

Samorządowa Instytucja Kultury - Centrum Nowoczesności Młyn Wiedzy  
[Self-Government Cultural Institution – the Innovation Centre Mill of Knowledge]  
Toruń, ul. Władysława Łokietka 5,  
Tel. +48 56 690 49 90  
[www.centrumnowoczesnosci.org.pl](http://www.centrumnowoczesnosci.org.pl)

Terms of Reference

# **EXHIBITION**

## **„Ideas”**

### **PART I – GENERAL REQUIREMENTS**

#### **Basic information on the intended use and location of the exhibition in the exhibition area and description of the object of the contract**

The Innovation Centre Mill of Knowledge (CNMW) is a self-government cultural institution founded by the commune of the city of Toruń and it is located in the historical part of the so-called Richter Mills, dating back to the 1940's. The building consists of two parts – the former mill and grain elevators having 8 and 10 floors respectively, wherein the CNMW will occupy 6 and 7 floors respectively.

The remaining two floors of the mill, in which the exhibitions are located, have been assigned to the needs of another institution. The Centre's location in historical buildings of Toruń will determine the character of permanent exhibitions presented there: 'On the Revolutions', 'The River', 'Strength and Energy' and 'Ideas', two of which, namely 'On the Revolutions' and 'The River' have already been installed.

Under the object of the contract the Contractor will design and make the exhibition 'Ideas' consisting of 21 exhibits together with exhibition messages and appropriately designed space and deliver it to the Awarding Entity's seat. The exhibition is to be located on the 6<sup>th</sup> floor of the building.

#### **1 Basic information**

##### **1.1 Audience of the exhibition**

The exhibition is addressed to individual persons and organised groups of:

- children and youth;
- adults and whole families;

Children under the ages of 13 will stay on the premises of Innovation Centre Mill of Knowledge under adult supervision. Organised groups will stay on the premises of Innovation Centre Mill of Knowledge only with their group leaders.

## **1.2 Topics of the exhibition**

The exhibition 'Ideas' will include stations covering the following themes:

- artistic (beauty in nature, beauty in art in the general sense)
- physical,
- medical,
- humanistic and in particular, sociological,
- astronomical,
- technological,
- biological,

## **1.3 Characteristics of the exhibition**

The main subject is the Ideas created over time in order to improve the quality and comfort of life. The exhibition space is to be divided into four zones: 'the communications zone', 'the zone of arts and beauty', 'the zone of life' and 'the zone of the constructor'. Each of the zones is to refer to a different idea created and implemented by people, owing to which the exhibition will have an interdisciplinary character. The themes and issues on the exhibition stations will refer both to natural science and humanities.

The exhibition will be located in the new building of the Innovation Centre Mill of Knowledge, in the former Richter Mills on the 6<sup>th</sup> floor of the building in the designated place, with the total exhibition area of 373.42 m<sup>2</sup> and foreground of exhibition with 135,85 m<sup>2</sup> surface (a view of the exhibition area included in the appendix). The exhibition is to be situated between the north wall and the banisters protecting the zone of Foucault Pendulum. The exhibition 'Ideas' will adjoin the glass banisters protecting the zone of the 'Foucault Pendulum' exhibition, which is a part of the 'On the Revolutions' exhibition.

## **1.4 Elements of the Exhibition**

### **1.4.1 Stations**

The exhibition will include 21 stations in four appropriately arranged zones: the communications zone', 'the zone of arts and beauty', 'the zone of life' and 'the zone of the constructor'. Apart from the zone stations there will be a central exhibit of the exhibition, arranged around glass banisters protecting the 'Foucault Pendulum' zone. Each zone will consist of both multimedia and typical interactive hands-on stations, as well as of built up stations enabling several persons to use them at the same time.

### **1.4.2 Exhibition messages**

Each station has to be accompanied by an exhibition message, consisting of an information board made of discretional hard-wearing material. The board have to be blend in with the station or the design of its direct surroundings.

