Computer Science Standards Development

Diane Douglas
Superintendent of Public Instruction

Working Group Meeting

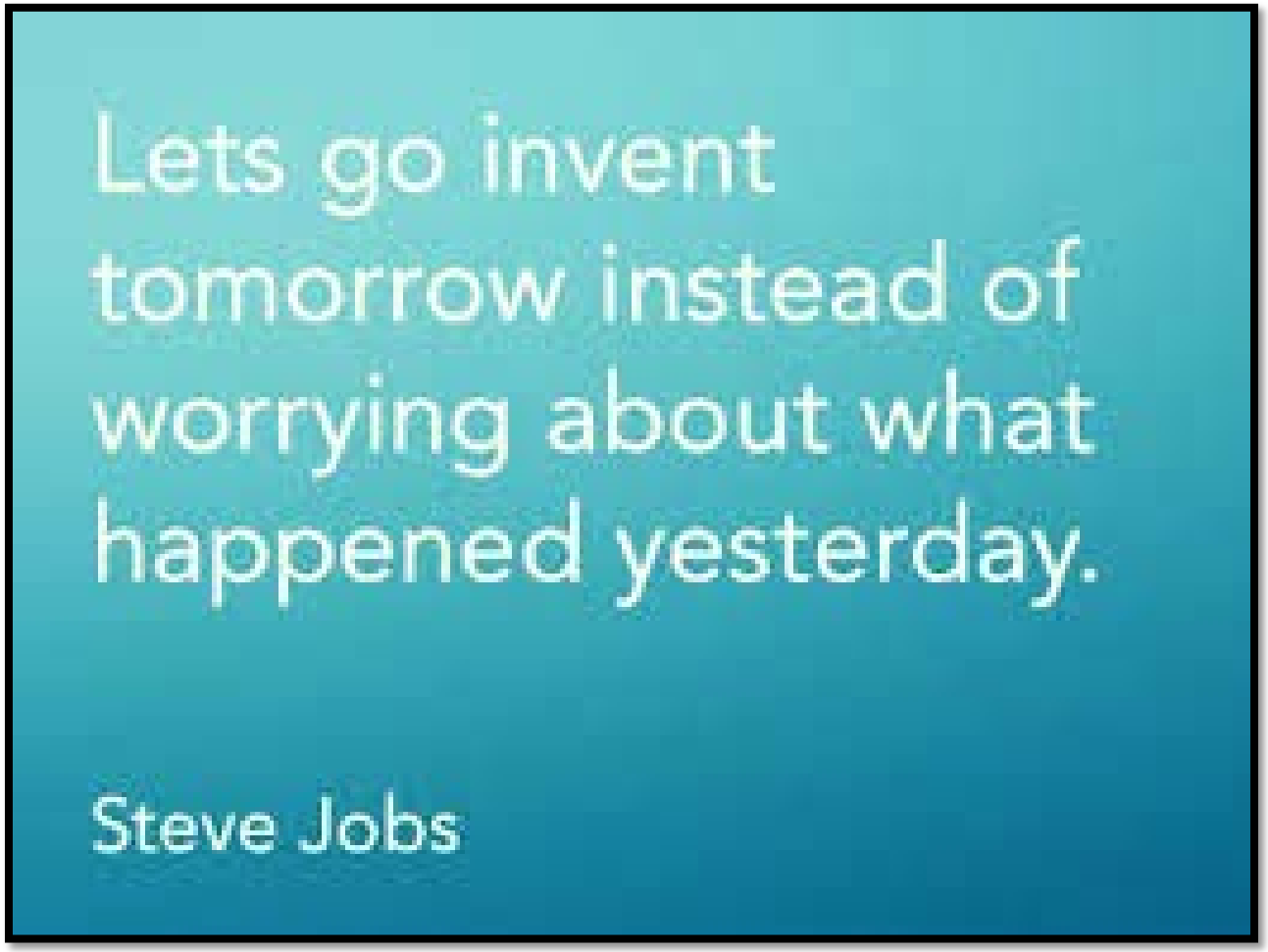
January 31, 2018

K-12 Academic Standards

Housekeeping

1. Sign in
2. Parking validation
3. Restrooms
4. Breaks/Lunch
6. Travel Questions – Fill out W9 if needed
7. Sign non-disclosure form – All members

Cell phones should only be used during breaks and lunch. If you need to take a call, please go to the break room. Please check text and email only during break due to non-disclosure.

