DLI Accelerated Data Science Teaching Kit

Lecture 9.4 - Enter-Update-Exit

2

Enter-Update-Exit

- The most critical facet of how D3 works

- If you remember nothing else from today, remember this...

- "Enter-Update-Exit"

- "Enter-Update-Exit"
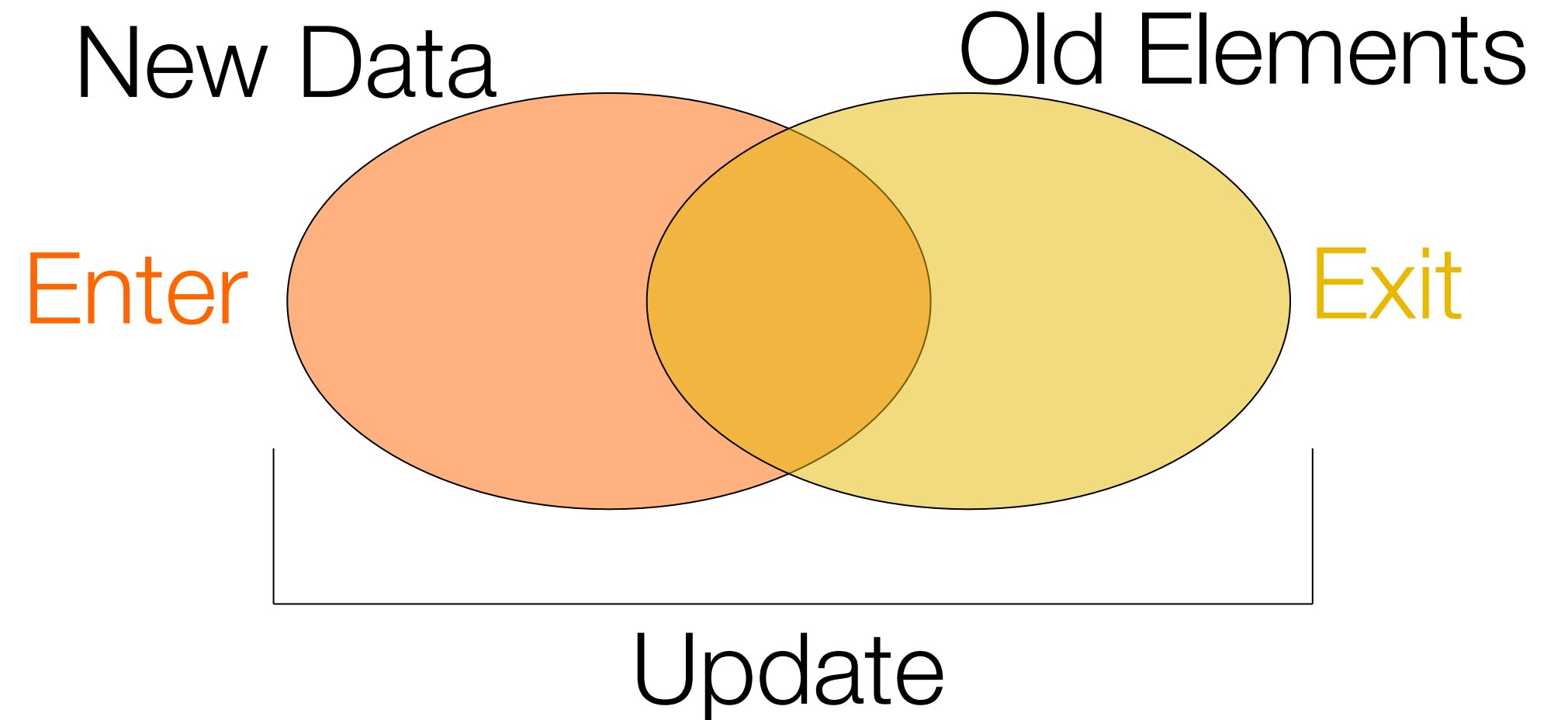
- "Enter-Update-Exit"

Enter-Update-Exit

Pattern:

- Select a "group" of "elements" (e.g., circles)

- Assign data to the group

- Enter: Create new elements for data points not associated with any elements yet (and set constant or initial attribute values)

