



# Back to the Middle Ages

**Blend4Web for a point and click game**

Daniele De Luca  
Silvano Imboden  
Luigi Verri

CINECA VisIT  
Italy

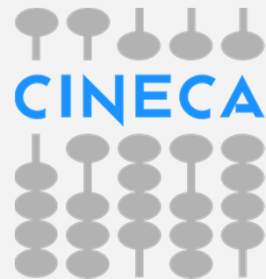


## CINECA VISIT



Cineca is the main italian supercomputing facility hosting machine used for both research and industries.

Cineca VisIT is a small department focused in computer graphics applications. We have been doing real-time applications and short movies to comunicate scientific results and cultural heritage knowledge



VISIT LAB  
VISUAL INFORMATION  
TECHNOLOGY LAB  
CINECA



# The game



Back to the Middle Ages is an **educational third-person** adventure game for on-line PC platforms and mobile devices, at present in its prototypal version.

In the game you play the role of **Guido**, a merchant's apprentice in 13th century Italian city of Bologna.

He falls into a **time vortex** created by a mischievous ghost and finds himself in **Roman Bologna**. By investigating, solving riddles and quests he will eventually find the way to **get back home**.



# People



## Production:

Antonella Guidazzoli  
Silvano Imboden  
Sofia Pescarin  
Holger Graf

## Programming:

Luigi Verri  
Antonio Baglivo



## Modeling:

Daniele De Luca  
Francesca Delli Ponti  
Emanuel Demetrescu  
Daniele Ferdani  
Valentina Rossetti  
Maurizio Quarta  
Francesco Veronesi  
Rossella Pansini  
Chiara Bonanni  
Luca De Felice

## Storyboard

Ya'ara Ilan  
Maria Chiara Liguori

## Screenwriting

Maria Chiara Liguori

## Archeological consultant

Jacopo Ortalli



## The technology



- The open-source production pipeline is grounded on **Blender** for modeling.
- The characters are based on **BlendSwap** and **CGCookie FlexRig** assets
- Our main goal was to create a **prototype** of a web application accessible with a simple **browser**.

No plugins installation => **Blend4Web**

- The game logic has been written in **Javascript**, by working with low level and high level Blend4Web APIs, iterations, and math, math, math!
- The **inventory system** and the **conversation engine** are based on two javascript libraries from the 'thiscouldbebetter' website, extended in order to achieve our objectives.



## Reuse and Blender for Modeling



The game uses several already available **assets** from the "Apa the Etruscan" movie, adapted for the real-time.

This movie is now a resident exhibition in the city museum.



[Roman Bridge](#)



## Reuse and Blender for Modeling



The movie is already based on a pretty old realtime project called Nu.M.E. (1999)





## Reuse and Blender for Modeling

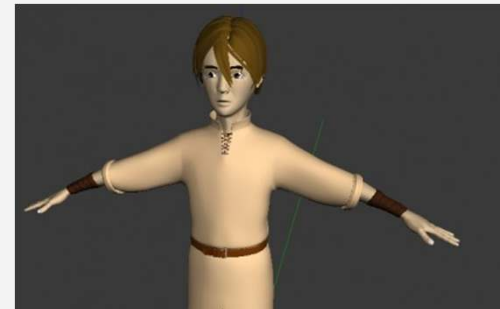




## The main character creation



- Based on a community model: thanks to <http://www.blendswap.com/blends/view/3177>
- Heavily **optimized**: from ~50000 verts to 3000 verts [first abomination](#)
- Rigged and animated for B4W: [modeling wip](#)
- Node materials and baked lights



## The NPCs: Cg Cookie Flex Rig



The other NPCs are based on the **CGCookie Flex Rig**

Thanks to this powerful tool everybody is able to create as many characters he desire with a lot of controls infinite variation over:

