



Paolo Monella

IIIF / TEI



THESE SLIDES

Originally created for the [VeDPH Summer Camp 2020](#)

LINKING TEXT AND IMAGE



Thumbs

Magnifier

HotSpots

Image-Text

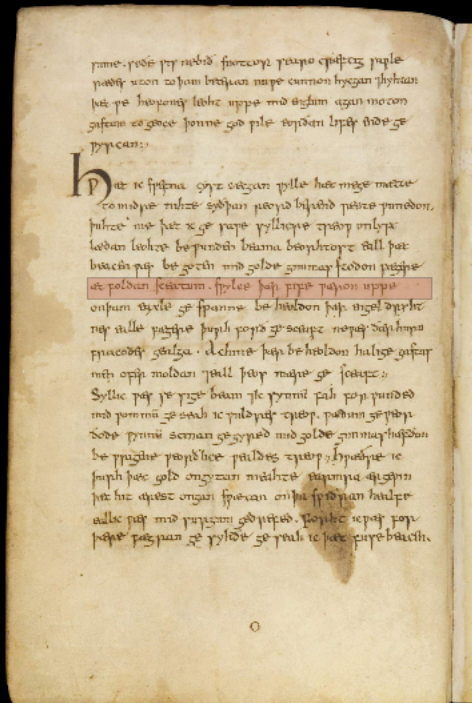
MS Desc

DOTR

104v

Diplomatic

Info



- 7 **H**wæt ic swefna cýrt secgan wylle hætt mege mætte
- 8 to midre nihte syðþan reord berend reste wunedon.
- 9 þuhte me þæt ic ge fawe syllicre treow onlyft
- 10 lædan leohte be wunden beama beorhtoft eall þæt
- 11 beacen wæf be goten mid golde gimmar stodon fægere
- 12 **æt foldan sceatum . swylce þær fife wæron uppe**
- 13 onþam eaxle ge spanne be heoldon þær engel dryht
- 14 nef ealle fægere þurh forð ge scaft newæf ðærhuru
- 15 fracoderf gealga . æchine þær beheoldon halige gastar
- 16 men ofer moldan geall þeof mære ge scaft :
- 17 Syllic wæf ge fige beam ge ic synnū fāh for wunded
- 18 mid wommū ge seah ic wuldref treow. wædum geweor
- 19 ðode wynnū scinan ge gyred mid golde gimmar hæfdon
- 20 be wrigene weorðlice wealdes treow .; hwæðre ic
- 21 þurh þæt gold ongytan meahthe earmra ærgewin
- 22 þæt hit ærest ongan swætān on þa fwiðran healfe
- 23 eallic wæf mid furgum gedrefed . Forht icwæf for
- 24 bære fægran **ge rvhðe ge reah ic bætt fure beacen.**

31%

Search

LINKING TEXT AND IMAGE

We can link our TEI digital edition...

- to **local** images
 - images are in my computer / on my website
- to **IIF** images
 - images stay on the library website

LINKING TEXT AND IMAGE

Let's link our TEI digital edition to a **local** image

**TEI → LOCAL IMAGE
ENCODING**

TEI → LOCAL IMAGE

ENCODING

1. Download the Marco Polo XML File (right click → save as; then open with your XML editor):
 - [Exercise XML file \(to do\)](#)
 - [Exercise XML file \(completed\)](#)
2. Download the manuscript image to the same folder (right click etc.): [218r.jpg](#)

TEI → LOCAL IMAGE ENCODING

1. Local image [218r.jpg](#) is in the same folder in which you have your TEI XML file
2. Locate the `<pb/>` element with `@n="218r_local"` in your `marcopolo.xml` file
3. TEI code:

```
<pb facs="218r.jpg" n="218r"/>
```


TEI → LOCAL IMAGE

ENCODING

Alternatively:

1. EVT requires images to be in a specific folder, so move image [218r.jpg](#) to `evt_marco_polo/data/images/single`
2. Find `xml:id="F1"` in file `marcopolo.xml`
3. TEI code (for EVT):

```
<pb
```

```
  facs="data/images/single/218r.jpg"
```

n="218r" />

TEI → ONLINE IMAGE (WWW)

