CONTACT

Jose Antonio Muñiz
jam@digivision.com.es
+34 902 101 336

Andrés Serrano
andres.serrano@structuralia.com
+34 914 904 200

www.ingenieriaromana.digivision.com.es


ROMAN·ENGINEERING
The ingenuity of Rome at the service of the people
introduced by
Isaac Moreno
six 55-minute episodes

SYNOPSIS

This documentary series describes the ability of the Romans to accept and assimilate knowledge, no matter where it came from, and then perfect it. The six episodes show the engineering of Rome and the astuteness of its engineers in applying knowledge and resources to the construction of prodigious structures that were designed to link the vast territories of the empire, to control the water supply and to build extraordinary cities.

We will see the challenges faced by the Roman engineers and the way they approached and overcame them. We will come to understand the huge difficulties of the time and how these were dealt with. We will marvel at the astuteness and skill of humankind and be amazed at the effort needed to undertake projects that, in the majority of cases, can be considered extraordinary and colossal. Finally, we will travel across half the world, and especially on the Iberian Peninsula, to see the remains that still survive. Remains that, thanks to all the above, we will have the enormous satisfaction of being able to understand and interpret.

Viewers will learn of a glorious past that will surprise and amaze them and will lead them to ask the disquieting question: How is it possible that such a resplendent empire and advanced lifestyle and standard of living could disappear so abruptly?

The Arches of the Segovia Aqueduct

FROM EPISODE 3 - AQUEDUCTS

FORMAT

"ROMAN·ENGINEERING" consists of six 55-minute episodes. The final master is in 1080i and Dolby Digital 5.1 (AC3).

Episode 1 of "ROMAN·ENGINEERING" prepares viewers for the series with an exciting presentation of everything they need to know to be able to understand the elements that helped forge the Roman empire. It then continues by focusing on the great engineering works built to serve the people.

Episodes 2 to 6 deal with Roman technology and the great engineering projects; how they were built and the service they provided to citizens and the state.

Each episode is an exciting adventure into a specific speciality of Roman engineering.

1. BUILDING AN EMPIRE

2. CITIES

3. AQUEDUCTS

4. ROADS

5. BRIDGES AND STONE STRUCTURES

6. MINING

EPISODE 1

BUILDING AN EMPIRE

BUILDING FOR THE PEOPLE

Episode 1 of "ROMAN·ENGINEERING" is an introduction to the series. It begins by reflecting on the nature of humankind and its ability to progress and fall into decline.

Episode 1 briefly reviews the history of the human race, chronologically situating the periods of greatest prosperity and decadence

This sets the scene for introducing the Roman empire and comparing it to other empires. In this way the viewer learns of all the key elements that allowed one of the greatest and most prosperous empires of all time to be built.

To do this it focuses on analysing the sources of knowledge about Rome. Through spectacular reconstructions, viewers will travel to ancient Greece where, among other things, they will hear the story of Hypatia and the destruction of the Library of Alexandria and be present at some of the stories of conquest. This will help them understand how the Romans assimilated the knowledge of the conquered peoples.

Episode 1 explains how Rome used that knowledge to create the extraordinary engineering that played a fundamental role in the expansion and functioning of the empire.

Thus, the episode gives a fast-moving description of the evolution of the empire from the perspective of the grand building projects, presenting briefly but epically the domination of the topography, the building of cities, the control of water, the construction of roads, and the conquest of architecture, ports and mining.

The first episode is an intensive synthesis and grandiose presentation of the following five episodes, which will seduce the viewer into becoming an undying fan of "ROMAN·ENGINEERING".


Alejandria
Aldaia

EPISODE 2

CITIES

THE SEEDS OF THE EMPIRE

Rome was a city that became the seed of an empire.

The city itself as a seed of civilisation and coexistence was probably the most effective of all the weapons in Romanisation arsenal. Its irresistible attraction and ability to convince were greater than any military campaign. What caused the typical citizen of Rome to possess this incredible power?

Isaac Moreno explains it to us in Episode 2 of "ROMAN·ENGINEERING", telling us how Rome served as a model for the foundation of all the other cities in the empire.

Next we will see how a city was founded, how the location was decided and the fundamental factors in that decision; the rituals, the setting out of boundaries, the division into lots and their distribution among the colonists.

Isaac Moreno takes us to ancient Tarraco and uses it as an example of a mid-size city, although in this case one that was extremely important in administrative terms, to show us how a Roman city was planned, structured and built. Isaac makes constant use of virtual models and contrasts them surprisingly and colossally with the known remains of the city.

Viewers will enjoy a magnificent spectacle in which they will be able to see how the knowledge and instruments of Roman topography were applied, understand the ever-mystical and incomprehensible archaeological remains of a city and travel back to the second century, when ancient Tarraco was at the peak of its splendour.

Next they will experience the art of creating cities and travel to the most surprising Roman cities to see their similarities and differences.