- shape of the body

- face conformation

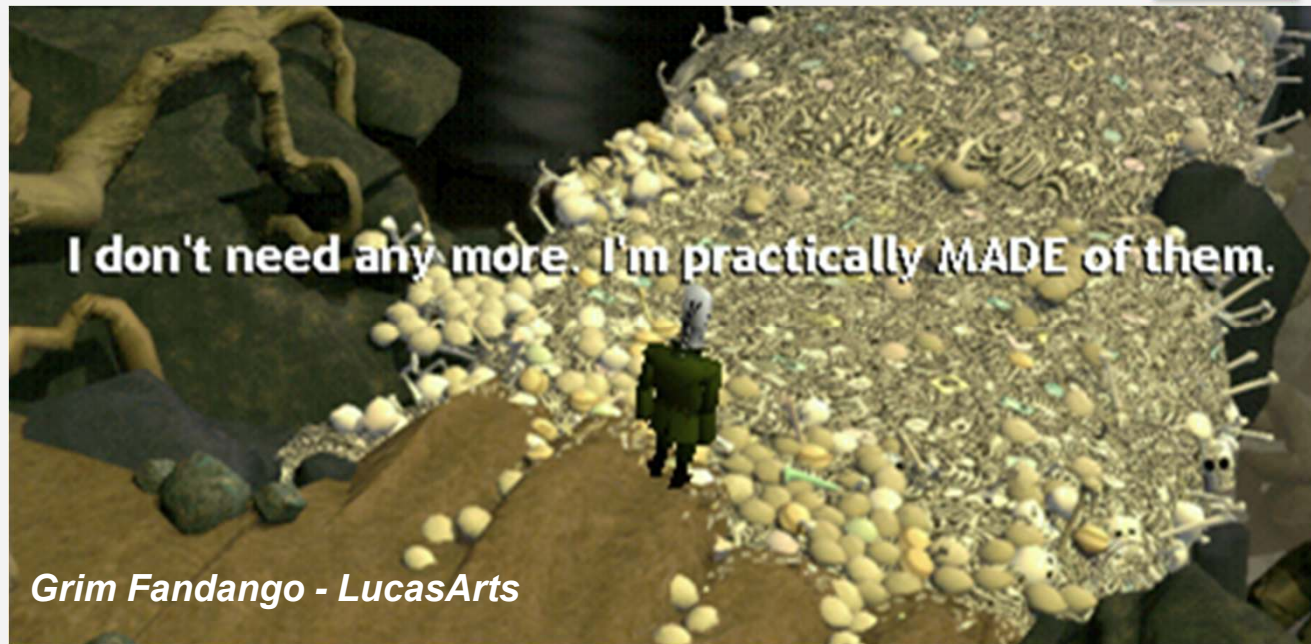
- eyes hair and skin color

- dress and shoes

- so many more stuff!