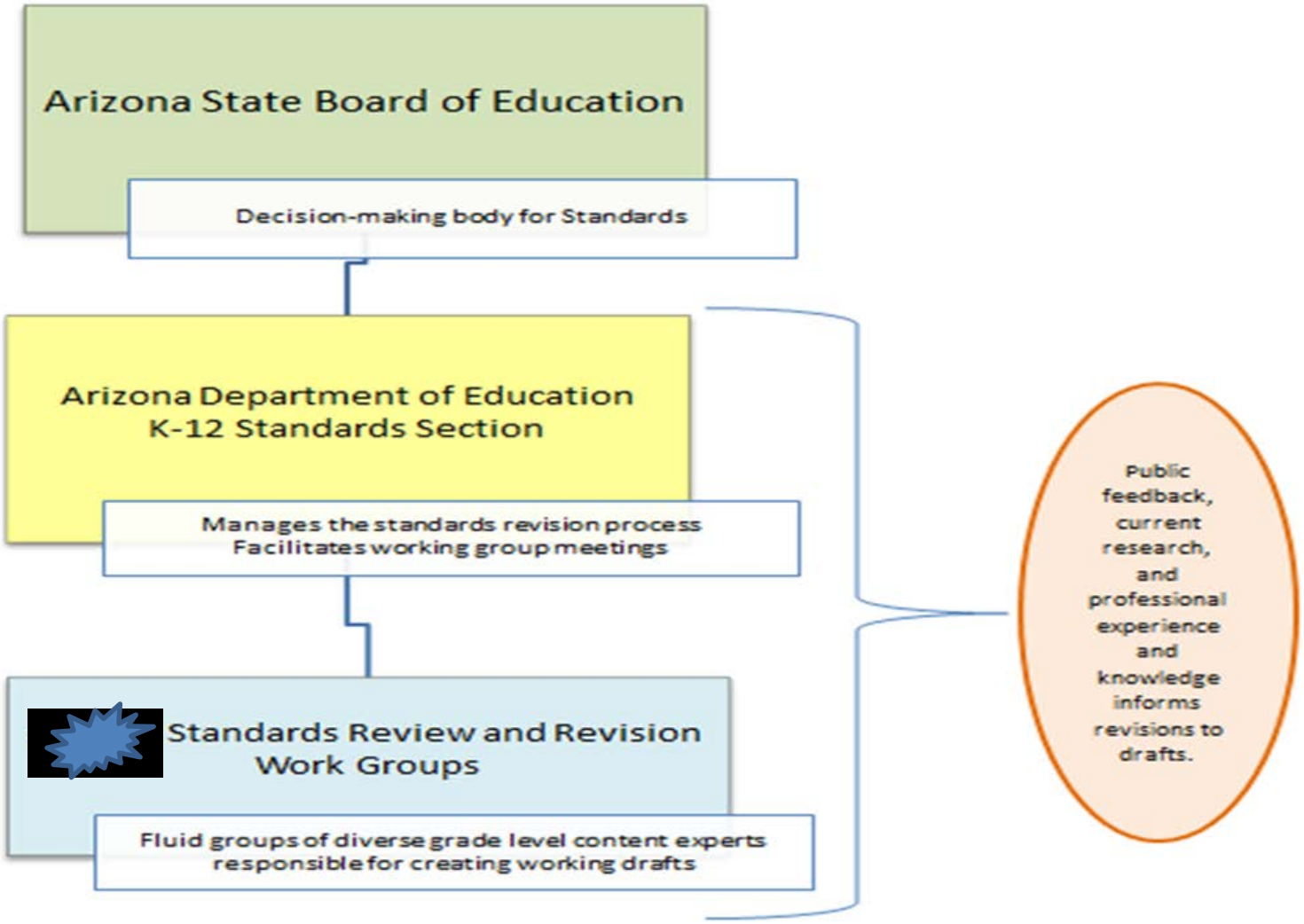

Lets go invent
tomorrow instead of
worrying about what
happened yesterday.
Steve Jobs

Introductions

Introduce yourself by telling everyone in the group:

1. Your name
2. Your school/district
3. Your current position

Standards Review- Structure



Governor's Office of Education