The fortification, the forum, the temples, the fountains, the public baths, the squares, the administrative buildings, the streets, the grand venues for holding spectacles: the circus, the theatre, the amphitheatre, etc. A festival for the senses that will stun both experts and non-experts alike.

At this point viewers will think they have reached the climax of the documentary and will be extremely surprised and finally dazzled beyond their imagination. Thanks to the knowledge they have acquired and the cities they have just learned about, they will be able to understand the magnificence of Rome. Using educational techniques and the virtual resources previously used in Tarraco, Isaac Moreno will make Rome rise again from its ruins, showing viewers almost inconceivable data and statistics.

EPISODE 3

AQUEDUCTS

ENSURING A VITAL SUPPLY

The Romans were not only aware that water meant power, they also knew that health and well-being depended on it. That is why they were obsessed with finding the purest and most abundant water supplies possible, collecting it from wherever they found it and taking it to where it was needed.

This obstinacy, combined with Roman ingenuity, could only give rise to prodigious constructions. These were unique structures, as the challenges of the terrain were different in each circumstance. Mountain chains, ravines, valleys and deserts were the scenes of these achievements.

Isaac Moreno takes us to the past, to the historical moment when the Romans decided where to locate some of the empire's most important cities. We will stop for a while to see the city of Nîmes, ancient Nemausus, and a magnificent challenge that involved building one of the most spectacular water supplies of antiquity.

Through precise, elaborate computer simulations we will see the work and the engineering needed to make it a reality: the techniques used by the Romans to bore through mountains, cross valleys and ravines and distribute the water throughout the city. Isaac Moreno will also show us the uses found for aqueducts in mining and other industries.

With the knowledge we have acquired, we will embark on a dramatic journey to other parts of the empire where breathtaking projects were undertaken and prodigious technical solutions were found for the challenges faced.

Viewers will get to know the audacious aqueducts of Tiermes, Albarracín and Chelva, the impressive arches of Segovia and Tarraco, the mysterious and surprising Bilbilis, and the cistern of Osma, all in Spain. They will also see the impressive siphons of La Gier in France and Aspendos and Patara in Turkey, the enormous cisterns of Tunis, the more than ten aqueducts that supplied water to Rome, and the unbelievable aqueducts of Gadara and Carthage.

EPISODE 4

ROADS

THE NEURAL NETWORK OF THE EMPIRE

The first peoples had paths that allowed them to travel their territories, to communicate and trade with other settlements and to explore new territories.

There were no roads before the rise of the first civilisations and great states. The first we know of were built by the Persians, although perhaps Assyria and Mycenae already had some. To date little has been documented of these.

Rome needed roads more than any other state that had come before it. Its great empire required fast and effective communications. Its immense trade was only possible thanks to them.

In Episode 4 of "ROMAN·ENGINEERING" we will learn about the immense Roman road network. A network of a magnitude unprecedented in the history of humanity. Isaac Moreno will not only show us the distribution of the thousands of kilometres covered by Roman roads, but also how the Roman engineers planned and built them in the face of the challenges posed by multiple types of terrain.

Isaac Moreno will reveal the efficiency and ingenious techniques used to build the Roman road surfaces by showing us the methods used to locate, excavate and interpret them.

We will fly over the plains of the Iberian Peninsula, France and Italy in search of the ancient routes of the roads. Viewers will be surprised to discover that changes in the colour of the land and crops are evidence of the traces of ancient roads, as well as of many of the Roman towns they linked so many centuries ago that have now been almost completely forgotten.

We will come to understand how the Romans were able to successfully undertake an enterprise of such magnitude, how they solved the question of finance and how they built the roads in sections, just like today.

Isaac Moreno will show us how Roman citizens used their roads: for people transport, the imperial post, trade, and special merchandise shipments, some of them very heavy. We will also see the advanced vehicles and their design, their speed and safety, as well as inns and taverns, post stops, maintenance work, etc.

Viewers will be surprised to see how many of our modern roads follow the same routes as those chosen by the Roman engineers, irrefutable evidence of their expertise and advanced engineering.

Finally, Isaac Moreno will invite us to reflect on the use made of the roads after the fall of the empire. How in subsequent centuries, far from progressing in this field, the Roman legacy was used and abused, and how the brilliant, painstaking road-building technology was lost for centuries and only rediscovered in our time.

EPISODE 5

BRIDGES AND STONE STRUCTURES

THE EQUILIBRIUM OF STONE

The "fabric" of a construction is the stonework based on modules set out and organised to support the structure. The Romans skilfully took advantage of the resistant nature and characteristics of different materials to build their fabrics. Among them, the arch was the most commonly used device for withstanding the stresses in the structures they built.

In Episode 5 of "GROMAN·ENGINEERIN" we will learn about the structural techniques most commonly used in ancient construction and, among them, those chosen and perfected by the Romans. We will see how they used massive amounts of fine building materials such as stone, bricks and concrete, and how they intelligently combined all of them.

