



FirstNet and NG911: A Tale of Two Technologies

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Let's start at the beginning...

- Public Safety land mobile radio born in Michigan
- *April 1928 – LMR started for Public Safety “Station KOP”*
- *1929 – MI Governor, AG, and State Police showdown with FCC resulting in first statewide LMR approach*
- Public Safety spectrum used across multiple bands
 - HF, VHF, UHF
- Includes traditional voice and data communications
- Mostly private networks
- Data limitations based on spectrum

Let's start at the beginning...

- Public safety spectrum “D Block” = had it all
 - Lost a portion, fought for it....
- FCC Developed national broadband plan
 - March 2010
 - A strategic plan for the nation – economy and citizen protection
 - Chapter 16 Public Safety (20 pages)
- D-Block lobbying efforts unifying public safety across the nation
- Michigan supported several congressional bills introduced before one finally passed
 - Differing approaches for public safety
 - Inclusion of feds/exclusion of feds
 - First incentive auction ☹️

Still in the beginning...

Michigan 911 enabling statute enacted 1986

*** Implementation of 911 was done at the local (county level).**

- Enhance 911 with ANI and ALI
- Selective routing
- All landline system
- Recommendation to Legislature on local 911 surcharges
- More centralized dispatch operations began to emerge
- Moderate to little State involvement = \$ and best practices

Still in the beginning...

911 was telecomm and the States' purview – FCC very hands-off until expansion of wireless. Order 94-102 in 1994 was issued requiring two significant changes for wireless and 911:

1) Direct routing of 911 calls into PSAPs on 911 trunks with callback info

2) Location information

- Phase I – Tower and Sector
- Phase II – Actual location with 50/100/300 meter requirements, depending on location technology
- Accuracy requirements based on outdoor calling

Still in the beginning...

- Cellular access into 911 system was retro-fitted into existing system that was designed in the 60's.
- Not all states jumped on board quickly – a lot of growth and even some litigation.
 - King County – Duty of CMRS is to bring calls to SR
 - Richardson Order – PSAPs must be ready prior to ask for wireless 911
 - Michigan, MCDA v. AT&T
- Then came VoIP:
 - Initial inclination was hands-off, as states brought VoIP to court for regulatory purposes, courts wanted to allow the new technology evolve:
 - After incidents in Texas and Florida, the FCC interceded and issued 05-116 requiring 911 location information with 911 calls

The beginning becomes the NOW...

With the onset of non-traditional POTS functions entering into the 911 system, others followed:

- Telematics
 - VRS
 - Interim text-to-911
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- Over the past decade the migration to IP-based systems for private sector communications has been faster than the migration to public safety communications system.

The beginning becomes the NOW...

- **Progression toward IP-based systems and new technologies are accessing 911 networks.**
 - Development and marketing of “911” applications
 - Marketing of third-party services directly to consumers
 - Pictures, video, text, and data messaging emerge as essentials and not “luxury/fun” technologies

It becomes clear that the legacy 911 system will not be able to support the growing consumer communication modes and change is needed.