## BONES EVERYWHERE!



**Hundreds  
of bones  
and  
shapes!**

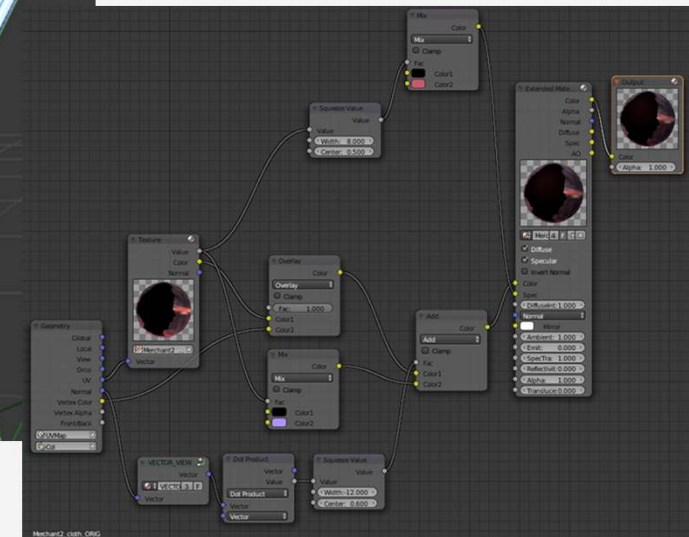
## NPC Creation

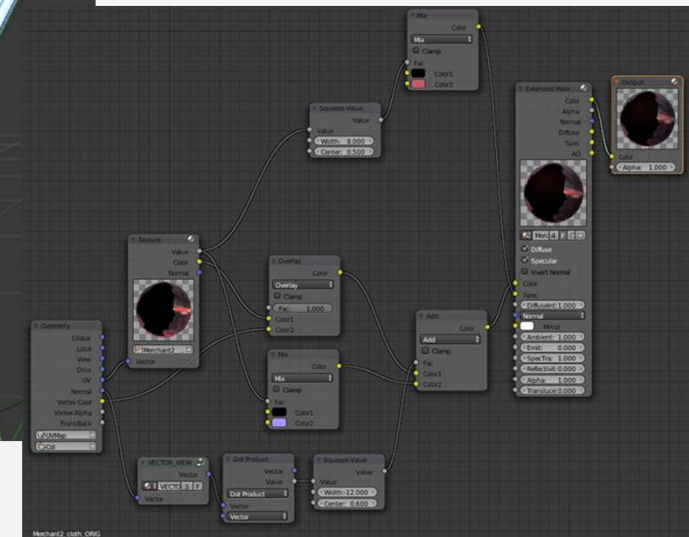


**Model** with CG flexrig  
**Apply** shape keys and  
**remove** armature  
Decimate and **clean**  
**Paint** and bake



A 3D rendered character, NPC\_Merchant2, is shown from the waist up. The character has a bald head, large eyes, and a wide smile. They are wearing a purple long-sleeved shirt with a pink belt. They are holding a large sword in their right hand and a shield in their left hand. The background is dark with a grid pattern. In the bottom right corner, there is a small window with the text "© Gamemaster" and a list of items: "Gold", "Silver", "Bronze", "Iron", "Steel", "Wood", "Stone", "Glass", "Leather", "Cloth", "Paper", "Food", "Drink", "Tools", "Weapons", "Armor", "Housing", "Transportation", "Communication", "Information", "Entertainment", "Education", "Healthcare", "Social Services", "Public Works", "Utilities", "Transportation", "Communication", "Information", "Entertainment", "Education", "Healthcare", "Social Services", "Public Works", "Utilities".







