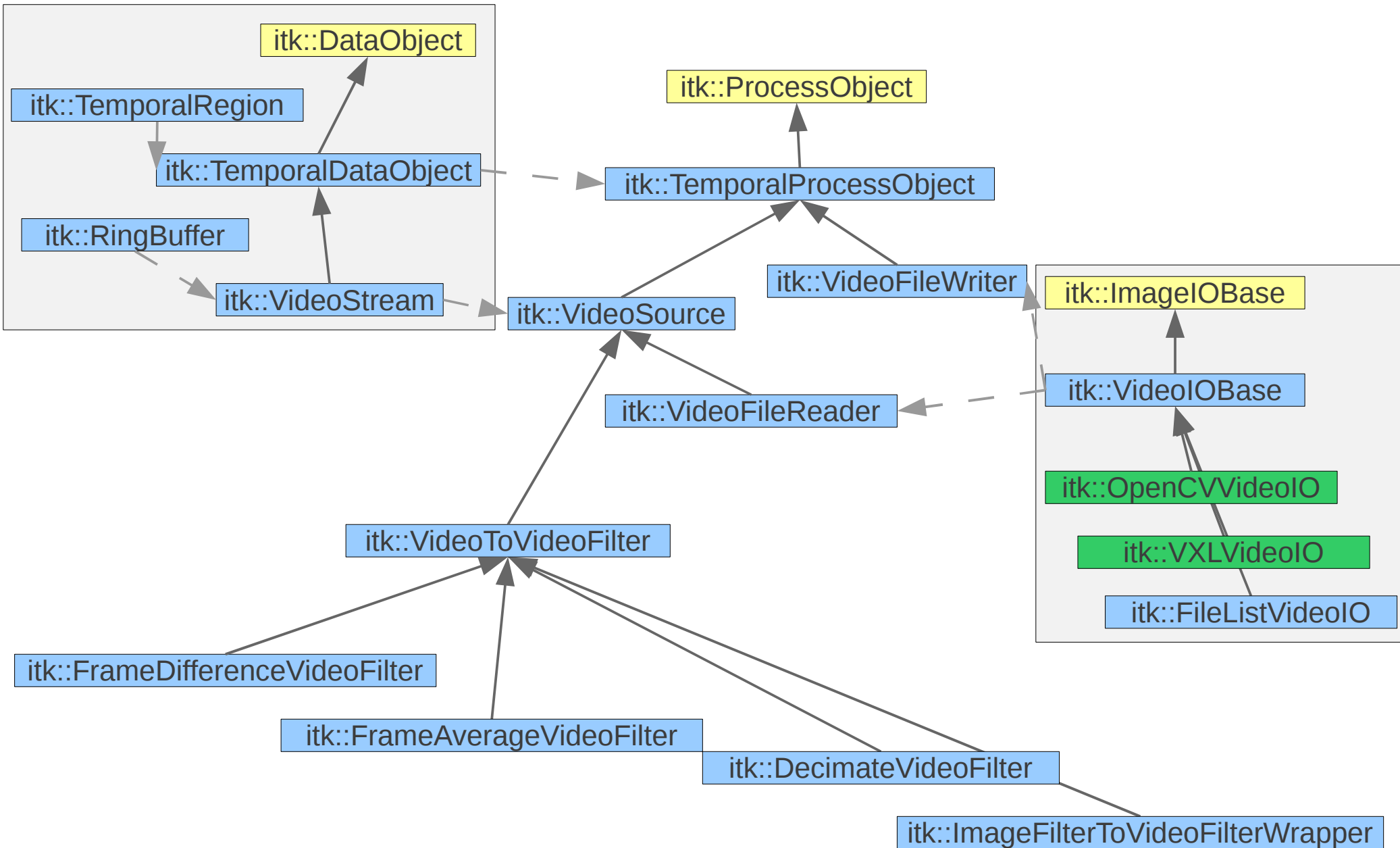


# ITK Video A2D2

Amitha Parera, Patrick Reynolds, Matt Leotta,  
Luis Ibanez, Gabe Hart

# New Classes

# Class Hierarchy



itk::VideoStream

# itk::VideoStream

## itk::TemporalRegion

FrameStart

FrameDuration

RealStart

RealDuration

# itk::VideoStream

## itk::TemporalRegion

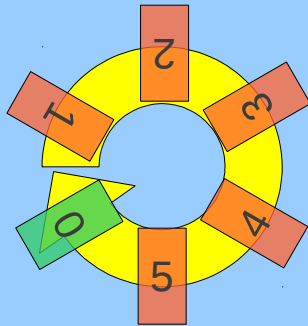
FrameStart

FrameDuration

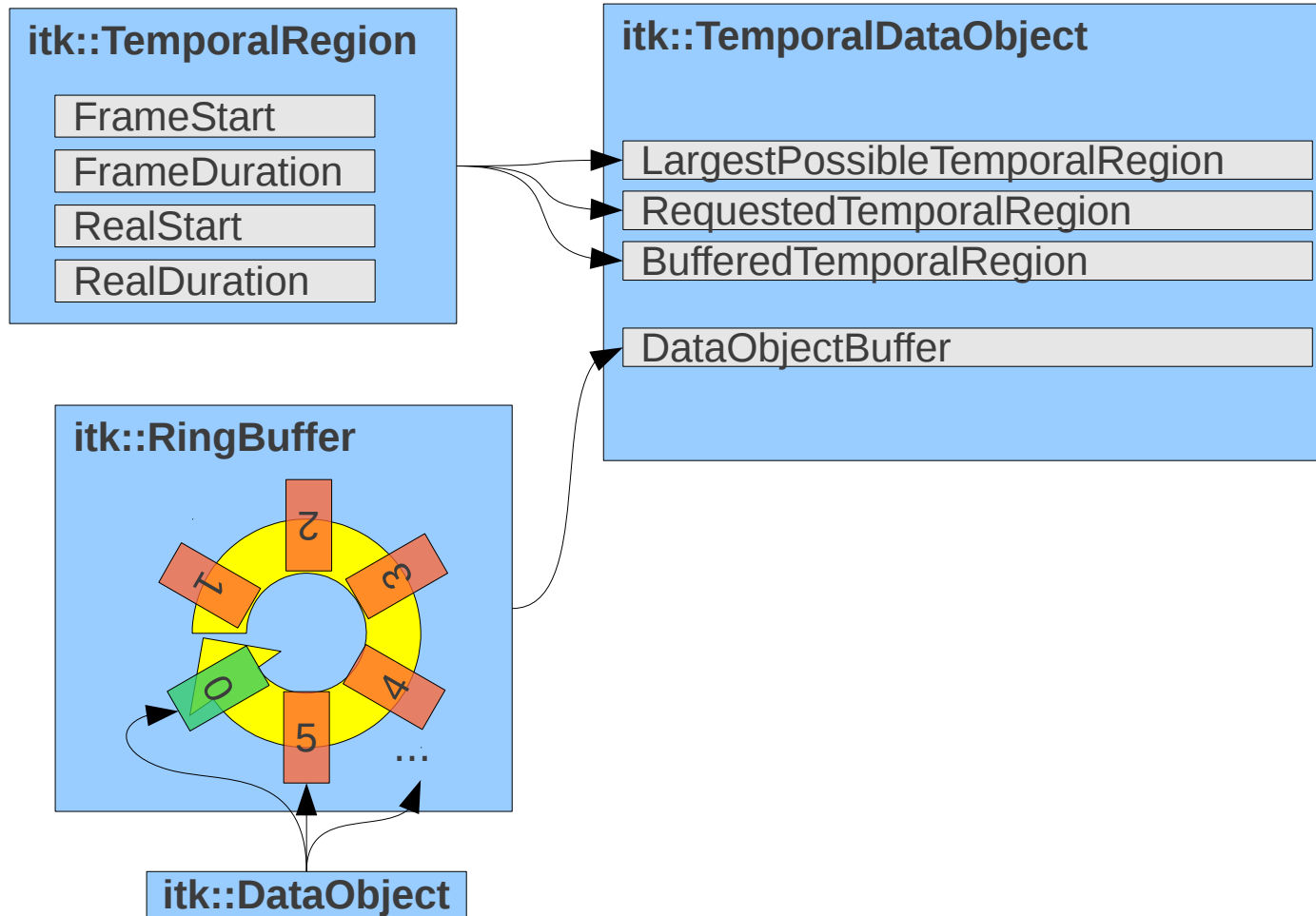
RealStart

RealDuration

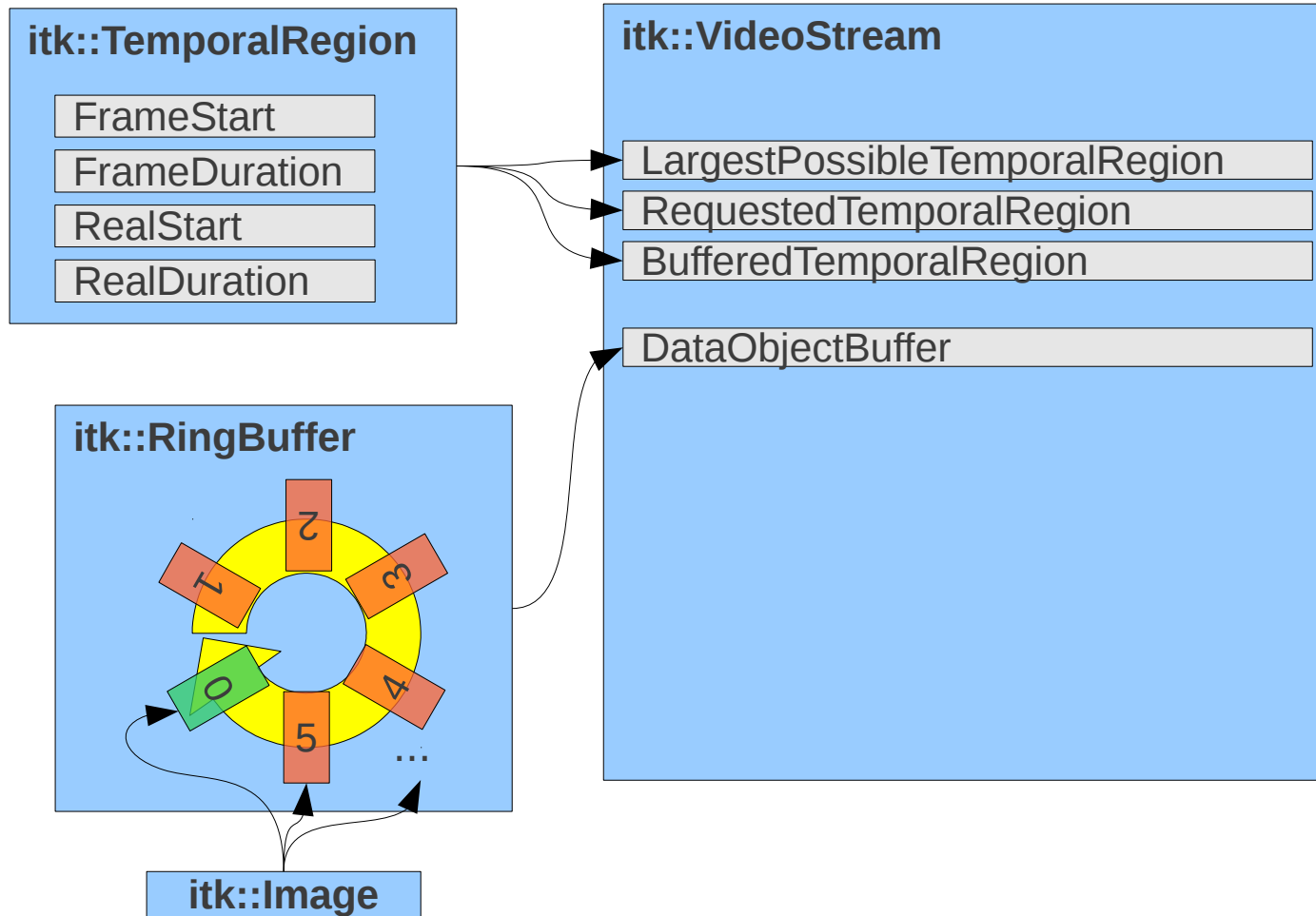
## itk::RingBuffer



# itk::VideoStream

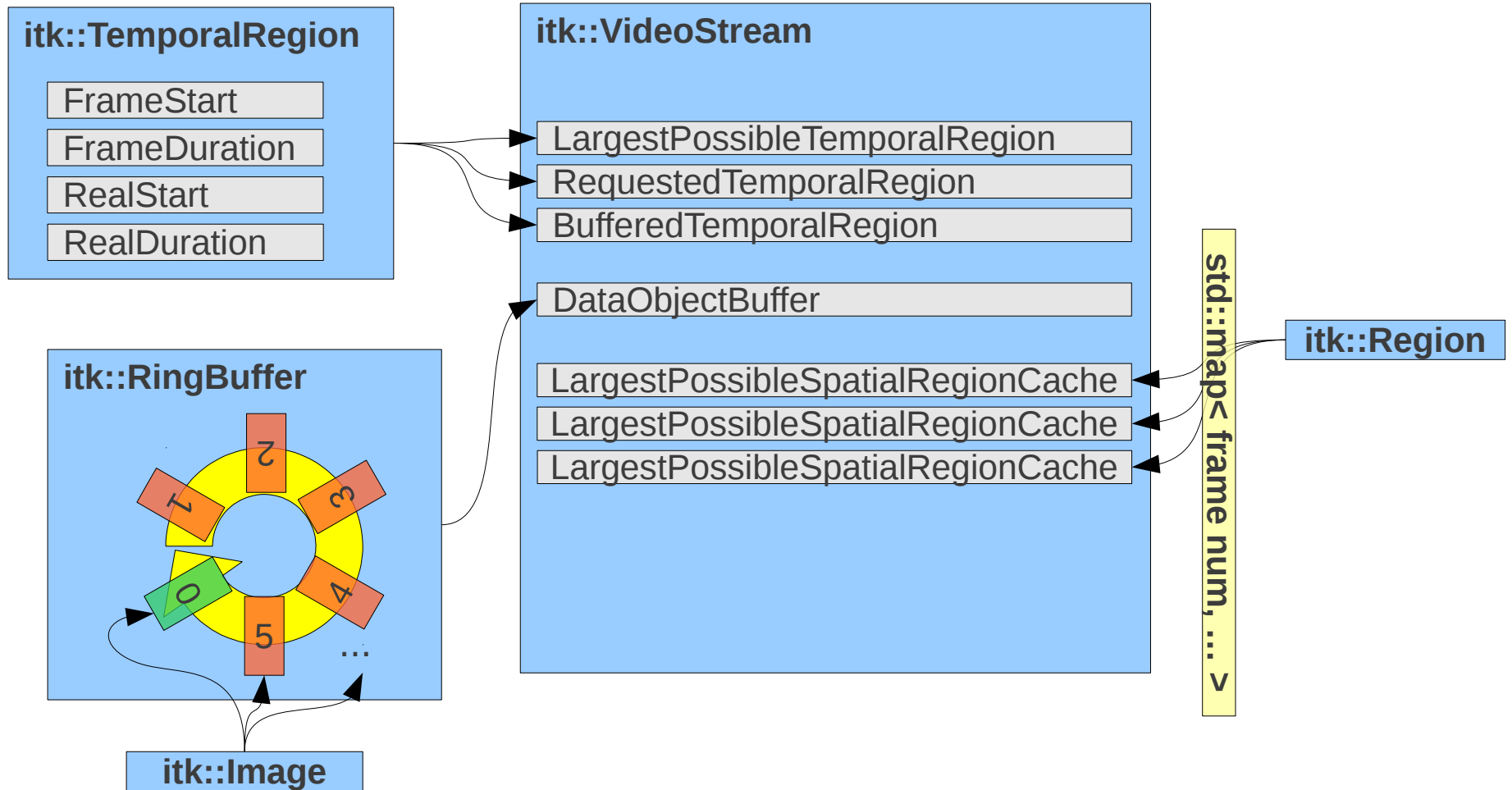


