

> BUSINESS MADE **SIMPLE**



Healthcare Technology Standards – Driven By Solutions To Clinicians' Needs

Bruce Wallace – wally@nortel.com

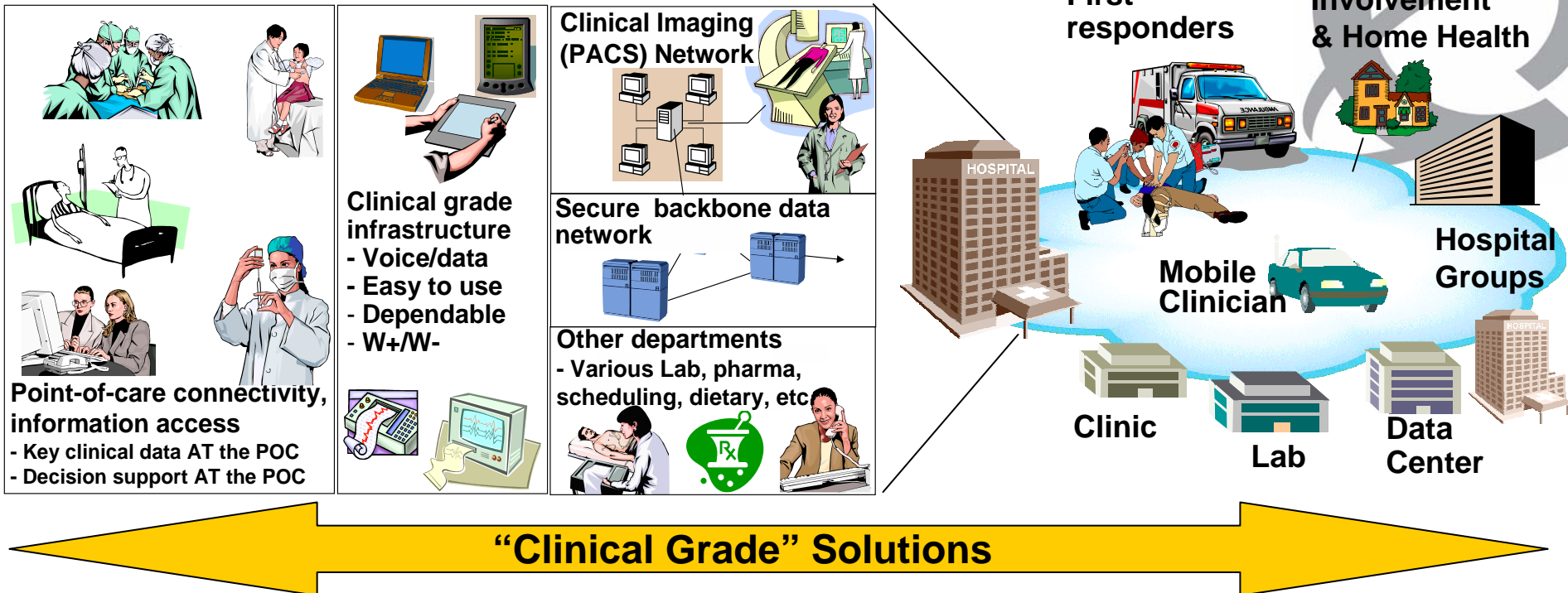
Lead Solution Architect - Enterprise Solutions

Alan Graves – agraves@nortel.com

Consultant - Advanced Network Solutions



Healthcare Networks



- **Clinical processes are complex - intense interaction of diverse professionals**
 - Simple errors, or omissions can be very costly - patient’s lives, clinician’s careers
- **HealthCare IT is enabling solutions for the new world of healthcare**
 - Providing Secure Access to Information including the Point of Care
 - Reducing Errors, Enabling Efficient Processes/Workflows, Consumer Involvement
 - Improving Quality Care at Improved Cost

Networking in Healthcare is now a foundation for the delivery of care
Availability of services is key – failure is not acceptable



The challenge

**Clinical Systems
and standards**

**Knowledge and
reference systems**

**Communication
Networks**

How they communicate



**Workflow and
Policy/Procedures**

How people work.

Spanning these three needs is necessary for success

What standards do you use for the network?

