

The background is a vibrant blue digital collage. It features several key elements: a puzzle piece being inserted into a larger piece, glowing white and yellow lines that suggest data flow or network connections, a portion of a computer keyboard, and a QR code. The overall aesthetic is futuristic and technological.

**Going Paperless:  
Emerging Technologies for Electronic PCR's**



# Who's this guy?

- Laurent Repass
  - Paramedic
  - EMS Coordinator
  - QI / Data Coordinator
  - Orange County EMS
  - **A SUPER COMPUTER GEEK**

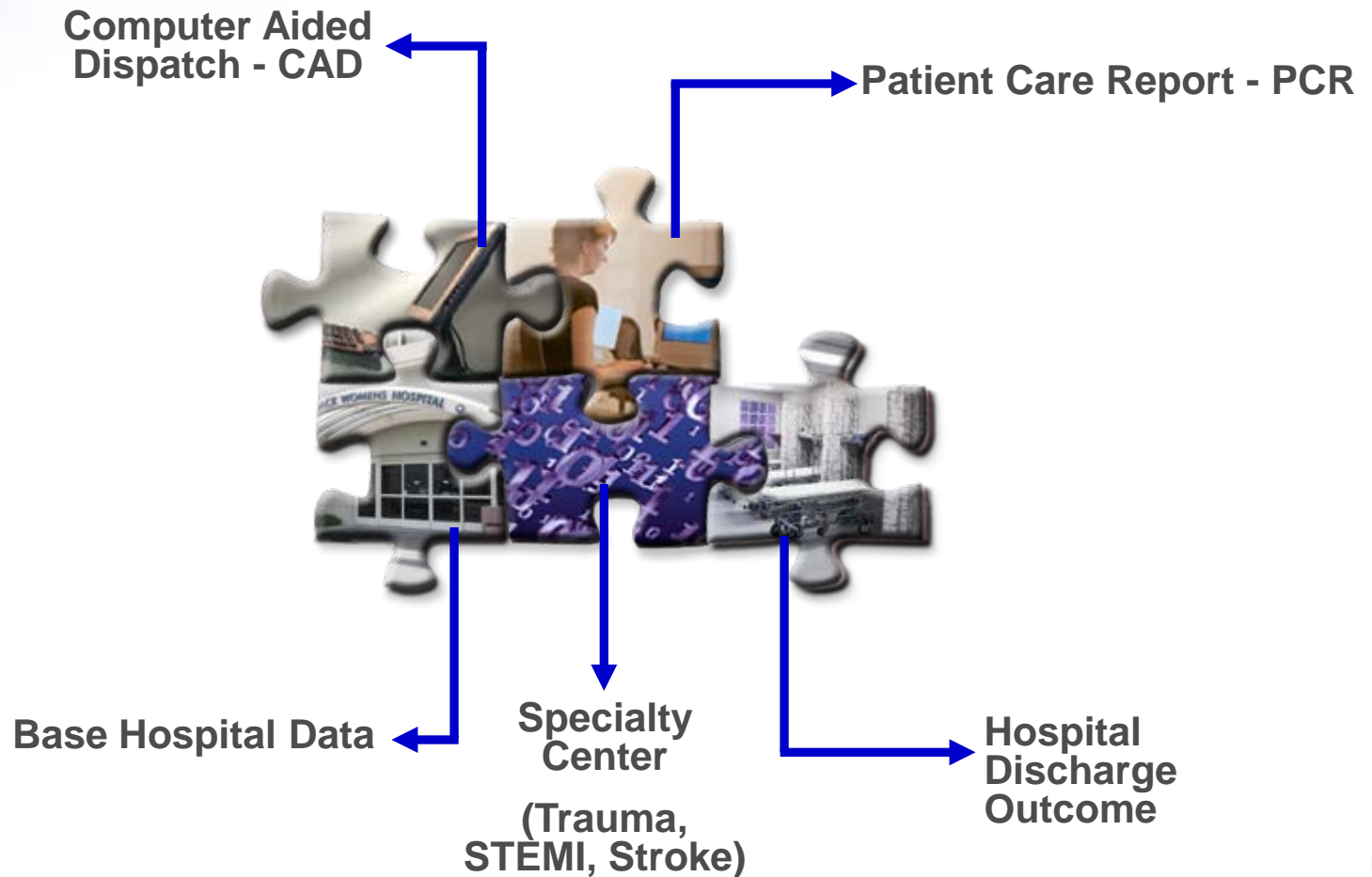


# Why are we doing this?

- Data Sharing / Continuity of Patient Care / Outcome
- Continuous Quality Improvement / Research
- Streamline Ambulance Billing
- Resource Justification – Prove our existence
- HIPAA / Health Information Technology for Economic and Clinical Health (HITECH) Act Compliance 2014
- Future Statutory / Regulatory Compliance – CEMISIS
- Syndromic Surveillance / Identify Medical Surge
- Public Awareness – Prevention / Education

## ...and now, the **BIG PICTURE.**

*“Following the continuum of EMS Patient Care...”*



# How are we going to do this?

- Mark Hagan – American Medical Response
  - Governance
  - Project Management 101
- Tim Hakamaki – Sansio, Inc.
  - Connectivity
  - Interfaces / Integration
- Sam Delp – ZOLL
  - Hardware – Current deployments, trends, Challenges, future
  - Support Infrastructure / Training
- Todd York – ImageTrend, Inc.
  - Data Aggregation
  - Reporting



