

## TERMS OF REFERENCE

### **Abastumani National Astrophysical Observatory New Technological and Interactive Science Museum**

#### **Content development**

##### **I. Introduction**

**The Municipal Development Fund of Georgia (MDF)** is a Legal Entity under Public Law (LEPL) with the objective of assisting to enhancement of institutional and financial capacities of local self-governmental bodies, making investments in local infrastructure and services, and improvement of main economic and social conditions for the local population. MDF implements the significant infrastructural projects such as: urban renovation of the cities, arrangement of infrastructure at tourist and cultural heritage monuments, construction and rehabilitation of schools and kindergartens, improvement of infrastructure aimed at preventing the natural disasters, creation of sustainable economic base for IDPs, rehabilitation of WS and WSSs, construction of shelters for homeless animals, arrangement of the cable ways, renovation of sports infrastructure, and enhancement of the component in support of State and Private Sector Investments (PPI).

The MDF is implementing the Third Regional Development Project (RDP III) financed by the World Bank Group and the Government of Georgia (GoG).

The main objective of the project is to create an infrastructure, which shall contribute to improvement of living conditions of the town and support the development of the tourism-based economy in Abastumani and largely in Samtskhe-Javakheti region.

Development of Abastumani is one of the flagship investments of RDP III. Two important projects have recently been completed: Rehabilitation of Historic Heritage houses, rehabilitation of the Observatory building and landscaping of the area. Major Urban regeneration project is ongoing. The resort has already experienced both tangible and intangible benefits of the above-mentioned projects. The RDP3 continues to support further development of the region and the resort with planned investments still to be implemented in Abastumani. Sustainability and operationalization of the Abastumani Observatory building being one of those.

##### **II. About National Astrophysical Observatory**

Nowadays, Abastumani serves as one of the last enclaves of a strong scientific community within Georgia and a potential tourist attraction due to its history and nature. Abastumani has a potential to become a place of inspiration for future generations of astronomers, scientists and researchers, and this transformation can start by modernizing the National Astrophysical Observatory area and making it more attractive and engaging for different visitors.

The Rehabilitation the Observatory building and landscaping of the area was completed in March 2020. Second and third floors rooms are designated for administration, which shall be furnished and equipped through the Project by early 2021 and the first floor, shall host the Interactive Science Museum.

Academician Eugene Kharadze on Mountain Kanobili founded Georgian National Astrophysical Observatory (GENAO) in 1932, near resort Abastumani, Samtskhe-Javakheti (Southeastern Georgia). Currently the Observatory is an independent Legal Entity of Public Law operating under the Ministry of Education, Science, Culture and Sport of Georgia.

The observatory is located ~250 km from the capital Tbilisi, being distant from the air pollution and sky illumination together with excellent natural conditions (hilly landscape covered with coniferous forest) makes

this place being among the best observatories at the same altitude range. Weather is stable, no harsh and sudden changes.

The Observatory is running wide-profile research, spanning different fields of Astronomy and Astrophysics and investigation of the upper layers of the Earth's atmosphere. The observatory includes up to 20 telescopes.

### III. Overall scope and Objectives

Following the recent rehabilitation through RDPIII, the Observatory central building shall reopen to host visitors and offer new unique experience through the venues, which shall be known as Abastumani Observatory Interactive Science Museum. **The museum shall be located on the first floor of the building and stylized solar system and sun clock installation shall be outside around the fountain in front of the same building.**

The core Mission of the Abastumani Interactive Science Museum is to inspire the visitors with passion towards scientific endeavor and to showcase cosmos in an interactive way. The Interactive Science Museum shall be a part of the overall Abastumani Observatory and shall be created and conceptualized in conjunction with both the clients as well as the scientific and management personnel of Abastumani Observatory.

The museum shall be an interactive educational center where STEM (Science, Technology, Engineering, Math) approach shall be followed in an unconventional way. The facility shall promote an innovative cultural environment that would serve and educate the local community and the visitors/tourists.

Because of the rarity of such venues as well as a great interest in them across the world, it could easily become a highlight in Georgia and foster the role of Abastumani as a place with unique entertainment attraction, learning environment and hub of scientific inspiration.