# itk::VideoStream

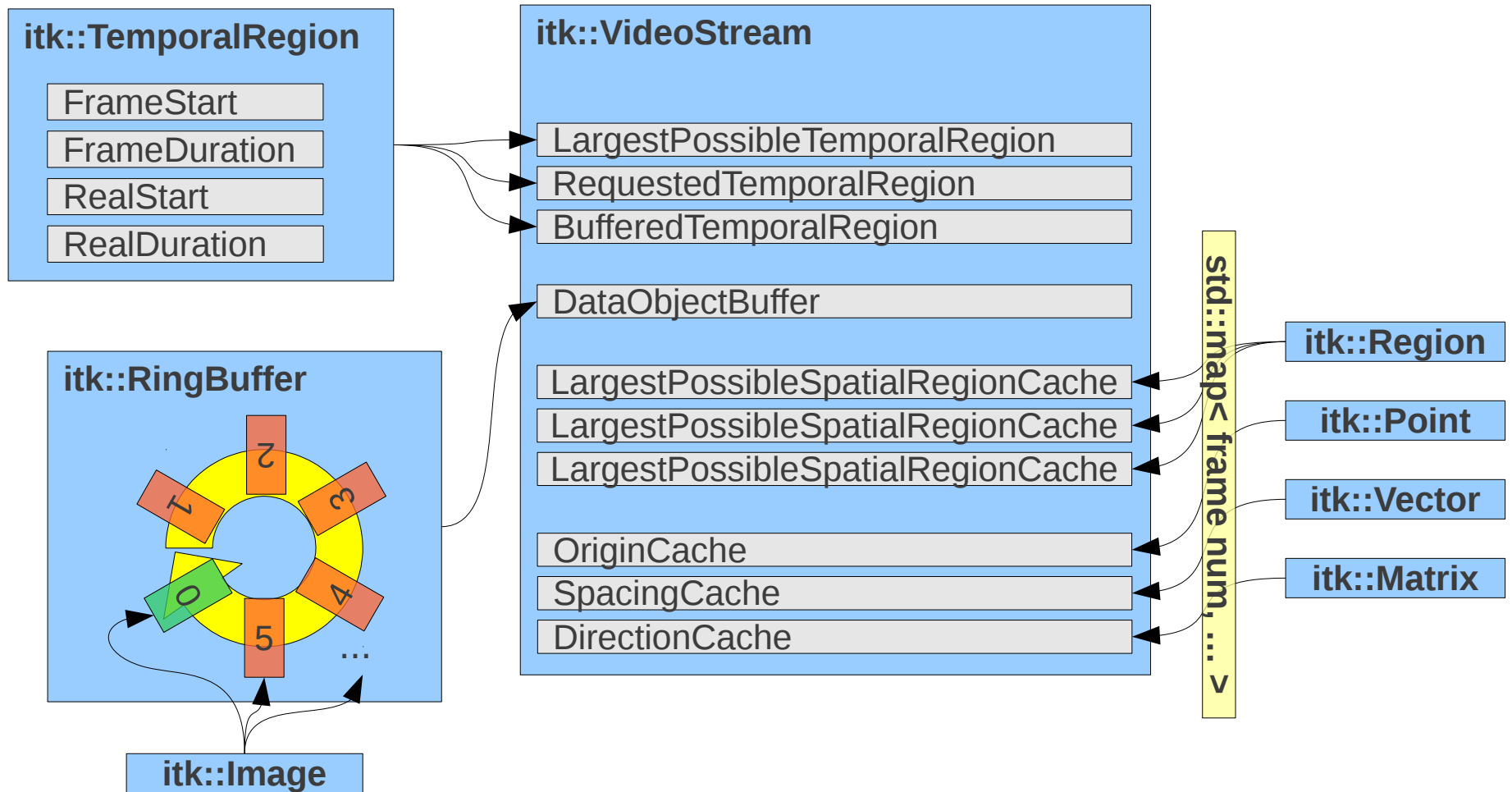




# itk::VideoStream

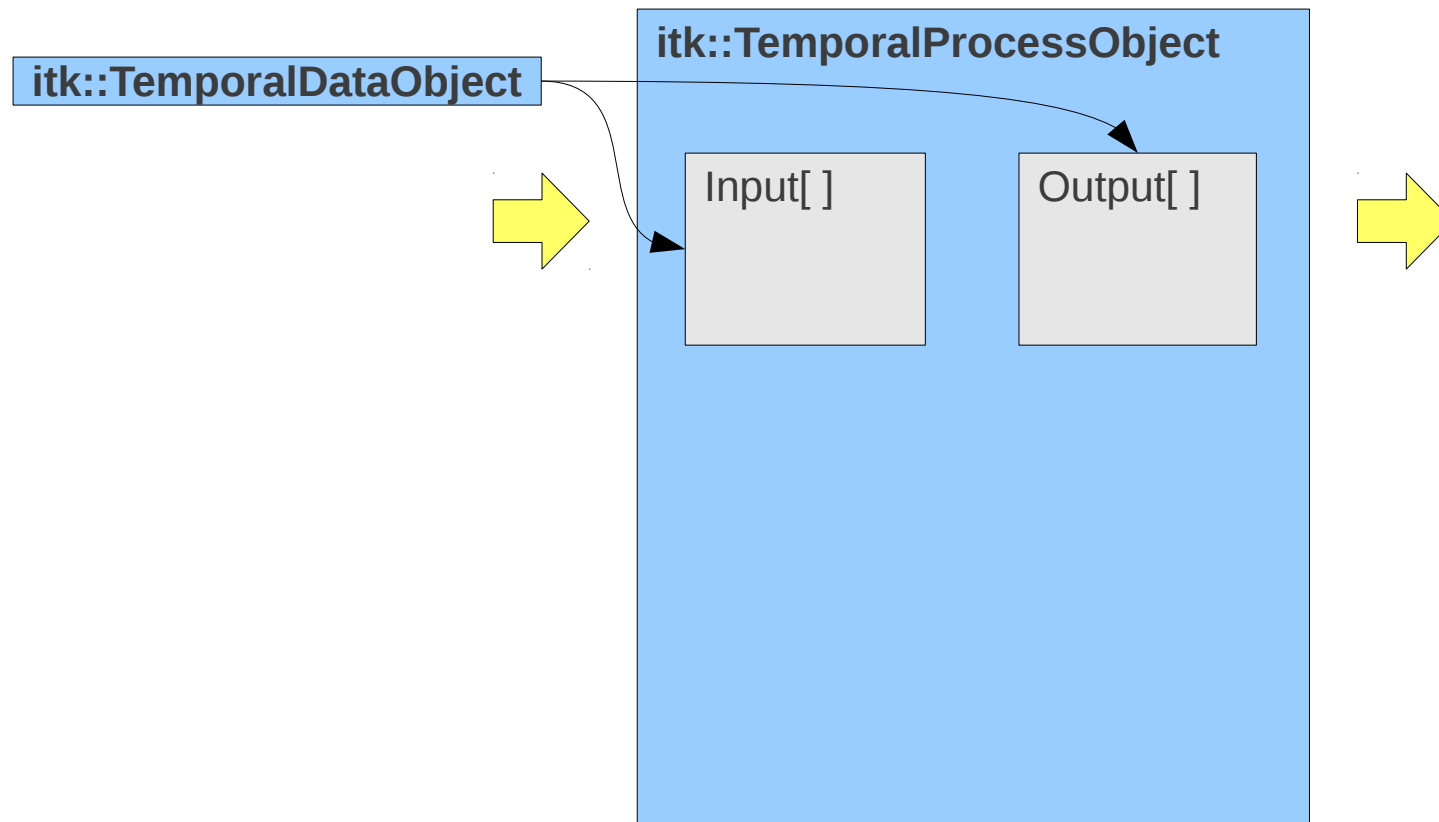


# itk::VideoStream

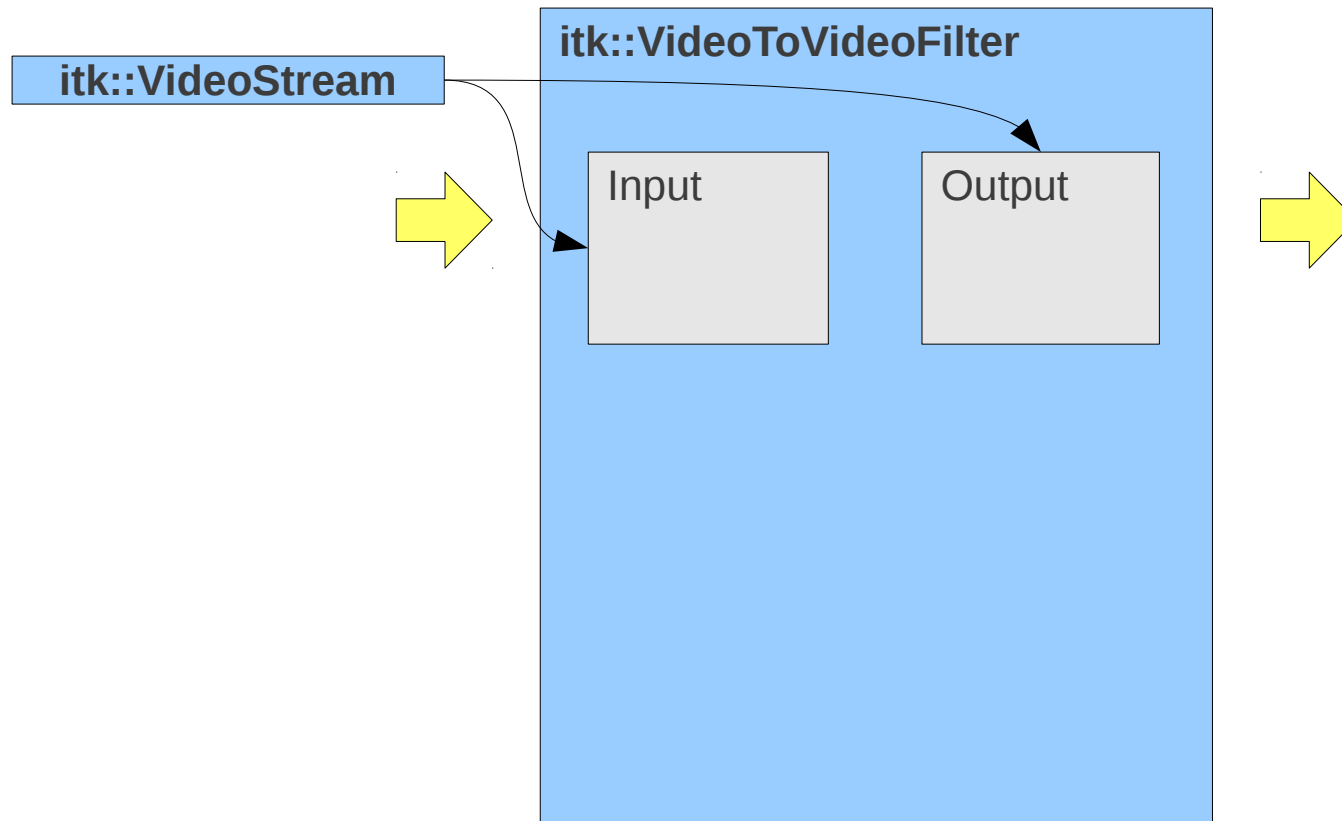


itk::VideoToVideoFilter

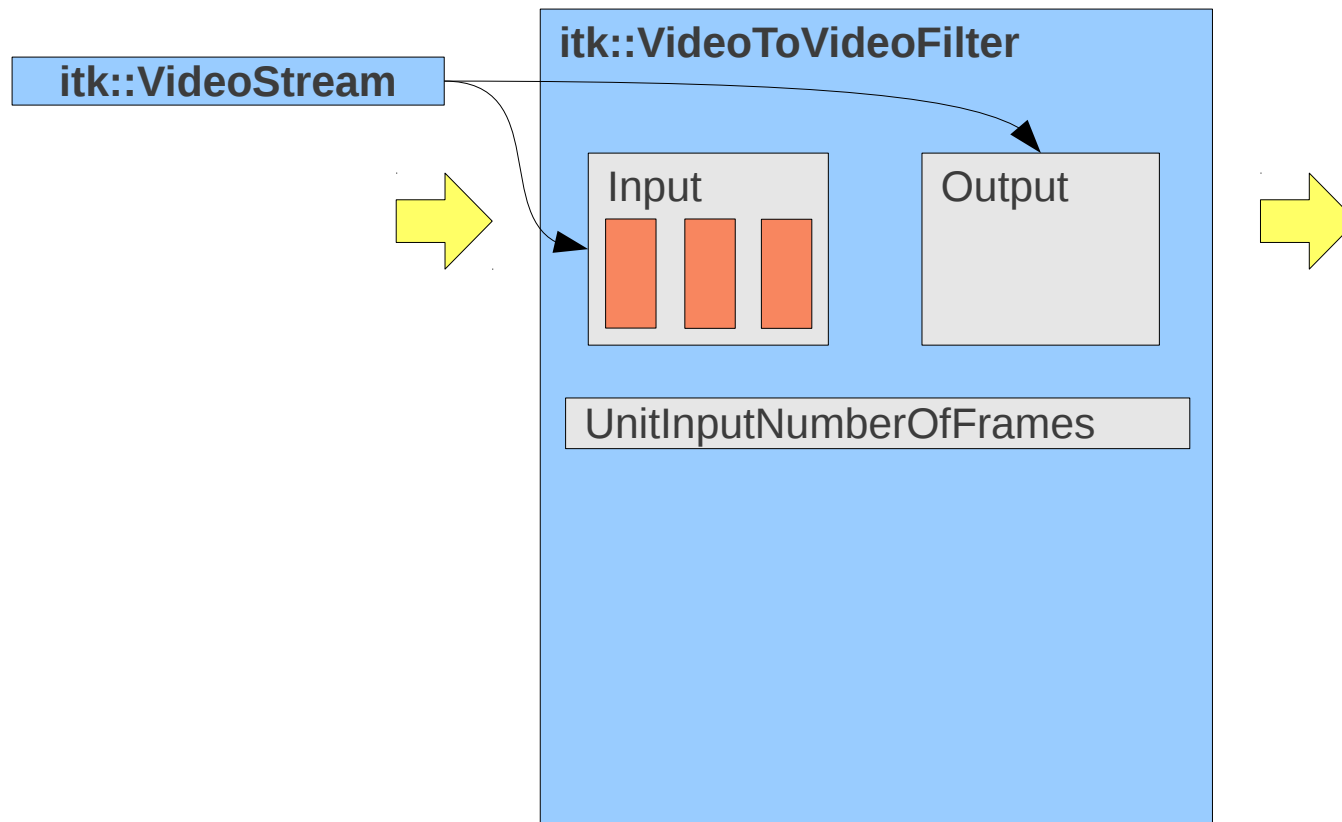
# itk::VideoToVideoFilter



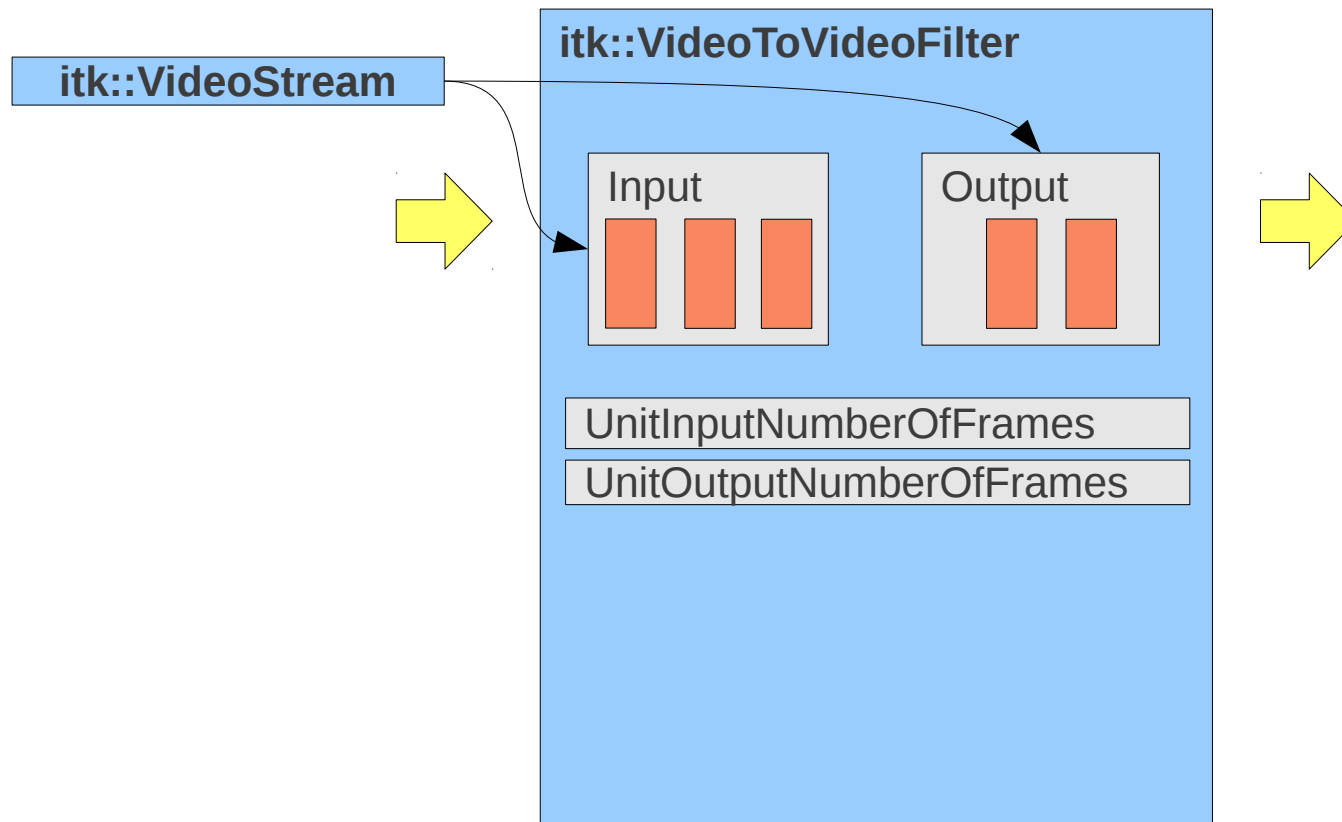
# itk::VideoToVideoFilter



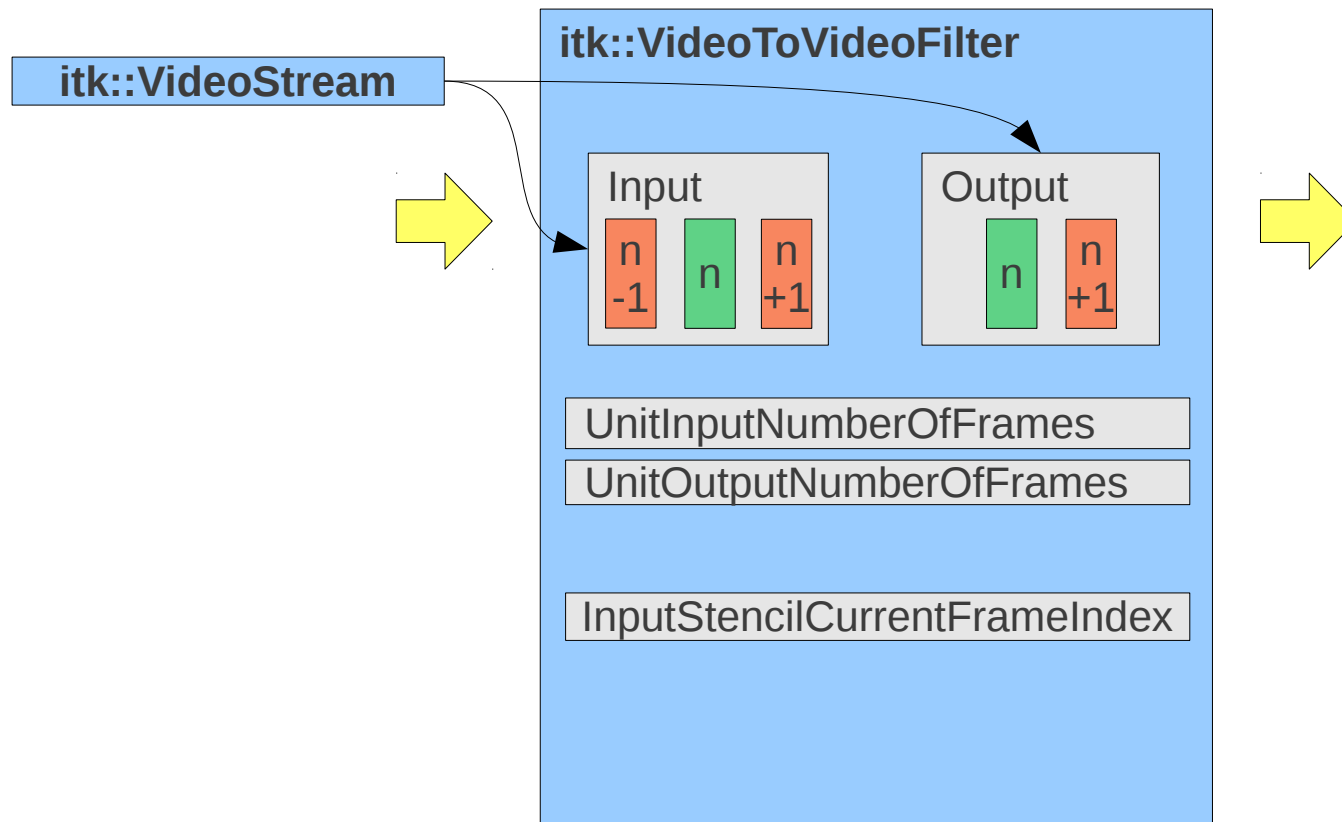
# itk::VideoToVideoFilter



# itk::VideoToVideoFilter

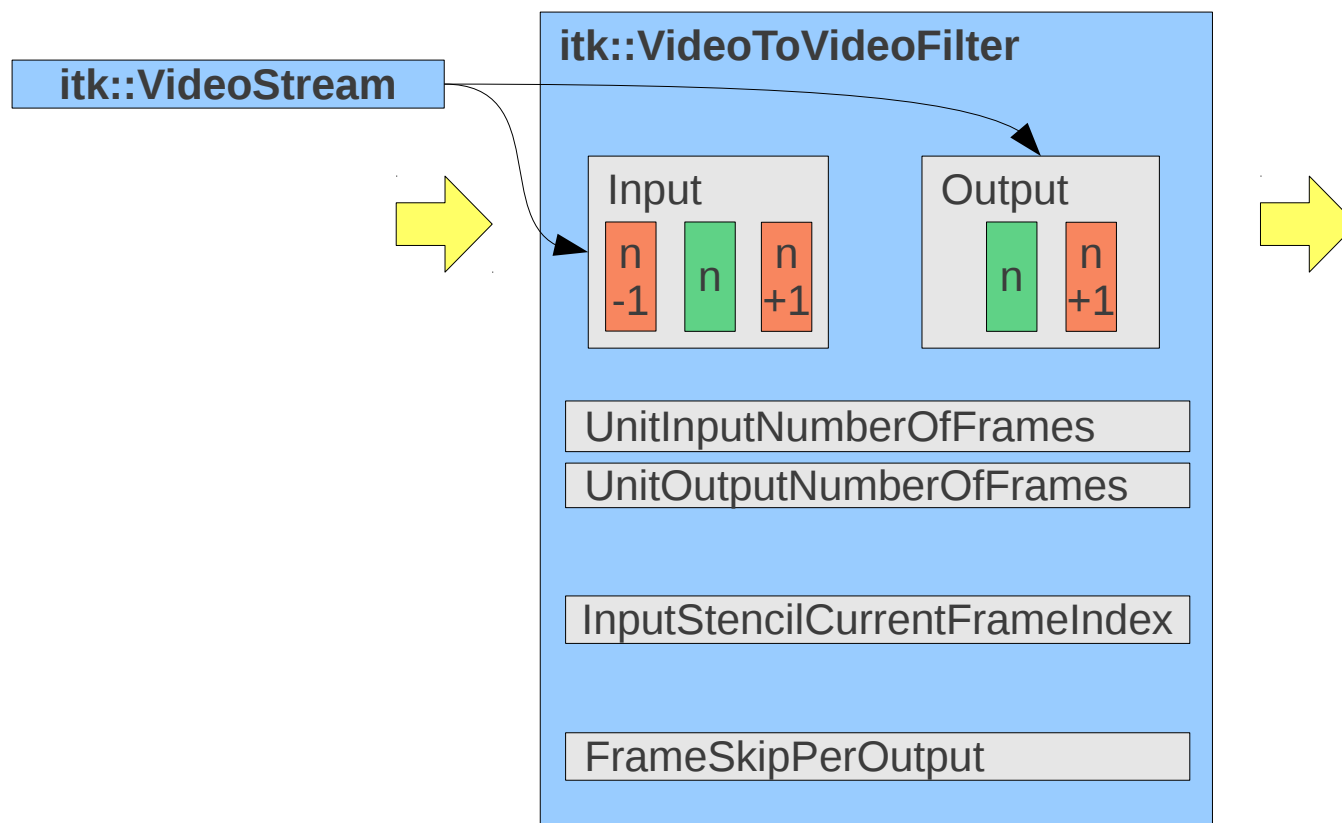


# itk::VideoToVideoFilter

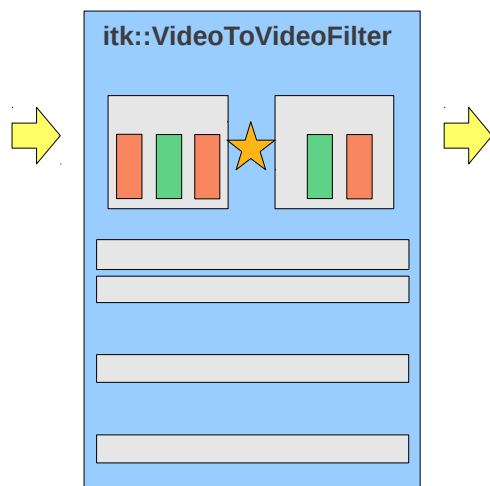




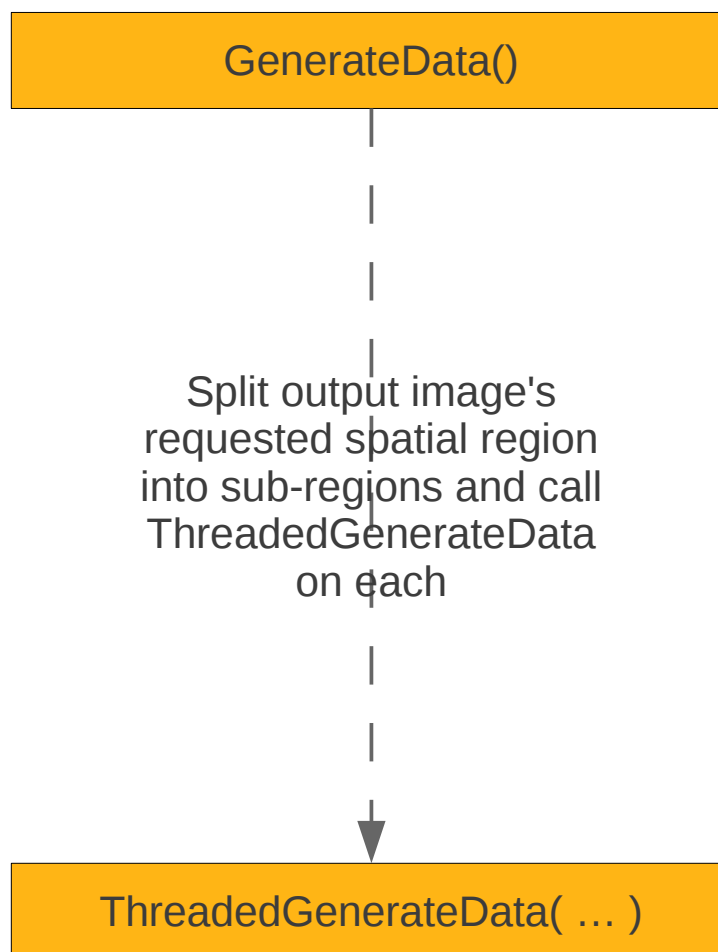