ENCODING

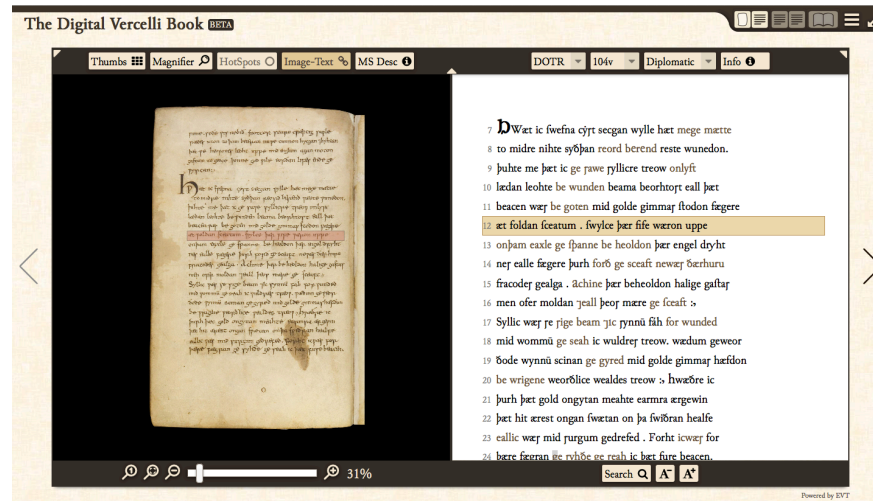
1. Image [218r.jpg](#) is on an other Website
2. Locate the <pb/> element with
@n="218r_http" in your 'marcopolo.xml' file
3. TEI code (using regular Internet HTTP protocol):

```
<pb  
facs="http://www.paolomonella.it/torino  
n="218r" />
```

**TEI → LOCAL IMAGE
VISUALIZATION**

TEI → LOCAL IMAGE VISUALIZATION

EVT - Edition Visualization Technology



ISSUE: PERMISSION FROM LIBRARIES

- Libraries claim copyright over photos of MS pages
 - written 1000 years ago
 - bearing texts composed 2000 years ago

SOLUTION: IIIF

Images stay on their server
(e.g. the Bodleian Library)

and may be integrated
(e.g. in "distributed" editions)

WHAT IS IIIF?

IIIF is a framework
(a language shared between computers)
to serve images with metadata.



WHAT DOES IIIF STAND FOR?

International Image Interoperability Framework

VIEW A MANUSCRIPT WITH IIIF

Bodleian Library MS. Bodl. 264: *Mirador Viewer*

<https://iiif.bodleian.ox.ac.uk/iiif/mirador/2d7945ce-b71e-41c6-ad1f-8af6b92f020f>



- go to *fol. 218r* from thumbnails (menu top right/gallery/then scroll down)
- or to *Li Livres du Graunt Caam* from the left menu
- [alternative viewer](#)

IIIF FOR PHILOLOGISTS

MS page

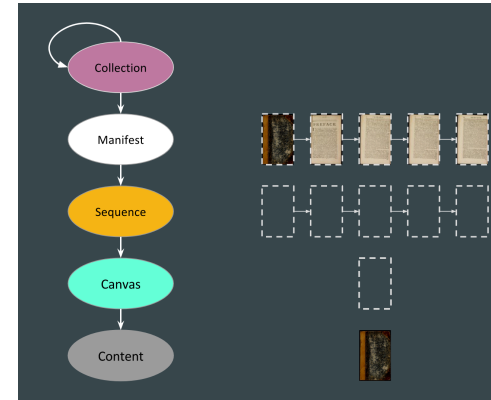
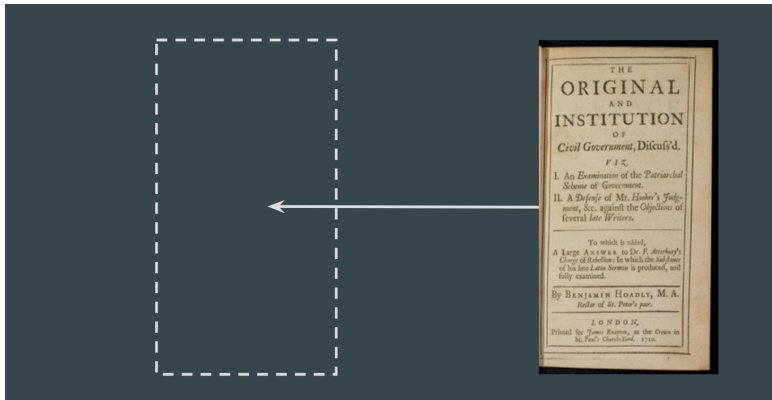
Manuscript