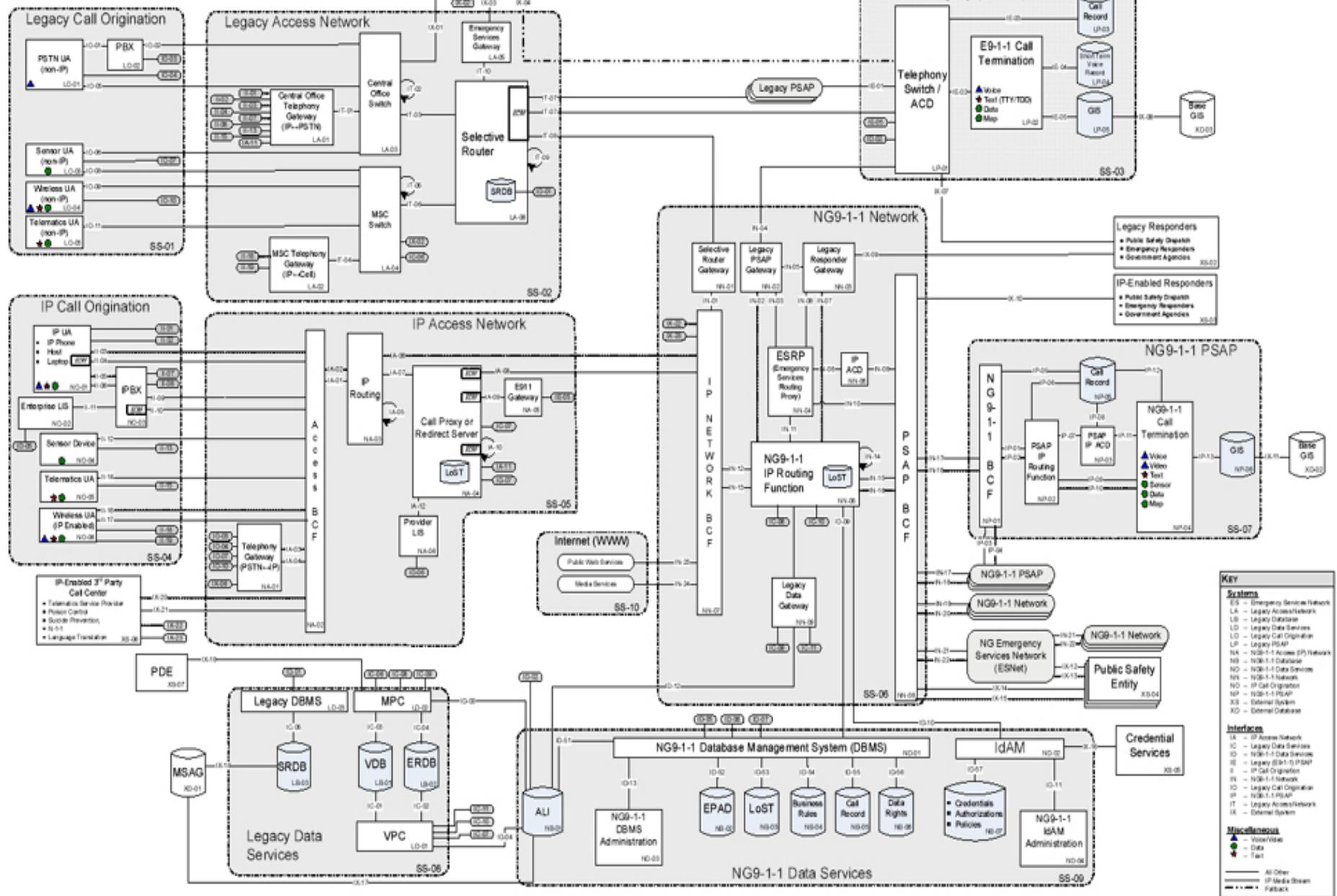
The beginning becomes the NOW...

Next Generation 911 – NG911:

Public safety grade IP-based digital 911 network that contains the core functionality of location-based call routing is:

- * Secure
- * Reliable
- * Redundant
- * Flexible
- * Open point of entry
- * Scalable
- * Standards-based

| Revisions | | |
|-----------|----------------------|-------------|
| Rev. | Description | Date |
| 01 | Initial Draft Review | 2007 Aug 31 |



- Legacy Responders**
- Public Safety Dispatch
 - Emergency Responders
 - Government Agencies
- IP-Enabled Responders**
- Public Safety Dispatch
 - Emergency Responders
 - Government Agencies

KEY

Systems

- ES - Emergency Services Network
- LA - Legacy Access Network
- LB - Legacy Database
- LD - Legacy Data Services
- LO - Legacy Call Origination
- LP - Legacy PSAP
- NA - NG9-1-1 Access (PSTN)
- NB - NG9-1-1 Database
- ND - NG9-1-1 Data Services
- NN - NG9-1-1 Network
- NO - IP Call Origination
- NP - NG9-1-1 PSAP
- NS - External System
- XD - External Database

Interfaces

- IA - IP Access Network
- IC - Legacy Data Services
- ID - NG9-1-1 Data Services
- IE - Legacy (E9-1-1) PSAP
- IF - IP Call Origination
- IN - NG9-1-1 Network
- IO - Legacy Call Origination
- IP - NG9-1-1 PSAP
- IT - Legacy Access Network
- IX - External System

Miscellaneous

- ▲ - Voice/Video
- - Data
- - Text

— All Other
 — IP Media Stream
 — Public



The beginning becomes the NOW...