# itk::VideoToVideoFilter



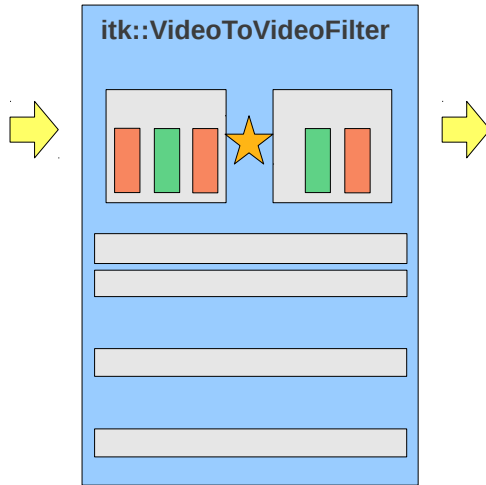
# itk::VideoToVideoFilter



`itk::ImageToImageFilter` → **GenerateData** Process



# itk::VideoToVideoFilter



`itk::ImageToImageFilter` → **GenerateData** Process

`GenerateData()`

Split input and output videos' requested temporal regions into sub-regions of unit input and unit output size. Continue processing sub-regions until entire output request is full

`TemporalStreamingGenerateData()`

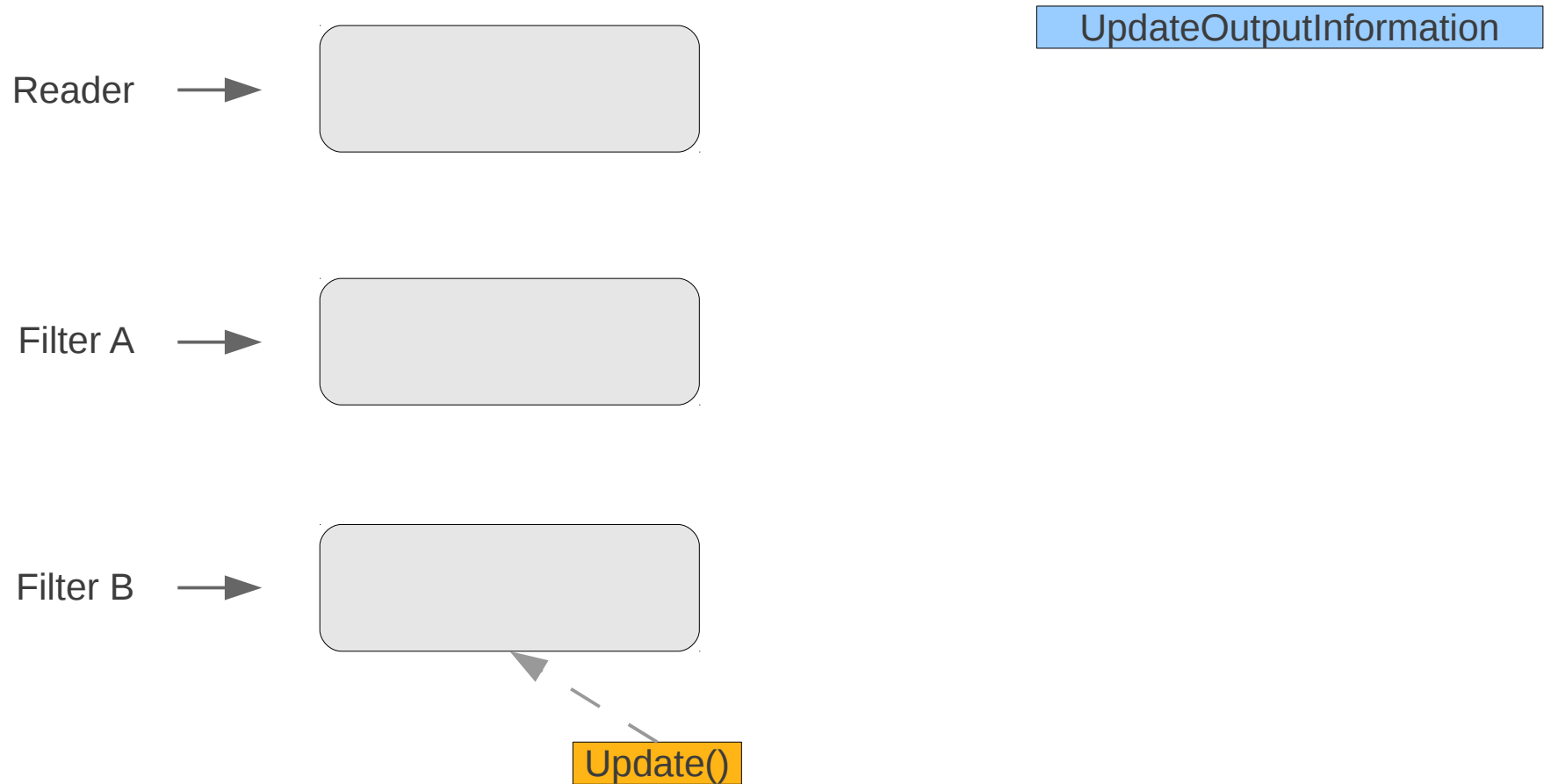
Split output video's requested spatial region into sub-regions and call `ThreadedGenerateData` on each

