Return to Bagacum – Interactive fictional 3D adventure.

Département du Nord, Bavay Museum of Archaeology – 11.30 pm.
Seeing suspicious lights, a police van from the Maubeuge gendarmerie turns into the Museum site. The two officers who emerge from it find much of interest: a car with no number plate, an abundance of technical equipment spilling from the back of a van, ropes hanging down the face of the building, shadowy figures on the roof. Clearly they have stumbled upon a major crime…

"Don't worry, we are just faking a break-in" the production team assures them…
"Oh really?… ", says the gendarme.
"Yes, that's the clever part!"…

We convince him by showing him that the van is in fact a perfectly innocent 3D video control room. The upholder of the law dons a pair of stereoscopic spectacles, and a broad smile spreads across his face….

Midnight, and **de pinxi** *finishes filming the introductory sequence for the interactive show* *"Return to Bagacum".*

A 3D interactive show that incorporates a recreation of everyday life in the largest forum in Gaul in the second century into a fictional adventure!

Concept.

In Roman times, the town of Bavay was known by the name of *Bagacum*; being located on the spot where seven major routes met, it was an important stopping-off point, and the capital of the city of Nerviens.

To assert their presence, the Romans built the largest forum outside Italy right here in the town: it was a gigantic public building, 200 metres long by120 metres wide!

Today the area of Bavay once occupied by the forum has been preserved, and forms part of the museum complex. All that remains of the original building is a ruined part of the underground portico. In order to restore the readability of the site, the Bavay Museum and archaeological site, in conjunction with the cultural department of the Conseil Général du Nord, have commissioned *de pinxi* to reconstruct the Gallo-Roman site in computer graphics, just as it existed in the second century AD.

To give a better understanding of life in Gaul under the Romans, the show is based on a fictional premiss. Julie is seeking to publish her thesis on archaeology; she is rather too interested in a statuette of Mercury. By magic, she finds herself back in the second century AD, with the mission of returning to the present day… with a bit of help from the audience!

The digital reconstruction:

The digital reconstruction of the Bavay forum consists of:

- External detailing (down to the tiles and capitals);
- Interior detailing, involving extensive research for the shops and public offices;
- The digital modelling of everyday objects found at the site, pieces from the Museum's collections and excavations;
- Several hundred metres of frescoes based on canvases at the Institute of Roman Painting in Soisson;
- The site of the basilica (90m x 15m) and its guilds;
- The capitals, statues and decors, all modelled in high definition;
- The dwellings and buildings surrounding the forum;
- realistic simulated lighting;

- the shops and their associated crafts:
  - basketwork shop;
  - pottery;
  - drapery;
  - grocery;
  - forge;
  - tabletry shop;
  - shoemaker's;
  - apothecary's shop;
  - goldsmith's shop;

- the public activities:
  - religious ceremonies;
  - the town administration;
  - trials;
  - the basilica site.

As we explain, most of the objects appearing in the interactive adventure were found during excavations of the site, and these help to create a dialogue between the digital production and the Museum's collections.

In contrast to the usual disclaimers made for a work of fiction, the dialogues, characters and situations portrayed are in fact based on real situations, characters and actions that existed in Bavay/Bagacum in the second century AD. These elements have been identified through archaeological digs and writings from the time: not one word is uttered that does not have its roots in second century Bagacum.

Technical note.

"Return to Bagacum" is an interactive, multilingual, 3D show that takes place in an interactive *argoGroup™* theatre.

Every seat in the theatre has its own interactive console consisting of a joystick, buttons, display and multilingual sound system (FR, NL, EN, D). Sitting facing the vast screen that completely swallows up the audience, every single spectator can influence the course of the show and extract personalised information from it.

The spectators are charged with accomplishing various tasks, either on their own or in collaboration, to help the heroine in her quest. This exclusive system from *de pinxi* combines group navigation and social experience with strong individual interaction.