- Update: Set the attributes of all the elements based on the data

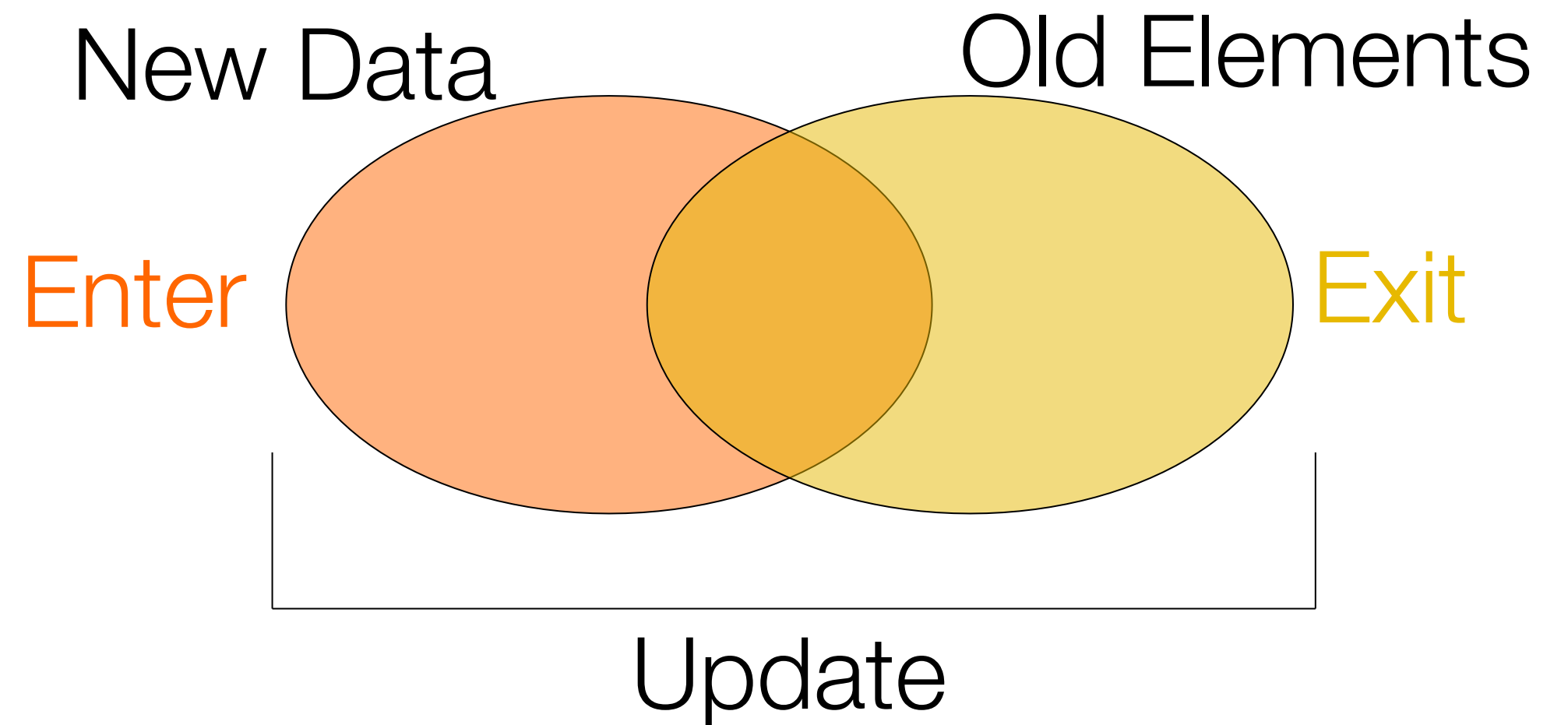- Exit: Remove elements that don't have data anymore

.enter( ) and .exit( )

- .data([1,2,3,4])
  - Enter: [1,2,3,4]
  - Update: [1,2,3,4]
  - Exit: [ ]
- .data ([1,2,3,4,5,6])
  - Enter: [5,6]
  - Update: [1,2,3,4,5,6]
  - Exit: [ ]
- .data ([1,2,3])
  - Enter: [ ]
  - Update: ???
  - Exit: [4,5,6]