The Abastumani Interactive Science Museum fits in within the strong history and heritage of Abastumani, since it is one of the primary scientific hubs in Georgia with even greater importance during the Soviet Union. Interactive Science Museum shall provide new life and context for Abastumani scientific community; as well as create a scientist can share their discoveries in a digestible and fun way.

### IV. Overall Scope

The scope of this Terms of Reference is to:

- Develop Science Museum Concept and respective Digital and non-digital Content to transform the Museum building into new tourism destination as well as contribute to popularization of the Observatory and astrophysical sciences;
- Develop list of specifications for latest interactive and digital display technologies required to equip and operate the Interactive Science Museum.

### V. Scope of the Assignment

Under this assignment, the consultant is expected to provide:

#### **Stage 1. Museum Concept and Content**

The Consultant shall provide the Client with the Interactive Science Museum Visual Concept and Content, covering the following:

- Definition of the main/constant overarching themes that will stay between the Exhibitions of the Interactive Science Museum;
- The overall Concept development for the digital and interactive Exhibition that will be hosted within the

Museum;

- Adaptation of chosen scientific topics into planned content that is compatible with the rooms and hardware provided within the Museum. These topics that will be adapted into the concepts to be used within the Exposition must be done so in collaboration with the scientific community and professionals within the Abastumani Observatory;
- Design of the exhibition narrative, sequence and thematic organization of rooms;
- Interior design concept that must be seamlessly merge with the utilized display technology;
- 3D model and Concept Design for Astronomic Scene under the open sky of Observatory;
- Planned Content for the fully digital exhibition, in the form of Visualization/graphics/videos that will be projected and displayed in the rooms;
- Museum visual and brand identity.

## **PROPOSED DISTRIBUTION OF THE MUSEUM SPACE, THEIR DESCRIPTION AND VISITORS' CIRCULATION**

Check the annex #1

### **Reception space N1**

The hall will be the reception of the digital museum. Its design includes static elements on the walls; a sphere suspended from the ceiling with internal or external lighting for example imitating sun or earth surface may be used as well. In addition, a small wardrobe for 20-25 visitors should be arranged in the space.

### **Meeting and staff room N2**

The room will be arranged for the observatory staff, if needed, will be used to hold meetings with visitors. The room should be equipped with appropriate furniture - 4 workplaces with office furniture and meeting space with furniture, the space should have computer equipment.

### **Digital Museum N3**

The room will be thematically divided into three parts and will be equipped according to the developed content, as static elements as well as dynamic multimedia devices will be placed in the space. Multimedia means primarily high-definition video monitors with vertical or horizontal orientation. Astro Guides will make relevant explanations and presentations on the topics of the exposition for the visitors. In addition, all exhibits must be equipped with appropriate explanatory and didactic panels.

**The first part** - the "World's Largest Telescopes" exhibition should present information about several current telescopes - their technical parameters, scientific purpose and most prominent achievements.

**The Second part** - "Study of the Universe from Space Satellites" - dedicated to the world's most famous space telescopes - their technical parameters, scientific purpose and the most important discoveries.

**The third part** - a high-resolution monitor located on the middle wall of the room with an audio system (home theater type) for showing thematic videos. It is possible to arrange small chairs in the room from where viewers will be able to watch videos.

The exhibition room may be equipped with large format printed posters, thematic stands, light boxes and video monitors, where short video clips or slideshows will be uploaded.

### **Digital globe N4**

In this room, the main concept of "Sun and Solar System" exposition is to be dedicated to exploration of our solar system. The exposition starts with short history of Galileo Galilei, his first telescope and discoveries made before

the beginning of the space age. Major part of exposition presents space missions undertaken for exploration of the sun, moon, planets, asteroids and comets.

The exposition shall be integrated with large format printed posters, floor stands, light boxes and video monitors demonstrating short video clips or slideshows. Specially manufactured models may also be applied for visibility.

The central attraction of the room is to be represented by a late model of spherical projector, i.e. so called digital globe (diameter - 150 cm, surface area - 7 sq.m., with double projector, touch-sensitive terminal, and special stand), which allows for internal illumination of the sphere's surface rendering different textures, such as surfaces of the sun, various planets or asteroids, which is to give the visitors an insight into how the celestial objects' surfaces appear in 3D. The digital globe is to be enclosed in a protective barrier.