In *"Return to Bagacum"*, the audience are drawn into two different types of action: guiding the heroine, Julie, through the various accessible areas of the Bavay Forum (majority navigation system), and selecting various different objects, characters, writings etc. encountered along the way or in the shops (individualised control system using the joystick). Each repeat visit is a new experience, because during their 25-minute voyage of discovery visitors get to explore only *half* of the Forum's architecture, less than a third of the shops and craft workshops and a quarter of the public activities! They experience only one of 108 possible itineraries.

The production – an unique search tool

From a scientific point of view, the production *Return to Bagacum* has had the benefit of unprecedented expertise to help in creating the reconstruction by means of computer graphics. Over 40 international experts, from every field of expertise on second-century Romans, gave us the advice, records, sketches and texts we needed to work out the details of the virtual models. The credits listed below give a good indication of the links forged during the course of the project.

The digital reconstruction is also an unique search tool: it is the first visual synthesis of the present state of knowledge of the Bavay Forum. The infographic database that provides the decor for the fictional adventure *Return to Bagacum* is already the object of new search programs launched by the Bavay Museum and archaeological site.

Another unique aspect of the project is the presentation of the show in conference mode, which releases it from the temporal constraints of fiction and allows the operator to "walk" freely through the digital reconstruction. There are no limits; the audience can discover every detail of the reconstruction for themselves.

Finally a production system was installed at the Museum to allow the reconstruction to be updated according to the advances of the various search programs. The project is part of an evolving system: thanks to the interactive techniques deployed, the production will never date from the day it comes into service! The Bavay Museum has tools for updating the representation of the site according to the latest knowledge.

The production – a technological performance.

The show constitutes a real first in the field of archaeological reconstruction for the purposes of education; it is based on a number of innovative techniques, brought together in a single show for the first time.

The voyage of discovery through the Bavay Forum is based on real-time synthetic images; the interactive navigation is controlled by the *argoKernel* software developed by *de pinxi*, showing on a Linux cluster; the computer produces a very high-definition 3D image.

The action sequences in the middle and far distance are created by means of synthetic images of animated characters; this is how all the guilds on the basilica site are presented for example.

The close-up action is played by *real* actors, filmed in 3D with the *dpCam3D*, the second-generation stereoscopic camera specially made by *de pinxi*. The actors are filmed against a green

background ("chroma key" special effects), then the footage is integrated into the real-time synthetic image in the form of non-compressed video flow.

The objects close to the actors also belong in the real world. They consist of numerous replicas of Gallo-Roman objects: baskets, pottery, textiles, tools, tablets, stylets, sculptures etc., all provided by various museums and experts who were involved in the project.

The figures

The project was launched in October 2003.
Over 8 months of documentary research, and over 200 bibliographic references.
Nearly 3000 photos of materials and graphic references taken for the project.
9 months of production for the reconstructed synthetic images.
15 animated synthetic characters.
18 days of 3D filming (studio and outdoor), 20 hours of rushes.
33 real characters integrated.
80 minutes of scenes enacted.

The interactive theatre *argoGroup™* has 40 seats and a 3D screen measuring 6.6m x 4m. The show is presented in 4 languages (individual interactive audio system, on request): French, English, Dutch and German.

Media available to the press.

Screen captures.
2.30 minute video trailer.
Images of filming and "making of".
Stereograms of show.
Catalogue "Overlapping notions of Roman heritage and contemporary approaches", 120 pages on the research behind the making of the digital reconstruction.

Contacts: Philippe Chiwy –phil@depinxi.be
Tel. +32 2 245 75 01

Stop press: on its first public outing, "Return to Bagacum" is awarded the "Mixed Realities" trophy at Laval Virtual (April 2005).

Laval Virtual is the crossroads of virtual reality in Europe, at which over 40 countries are represented by the greatest specialists in this field. *Laval Virtual* also has the distinction of being both a trade fair and an event for the general public. *Return to Bagacum*, even though presented away from the context of the Bavay Museum and archaeological site, found incredible popularity, drawing the largest crowds of all the attractions: the largest interactive space at the fair, always full, and booked up more than two hours in advance….!

