A National Consortium of States

- 26 member states and territories representing 39% of K-12 students
- 21 Governing States, 4 Advisory States, 1 Affiliate Member
- Washington state is fiscal agent
- WestEd provides project management services
A Balanced Assessment System

Common Core State Standards specify K-12 expectations for college and career readiness.

Summative assessments
Benchmarked to college and career readiness

Teachers and schools have information and tools they need to improve teaching and learning.

Teacher resources for formative assessment practices to improve instruction

Interim assessments
Flexible, open, used for actionable feedback

All students leave high school college and career ready.
A Balanced Assessment System

ELA/Literacy and Mathematics, Grades 3-8 and High School

School Year

Last 12 weeks of the year*

DIGITAL LIBRARY of formative tools, processes and exemplars; released items and tasks; model curriculum units; educator training; professional development tools and resources; scorer training modules; and teacher collaboration tools.

Optional Interim Assessment
Computer Adaptive Assessment and Performance Tasks

Optional Interim Assessment
Computer Adaptive Assessment and Performance Tasks

Performance Tasks
- ELA/literacy
- Mathematics

Computer Adaptive Assessment
- ELA/literacy
- Mathematics

Summative Assessment for Accountability

Re-take option available

Scope, sequence, number and timing of interim assessments locally determined

*Time windows may be adjusted based on results from the research agenda and final implementation decisions.
Using Computer Adaptive Technology for Summative and Interim Assessments

<table>
<thead>
<tr>
<th>Increased precision</th>
<th>• Provides accurate measurements of student growth over time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tailored for Each Student</td>
<td>• Item difficulty based on student responses</td>
</tr>
<tr>
<td>Increased Security</td>
<td>• Larger item banks mean that not all students receive the same questions</td>
</tr>
<tr>
<td>Shorter Test Length</td>
<td>• Fewer questions compared to fixed form tests</td>
</tr>
<tr>
<td>Faster Results</td>
<td>• Turnaround time is significantly reduced</td>
</tr>
<tr>
<td>Mature Technology</td>
<td>• GMAT, GRE, COMPASS (ACT), Measures of Academic Progress (MAP)</td>
</tr>
</tbody>
</table>
Timeline

Formative Processes, Tools, and Practices Development Begins

- Summative Master Work Plan Developed and Work Groups Launched
- Writing and Review of Pilot Items/Tasks (including Cognitive Labs and Small-Scale Trials)
- Writing and Review of Field Test Items/Tasks (throughout the school year)
- Field Testing of Summative and Interim Items/Tasks Conducted
- Final Achievement Standards (Summative) Verified and Adopted

- Procurement Plan Developed
- Content and Item Specifications Development
- Pilot Testing of Summative and Interim Items/Tasks Conducted
- Preliminary Achievement Standards (Summative) Proposed and Other Policy Definitions Adopted
- Operational Summative Assessment Administered
Pilot Test Early Report

• More than 5,000 schools, over 650,000 students.
• Device Report
• Other Reports Pending
Technology Readiness
## Technology Strategy Framework and System Requirements

### (February 2013)

### Hardware and Software Requirements Overview

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Minimum Smarter Balanced Requirements for Current Computers</th>
<th>Recommended Smarter Balanced Minimum for New Purchases</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Windows</strong></td>
<td>Windows XP (service pack 3)</td>
<td>Windows 7</td>
</tr>
<tr>
<td></td>
<td>Pentium 233 MHz processor</td>
<td>1 GHz processor</td>
</tr>
<tr>
<td></td>
<td>128 MB RAM</td>
<td>1 GB RAM</td>
</tr>
<tr>
<td></td>
<td>52 MB hard drive free space</td>
<td>80 GB hard drive or at least 1GB of hard drive space available</td>
</tr>
<tr>
<td><strong>Mac OS X</strong></td>
<td>Mac OS X 10.4.4</td>
<td>Mac OS X 10.7+</td>
</tr>
<tr>
<td></td>
<td>Macintosh computer with Intel x86 or PowerPC G3 (300 MHz) processor, 256 MB RAM, 200 MB hard drive free space</td>
<td>1GHz processor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1GB RAM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>80 GB hard drive or at least 1GB of hard drive space available</td>
</tr>
<tr>
<td><strong>Linux</strong></td>
<td>Linux (Ubuntu 9-10, Fedora 6)</td>
<td>Linux (Ubuntu 11.10, Fedora 16)</td>
</tr>
<tr>
<td></td>
<td>Pentium II or AMD K6-III</td>
<td>1 GHz processor</td>
</tr>
<tr>
<td></td>
<td>233 MHz processor</td>
<td>1 GB RAM</td>
</tr>
<tr>
<td></td>
<td>64 MB RAM</td>
<td>80 GB hard drive or at least 1GB of hard drive space available</td>
</tr>
<tr>
<td></td>
<td>52 MB hard drive free space</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>iOS</strong></td>
<td>iPads 2 running iOS6</td>
<td>iPads 3+ running iOS6</td>
</tr>
<tr>
<td><strong>Android</strong></td>
<td>Android-based tablets running Android 4.0+</td>
<td>Android-based tablets running Android 4.0+</td>
</tr>
<tr>
<td><strong>Chrome OS</strong></td>
<td>Chromebooks running Chrome OS (v19)+</td>
<td>Chromebooks running Chrome OS (v19)+</td>
</tr>
</tbody>
</table>

### Minimum Computer Requirements

Minimum requirements represent a low compliance threshold. Districts should attempt to exceed these requirements as many machines operating at these levels could struggle with sufficient on-board memory and processing to run secure browsers as well as other simultaneous running programs accumulated on the device over time.

