



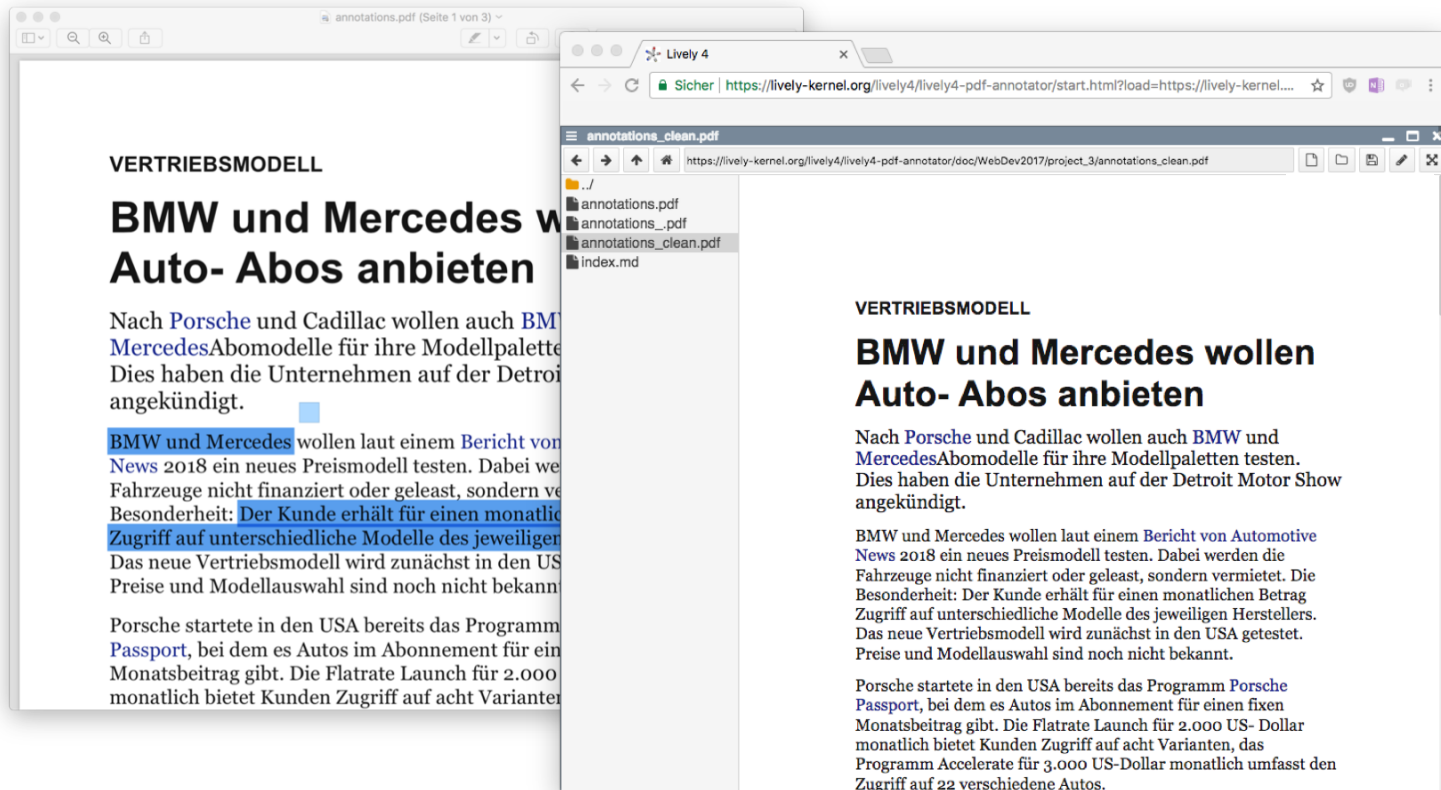
Web-based Development Environments

Group 3: PDF Annotator

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06.02.2018

Motivation



PDF Annotator

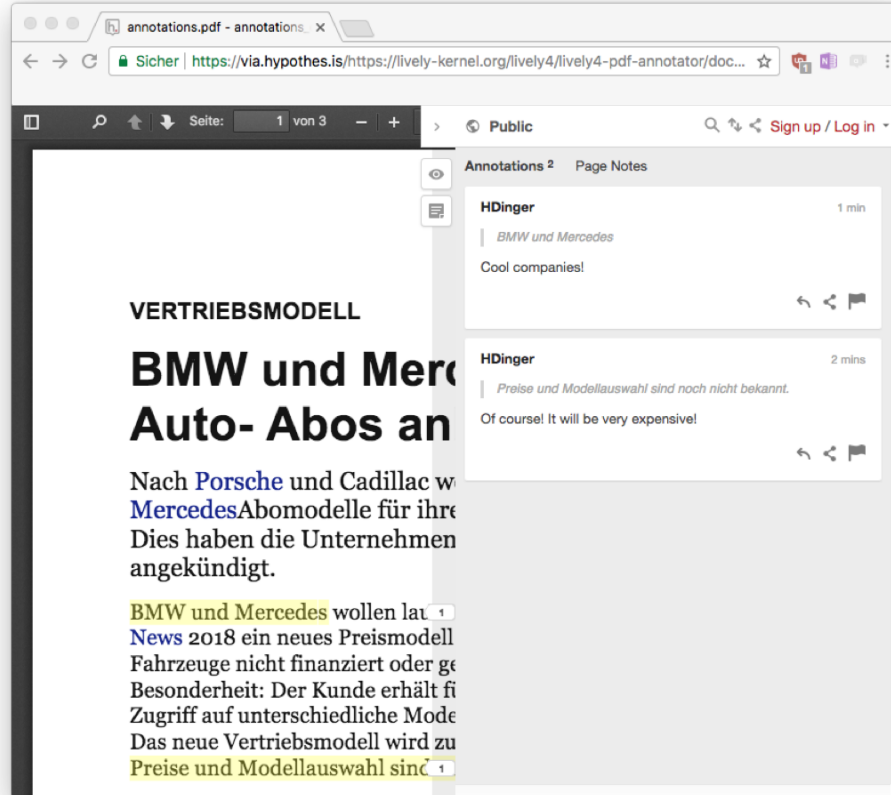
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Chart 2

Demo

Existing Approaches

Existing Approaches Hypothes.is



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Chart 5

Pro	Contra
<ul style="list-style-type: none">▪ Free	<ul style="list-style-type: none">▪ Requires account
<ul style="list-style-type: none">▪ Easy integration	<ul style="list-style-type: none">▪ Stores annotations on server instead of PDF

