# MOBILE APPLICATION DEVELOPMENT

ANDROID (2017)

LECTURE 06: LISTENERS

LISTENERS

▸ Listeners are classes or objects which listen for events.

▸ Generally, the 'listening' methods are defined by an interface.

  ▸ Many listeners are instances of anonymous types (objects).

  ▸ The interface defines events, and specific instances implement reactions to those events for a particular purpose.

▸ Listeners allow objects and classes which have no explicit knowledge of one another to communicate in a standardized way, which helps keep units of code discrete and focused.
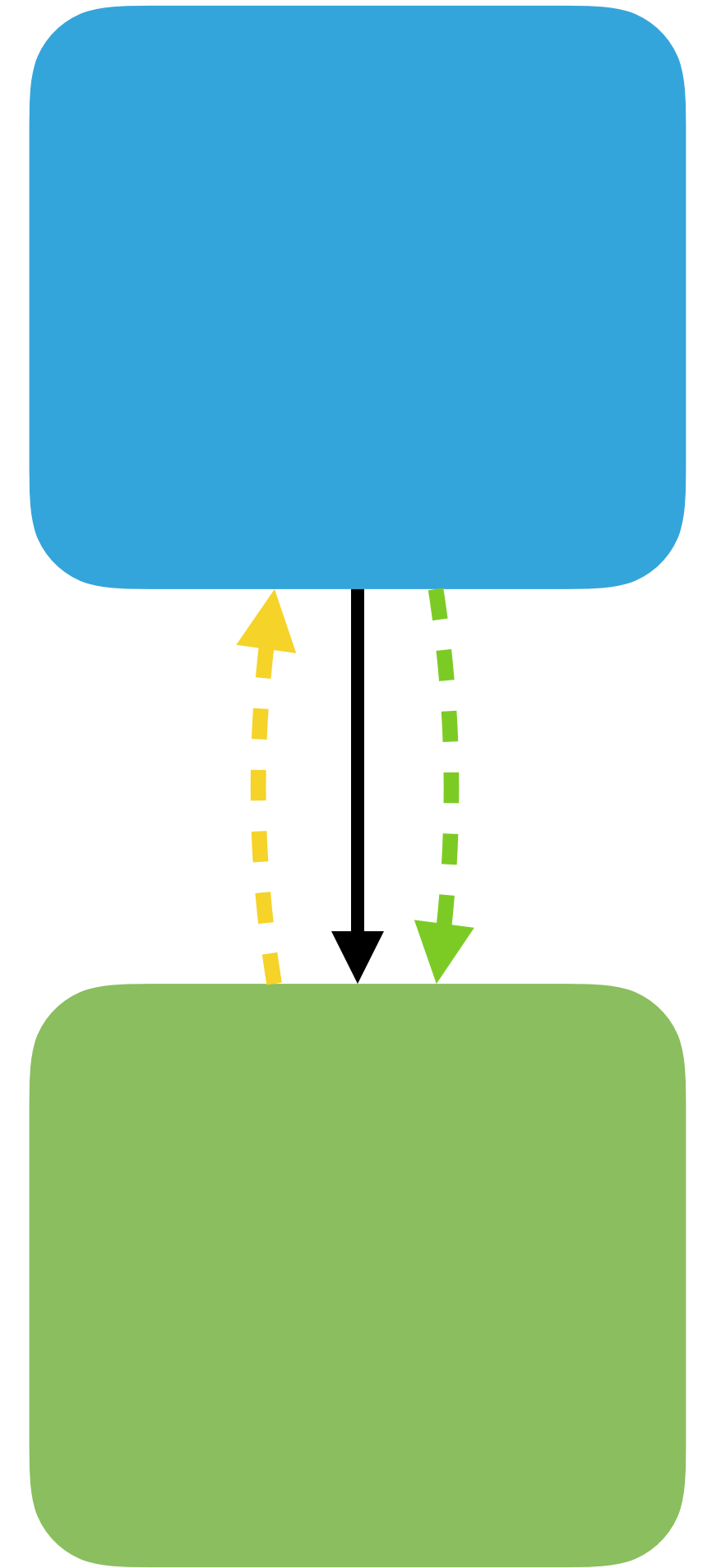
CONTROL INTERACTIONS

▸ Controls are part of a chain of events.

