Healthcare Information:
Where you want it, When you need it
About Axial Exchange

- Founded in 2009 by former executives from Red Hat, Siemens Healthcare, UBS, and Fujitsu
- Using the power of open source to drive down the cost and complexity of health IT interoperability
- Based in the Triangle (NC) - health care and open source hub

2010 Featured Start-Up

2010 Most Innovative Technology Company

2010 Best Health IT Start-Up
Mountains of data locked into thousands of silos – confusion; decisions made on incomplete information

2 billion annual prescriptions from 45,000 pharmacies

Hundreds of millions of lab tests from 11,000 labs.

Hundreds of millions of annual images (XRay, MRI, CAT)

1.1 billion annual doctor visits from 489,000 practices 6,000 hospitals
Emergency Rooms- The Most Expensive Disconnect in Health Care

Staggering Statistics

- 116 million visits a year—and 25% of patients will come back within 90 days
- $150B in revenue for hospitals
- 62% of patients require follow-on care (72 ambulatory visits)
- Most frequent entry point for the 5% of most expensive patients
  - generate 50% of our nation’s health cost
  - 15% of ED patients are uninsured

Axial provides real-time clinical connections to connect the community of care providers:

- Physicians outside hospitals
- Case management workers
- Telemedicine and monitoring equipment
- Emergency Vehicles
Wake Med – **Problem** - Poor communications with referring doctors about Emergency Care visits

- **Solution** – Axial Alerts™ + 360™ link area pediatricians with Wake Med’s ER for real-time notification of patients entering ER, plus discharge notes for better care coordination

- **Metrics** - Less than 5% of patients’ physicians have ER records when follow-up occurs; goal over 2 years is 90% with Wake Med patients

- **ROI** Wake achieved a 10X ROI immediately, simply by swapping electronic notification for faxes and snail mail

- **Expected ROI** much greater, because:
  - Alerts creates physician loyalty which translates into referral dollars
  - Alerts as installed satisfied 4 of 5 Meaningful Use criteria for Wake Med
Introducing Axial Alerts™ – real-time communications across the community of care

Event Discharge Summary

For Encounter: Sun 07 Feb 04:27AM
Time: Tue 09 Feb 12:33PM

Provider: HOLLY E. WARNER, NP
Admit Date: 01/23/2010
Discharge: 01/25/2010
Discharge Diagnoses:
1. Gingivostomatitis
2. Dehydration
3. Otitis media

History of Present Illness:
This is a 2-year-old Hispanic male who was diagnosed with an otitis media on 01/19/10, was to get his 3rd Rocephin shot on the 23rd, but due to his stomatitis and poor p.o. Intake, was sent for a direct admission. He did continue to receive ceftriaxone and has been adequately treated for his otitis. On admission, he was not drinking at all and not voided for more than 24 hours. He was given multiple saline boluses and IV fluids. On admission, his BMP was significant for a CO2 of 18. His CBC was clotted. His blood cultures, no growth to date. He was still not tolerating p.o. fluids on the 24th and received an additional normal saline bolus and continued with his maintenance IV fluids. On the morning of the 25th, he was having some p.o. intake. His IV fluids were KVO and he was given Tylenol with codeine to alternate with his ibuprofen for pain. He was able to tolerate a regular soft diet throughout the day. He is feeling much better. Is having normal urine output, afebrile, and is ready for discharge home. He will follow up with Growing Child Pediatrics in 1-2 days.
The Competition: 10X the cost and 100X the complexity

The “JUST IN CASE” Approach

Import data from all systems into a **master database**.

**Continuously scrub and manage** master database.

Keep data synchronized with all systems “**Just in Case**” it is needed for an application.

The “JUST IN TIME” Approach

**Do not replicate data**, store it in the originating systems.

Enable data to be **transformed and combined on-the-fly**.