1. The minimum Smarter Balanced requirements are generally equivalent to the minimum requirements of the associated eligible operating system. Users should refer to the minimum requirements of the operating system as a means of resolving any ambiguities in the minimum Smarter Balanced requirements.
2. These guidelines do not supersede the minimum requirements of the operating systems.
3. All hardware choices should consider the individual needs of students. Some students may need hardware that exceeds these minimum guidelines, and some students may require qualitatively different hardware. Tablets may require the use of a mouse.
## Technology Strategy Framework and System Requirements

### Additional Requirements Applicable across Operating Systems

<table>
<thead>
<tr>
<th>Device Requirements</th>
<th>Minimum Smarter Balanced Requirements for Current Computers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screen Size</td>
<td>10” class or larger, 1024 x 768 resolution</td>
</tr>
<tr>
<td>Headphones / earphones</td>
<td>Available to students for use during the English language arts test and for students who require text-to-speech features on the mathematics test</td>
</tr>
<tr>
<td>Security</td>
<td>The device must have the administrative tools and capabilities to temporarily disable features, functionalities, and applications that could present a security risk during test administration.</td>
</tr>
<tr>
<td>Keyboards</td>
<td>Mechanical keyboards must be available unless students use alternative input devices as part of their classroom instruction.</td>
</tr>
<tr>
<td>Form Factors</td>
<td>No restriction as long as the device meets the other stated requirements. These forms include desktops, laptops, netbooks, virtual desktops and thin clients, tablets (iPad, Windows, Chromebooks, and Android), and hybrid laptop/tablets.</td>
</tr>
<tr>
<td>Network</td>
<td>Must connect to the Internet with approximately 10–20 Kbps available per student to be tested simultaneously.</td>
</tr>
<tr>
<td>Chrome OS</td>
<td>Chromebooks running Chrome OS (v19)+</td>
</tr>
</tbody>
</table>

---

4 The resources (e.g., memory and processors) available to each client need to be equivalent or greater to the requirements for standalone hardware

---

**Minimum Requirements for Other Devices**

Minimum requirements represent a low compliance threshold. Ultimately, districts should attempt to exceed these requirements as many machines operating at these levels could struggle with sufficient on-board memory and processing to run secure browsers as well as other simultaneous running programs accumulated on the device over time.
Things that go wrong on exam day.

- Interference between wireless input devices (keyboards and mice)
- Interference between wireless input devices and wireless internet.
- Pairing between wireless input devices and their associated computing devices.
- Inadequate device capacity on wireless access points.
- Inadequate device capacity on the router. (DHCP)
- Inadequate bandwidth on wireless access points.
- Interference between wireless access points.
- Inadequate internet bandwidth (mismeasurement due to burst capacity).
- Insufficient power in the testing room.
- Insufficient cooling in the testing room.

More about this on my blog at:
http://www.ofthat.com/2013/06/education-technology-readiness.html
Technical Architecture
Key Components

- Test Item Authoring
- Item Bank and Test Packager
- Test Administration
  - Registration
  - Delivery
  - Scoring
- Secure Browser
- Data Warehouse
- Digital Library
Summative Assessment Logical Hosting Diagram

**Hosted at a State or LEA data center, or Smarter Balanced-certified vendor using open source versions of components.**

- **Item Bank** (author, approve, versions, etc.)
- **Test Bank** (blueprints, test items, etc.)
- **Data Warehouse**
- **Reporting**

- **Consortium Hosted**
  - Operational Items
  - Pools of items packaged into tests
  - Scored item responses
  - Items
  - Extract file with student-level responses

- **State Hosted**
  - Item Scoring (Machine, Artificial Intelligence, Hand)
  - Test Delivery
  - Test Admin (scheduling)
  - Test Registration
  - State Student Data System

- **Adaptive Engine**
  - Determine next set of items
  - Scheduled tests
  - Eligible students
  - Student ID, school, grade, ethnicity, etc.
  - District SIS

- **District will need to register students if no State system is available**

**Credit: Rodney Okamoto**
Certification Program

• Student Device
  – Meets technology requirements
  – Can run the secure browser

• Test Administration
  – Import Test Package
  – Render With Fidelity
  – Integrate with Data Warehouse

• Scoring
  – Types: Deterministic, AI and Human
  – Calibrated to match other scoring systems
Resources

• http://www.smarterbalanced.org/
• Technology Requirements: http://www.smarterbalanced.org/smarter-balanced-assessments/technology/
• Technology Readiness Tool: https://www.techreadiness.net
• Technology Readiness Calculator: http://www3.cde.ca.gov/sbactechcalc/
• My Blog: http://www.ofthat.com