# Mark Hagan

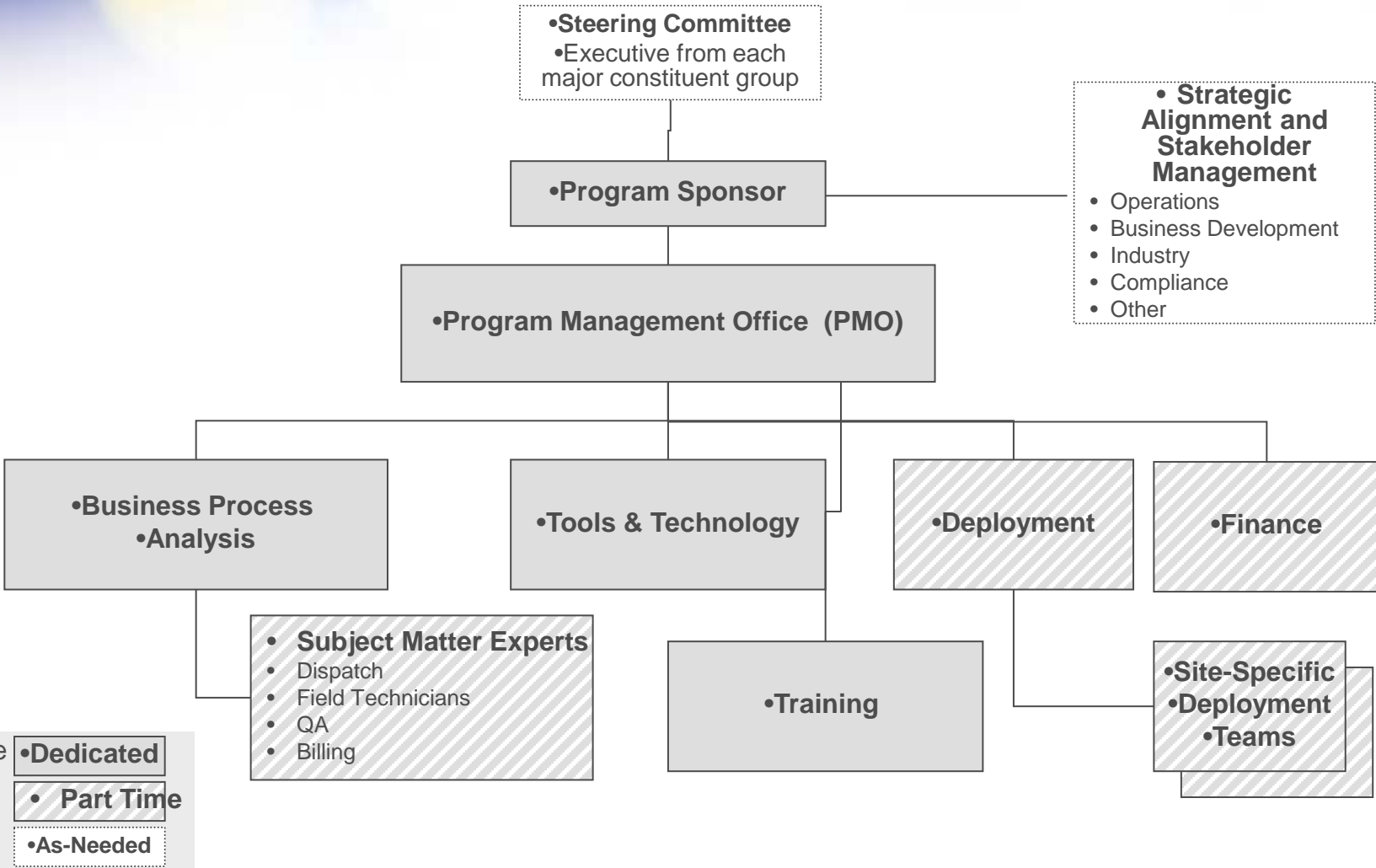
- Governance
- Project Management 101



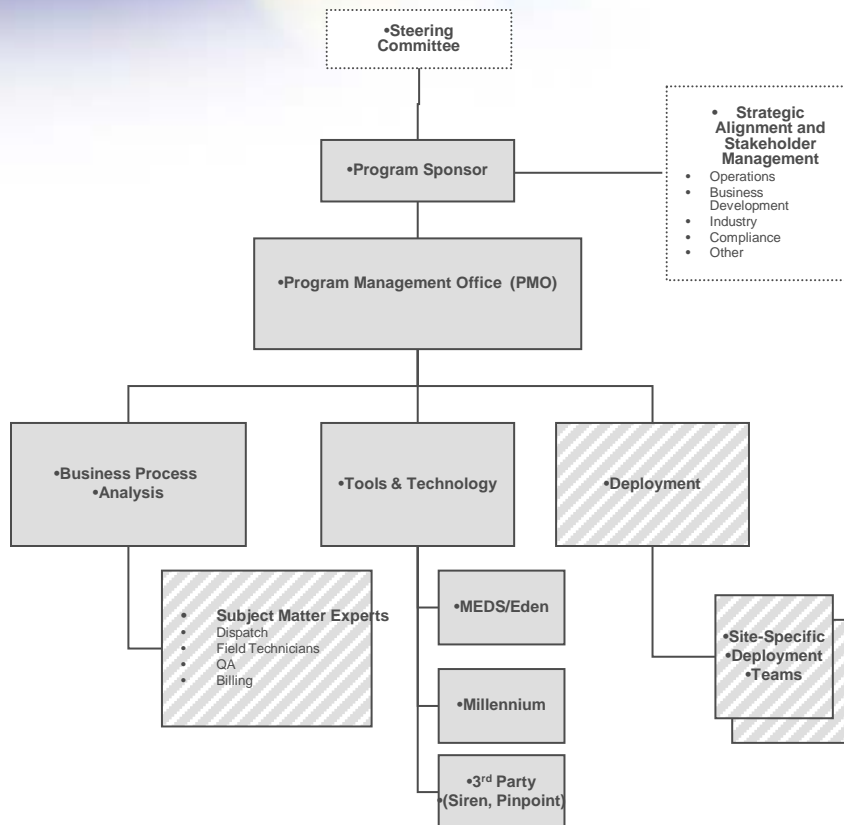
# Establish Governance

- Why the need for Governance
  - Define the objectives and goals of the project
  - Establish what metrics will be used to measure project performance and project success
  - Establish boundaries for implementation and expectations from each constituent
  - Define rules for managing priorities and risk management
  - Provide resource management expertise
  - Ensure the investment meets the business value