The information board should contain:

- Name of the station in Polish and English;
- Instructions for the Visitor to conduct an experiment (step by step);
- Name of the station
- Description of the phenomenon and an interesting fact in Polish and English;

The content of the exhibition message has to be understandable and encourage to use the station with regard to both the information included and the volume/length of the text. Furthermore the descriptions have to be prepared in such a way as to enable the Awarding entity to modify the content of the description later on (if there is such a need). The descriptions have to be made in Polish and English.

The character of all descriptions of the Exhibition's stations has to be consistent and characteristic of the whole Exhibition and its appearance. The Contractor has to blend the descriptions in with the station or its surroundings.

#### **1.4.3 Design of the Exhibition's space**

The whole exhibition together with the surrounding space (floors, walls, small walls, elements of structural landscaping, etc.) should be designed in a uniform way. The design has to include elements distinguishing a given zone, i.e. an additional colour and a pictogram of the zone. As part of the arrangement the contractor should separate each zone using a small architectural elements or proper exhibit distribution.

The space design has to include additional elements, such as, among other things, recreational space for visitors.

#### **1.5 Technical description of the building**

The building of Innovation Centre and the Toruń Technological Incubator is an adaptation of mills and grain elevators built in the 1940's. The object consists of two parts having 8 and 10 floors with the height of 33.4 m and 40.35 m respectively, i.e. it is a tall building. The building consists of two functional parts which are used by two different Users – the Innovation Centre Mill of Knowledge and the Toruń Technological Incubator. The Centre is located on the 1<sup>st</sup> floor (partly) and on the floors from the 2<sup>nd</sup> to 6<sup>th</sup> and partly on the 7<sup>th</sup> floor. The Incubator's seat is on the 1<sup>st</sup> and 7<sup>th</sup> floors (partly), on the 8<sup>th</sup> floor and partly on the 9<sup>th</sup> floor. At present there is a multi-storey exhibition space in the Innovation Centre (in the former grain elevators) and popular science studios (in the part of a former grain mill).

The part used by the Centre is a seven-storey space consisting of mezzanines opening to a cone-shaped space defined by a plane parallel to the plane of movement of the Foucault's Pendulum. In the popular science studios zone there are didactic, experimental and workshop rooms. Mobility is ensured by two staircases and two lift systems with vestibules. The zone is also a passage place from the exhibition space to the studios zone. The building in its part over the ground is in the form of a rectangle with sides sized 29.6 m and 37.3 m. It is based on a reinforced frame structure and supported by reinforced pillars, rectangular in cross-section and their cross-section dimensions varying on particular floors. On the level of

ceilings there are ceiling joists with a characteristic change (increase) in their height near the supports. The floor slab with the reinforcement is 12 cm thick (15 cm on the flat roof). The 15 cm thick roof plate is designed to shift the weight from the air-conditioning devices. On the roof plate, above a number of inlets, there is a space provided for a steel structure turret, where the Foucault Pendulum is hung.

The ceiling's payload in the exhibition part is 5.0 kN/m<sup>2</sup>, while the roof's payload equals 3.0 kN/m<sup>2</sup>. The exhibition space occupies: FOREGROUND OF THE EXHIBITION natural granite 135.85 m<sup>2</sup>, EXHIBITION natural granite 373.42 m<sup>2</sup>, TECHNICAL ROOM rubber floor-finish 4.09 m<sup>2</sup>.

In the central place of the space there is a 27.71 m<sup>2</sup> hole in the ceiling, surrounded by banisters made of laminated glass with a handrail at the height of 1.10m, protecting the zone in which the Foucault's Pendulum is exhibited. The height between the flooring and the ceiling in the exhibition area on the 5<sup>th</sup> floor is 257 cm at the lowest and 295 cm at the highest point. The dimensions of the entrance openings leading from the passage vestibules to the exhibition room are: 180 x 200 cm and 90 x 200 cm.

