

iText for Archiving and Accessibility

PDF/A-3a and PDF/UA in 5 steps

Raf Hens – iText Software

Feature rich open source
developer's library for
PDF generation and manipulation
in web and other applications

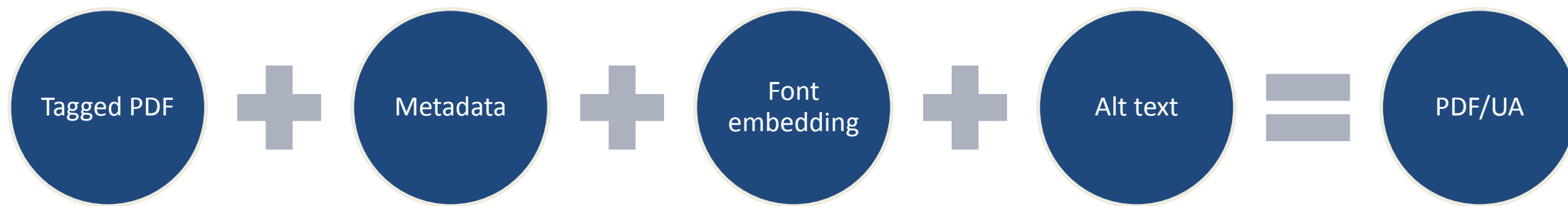




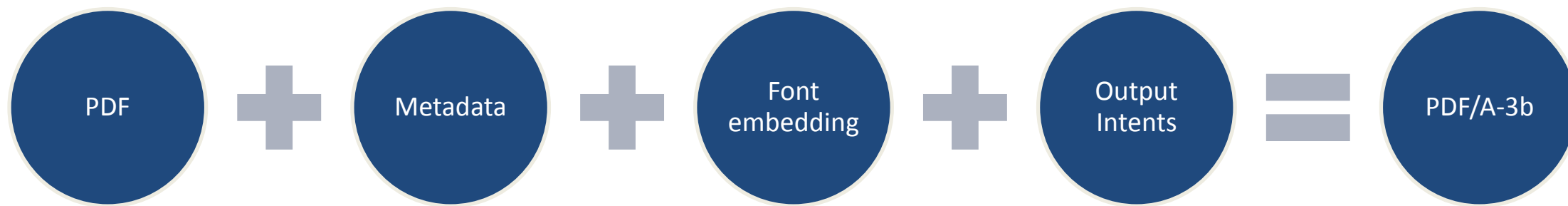
Step 1. Create PDF



Step 2. Create Tagged PDF



Step 3. Create PDF/UA



Step 4. Create PDF/A-3b



Step 5. Create PDF/A-3a



Step 1. Create PDF

```
Document document = new Document();
```

```
PdfWriter writer =  
    PdfWriter.getInstance(document,  
    new FileOutputStream("SimplePdf.pdf"));
```

```
writer.setPdfVersion(PdfWriter.VERSION_1_7);
```

```
document.open();
```

Step1. Create PDF: Initialize document


```
Paragraph p = new Paragraph();  
Chunk c = new Chunk("The quick brown ");  
p.add(c);  
Image i = Image.getInstance("fox.bmp");  
c = new Chunk(i, 0, -24);  
p.add(c);  
c = new Chunk(" jumps over the lazy ");  
p.add(c);  
i = Image.getInstance("dog.bmp");  
c = new Chunk(i, 0, -24);  
p.add(c);  
document.add(p);
```

Step1. Create PDF: Add elements

```
document.close();
```

Step 1. Create PDF: Close document

The quick brown



jumps over the lazy



Step 1. Create PDF: Result



Step 2. Create Tagged PDF

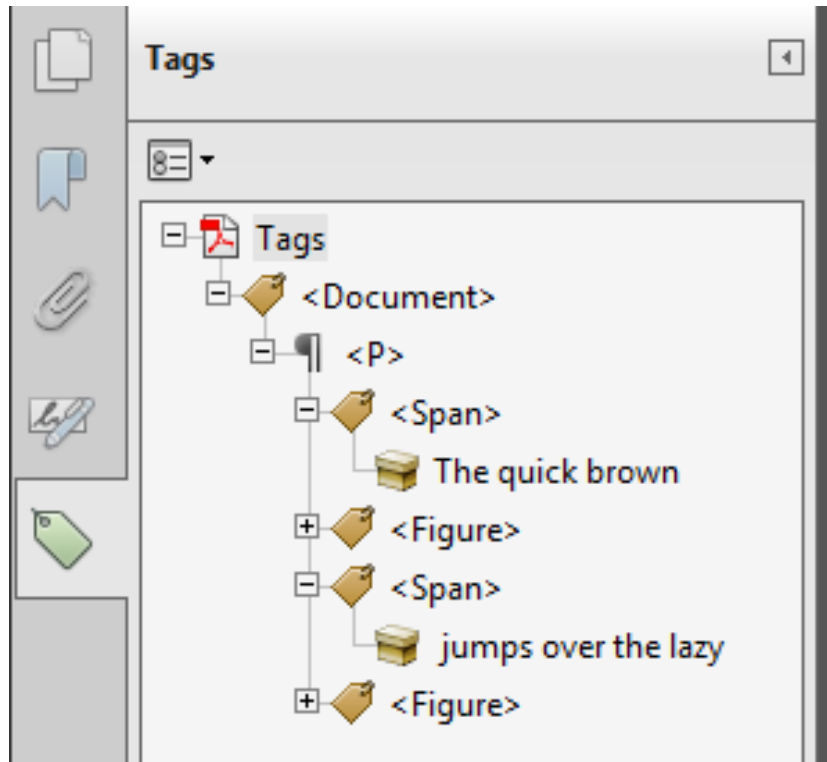


...

```
PdfWriter writer = PdfWriter.getInstance(...);  
writer.setPdfVersion(PdfWriter.VERSION_1_7);  
writer.setTagged();  
document.open();
```

...