## NPC Creation



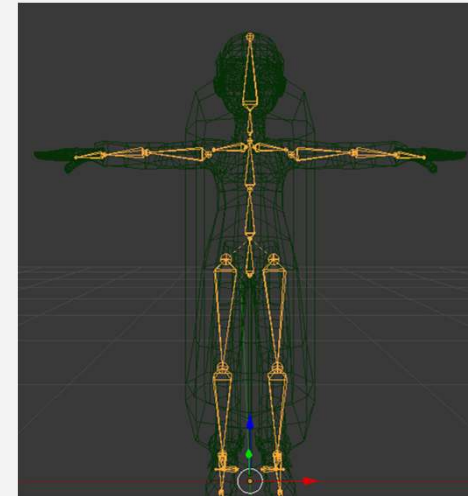
**Rigify** set-up

**Generation** of the  
armature

Automatic weight

**Save** the rigged file

`NPC_merchant_animated.blend`



# NPC Creation



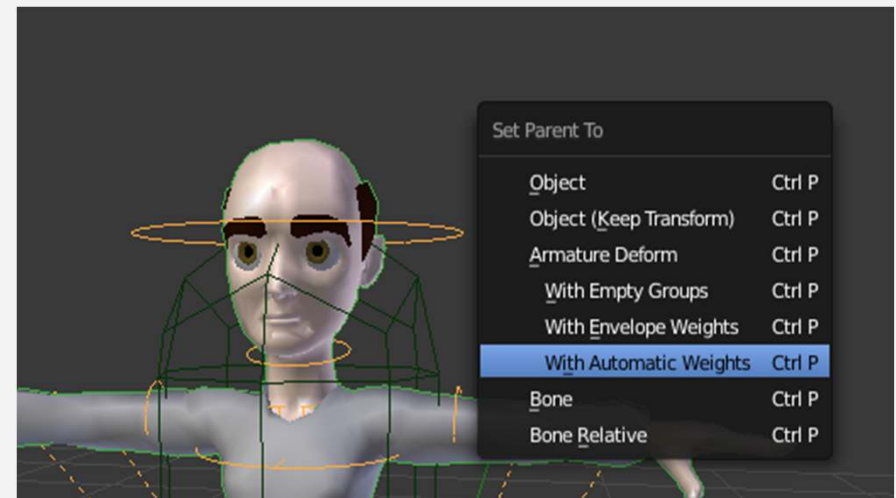
**Rigify** set-up

**Generation** of the  
armature

Automatic weight

**Save** the rigged file

`NPC_merchant_animated.blend`



## NPC Creation



**Throw away** all the damn bones again!

**Keep** only the DEF and ORG to animate in b4w

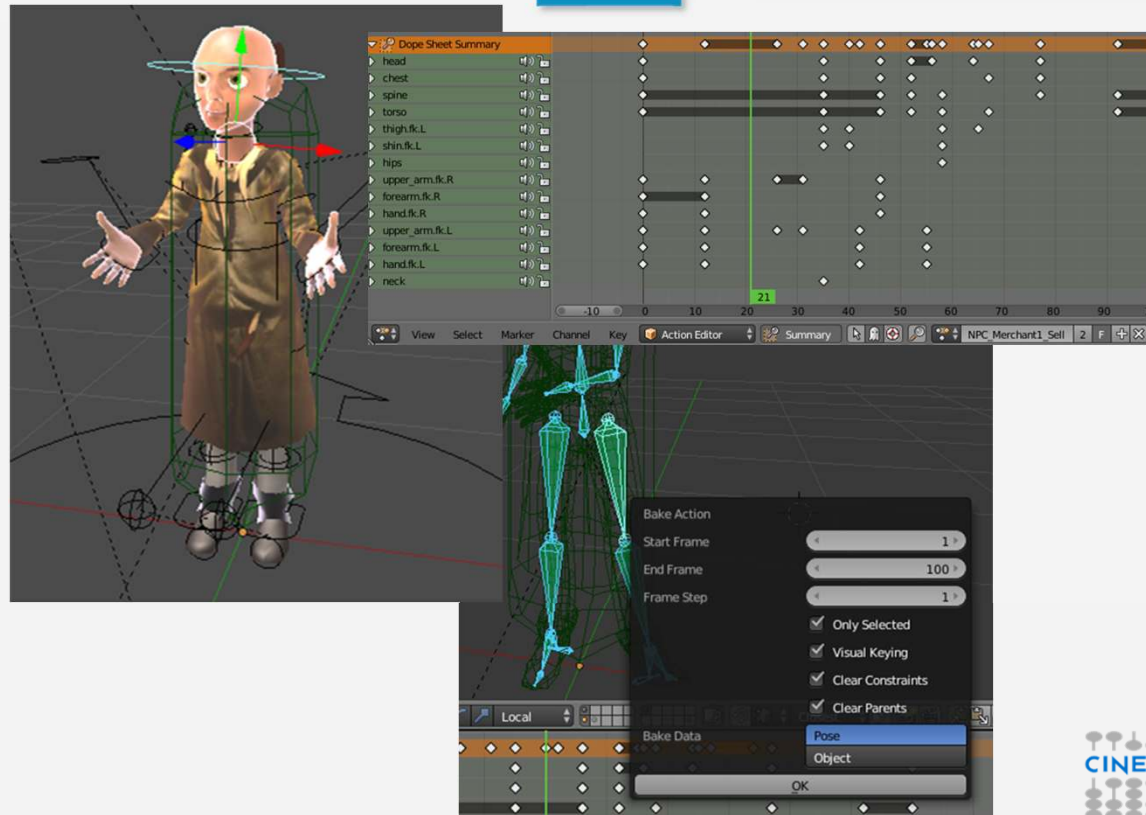
Save your production file: `NPC_merchant.blend`