The building is adjacent to the International Youth Meeting Centre. There are three entrances to the building; the main entrance to the Innovation Centre on the northern side, the main entrance to the Technological Incubator on the eastern side and the Innovation Centre's emergency entrance/exit on the western side.

On the ground floor in front of the main entrance sized 180 x 200 cm there are four gates; two turnstile gates and two swing ones. There is no option of disassembling the gates for the period of installation of the exhibition.

Ironworks of the internal doors leading to the exhibition space are made of aluminium profiles (colour RAL 9003), filled with a translucent glass. The flooring is made of 30 x 60 cm granite slabs. The granite floor had not been impregnated. The tiles were installed with the use of 'Atlas' elasticated mortar. The grout used is Baunit Premium Fuge. The brick walls are filled with polyurethane foam, reinforced from the inside with a reinforced wall. The interior has been thermally insulated with the use of foam concrete boards of a low multipore thickness. There are no window openings in the whole exhibition space. In the central part there are two reinforced pillars with their cross section of 61.5 x 62cm. Proprietary suspended ceilings made of plates with perforated core made of mineral fibre and a coating of acoustic fleece (thickness of the plates – 19 mm). At the walls and around the pendulum zone there is a suspended ceiling made of G-K boards (thickness of the board 1 x 1.25 cm), CD 60 on the ceiling profiles, wall UD 30. The Contractor undertakes to ensure that the Awarding entity will not lose the guarantee of the general contractor of construction works or the Contractor undertakes to ensure guarantees for the executed works connected with damage of construction works already carried out, for the period not shorter than the guarantee given by the general contractor. All costs connected with such a change will be borne by the Contractor. Furthermore, the building provides for the following installations, systems and devices:

- \* SAP fire alarm system;
- \* DSO voice alarm system;
- \* BMS automatic ventilation and building management system;
- \* telecommunications installation of intrusion detection system signalling
- \* SSWiN [IDS], access control;
- \* KD, CCTV surveillance television;

\* installation of a structural network (computers, telephones and network equipment and of a switchboard).

The building has a mechanical intake and exhaust ventilation with air-conditioning of the rooms. The core of the system will be the three roof air handling units and one suspended air handling unit in the attic, directing the outside air to proper rooms. The installation of ventilation of the whole exhibition space has been designed as an installation with a laminar flow, with the use of skirting displacement flow diffusers. Such a system is aimed at eliminating the influence of ventilation air movement on the exhibits' work.

The lighting level applicable in the exhibition space of the building is the working plane, i.e. the height of 0.85 m from the level of the floor, with the intensity of about 400 lx. The lighting system control has also been designed. The exhibition's control cabinets are situated in the technical room on the eastern side. Moreover, the building provides for LED emergency lighting of a small intensity. The internal electrical installation is routed on the 5th floor in the walls and in floor boxes; lamps – 70 pieces, halogen bulbs – 63 pieces, floor boxes – 36 pieces. 400V sockets – 6 pieces, 230V sockets – 15 points ( appendix no 1 – installation of sockets) (appendix no 2 – electrical switchgears – installation power TCK5.1 and TC5/2).

Additionally the appendixes contains the basic floor plans. It should be noted that the as-built documentation includes changes in comparison to the original documentation. Details of the as-built documentation will be available at the seat of Awarding Entity.

## **1.6 Types of exhibition stations**

The Awarding Entity provides for the installation of three types of stations at the exhibition.

### **1.6.1 Hands-on stations**

In each of the zones the Awarding Entity provides for hands-on stations, requiring greater involvement of the user to achieve the desired result. The main purpose of these stations is to stimulate the visitors' thought and creative processes. Such stations will not include multimedia devices.

### **1.6.2 Multimedia stations**

The Awarding Entity provides for typical multimedia stations at the exhibition, with their content referring to e.g. modern techniques of imaging of human body, verbal and non-verbal communication, visual sociology of the body and the culture of tattoo, etc. The multimedia stations will be fitted in the form of information kiosks or fitted in the wall according to the guidelines described in the second part of the document. Such stations will consist mainly of multimedia devices.