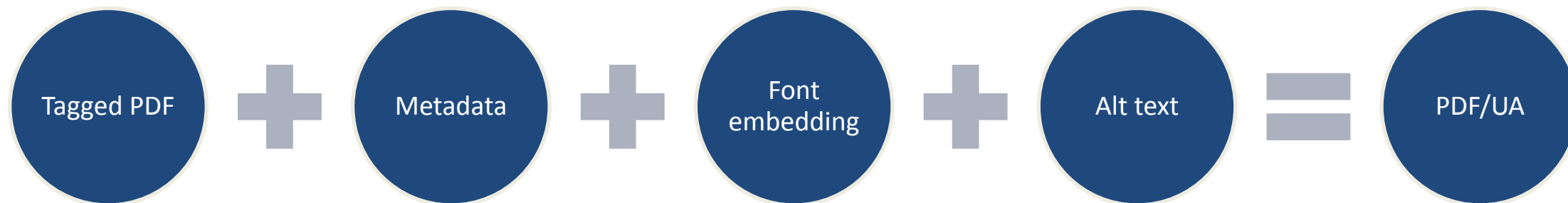
Step 2. Create Tagged PDF



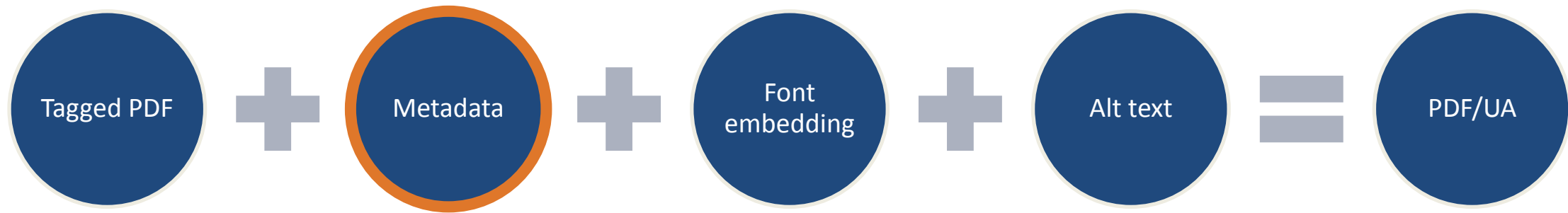
The quick brown



Step 2. Create Tagged PDF



Step 3. Create PDF/UA



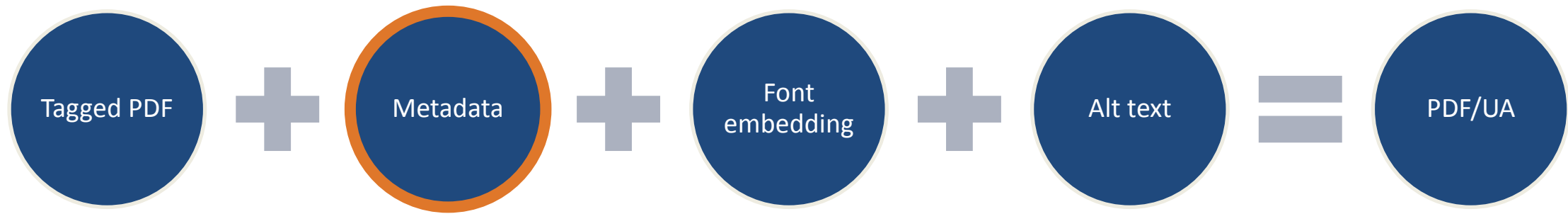
Goals

Provide document title, author, keywords

Provide document language for better accessibility

Identify “type” of PDF (PDF/UA) to help PDF reader

Step 3. Create PDF/UA



...

```
writer.setTagged();
```

```
writer.setViewerPreferences  
    (PdfWriter.DisplayDocTitle);
```

```
document.addLanguage("en-US");
```

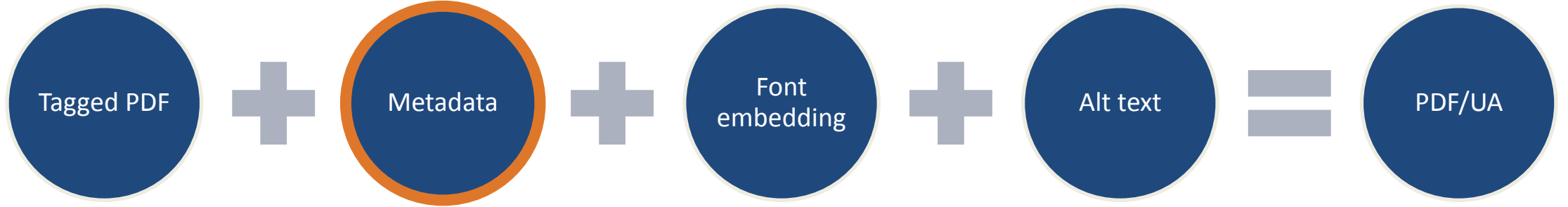
```
document.addTitle("English pangram");
```

```
writer.createXmpMetadata();
```

```
document.open();
```

...

Step 3. Create PDF/UA



English pangram - Adobe Acrobat Pro

File Edit View Window iText Help

Document Properties

Description Security Fonts Initial View Custom Advanced

Description

File: PdfUa.pdf

Title: English pangram

Author:

Subject:

Keywords:

PdfUa.pdf

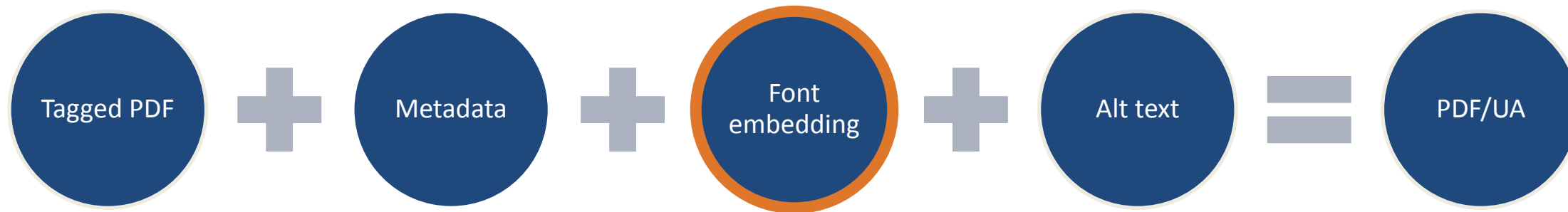
Description

Advanced

- [-] Dublin Core Properties (dc, http://purl.org/dc/elements/1.1/)
- [-] PDF Properties (pdf, http://ns.adobe.com/pdf/1.3/)
- [-] XMP Core Properties (xmp, http://ns.adobe.com/xap/1.0/)
- [-] http://www.aiim.org/pdfua/ns/id
 - pdfuaid:part: 1

the lazy

Step 3. Create PDF/UA



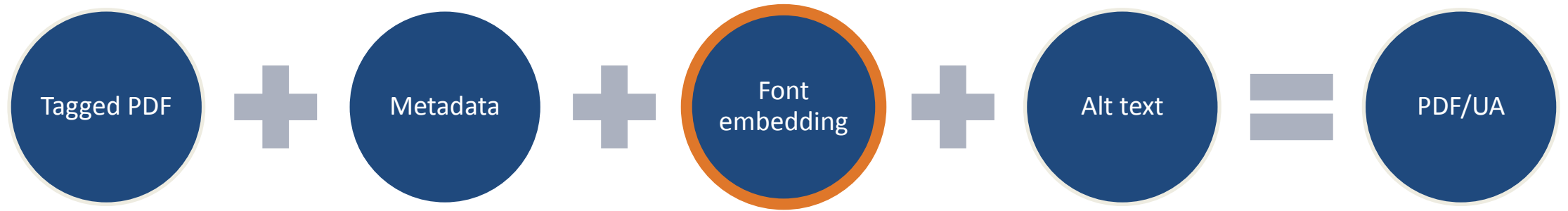
Goals

Make document independent of font set of current OS

Make document independent of font selection strategy of PDF reader

Make document fully portable

Step 3. Create PDF/UA



...

```
document.open();
```

```
Paragraph p = new Paragraph();
```

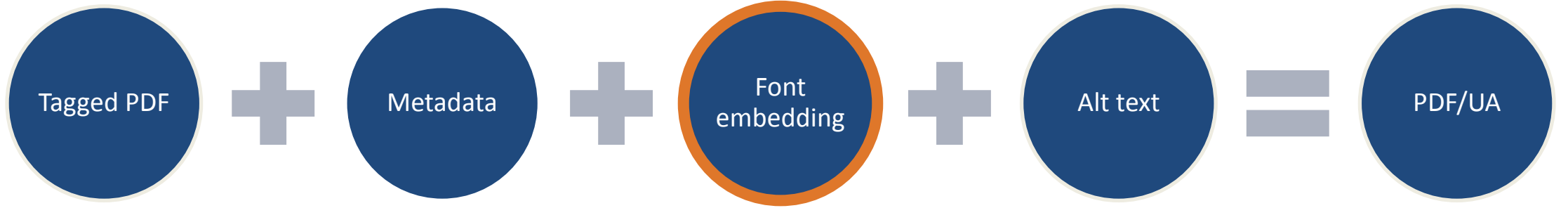
```
p.setFont(FontFactory.getFont("FreeSans.ttf",  
BaseFont.WINANSI, BaseFont.EMBEDDED, 20));
```

```
Chunk c = new Chunk("The quick brown ");
```

```
p.add(c);
```

...

