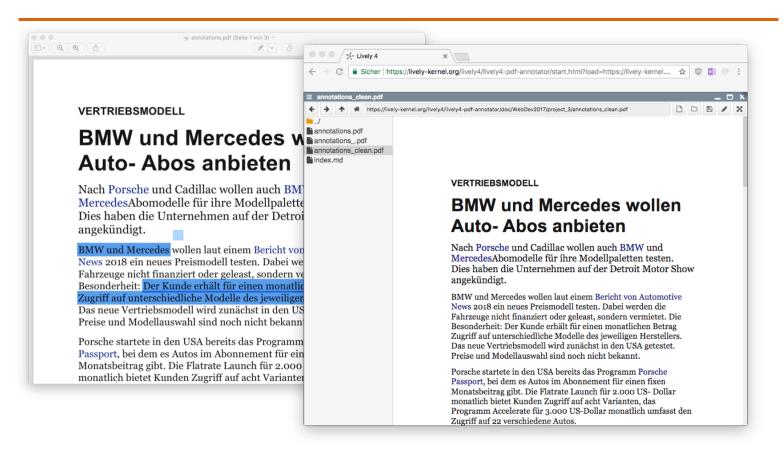




Motivation





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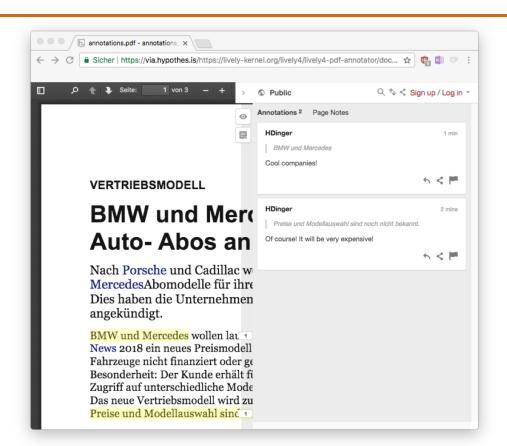
Demo



Existing Approaches

Existing Approaches Hypothes.is





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Existing Approaches Hypothes.is



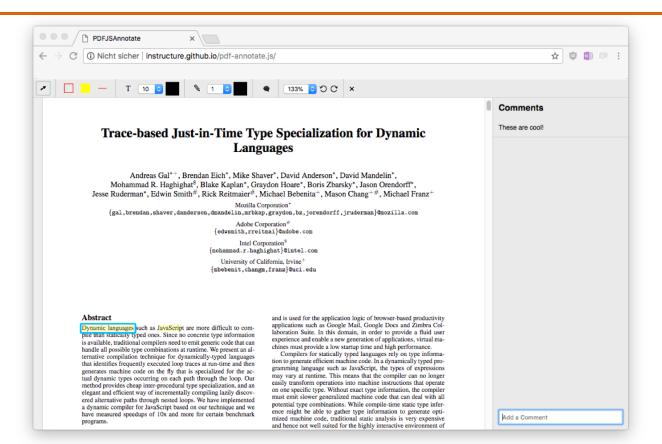
| Pro | Contra |
|------------------------------------|---|
| Free | Requires account |
| Easy integration | Stores annotations on server instead of PDF |

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Existing Approaches pdf-annotate.js





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Existing Approaches pdf-annotate.js



| Pro | Contra |
|------------------------------------|---|
| Free | Stores annotations in own data structures |
| Easy integration | |

PDF Annotator

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Edit PDF Files





```
annotations.pdf ~
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 Û~: sñΔ"Âe_∂ĬJΔácOJ^õ9 tÄvf‡
»≥yëxëÎK~∞òŸûè_°KÉin∫êP&ÀD<f=,s
```

PDF Annotations



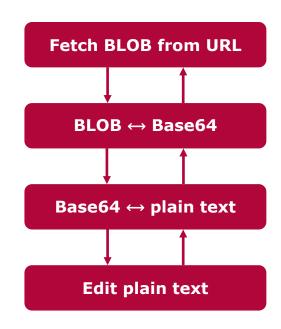
```
14 0 obj <<
                                          2 0 obj <<
  /Type /Annot
                                            /Type /Page
  /Popup 15 0 R
                                            /Parent 3 0 R
  /AP 35 0 R
                                            /Contents 4 0 R
  /Rect [ 71 405 512 442 ]
                                            /MediaBox 1020 0 R
  /Contents (Cool)
                                            /Annots 11 0 R
  /C [ 0.35 0.62 0.93 ]
                                          >> endobi
  /QuadPoints [ 173 442 506 442
   173 424 506 424 71 423 512 423
                                          11 0 obj
   71 405 512 405 1
                                            [ 14 0 R 15 0 R ]
  /Subtype /Highlight
                                          endobj
>> endobi
```

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Edit

Replace /Content attribute

Delete

- Remove annotation object
- Remove references to annotation object

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Add Annotations



- Create annotation object
 - Create new ID
 - Add content
 - Calculate coordinates
- Write new ID into page's annotations array
- Bug in pdf.js: appearance stream required
 - Existing streams cannot be reused
 - No manual way to generate stream
 - Workaround: highlight HTML elements in Lively

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Calculating Coordinates



/QuadPoints [350 146 600 146 350 123 600 123 7 123 257 123 7 100 257 100]



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Chart 15

0



Future Work

Future Work



Planned

Implement delete function

Postponed

Support additional annotation types



Thank you for your attention!

Henriette Dinger, Sebastian Kliem 06.02.2018

Appearance Streams



```
31 0 obj <<
  /N <<
    /Filter /FlateDecode
    /Type /X0bject
    /BBox [0 0 160.4664 17.9943]
  >>
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  endstream
>> endobj
```

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