### **1.6.3 Built-up stations**

The exhibition space also provides for built-up stations, i.e. a separated space in a given zone built-up with light walls in the form of a chamber, cabin, small room able to contain several people at a time. Stations of the kind will have multimedia devices.

## **1.7 Interactivity types of the stations**

All the stations of the exhibition will be interactive. Stations which meet this requirement will be considered as such if they represent at least one of the following types of

interactivity:

- Manual: station requiring the work of hands;
- Motor: station requiring the movement of the whole body and motor coordination;
- Sensory: station requiring the use of senses (e.g. sight, touch, smell, etc.);
- Intellectual: interaction using the visitors' knowledge;

## **2 Description of the object of contract**

### **2.1 Designs**

**2.1.1** Creating graphic and working designs of the particular elements of the Exhibition and delivering them to the Awarding Entity, in particular:

**2.1.2** Creating graphic and working designs of stations and delivering them to the Awarding Entity.

**2.1.3** Creating a graphic design of the arrangement of the whole Exhibition space and delivering it to the Awarding Entity.

**2.1.4** Creating a preliminary graphic design of the exhibition messages including: the colouring of a given zone, pictograms, graphic template and the name of the station in Polish and English, and delivering it to the Awarding Entity.

**2.1.5** Creating and delivering the updated visualisations of the stations together with the exhibition messages and of the whole Exhibition, presenting the Exhibition from each side, during the day and at night, on the basis of designs mentioned in clauses 2.1.2, 2.1.3 and 2.1.4, after their final acceptance by the Awarding Entity;

**2.1.5.1** in electronic form, with parameters which enable to make printouts sized 0.7 m x 0.5 m without deterioration in their quality. The prepared files must have appropriate parameters which provide a readable and proper image. The required parameters are:

CMYK colours, resolution of at least 300 dpi on the 1:1 scale, files saved in the „tif” format on the 1:1 scale,

**2.1.5.2** in the form of an imprint on a PCV board sized 0.7 m x 0.5 m for 3 visualisations chosen by the Awarding Entity among the electronic visualisations delivered by the Contractor,

**2.1.6** Handing over a cost estimate including the prices of Exhibition's elements mentioned in clause 1.4. and all the other costs necessary to execute the object of contract (after the final acceptance of the designs by the Awarding Entity) to the Awarding Entity.

**2.1.7** Providing the Awarding Entity with the information concerning the yearly cost of the Exhibition's operating.

**2.1.8** Handing over a list of all spare elements meant for all stations, together with their quantity, to the Awarding Entity.

## **2.2 Manufacture, delivery and installation of the Exhibition's elements**

**2.2.1.** Creating exhibition messages consisting of an information board for all the stations, including:

### **Information board:**

- a.** Name of station in Polish and English
- b.** Description of the presented phenomenon in Polish and English,
- c.** An interesting fact in Polish and English,
- d.** Instruction for the visitor to conduct an experiment (step by step) in Polish and English,

**2.2.2** Creating all presentations for the multimedia stations. The presentations on each station have to include, in particular:

- a.** a list of all presentations together with a specification of their content and a list of means of multimedia messaging used,
- b.** graphic designs of the presentations,
- c.** films,
- d.** animations,
- e.** structure of the whole multimedia software together with a specification of switching between the particular presentations.

**2.2.3** Providing the Awarding Entity with the content of exhibition messages including the elements required in clause 2.2.1 in order to obtain their acceptance and make necessary changes on the basis of the Awarding Entity's observations.

**2.2.4** Providing the Awarding Entity with the content of presentations for all of the multimedia stations including the elements required in clause 2.2.2. in order to obtain their acceptance and make necessary changes on the basis of the Awarding Entity's observations.

**2.2.5** Manufacturing of all the Exhibition's elements according to the designs accepted by the Awarding Entity and mentioned in clause 2.1.