Step 3. Create PDF/UA




quick brown



Document Properties

Description Security **Fonts** Initial View

Fonts Used in this Document

- ☐  Helvetica
Type: Type 1
Encoding: Ansi
Actual Font: ArialMT
Actual Font Type: TrueType

Before


quick brown



Document Properties

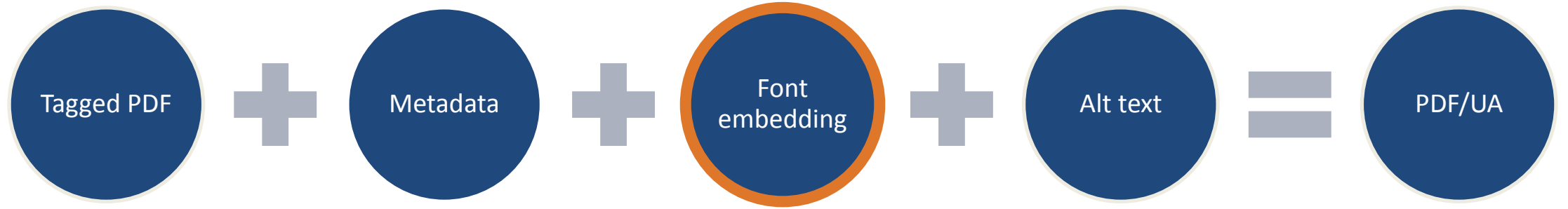
Description Security **Fonts** Initial View

Fonts Used in this Document

- ☐  FreeSans (Embedded Subset)
Type: TrueType
Encoding: Ansi

After

Step 3. Create PDF/UA

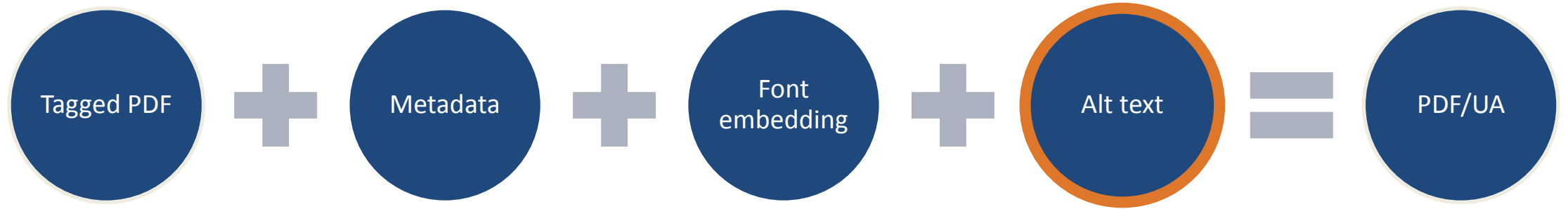


THE QUICK BROWN FOX JUMPS

OVER THE LAZY DOG

The quick brown fox jumps
over the lazy dog

Step 3. Create PDF/UA

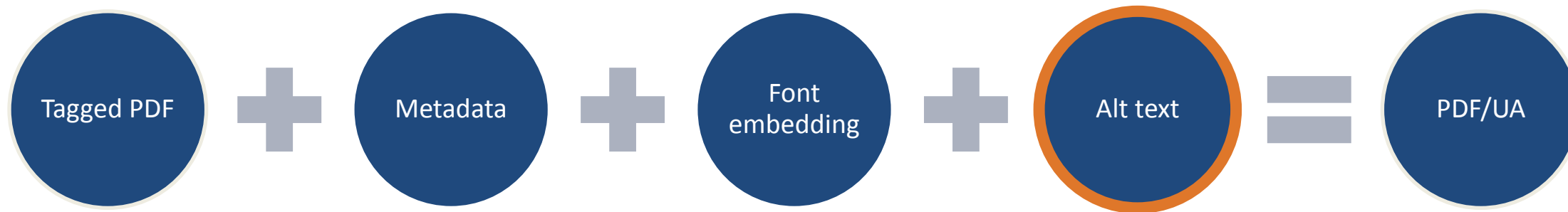


Goals

Provide alternate text for non-textual content

Help conforming readers to read out loud the non-textual content

Step 3. Create PDF/UA



...

```
Image i = Image.getInstance("fox.bmp");
```

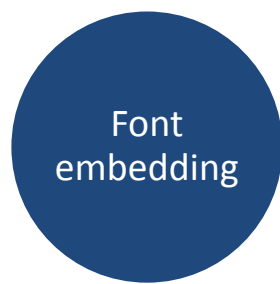
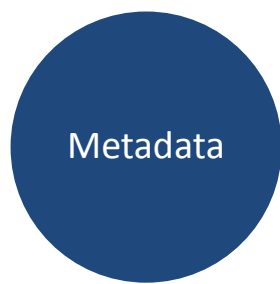
```
c = new Chunk(i, 0, -24);
```

```
c.setAccessibleAttribute(PdfName.ALT,  
    new PdfString("Fox"));
```

```
p.add(c);
```

...

Step 3. Create PDF/UA



Tags

- Tags
 - <Document>
 - <P>
 -
 - <Figure>
 -
 - <Figure>

TouchUp Properties

Content Tag Text Color

Type:

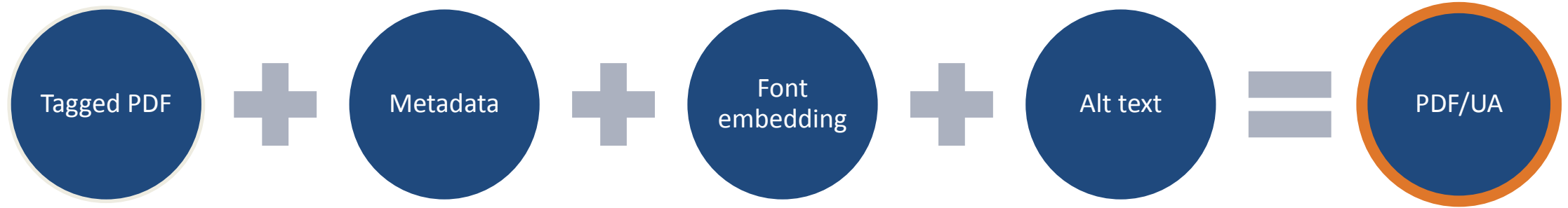
Title:

Actual Text:

Alternate Text:



Step 3. Create PDF/UA

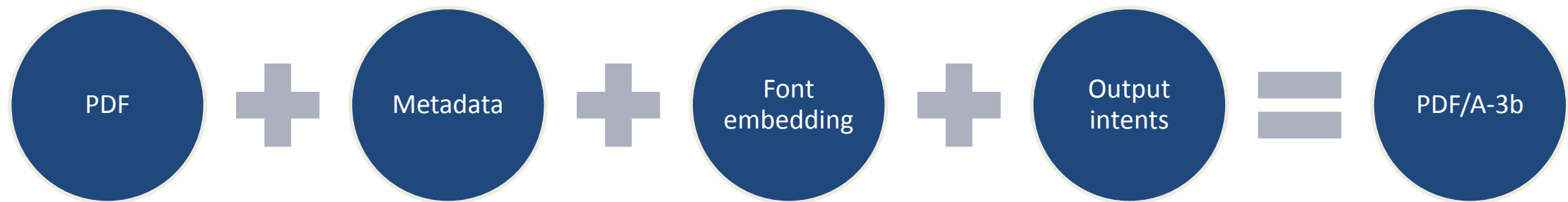


Results

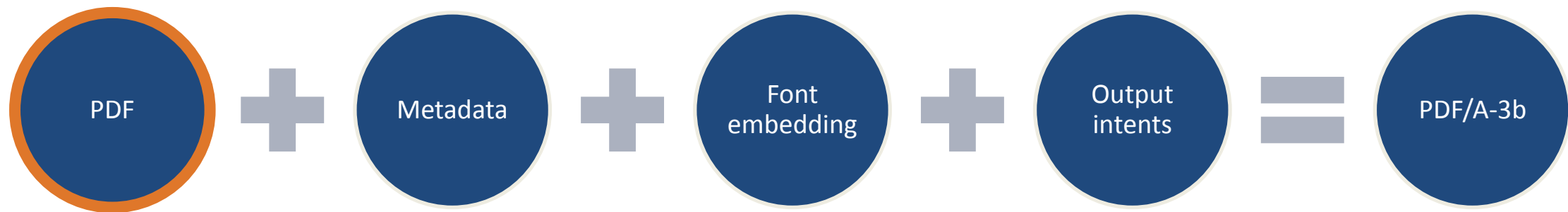
Checkpoint	Passed	Warned	Failed
PDF Syntax	0	0	0
Fonts	1	0	0
Content	10	0	0
Embedded Files	0	0	0
Natural Language	4	0	0
Structure Elements	3	0	0
Structure Tree	6	0	0
Role Mapping	6	0	0
Alternate Descriptions	12	0	0
Metadata	3	0	0
Document Settings	3	0	0

This PDF is technically accessible. Report

Step 3. Create PDF/UA



Step 4. Create PDF/A-3b



...

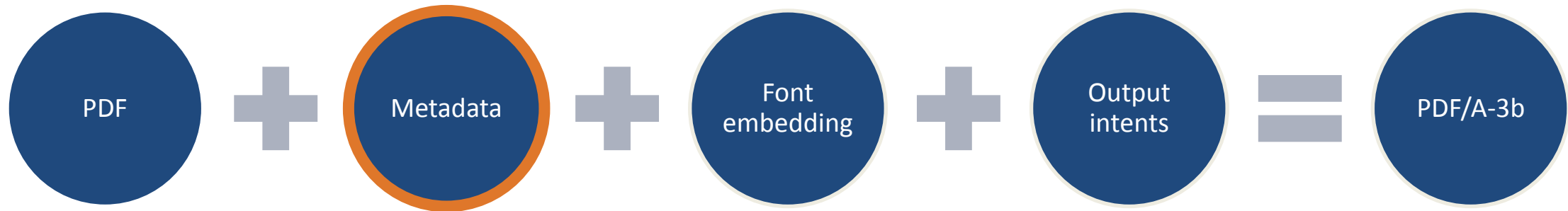
```
Document document = new Document ();
```

```
PdfAWriter writer = PdfAWriter.getInstance (document,  
    new FileOutputStream ("PdfA3b.pdf"),  
    PdfAConformanceLevel.PDF_A_3B);
```

```
writer.setPdfVersion (PdfWriter.VERSION_1_7);
```

...

Step 4. Create PDF/A-3b

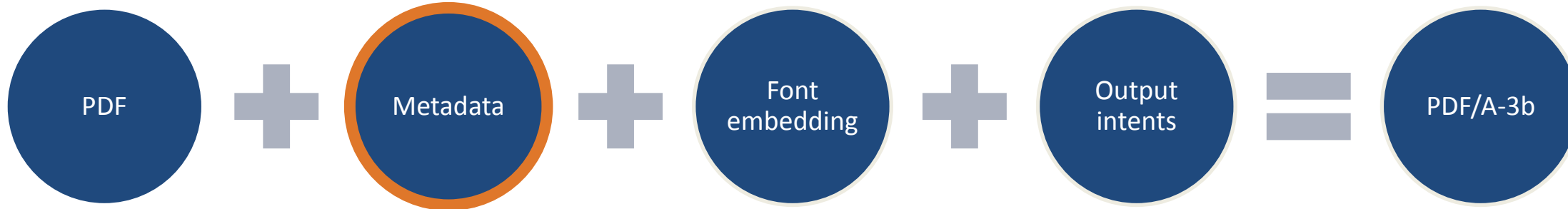



Goals

Identify “type” of PDF (PDF/A) to help PDF reader







Similar iText code as for PDF/UA

Step 4. Create PDF/A-3b



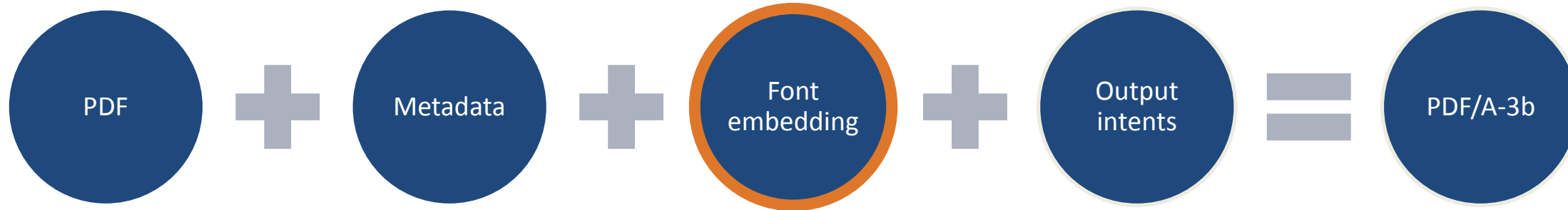
 This file claims compliance with the PDF/A standard and has been opened read-only to prevent modification.

Advanced

-  Dublin Core Properties (dc, <http://purl.org/dc/elements/1.1/>)
-  PDF Properties (pdf, <http://ns.adobe.com/pdf/1.3/>)
-  XMP Core Properties (xmp, <http://ns.adobe.com/xap/1.0/>)
-  <http://www.aiim.org/pdfa/ns/id/>
 -  pdfaid:part: 3
 -  pdfaid:conformance: B



Step 4. Create PDF/A-3b

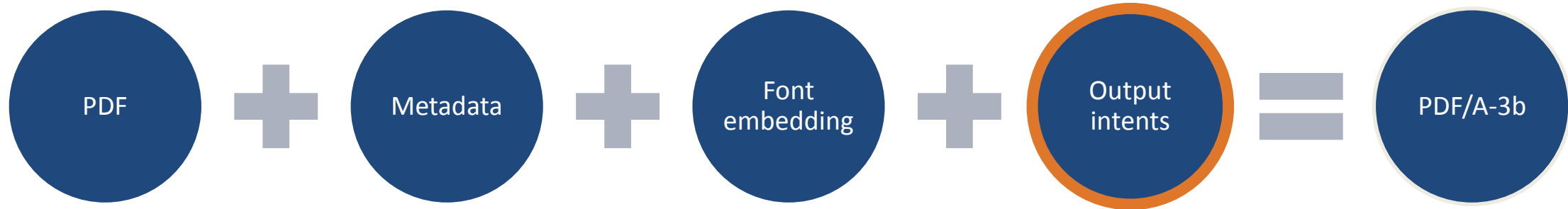


Goals

Make document fully self contained and archivable

Same iText code as for PDF/UA

Step 4. Create PDF/A-3b

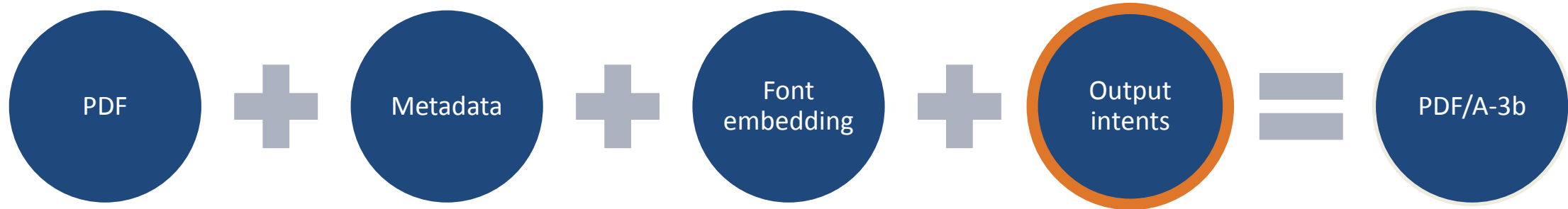


Goals

Match color characteristics of PDF document with color characteristics of device on which it is intended to be rendered