Canvas

Collection

Image API

Presentation API



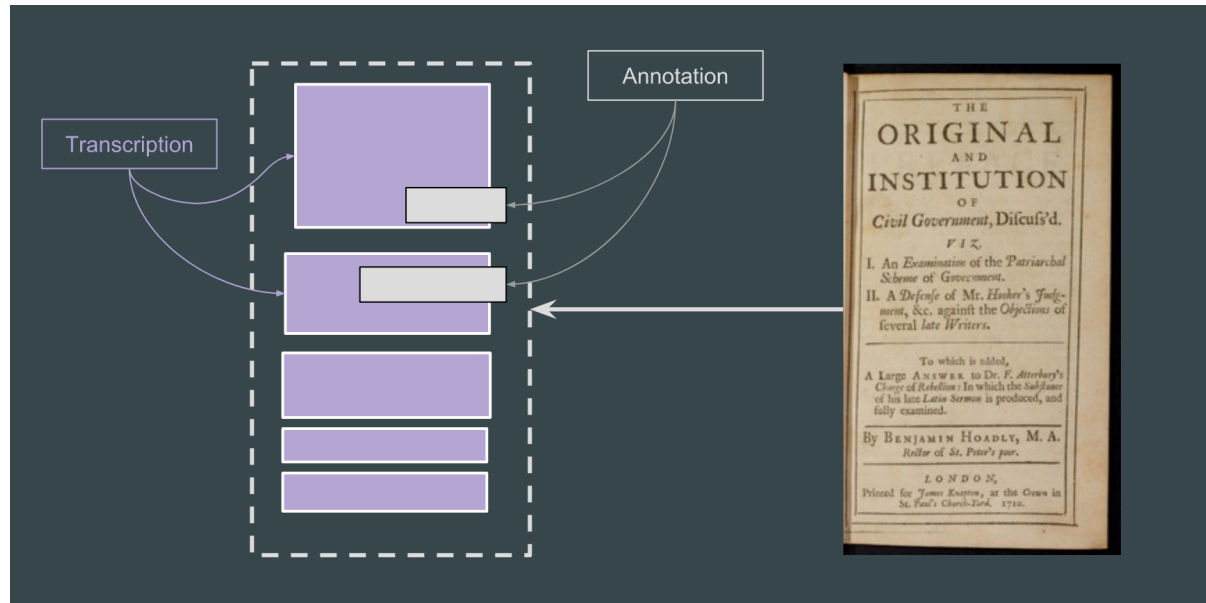
Source: J. Ronallo, [Workshop: Shared Canvas](#)

CANVAS ← IMAGE(S)

- One canvas may include many images, e.g.:
 - new photos of same MS
 - new photos taken after MS restoration
 - advanced imaging (multi-spectral imaging, X-Ray, CT-scan etc.)

CANVAS ← ANNOTATION(S)

Canvases may include images and other "annotations"



Source: Jason Ronallo, [Workshop: Shared Canvas](#)

JSON METADATA FILES

JSON METADATA FILES

- Manifest:
<https://iiif.bodleian.ox.ac.uk/iiif/manifest/ae9f6cca-ae5c-4149-8fe4-95e6eca1f73c.json>
- Canvas:
<https://iiif.bodleian.ox.ac.uk/iiif/canvas/699adfb3-a5da-4b09-9759-41eee3713bc3.json>
- Image:
<https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/info.json>
- Image **file**:
<https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/full/full/0/default>

JSON METADATA FILES

METADATA → IMAGE FILE

Image metadata file URL

JSON

<https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/info.json>

→ `/info.json`

Acc

JP

htt

a50

410

→`

IMAGE API

Full image:

<https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/full/full/0/default>

IMAGE API

Cropped region:

<https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/500,3550,3000,140/full/0/default>



IMAGE API

- Resizing, cropping etc. happens on the server
- I can ask for a specific size, region etc. of an image through an URL
- The server creates an *ad hoc* image and only returns that

IMAGE API

LET'S MANIPULATE AN IMAGE

- Full image
- resizing (size)
- cropping (region)
- quality (color, gray...)
- rotation

FULL IMAGE

FULL IMAGE

<https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/full/full/0/default>

FILE FORMATS

FILE FORMATS

Full image with file extension at the end (.jpg):

<https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/full/full/0/default.jpg>