`ThreadedGenerateData( ... )`

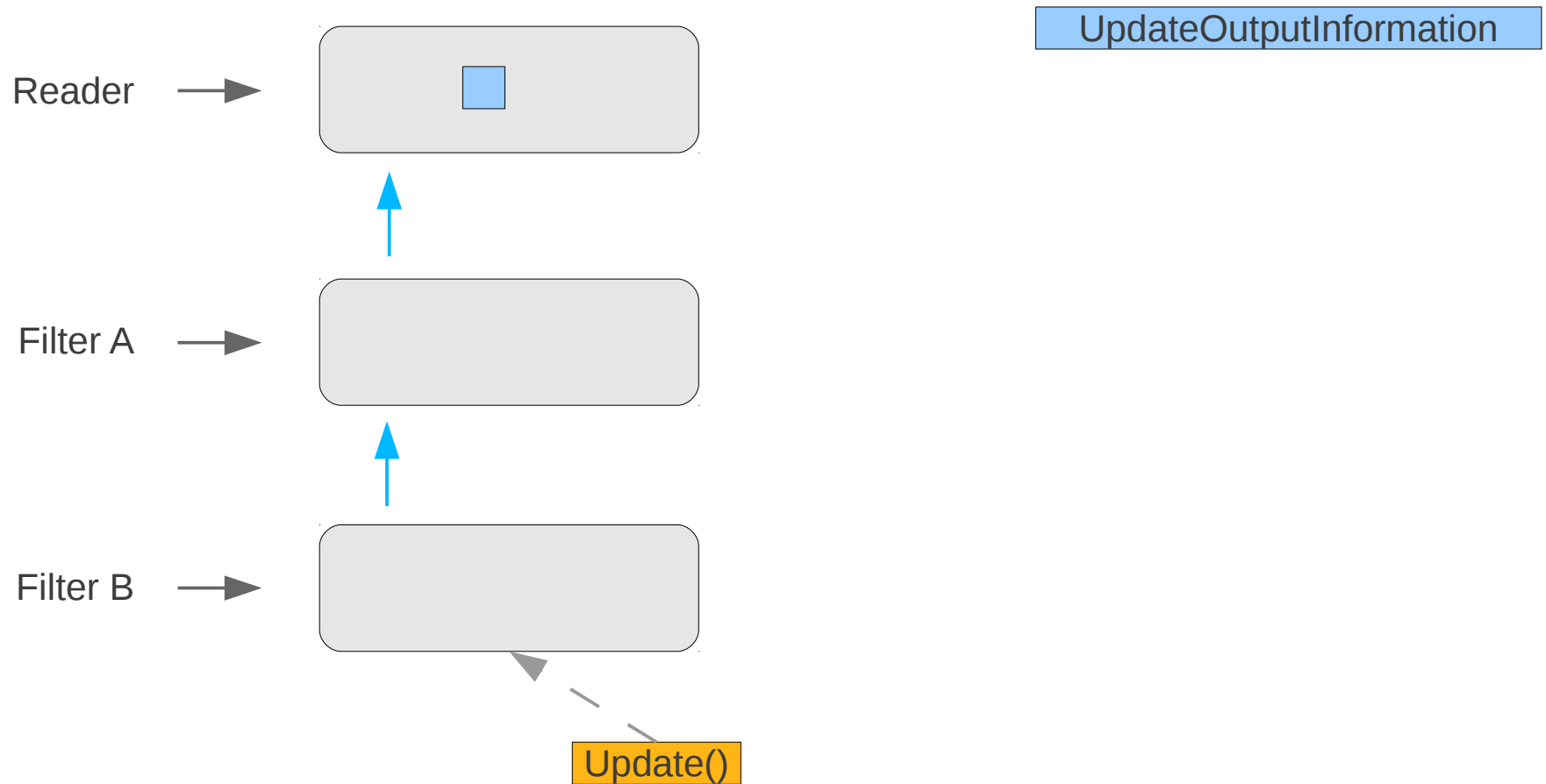
# Pipeline Architecture

# ITK Pipeline

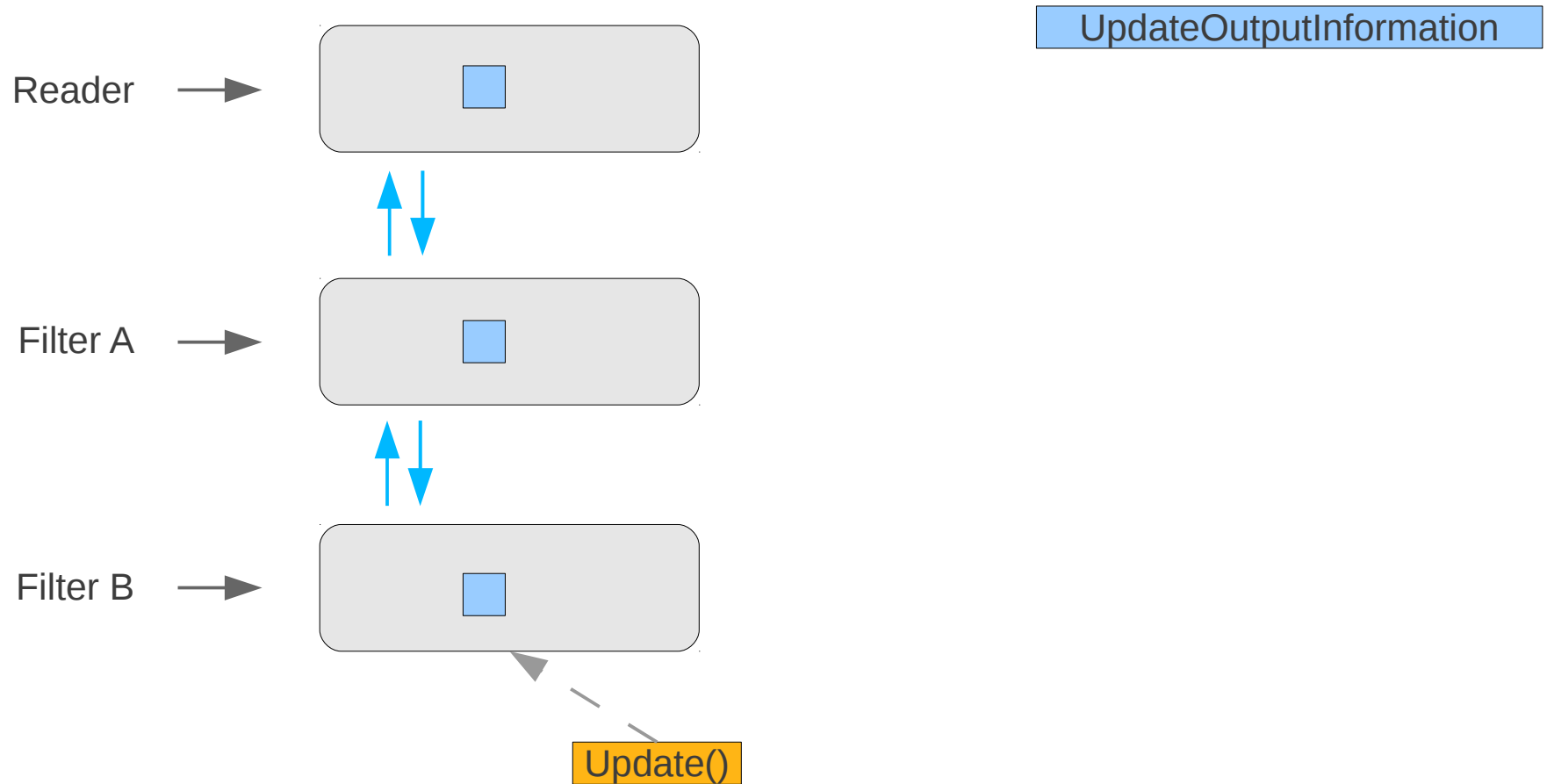
# ITK Pipeline



# ITK Pipeline

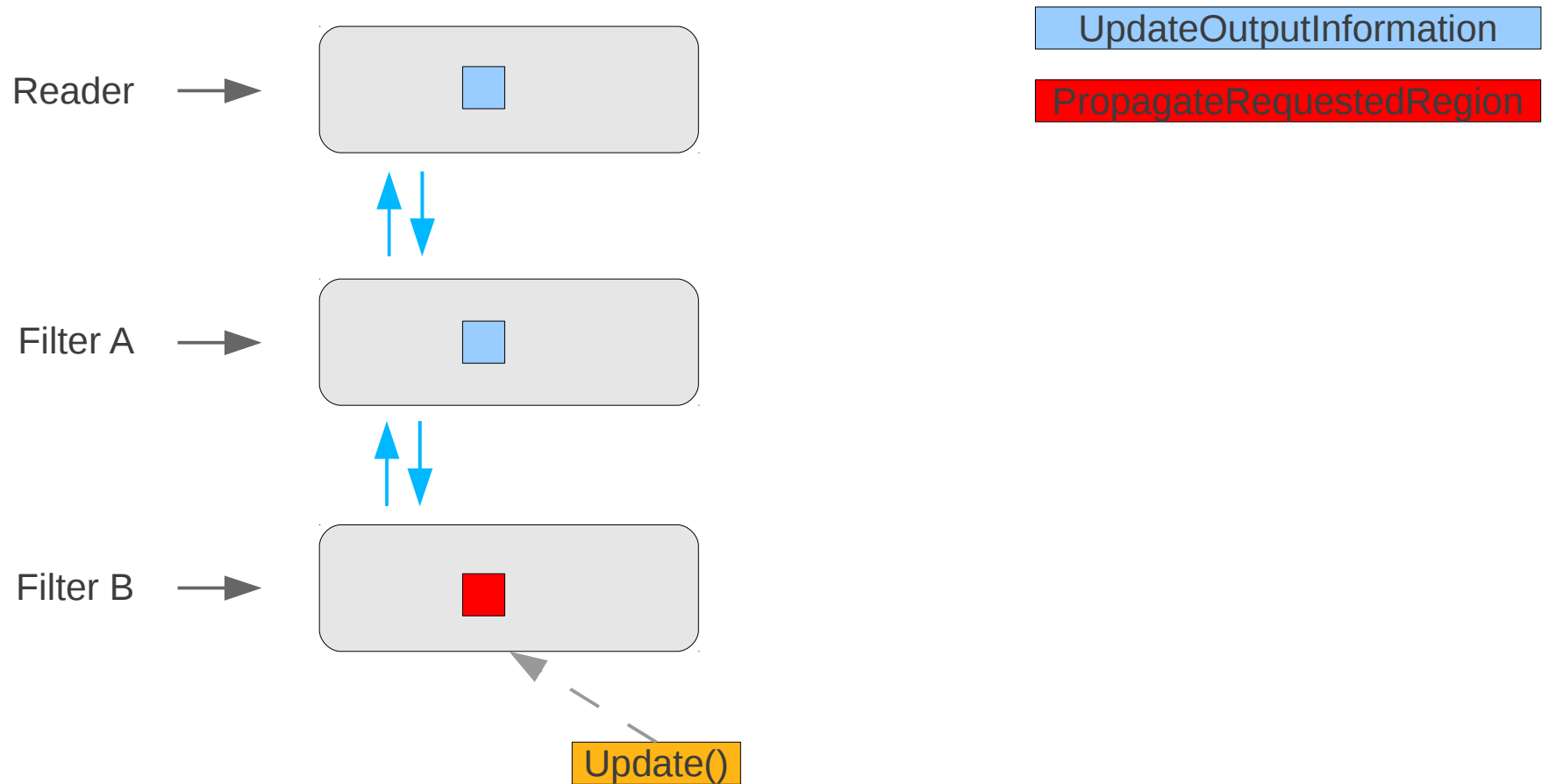


# ITK Pipeline

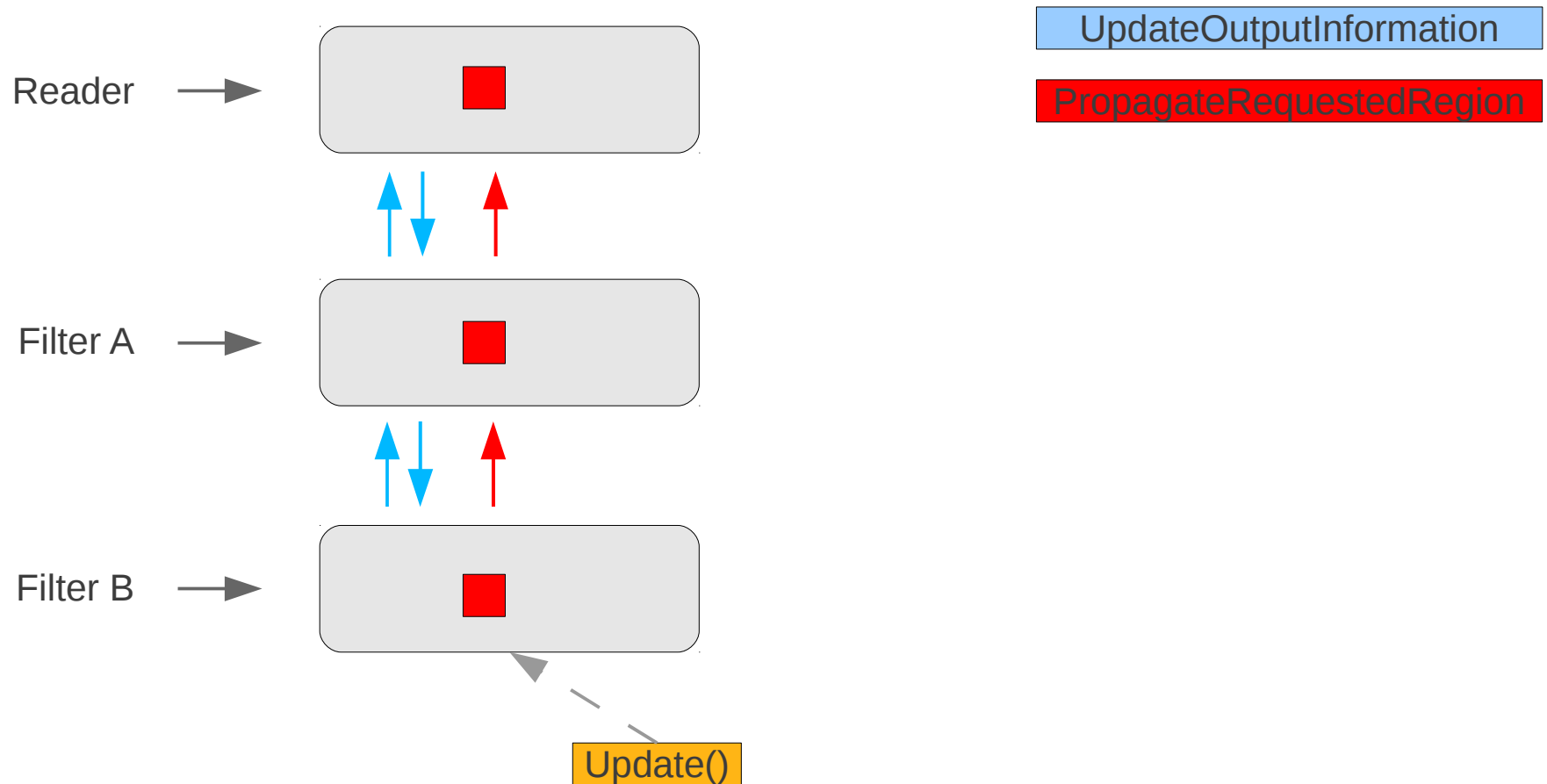




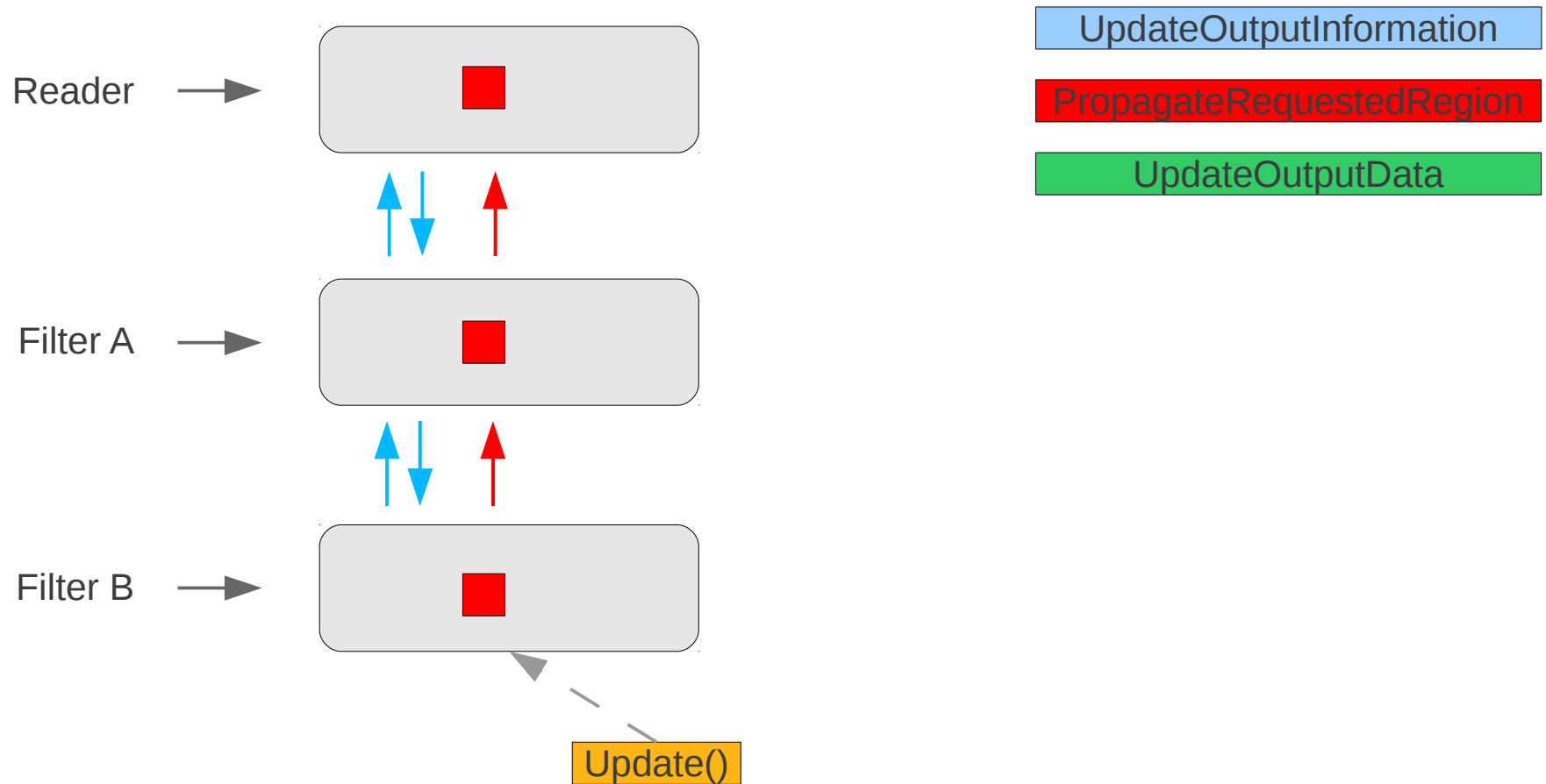
# ITK Pipeline



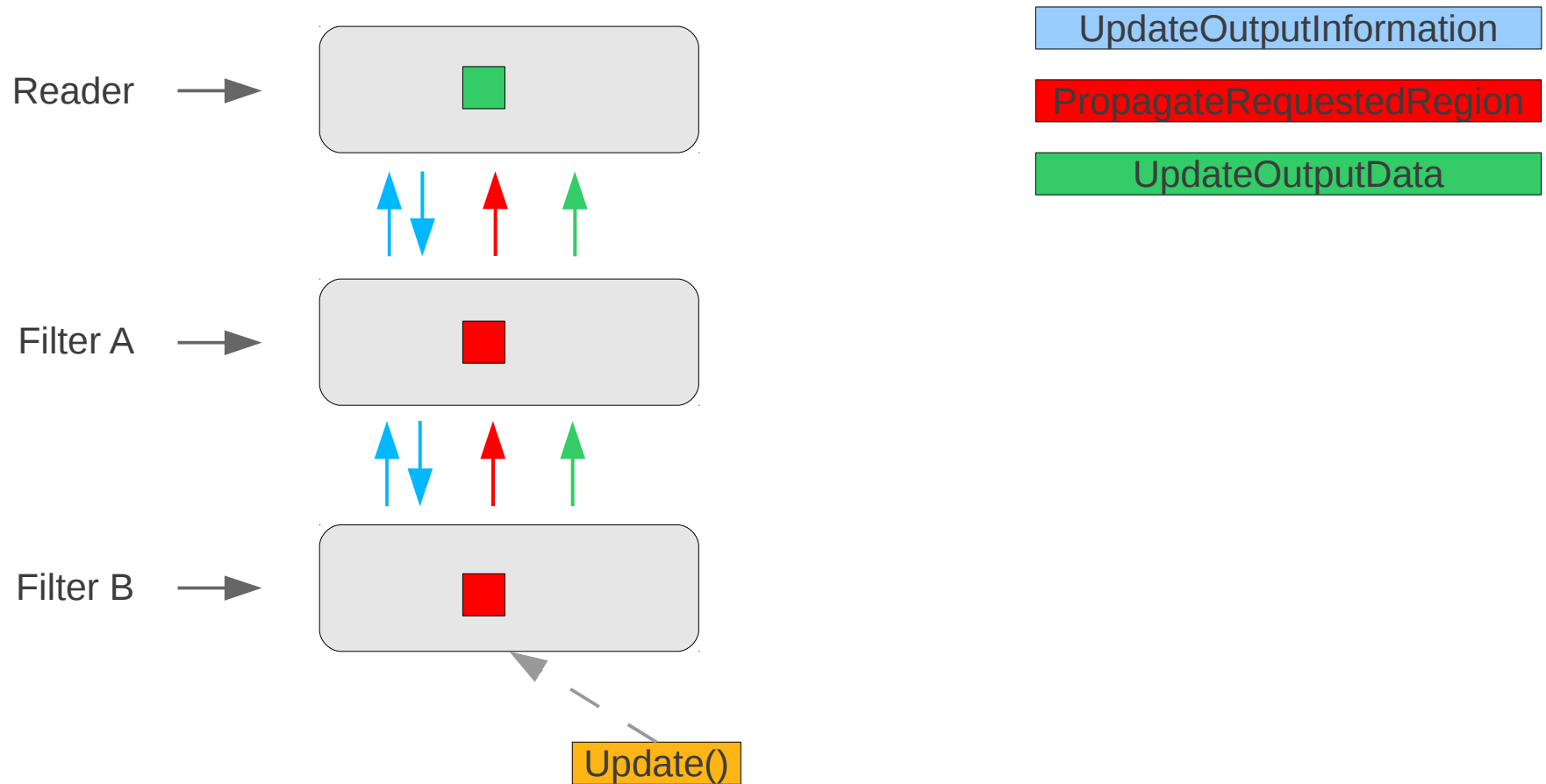
# ITK Pipeline



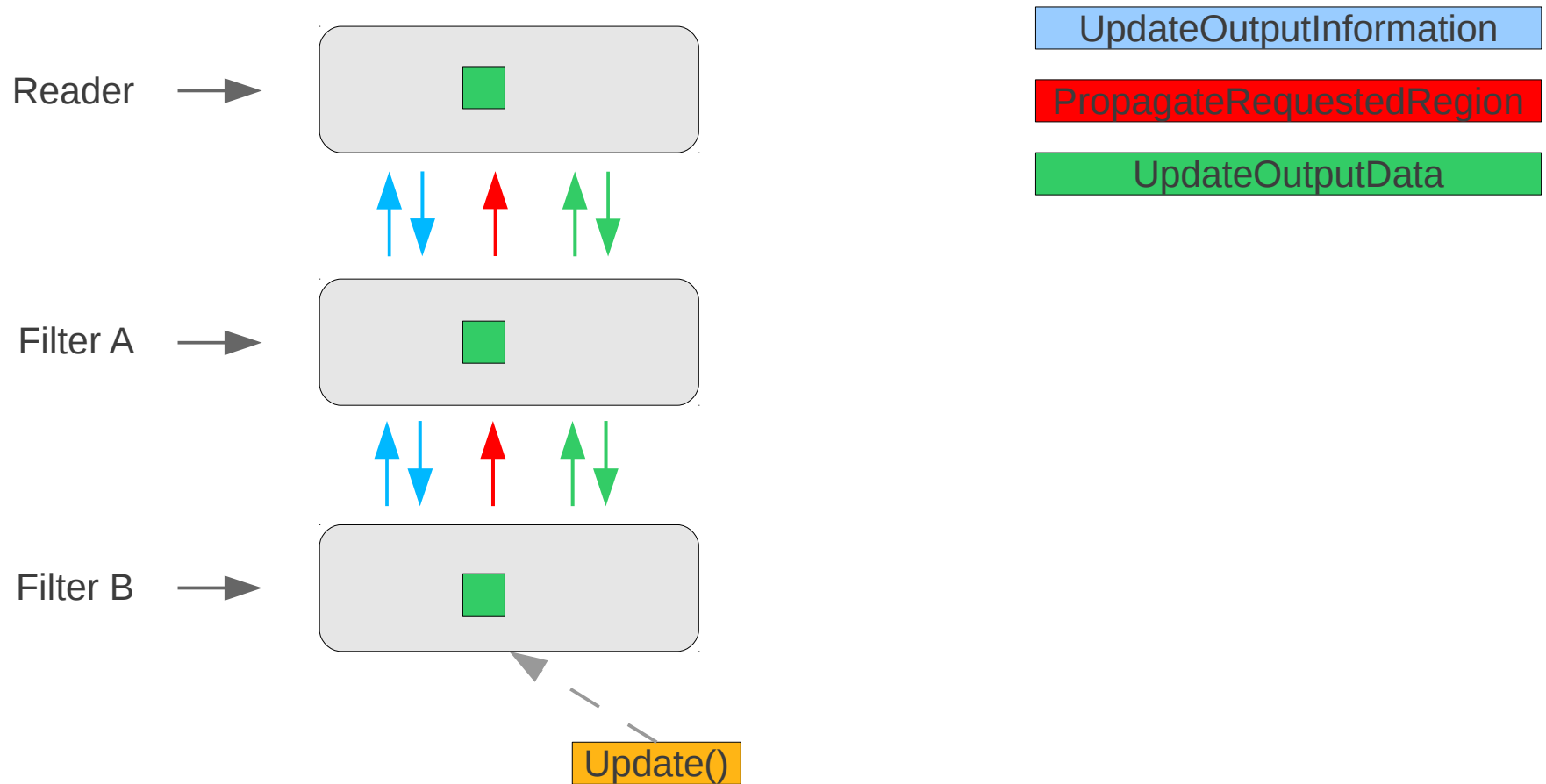