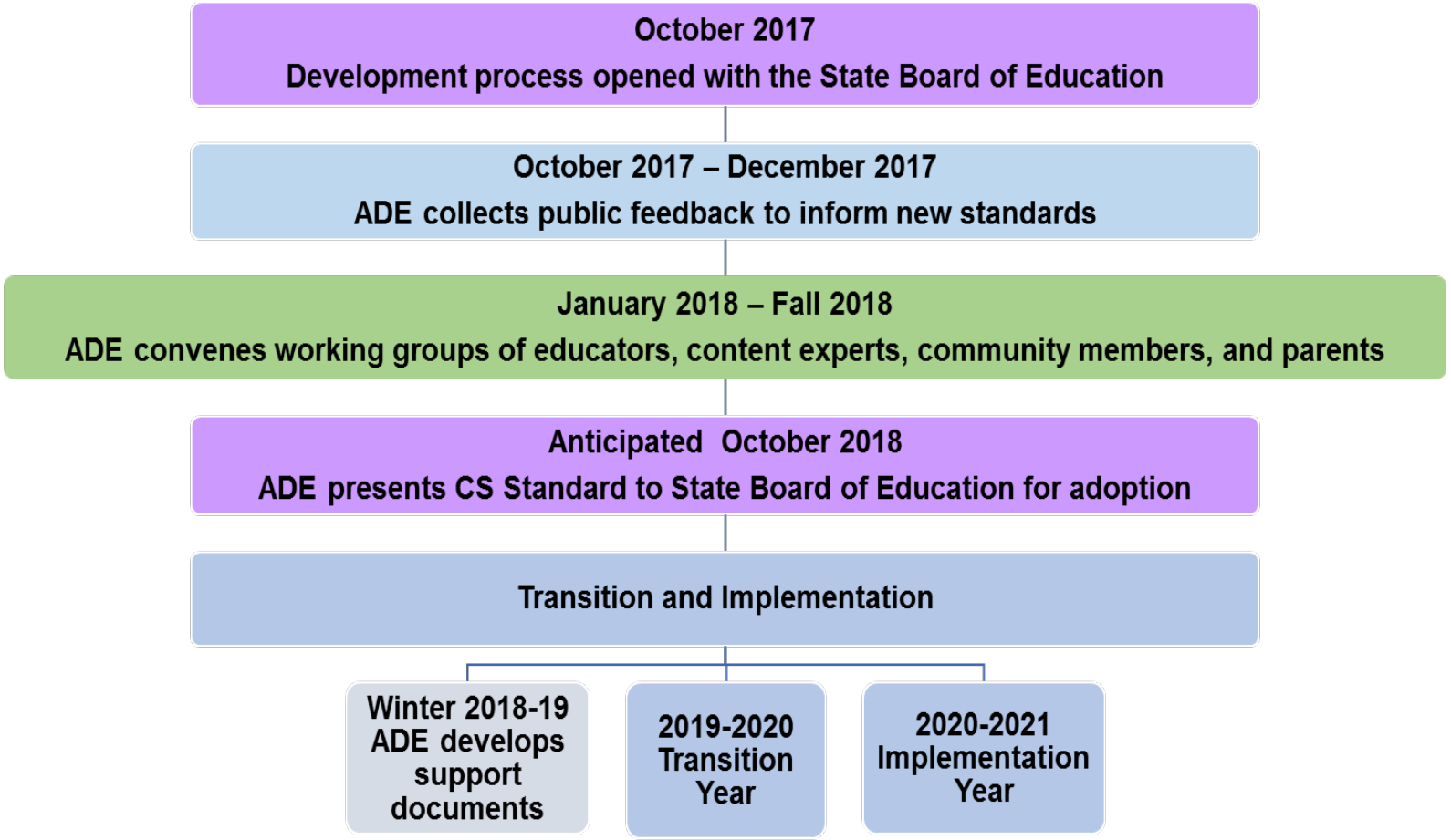
- Governor's Office of Education was appropriated $200,000 to support the development of computer science standards for K-12.
- K-12 Academic Standards, in collaboration with the Governor's office, will convene educators, content experts, and other stakeholders to develop standards.