# NPC Creation



**Bake** action for ORG bones, in a new temporary file



## NPC Creation



Append the animation into the final production file



# A point and click adventure



In order to make the game playable on every touch-screen device we decided to adopt a **"point and click" genre**.

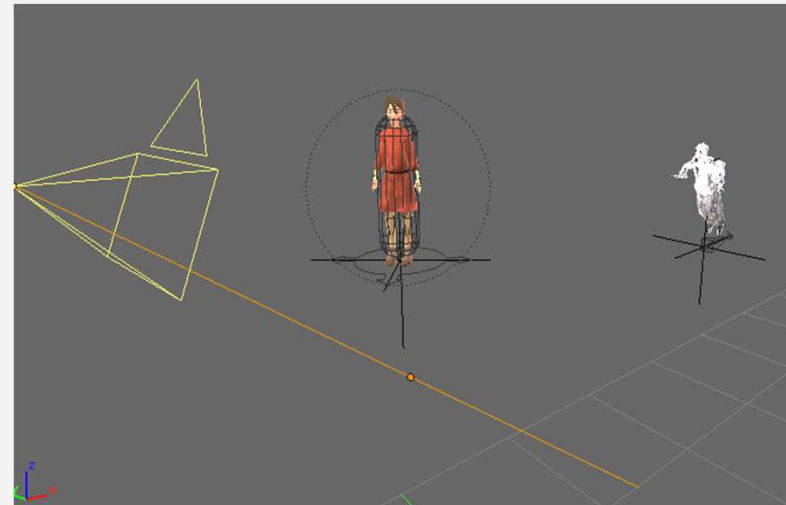




## The movement



**Target point:** calculated starting from the point clicked on the screen, a ray is projected from the camera toward the floor plane.



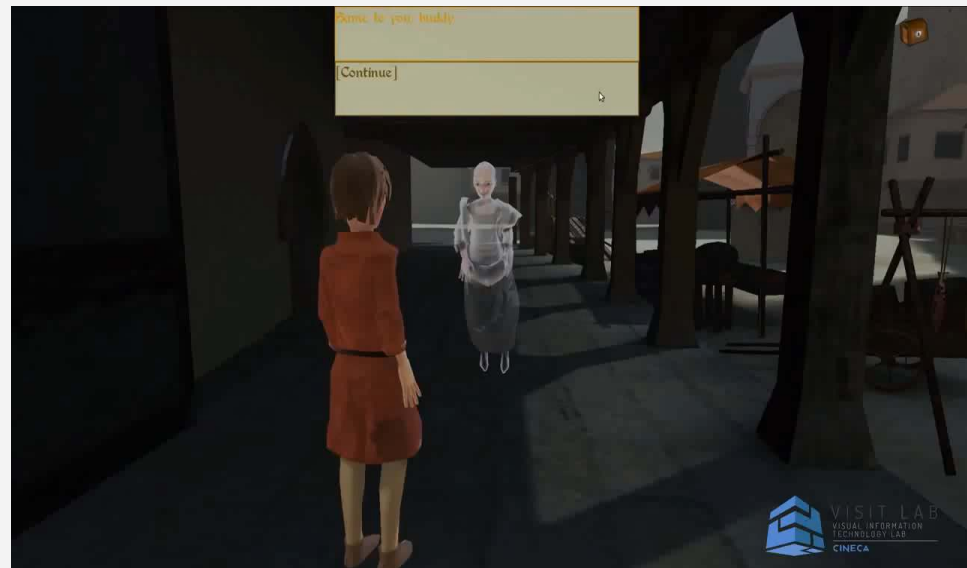
## The movement



**Target point:** calculated starting from the point clicked on the screen, a ray is projected from the camera toward the floor plane.