# ITK Pipeline



# ITK Pipeline

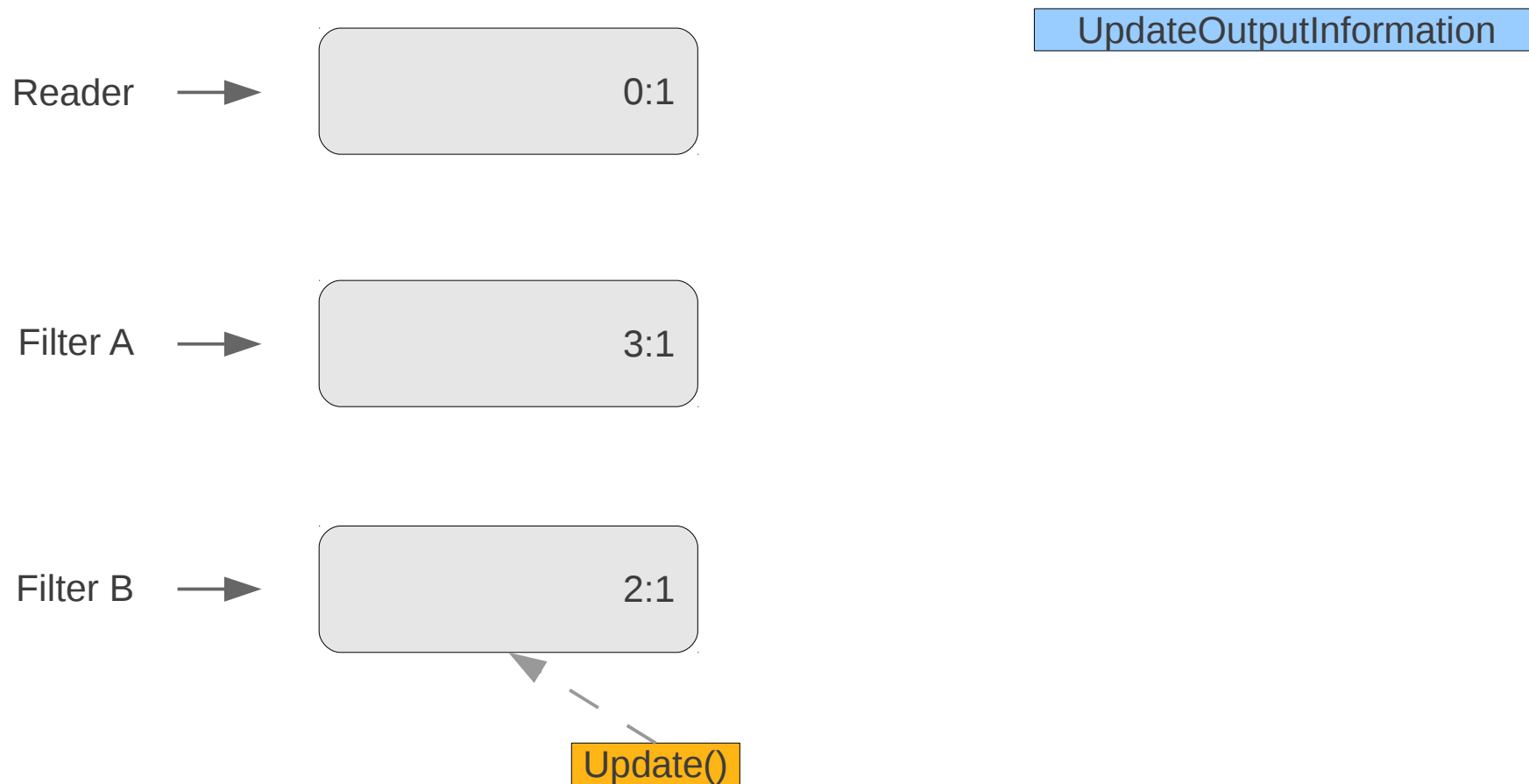


# ITK Pipeline

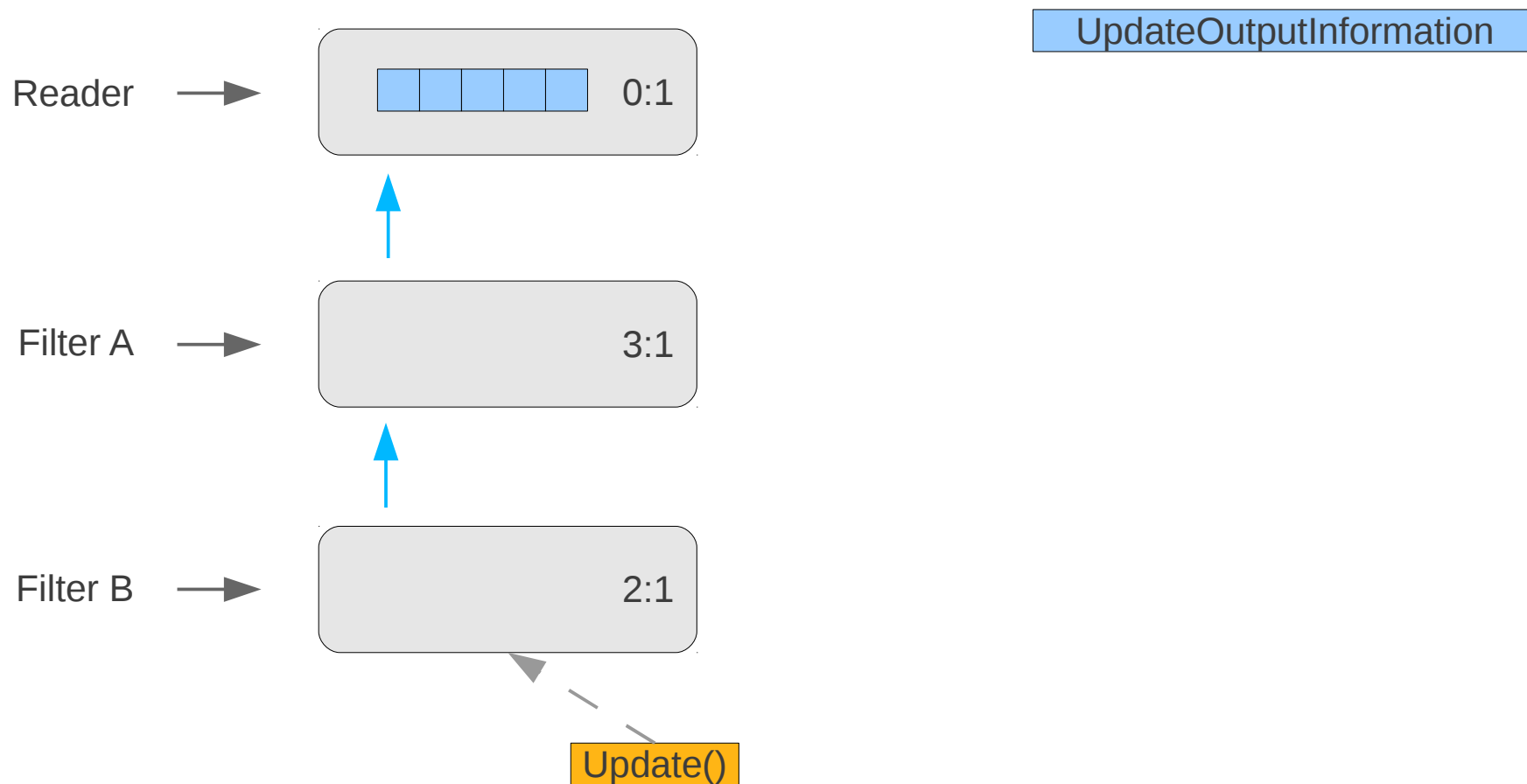


# ITK Video Pipeline

# ITK Video Pipeline

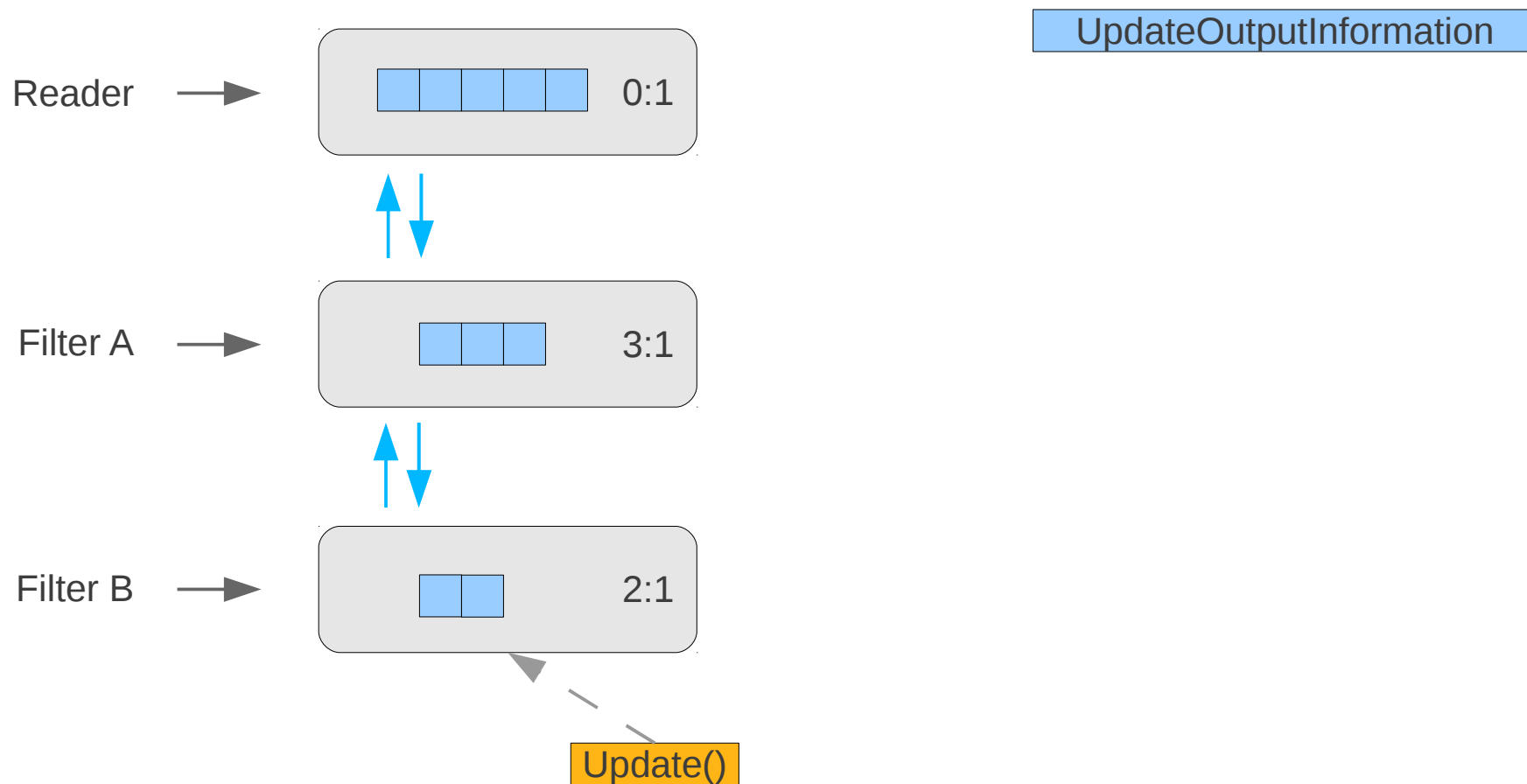


# ITK Video Pipeline

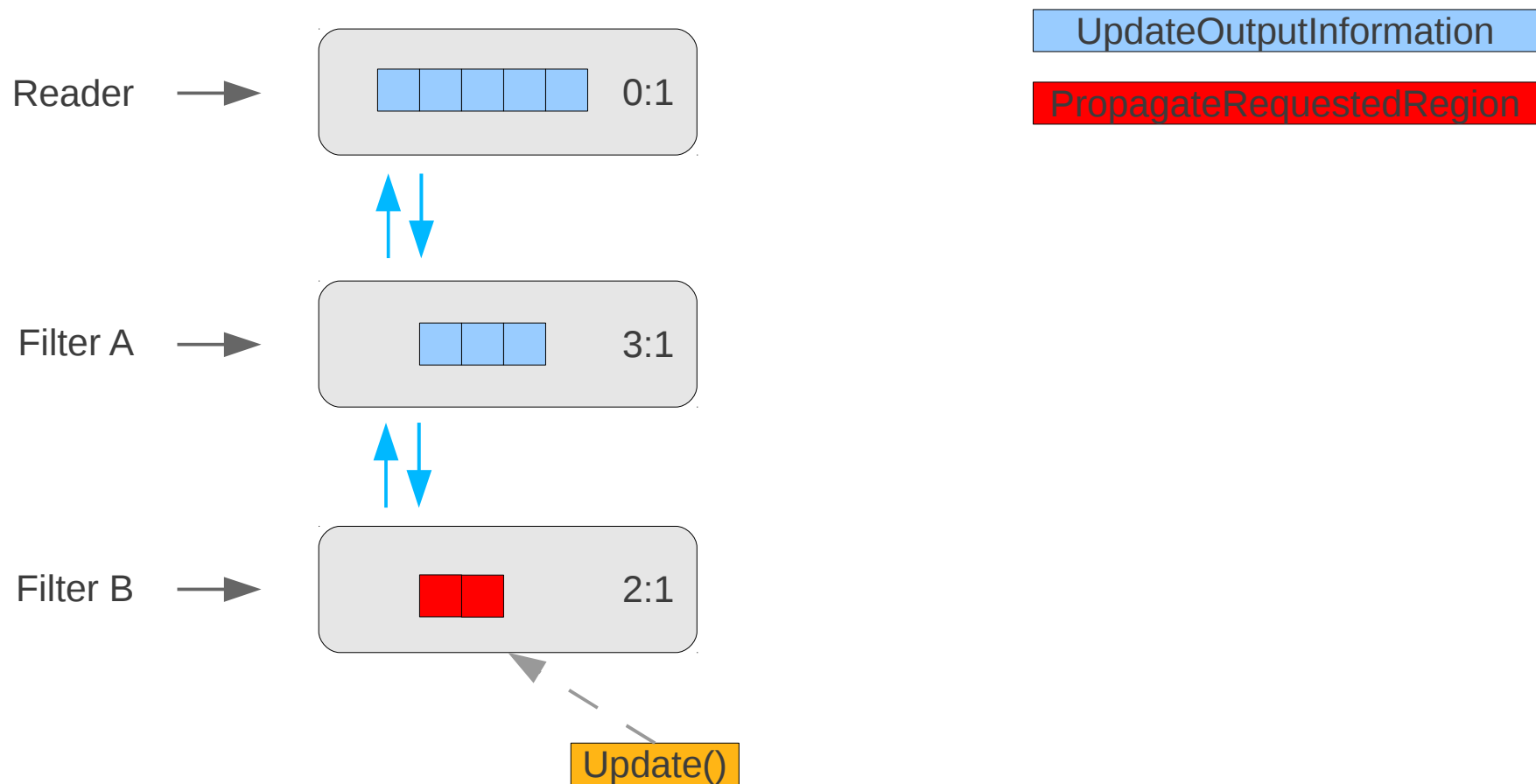




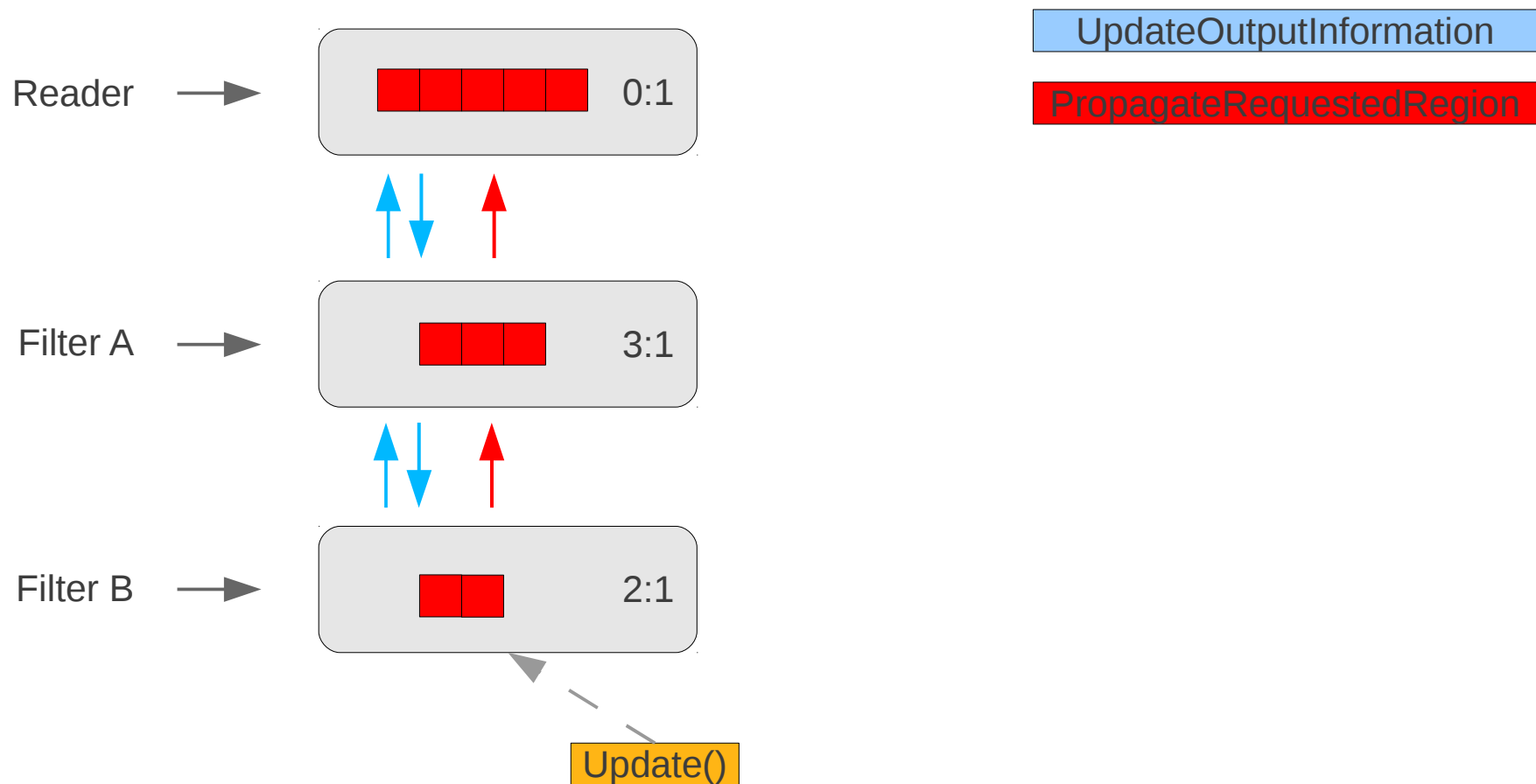
# ITK Video Pipeline



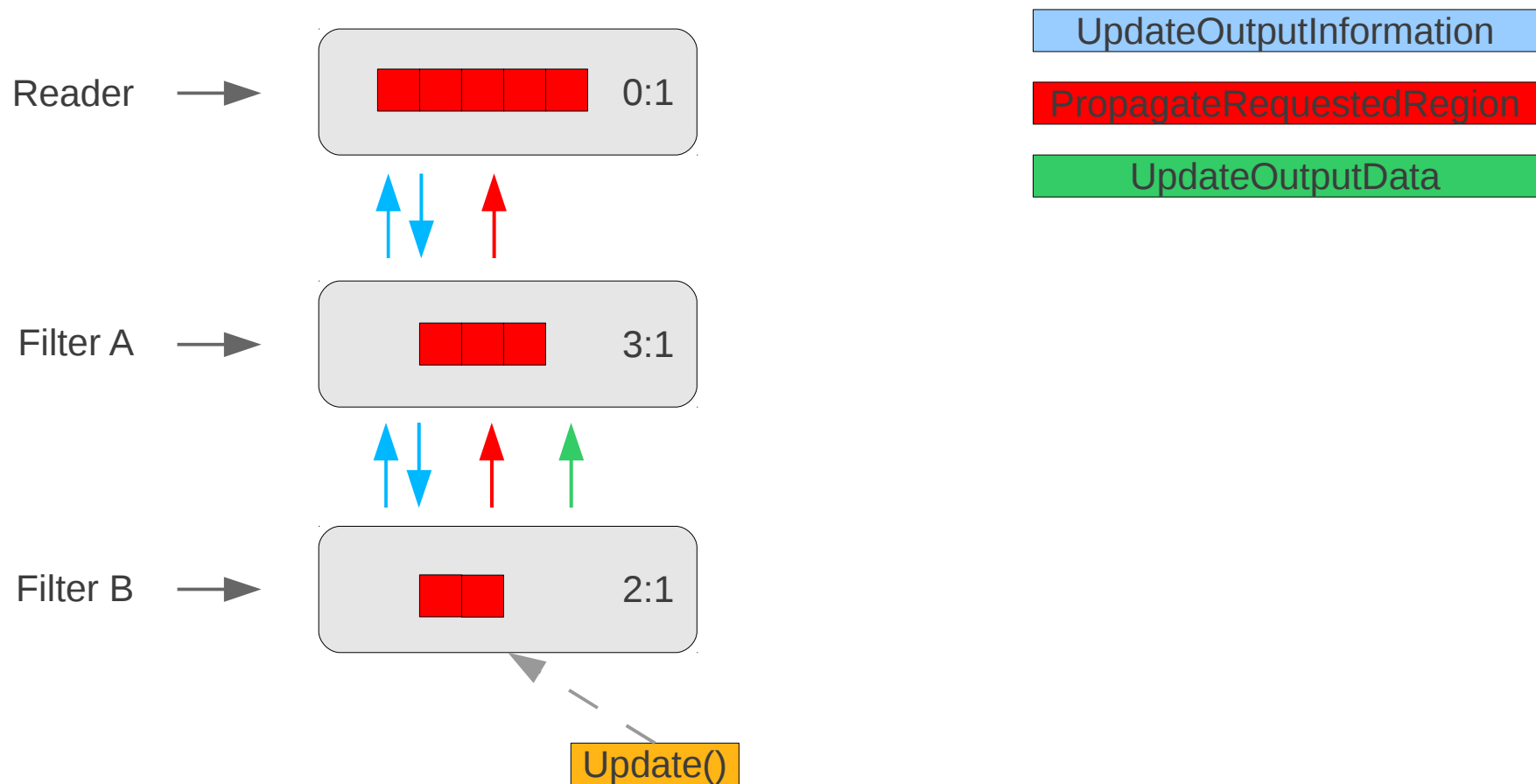
# ITK Video Pipeline



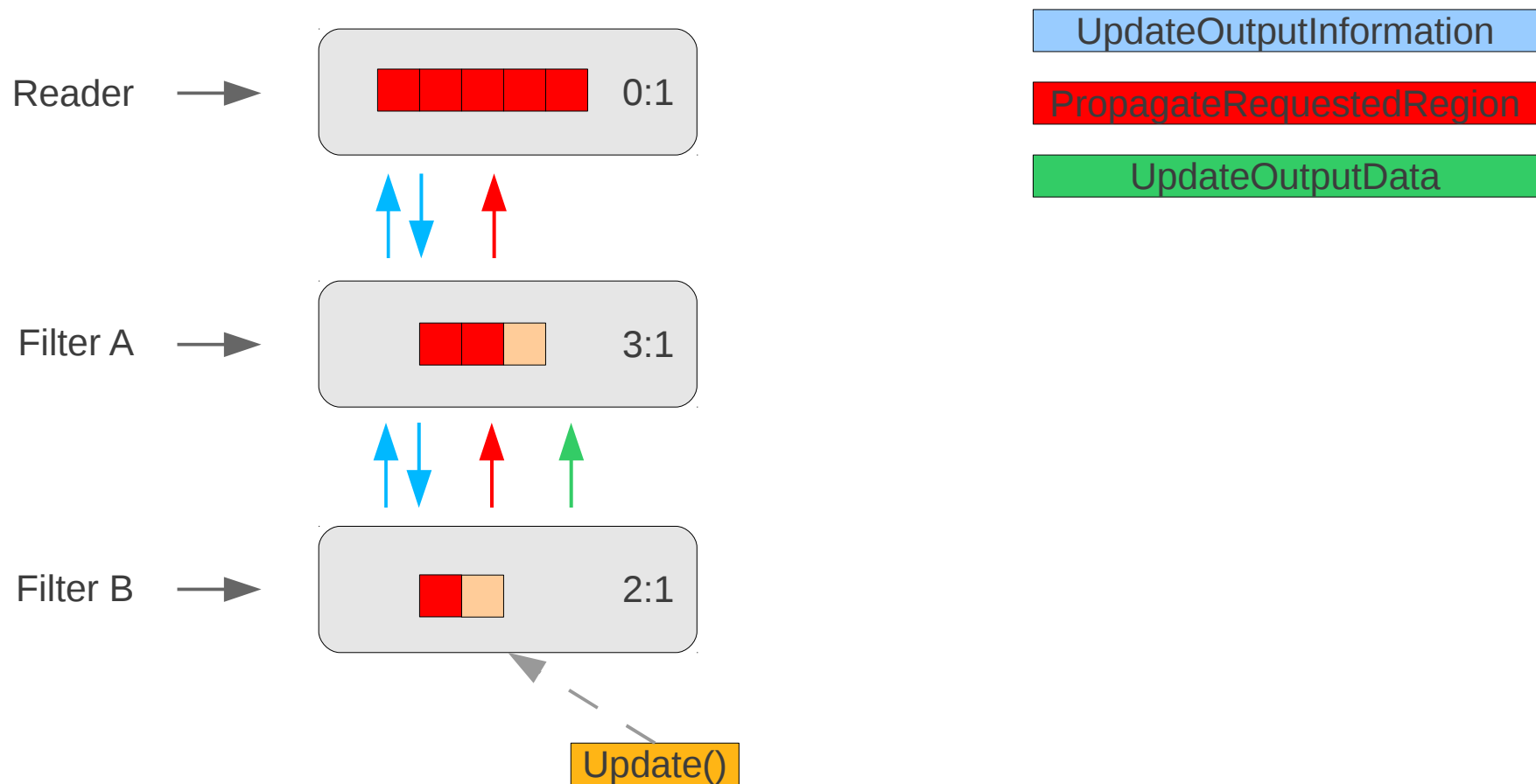
# ITK Video Pipeline



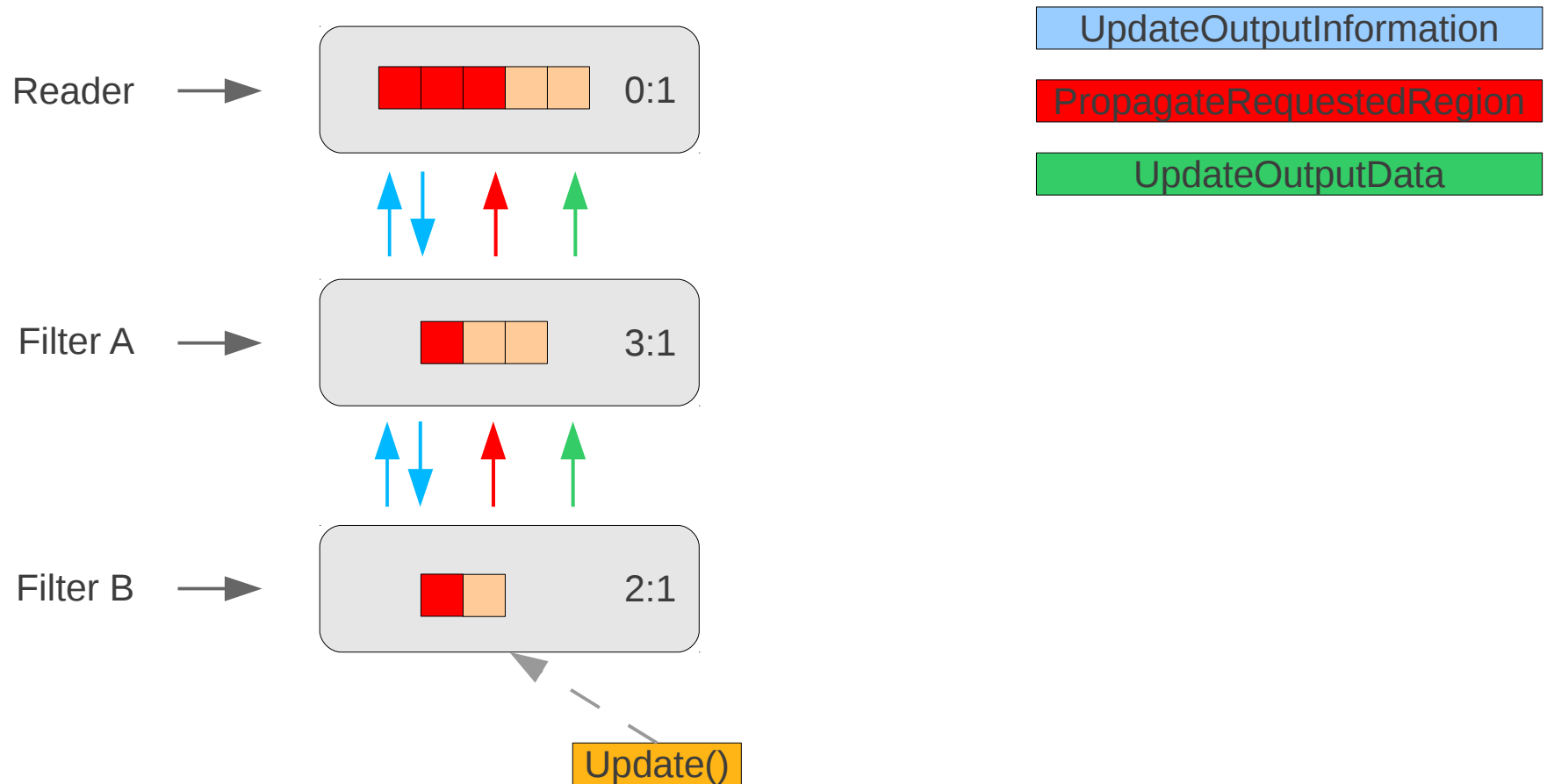