# Our Governance Model



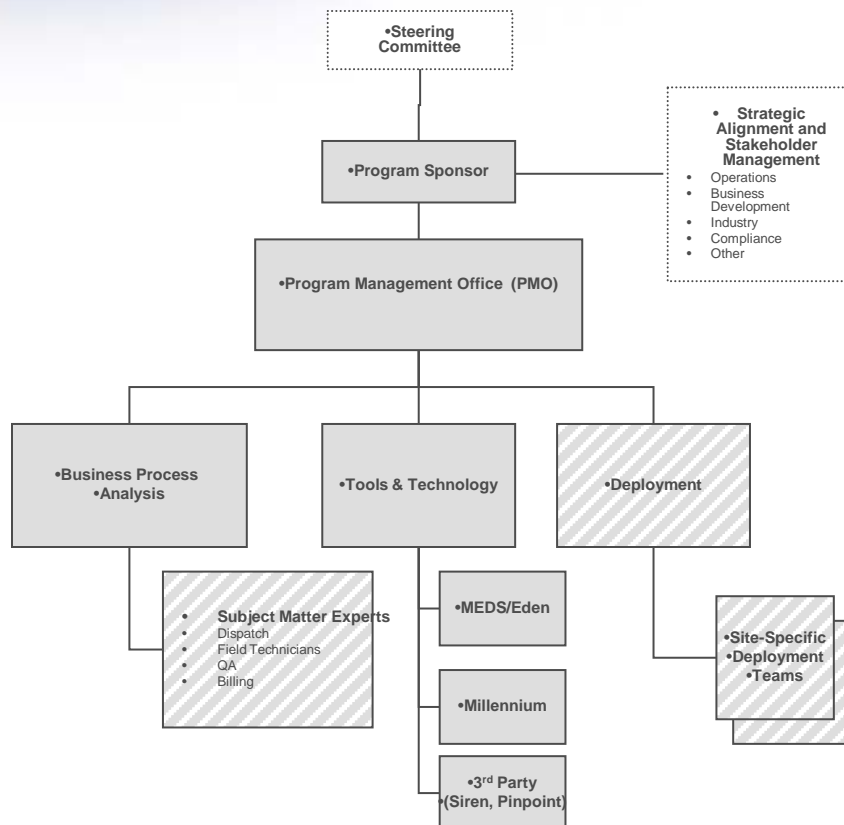
# Steering Committee



## • Responsibilities

- Allocation of funds, resources
- Program guidance. Go/No-Go decisions.
- Definition of Strategic Objectives
- Champion the program to all of Constituents
- Scope/opportunity management
- Sign-off on business case