FILE FORMATS

...with file extension at the end (.jp2):

<https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/full/full/0/default.jp2>

FILE FORMATS

The server has no copy of this image in **.png** format, so this returns an error:

<https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/full/full/0/default.png>

FILE FORMATS

...with file extension **before**:

<https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3.jp2/full/full/0/default>

CROPPING

CROPPING

Full image, no cropping:

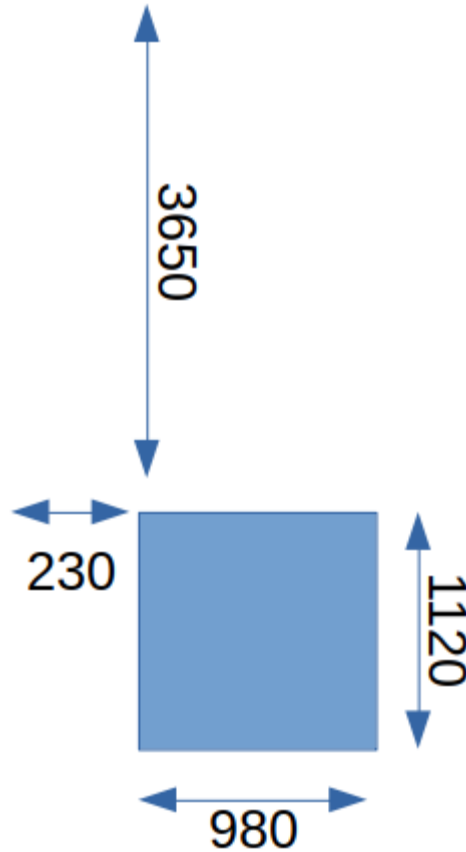
<https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/full/full/0/default>

CROPPING

Illuminated initial:

<https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/230,3650,980,1120/full/0/default>

CROPPING



230,3650,980,1120

CROPPING

Panoramic view of the city of Venice:

<https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/510,550,3580,3200/full/0/default>

CROPPING

First line of the rubric (*Ci commence li livres du graunt
Caam qui parole de la graunt Ermenie de Perffe*):

[https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-
a5da-4b09-9759-
41eee3713bc3/500,3550,3000,140/full/0/default](https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/500,3550,3000,140/full/0/default)

CROPPING

Second line of the rubric (*et del tartars et d'ÿnde. Et des
granz merveille. qui p le monde font*):

[https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-
a5da-4b09-9759-
41eee3713bc3/530,3670,2400,140/full/0/default](https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/530,3670,2400,140/full/0/default)

CROPPING

See paragraph [Region](#) in the API documentation

RESIZING

RESIZING

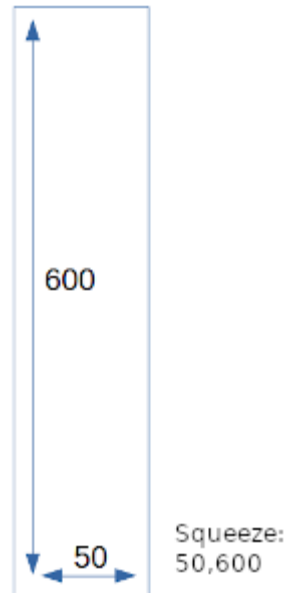
Full size, no resizing:

<https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/full/full/0/default>

RESIZING

Squeeze to 50 (width) x 600 (height):

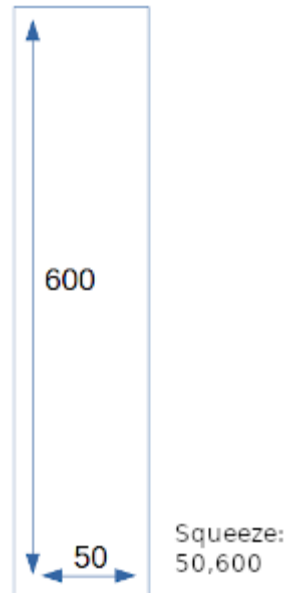
<https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/full/50,600/0/default>



RESIZING

Width 50 px:

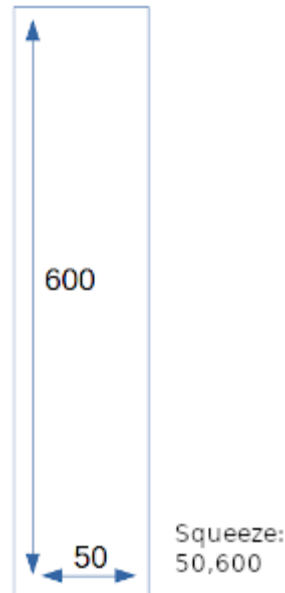
<https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/full/50,/0/default>



RESIZING

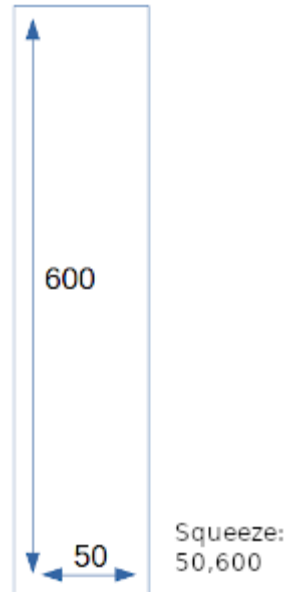
Height 600 px:

<https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/full/,600/0/default>



RESIZING

See paragraph [Size](#) in the API documentation



ROTATION

ROTATION

No rotation (0°):

<https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/230,3650,980,1120/full/0/default>

ROTATION

Rotate 90°:

<https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/230,3650,980,1120/full/90/default>

ROTATION

Rotation is allowed only for multiples of 90° in this IIF server, so 45° returns an error:

<https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/230,3650,980,1120/full/45/default>

ROTATION

Mirroring (with exclamation mark!):

<https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/230,3650,980,1120/full/!0/default>

QUALITY

QUALITY

Default:

<https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/230,3650,980,1120/full/0/default>

QUALITY

Color (same as 'default'):

<https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/230,3650,980,1120/full/0/color>

QUALITY

Gray:

<https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/230,3650,980,1120/full/0/gray>

QUALITY

Bitonal (black and white):

<https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/230,3650,980,1120/full/0/bitonal>

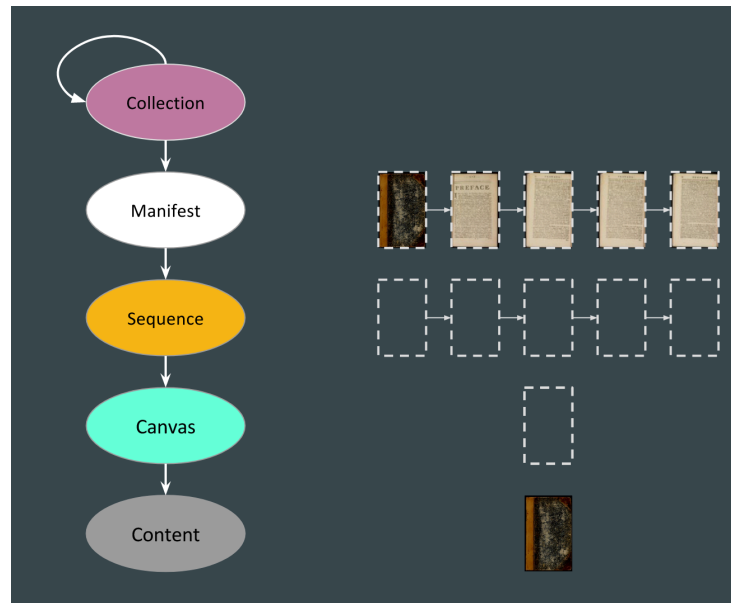
QUALITY

See paragraph [Quality](#) in the API documentation

LINKING TEXT AND IMAGE

Let's link our TEI digital edition to a IIF image

TEI → IIIF IMAGE MANIFEST



Source: Jason Ronallo, [Workshop: Shared Canvas](#)