The **speed** is calculated depending on the distance.

The **animation** is walk/run/idle depending on the speed.



## The movement



**Target point:** calculated starting from the point clicked on the screen, a ray is projected from the camera toward the floor plane.

The **speed** is calculated depending on the distance.

The **animation** is walk/run/idle depending on the speed.

And to get the correct quaternion **rotation** of Guido...  
again math, math, math!



## The movement



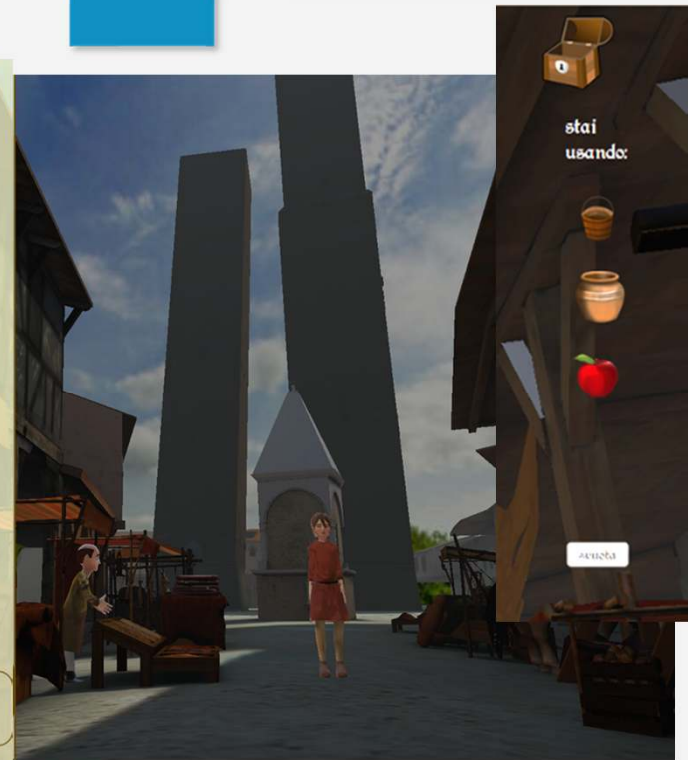
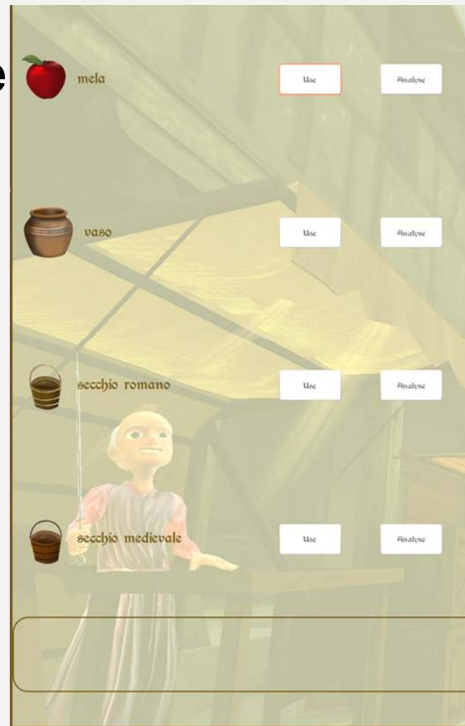
...and while we  
were looking for the  
right trigonometric  
corrections... .



# The inventory



We started from a simple textual inventory library and we created a **graphical inventory system**.



## The conversation engine



We started from a library managing a **direct dialogue** with multiple choice answers.