Maintain run time flexibility to create new combinations of data “**Just in Time**” in order to keep pace with the continuously changing user needs.
Axial 360™ Architecture Overview
Axial: Subsystem Component Overview

- User Interface for Physicians and Administrators
- Plug-ins for messaging, etc
- Lightweight ESB: message management with rule-based routing
- Ruby Container
- Operating System
- Deployment options

- VMM (VMware, KVM, Xen)
- Bare Metal
- Cloud

Persistence Database

mongoDB

ActiveMQ + Apache Camel

mongrel

redhat

Rails

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Axial Project: Driving Down the Cost of Interop

• Pre-configured Connectors

• Show/Hide GUI for publishing data

• Open Library of step-by-step instructions for using 360 to extract data from specific systems
User selects their system from a drop down menu

Which EHR system are you using?

Vendor: Allscripts
Product: ED
Version: v6.3
Axial knows that this version of Allscripts speaks HL7 v2.3 over MLLP

Vendor: Allscripts
Product: ED
Version: v6.3

Protocol:
MLLP
HL7 2.3
Axial auto-configures the connector and prompts the user to export

Axial is now ready to receive data from your Allscripts system.

Click **here** for step-by-step instructions for sending data from Allscripts to Axial 360.
User follows a step-by-step guide

Sending Data to Axial from Allscripts ED v6.3

1. After importing, check to see if the superset source already in place points to the same DSN you will be using. If it does not use the same database, you can stop (as may be the case with a combined Test/Live server, or an interface server serving multiple EHRs or other applications).

2. Open the mapping between your new source and target, and go to Edit > Copy. This will copy the current mapping.

3. Change the source system to the old superset source, but leave your target system and message selected. Select the inbound message that matches the type of source message in the copied mapping.

4. Go to Edit > Paste. This should paste the mapping in. Quickly scan the mapping for any Field level not found errors or other oddities. If the mapping looks OK, then click Save. If not, close and reopen, or manually map over.

5. Repeat the copy and paste process for *every mapping* between your imported source and target. Make sure you get all orders (remember to click on the '...' to get a quick view of how many you have), and all target message types. Also remember to check for switches (click on the switches button at the bottom, and be sure to duplicate the Segment and Exception fields exactly as they appear on the original mapping).

6. Deactivate your source system and test the new mappings by starting the target and sending test messages across the interface. Once you have confirmed the mappings were preserved and functioning correctly, you should delete the superset source system that you imported (be careful not to delete the original superset).
**User selects which data elements to show/hide**

<table>
<thead>
<tr>
<th>Show/Hide</th>
<th>Data Element</th>
</tr>
</thead>
<tbody>
<tr>
<td>Show</td>
<td>Name</td>
</tr>
<tr>
<td>Show</td>
<td>Date of Birth</td>
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<tr>
<td>Show</td>
<td>Gender</td>
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<td>Blood Type</td>
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<td>Height</td>
</tr>
<tr>
<td>Hide</td>
<td>Medications</td>
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<tr>
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<td>Total Chol</td>
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<tr>
<td>Show</td>
<td>LDL Chol</td>
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<tr>
<td>Show</td>
<td>HDL Chol</td>
</tr>
<tr>
<td>Hide</td>
<td>Vit D Level</td>
</tr>
</tbody>
</table>
Any authenticated user with a browser now has access to the clinical data.
Axial Exchange has created key enabling software applications and is building a partner ecosystem

Axial has leading products built in-house and with development partners:
• Axial 360: Interface Engine + Open Source Connector Library
• Axial Alerts: Results Distribution Application
• Axial Patient Connect: Self-Service Devices
• Axial Data Platform: Data Normalization Application

Axial is building a partnership ecosystem:
• Create value-added apps on top of the Axial 360 interface engine
• Provide increased value to the market through joint marketing and/or engineering
Questions?

• For more information about products or services offered by Axial Exchange, please contact us through any of the following:

• Website: www.axialexchange.com

• Email: info@axialexchange.com

• Twitter: www.twitter.com/axialexchange

• LinkedIn: www.linkedin.com/companies/axial-exchange-inc.

• Phone: (919) 576-9988

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