

# Web Services in the Doctor's Office

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October 4, 2002



## **Atlas Medical Software**, a division of Atlas Development Corporation

- Established in 1989.
- Expertise in high-performance database – driven applications for medical industry leaders.
- A leading provider of Windows – based clinical connectivity between physicians and laboratories.

## Clinical Connectivity

### Physician Order Entry (POE)

- Prescription Drugs
- Radiology
- Referrals/Procedures
- Laboratory Test Ordering and Reporting

## Clinical Connectivity

### *POE for Labs*

Main purposes:

- Reduce incidence of clinical and clerical errors
- Enhance access to information
- Increase reimbursement rates

## Clinical Connectivity

### *Problems with Paper*

Lab Orders are often handwritten:

- Incorrect
- Incomplete
- Illegible

Lab may not be able to collect for test:

- Patient's insurance information may be wrong
- Test may not meet Insurer's criteria
  - Medicare – Medical Necessity
  - Others – Online eligibility checking

## Clinical Connectivity

### *The Current Solution*

#### POE using EDI:

- Maintain one (true) source of info
- GUI includes required fields
- Data entry is (usually) legible

## Diagram of Central Server and PMS

LAB

Doctor's Office



LIS Mainframe



## Elements of Medical Data Exchange

- ICD9 patient diagnosis codes – “Medical Necessity Verification”
- Current Procedural Terminology (CPT) – Test Codes
- Patient Demographics & Insurance – Billing Information
- Test Orders and Test Results – Clinical Data



## Standard Format for Data Exchange

### Health Level 7 – “HL-7”

- Industry Standard format for clinical data

### Variation among adopters

- Different expressions within fields (Suffix/Prefix)
- Selective use of fields
- Etc.

Standard enables EDI in this field

## HL-7 Example

### Tests and CPT Codes

- Acupuncture - 97800 - \$54.73
- Tay-Sachs Carrier Testing -83080, 82397, 83912 - \$73
- Skin test tuberculosis (intradermal) –86580 - \$10

## ICD9 Diagnosis Codes

571.4 - Chronic hepatitis

070 - Viral hepatitis

730.0 - Acute osteomyelitis

001 - Cholera

## HL7 Document

MSH|^~\&|LAB1||DESTINATION||19910127105114||ORU^R  
03|LAB1003929  
PID|1||313131312||ZHIVAGO^ANDREI||19600505|M  
OBR||A485388^OE|H29847^LAB1|BLOOD  
CULTURE||199610021226|  
||||N||SICK|19961005144721||23462^ALVIN,Steven  
OBX|1|ST|BLOOD CULTURE||1.5mg/dL|0.4-2.0|N||S|F||S

## Translation

Patient Name: Andrei Zhivago, DOB: May 5, 1960, Sex: Male, SSN: 313-13-1312

Test Ordered. Name: "Blood culture", Test Date: October 2, 1996 12:26 am Ordering Physician: Steven Alvin

Results Received. Value: 1.5mg/dL, Reference Range: 0.4-2.0, Abnormal Flags: Normal

## Clinical Connectivity - Barriers

- “You can’t teach an old Doc new tricks”
- Until recently, no solid ROI data
- HL7 - Not a complete solution to interoperability

## Clinical Connectivity - Barriers

- Interfacing across numerous proprietary platforms is a major barrier to wider deployment
- Traditional solution usually lies in lower level custom-coded interfaces
  - Socket connections, printer and screen scrapping



# Making the Case for the Web Services

## Pros

- Standard Communication Protocol
- Standard data reporting format
- Standard description mechanism
- Standard discovery