We will see how a vault works and the skill the Roman engineers achieved in its use.

Having understood the structures and how they were supported, Isaac Moreno will take viewers to see the Roman empire's most spectacular and representative constructions.

Virtual models superimposed on real images will help viewers to understand the ingenuity applied to these constructions and the distribution of stresses within them.

Viewers will marvel at the use of semi-spherical vaults and domes, whose enormous dimensions have never since been equalled. Isaac Moreno will use modern engineering to show viewers the impressive results of the calculated resistance of these structures.

Once we have understood the structures and how they function, Isaac Moreno will invite viewers to reflect on the skill and dexterity with which the Roman quarrymen worked the stone.

Using precise computer animations, Isaac Moreno will show viewers how the Romans were able to cut and adjust the stone blocks with such skill and how they were able to lift and manoeuvre them into position, despite their huge weight and the great heights at which they had to be placed. In this process viewers will learn about the ingeniousness of Roman cranes, with their hoisting tackle and large human-powered traction wheels that provided impressive lifting power.


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EPISODE 6

MINING

EXPLOITING THE RICHES OF THE LAND

Rome had a huge appetite for all types of metal and mineral products. So much so that Roman mining operations reached a scale unimaginable prior to that time.

Gold, silver, copper, iron, lead, tin, salt, cinnabar, malachite, etc., viewers will be amazed at the enormous variety of minerals and the applications they found in Roman society.

In Episode 6 of "ROMAN·ENGINEERING", Isaac Moreno will demonstrate how the Romans conquered and subjugated territories that were extremely rich in high value metals. Although the indigenous populations had already been exploiting those metals, the Romans applied the science of engineering to their operations, extracting practically a hundred per cent of the known natural resources of those territories.

Thanks to the Roman technicians' thorough command of such disciplines as topography and hydraulics, they were able to undertake projects of a magnitude unknown until their time.

Isaac Moreno will amaze viewers with virtual simulations of the most original and powerful techniques used by the Romans to wrest the earth's riches from it. How they dug shafts more than a hundred metres deep, how they extracted water from the depths to continue working below the water table and how they used conduits that in some cases transported water over distances of more than 140 km.

We know the tools they used, the lighting, how the galleries were shored up, the machinery and techniques for draining off or raising the pumped water; we know how they extracted the minerals, how they ventilated the galleries and how they removed and washed quantities of gold-bearing ore unimaginable before that time, in some cases more than a hundred million cubic metres.

With everything they have learned, Isaac Moreno will take the viewers to see some of the Roman empire's most interesting mining areas and surprise them with a tremendous finale: the gold-bearing exploitation of the cores.

In virtual settings, Isaac Moreno will set the scene for one of the Romans' most incredible and unimaginable mining operations, in which they literally split open mountains with the ingenious and extremely powerful use of water, managing to move and process volumes of earth unsurpassed until modern-day mining.


ROMAN·ENGINEERING
THE INGENUITY OF ROME AT THE SERVICE OF THE PEOPLE
INTRODUCED BY
ISAAC MORENO
SIX 55-MINUTE EPISODES
BUILDING AN EMPIRE
CITIES
AQUEDUCTS
ROADS
BRIDGES AND STONE STRUCTURES
MINING
www.ingenieriaromana.digivision.com.es
A DIGIVISION AND STRUCTURALIA PRODUCTION CO-PRODUCED BY GRADHERMETIC AND TELEVISIÓN ESPAÑOLA
PRODUCED AND SCREENWRITTEN BY JOSÉ ANTONIO MUÑIZ INTRODUCED BY ISAAC MORENO DIRECTED BY JOSÉ ANTONIO MUÑIZ AND JAVIER TÉLLEZ
DOCUMENTARY DIRECTOR ISAAC MORENO VISUAL EFFECTS DIRECTOR JAVIER TORRES VISUAL EFFECTS ANGEL VELOSO
PHOTOGRAPHY JAVIER TÉLLEZ ARTISTIC DESIGN JAN VALLÉS AND JAVIER TORRES
digivision
structuralia
GRADHERMETIC
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ROMAN·ENGINEERING
EPISODE 3
AQUEDUCTS
ENSURING A VITAL SUPPLY
INTRODUCED BY
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PROMOTIONAL IMAGE

The dissemination and promotion of a major production should be able to transmit rapidly and effectively the treasures it contains and aims to reveal, the efforts put into it and the finesse and elegance with which it is produced.

digivision and **structuralia** are dedicating much care and attention to the concept and design of the production's promotional and dissemination material, as well as to the packaging of possible merchandising items, ensuring that they evolve as the production advances.

The extraordinary content generated in a production of this type allows additional items to be devised and produced, particularly e-books and interactive applications for emerging technology platforms.

digivision and **structuralia** are developing an iPad version of "ROMAN·ENGINEERING", an editorial and interactive application to complement the documentary series. This application will without a doubt encourage users to watch the series.