**2.2.6** Testing of all the Exhibition's elements in head office of Contractor in the presence of the Awarding Entity's representatives and making necessary changes on the basis of the test's results.

**2.2.7** Delivering all the Exhibition's elements to the Awarding Entity's seat, i.e. the stations, exhibition messages and space design.

**2.2.8** Providing the Awarding Entity with the complete software for the multimedia stations, together with animations, films and other interactive software used in them, according to the presentation accepted by the Awarding Entity and mentioned in clause 2.2.2., in the form allowing for the change of software, as well as for adding new films and animations. The Contractor should deliver, in particular:

- a.** a list of all presentations together with a specification of their content,
- b.** graphic designs of the presentations,
- c.** all the animations used, in electronic form on a CD or DVD,
- d.** all the films used, in electronic form on a CD or DVD,

- e. all the computer programs together with source files created for the needs of the Exhibition in electronic form on a CD or DVD,
- f. all the other elements of the presentations created with the use of means of multimedia messaging in electronic form on a CD or DVD,
- g. structure of the whole multimedia software together with a specification of switching between the particular presentations.

**2.2.9** Installation, start-up and integration of all the Exhibition's elements, i.e. the exhibition stations, space design, exhibition messages, [are] according to the designs referred to in clause 2.1.

**2.2.10** Testing of all the Exhibition's elements ( with the selected target audience) after its integration and making necessary changes on the basis of the test's results.

### **2.3 Delivery of spare parts, post-completion documentation and training of the staff.**

**2.3.1** Delivery of spare parts which can be used for repairs (referred to in clause 2.3.4.) made during the warranty period by trained employees of the Awarding Entity.

**2.3.2** Delivery of all consumables for the particular elements of the Exhibition for the first six months of its presentation, beginning from the day on which it would be received by the Awarding Entity, the Innovation Centre Mill of Knowledge.

**2.3.3** Providing the Awarding Entity with the content and graphics of the exhibition messages on a CD or DVD, in electronic form allowing for their free modification.

**2.3.4** Creating documentation of the Exhibition and delivering it to Awarding Entity. The documentation should include at least the following information (post-completion documentation):

- a. a list of Exhibition's elements (stations and elements of the design)
- b. names of the stations, their belonging to the Exhibition and its theme zone,
- c. purposes of the stations,
- d. graphic and working design of the Exhibition and its particular elements
- e. a detailed manner of functioning of the particular stations,
- f. a detailed description of phenomena presented on the particular stations,
- g. number of people who can use one station at the same time
- h. detailed information concerning the media and consumables necessary for the proper functioning of the stations,
- i. a list of repairs which can be made during the warranty period without prejudice to the warranty conditions by the employees of the Innovation Centre Mill of Knowledge, trained by the Awarding Entity

**2.3.5** Creating an operating manual, rules of control, service and maintenance of particular elements of the Exhibition in Polish, in paper and electronic form, as well as the warranty cards and delivering them to the Awarding Entity.



**2.3.6** Handing over the results of tests referred to in clause 2.2.6 to the Awarding Entity.

**2.3.7** Transfer of software licence and copyrights to the photos, graphics, drawings, fragments of source texts, films and animations as well as other software and creations used in all the elements of the Exhibition, to the Awarding Entity.

**2.3.8** Handing over a declaration of the object of contract's conformity with the applicable regulations and standards to the Awarding Entity; the elements of the Exhibition and of the design have to meet the European safety standards and have proper declarations of conformity, shown by the CE marking, or declarations which are equivalent to them.

**2.3.9** Transfer of copyrights to the object of contract to the Awarding Entity under the terms and conditions defined in the contract.

**2.3.10** Training of the Innovation Centre Mill of Knowledge employees in the scope of management, inspection, maintenance and servicing of the Exhibition's elements made by the Contractor to the extent enabling the workers to make repairs (referred to in clause 2.3.4), also during the warranty period. A training for a group of maximum 20 people will be conducted at the Awarding Entity's seat, in Polish or English. The duration of the training will be suggested by the Awarding Entity in the schedule.