The "*Mixed Realities*" category is particularly apt for the *Return to Bagacum* production, which presents the spectator with an interactive show constructed from several digital layers: the synthetic décor, the real actors filmed in 3D, the virtual actors, the interactive objects….

Credits.

Conceived and produced by *de pinxi* sa - Brussels
Story, music and direction: Philippe Chiwy
Production and scientific coordination: Aude Salmon
Director of photography: Denis Dufays
Script girl, editing, direction team C: Anne-Françoise Tran
Production assistant: Bénédicte Moulard

Computer graphics, programming & interaction par *de pinxi*
Modelling, rendering:	Geoffrey Haulotte
	Jean-Michel Trauscht
	Jérémy Belly
Animations:	Jean-Michel Trauscht
Textures:	Eugène Gérin
	Jérémy Belly
	Bruno Saint-Olive
Photography:	Guy Talin
	Philippe Chiwy
	Jean-Michel Trauscht
Programming:	Emmanuel Léonard
	Daniel Hussenet
	Hugues De Keyzer
	Anis Fetouaki
Special effects:	Stephen Sobad - Keen sa

Cast (by order of interactive appearance):
Julie/Julia – Maria Del Rio
Manu – Anis Fetouaki
Germain – Hugues De Keyzer
Doorman 1 – Daniel Hussenet
Doorman 2 – Jérémy Belly

In the shops:
Potter – Bernard Lefrancq
Livia's Friend – Françoise Oriane
Domina Tiberina – Frédérique Barret
Basket maker – Cécile Eloy
The daughter – Lilith Chiwy
Drapier – Bernard Lefrancq
Shopkeeper 1's wife – Valérie Lebrun
Cobbler- Peter Tietze (Leder Peter)
Jeweller – Luc Devos
Apothecary – Geoffrey Haulotte
The patient – Jean-Michel Trauscht
Shopkeeper 2's wife – Véronique de Miomandre
Tabletry – Ludovic Vaes
The son – Thomas Tilborg
Blacksmith – Thibault Verhelst
Grocer – Jean-Pierre Dauzun
Caius – Pierre Generet-Lebof

Crocus the schemer- Pierre Crokaert
Potus the schemer – Bernard Accarain
Frescoes painter – Jean-François Lefèvre

Justice:
pro lawyer– Marc De Roy
The judge – Alain Louis
plouc lawyer – Patrick Waleffe
The owner – Joël Beyaert
The farmer – Guy Talin
The witness – Jérémy Belly
The scribe – Christophe Hilarion

Administration:
The duumvir – Alain Fréhaut
Publius – Patrick Waleffe
Marcus – Marc De Roy
Lucius – Joël Beyaert
The scribe – Christophe Hilarion

Religion:
The priest – Patrick Waleffe
The magistrate – Marc De Roy
The reader – Joël Beyaert
The checker – Christophe Hilarion
The slave – Jérémy Belly
The flutist – Daniel Hussenet

The basilica:
The magistrate – Alain Louis
Machinator – Christophe Hilarion
End:
Aulus – Pierre Dumaine

Film crew:
Camera assistant: Guy Talin
Video engineer 1: Bernard Vandermolen,
Video engineer 2: Stephen Sobad
Sound engineer: Benoît Bruwier
Editor 2: Thomas Doneux
Sound post-production: studio 5/5 + studio *danslacave*
Antique costumes:
    Provincial Archaeological Museum – site of Velzeke
    Peter Vanderplaetsen & Geertrui Vankerhoven

Ms Del Rio's costumes : Nathalie Leborgne.
Make-up: Pascale Dero
Make-up, hairdresser and postiches: Geneviève Lacroix
Storyboard : Eugène Gérin.
Set: Eric Verheyden
Constructor: Laurent Havaux
Best boy: Pierre Generet

Actors are filmed in stereoscopy with dpCam3D

Scientific advisers et research :
L'équipe Conservation-recherche du musée/site archéologique départemental sous la direction de Véronique Deloffre:
Frédérique Barret, Kelig-Yann Cotto, Mélanie Foucault, Christophe Hilarion, Jérémie Ketels, Marie-Françoise Kwiatkowski, Monique Toilliez.