# ITK Video Pipeline



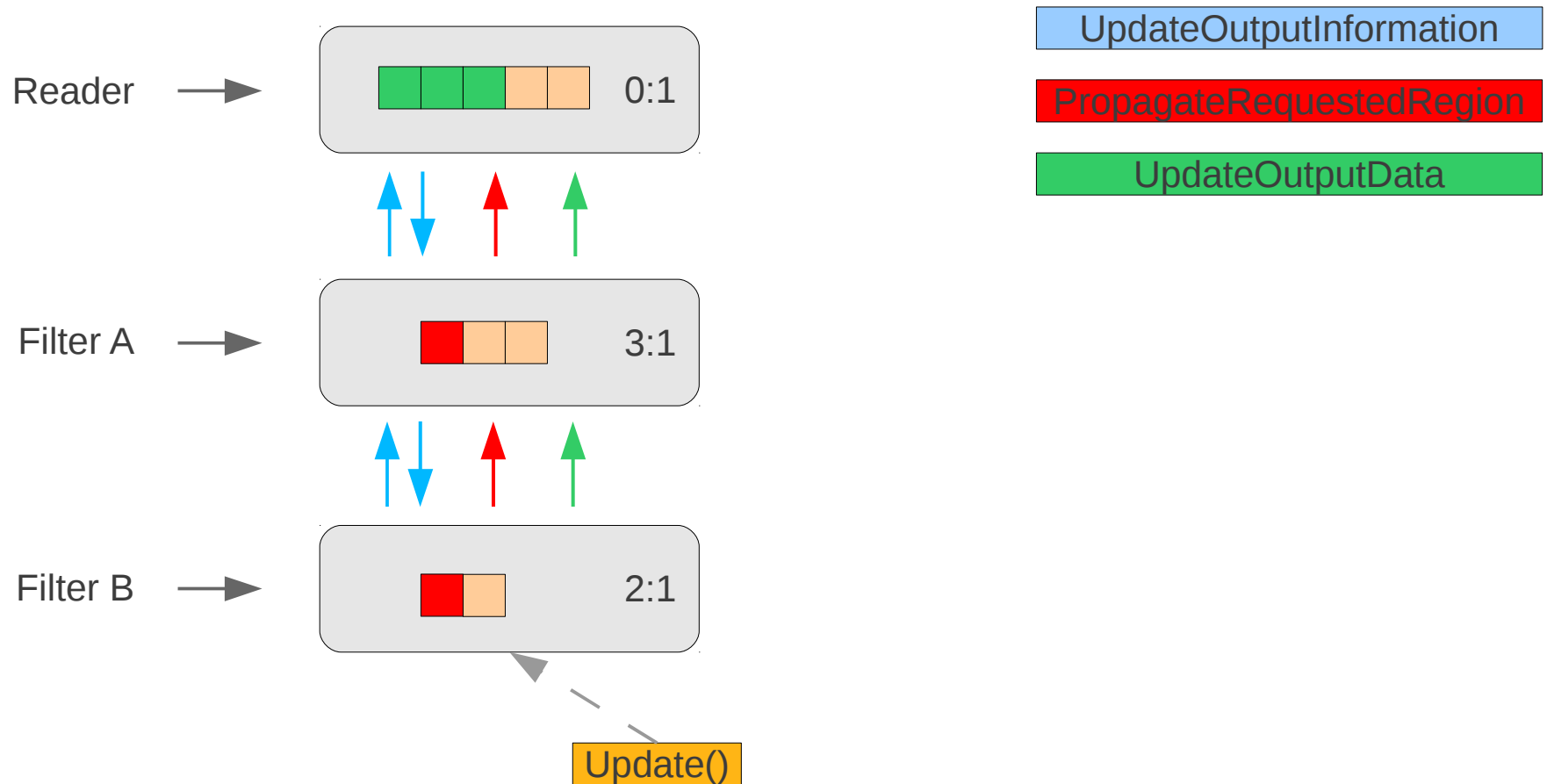
# ITK Video Pipeline



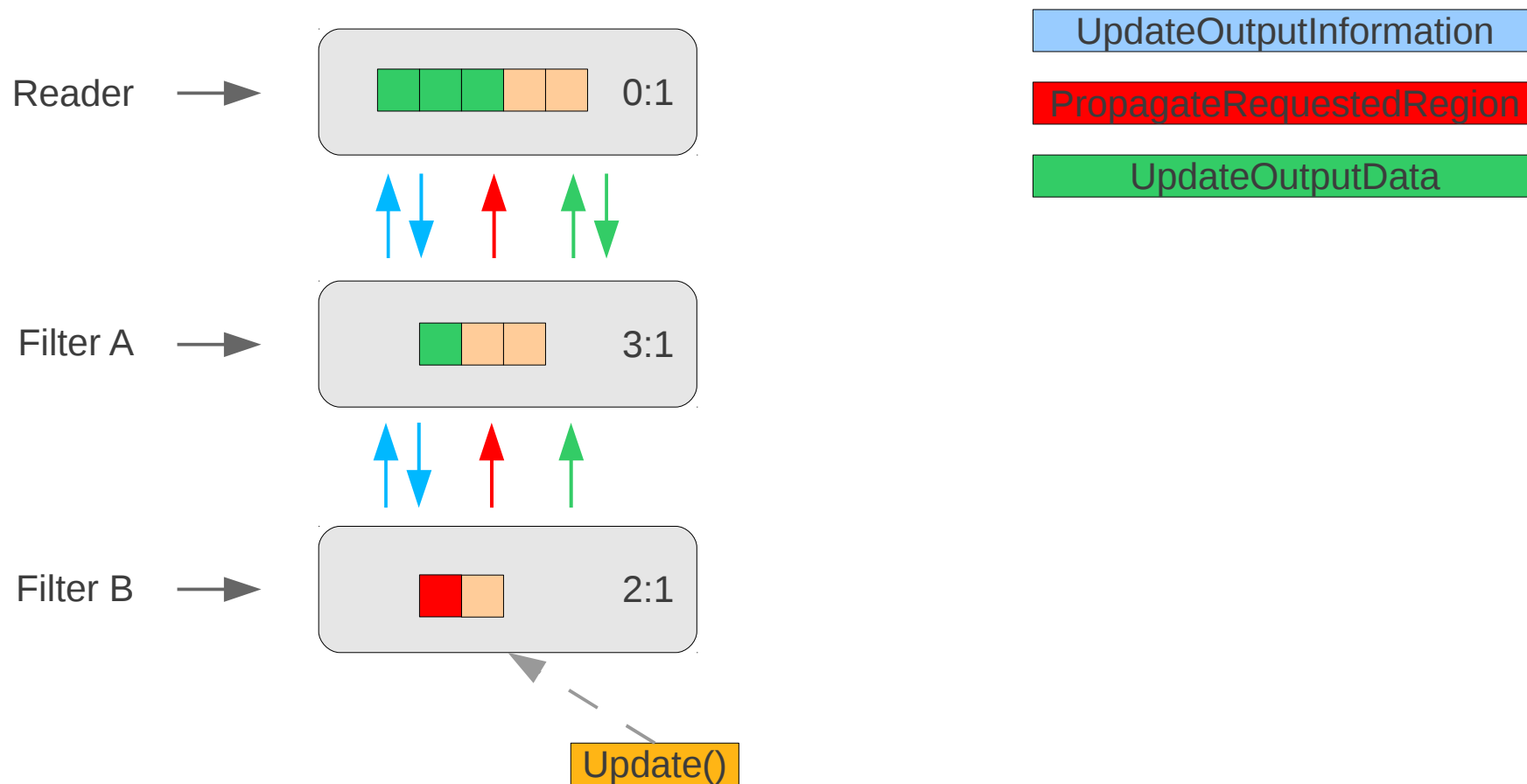
# ITK Video Pipeline



# ITK Video Pipeline

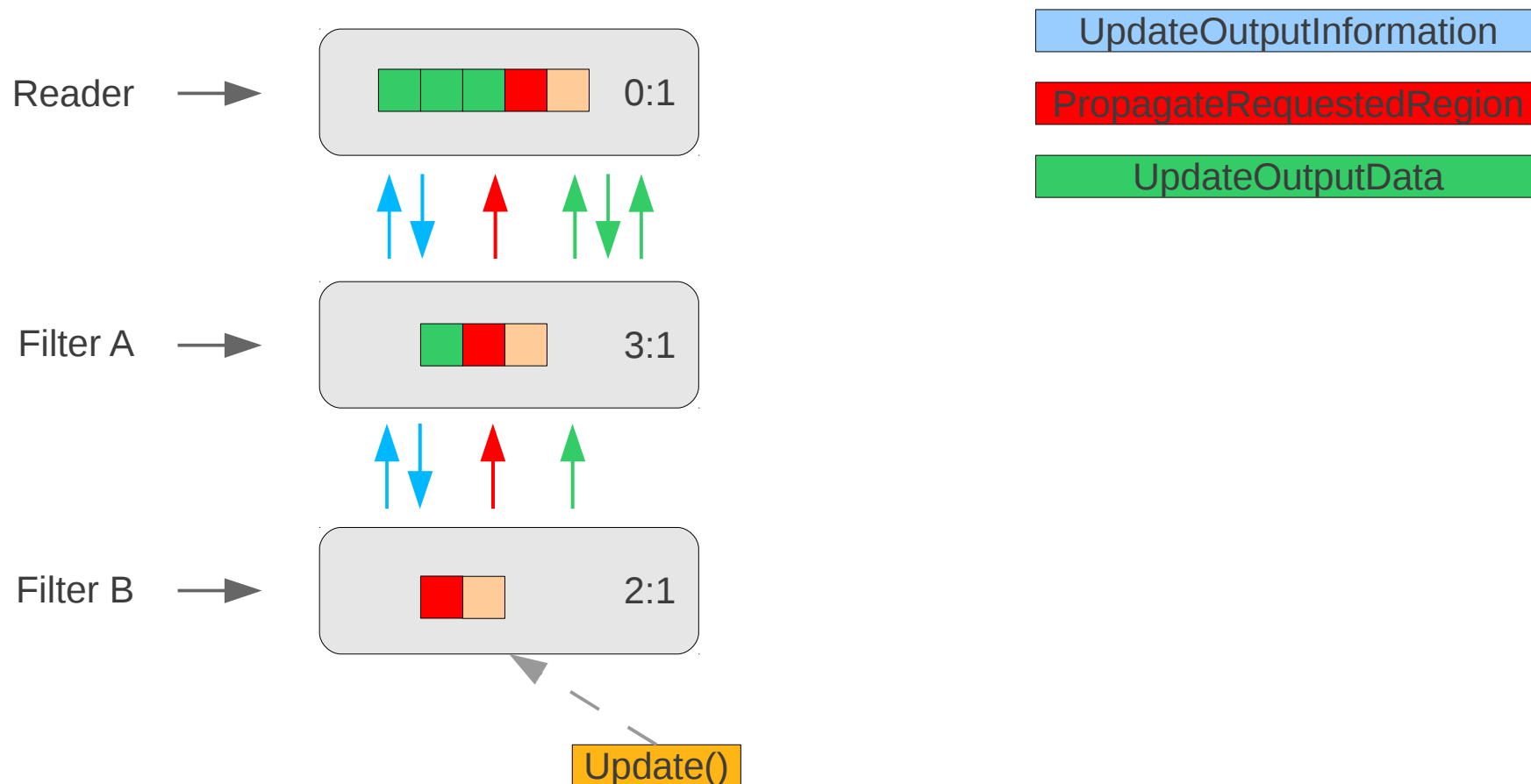


# ITK Video Pipeline

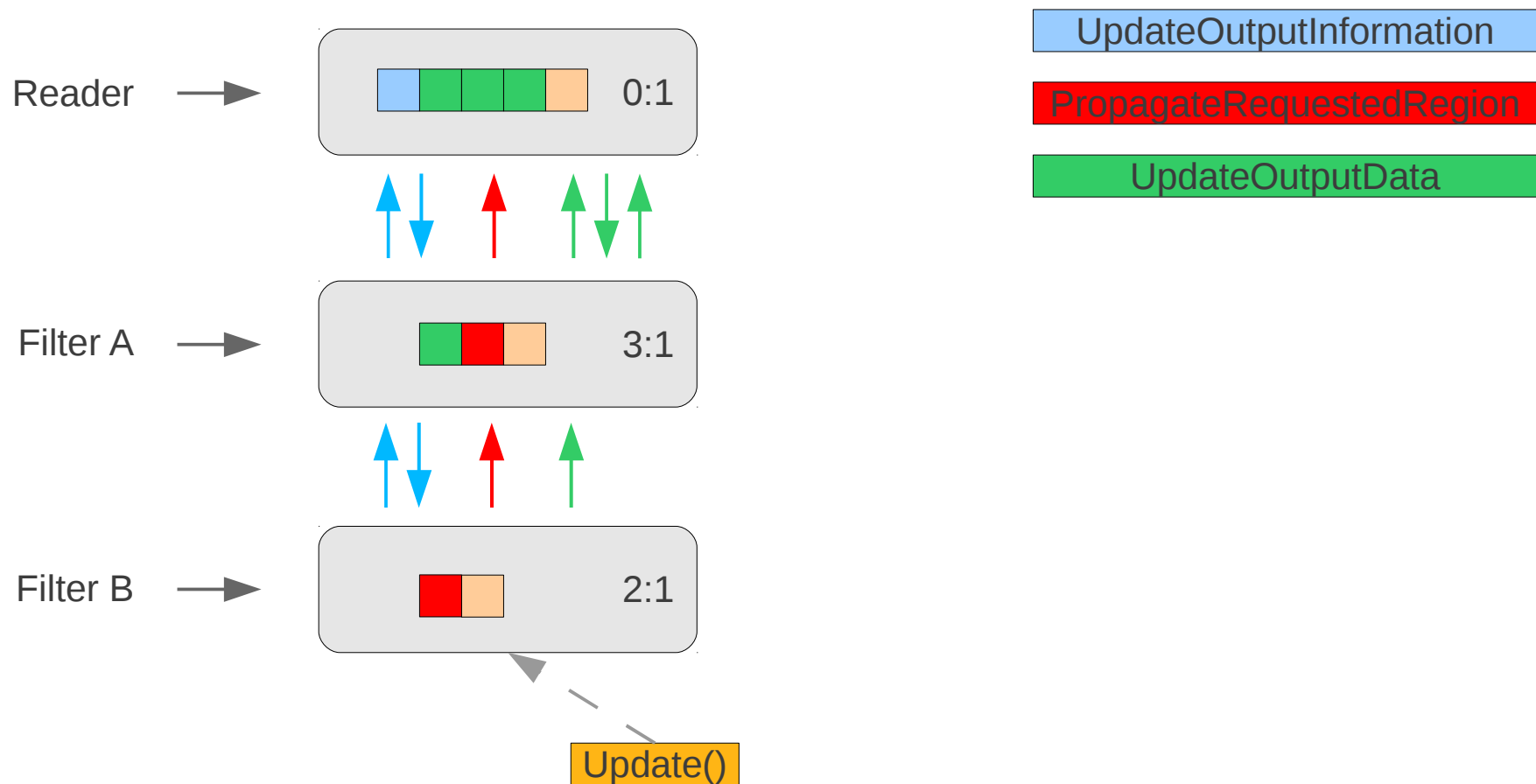




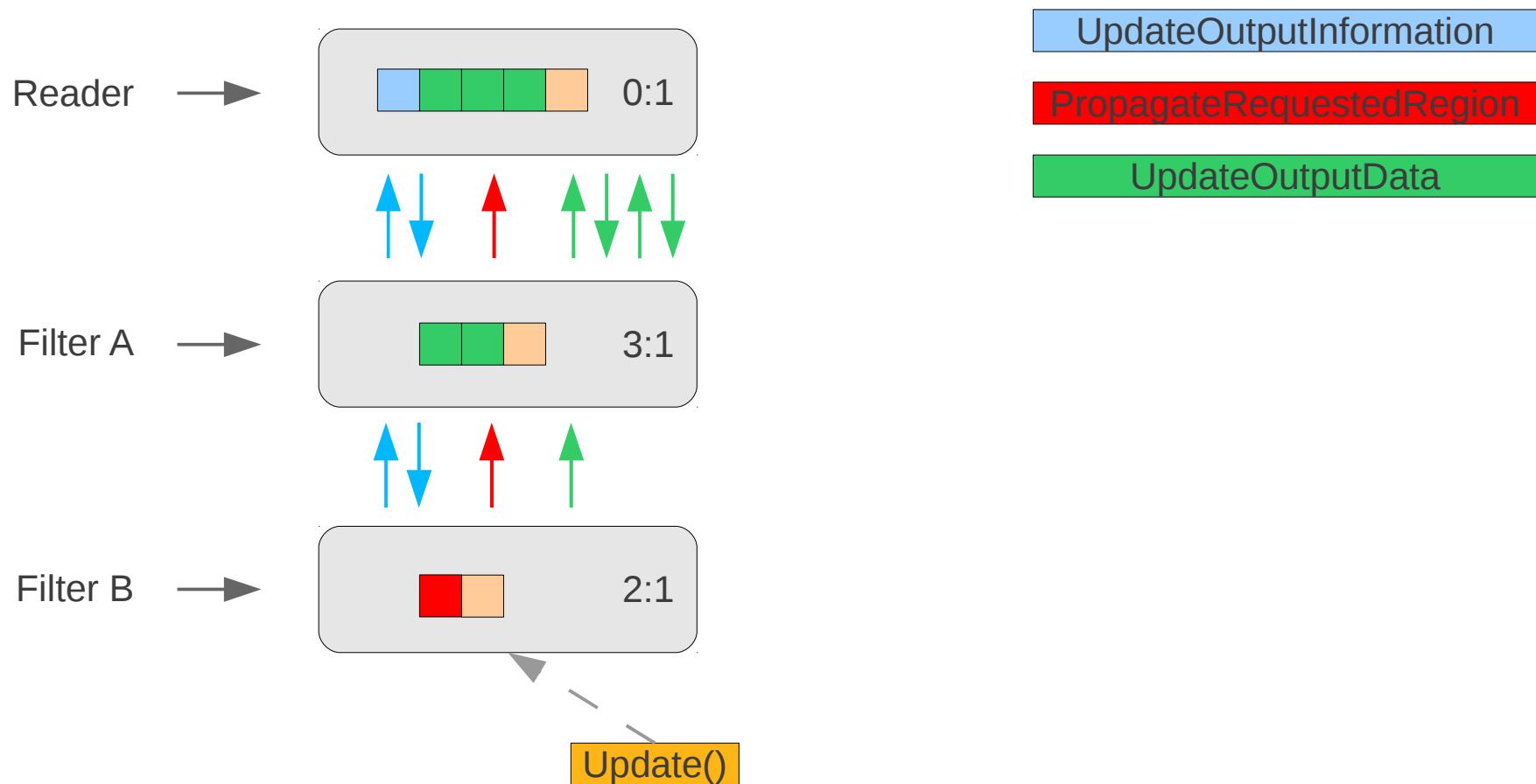
# ITK Video Pipeline



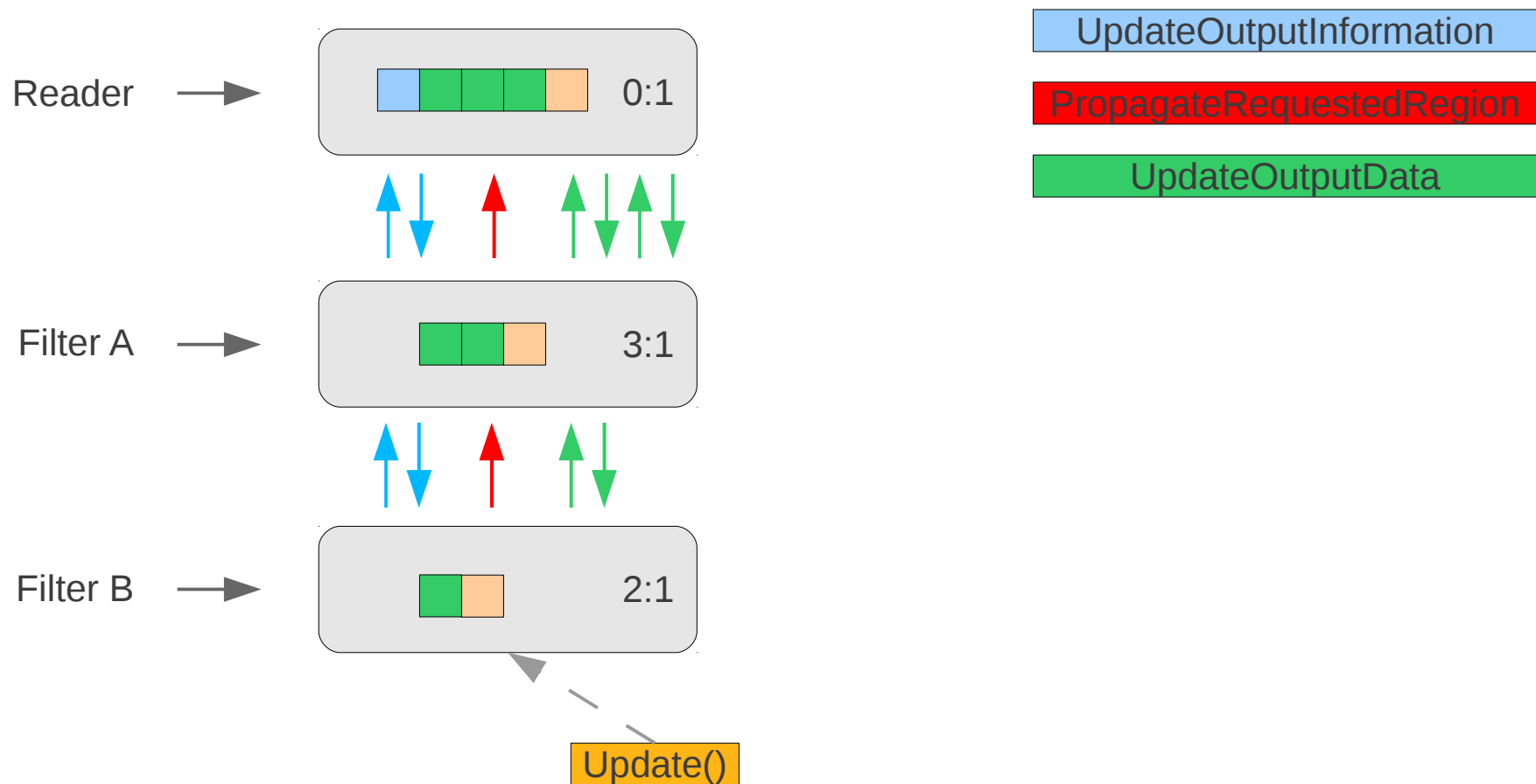
# ITK Video Pipeline



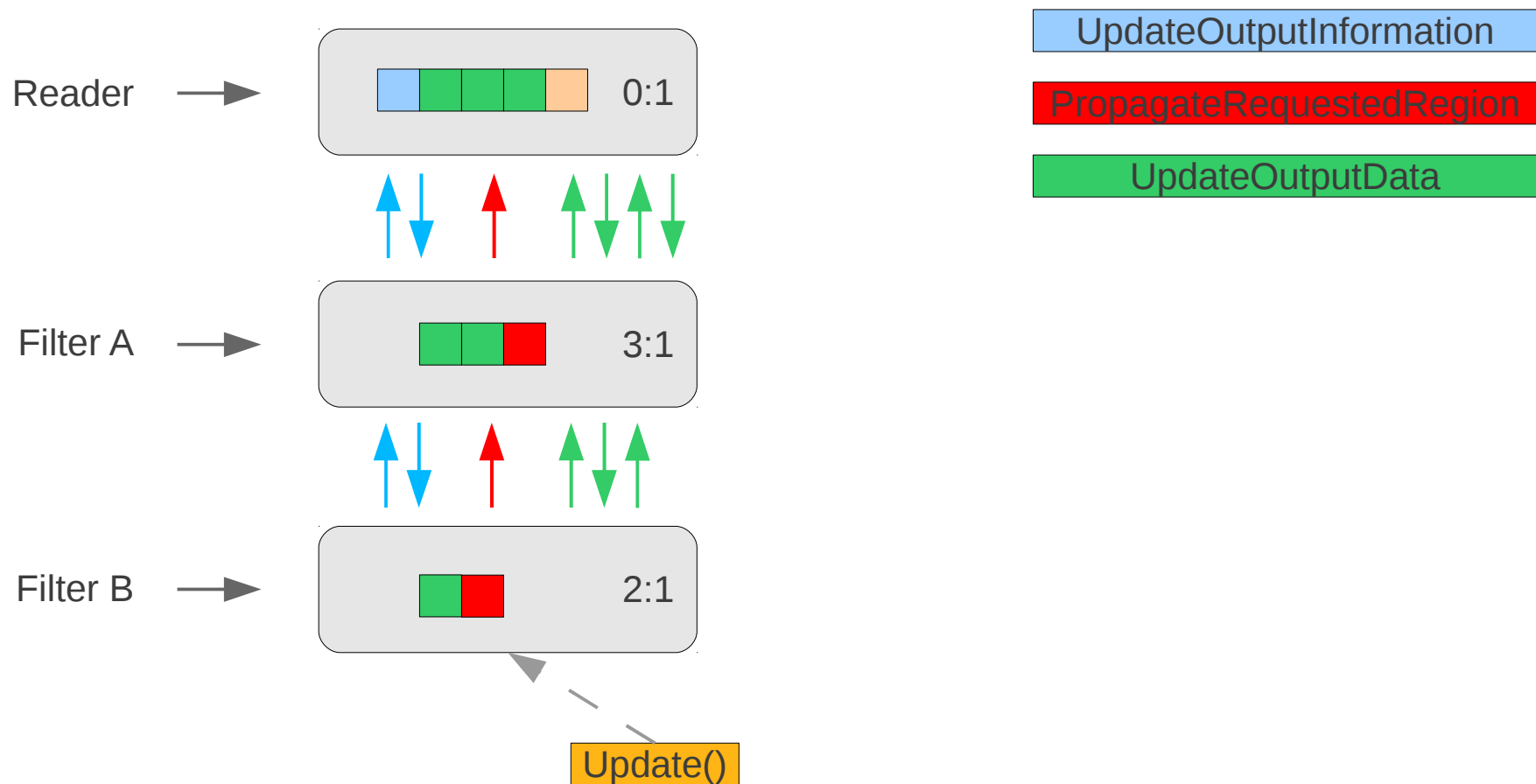