Most people were asking how do we get all this information, but not a lot of people were asking what do we do with it?

Out of the silos - NG911 and FirstNet relationships are tied together as two networks, but a single system.

The beginning becomes the NOW...

Federal Policy and Politics:

- ENHANCE 911 Act – Set foundation of E911 beyond wireless 911
- NET911- Recognized incoming impact of NG911
- American Recovery and Reinvestment Act
- Middle Class Tax Relief and Jobs Creation Act which

Created both FirstNet and (some) funding for NG911

- **FCC – Starting to see more FCC investment and collaboration in 911:**
 - CSRIC and NRIC
 - PSAP Optimization Task Force
 - Text-to-911
 - Wireless 911 Accuracy
- **FirstNet – Not “Federal System” FirstNet board and PSAC**

Pieces start to fall into place

- In Michigan, the past decade's projects, economics, policies, and yes, even our differences started to bring things together;
 - 911 funding change
 - Growth of MPSCS
 - 911 operator training standards
 - GIS project – equal parts government teambuilding and database building
 - 911 Efficiencies Studies
 - CLEAR NG911 – Concept of public safety ecosystem and re-thinking interoperability.
 - SLIGP project
 - Local projects: some successful and not-so-successful.
 - SB 636 (now P.A. 52 of 2014)

The beginning become the NOW...

- Technology standardization
 - Focused spending – learning from past issues
 - Focused strategy – one direction with multiple solutions
 - Standardized technology solution – LTE, IP
- Alignment of technology planning
 - How can we build on what we have, in lieu of just building to replace?
 - Limited funds = proper planning and total cost inclusion
 - Identify multi-discipline and citizen use of technology and data

The beginning become the NOW...

Vision for technology directions for public safety

FirstNet & NextGen911

- End-to-end solution for citizens and public safety
- Expectations from citizens of more and accurate data – no different than what public safety expects
- Still developing in silos, yet expectations grow wildly of data accessibility across multiple solutions of inputs
 - citizen>health information>dispatch>first responder
 - citizen>dispatch>first responder>citizen
- Partnering – developing mid/long term solutions with user community
- Leveraging versus constructing
 - Creating sustainability

Pieces start to fall into place

- As complex as it is, the technology is the easy part – the policy, organization, and politics is the biggest challenge.
 - Governance
 - Regulatory
 - Inter/intra government agreements
 - Privacy concerns
 - Private sector interests
- Technology strategies are the roadmap that create a standardized approach to public safety communication regardless of the vendor

Standardization - While teams may wear the same kind of uniform and play by the same rules – every game is different. If you have different teams playing different games with different rules on the same field no one is going win.

The getting there...

So, all the talk is well and good, but when will we see things happening?

- RFP for NG911 Network
- FirstNet Consultation
- UP IP-911 Project – looking at test bed for GIS routing
- Agencies joining the SRMS – dedicated resources to it
- CAD to CAD discussions

Expect to see changes in the next two to three years:

- * Governance
- * Funding
- * Standards
- * Collaborative Projects

And they all lived happily ever after, right?

A Vision for Interoperability – Public Safety Ecosystem

There are no doubt many challenges as well as opportunities, we are at a pivotal time where **WE** becomes an essential element in forward movement. **WE** becomes the process of establishing mutually beneficial:

- Public/private partnerships
- Federal/state/local partnerships
- Interdisciplinary relationships – police/fire/EMS/health care/education/infrastructure/ 911/emergency management/tribal/military

Work, collaboration, commitment, trust, and mutual objectives will allow us to reach the effective lifesaving integration of two networks on one system.



Questions?