## **2.4 Characteristics of the stations**

The Awarding Entity has prepared a list of 21 stations (Table 1.).The stations have been divided into zones

No	Name of station	Zone	Type of station
0	The Whispering Wall – central exhibit		
1	How Are You Feeling Today	Communication	Multimedia
2	Your Newspaper	Communication	Hands-on
3	The Morse	Communication	Hands-on
4	Are We Here Alone?	Communication	Multimedia
5	What the Tattoo Says	Communication	Multimedia
6	Beautiful Man	Art and beauty	Multimedia
7	Beauty Painted With Light	Art and beauty	Multimedia built up
8	Beautiful Nature	Art and beauty	Hands-on
9	Sculpted Beauty	Art and beauty	Hands-on
10	Mysterious Beauty	Art and beauty	Hands-on
11	Man	Life	Hands-on
12	The cell and DNA	Life	Hands-on
13	Operation	Life	Hands-on

14	The Chamber of Secrets	Life	Built up Multimedia
15	Body Imaging Methods	Life	Multimedia
16	Labyrinth of Light	Constructor	Hands-on
17	Acoustics	Constructor	Hands-on
18	Telephone	Constructor	Hands-on
19	Radio Station	Constructor	Hands-on
20	SmartPhone	Constructor	multimedia

### 3. Requirements concerning the subject matter of the contract

#### 3.1 Requirements concerning the arrangement of the exhibition and the space around it

The Awarding Entity requires that the exhibition space should be divided into four zones by small architectures elements or by proper distribution of exhibits.

The design concept should be consistently applied in the whole exhibition space and should include the design of the stations, meet the character of the stations' descriptions, the suggested pictogram of the Exhibition, the zones and scenography, as well as the additional elements of the space's design. The design concept ought not to hinder the visitors from using the stations and it cannot distort the educational message.

Furthermore, the Awarding Entity requires that the Exhibition's design, including the colour scheme:

- be consistent, with the colours used consistently in the whole design;
- not be monotonous, nor too glaring;
- has no aggressive themes;
- includes themes connected with the subject scope of a given zone;

The design of the Exhibition should also include the walls and surfaces not used as stations. The design of walls and surfaces not used should include e.g. graphics, photos, texts substantively enriching the exhibition.

Awarding Entity requires name and logo of the exhibition to be included into arrangement of the exhibition. Additionally, Awarding Entity requires map of the exhibition, size 2m X 2m, included on the southern wall, on which themathic relations between exhibits will be shown. The Awarding Entity requires that the Contractor installs industrial cameras in the exhibition space, in order to monitor the places which are difficult to be accessed by the already existing monitoring. In addition the Contractor is to install a Wi-Fi connection in the exhibition space, within the framework of the order.

### **3.1.4 Requirements concerning additional elements of the space design**

When planning the design of additional elements it is necessary to consider the harmony and uniformity of location of the Exhibition's stations, as well as the general location of the Exhibition. It is necessary to create at least one bigger or a few smaller places of recreation in the form of benches or chairs of non-standard shapes, suited in terms of the design and colours to the whole Exhibition. In order to achieve this, elements of landscaping in the form of partition walls or low walls can be used. The design has to include additional elements stirring the imagination and curiosity of the Visitors, such as riddles, brainteasers, quizzes, graphics, short fragments of texts blended in with the walls, floors, elements of landscaping, etc. The design should provide for elements made for children, such as places on walls or tables, quizzes, riddles or puzzles made especially for children. The additional elements of the design cannot be gathered in one place; they have to be spread evenly throughout the whole exhibition space.