#### **Lecture-presentation event space N5**

This space, designed for 60 people, shall accommodate a conference room for lectures-study tours and presentations. The room is to be astronomically-themed and equipped with a high-resolution HD projector, screen, computer and appropriate furniture. In addition, the room might be equipped with interactive board, computers and other presentation means to help lecturer during his/her presentation. The room-adjoining kitchen is to provide snacks and drinks for the personnel and visitors of the building. Therefore, the kitchen is to be equipped with all requisite facilities, such as coffee and tea machines, microwave, refrigerator, kitchen tables and chairs, kitchenware, and other appliances.

#### **Planetarium N9**

The room is designed for a small planetarium, which shall be designed for 15 visitors. The height of the room is about 320 cm and the width is 430 cm. Consequently, the finished planetarium must be of a compact semi-portable model. The consultant shall select a planetary for the room, and determine its specifications. The planetarium should be accompanied by videos of various ready-made astronomical topics in 2 languages - Georgian and English.

#### **Rooms N 11,10**

These rooms will be used as museum storerooms and server room and should be equipped with proper prefabricated shelves. Above distribution and description should be carefully analyzed and validated. Improved solution should be developed by the consultant and presented for stakeholder approval.

#### **Astronomic Scene under the open sky of Observatory**

Check the annex #2

#### **Sun-Clock and System of Planets**

In the yard of the National Observatory, in the place of the fountain and its surroundings, (i.e. on the path, which the visitor of the observatory shall pass from the museum, being in the structure of dioptric telescope to the building of AZT 11 museum) an exposition symbolizing the solar system will be placed. Along with aesthetic and impressive character of the structures, most importantly is that it will have the extended educational function. On the opposite side of the fountain, in front of the entrance to the former canteen building, on the lawn between the stairs (annex 2) will be set the equatorial sundial.

#### **Sun clock**

The Sun clock is to be represented as the original structure made out of metal. Through shadow of polar axis, on the one hand, and by projection of transparent letters - cut on upper thin bar of steel material - on the other hand, it shows the local time. The support, on which the Sun clock is to be arranged, will be the reinforced/concrete pedestal of about 40 cm with carved designators of the North and the South. Along with the directions, the Disk Dial indicates at inclination of Earth axis - polar direction, the Equator, ecliptic and sky meridian. (Annex 3)

### **Sample of Solar System**

In the center of the fountain from which the water will flow, there will be a rotating, seven-pipe water valve (Annex 4) with water flowing out of it, forming an approximately spiral Borjghali shape with a radius of 2.5 meters. The valve will also be golden in color, in the form of an old Georgian Borjghali symbol (annex 4)

From the edge of the basin towards the center of the fountain, there is to be the metal bar of arc shape - at about 80 cm distance from the Sun-Borjgali. Over that metal bar, the stylized symbol of Planet **Mercury** (with the sphere of 4 cm within it) will be arranged. At the angle of 120 degrees from it (similarly), there will be bent the symbol of Planet **Venus** with the sphere of 9.5 cm within it (at 140 cm from Borjghali). Then again at 2-meter distance – which we will comply one astronomic unit with (i.e. distance from the Earth to the Sun) there will be the **Earth**, and at the edge of the basin at about 300 cm there will be arranged the Planet **Mars** (Annex 5)

The diameters of the planets are selected to reflect precisely the difference in size being between them. For comparing of these sizes with the diameter of the Sun, there is to be arranged the circumference (of 10 m and 90 cm diameter) on the cobblestone pavement (beyond the basin) by means of petty yellowish slabs, showing the real size of the Sun, compared with the ones of the given planets (Annex 5).

In about 10 m distance from Borjghali - beyond the basin, there will be arranged the giant Planet **Jupiter** (Annex 5) on the narrow column.

Between the Planets Mars and Jupiter, there is the space with asteroid belt within it (Annex 5). There will be arranged several round metal bas-reliefs of about 15 cm diameter into the cobblestone pavement with the names of those outstanding persons and toponyms, after whom the asteroids – small planets were named. E.g. Asteroid #2147 – Evgeni Kharadze (Annex 5), as well as Roland Kiladze, Abastumani, etc.