Roles/Responsibilities: ADE K-12 Standards Staff

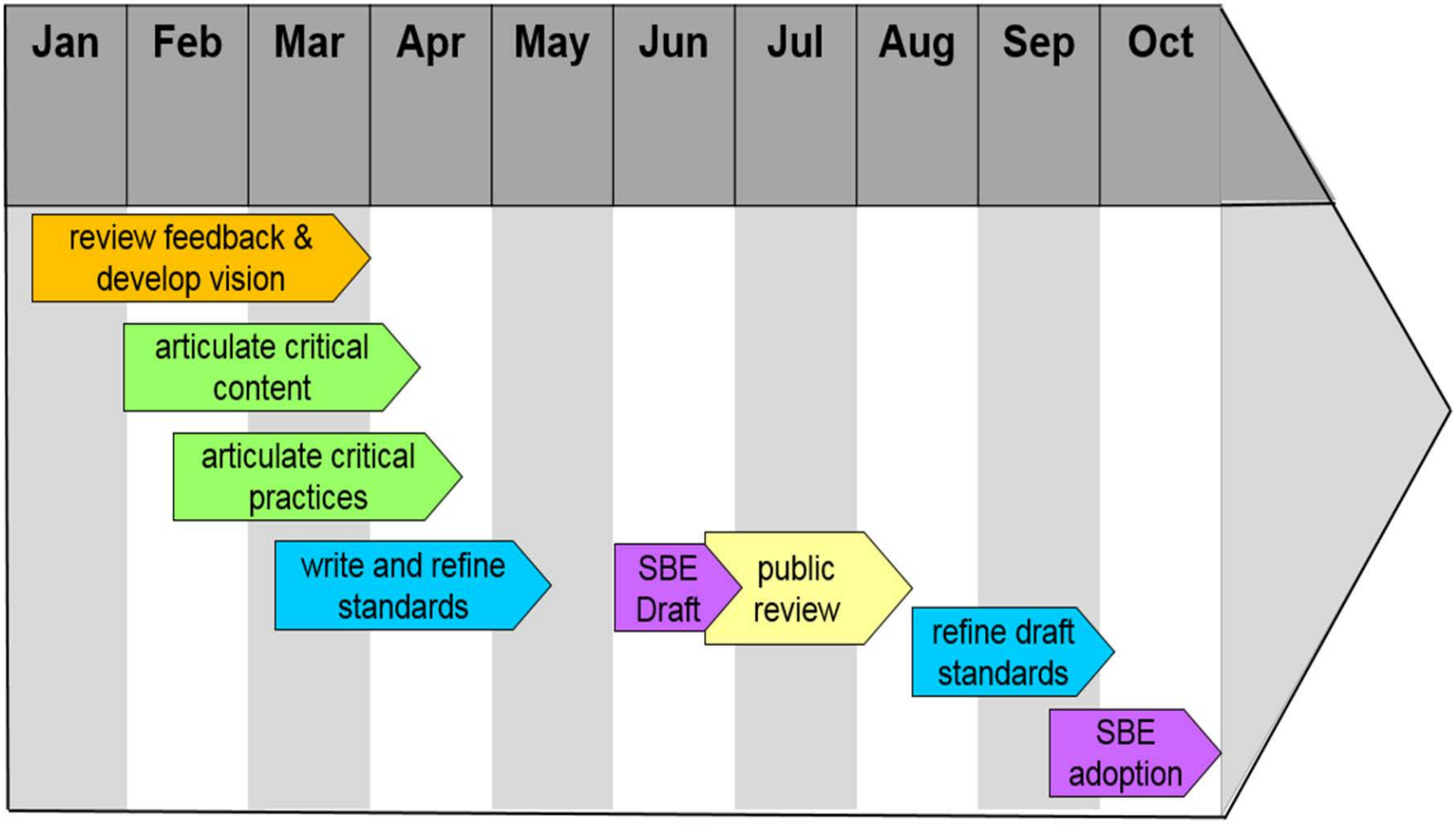
ADE K-12 Standards Members

- Facilitate work group meetings
- Provide meeting goals, agendas, tasks, and instructions
- Provide needed materials
- Organize committee members into vertical, horizontal, and/or content groups, as appropriate.

CS Standards Development and Implementation Timeline



CS Standards Development Outline



Structure: Working Groups

Use a fluid membership model ("accordion model") to include multiple voices and perspectives throughout the process

- K-12 teachers, coaches, curriculum directors, administrators
- Higher education: computer science education and computer science content instructors, professors, and/or researchers
- Content experts from the community
- Parents

Roles/Responsibilities: Working Groups

1. **Develop the vision for the Computer Science Standards**
2. **Write the Computer Science Standards**
   - Make decisions about content and structure of grade level standards
   - Apply content knowledge, grade-level expertise, research, and public feedback to inform all decisions
3. **Develop drafts of K-12 Computer Science Standards, including an introduction, glossary, and other appendices, as needed**

Working Group Norms

- Actively engage in all discussions
- Be open-minded
- Have an attitude that fosters collaboration, agreement, and consensus
- Be mindful of timelines and scope of work
- **Cell phone/email checks are limited to breaks (non-disclosure)**