Scientific committee :

Pierre Aupert – Directeur de Recherche, CNRS
Jean-Baptiste Bellon - Architecte du Patrimoine
Philippe Bridel - architecte, responsible des monuments, Etat de Vaud (Suisse)
Véronique Brunet-Gaston – Chargée de Recherches à l'Inrap – UMR 6565 – Laboratoire de Chrono-Eco de Besançon
Pierre Cusenier - Architecte des bâtiments de France, Service départemental de l'architecture et du patrimoine du Nord
Gérard Fosse - Conservateur régional de l'Archéologie, Direction régionale des affaires culturelles du Nord – Pas-de-Calais
Jean-Claude Golvin - Directeur de egional, CNRS
Roger Hanoune - professeur d'archéologie, université Lille III, Centre Halma – UMR 8142
Pierre Leman - conservateur du patrimoine, Direction régionale des affaires culturelles du Nord – Pas-de-Calais
Frédéric Loridant - conservateur du patrimoine, Service archéologique départemental, Conseil général du Nord
Christine Louvion - Traitement des données architecturales, Service archéologique départemental, Conseil général du Nord
Arthur Muller – Professeur, université Lille III, Centre Halma – UMR 8142
Albéric Olivier - Architecte CNRS
Jacques Philippon - Conservateur egional des monuments historiques, Direction régionale des affaires culturelles du Nord – Pas-de-Calais
François Rousseau - Université du Littoral, Laboratoire d'informatique UPRES-JE2335, Calais
Christophe Renaud - Université du Littoral, Laboratoire d'informatique UPRES-JE2335, Calais
Claude Vibert-Guige - Centre d'étude des peintures murales romaines CNRS, Soissons

Conseillers scientifiques :

Claudine Allag - Centre d'étude des peintures murales romaines CNRS, Soissons
Marc Bubert - professeur de lettres classiques, Cassel
Hélène Chew - conservateur en chef chargée du département gallo-romain, Musée des antiquités nationales, Saint-Germain-en-Laye
Virgilio Hipolito Correia - directeur du musée et site, Coïmbriga (Portugal)
Karine Delfolie – documentaliste, Direction régionale des affaires culturelles du Nord-Pas-de-Calais
Monique Dondin-Payre - directeur d'études à l'Ecole pratique des hautes études, Paris
Alain Favre-Bulle - professeur de lettres classiques, Besançon
Danielle Gourevitch - directeur d'études à l'Ecole pratique des hautes études, Paris
Sabine Groetembril - Centre d'étude des peintures murales romaines CNRS, Soissons
Markus Kohl - Halma – UMR 8142 (CNRS, Lille 3, MCC)
Jean-Philippe Kwiatkowski - professeur de physique, Valenciennes
Noël Mahéo - conservateur du patrimoine, Musée de Picardie, Amiens
Jacques Michel – Professeur honoraire – Université Libre de Bruxelles
Florence Monier - Centre d'étude des peintures murales romaines CNRS, Soissons
Véronique Montembault - Atelier Bell, Saint-Benoît du Sault, Indre
Tarek Oueslati – Halma – UMR 8142 (CNRS, Lille 3, MCC)
Marie-Thérèse Raepsaet-Charlier - professeur, Université libre de Bruxelles, Bruxelles
Yves Roumégoux - archéologue, Direction régionale des affaires culturelles du Nord-Pas-de-Calais
Magali Schneider, Université Paris I, Paris
John Scheid, professeur au Collège de France, Paris
William Van Andringa, maître de conférence, Université de Picardie Jules Verne

Many thanks:

Archéosite d'Aubechies : Léonce Demarez, Evelyne Gillet
U.L.B. : Bibliothèque de Sciences Humaines de l'Université Libre de Bruxelles - Jean-Pierre Devroey, Christian Brouwers, Ghislaine Bary
Proofreading: Jean Salmon, Denise Mathy, Emile Chiwy