In general, and pursuant to the given scale (2 meters – per astronomic unit), all planets reflect actually the cosmic distances being between them. Therefore, Planet **Saturn** will be arranged at 19 meter and 60 cm distance from Borjghali. After Jupiter - at the road edge (Annex 6) there will be arranged the Planet Uranus – at 38 meter and 40 cm distance at the ascending stairs to the Digital Museum – over the elevated hill. Planet Neptune will be arranged at about 60-meter distance from the center of the basin, i.e. where the ascending highway starts (Annex 6). Neptune – the final planet of the solar system will simultaneously be the border, beyond which the tourists will not be allowed to enter without permission.

The giant planets of the solar system likewise the earth ones, will be arranged within the solid metal structure of relevant symbol - in accordance with the axis inclination.

Please find below the mockups for the planets as follows: Jupiter, Saturn, Uranus and Neptune: Annex 7. It is worth mentioning that the symbol structures will accommodate simultaneously some small colorful LEDs that are to light up the spheres in faint colors at night. It needs to be noted as well that the spheres of stainless metal material reflecting planets will be modified in color (by applying of special rusting method) that will enable their image to be impressive in daylight too.

Thus, **Under the Open Sky Project** will acquaint the Observatory visitors (especially the youth - students) with the ancient method of time recording – by means of the Disk Dial, and enable them to perceive the cosmic space.

## **Stage 2. Museum interior design and technical specifications for hardware and Software specifications**

- Drawings for Distribution of hardware and display technology across the rooms according to the 2D and 3D plans specific to the room and content that is supposed to be there;
- Detailed Design of technological supports to be included within the exhibition rooms;
- Installation management;
- Informational material in Georgian and English, as well as the display method to show;
- Design of the museum information signs (evacuation, prohibition, etc.).
- Visitors movement scheme(s) at the exhibition spaces (including evacuation plan);
- Technical specifications for Hardware;
- Interpretation texts and exhibition annotations (Georgian and English);
- Preparation of the interpretation texts and exhibition materials for the persons with disabilities;
- Media server room planning;
- Full hardware cabling;

- Hardware upgradability plans to support future technology that could provide Museum with superior content eventually;
- Detail Design and specifications for Astronomic Scene under the open sky of Observatory;
- Projection mapping and software to hardware interfacing of all the rooms;
- Furniture design and specification;
- Project cost estimation and bill of quantities (inventory and equipment);
- Interior design project cost estimation (taking into account inventory and equipment) and a calendar schedule of works performance. The summary table shall be acceptable to design the bidding document for procurement.

The museum will be equipped with interactive rooms suitable for each scientific topic of the museum concept and will be equipped with the latest displays and equipment, which must be supported by media servers that provide undisturbed operation. Hardware and media servers need to be advanced enough to allow for system updates and content changes.

### **Stage 3. Museum management plan**

The Consultant shall develop a management plan, which will respond to the needs of the museum. The Management Plan is a detailed document covering the strategic planning of the museum and considering its financial and economic sustainability.

The management plan should cover a short-term (1 to 5 years), medium-term (10 years) and long-term (20/25 years) plan on how the museum will be managed and maintained. The plan is a live document and it should offer the milestones for revision and adaptation.

The management plan shall include:

- List of required roles and job descriptions of staff needed for the museum operation (number of employees, required work experience for each position, etc.);
- The museum visitor management plan;
- Information about the content within the museum and training plans for the future Guides;
- Offerings for the marketing policy and branding;
- Marketing campaign and strategic planning;
- Multimedia campaign planning as well as a long term advertising strategy;
- Recommended strategies and actions for future development;
- Risk assessment, Emergency Management Plan (for personnel, visitor and collection safety), including the safety emergency action plan with marking of emergency exits for rapid evacuations, etc.
- Financial Plan.

### **Stage 4. Installation Supervision**

The consultant shall supervise the installation process and coordinate with the company responsible for supply and installation of the digital as well as non-digital (furniture) equipment.

**VI. Safeguard Requirements**

The consultant will advise the Employer on the potential risks of operating the Interactive Science Museum on the health and safety of personnel and visitors, including likelihood and expected impacts of any emergencies that may occur. Mitigation measures should be provided, costed and integrated into the design document.