TEI → IIIF IMAGE MANIFEST

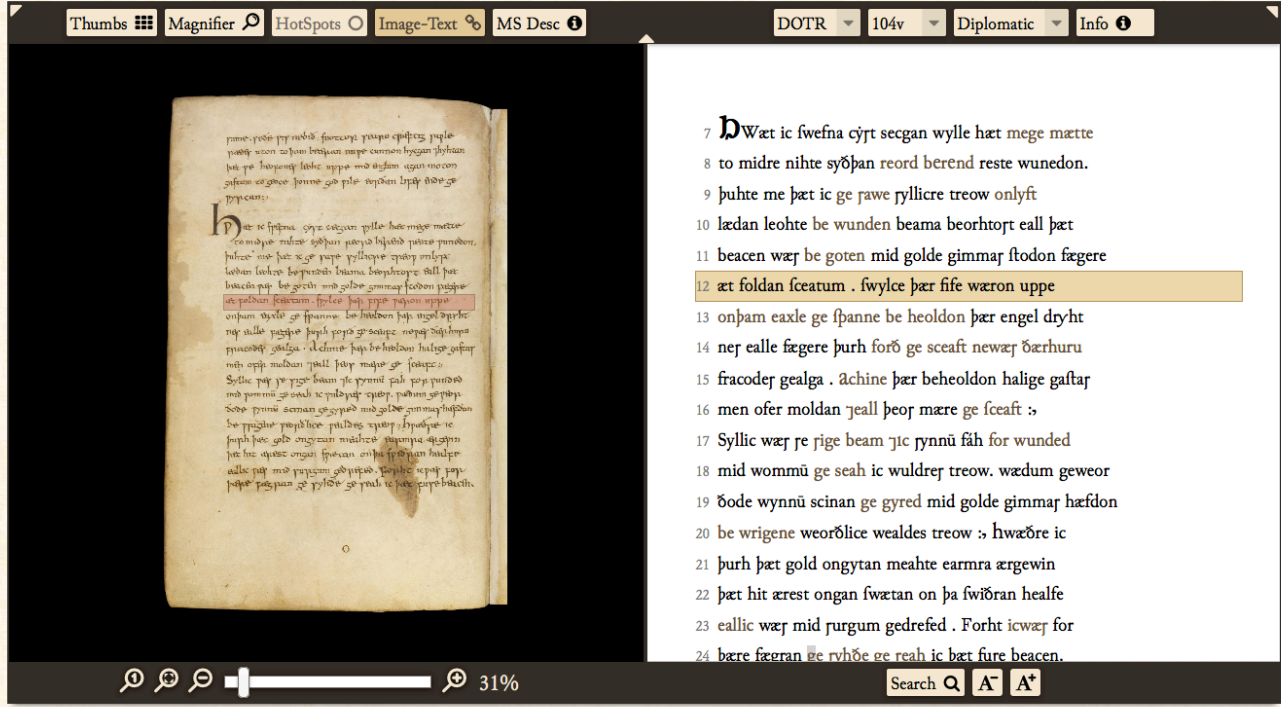
Linking `<msDesc/>` (MS description, in the TEI header)
to a whole IIIF JSON **manifest** (metadata about
collection of all images of a MS):

```
<msDesc  
facs="https://iiif.bodleian.ox.ac.uk/iiif/  
ae5c-4149-8fe4-95e6eca1f73c.json">
```


TEI → IIIF IMAGE PAGE

The Digital Vercelli Book BETA

Thumbs ☰ Magnifier 🔍 HotSpots ○ Image-Text 🔗 MS Desc ℹ️ DOTR ▼ 104v ▼ Diplomatic ▼ Info ℹ️



7 **Ð**wæt ic fweƿna cȳrt secgan wylle hæƿ mege mætte
8 to midre nihte syðþan reord berend reste wunedon.
9 þuhte me þæt ic ge ƿawe ƿyllice treow onlyft
10 lædan leohte be wunden beama beorhtort eall þæt
11 beacen wæƿ be goten mid golde gimmar stodon fægere
12 **æt foldan sceatum . swylce þær fiƿe wæron uppe**
13 onþam eaxle ge sƿanne be heoldon þær engel dryht
14 neƿ ealle fægere þurh forð ge sceaft newæƿ ðærhuru
15 fracodeƿ gealga . ðchine þær beheoldon halige gaftaƿ
16 men ofer moldan ȝeall þeow mære ge sceaft .
17 Syllic wæƿ ƿe ȝige beam ȝic ȝynnü fäh for wounded
18 mid wommü ge seah ic wuldreƿ treow. wædum geweow
19 ðode wynnü scinan ge gyred mid golde gimmar hæfdon
20 be wrigene weorðlice wealdes treow . hwæðre ic
21 þurh þæt gold ongytan meahƿe earmra ærgewin
22 þæt hit ærest ongan fwætan on þa fwiðran healfe
23 eallic wæƿ mid ƿurgum gedrefed . Forht ic wæƿ for
24 bære fægran **ge rwhðe ge reah ic bæƿ fure beacen.**