The "Devil's Bridge" (Tarragona)
FROM EPISODE 3 - AQUEDUCTS

THE PROPOSAL

The idea of making this documentary series came about in digivision and structuralia as a logical consequence of meeting Isaac Moreno.

The man has an interesting story to tell. The feats of humankind kindle admiration. New discoveries, adventure and innovation are all irresistible attractions that arouse concern with respect to future advances. These new ideas, dreams turned into reality, give rise to curiosity and an intense desire to understand the mechanisms that made them possible.

Many documentaries and films have included some or perhaps even all of those concepts. However, when you hear Isaac Moreno you will understand that in his discourse there is something completely different. We saw it quite clearly: the difference is the perspective, the focus. The difference is that we are accustomed to hearing the explanations from the mouths of experts, of historians and archaeologists. Isaac, however, in addition to being a humanist, is an engineer, and as such, he explains things to us from both a technical and a human point of view. The point of view of the engineer and of the user of the infrastructure. A point of view that allows viewers to understand how things were built and how they worked.

This focus opens up completely new attractions to us. We will not only come to understand what the infrastructures were like and what remains of them, we will also understand how and why they were built, how they worked and what they did. We will finally understand the true effort and ingeniousness behind each of the great Roman works.

digivision and structuralia have concentrated their efforts on making this proposal the soul of the series. The strategy to achieve this consists of having a very clear informative line that begins by placing viewers in the circumstances of the historical moment to be looked at and, immediately afterwards, showing the challenges faced by the Roman engineers, asking the viewers to think about how they could possibly be solved. After having the viewers make this reflection, we tell them the solution chosen by the Roman engineer, which is always surprising for its audacity and genius and allows us to immediately understand the theoretical concepts of engineering to be applied. Finally, the construction is recreated by putting the theory into practice and we witness the conquest of the challenge.

Viewers will experience this process under the guidance of Isaac Moreno, who will explain it in a simple and understandable manner, thanks to the interaction of elaborate computer simulations in virtual settings.

Once the viewers have understood the challenge, the solution found for the project, how the construction is to be approached, the techniques used and the end result, they are transported to the corresponding part of the empire where they can see the archaeological remains that have survived to the present day. There, with computer simulations overlaid on real images of the remains and thanks to Isaac Moreno's explanations, they will arrive at an effective and decisive understanding that has been difficult to achieve until now.

When the viewers have the knowledge to interpret the ancient remains, Isaac Moreno will take them on a thrilling journey to the most interesting and exciting places in the Roman empire. In all of them he will help the viewers to observe and understand the singularities and details revealed to us by the building techniques, the unforeseen events that faced the engineers and how they exploited and maintained the structures they built.

THE PROPOSAL

After the journey, viewers will be invited to reflect very briefly on the fall of the Roman Empire, the disappearance of a way of life, the loss of technical and scientific knowledge that left Europe in a technological recession that lasted hundreds of years. To analyse how it is only in recent history that the knowledge and skills of Roman engineering have been rediscovered as a basis on which to build modern civilisation.

To support and reinforce this entire discourse, we use numerous historical reconstructions that have been carefully chosen and created reaching the utmost limits of scientific rigour. Isaac Moreno will also occasionally and briefly seek the opinion of experts from all over the world.

Furthermore, in each episode an element will be carefully chosen to set the scene in a surprising and extreme way. Viewers who watch more than one episode will notice this and will anxiously be looking to discover the culminating moment of the new episode they are watching.

The challenges, situations, conquests, ruins, etc. are all elements that posses an enormous emotional power and are highlighted thanks to the natural and contagious enthusiasm of Isaac Moreno, which the viewers will quickly latch onto. digivision creates a tremendously exciting production using constantly moving, extremely dynamic images full of impact, backed by a masterful soundtrack that competes for protagonism with the story being told.

Finally, equally as important as the educational and historical information transmitted is arousing the viewers' admiration and pride in the conquests of humankind, for its ability to turn ideas, wishes and dreams into reality. Each chapter is therefore imbued with an epic and emotional tone that underlies the whole series.

All these ingredients, combined with digivision's particular and unmistakeable style, ensure a completely original production that will undoubtedly be a benchmark for future documentary series.

The Forum of the Colonia (Tarragona)

FROM EPISODE 2 - CITIES

THE SCRIPTWRITERS

Isaac Moreno

Isaac Moreno is a public works engineer employed by the Spanish Ministry of Development. He is a recognised expert on Roman engineering and has taken part in numerous Roman road identification projects, technical studies of Roman water conduits, research into ancient technology and topographical instruments, and other facets related to Roman engineering.

His passion for ancient engineering, and particularly that of the Roman period, has led him over the years to continuously investigate and concentrate his knowledge. This has made him a world-renowned expert in the field and has led to many requests to assess, cooperate with or direct research, excavation, conservation and rescue projects.