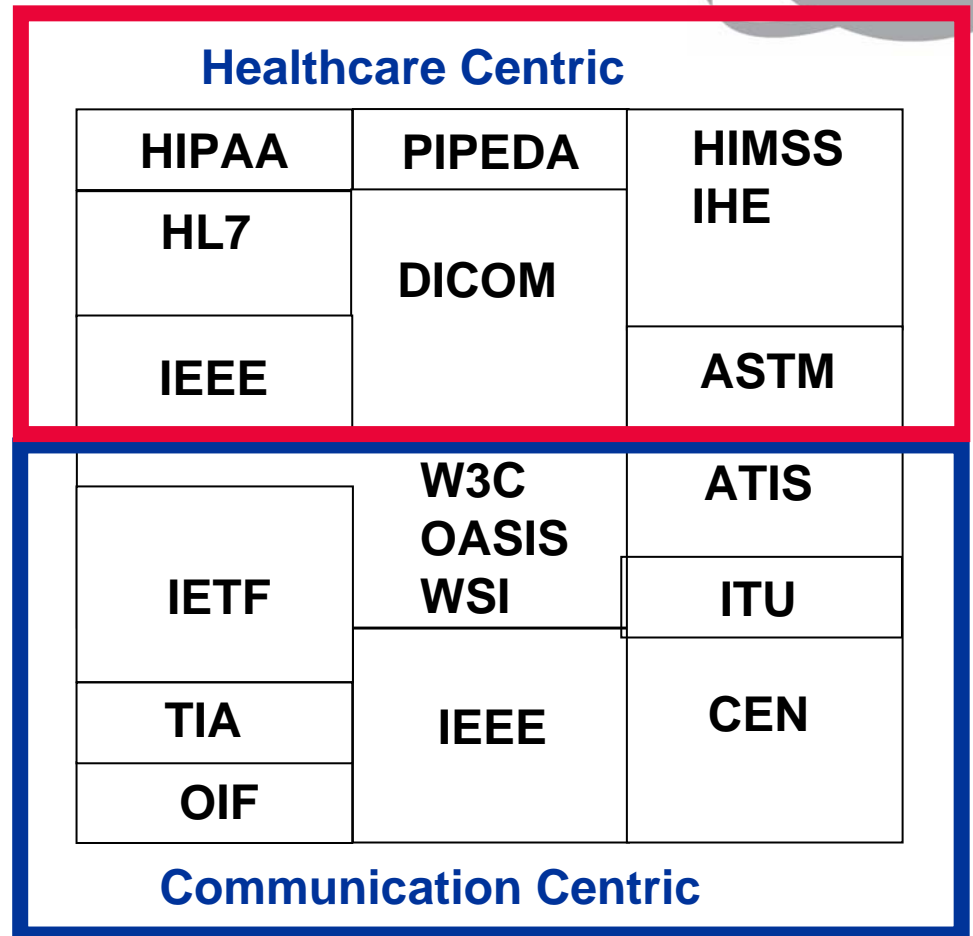


Layer 8
Layer 7
Layer 6
Layer 5
Layer 4
Layer 3
Layer 2
Layer 1
Layer 0

Politics/Policy

WDM

OSI Model



Is there a way to chart a path through this complexity?



What does Healthcare need?

- > It needs interoperable solutions
not a bunch of disparate standards
- > Healthcare solutions will be based on standards
 - Which implies interoperability and integration across a wide range of disparate point standards up and down the stack
 - The complexity must be simplified through implementation/integration agreements
 - This needs to exist in a open standards arena for H/C
 - Needs expertise from many disciplines (clinicians and engineers)
 - It requires engagement from numerous standards groups

3GPP – 3rd Generation Partnership Project



- Challenge: To produce globally applicable standards for a 3rd Generation Mobile System.
- 3GPP is a collaboration among a number of telecoms standards organizations:
 - Japan (ARIB, TTC), Korea (TTA),
 - Europe (ETSI), USA (ATIS) and China (CCSA).
- 3GPP is not incorporated or accredited.
- Organizational Partners convert the standards approved by 3GPP into national/regional deliverables through their normal processes.



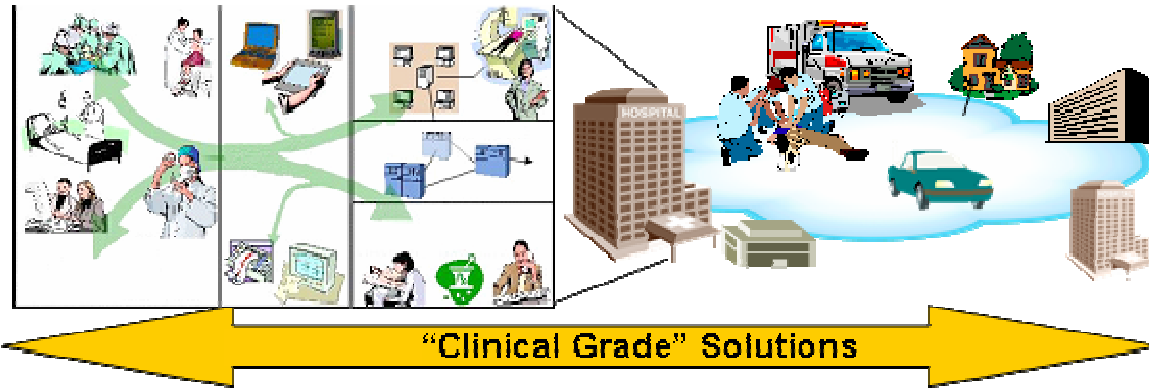
3GPP – 3rd Generation Partnership Project



- 3GPP is governed by a Project Coordination Group with representation from all the partners.
- Standards development is carried out by various technical committees that answer to the Project Coordination Group.
- The Secretariat is provided by one of the Partners on a permanent basis.
- The governing documents are the Partnership Agreement and the Working Procedures.