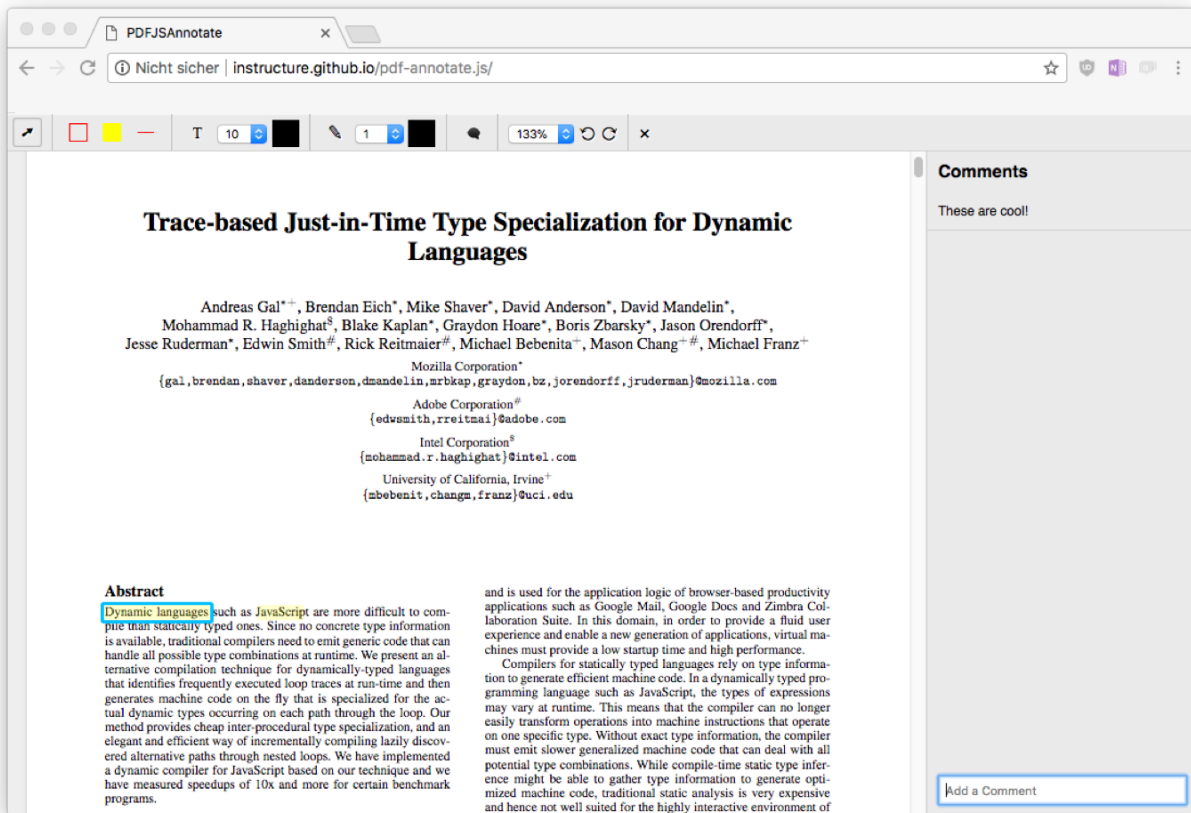
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Chart 6

Existing Approaches

pdf-annotate.js



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Chart 7

Existing Approaches

pdf-annotate.js

Pro	Contra
<ul style="list-style-type: none">▪ Free	<ul style="list-style-type: none">▪ Stores annotations in own data structures
<ul style="list-style-type: none">▪ Easy integration	

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Chart 8

Edit PDF Files

[illegible]

PDF Annotations

```
14 0 obj <<
  /Type /Annot
  /Popup 15 0 R
  /AP 35 0 R
  /Rect [ 71 405 512 442 ]
  /Contents (Cool)
  /C [ 0.35 0.62 0.93 ]
  /QuadPoints [ 173 442 506 442
    173 424 506 424 71 423 512 423
    71 405 512 405 ]
  /Subtype /Highlight
>> endobj
```

```
2 0 obj <<
  /Type /Page
  /Parent 3 0 R
  /Contents 4 0 R
  /MediaBox 1020 0 R
  /Annots 11 0 R
>> endobj

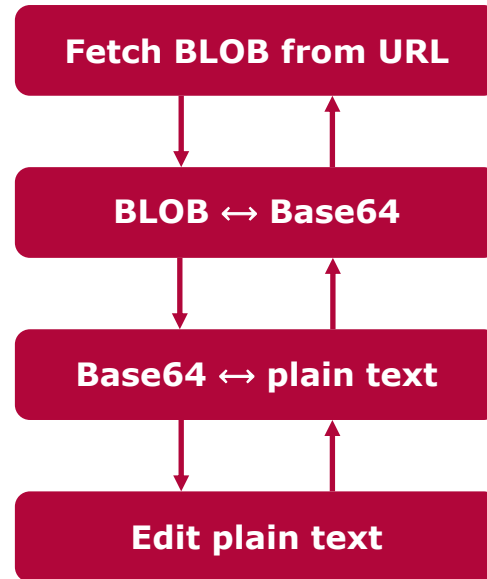
11 0 obj
  [ 14 0 R 15 0 R ]
endobj
```