Isaac Moreno is not only passionate about Roman engineering; he feels the same way about its dissemination. That is why he founded "Traianus", one of the most important professional groups in the field of civil engineering and one of the world's most important thematic portals on Roman engineering. He also gives many lectures and talks, occasionally teaches specialised courses, and has written articles for more than fifty publications.

Now Isaac Moreno is throwing the weight of all his knowledge and experience into the "ROMAN·ENGINEERING", documentary series, providing technical and scientific assessment and writing the scripts together with the director of this ambitious production.

Jose Antonio Muñiz

Jose Antonio Muñiz simultaneously studied analogue and digital electronic engineering. He then specialised in automatic machines and microprocessors. He subsequently travelled to the United States where he saw for the first time the simulation technologies developed by AT&T and Silicon Graphics.

At the age of 18 he imported that technology into Spain and founded digivision with the aim of producing computer imaging, becoming one of the first Spanish companies to offer such services.

The continued management of digivision, his passion for science and technology and his enterprising nature have led to him work with dozens of companies in the industrial, technological and audiovisual sectors, developing all types of computer simulations and audiovisuals of a largely documentary and educational nature, and turning digivision into a benchmark company due to its quality and originality. During that time he has devised and planned the production of various science and technology-related documentary series.

Now, Jose Antonio Muñiz is putting all his experience and expertise into a new documentary series designed to take maximum advantage of the most advanced and innovative cinematographic and digital imaging techniques. To achieve this he is writing the scripts together with Isaac Moreno.

THE DIRECTOR

Jose Antonio Muñiz is convinced that there is a different way of making documentaries and he attempts to demonstrate this in all the documentary productions he is involved in.

His personal style is to maintain the informative nature of the documentary, but to do this with the emotional and visual impact of the cinema. He has the finest production resources at his disposal and he knows the best technologies to apply to the script and the production. He seeks out exciting elements and builds on them to take them to the greatest heights. He creates a spectacle of sound and light that leaves no viewer indifferent.

This concept is transmitted with all its strength in "INGENIERÍA·ROMANA" and demonstrates the effectiveness, elegance and emotion of this new way of making documentaries.


digivisio

THE PRESENTER

To find the technical knowledge, the passion, the vocation for narration, the affability, the speaking skill, and the ability to transmit energy and optimism all in the same person is no easy task; but those are the basic talents required of a guide.

Isaac Moreno not only has all those characteristics, he also has huge experience of fieldwork and he loves to visit and interpret the remains that are the source of his knowledge. None of this stays hidden from his viewers.

Isaac Moreno cannot help but infect the viewers with his energy, passion and admiration, arousing in them the sensations and feelings aspired to by the production.






RESOURCES

The main resources of this production are Isaac Moreno's knowledge and experience, but to ensure that the extremely rigorous demands with regard to content are met, experts in history and engineering from all over the world have been consulted.

The use of computer animation is very important. Not only is it used independently, but it is also skilfully and successfully combined with real images to provide them with an augmented reality.

Habitual use is made of historical reconstructions. In addition to the aforementioned experts, we are able to count on the participation of experienced specialist companies and re-enactment groups to ensure we maintain the desired rigour. Maximum care is taken with the artistic design of the props and settings and the parts are played by professional actors directed using cinematographic values. All this is undertaken without sacrificing the required rigour.

Taking spectacular shots in extraordinary places requires bringing in cranes, robotic camera movement systems and helicopters.

Stabilisation has been taken to the extreme and the "floating" images are designed to communicate the majesty of the elements and our respect for them.

While the outdoor scenes and those with the presenter are filmed in HDCAM, the reconstructions are "filmed" using digital cine cameras. This allows the images to be fully differentiated, reinforcing the viewers' sensation of "a leap in time". Under this criterion the photography, to which maximum attention is paid, maintains two completely differentiated styles, one for the reconstructions and another for the presenter's scenes.

The soundtrack is by renowned composers, all from the world of the cinema. All the music is orchestrated and the musical montage is equal to the best cinematographic productions.

Maximum care is taken with the photography, maintaining the two completely different styles for the reconstructions and the presenter's scenes.

FILM

The documentary section, in which the images have to be “fresh” and “clear”, is filmed with Sony HDCAM cameras. The lenses chosen are from the highest quality CANON range (the HDxs Series). A colour depth of 8/10 bits (4:2:2/4:4:4) is used.

For the cinematographic sections, in which the images need to be evocative and sensual, filming is with RED ONE and EPIC digital cone cameras. The lenses chosen in this case are from the highest quality ANGENIEUX range (the Optimo Series). A colour depth of 12 bits is used.