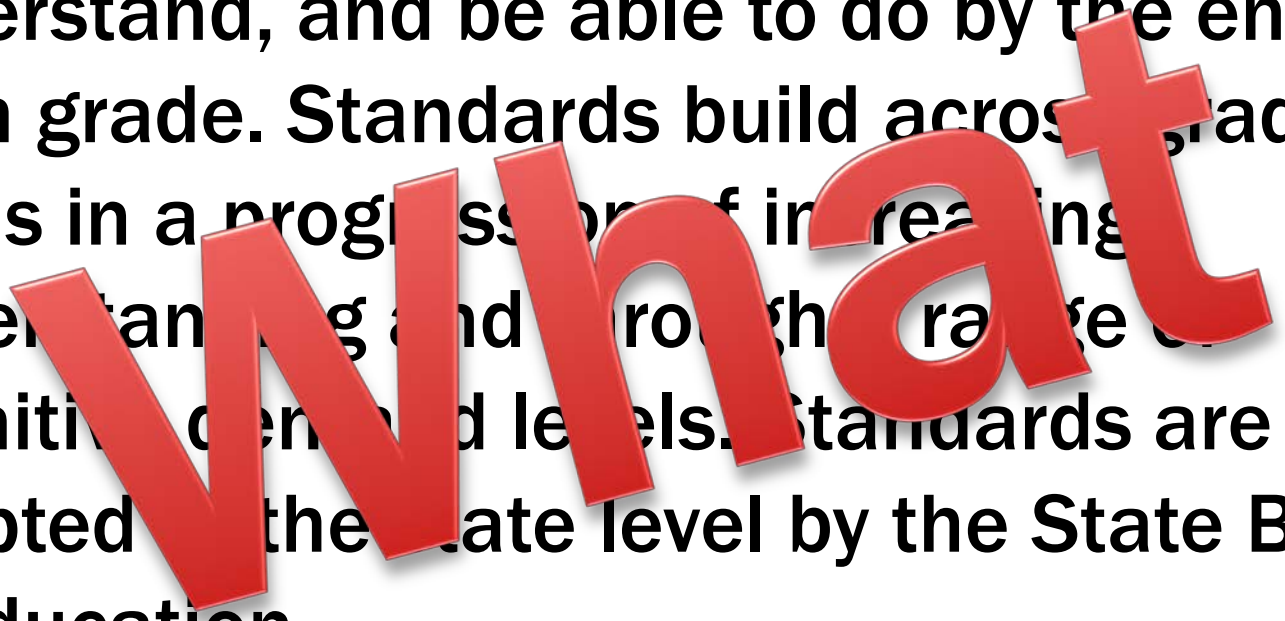
Questions on Structure

ADE Mission for Computer Science Standards

- Arizona standards, written for Arizona teachers and students, by Arizona educators and content experts
- Write grade-level standards and not performance objectives

Standards, Curriculum & Instruction

Standards – What a student needs to know, understand, and be able to do by the end of each grade. Standards