



QOOXDoo

THE NEW ERA OF WEB DEVELOPMENT

## qooxdoo 0.8 Event Layer

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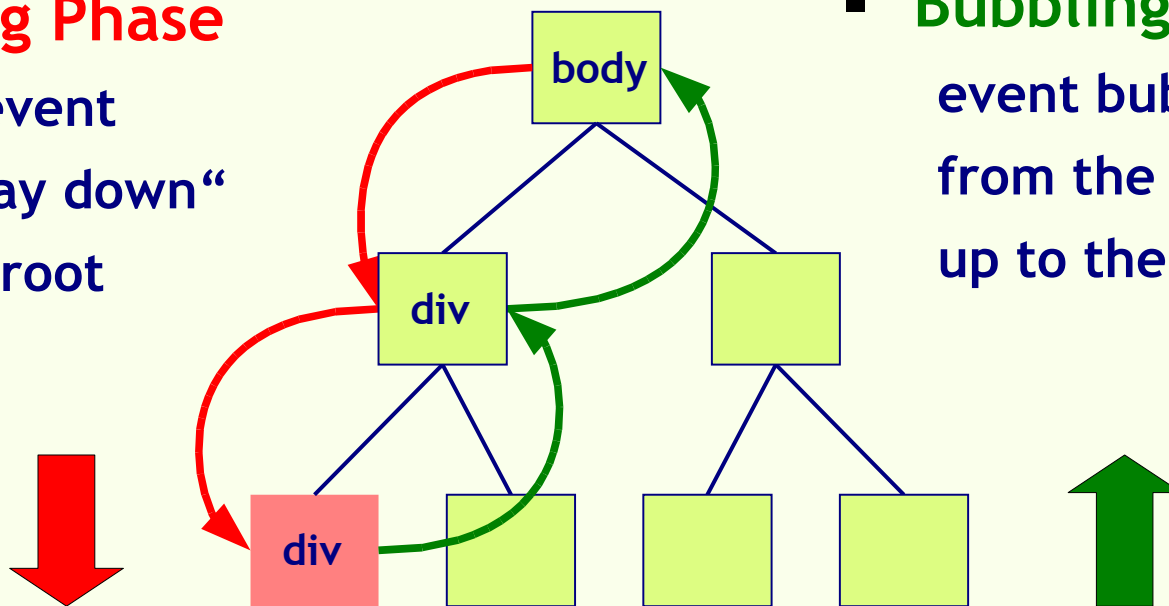
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- Only basics are standardized by the W3C
- Some browser don't even implement those
  - no browser currently implements DOM3 key events
  - no standard for focus events
  - IE does not implement any W3C event standard
- Huge differences between browsers
- Easy to normalize different function names
- Hard to get a consistent, cross-browser behavior

- **Capturing Phase**

capture event  
„on its way down“  
from the root  
to the  
target



- **Bubbling Phase**

event bubbles  
from the target  
up to the root

- Event propagation can be stopped at any node
- IE does not support capturing, only bubbling
- Inline events don't bubble, e.g. scroll events