Make colors device independent

Step 4. Create PDF/A-3b



...

```
document.open();
```

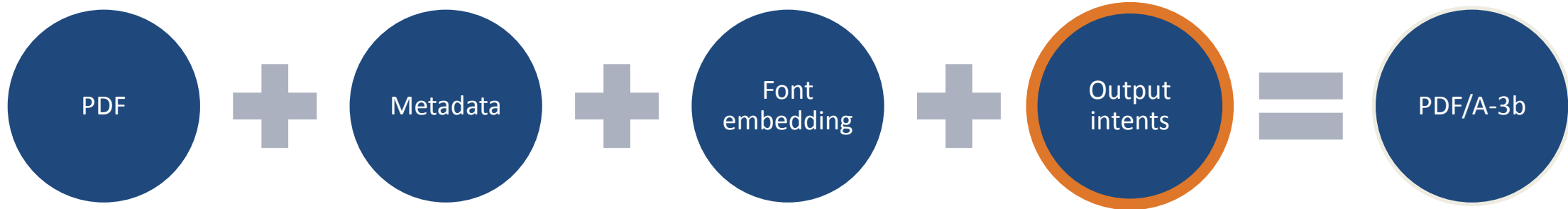
```
ICC_Profile icc = ICC_Profile.getInstance(new  
    FileInputStream("sRGB Color Space Profile.icm"));
```

```
writer.setOutputIntents("Custom", "",  
    "http://www.color.org", "sRGB IEC61966-2.1", icc);
```

```
Paragraph p = new Paragraph();
```

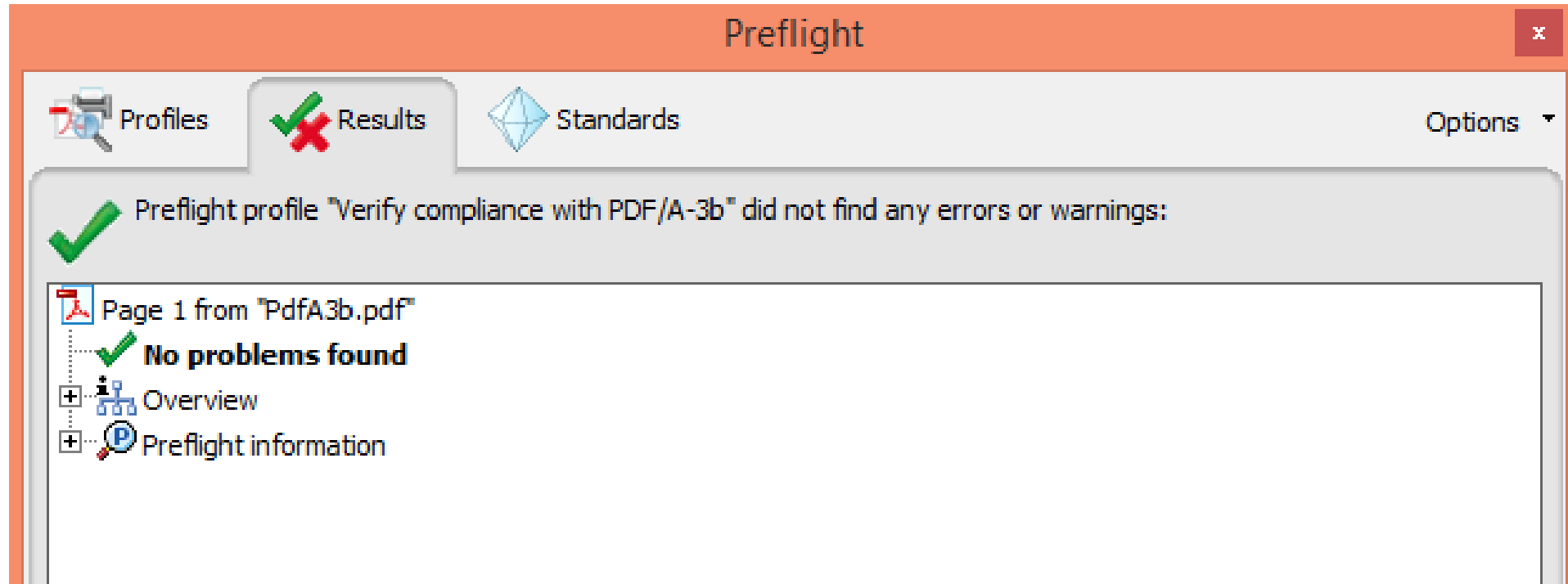
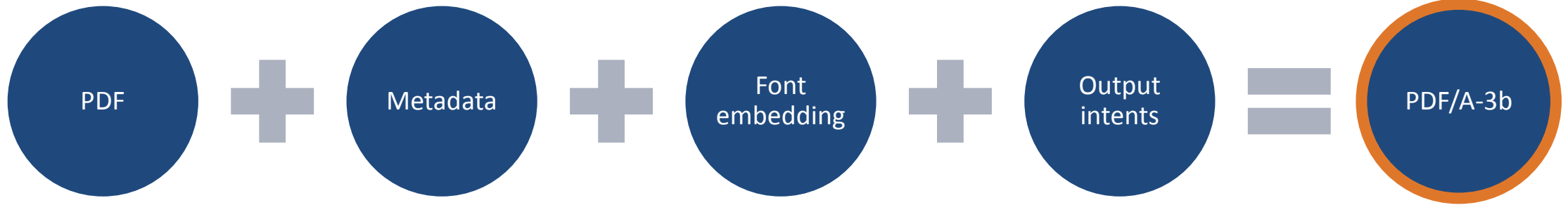
...

Step 4. Create PDF/A-3b



```
527 11 0 obj
528 <<
529   /Type/Catalog
530   /OutputIntents[<<
531     /OutputCondition()
532     /Type/OutputIntent
533     /DestOutputProfile 1 0 R
534     /S/GTS_PDFA1
535     /OutputConditionIdentifier(Custom)
536     /RegistryName(http://www.color.org)/Info(sRGB IEC61966-2.1)>>]
537   /Metadata 10 0 R
538   /Pages 6 0 R
539 >>
540 endobj
```

Step 4. Create PDF/A-3b



Step 4. Create PDF/A-3b



Step 5. Create PDF/A-3a



...

