Web 2.0 (and 3.0?) Tools for the Laboratorian
Rose Romeo, Ph.D FACB

Objectives
- Distinguish between Web 1.0, 2.0 and 3.0 tools
- Identify Risks and present mitigations for ineffective use of Web 2.0 tools
- Provide sampling of Tools for the Clinical Laboratory
- Provide guidance for Best Practices for integration of Web 2.0 (and eventually 3.0) tools into your laboratory

Background
- Past Presentation was heavy on tools related to
  - Risk & Project Management
  - Investigations
  - QMS.
- Many "Web 1.0" integrated into a personal web page (ala Web 2.0).
- Will still leverage "1.0" tools but include more of the "2.0" options used by other laboratories
- Acknowledge the expansion of Web 3.0 into laboratory processes
### What's the Difference?

<table>
<thead>
<tr>
<th>Web 1.0</th>
<th>Web 2.0</th>
<th>Web 3.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Closed, Individual Publishing</td>
<td>• User-friendly interface, Publish the existing information.</td>
<td>• Computers generating raw data on their own, Omnipresent environment.</td>
</tr>
<tr>
<td>• One-Way Communication</td>
<td>• Power and control over the data.</td>
<td>• Exchange and generation of data between devices (e.g. learning/training)</td>
</tr>
<tr>
<td>• Passive Involvement, Read-Only Content &amp; Personal Websites</td>
<td>• Social networking tools</td>
<td>• Perform tasks faster and...</td>
</tr>
</tbody>
</table>

### Web 1.0 vs 2.0 Comparison

**Web 2.0 in Medical Education**

[Link](https://www.aamc.org/members/gir/resources/112066/viewpoint_may08.html)

### Web 2.0 applies across your System

[Link](http://labmed.ascpjournals.org/content/43/1/26)
**Web 2.0–Risks**

- [https://www.aamc.org/members/gir/resources/112066/viewpoint_may08.html](https://www.aamc.org/members/gir/resources/112066/viewpoint_may08.html)

<table>
<thead>
<tr>
<th>Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
</tr>
<tr>
<td>Need for Validation?</td>
</tr>
<tr>
<td>Security</td>
</tr>
<tr>
<td>Ownership/liability</td>
</tr>
<tr>
<td>Non-alignment with other IT</td>
</tr>
<tr>
<td>policies</td>
</tr>
<tr>
<td>Robustness/Sustainability</td>
</tr>
<tr>
<td>Version Control</td>
</tr>
<tr>
<td>HIPAA/HITECH</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhanced Interaction</td>
</tr>
<tr>
<td>Review of data by multiple</td>
</tr>
<tr>
<td>experts in short period of</td>
</tr>
<tr>
<td>time</td>
</tr>
<tr>
<td>Improved motivation</td>
</tr>
<tr>
<td>and satisfaction</td>
</tr>
<tr>
<td>Improved efficiency of</td>
</tr>
<tr>
<td>processes</td>
</tr>
</tbody>
</table>

**Risks Benefit Analysis– Tool Use**

**Mitigations for Risks**

- Incorporate into controlled environment(s)
  - Control on Design
  - Control on Change
    - Documentation by V/V Test Plans/Protocols and Reports
- Internal (External) Auditing
- Supplier Agreements (as needed)
- Discuss with IT for consensus solutions
Risk Mitigation: Web 2.0 Regulatory Controls


Steps to Increased Security (E. Wolfram)

- Step 1
  - Frequent and Comprehensive Education

- Step 2
  - Current and User Friendly Procedures

- Step 3
  - Cyber Security

- Step 4
  - Keep Abreast Of Current Trends

Clinical Pathology Blogs: Dark Daily & Web 2.0


http://connectedresearchers.com/online-tools-for-researchers/

Pathology in the Era of Web 2.0

Table 10
Popular Sites With Web 2.0 Features

<table>
<thead>
<tr>
<th>Web Site</th>
<th>Address</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloglines</td>
<td><a href="http://www.bloglines.com">http://www.bloglines.com</a></td>
<td>Aggregating news and research</td>
</tr>
<tr>
<td>Delicious</td>
<td><a href="http://delicious.com">http://delicious.com</a></td>
<td>Web sites tagging</td>
</tr>
<tr>
<td>Facebook</td>
<td><a href="http://facebook.com">http://facebook.com</a></td>
<td>Social networking</td>
</tr>
<tr>
<td>SlideShare</td>
<td><a href="http://slideshare.net">http://slideshare.net</a></td>
<td>Finding presentations</td>
</tr>
<tr>
<td>Twitter</td>
<td><a href="http://twitter.com">http://twitter.com</a></td>
<td>Sharing ideas now</td>
</tr>
<tr>
<td>Wikipedia</td>
<td><a href="http://wikipedia.org/">http://wikipedia.org/</a></td>
<td>Encyclopedia</td>
</tr>
<tr>
<td>YouTube</td>
<td><a href="http://www.youtube.com/">http://www.youtube.com/</a></td>
<td>Video snippets</td>
</tr>
</tbody>
</table>