## Cons

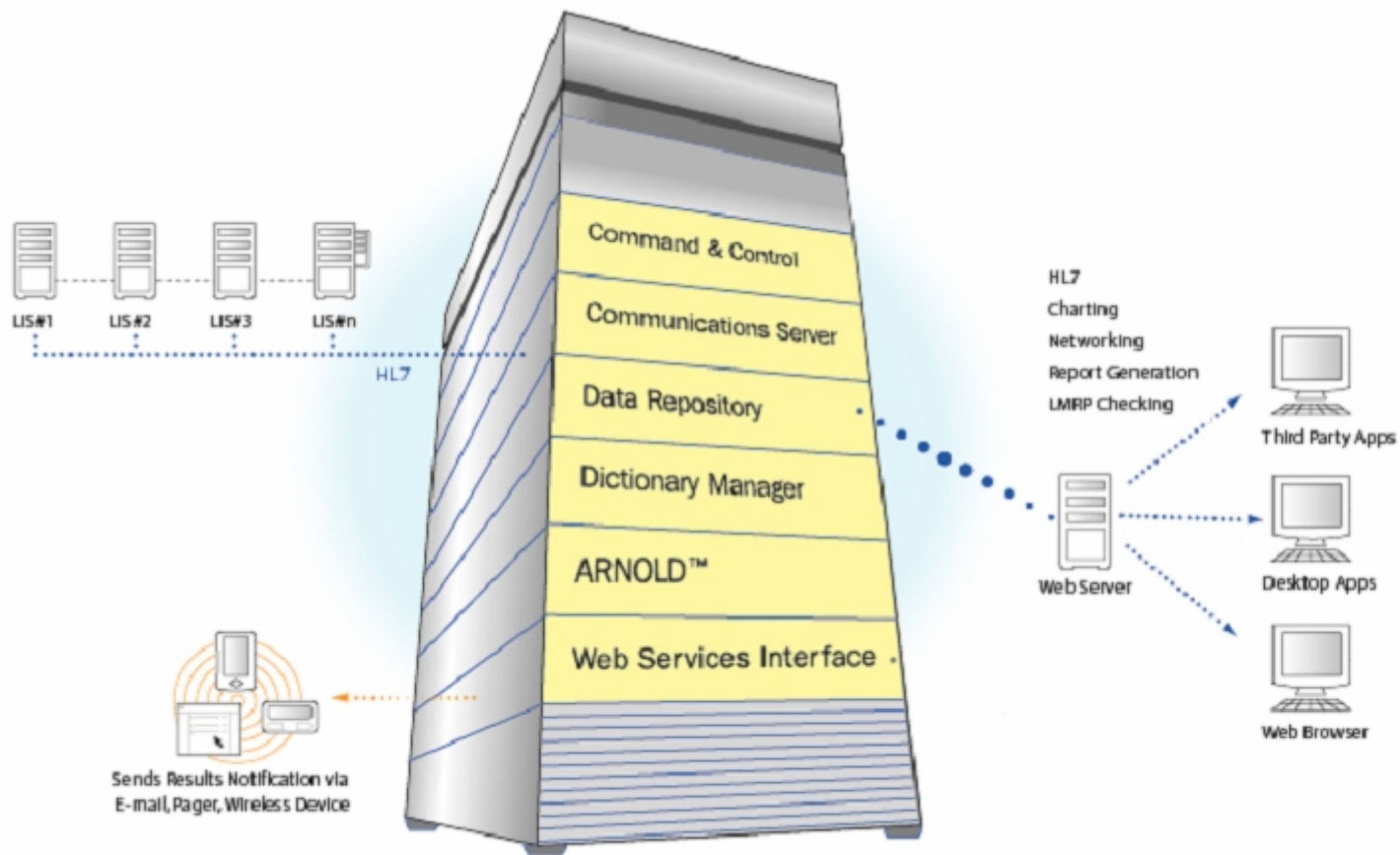
- Weak/unconvincing business cases from WS industry leaders
- Bandwidth/Performance
- Resistance to Change

## Making the Case for the Web Services

### User's Perspective

- Test Results available 24/7 and seamlessly integrated into web or windows applications
- Real-time insurance eligibility checking and approval across IT platforms, insurance providers, Lab Information Systems.
- Error free prescription generation

# Atlas Web LabWorks



## Making the Case for the Web Services

### Engineer's Perspective

Web Services can facilitate interoperability between diverse platforms and architectures

- Use existing network standards
- Use existing interoperability engines (e.g. HL7 translation)
- Mix and match tiers, platforms, protocols and controls
- Move legacy MUMPS systems to multi-tiered architecture
- Use cutting edge tools to interoperate with legacy systems and develop new functionality

## Conclusion

“Clean up with SOAP to avoid getting MUMPS”  
- Centers for Disease Control :)

## Contact Information

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