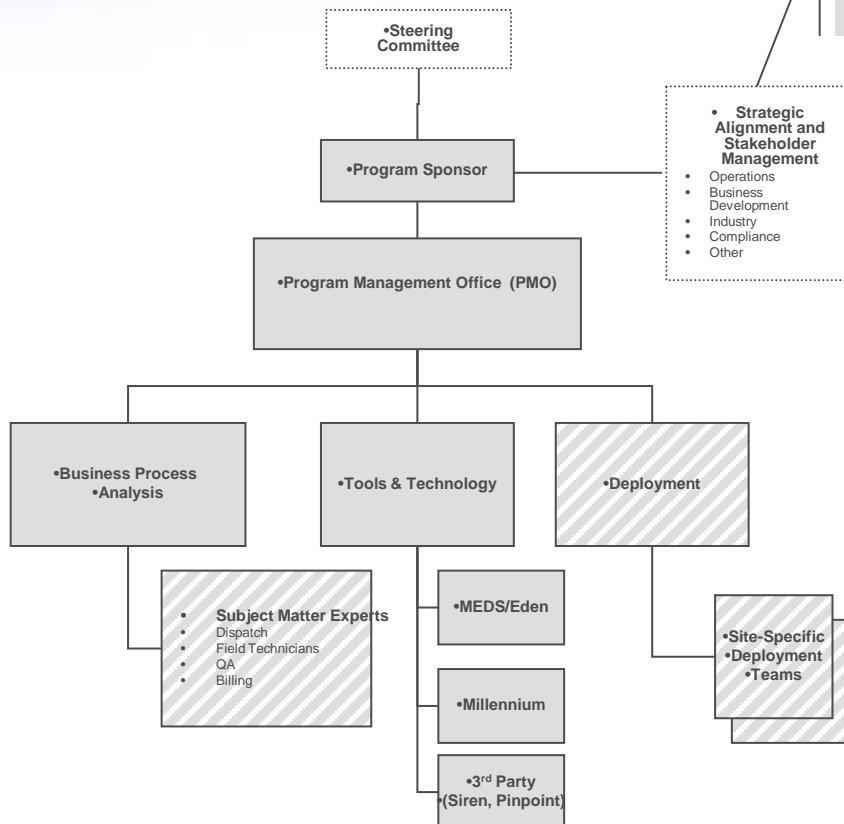
# Program Sponsor



- Responsibilities
  - Overall Program Success and accountability
  - Alignment of Program to Strategic Objectives
  - Accountability to Steering Committee
  - Accountability to Stakeholder Group
  - Final arbiter on major project decisions

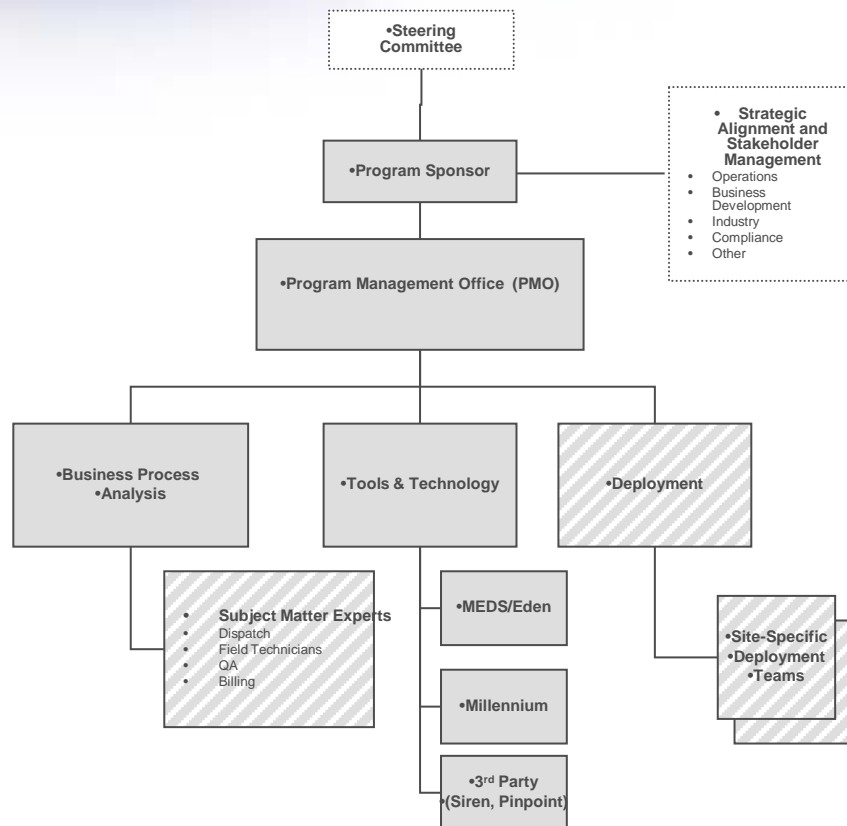
# Stakeholder Group

- Strategic Alignment and Stakeholder Management
- Public & Private EMS, Fire, EMS Agency, Hospitals,