TECHNOLOGY AND RESOURCES

PRODUCTION

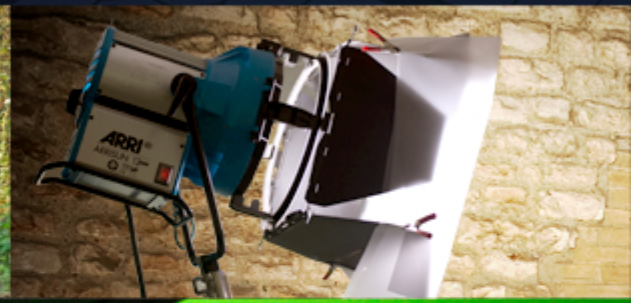
All filming is done using stabilising systems (steadicam, three-axis hot head, camera crane and dolly) and CINEFLEX HD for the aerial filming (one of the most complex and effective gyro-stabilised systems on the market).

Light helicopters are used for particularly special places.

The vehicles used are fully adapted for the material and the terrain, allowing complex equipment to be transported to difficult, hard-to-reach spots.

The lighting covers the whole range of current technology. HMI and LED are the preferred methods of lighting. The main suppliers are ARRI and Dedolight.

For studio scenes a 500-square-metre covered set with a 40-linear-metre chroma key backdrop and more than 200 square metres of surface area is used.

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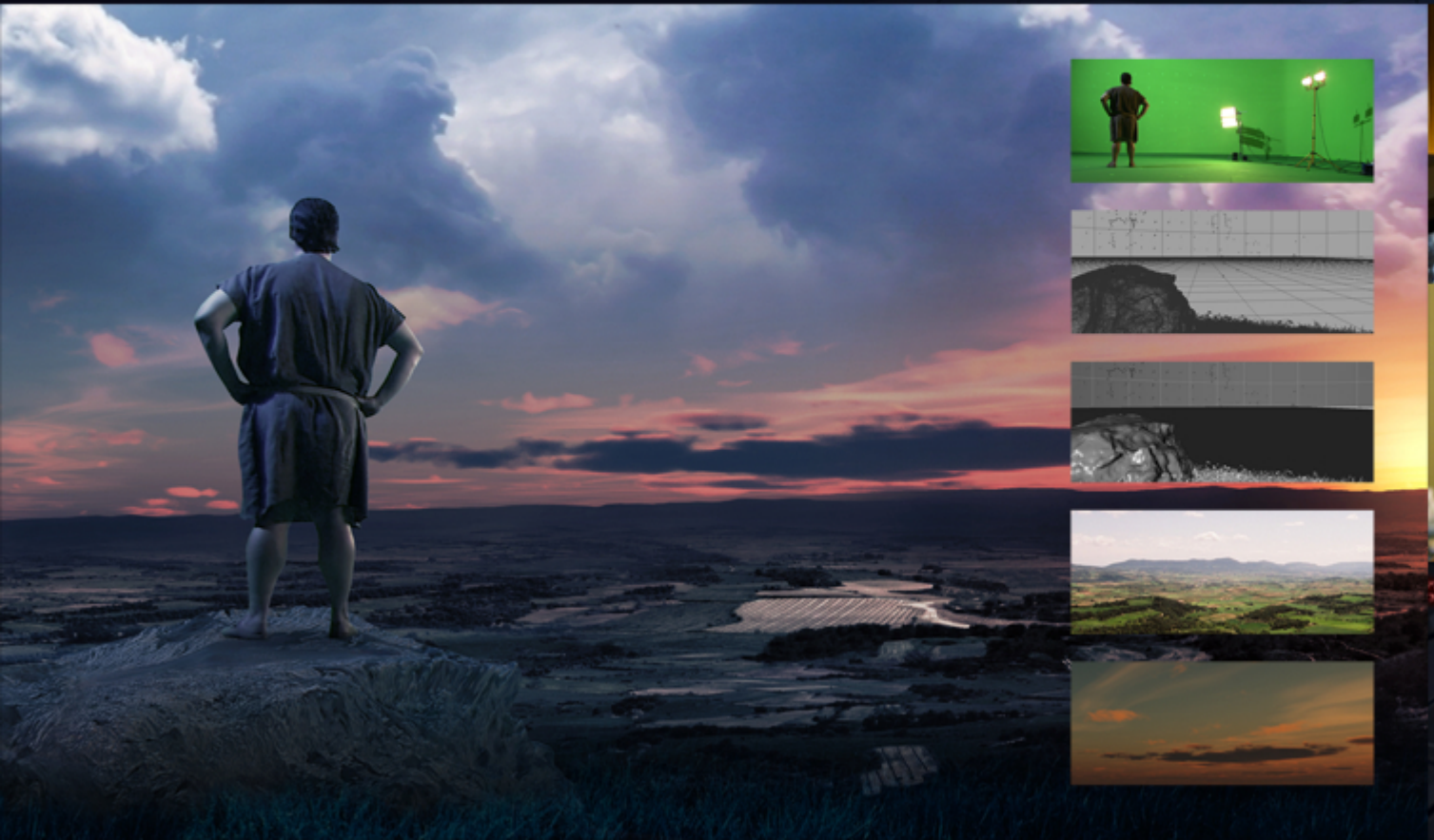
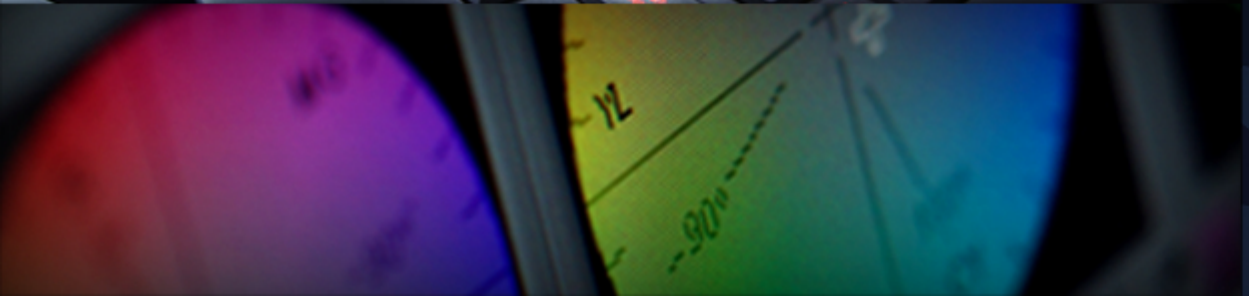