▸ Controls have their properties set by managing objects/classes.

▸ Controls generate events, which are handled elsewhere.

▸ Setting properties is an explicit action that must be special-cased.

▸ Event handling is not always explicitly defined, or even defined at all.

  ▸ Controls may generate unhandled events.

  ▸ Controls may be used in non-interactive contexts to represent data.

  ▸ Controls use listener interfaces to handle the forwarding of events.

MANAGING OBJECT

EVENTS PROPERTIES

CONTROL
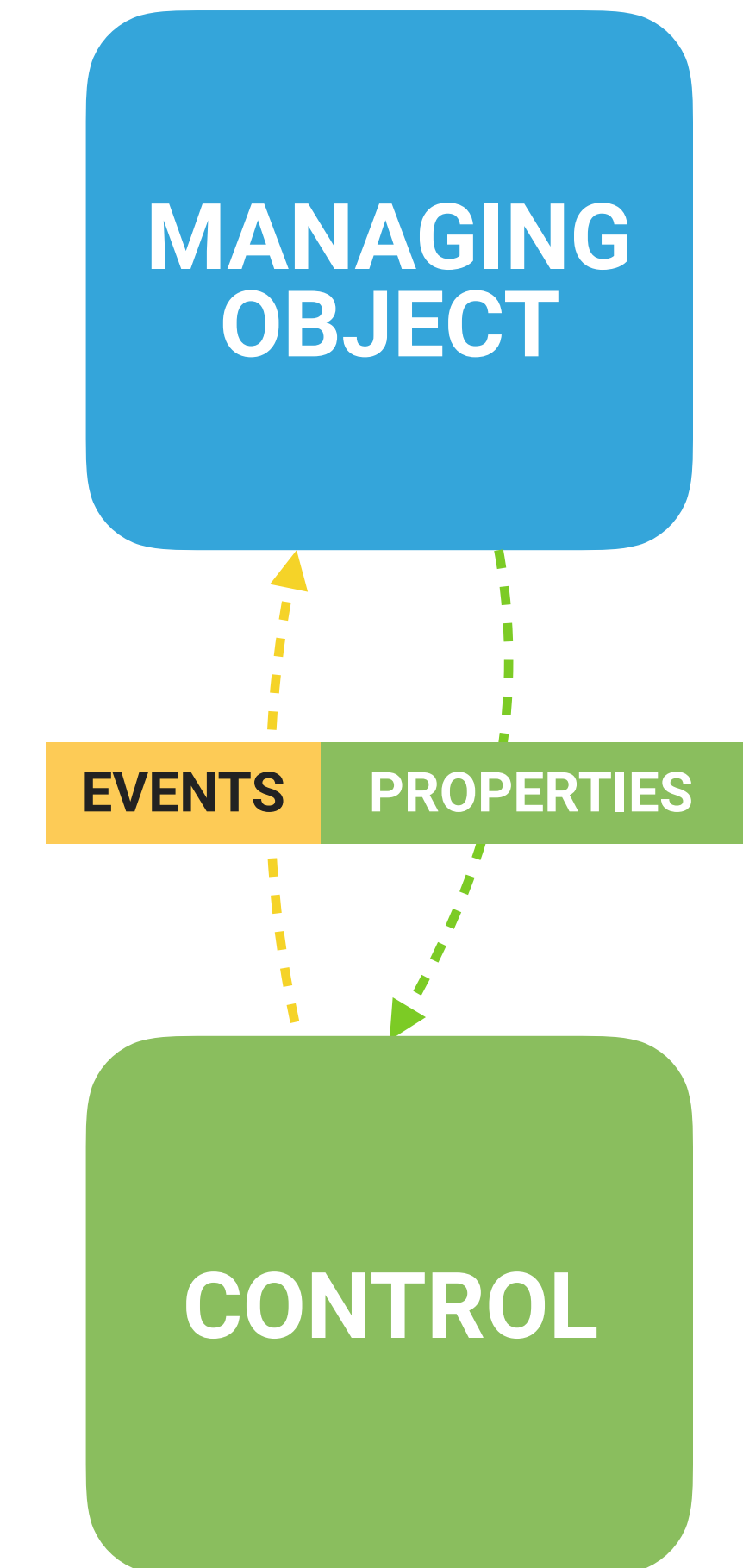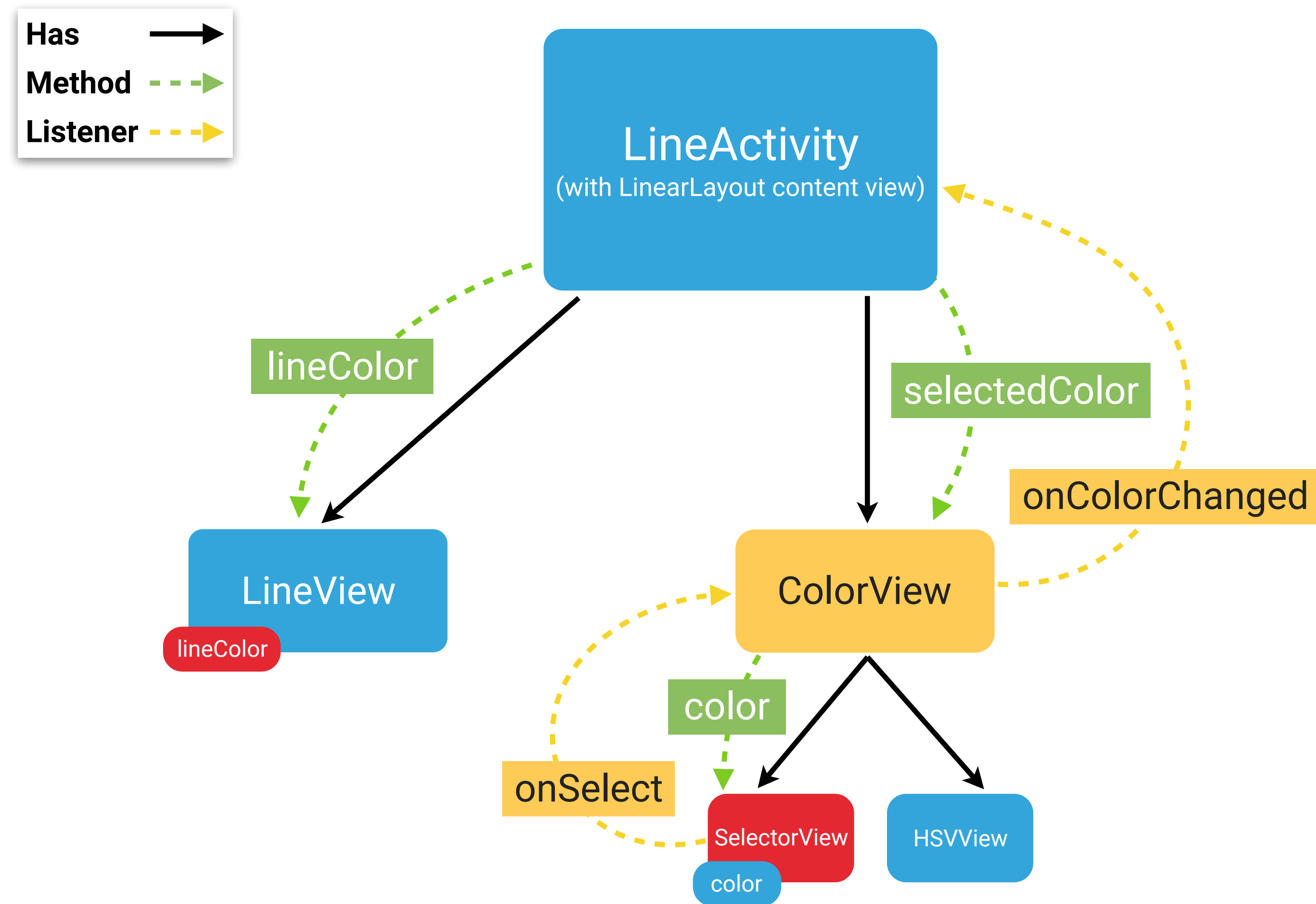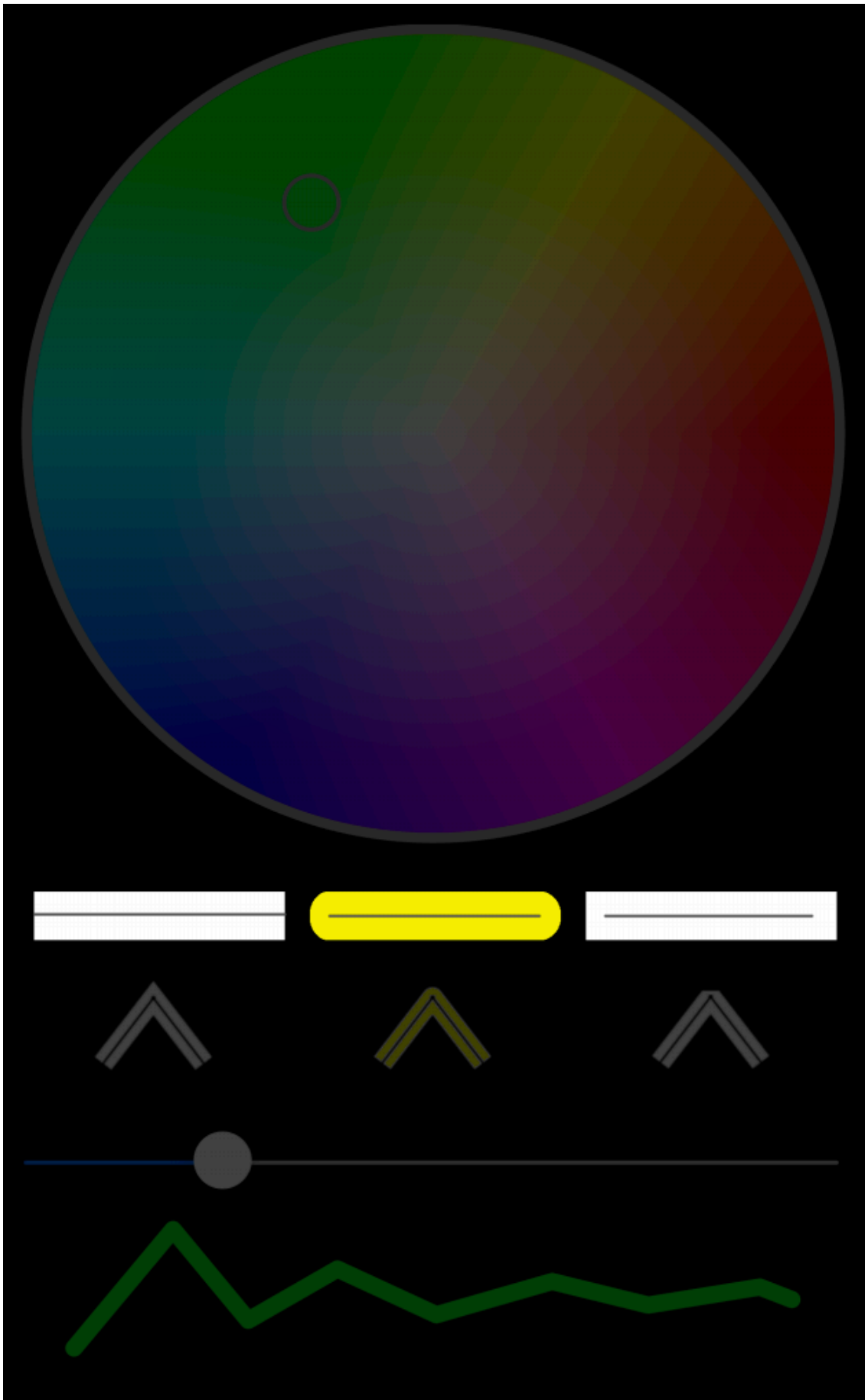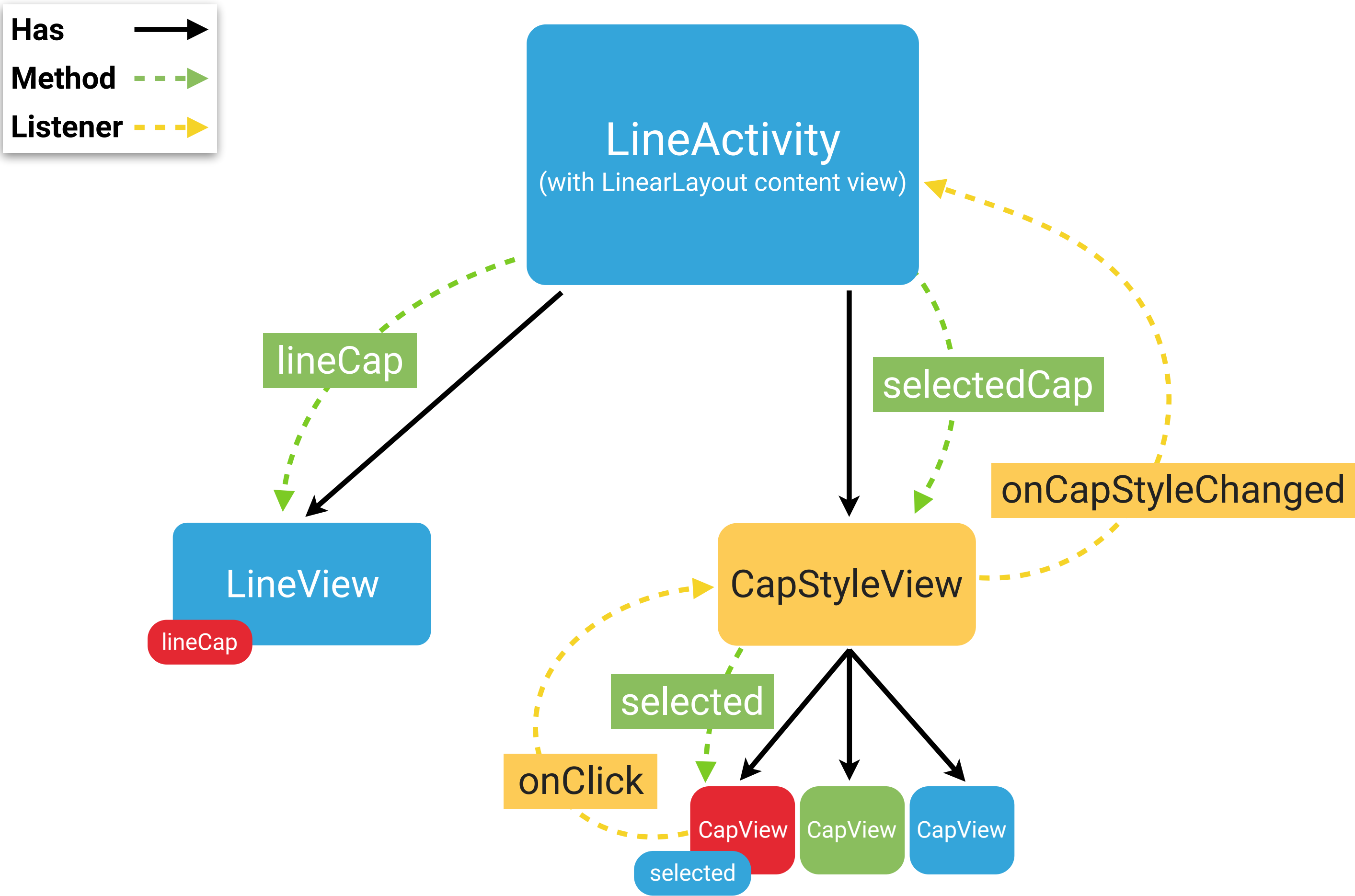
LISTENER EXAMPLE: LINE SETTINGS