This approach has worked well!

Quality Solutions – Clinical Grade Networking



- > Clinical Grade networks to deliver on 10 fundamental tenets, which are: -
- Availability
 - Security
 - Quality of Service (QoS) and guaranteed Service Level Agreements (SLA)
 - Pervasive Coverage of the Facility and beyond
 - Seamless mobility with session adaptation
 - Transaction integrity
 - Non-repudiation
 - Provides ability to evolve – “future-proof”
 - Human-system interactions - ease and consistency
 - Workflow engaged .

Clinical Grade allows Clinicians to depend upon and trust the infrastructure
– it does not impede their work, neither does it require their attention
– they must come to assume that it is always there and always delivers

Quality Solutions – Clinical Grade Networking



- > Clinical Grade networks to deliver on 10 fundamental tenets, which are: -
- **Availability**
 - Security
 - Quality of Service (QoS) and guaranteed Service Level Agreements (SLA)
 - Pervasive Coverage of the Facility and beyond
 - Seamless mobility with session adaptation
 - Transaction integrity
 - Non-repudiation
 - Provides ability to evolve – “future-proof”
 - Human-system interactions - ease and consistency
 - Workflow engaged .

**Good network design assumes failures and provides back-up alternatives
Issue is service availability – components fail – user services can't**

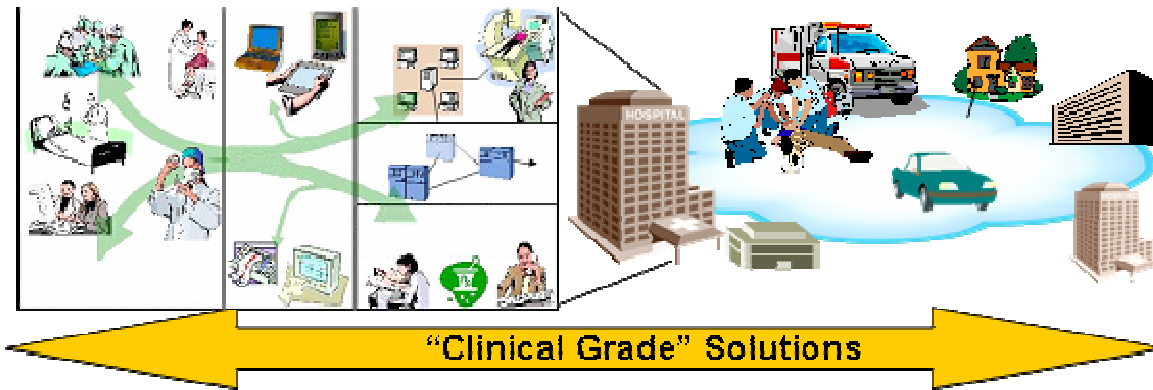
Quality Solutions – Clinical Grade Networking



- > Clinical Grade networks to deliver on 10 fundamental tenets, which are: -
- Availability
 - **Security**
 - Quality of Service (QoS) and guaranteed Service Level Agreements (SLA)
 - Pervasive Coverage of the Facility and beyond
 - Seamless mobility with session adaptation
 - Transaction integrity
 - Non-repudiation
 - Provides ability to evolve – “future-proof”
 - Human-system interactions - ease and consistency
 - Workflow engaged .

Security = Network Integrity, Dependability, Information Privacy, Integrity
Security = Only authenticated logged access by authorized personnel
Security = Layered defense model through-out the network

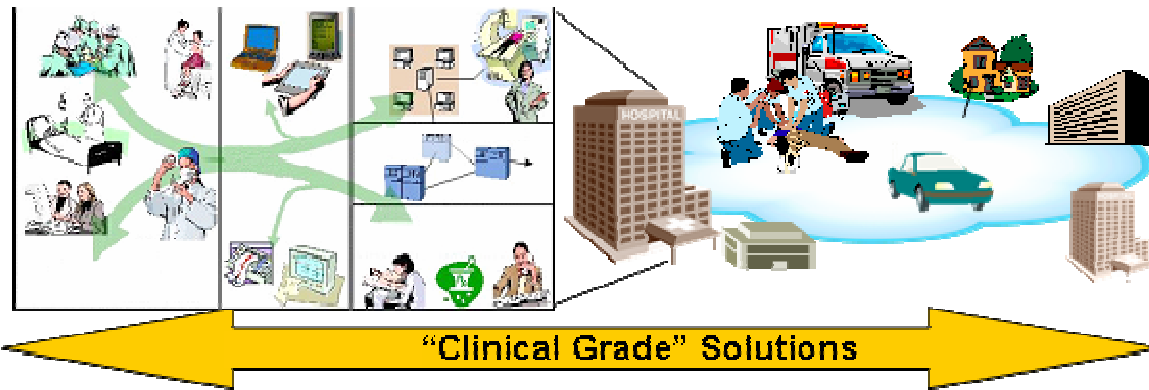
Quality Solutions – Clinical Grade Networking