31%

Search Q A A

Powered by EVT

TEI → IIIF IMAGE PAGE

Linking <pb/> to a **canvas JSON** (metadata):

```
<pb  
facs="https://iiif.bodleian.ox.ac.uk/iiif/canvas/a5da-4b09-9759-41eee3713bc3.json"  
n="218r" />
```

TEI → IIIF IMAGE PAGE

Linking <pb/> to an image JSON
(metadata, note **info.json** at the end)

```
<pb  
facs="https://iiif.bodleian.ox.ac.uk/iiif/  
a5da-4b09-9759-  
41eee3713bc3/info.json" n="218r"/>
```

TEI → IIIF IMAGE PAGE

1. Linking `<pb/>` to an **actual image**
(note **full/full/0/default** at the end)
2. Locate the `<pb/>` element with
`@n="218r_iiif"` in your `'marcopolo.xml'` file
3. Write this in your TEI code:

```
<pb  
facs="https://iiif.bodleian.ox.ac.uk/iiif/image/218r_iiif-  
a5da-4b09-9759-
```

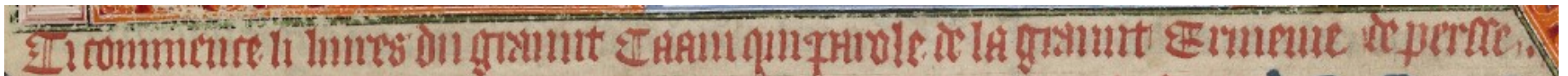
```
41eee3713bc3/full/full/0/default"  
n="218r_iiif"/>
```

TEI → IIIF IMAGE

LINE

Cropped region:

<https://iiif.bodleian.ox.ac.uk/iiif/image/699adfb3-a5da-4b09-9759-41eee3713bc3/500,3550,3000,140/full/0/default>



TEI → IIIF IMAGE LINE

Linking `<lb/>` to a region of an image file, first line of the rubric (*Ci commence li livres du Grant Caam...*):

```
<lb n="1"  
facs="https://iiif.bodleian.ox.ac.uk/iiif/  
a5da-4b09-9759-  
41eee3713bc3/500,3550,3000,140/full/0/d
```

TEI → IIIF IMAGE

LINE

...second line of the rubric (*et de tartars et d'ynde...*):

```
<lb n="2"
```

```
facs="https://iiif.bodleian.ox.ac.uk/iiif
```

```
a5da-4b09-9759-
```

```
41eee3713bc3/530,3670,2400,140/full/0/d
```


EXERCISE: JSON → IIIF URI → TEI

Feel free to [email me](#) if you encounter any issues.

Find the IIIF URL for page 218v of the MS in the IIIF JSON metadata files (starting from the manifest) and connect it to `<pb n="218v_iiif"/>` in the TEI XML code of your digital edition. Instructions:



1. Go to the [Bodleian MS manifest](#)

- *Hint:* Click on the triangles on the left to view a section of the file

2. In the JSON code of the [manifest](#), browse to:
sequences/0/canvases/457/images/0/re
- *What's this?* Canvas n. 457 corresponds to page
 - *Hint:* it should look like @id "https://iiif:
4634-8b5f-8474ad04cbbb"
 - ...or like @id
"https://iiif.bodleian.ox.ac.uk/:
62ac-4634-8b5f-8474ad04cbbb"

3. Click on the URI in that @id

- You should end up in

<https://iiif.bodleian.ox.ac.uk/iiif/image/ccf86bc62ac-4634-8b5f-8474ad04cbbb/info.json>

- (if not, just click on the link above)
- (*No worries*: I got lost myself the first time I tried this. Let's continue!)
- *What's this?* It's the URI of the JSON metadata for the **image/photo**

4. Edit the URI

<https://iiif.bodleian.ox.ac.uk/iiif/image/ccf86bd5-62ac-4634-8b5f-8474ad04cbbb/info.json> directly in your browser's address bar so that you get the **image file URI**

- *Hint:* delete `info.json` and replace it with `/full/full/0/default`

5. Once you have the new URI, hit 'enter' in the address bar of your browser to view the image
- *What's this?* It's the URI of the actual **image** data. Great job!
 - *Hint:* The photo should show a MS page starting with "Ci dit le p'mier..." (as shown in the slide below)

Et dit le premier Chapitre. Comment les .ij. freres se partirent de constantinoble pour chercher du monde.