▶ Need to allow the user to customize the appearance and shape of a line they are going to draw.

▶ This requires a number of attributes to be customizable:

  ▶ The color of the line.

  ▶ The line join and cap styles.

  ▶ The line width.

▶ This is a complex control, which is made up of other controls. The combined control manages the line settings.

LISTENER EXAMPLE: LINE COLOR CONTROL

LISTENER EXAMPLE: LINE CAP CONTROL

Has →

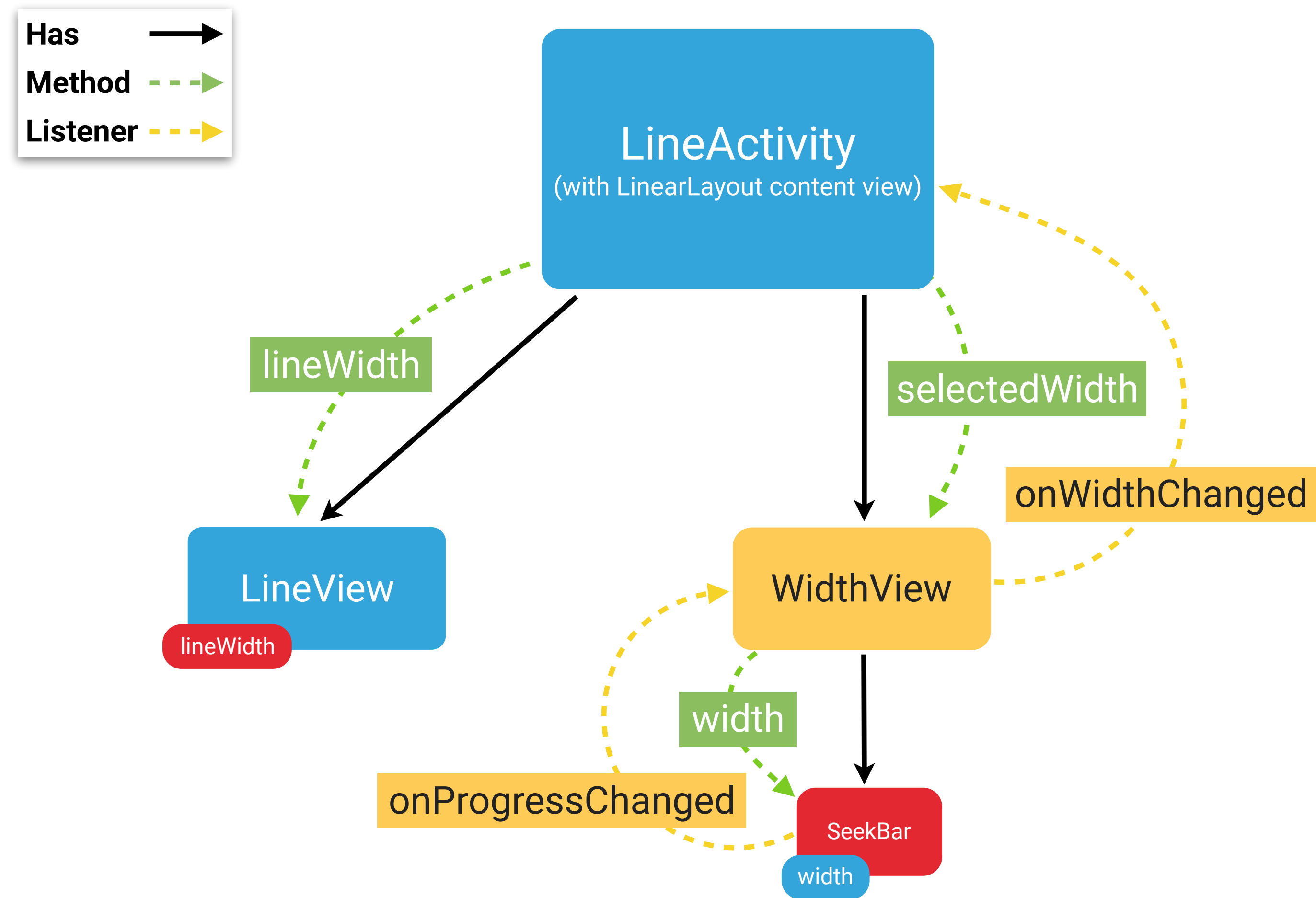**Method** ⇢ (green dashed)

Listener ⇢ (yellow dashed)

LineActivity
(with LinearLayout content view)

lineCap

selectedCap

onCapStyleChanged

LineView
lineCap

CapStyleView

selected

onClick

CapView (selected)