**VII. Timeframe and Deliverables**

The tentative duration of the Contract is **3 months (Stage 1, Stage 2 and Stage 3) plus tentative duration for installation 9 months (Stage 4).**

The client should deliver following reports and activities during the project duration according to the following schedule (the consultant is allowed to change the deadlines as per the proposed action plan to be agreed with the client in writing):

| Deliverables   | Submission Date                                    | Language                     | Format  | Correlation Rate to Contract Price |
|--|--|------------------------------|---|------------------------------------|
| <p><b>Stage 1</b><br/>Museum<br/>Concept and Digital digital and non-digital content development</p> | <p>Within 1 Month after the contract signature</p> | <p>Georgian/<br/>English</p> | <ul style="list-style-type: none"> <li>• 4 printed copies for each project, in A4, A3, A2 size;</li> <li>• An electronic copy of all reports, plans and related CAD, Excel, Word, PDF etc. Files;</li> <li>• The package of documents and related documents will be submitted as per bid requirements and in line with World Bank Guidelines;</li> <li>• 2d and 3d concept art packages for each of the future possible rooms within the Museum;</li> <li>• Digital/animated demonstrations and of future interactive content within the Museum rooms;</li> <li>• Visual file that will allow the production team to fully realize it;</li> <li>• The package of documents and related documents will be submitted as per bid requirements and in line with World Bank Guidelines.</li> </ul> | <p>40%</p>                         |



|  |  |                         |  |            |
|--|--|-------------------------|--|------------|
|  |  |                         | <ul style="list-style-type: none"> <li>• Relevant Drawings (dwg, Pla. 3D, Pdf formats)</li> </ul>  |            |
| <p><b>Stage 2</b><br/>Museum interior and exterior design and hardware</p> | <p>Within 2 Month after the contract signature</p> | <p>Georgian/English</p> | <ul style="list-style-type: none"> <li>• 4 printed copies for each project, in A4, A3, A2 size;</li> <li>• An electronic copy of all reports, plans and related CAD, Excel, Word, PDF etc. Files;</li> <li>• The package of documents and related documents will be submitted as per bid requirements and in line with World Bank Guidelines;</li> <li>• 2d and 3d concept art packages for each of the future possible rooms within the Museum;</li> <li>• Digital/animated demonstrations and of future video content within the Museum rooms;</li> <li>• Visual file that will allow the production team to fully realize it;</li> <li>• Relevant Drawings Scale 1:100, 1:50, 1:20</li> </ul> | <p>30%</p> |
| <p><b>Stage 3</b><br/>Museum Management Plan</p>                           | <p>Within 3 Month after the contract signature</p> | <p>Georgian/English</p> | <ul style="list-style-type: none"> <li>• 4 printed copies for each project, in A4, A3, size, plans, sections, details in A1, A0 etc.</li> <li>• An electronic copy of all reports, plans and related CAD, Excel, Word, PDF etc. files.</li> <li>• The package of documents and related documents will be submitted as per bid requirements and in line with World Bank Guidelines;</li> </ul>  | <p>20%</p> |
| <p><b>Stage 4</b><br/>Author's supervision</p>                             | <p>During the whole period of installation</p>     | <p>Georgian/English</p> | <p>The consultant shall supervise the installation process and coordinate with the company responsible for supply and installation of the digital as well as non-digital (furniture) equipment.</p>  | <p>10%</p> |

| # | Deliverable                                      | Timeline   | Payment % |
|---|--|--|-----------|
| 1 | Museum Concept and content development (Stage 1) | Within 1 Month after the contract signature                          | 40%       |
| 2 | Museum interior design and hardware (Stage 2)    | Within 2 Month after the contract signature                          | 30%       |
| 3 | Museum Management Plan (Stage 3)                 | Within 3 Month after the contract signature                          | 20%       |
| 4 | Installation Supervision (Stage 4)               | During the whole period of installation (tentative duration 9 month) | 10%       |

The Employer for this assignment is the LEPL Municipal Development Fund of Georgia, while the Beneficiary is the Georgian **National Astrophysical Observatory** (GENAO). All deliverables shall be agreed with the beneficiary and approved by the Employer. All deliverables must be submitted in Georgian and English, in hard copy and electronically.