New Data   Old Elements

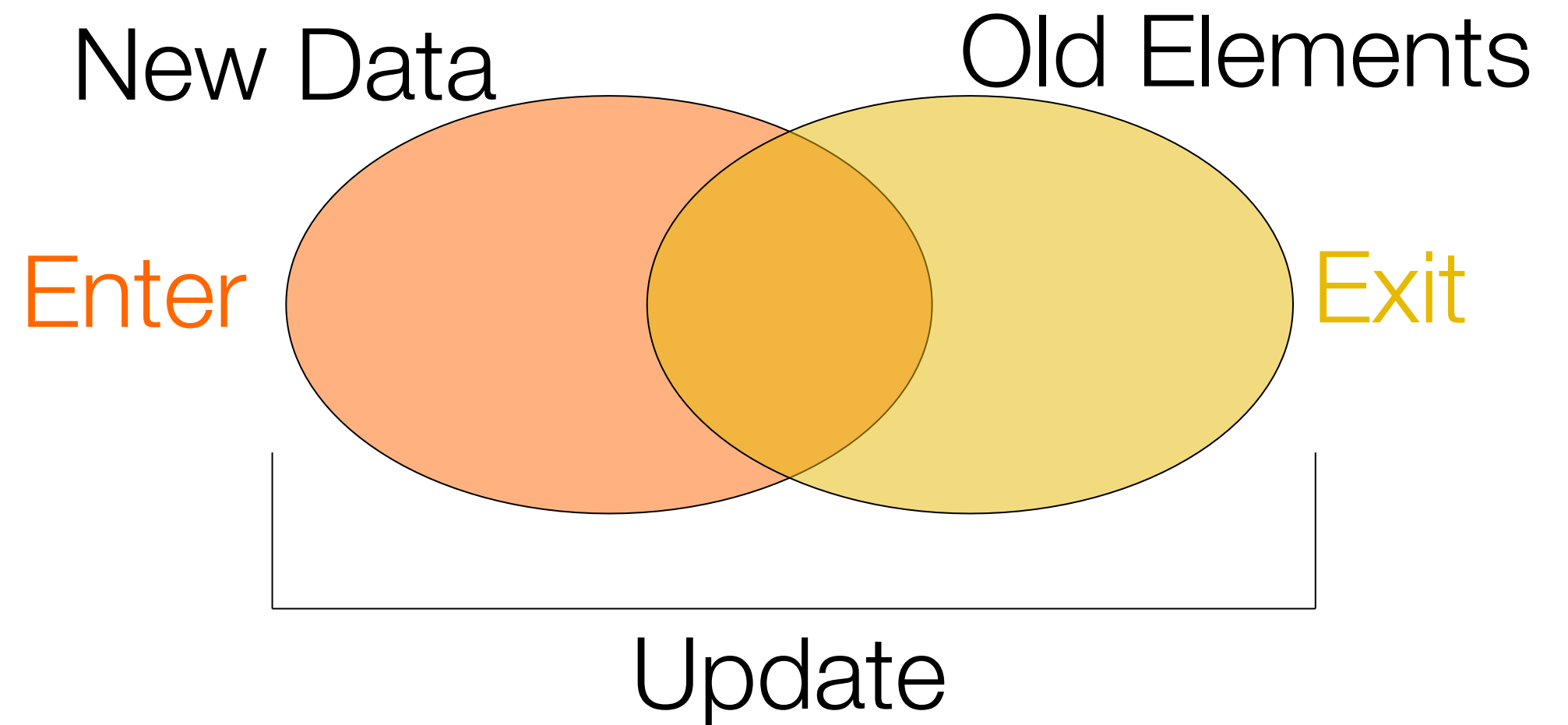Enter   Exit

Update

.enter( ) and .exit( )

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  - Exit: [ ]
- .data ([1,2,3,4,5,6])
  - Enter: [5,6]
  - Update: [1,2,3,4,5,6]
  - Exit: [ ]
- .data ([1,2,3])
  - Enter: [ ]
  - Update: [1,2,3,4,5,6]
  - Exit: [4,5,6]

New Data   Old Elements

Enter   Exit

Update

6

.enter( ) and .exit( )

- .enter( )
  – New data points

- .exit( )
  – Elements to be removed

- .enter() and .exit() only exist when .data() has been called

Can be hard to grok:

You can select groups of elements that DON'T EXIST YET

http://bost.ocks.org/mike/join/

Data Key Functions

- .data(rawdata) defaults to assuming that the index of the point is the key

- .data(rawdata, function(d,i){ }) allows you to set a key functions

- e.g.
  - `.data(rawdata, function(d,i){ return d.id; })`
  - `.data(rawdata, function(d,i){ return d.name; })`

E-U-E Pattern Template

```
var group = vis.selectAll("rect")
        .data(rawdata) //rawdata must be an array!
group.enter( ).append("rect") //ENTER!
        .attr( )
        .style( )
group //UPDATE!
        .attr( )
        .style( )
group.exit( ).remove( ) //EXIT!
```

WARNING!!!!

E-U-E Pattern Template

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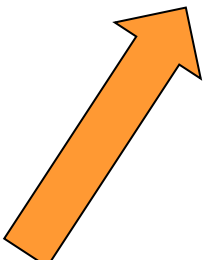
Many online examples

E-U-E Pattern Template

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Many online examples drop the variable name before .enter()

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Many online examples drop the variable name before .enter()
I highly recommend you don't!

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Thank You

We thank Dr. Chad Stolper for sharing teaching materials for visualization and D3.