Lors vous au temps que baudouin fu empereur de constantinoble. Ce fu a .m. l. .ccc. .xl. .anz de crist. ou es uns nicolaus pol qui peres mesire marcelin estoit et mesire mase qui freres nicolaus estoit. Cil .ij. freres estoient en la cite de constantinoble ale deuenise avec leur marcheandise noble et sage et pourveant estoient sanz faille il oient conseil eutrech et prestrent daler au marma iour pour gaaigner. il achetoient plusours iorans et se partirent de constantinoble et alerent par mer en soladaye. **Et dit le second chapitre comment li roi frere se partirent de solcaye.**

Quant il furent venu en soladaye li penserent et lor sambla bon daler plus auant et se partirent de soladaye et se mistrent au chemin et cheuauchierent tant que il vindrent a un seignour tartar qui auoit non alarta. Caam. qui estoit aulara et alolgata. Cestun dit lartaloz fit grant honneur aus .ij. freres et ot mist grant ale grace de lor venue. et il li donnerent touz les iorans que il auoient apetez. et il les veant mist volentiers et quant il furent demourer avec le seignour .i. an. si li plorent mist et il leur fist donner .ij. tans q ce ne valoit quil li auoient donne. Si com di vne guerre entre larta et alan le seignour de tartars de lenant et furent grant ost d'une part et d'autre. Mais en la fin fu des confort larta le seignour de tartars de pment. et mourut mist de gent d'une part et d'autre si que par lachoisie de ceste guerre nus ne port aler par chemin qui ne fust pris. Mais ce peril couroit par ce chemin ou il estoient uenu. si oue auant mort chascuns

Comment les .ij. freres passerent .i. desert et

Quant il oient passe vindrent ala cite de loca. cel desert li vindrent doonc cite qui est appelee locara mist noble et grant la prouence aussi auon lara et estoit roys .i. qui auoit non lara. la cite estoit la meillour de toute partie et qui il furent la venu sine purent plus aler auant. Ne retourner arriere. si que il demourent en cele cite de locara. .ij. anz. Eudemetres q il demourent en cele cite li vint messages delan le seignour de lenant li quele aloient au grant seignour de touz les tartars du monde. Et quant li message vint ces .ij. freres li oient grant merueille pour ce q ouiques n'auoient veu nul latin en celle contree si distrent aus .ij. freres seignours se vous nous voulez croice vous paures grant pourfit et grant honneur et il respondirent que il les oiroient volentiers de ce si lor distrent li message. li grauz. Caam ne mit ouques nul latin. et agrant desir deueour eut auant. Et pour ce se vous voulez veur alin sachez sanz faille que il vous verra volentiers et vous fera grant honneur et grant bien et peuez veur seurement avec nous sanz nul encombrement de mile male gent. **Et dit le quart chapitre Comment les .ij. freres virent les messages pour aler au grant.**

Quant li frere furent **Caam.** **Q**appareillie pour aler avec les messages li se mistrent ala voie avec les messages et cheuauchierent .i. an eutrech par montaignes et par grauz auant que il fussent la venu ou estoit le seignour. En cheuauchant trouuerent mist de grauz merueilles de diuers setez tel choses les queles nous ne conterous pas ore pour ce que mesire marcelin qui toutes ces choses vit aussi le vous conterai en cest liure en auant tout auertement. **Et dit le .v. chapitre**

8. Locate the <pb> element for page 218v in your digital edition's TEI XML

- *Hint* - Find this in your code:

```
<pb n="218v_iiif"/>
```

12. Copy/paste the image URI as value of a @facs attribute in a <pb> element in your <pb/> element for folio 218v:

```
<pb  
facs="https://iiif.bodleian.ox.ac.uk/iiif/  
62ac-4634-8b5f-  
8474ad04cbbb/full/full/0/default"  
n="218v"/>
```

14. Hurray! Victory is ours!



LEARNING MATERIALS

1. IIF documentation: [Image API](#) for individual images and [Presentation API](#) for collections
2. DARTH, [Hacking Mirador 2016](#)
3. Paolo Monella, [Bologna 2019](#)
4. Tiziana Mancinelli, [Bologna 2020](#)
5. Paolo Monella and Roberto Rosselli Del Turco, [AIUCD 2020](#)
6. Paolo Monella, [Venezia 2020](#)
7. Paolo Monella, [contacts](#)