#### **VIII. TEAM PROFILE AND KEY PERSONNEL**

The consultant should propose a team of experts who will implement the project. Level of effort for each expert should be discussed and agreed with the client.

The following list of qualifications serve as a guide and Consultant Team may with justification propose additional staff. The Consultant Team shall also propose the time allocation for each of the staff dedicated to their respective tasks and the breakdown of the time that those work will be performed on location or remotely. The proposed team composition shall be:

| N                      | Consultants               | Number | Month | Input, person/month |
|------------------------|---------------------------|--------|-------|---------------------|
| <b>Key Experts</b>     |                           |        |       |                     |
| 1                      | Project Manager           | 1      | 3     | 3                   |
| 2                      | Art Director              | 1      | 3     | 3                   |
| 3                      | Architect                 | 1      | 3     | 3                   |
| 4                      | Chief Technical Officer   | 1      | 3     | 3                   |
| 5                      | Chief Electrical Engineer | 1      | 2     | 2                   |
| <b>Non-Key Experts</b> |                           |        |       |                     |

| N  | Consultants              | Number | Month | Input, person/month |
|----|--------------------------|--------|-------|---------------------|
| 1  | Venue Operator           | 1      | 2     | 2                   |
| 2  | CGI Artists              | 2      | 3     | 6                   |
| 3  | Graphical Designer       | 1      | 2     | 2                   |
| 4  | Economics expert         | 1      | 2     | 2                   |
| 5  | Chief Software developer | 1      | 3     | 3                   |
| 6  | Marketing Expert         | 1      | 2     | 2                   |
| 7  | Web Master               | 1      | 2     | 2                   |
| 9  | Graphic Designer         | 1      | 2     | 2                   |
| 10 | Social Media Manager     | 1      | 2     | 2                   |
| 11 | Engineer-designer        | 1      | 3     | 2                   |
| 12 | Interior designer        | 1      | 2     | 2                   |
| 13 | Junior architect         | 1      | 3     | 3                   |

| #                  | Expert(s)       | Experience  | Job description according to TOR   |
|--------------------|-----------------|---|--|
| <b>Key Experts</b> |                 |   |  |
| 1                  | Project Manager | 3 years of experience in managing and administration of projects related to museums, multimedia venues or interactive projects. Must have fulfilled at least 2 large venue multimedia or museum projects. | <ul style="list-style-type: none"> <li>- Project administration;</li> <li>- Responsibility for project implementation and guidance of the team of experts</li> </ul>   |
| 3                  | Art Director    | Digital and multimedia focused portfolio with 3 years of experience, there must be at least one large venue multimedia project done under their supervision.  | <ul style="list-style-type: none"> <li>- Art direction of current and future exhibitions</li> <li>- Communication and supervision of the content production team</li> <li>- Creation of a unified design language/framework that affects both the interior design as well as the content production</li> <li>- Development and supervision of visual brand identity of the Museum</li> </ul> |

|   |                               |   |   |
|---|-------------------------------|---|---|
| 4 | Architect                     | Architecture focused portfolio with 5 years of experience. Must have fulfilled at least 2 large venue multimedia or museum projects.  | <ul style="list-style-type: none"> <li>- Development of the exposition space design according to the exhibition concept;</li> <li>- Determining the showcase design with lighting;</li> <li>- Design of the museum information signs (direction, evacuation, prohibition etc.);</li> <li>- Preparation of the list of equipment, furniture and accessories for all the museum's spaces (including public spaces, indoor &amp; outdoor cafes);</li> <li>- Development of projects reflecting safe and efficient illumination systems of the exposition spaces showcases and installations;</li> <li>- Design of outer café pergolas, illumination, greenery, etc.</li> <li>- Preparation of the list of advice for the future development of the Museum's outdoor additional space.</li> </ul> |
| 4 | Chief Technical Officer (CTO) | Must have past experience of server management for large venue Media intensive projects. This includes hardware installation, cable management, alternative input hardware management and software operation. | <ul style="list-style-type: none"> <li>- Will choose the necessary input hardware that can support/display the content and the vision that the museum wishes to provide.</li> <li>- Media server management</li> <li>- Unification of various hardware elements under one controllable system</li> <li>- Hardware maintenance planning and specifications</li> <li>- Supervision of specialized software development</li> </ul>   |