build across grade levels in a progression of increasing understanding and through a range of cognitive demand levels. Standards are adopted at the state level by the State Board of Education.



Standards, Curriculum & Instruction

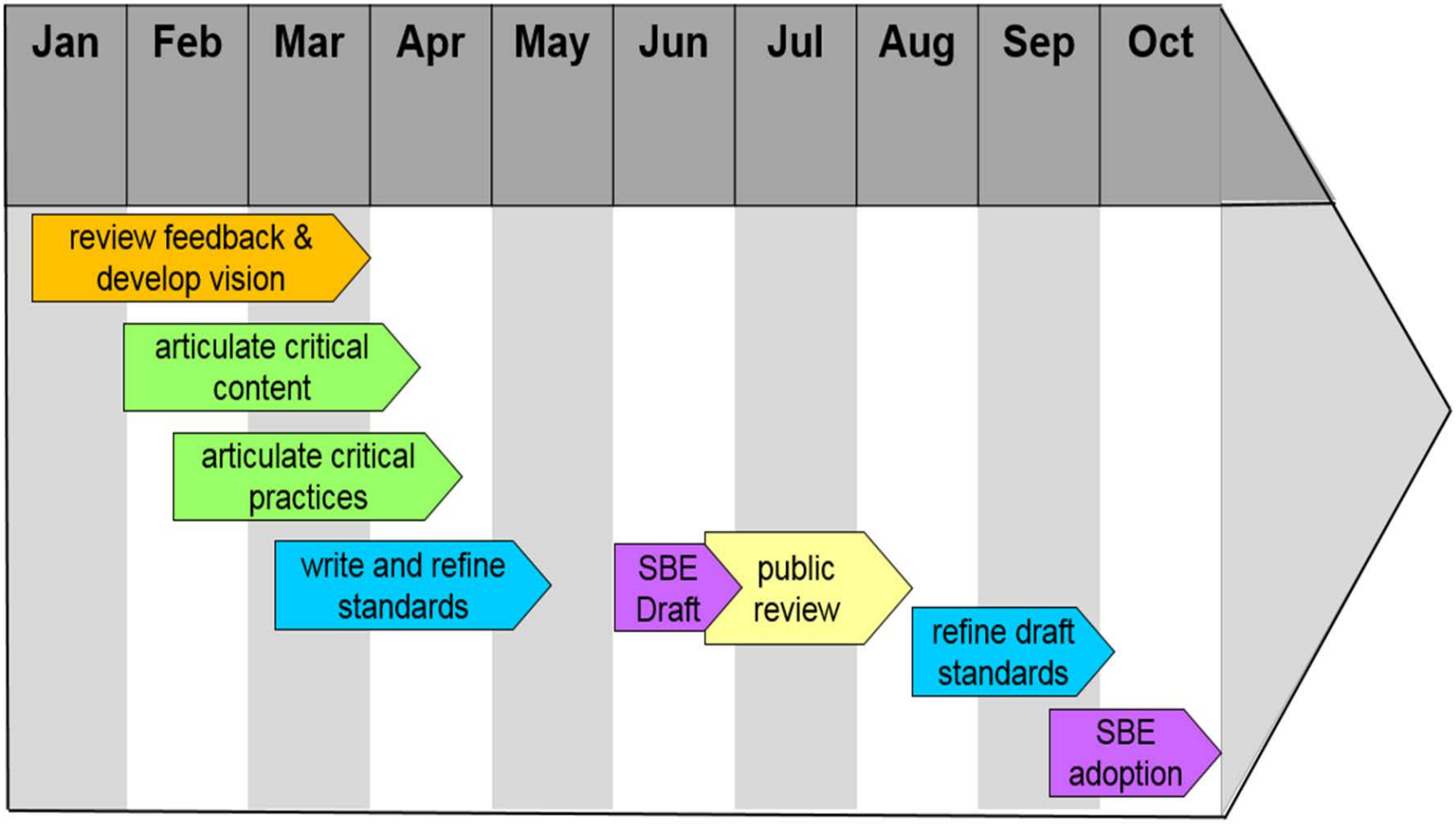
Curriculum – The resources used for teaching and learning the standards. Curricula are adopted at a local level by districts and schools.