http://www.slideshare.net/giustinid/pathology-in-an-era-of-web-2.0

Pathology in the Era of Web 2.0

Table 11
Some Top Medical Sites That Use Web 2.0 Technology

<table>
<thead>
<tr>
<th>Web Site</th>
<th>Address</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>AdaCME</td>
<td><a href="http://adacme.com">http://adacme.com</a></td>
<td>Medical encyclopedia</td>
</tr>
<tr>
<td>British Medical Journal</td>
<td><a href="http://bmj.com">http://bmj.com</a></td>
<td>General medical journal</td>
</tr>
<tr>
<td>Clinical Cases and Images Blog</td>
<td><a href="http://clinicalcasesandimages.blogspot.com">http://clinicalcasesandimages.blogspot.com</a></td>
<td>Medical encyclopedia</td>
</tr>
<tr>
<td>Contact</td>
<td><a href="http://www.contact.org">http://www.contact.org</a></td>
<td>Reference manager</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td><a href="http://www.gastro.org">http://www.gastro.org</a></td>
<td>Medical encyclopedia</td>
</tr>
<tr>
<td>Health Education And Library (HEAL)</td>
<td><a href="http://www.heal.org">http://www.heal.org</a></td>
<td>Digital library</td>
</tr>
<tr>
<td>Learning</td>
<td><a href="http://www.learning.com">http://www.learning.com</a></td>
<td>Share academic papers</td>
</tr>
<tr>
<td>Medline</td>
<td><a href="http://www.nlm.nih.gov/periodicals">http://www.nlm.nih.gov/periodicals</a></td>
<td>Educational resources</td>
</tr>
<tr>
<td>ScienCite blog</td>
<td><a href="http://scienciteblog.com">http://scienciteblog.com</a></td>
<td>Medical journal</td>
</tr>
</tbody>
</table>
Tool #1:
ISO 15189 Quality System Monitoring Checklists
• Leveraged regardless of specific system for internal audits, process improvement, related activities

ISO 15189 checklist
• (2012)
  • http://www.sanas.co.za/manuals/pdfs/F2029-01.pdf/manuals
• (2014)
  • http://www.dakks.de/en/content/checklist-according-din-en-iso-151892014-medical-laboratories

Scenario #1:
Internal Audit & Related Processes
• ISO 15189 Checklists
• Document Internal Audits
• Leverage for Root Cause Analyses
• Select Subsections for process improvement
  • Risk Management
  • Traceability to ISO standards
• Post Findings in an internal Web 2.0 Environment

Scenario #2– Generate your own Training Space
• 2nd Year Med Student content:
  • http://blog.lib.umn.edu/kille001/labmedpathol6290/

• Tools:
  • Wordpress
  • Moreofit.com
    • http://www.moreofit.com/similar-to/wordpress.com/Top_10_Sites_Like_Wordpress/
  • Alternative to
    • http://alternativeto.net/software/wordpress/
Scenario #2 Possible Components

- Compendium of Training
  - PPT
  - Video’s
  - Audit Reports
  - PT Results

Scenario 2–Historic Example

- Archived Personal Example:

  Quality Systems
  - Inventory Management
  - Electronic Catalog
  - Web-Based Ordering
  - Accountability
  - Billing
  - Revenue Cycle Management
  - Claim Automation
  - Revenue Recovery
  - Process Improvement
  - Performance Metrics

A table follows the list that identifies the key components associated with clinical laboratories. While the majority of the sites utilize CLIA EPS as the primary tool for quality management, some organizations are performing a gap analysis on an existing system to refine any potential gaps and then plan to address any process improvements by 2015 for streamlining operations.

Scenario #3: Clinical Condition Specific

- CDC Flu Web–More Web 2.0

- Outcomes–Flu Surveillance–Leaning towards Web 3.0
Scenario #4: Community forum

Health 2.0 NYC:
The NY Healthcare Innovation Group

Involvement of “Patients, Physicians, Nurses, Administrators, Engineers, and even Lawyers.”

http://www.meetup.com/health20nyc/

Scenarios for Tool #4

- Interdepartmental topics
- Multiple Sites
- Interlaboratory topics
- Multiple SME’s
- Patients

Best Practices for Generating Content

- Design Controls
- Privacy and Security Controls
- Ongoing Audits
- Change control

POOR DESIGN = INEFFECTIVE TOOLS
Summary

- Web 2.0 tools already in use in the Clinical Laboratory
  - Education/Training
  - Exchange of Information
  - Process Improvement
- Use will continue to expand to Web 3.0 opportunities
  - Clinical Outcomes Analysis
  - Clinical Trials
  - Research Outcomes Analysis
- Risk mitigated by design, verifications, centralized controlled location of content

Assessment—Question 1

- Web 3.0 content is characterized by:
  - A. Single dimension information
  - B. Web based tools to help you with your job and leverage the internet
  - C. Interactive content that is intuitive and updates with ongoing inputs

Assessment—Question 2

Web 2.0 tools should include consideration regarding:

A. Unexpected malware
B. Verification of Accuracy
C. Lack of controlled environments
Assessment–Question 3

- Web 2.0 Tools can help in the following subsystems of an effective Quality System:
  - A. Personnel
  - B. Production/Process/Design Controls
  - C. Complaint Management

Q&A

THANK YOU!