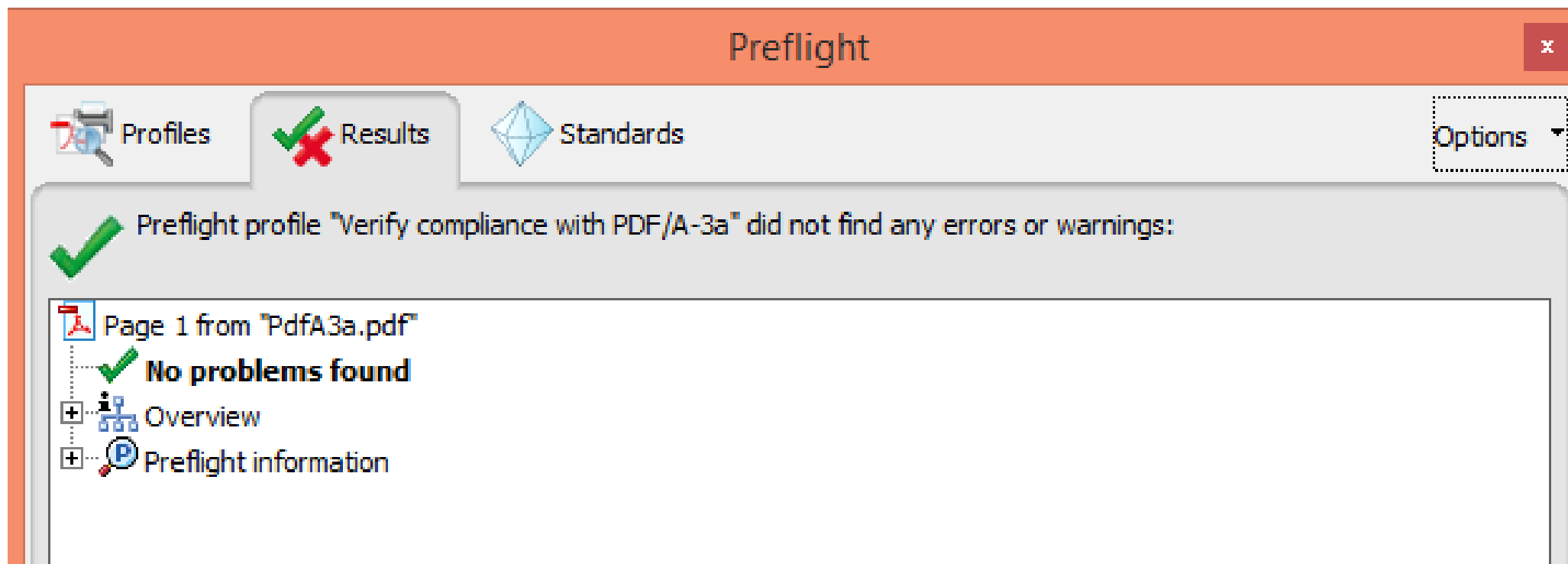
```
Document document = new Document();
```

```
PdfAWriter writer = PdfAWriter.getInstance(document,  
    new FileOutputStream("PdfA3a.pdf"),  
    PdfAConformanceLevel.PDF_A_3A);
```

```
writer.setPdfVersion(PdfWriter.VERSION_1_7);
```

...

Step 5. Create PDF/A-3a



Step 5. Create PDF/A-3a



Can I make sure that my document is compliant?

iText will:

- Perform a lot of checks, from technical POV, based on the requested conformance level
- Throw an exception if a requirement is not met

Not everything can be checked automatically!

Step 5. Create PDF/A-3a

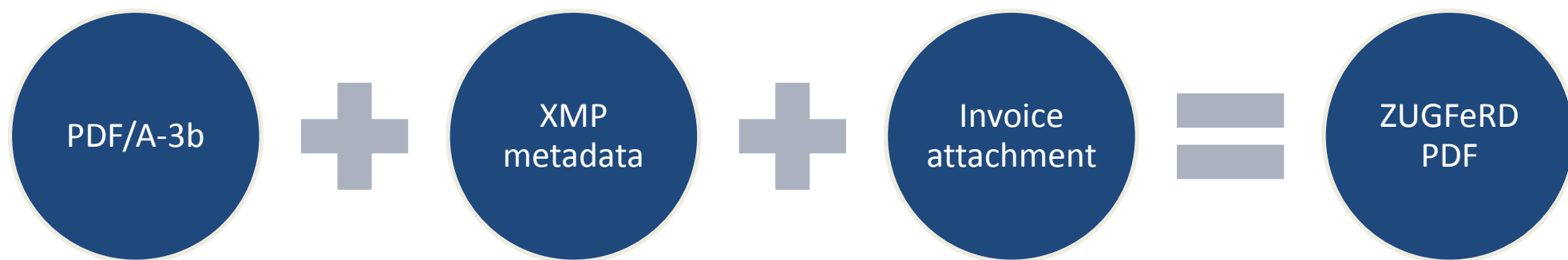


```
Exception in thread "main" com.itextpdf.text.DocumentException: com.itextpdf.text.pdf.PdfAConformanceException: All the fonts must be embedded. This one isn't: Helvetica  
    at com.itextpdf.text.pdf.PdfDocument.add(PdfDocument.java:805)  
    at com.itextpdf.text.Document.add(Document.java:278)  
    at com.itextpdf.pdfdays.PdfA3a.main(PdfA3a.java:70)  
Caused by: com.itextpdf.text.pdf.PdfAConformanceException: All the fonts must be embedded. This one isn't: Helvetica  
    at com.itextpdf.text.pdf.internal.PdfA2Checker.checkFont(PdfA2Checker.java:160)  
    at com.itextpdf.text.pdf.internal.PdfAChecker.checkPdfAConformance(PdfAChecker.java:187)
```

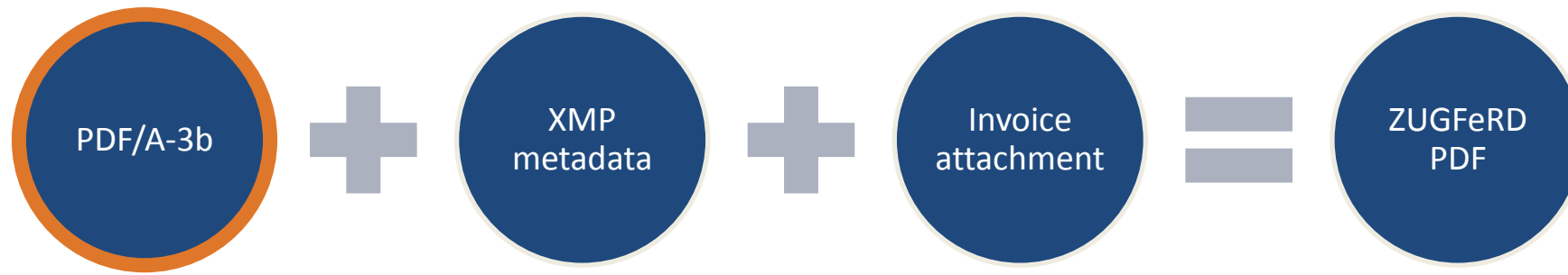
Step 5. Create PDF/A-3a

1. Create ZUGFeRD invoices
2. Flatten XFA forms with accessibility support

Use cases



Create ZUGFeRD invoices



...

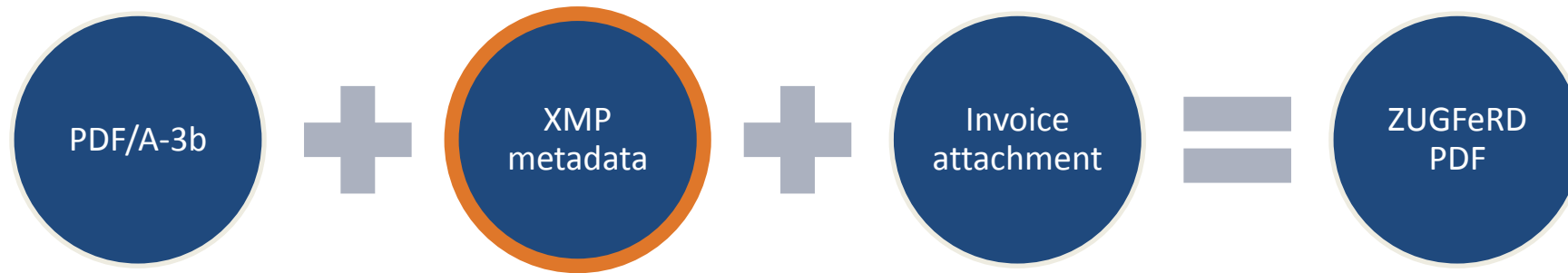
```
Document document = new Document ();
```

```
PdfAWriter writer = PdfAWriter.getInstance (document,  
    new FileOutputStream ("Zugferd.pdf"),  
    PdfAConformanceLevel.ZUGFeRD);
```

```
writer.setPdfVersion (PdfWriter.VERSION_1_7);
```

...