Instructio – Th m no us b eachers to teach thei ts nst ctic al techniques are employed i indi dual teachers in response to the needs o the students in their classes to help them progress through the curriculum in order to master the standards.

Standards versus Performance Objectives

Content Standards	Performance Objectives
Standards are what students need to know, understand, and be able to do **by** the end of each grade level. Standards build across grade levels in a progression of increasing understanding and through a range of cognitive demand levels.	Performance Objectives are **incremental steps** toward mastery of individual content standards. Performance Objectives are knowledge and skills that a student must demonstrate at each grade level. Performance objectives do not imply a progression of learning and, because they are discrete skills, reach a limited level of cognitive demand.

CS Standards Development Outline



Establishing the Vision

- Read "A Vision for K-12 Computer Science" in the *K-12 Computer Science Framework*
- Highlight important statements
- Engage in grade-band discussions about important ideas and any missing ideas
- Whole room discussion

Establishing the Vision…cont'd

- Using the Comparison Matrix review the other state standards included in the binder on the table (Small Group)
- As you review consider the following:
  - Organization of the standards
  - Content within the standards
  - Formatting of the standards
- Whole Group Discussion

Lunch

Computer Science Core Concepts and Practices

Core Concepts and Practices

Core Practices

1. Fostering an Inclusive Computing Culture
2. Collaborating Around Computing
3. Recognizing and Defining Computational Problems
4. Developing and Using Abstractions
5. Creating Computational Artifacts
6. Testing and Refining Computational Artifacts
7. Communicating About Computing

Core Concepts

1. Computing Systems
2. Networks and the Internet
3. Data and Analysis
4. Algorithms and Programming
5. Impacts of Computing

