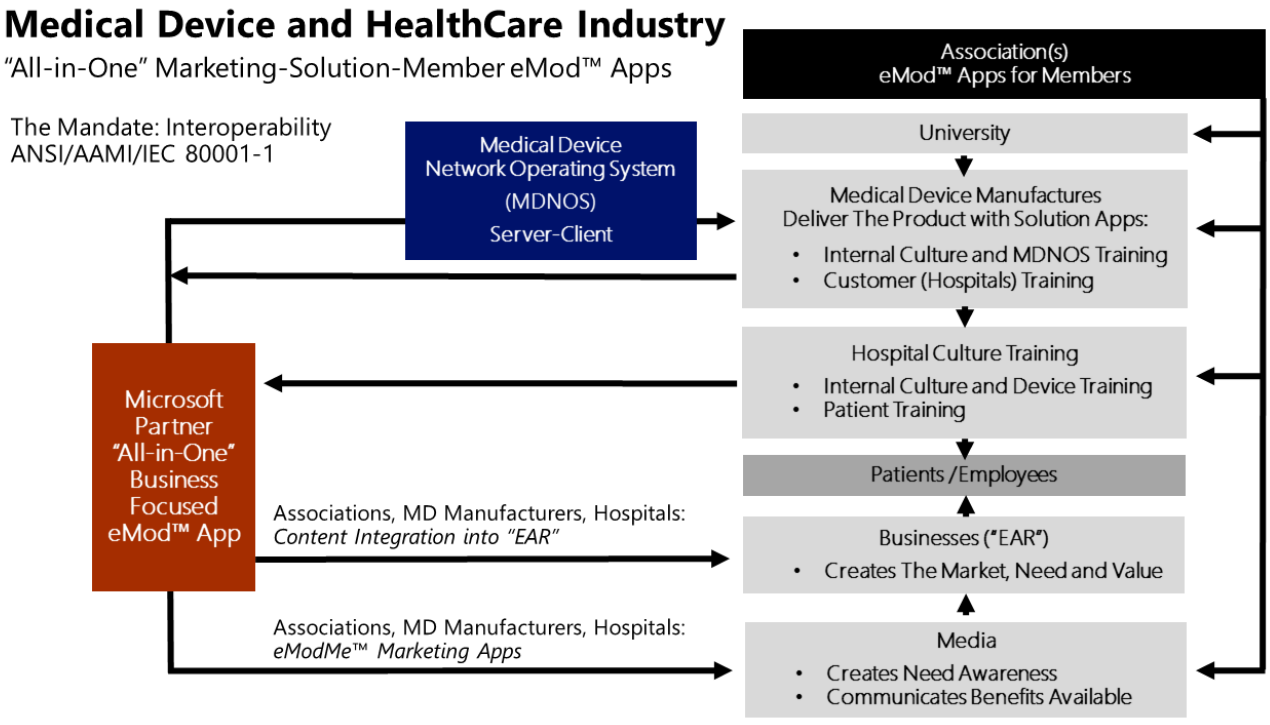
## An Example

In practice, manufacturer teams may deploy their own Private Branded Content Apps designed to promote interface with adjoining disciplines team, provided necessary technical and cultural support and feedback for developing implementation best practices.

In turn, the HealthCare provider with their own Private Branded Content Apps can aggregate and facilitate distribution of technical, cultural and procedure integration information to promote a fully focused Integration team.

Additionally, a Provider's Private Branded Content Apps would be deployed to the clinical staff to promote caregiver knowledge and support in applying the new technological abilities to the patient care activities. Provider "Customer" Apps would provide feedback and input to providers' clinical process improvement functions.

Industry associations for manufacturers, servicers and implementers can use Private Branded Content Apps to build and maintain a focus on interoperability while receiving feedback from the manufacturer field gaining knowledge used to develop best practices.



# The Invitation

I humbly appreciate your interest today and sincerely respect all of the efforts put forward for the advancement of technology in our healthcare future.

In order to develop the common vision we all have for interoperability in healthcare, we need to be of one voice; a common culture united as the "tide that lifts all boats."

To begin to turn the "I" into "We," I have partnered with Awareness Communication Technology, LLC. to bring a Private Branded Industry Incubator to our discipline. Together we are targeting and contacting potential governing board members, have developed a draft charter, and are recruiting sponsors in order to keep it self-sustaining.

We also need your support as members, contributors and researchers to carry the message to those around you and bring your wisdom back to the healthcare community.

Whether you develop and integrate EHR's, integrate medical devices, write code, design equipment, or work with clinical staff teaching work flow procedures, no matter what your part, we ask all of you to bring your wisdom, your story, your enthusiasm and your dedication to one another. It is time to bring us all together.

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