- > Clinical Grade networks to deliver on 10 fundamental tenets, which are: -
- Availability
 - Security
 - **Quality of Service (QoS) and guaranteed Service Level Agreements (SLA)**
 - Pervasive Coverage of the Facility and beyond
 - Seamless mobility with session adaptation
 - Transaction integrity
 - Non-repudiation
 - Provides ability to evolve – “future-proof”
 - Human-system interactions - ease and consistency
 - Workflow engaged .

QoS drives consistent user experience, building trust in system dependability
SLA provides solution risk-sharing
QoS and SLA both require that traffic be predicted, known (measured)

Quality Solutions – Clinical Grade Networking



- > Clinical Grade networks to deliver on 10 fundamental tenets, which are: -
- Availability
 - Security
 - Quality of Service (QoS) and guaranteed Service Level Agreements (SLA)
 - **Pervasive Coverage of the Facility and beyond**
 - Seamless mobility with session adaptation
 - Transaction integrity
 - Non-repudiation
 - Provides ability to evolve – “future-proof”
 - Human-system interactions - ease and consistency
 - Workflow engaged .

Clinicians must know that, when they need to communicate, they can communicate – irrespective of where they are

Quality Solutions – Clinical Grade Networking



- > Clinical Grade networks to deliver on 10 fundamental tenets, which are: -
- Availability
 - Security
 - Quality of Service (QoS) and guaranteed Service Level Agreements (SLA)
 - Pervasive Coverage of the Facility and beyond
 - **Seamless mobility with session adaptation**
 - Transaction integrity
 - Non-repudiation
 - Provides ability to evolve – “future-proof”
 - Human-system interactions - ease and consistency
 - Workflow engaged .

Clinicians are mobile, use multiple devices → mobility with session adaptation based on knowing what device will be used

Quality Solutions – Clinical Grade Networking



- > Clinical Grade networks to deliver on 10 fundamental tenets, which are: -
- Availability
 - Security
 - Quality of Service (QoS) and guaranteed Service Level Agreements (SLA)
 - Pervasive Coverage of the Facility and beyond
 - Seamless mobility with session adaptation
 - **Transaction integrity**
 - **Non-repudiation**
 - Provides ability to evolve – “future-proof”
 - Human-system interactions - ease and consistency
 - Workflow engaged .

Transaction Integrity and Non - Repudiation are key to solution viability in Clinical environment

Quality Solutions – Clinical Grade Networking



- > Clinical Grade networks to deliver on 10 fundamental tenets, which are: -
- Availability
 - Security
 - Quality of Service (QoS) and guaranteed Service Level Agreements (SLA)
 - Pervasive Coverage of the Facility and beyond
 - Seamless mobility with session adaptation
 - Transaction integrity
 - Non-repudiation
 - **Provides ability to evolve – “future-proof”**
 - Human-system interactions - ease and consistency
 - Workflow engaged .

Clinical Network capabilities / capacities must grow without sacrificing dependability, reliability, availability, security or the user-experience

Quality Solutions – Clinical Grade Networking



- > Clinical Grade networks to deliver on 10 fundamental tenets, which are: -
- Availability
 - Security
 - Quality of Service (QoS) and guaranteed Service Level Agreements (SLA)
 - Pervasive Coverage of the Facility and beyond
 - Seamless mobility with session adaptation
 - Transaction integrity
 - Non-repudiation
 - Provides ability to evolve – “future-proof”
 - **Human-system interactions - ease and consistency**
 - **Workflow engaged .**

Ease of use, deterministic behavior, integrated into clinical workflow, will accelerate adoption, integration into Clinical Processes



For more information

“Clinical Grade – A Foundation For Healthcare Communications Networks”

by Graves, Wallace, Periyalwar, Riccardi
5th International Workshop on Design of Reliable Communication Networks, IEEE – Oct 2005

- Reprint available at: www.nortel.com/healthcare

“Clinical Grade – A Foundation For Healthcare Communications Networks”

by Graves, Wallace
Internet2 Fall 2005 Member meeting – Sep 2005