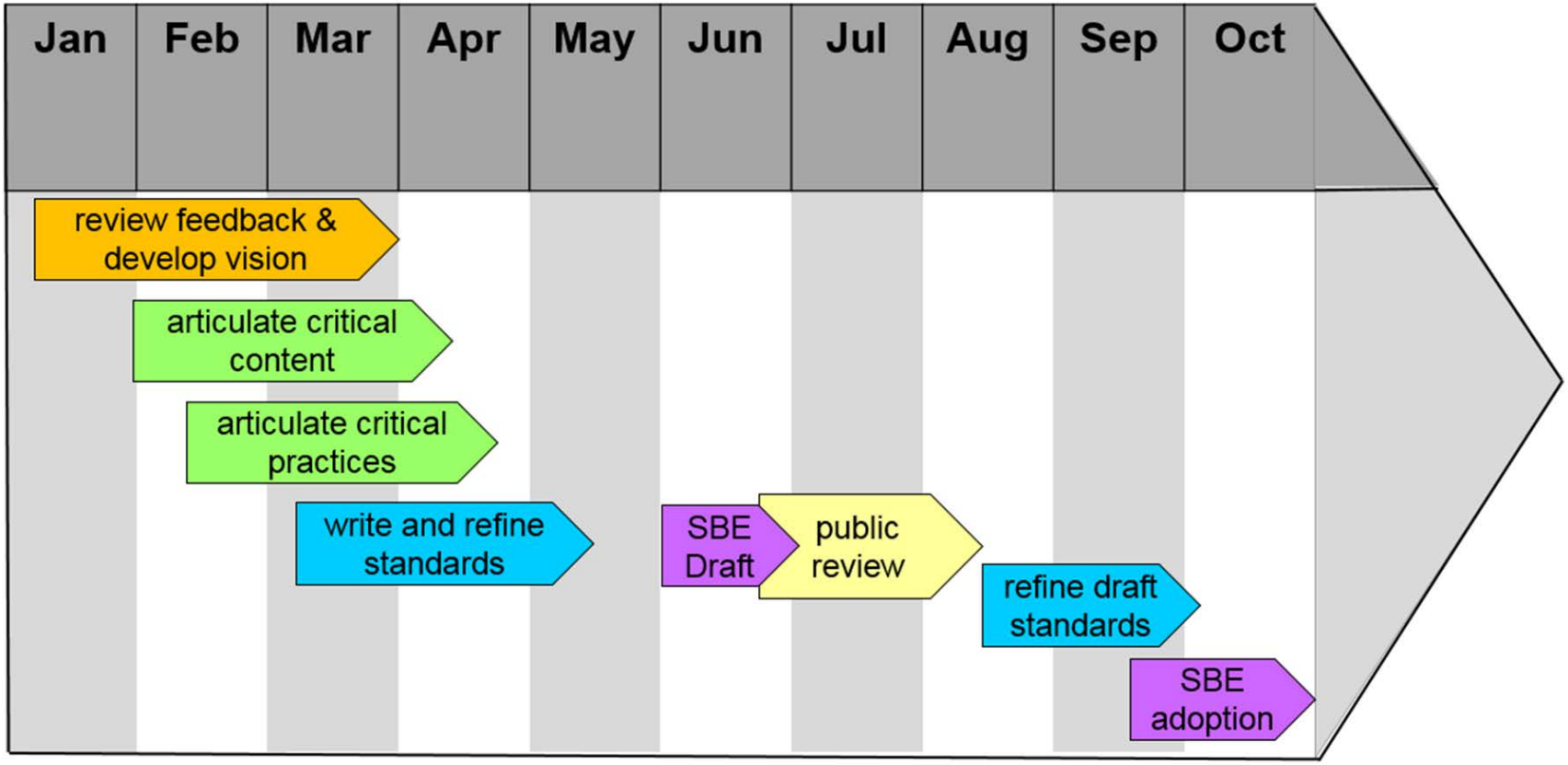
Crosscutting Concepts

1. Abstraction
2. System Relationships
3. Human-Computer Interaction
4. Privacy and Security
5. Communication and Coordination

Review Public Comment

- In Small Groups review a data set of public comment related to a specific core concept or core practice
- You can use the K-12 Computer Science Framework, pg.67 for Practices and pg.87 for Concepts, as a reference
- Using the Public Comment Review table, determine if the feedback is actionable (Remember standards, curriculum, and instruction), what recommendations would you make regarding the feedback, and why?

Wrap-up and Next Steps



Thank you!!!