Create ZUGFeRD invoices



...

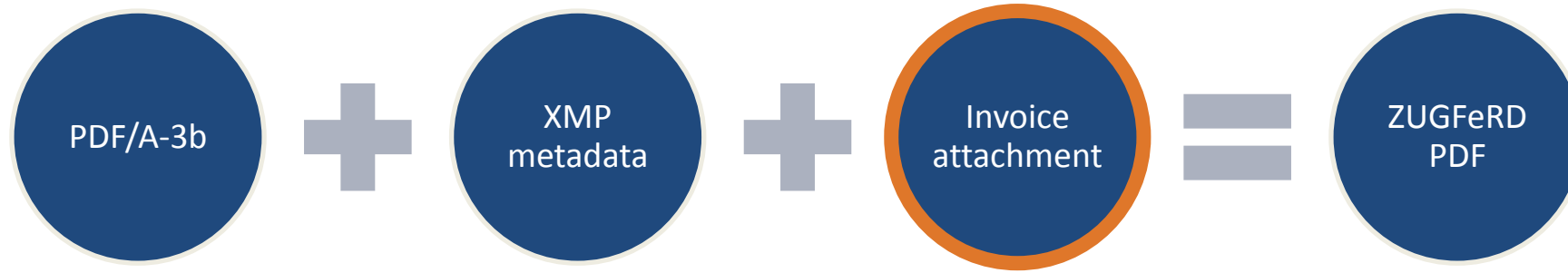
```
writer.createXmpMetadata();
```

```
writer.getXmpWriter().setProperty(  
    PdfAXmpWriter.zugferdSchemaNS,  
    PdfAXmpWriter.zugferdDocumentFileName,  
    "invoice.xml");
```

```
document.open();
```

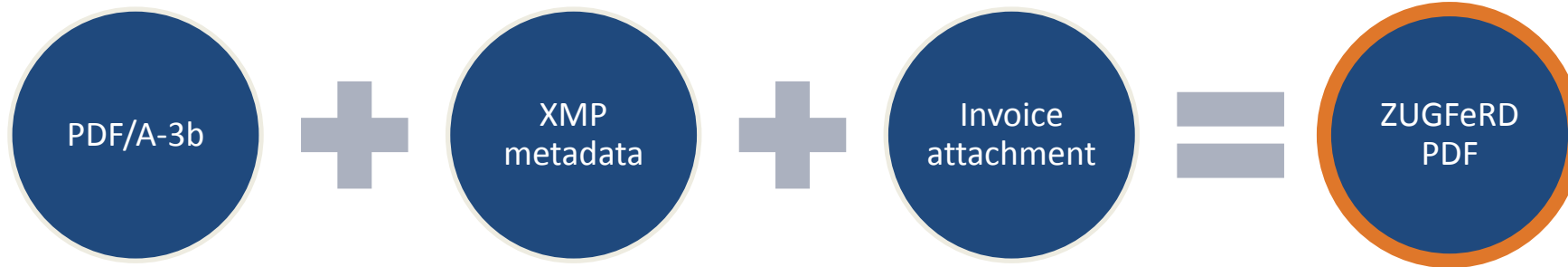
...

Create ZUGFeRD invoices



```
PdfFileSpecification fileSpec =  
    writer.addFileAttachment("ZUGFeRD invoice",  
        null, "c:/invoice.xml", "invoice.xml",  
        "application/xml",  
        new AFRelationshipValue.Alternative);
```

Create ZUGFeRD invoices



The file you have opened complies with the PDF/A standard and has been opened read-only to prevent modification.