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Chart **11**

Reading and Writing PDF files in JavaScript



Edit and delete Annotations

Edit

- Replace /Content attribute

Delete

- Remove annotation object
- Remove references to annotation object

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Chart **13**

Add Annotations

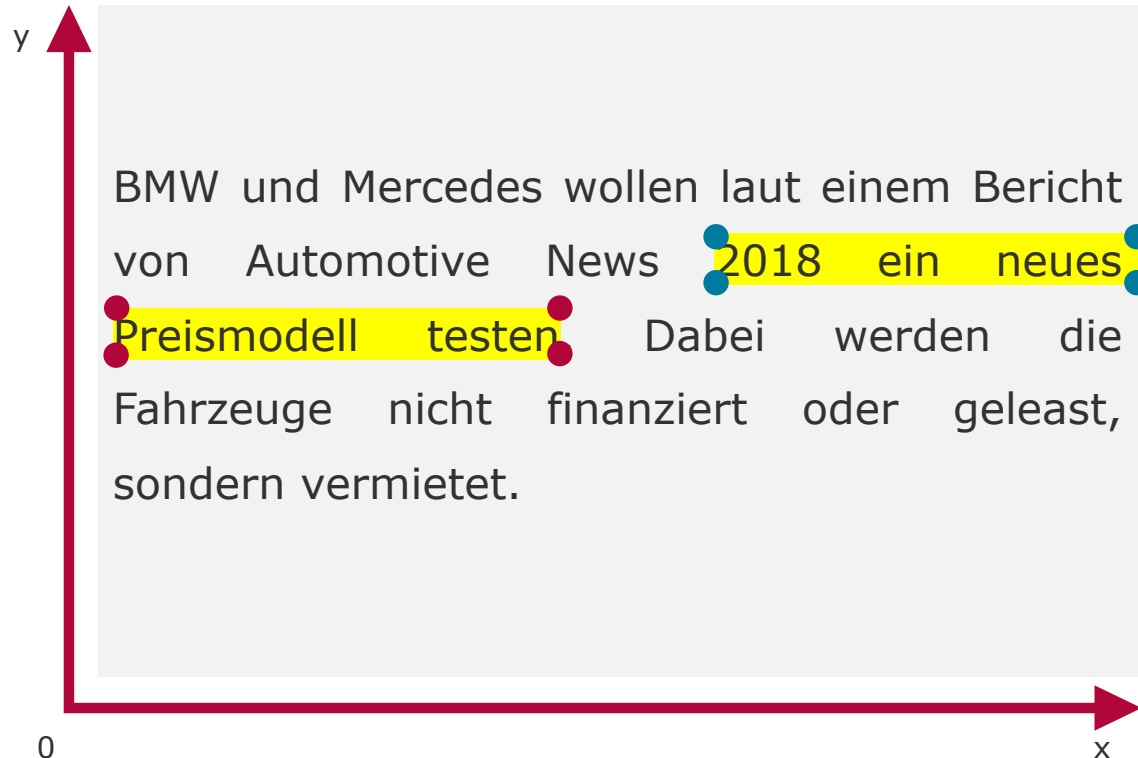
- Create annotation object
 - Create new ID
 - Add content
 - Calculate coordinates
- Write new ID into page's annotations array
- Bug in pdf.js: appearance stream required
 - Existing streams cannot be reused
 - No manual way to generate stream
 - Workaround: highlight HTML elements in Lively

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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**

Future Work

Future Work

Planned

- Implement delete function

Postponed

- Support additional annotation types

Thank you
for your attention!

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Appearance Streams

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

stream

```
x=å11 {^±ıAM'Æ)®Ø, 'Ó:§#~ó0hö)Fsb≈
MË*Ên`ó'x?Òı
Àm€ÑJehÀVö±«ËıA÷ëÒ< .À=√c, JÈøı_Ë&Í≠¢PZT' ~Ωc"
```

endstream

```
>> endobj
```