POSTPRODUCTION



The entire work flow is digital, without compression and always first generation, with the final editing being carried out on Black Magic Design systems.

Various systems are used for the digital composition, including Combustion, Digital Fusion and After Effects.

Considerable use is made of virtual images combined with real images. The latest specialised tracking and technology packages are used for this.

Many of the reconstructions that combine synthetic scenes with real images require matte painting on a graphic palette.

Colour correction is painstakingly carried out. Correct, carefully undertaken calibration is essential for the historical reconstructions “filmed” with digital cine cameras and great depth of colour. DaVinci colour correction systems are used for this.

TECHNOLOGY AND RESOURCES

SIMULATION AND SPECIAL EFFECTS

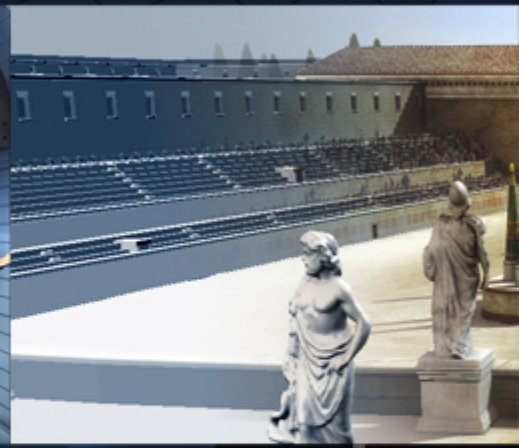
Computer image loading is essential and is used massively and convincingly in "ROMAN·ENGINEERING".

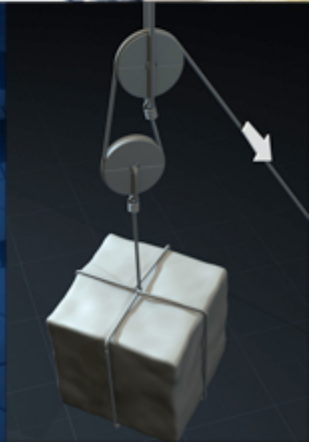
The main technologies employed for this are Lightwave and Maya, although other auxiliary packages, such as Cinema 4D, are occasionally used.

Dynamic and particle systems are habitually used. In addition to those already incorporated in Lightwave and Maya, specialised systems such as Real Flow are used.

The virtual animation of large areas of territory is a complex but fundamental resource. This is carried out using specialised systems that allow the handling of the enormous amounts of data required to process satellite images, orthophotos and terrain elevation data.

In parallel, traditional special effects and advanced make-up are used occasionally, but without reservation, when required.





THE PRODUCERS

Head Office

Avenida Once de septiembre, 1
Edificio Zénit, 4ª planta, A
43202 - Reus - SPAIN

Film Set

Ctra. de Montblanc, 165
43202 - Reus - SPAIN

Tel. 902 101 336
Fax 902 366 397

www.digivision.com.es

digivision

digivision was founded in 1989 and was one of the first firms in Spain to work with computer imaging. Its services focused initially on the production of computer graphics for TV documentaries and independent production companies, but it soon began to work on computer simulations for industry and research institutions. digivision grew rapidly thanks to its particular production methods: it was able to transmit educational messages by entertaining and stimulating the viewer through the use of spectacular production values, while maintaining the highest possible rigour in the content. In 2006, digivision decided to move into the field of TV documentary production. In the design of its productions it has maintained the scrupulous production methods that brought it so much success in the service sector.

In addition to its particular production methods, the major difference between digivision and other production companies is that it has everything it needs in-house to create major productions in high definition and digital cinematography.

Its permanent staff includes expert technicians and it has all the technical equipment needed for computer animation, editing, postproduction and calibration, as well as all the technical and human resources needed for the production: HD cameras, general and HMI lighting, hot head-equipped cranes, steadicam, dolly, mobile units and a soundstage.