- Responsibilities
  - Provide strategic guidance on Operational, Clinical, Reporting, and Integration
  - Active participation in planning and execution
  - Review and sign-off on designs and implementation plans
  - Ensure all regions and functions are represented and are contributing

# Program Management Office



## Responsibilities

- Day to day project management
- Define and track progress
- Integrate project plans
- Identify and resolve key issues
- Prioritize and sequence major EPCR activities (pilots, deployments, technology trials, etc.)
- Prioritize and assign software enhancements and feature requests
- Handle the interdependencies of issues and projects
- Manage project communication (including regular status reporting)



# Project Phases

## Common and Simplified Approach

- Project Initiation
  - Project Charter
  - Stakeholder Analysis
- Project Planning
  - Scope Statement by Stakeholder
  - Work Breakdown
  - Communications Plan
- Project Execution and Control
  - Team Management
  - Project Status
  - Risk Management
  - **Change Control**
  - **Testing**
- Project Closing

# Customers & Change

- Primary customers must have a voice in the approach and take the time to review deliverables
- Stakeholders can help manage change
  - Among EMS employees
  - Among EMS agencies
  - Among Providers
- Identify ways to over communicate change and what is happening along the entire project.

Not just the Beginning and the End



# Don't Forget Testing

- System Testing
  - Done by the project team
  - Get constituents from all teams to participate in system testing
- User Acceptance Testing
  - Allow time to work through problems
  - Extra work but EMS employees with appreciate it
  - Get Real users to test
  - Train on system and train on how to test
  - Capture and prioritize problems



# Tim Hakamaki

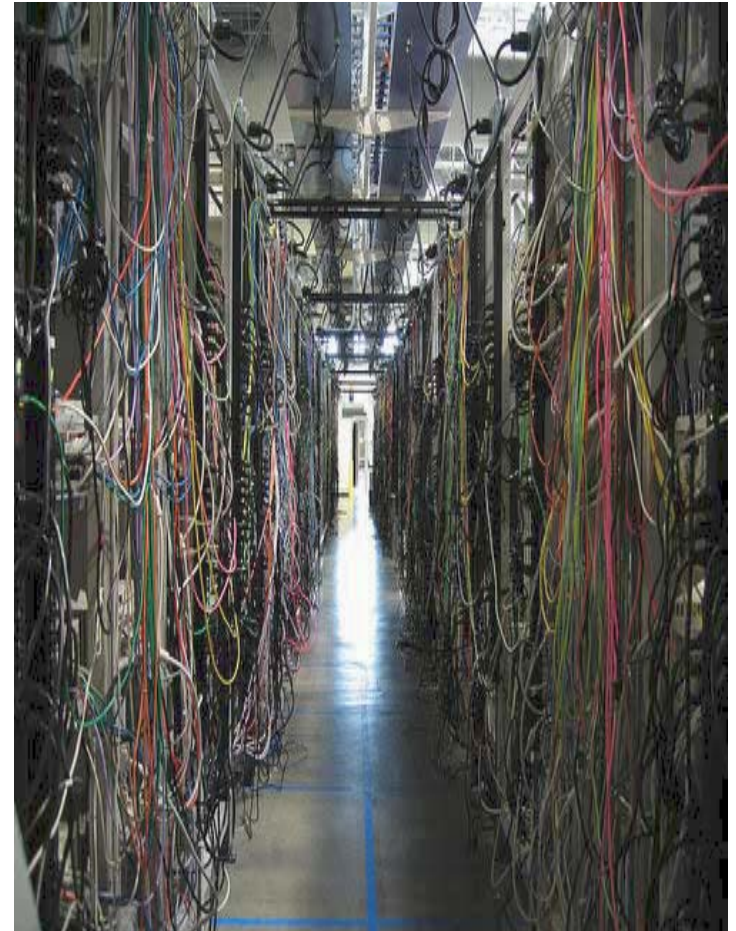
- Connectivity
- Interfaces / Integration