Attachments



Open



Save



Add



Name ▲

Description

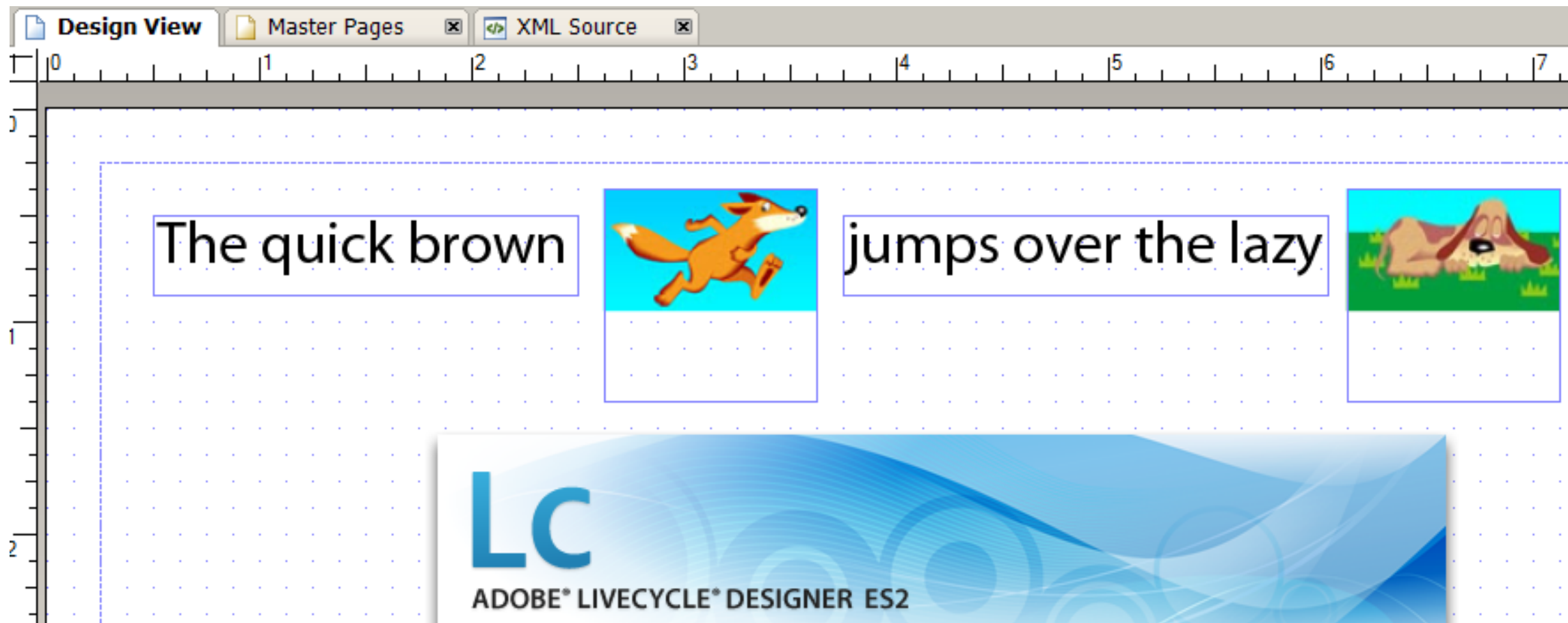


invoice.xml

ZUGFeRD invoice

Create ZUGFeRD invoices

Flatten XFA forms with accessibility support



Create XFA form in Adobe LiveCycle Designer

The quick brown



brown



jumps over

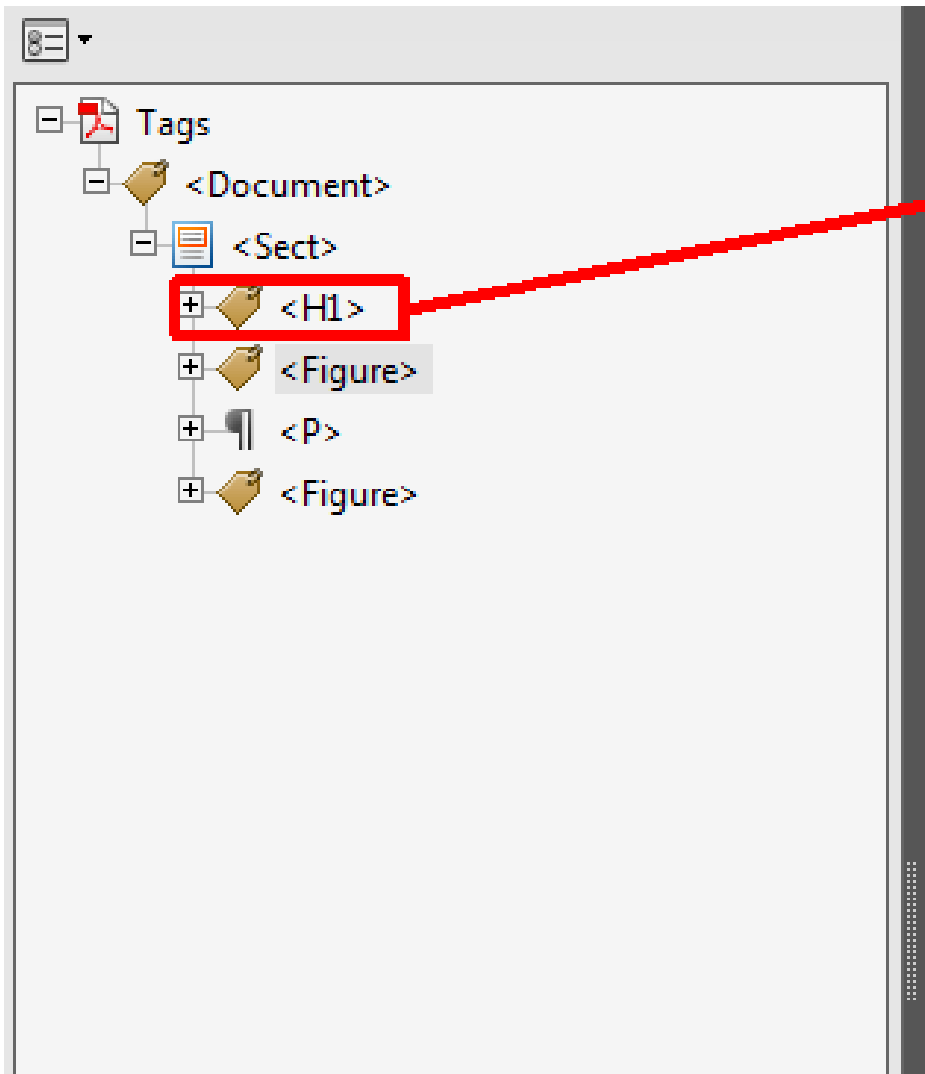
Accessibility panel for the first image:

- Object
- Layout
- Accessibility** (selected)
- Data View
- Role: **Heading Level 1**
- Tool Tip: [Empty text box]
- Screen Reader Precedence: **None**
- Custom Screen Reader Text: [Empty text box]

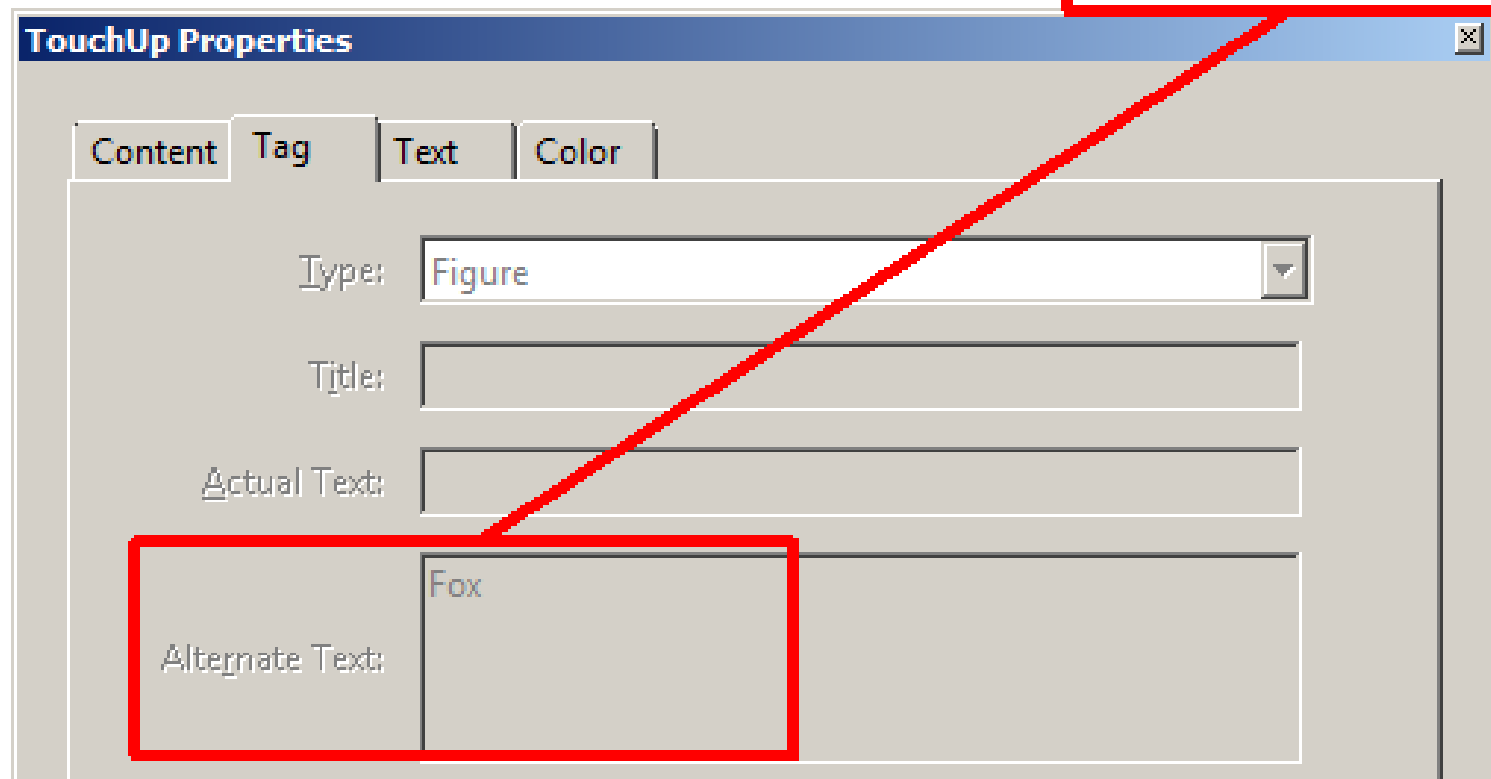
Accessibility panel for the second image:

- Object
- Layout
- Accessibility** (selected)
- Data View
- Role: [Empty dropdown]
- Tool Tip: [Empty text box]
- Screen Reader Precedence: **Custom Text**
- Custom Screen Reader Text: **Fox**

Define accessibility attributes



The quick brown



Flatten XFA form with iText XFAWorker

For Europe, Middle-East,
Asia and Africa

Kerkstraat 108
9050 Gentbrugge
BELGIUM

T: +32 92 98 02 31
F: +32 92 70 33 75
E: sales.isb@itextpdf.com

For the US, Canada,
Latin-America and Oceania

1 Broadway, 14th floor
Cambridge, MA 02142
USA

T: +1 617 982 2646
F: +1 617 982 2647
E: sales.isc@itextpdf.com

www.itextpdf.com

Contact us!