|                        |                                     |  |  |
|------------------------|-------------------------------------|--|--|
| 5                      | Chief Electric Engineer             | Must have past experience of engineering and managing hardware for large venue shows and media projects, such as concerts, museums or other. This primarily includes cabling and hardware interconnectivity.   | <ul style="list-style-type: none"> <li>- Long distance cable planning</li> <li>- Hardware interconnectivity through necessary boards or media splitters</li> <li>- Network cable planning for all of the hardware</li> <li>- Electrical safety planning</li> </ul>   |
| <b>Non Key Experts</b> |                                     |  |  |
| 1                      | Venue operator                      | 3 years of experience  | <ul style="list-style-type: none"> <li>- supervise all operations, and ensure that the location is safe;</li> <li>- Supervise and co-ordinate the work of staff</li> </ul>   |
| 2                      | CGI Artists                         | 3 years of experience ,Must have fulfilled at least 2 large venue multimedia or museum projects.   | <ul style="list-style-type: none"> <li>- 3D artists work in media production and use illustration and computer software programs to create animations and graphics.</li> <li>- Using 3D modeling, texture, mapping, and other techniques to create videos, graphics, visual effects, and animations.</li> <li>-</li> </ul> |
| 3                      | Graphic designer                    | Must have fulfilled at least 2 large venue multimedia or museum projects.  | <ul style="list-style-type: none"> <li>- Design of all printed materials and preparation of materials for printing</li> </ul>  |
| 4                      | Economics expert /Financial Manager | 3 years of experience in developing museums and/or multimedia venues.  | <ul style="list-style-type: none"> <li>- Determining economic sustainability of the museum</li> <li>- Resolving financial issues of the project implementation</li> <li>- Analyzing anticipated revenues</li> </ul>  |
| 5                      | Chief Software developer            | At least 5 years of working on multimedia software and hardware interfacing, preferably with motion sensor or other alternative input methods. Must have completed at least 5 projects in this field, this includes projects done in conventional game engines such as Unreal and Unity. | <ul style="list-style-type: none"> <li>- Preparation of specialized software primarily for interactivity with the hardware.</li> <li>- Long-term software support and elimination of future bugs should they arise.</li> </ul>   |

|   |                   |  |   |
|---|-------------------|--|---|
| 6 | Marketing expert  | At least 8 years of experience in multimedia marketing and campaign operations with at least 3 successfully launched campaigns, preferably for similar venues. | <ul style="list-style-type: none"> <li>- Responsibility for preparation of the marketing plan as well as the supervision of the multimedia marketing campaign;</li> <li>- Responsibility for coordinating the advertising team should they be necessary;</li> <li>- Long term brand and identity management for the Museum</li> </ul>   |
| 7 | Engineer-designer | Education of the respective profile<br>At least 3 years' experience (samples should be submitted)  | <ul style="list-style-type: none"> <li>- Projecting the mobile, mechanical, horizontal and vertical circular-moving constructions for exhibits</li> </ul>   |
| 8 | Interior designer | At least 5 years of working on design projects   | <ul style="list-style-type: none"> <li>- Interior furniture design work.</li> <li>- Project management experience.</li> <li>- Experience with computational design.</li> <li>- Highly creative, imaginative and artistic.</li> <li>- Excellent communication skills, especially in regard to communicating an artistic vision.</li> <li>- Proficiency in Archicad, 3ds Max, Vray, AutoCAD, Illustrator, Sketch Up or similar design software.</li> </ul>  |
| 9 | Junior architect  | At least 5 years of working on architectural projects  | <ul style="list-style-type: none"> <li>- Drawing and measuring skills</li> <li>- Modeling</li> <li>- Crafting skills</li> <li>- Technical drawings and details</li> <li>- Project management experience.</li> <li>- Experience with computational design.</li> <li>- Highly creative, imaginative and artistic.</li> <li>- Excellent communication skills, especially in regard to communicating an artistic vision.</li> <li>- Proficiency in Archi AD, 3ds Max, Vray, AutoCAD, Illustrator, Sketch Up or similar design software</li> </ul> |