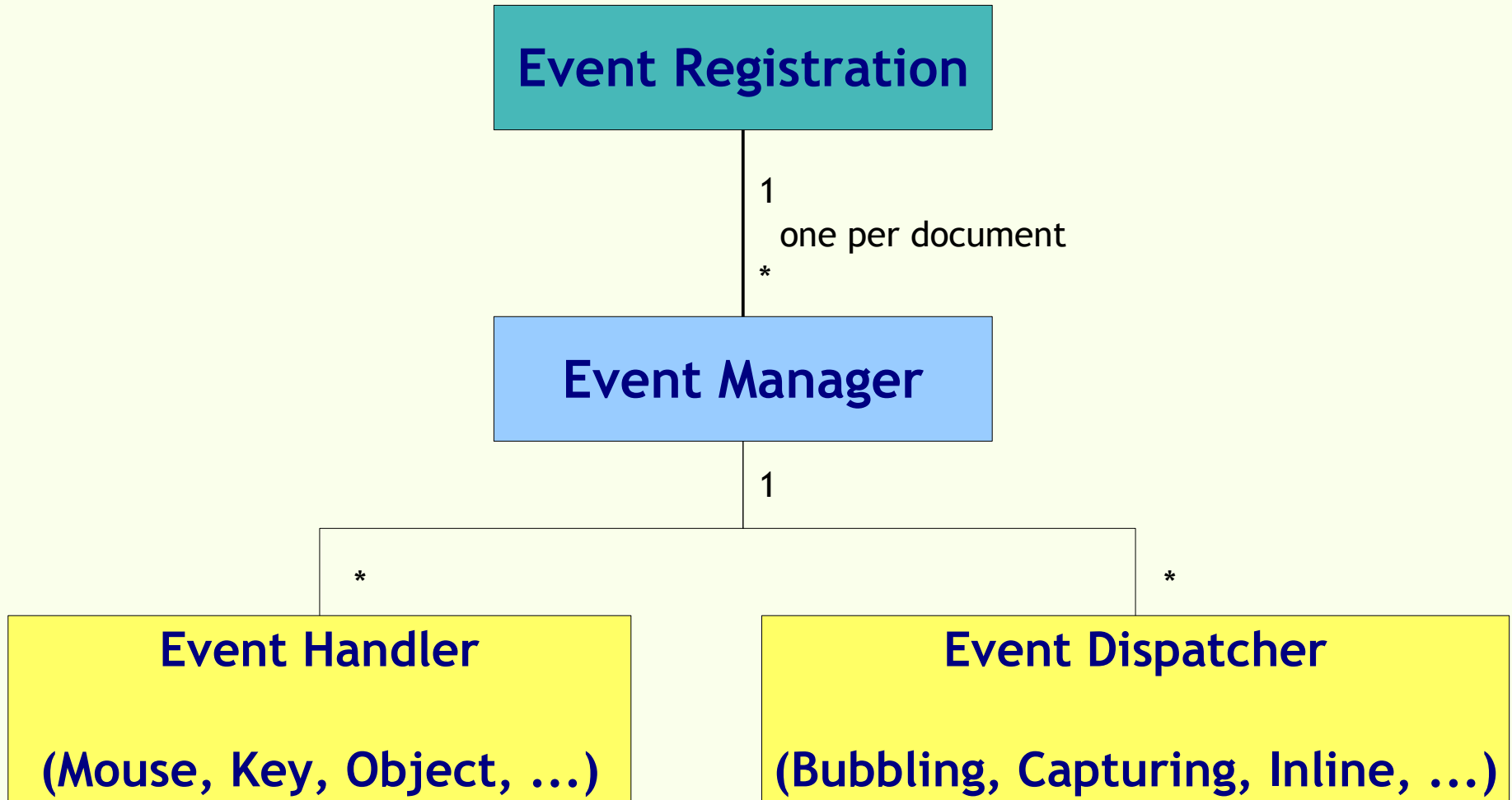
- **Mouse Capturing (only IE)**
  - dispatch all mouse events on the same element
  - needed for menus or drag and drop
- **Mousedown on one element and mouseup on another**
  - IE: click event on the first common parent element
  - Others: no click event
- **Event sequences differ, e.g. mousedown -> mouseup -> click**
- **Hard to detect whether the mouse leaves the viewport**  
(problem for drag & drop)
- **Most of this already worked in qooxdoo 0.7**

- Same API but very different behavior depending on
  - Browser
  - Operating system
  - Keyboard layout
- The key handler in qooxdoo 0.7 was already very good in dealing with these issues

**HORROR!!!**

- Provide common API and behavior for all supported browsers (IE, Firefox, Opera, Safari)
- Support capturing phase
  - we need this to correctly handle mouse focus
- Multi-document support
  - support attaching events to elements in other documents, e.g. iframes and native windows
- Usable for custom qooxdoo events
- Independent of the high-level widget system
- Offering a pluggable infrastructure

- **Attach DOM event listener for bubbling events to the body**
  - Do the entire event dispatch in JavaScript
  - This allows for the same behavior in all browsers
  - Add event capturing in IE
- **Use event pooling to reduce the number of (temporary) instances, i.e. keep the pressure on the GC low**
- **Custom event handler for key, mouse, focus, ... events**



- Look up the responsible event manager based on the event target's document
- Search for the best matching event handler based on the event target, event type (name) and the handler's priority
- Register the event at event handler
  - The event handler is responsible for registering the event at the DOM

- **Event sources**
  - programatically fired events (above DOM level)
  - user action events fired by the browser
    - The responsible event handler catches these events, normalizes them and converts them to qooxdoo events
- **Look up the best matching event dispatcher based on the event target and the event name**
- **Dispatch the event with the corresponding dispatcher**

- The new event system for 0.8 is finished
  - qooxdoo 0.7 mouse and key event handlers are ported to the new system
  - It already replaces the event code from class `qx.core.Target`, which could be removed
- All shortcomings and issues of the original DOM event handling as described in these slides are solved
- The legacy qooxdoo widgets still use the legacy event layer during development of qooxdoo 0.8
- Integration with new widget system has started

Have a closer look!

QooXDoo

<http://qooxdoo.org>