# ITK Video Pipeline



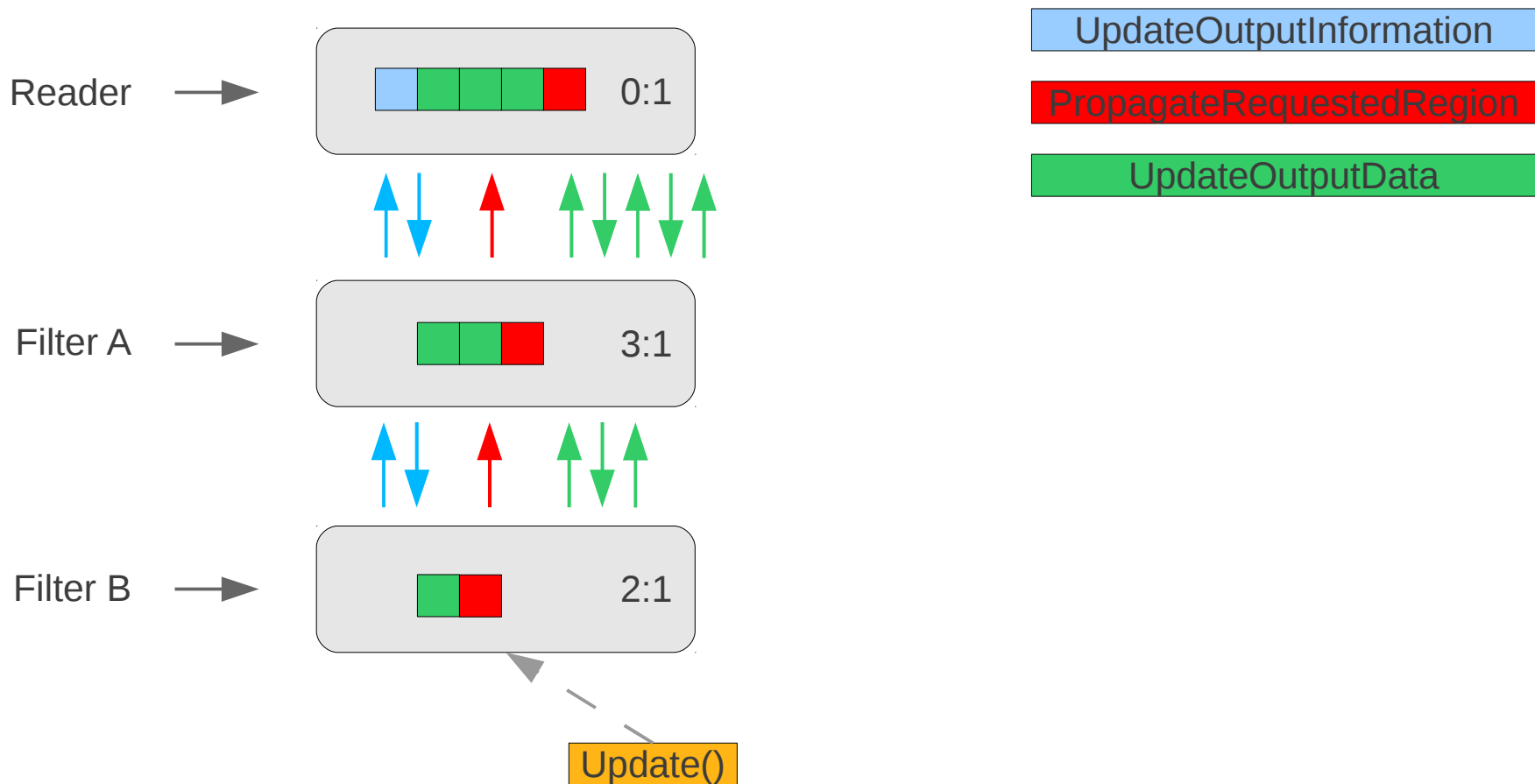
# ITK Video Pipeline



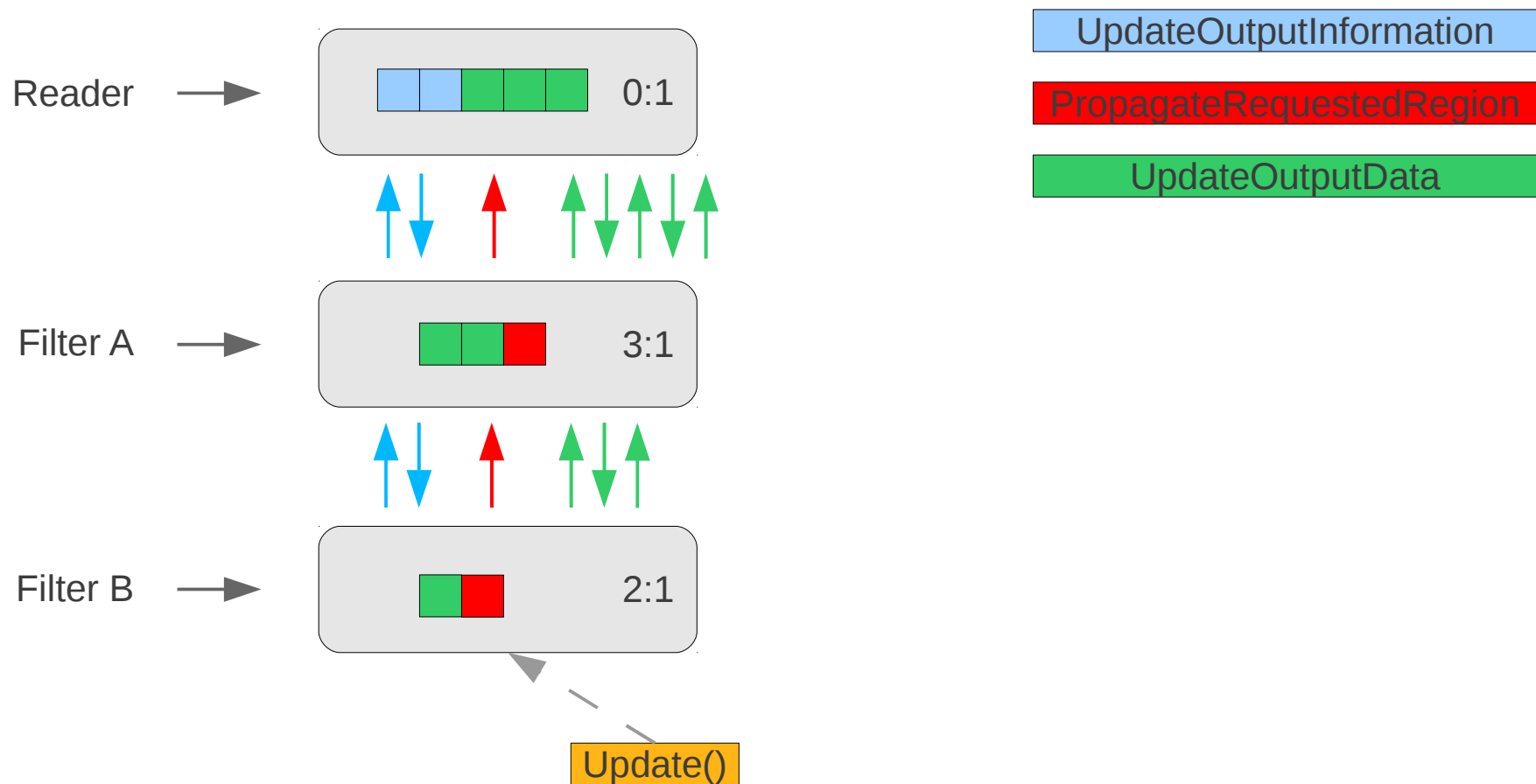
# ITK Video Pipeline



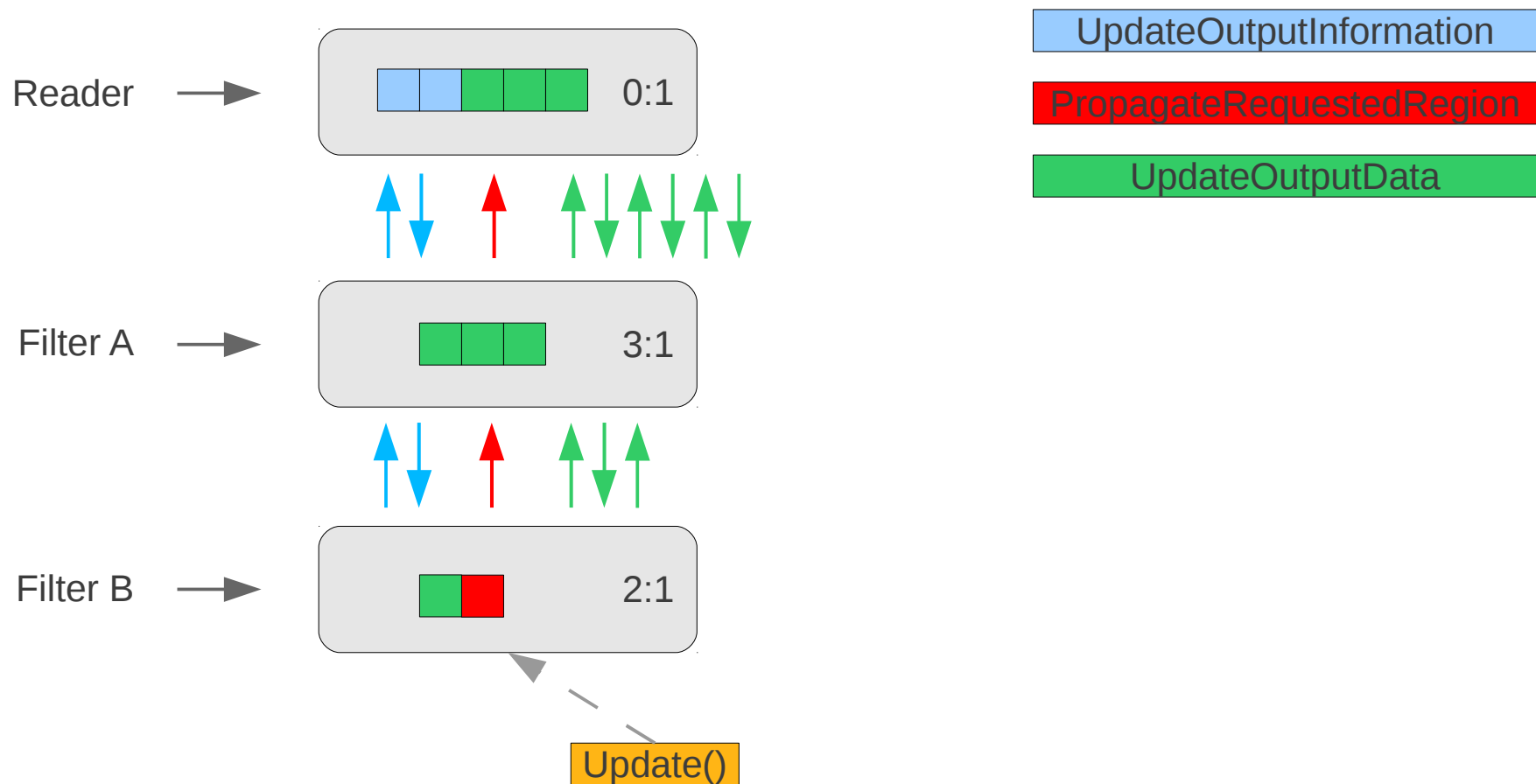
# ITK Video Pipeline



# ITK Video Pipeline

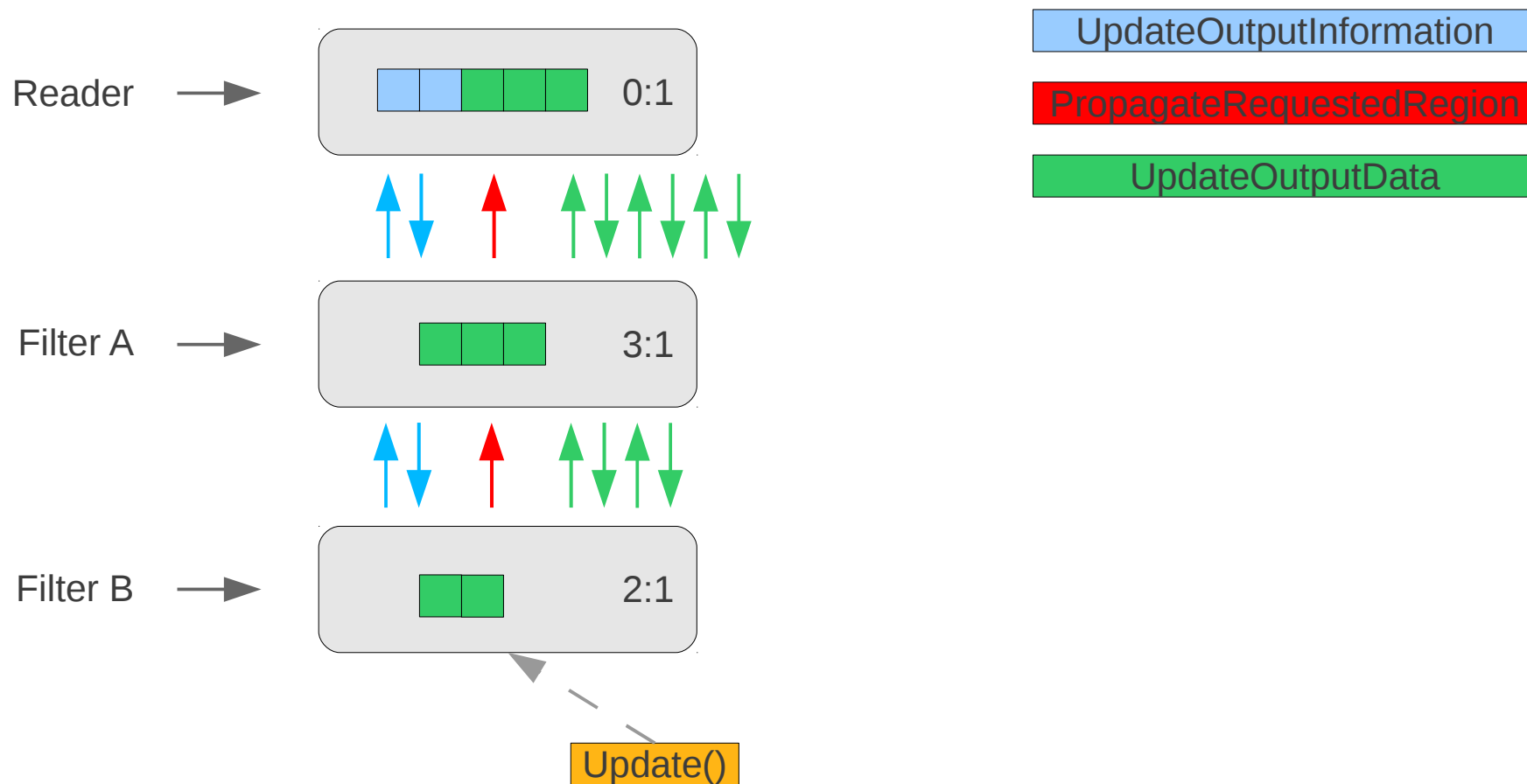


# ITK Video Pipeline





# ITK Video Pipeline



# OpenCV / VXL Bridges

# Single Image Bridges

- `itk::OpenCVImageBridge`
  - `IplImage`  $\leftrightarrow$  `itk::Image`
  - `cv::Mat`  $\leftrightarrow$  `itk::Image`
- `itk::VXLImageBridge` (forthcoming)
  - `vil_image`  $\leftrightarrow$  `itk::Image`
  - `vidl_frame`  $\leftrightarrow$  `itk::Image`

# Video Bridges

- `itk::OpenCVVideoCapture`
  - Subclass of OpenCV's `cv::VideoCapture`
  - Takes `itk::VideoStream` as input
  - Triggers pipeline attached to input if necessary
- `itk::vidl_itk_istream`
  - Subclass of VXL's `vidl_istream`
  - Takes `itk::VideoStream` as input
  - Triggers pipeline attached to input if necessary

END