We extended it to enable complex dialogues between the player and the characters.



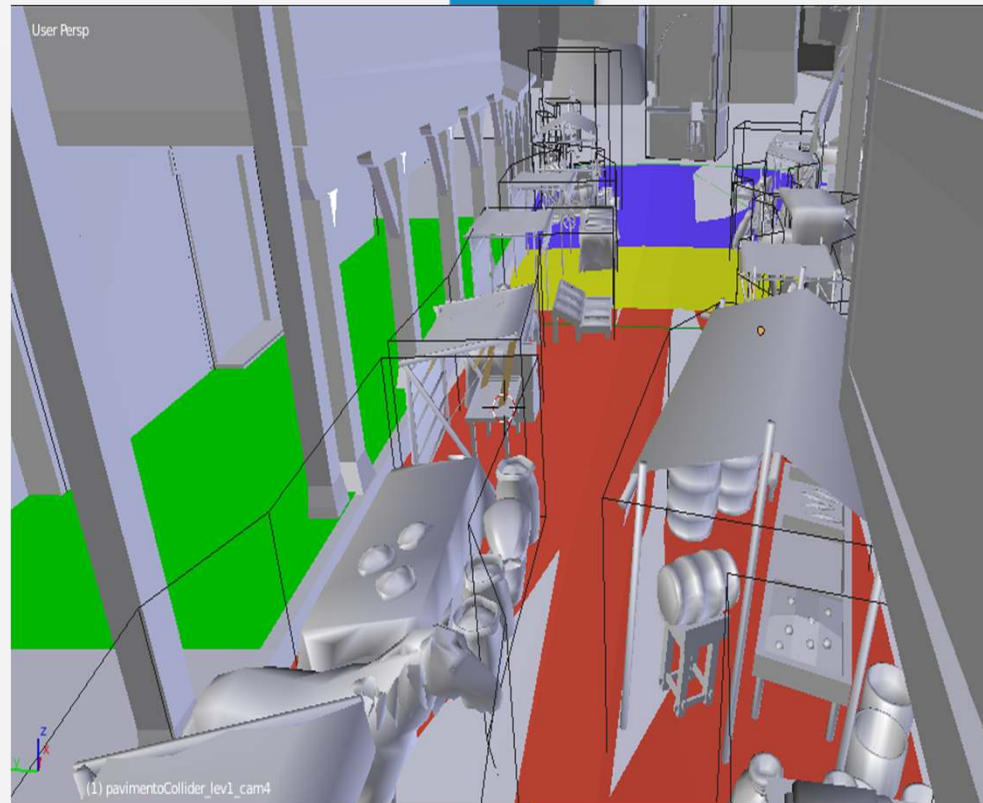


## Camera movements



In order to explore the locations we need **camera movements**

Those are **activated** when the character reaches specific **areas**, using blend4web collision sensors.



# The future




My Risultati della ricerca: x

www.muvir.it/Search/Results

NUOVA RICERCA ENTRAR EN

# muvir



Tutti i Campi


Ricerca:

Genera 3D con le ultime ricerche

Mostra 1 - 20 di 295 ricerca: ", tempo di risposta: 0.04s

Ordina

1



Identificativo originale: BCB00031

**Giovane donna con vestito verde**  
di Ellipini, Francesco


NELLA COLLEZIONE: Banco di Brescia

[Risorsa digitale >>](#)

[materiale grafico](#)

[Codice QR](#)  
[Aggiungi alle tue Gallery](#)  
[Vedi contesto](#)

2



Identificativo originale: BCB00094

**Patriarca d'Antiochia**

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[Vedi contesto](#)

Restringi la ricerca

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Donghi, Antonio	11
Gemito, Vincenzo	10
Pitloo, Anton Sminck	7
Matta, Roberto	6
Andreotti, Libero	4
espandi ...	





**Thank you**