# Connectivity / Integration

- Presented by:
  - Tim Hakamaki – VP EMS at Sansio
  - History and experience
    - EMT
    - Firefighter
    - RN
    - Business Administration
    - Helped start HealthEMS® in 1999, and has been with Sansio since 1997. Sansio has been in the business of offering Software as a Service (SaaS) to health care customers since its inception. To date, Sansio has focused on health care information services providing, web-based decision support solutions to the health care industry. Sansio's solutions include HealthEMS®, a remote-hosted, web-based field data collection, management and reporting system for the EMS industry.

# Connectivity / Integration

- Often viewed as confusing and complicated

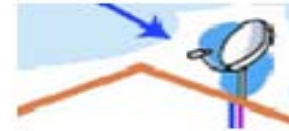


# Connectivity

- So many options:



Cable



Satellite



T1



DSL



High-speed dial-up



Municipal WiFi



Cellular

# Connectivity

- What's really important?
  - Security
    - Protect sensitive data
      - Encryption (SSL)
  - Availability
    - Needs to be reliable
      - Multiple Internet Service Providers (ISPs)
      - Global network support (24/7/365)
      - Small local carrier vs global carrier
  - Performance / Speed
    - Does it meet the needs of your organization?
      - Burstable? Can I get more bandwidth when I need it?
      - Upload and download speed guarantees
      - Latency
        - <25 ms is good, <100 ms is ok, > is questionable
    - It's more than just the size of the pipe



# Connectivity

Two main areas of focus for EMS:

➤ Mobile connectivity –

➤ Common use

- CAD – Computer Aided Dispatch
- MDT – Mobile Data Terminals
- ePCR – Electronic Patient Care Records/Reports
- Vehicle Tracking
- Hospital Data Transfer – ie STEMI, ePCR, MCI, etc.

➤ Typical choices for connectivity -

- Aircard – Sprint, Verizon, Alltel, AT&T, etc.
  - Consider Gobi technology which allows you to switch between carriers without hardware changes.
- Wi-Fi Hotspots – Ambulance, Starbucks, public, etc
- Radio frequency (800 MHz)

# Connectivity

- WAN/LAN connectivity
  - T1 and other committed connections
  - DSL, Cable, and satellite. How do you choose?
    - Important to have QoS (Quality of Service) in your ISP Agreement
    - As a business, you do not want to get a residential service
  - Redundancy is often overlooked. Once internet connectivity becomes mission critical, you need to evaluate the need for redundant ISPs.
    - As an example, a simple router change could cause periods of inaccessibility.

# Integration

- CAD
- EKG
- Hospital Data Transfer
- Billing
- State
- Various Registries



# Integration

## ➤ CAD

### ➤ Benefits:

- Reduces data entry time
- Increases data accuracy
- Provides QA loop to assure that you have a ePCR for the appropriate CAD records

### ➤ How to:

- Web services
- Batch files

## ➤ EKG

### ➤ Benefits:

- Reduces data entry time
- Increases data accuracy
- Elimination of paper reduces data loss

### ➤ How to:

- Direct cable link
- Bluetooth
- Data Card

# Integration

## ➤ Hospital Data Transfer

### ➤ Benefits:

- Real to near real-time access
- Reduces hospital data entry time
- Increases data accuracy

### ➤ How to:

- Web services
- Internet faxing

## ➤ Billing

### ➤ Benefits:

- Reduces data entry time
- Increases data accuracy
- Reduces revenue cycle

### ➤ How to:

- Web services
- Batch file
- Application bridges

# Integration

## ➤ State

### ➤ Benefits:

- Reduces data entry time
- Increases data accuracy
- Raises compliance

### ➤ How to:

- Web services
- Batch file
- Application bridges

## ➤ Various registries – ie CARES

### ➤ Benefits:

- Reduces data entry time
- Increases data accuracy
- Provides outcome data leading to improved care