CapView

CapView

LISTENER EXAMPLE: LINE JOIN CONTROL

Has

Method

Listener

LineActivity
(with LinearLayout content view)

lineJoin

selectedJoin

onJoinStyleChanged

LineView

lineJoin

JoinStyleView

selected

onClick

JoinView

selected

JoinView

JoinView
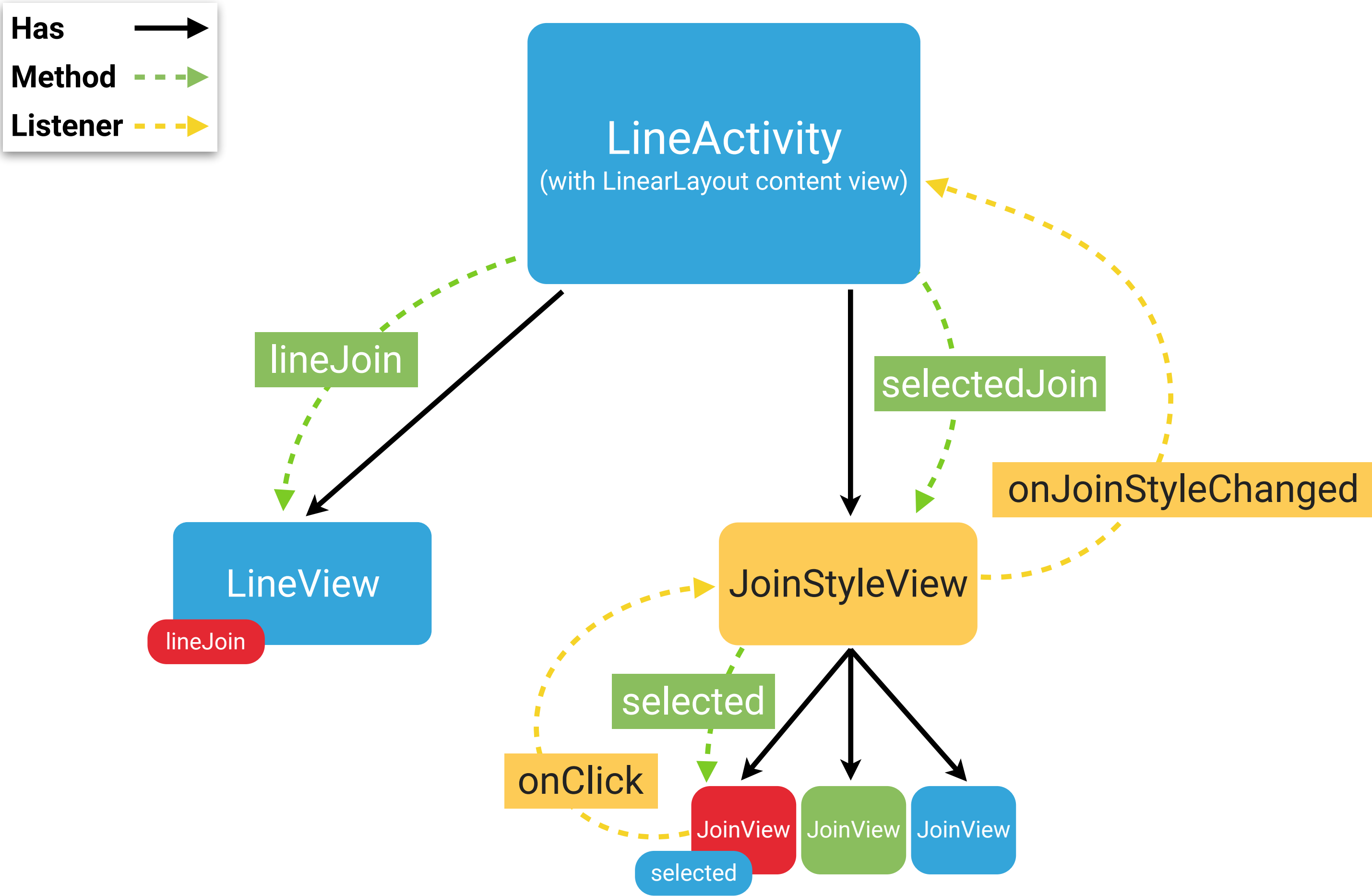
LISTENER EXAMPLE: LINE WIDTH CONTROL

LISTENER STRUCTURE

▸ A listener (represented by the yellow line) is established in 6 parts:

  ▸ B defines an interface the listener must implement.

  ▸ B defines a getter/setter for the listener property.

  ▸ B calls method(s) on the listener property for events.

  ▸ A implements the listener interface.

  ▸ A defines the method(s) the listener interface requires.

  ▸ A sets itself as the listener for B's event(s).

A

B