This means it can undertake productions without the extra cost of equipment hire, making it extremely competitive.

For aerial filming digivision has links to a major aeronautic firm that allows it to do all this kind of work in CINEFLEX HD from a helicopter, always working with the same pilot, producer and operator. This means we are able to consistently produce extraordinary results of a high technical and artistic quality.

digivision prioritises the production of major documentary series and can count on important financial support from the industrial and research sectors. The firm currently has five high-quality documentary series in production, two of them considered to be "major productions". The documentary projects produced by digivision are characterised by their cinematographic focus in terms of style and resources and they stand out for the excitement they generate.

structuralia

Head Office

Avenida de la Vega, 15
Building 3, 4ª planta
28108 - Madrid - SPAIN

Tel. 91 490 42 00
Fax 91 490 42 10

www.structuralia.com

structuralia is a school specialising in the infrastructure sector and a pioneer in the integration of audiovisual media and multimedia applied to training.

Its more than ten years of experience in promoting educational content in multimedia and audiovisual formats, its knowledge of the infrastructure and engineering sectors, and its network of expert contributors allow it to produce major audiovisual documentaries.

Its first major success was the "Trades in the Building Industry" documentary, with more than 40,000 copies sold on DVD and showings on Spanish television.

The idea for the "ROMAN·ENGINEERING" documentary series arose from an initial less-ambitious project carried out by **structuralia** in collaboration with Isaac Moreno: a 40-hour interactive multimedia course on the same subject.

structuralia is currently working on another four cinematographic productions in the field of engineering and infrastructure documentaries.

structuralia offers:

- Educational skills and wide experience in the engineering and infrastructure sector that **structuralia** gained over the past ten years.
- The technical resources and the team's experience in producing videos, computer graphics and cinematographic products, having always worked in the field of engineering and science.
- The ability to promote and develop major projects, coordinating experts in very different fields.

OUR CO-PRODUCERS

Studios and Head Office

Avenida Béjar, 345
08226 - Terrassa - SPAIN

Tel. +34 93 735 44 08
Fax +34 93 735 65 43

www.gradhermetic.es

GRADHERMETIC was founded in 1954 to work on the design, manufacture and marketing of aluminium products for the construction, industrial and decoration markets.

Over the years the company has succeeded in establishing an integrated business covering the entire manufacturing process: smelting furnaces, tapping, hot rolling, cold rolling, tension levelling, continuous painting lines, and cutting, shaping and assembly lines, all of which have given it a solid position in the market and a high degree of business maturity.

GRADHERMETIC's vocation is to be involved as much as possible in innovation and development. Efficiency, sustainability and environmental and social commitment are values that have been instilled and applied from the foundation of the company to the present day. This has been the case in both its internal operation and its projection in society.

These values are not only reflected in the company's products and its relations with its suppliers, but also in its social commitment.

In "ROMAN·ENGINEERING" **GRADHERMETIC** saw an excellent opportunity to cooperate in the dissemination of culture in our society, as well as to obtain an elegant and extraordinary promotion of their brand and an investment with considerable potential profitability.

RTVE Marketing Division

Edificio Prado del Rey. Avenida Radio Televisión, 4
28223 - Pozuelo de Alarcón (Madrid) - SPAIN

Tel. +34 91 581 70 00

www.rtve.es

Televisión Española Internacional is the number one worldwide generalist Spanish-language TV channel.

This is backed up by its 450 million potential viewers on five continents.

tve was founded in 1956 and, like RNE and RTVE, it belongs to the Corporación Radio Televisión Española (RTVE), a 100% publicly owned company.

RTVE reports only to the Spanish Parliament and renders accounts to that body. It is therefore independent of any government or party.

TVE Internacional has been broadcasting since 1989.

Information, culture, education and entertainment make up a varied, quality programming, the principal objective of which is to provide the best and most wide-ranging offer to a diverse and heterogeneous audience.

Participating in the production of the documentary series "ROMAN·ENGINEERING" was almost an obligatory decision for tve, given the programme's enormous cultural and educational content, as well as its important value in the dissemination of Spanish cultural heritage in particular and world heritage in general.

But it was also a strategic and intelligent decision, given that "ROMAN·ENGINEERING" is a production with a high interest and entertainment value made with the latest cinematographic and audiovisual production technology that will undoubtedly have a huge international impact.


ROMAN·ENGINEERING
THE ROMAN ENGINEER AT THE SERVICE OF THE PEOPLE
PREVIEWS
Episode 3 previews
ROMAN·ENGINEERING
AQUEDUCTS
TRAILER
Promotional trailer for the
ROMAN·ENGINEERING
documentary series
DEMO
IPAD
Demo IPAD application
ROMAN·ENGINEERING
AQUEDUCTS
digivision
structuralia
GRADHERMETIC
tve


Blu-ray Disc
DVD
VIDEO