### ➤ How to:

- Web services
- Batch file
- Application bridges



# Sam Delp

- Hardware
- Support Infrastructure
- Training



# Hardware Considerations

- In the vehicle
  - Data collection devices – TabletPC, Smart phone, PDA
  - Communications – Router, Air card, WiFi
  - Mounting – Docks, Brackets
  - Power – Via docks, Separate chargers
  - Ruggedness – Expect & prepare for damage just like any other device
  - Backups – Plan for down time on devices (damage, maintenance, etc.), 1 backup device for every 6-10 devices in service



# Hardware Considerations

## – Hosted vs. non-hosted

- Where do you want your data to reside?
- Does your IT group have the capabilities to support a non-hosted environment?
- Connectivity to CAD, Billing and other ancillary systems

## – Workstations

- QA, Medical Director, hospital, etc.)?
- What kind of connectivity is available for them to access your system?
- Browser-based or Windows?



# Hardware Considerations

## – Monitor Integration

- Cables for uploading data
- Bluetooth capabilities on monitors and data collections devices
- Any upgrades required on monitors?



# Training Considerations

- Choose application administrators wisely
  - EMS experience
  - They know your system (protocols, operating procedures, etc.)
  - Has time to work on the project
- Train-the-Trainer or End User Training
  - Which works best for your agency?
  - How many people do you have to train?
- Pilot your system
  - Small group to work with application before larger roll-out?



# Training Considerations

- Training approach
  - Onsite, videos, material
- Plan your 'Go-Live'
  - Staggered or agency wide
  - How many folks do you need to train



# Support Infrastructure

- IT Infrastructure
  - What is the capacity of your IT team
  - Contracted vs. In-house
  - Have they implemented these systems?
- On-going Support
  - ‘Go Live’ support
  - How (online, phone, email)
  - When (hours, etc.)
  - Escalation process



# Todd York

- Data Aggregation
- Reporting



# Data Aggregation

- Objective
  - State/County/System EMS and Trauma data in one database
    - Reporting
    - Quality Control
      - Key Performance Indicators
    - Begin to know what we don't know

# Data Aggregation

- Methodology
  - Import Data from ePCR vendors already in place
    - Hopefully they are all NEMESIS Gold (minimally Silver) compliant
    - Communicate in NEMESIS/CEMSIS XML File Format
    - **STRONGLY** suggest that NEMESIS Gold compliance is a requirement for new ePCR selections
  - Provide method of direct data entry (web-based)
    - Preferably allowing reporting and QA/QI by the Provider directly off of the system
  - Provide integrated field data collection application if at all budgetary possible



# Data Aggregation

- Pitfalls
  - Go with a vendor who has done this before
    - Commercial-off-the-shelf (COTS)
    - The ePCR vendors and the data aggregation vendors know how to work together
  - Stick with the Standards
    - NEMESIS/CEMSIS
    - Custom Field Ripple Effect


# Reporting

- Data Quality
  - Initially take what you can get
    - Too intense validation rules lead cause submission of only those calls that meet it or use default values in order to meet it, but is that reality?
    - Work with the Providers and their vendors to improve data quality over time
  - Provide easy to use standard reports for stakeholders from the system
    - Don't forget to include the medics themselves
    - Nothing improves data quality like individuals running reports on themselves
  - Create scheduled summary reports to be sent to the Providers so they can see what you are seeing



# Reporting

- System Requirements
  - Canned or Standard Reports
  - Ad Hoc Reporting
- Optional capabilities (but really cool)
  - Data Mining
    - 3 dimensional reporting
    - Cubing of data for speed
    - Mapping
    - Incorporating other data
      - Census
      - Climatological

- 
- Questions?
  - Closing Remarks
    - All Vendors have booths.
    - Take the time to visit if you have more specific questions.