### **3.2 Requirements concerning the contents of the exhibition and the descriptions of the stations**

**3.2.1** All stations must have exhibition messages which should be blended in with the stations or be placed on racks, special stations or built into the design elements near the stations. The multimedia stations ought to have appropriately selected multimedia presentations. The messages and animations ought to be consistent in terms of the graphic solutions and have a characteristic appearance, consistent with the adopted design concept. The exhibition messages have to be placed in such a way so that they can be visible to the visitors. The Awarding Entity allows for a possibility of changing the content of the messages in the later period of its activity, which is why they have to be made in such a way so that their replacement or modification does not interfere with the stations. The Awarding Entity also requires that the contractor hands over the exhibition messages in electronic form allowing for the modification of the content.

**3.2.2** The content of the exhibition messages, animations, films and multimedia presentations has to include scientific and educational texts; they cannot include explanations of phenomena which are contradictory to the environmental knowledge. Fairy tale, quasi-scientific content or content violating moral norms cannot be introduced to the content of the Exhibition.

**3.2.3** Selection of content of the exhibition messages has to be suited to the wide audience, yet without overlooking the basic knowledge; the texts have to be written in a comprehensive way, with the use of understandable vocabulary. The whole content of the exhibition messages has to be presented in a readable and organised way.

**3.2.4** All the other texts (e.g. voice messages, instructions on the multimedia stations, quizzes) have to be accessible for visitors in at least two languages: Polish and English.

### **3.3 Requirements concerning the elements of the Exhibition**

General requirements concerning all elements of the Exhibition:

- All elements of the Exhibition being the object of this contract ought to be unique, created particularly for the Innovation Centre Mill of Knowledge;
- Elements of the Exhibition have to be resistant to visitors' actions, both the ones compliant and non-compliant with the description included in the exhibition message or the operating manual of the multimedia station;
- Elements of the Exhibition have to operate smoothly despite their daily multiple mass use;

### **3.4 Educational requirements**

**3.4.1** Elements of the Exhibition have to be designed in such a way as to allow people with various kinds of disabilities to access it as fully as possible.

**3.4.2** Elements of the Exhibition should be suited to visitors of all ages and different intellectual, manual or mobility abilities.

### **3.5 Technical and operating conditions**

It is assumed that the Innovation Centre Mill of Knowledge can be visited daily by about 900 people, about 100 per each floor. The aforementioned information is to be taken into consideration when planning the Exhibition in terms of technical and operating conditions.

**3.5.1** Elements of the exhibition have to be durable and resistant to the visitors' actions:

- They have to operate smoothly despite their daily multiple mass use;
- They have to be resistant to the visitors' actions, both the ones compliant and non-compliant with the exhibition messages;
- They have to be easy to clean, in particular in case of being scribbled with a marker pen, pen, paint, etc.;

**3.5.2** The contents of the Exhibition have to meet the EU standards concerning lights and lighting, also with regard to the workplace. The lighting sources ought not to dazzle the visitors or put their eyesight at risk. In order to allow for a more complete reception of the Exhibition's contents and in view of the partial lack of natural lighting of the exhibition space, individual lighting of the Exhibition's elements ought to be considered. The lighting is to expose the most important elements of the Exhibition, yet it cannot hinder the usage of the stations.

**3.5.3** Elements of the Exhibition have to be made in such a way so that staying in the exhibition's space will not expose the visitors to danger and so that the elements can be used safely also by the untrained persons and without the help of the organiser.

**3.5.4** It is necessary to ensure unobstructed passageways between the Exhibition's elements, which ought to be accessible also for the disabled moving on wheelchairs.

**3.5.5** The materials used for making the Exhibition's elements must have safety approvals and meet European standards for objects of the kind, must be wear-resistant, washable and easy to maintain. The materials and technical solutions used for making the Exhibition's

elements, as well as possible operating materials ought to be ecological and energy efficient.

**3.5.6** Maintenance of the Exhibition's elements ought to be possible to be carried out by the Awarding Entity with no external help.

**3.5.7** All doors, cabinets and small doors fitted as parts of the Exhibition's elements, protecting the equipment installed inside, made for the management or servicing of the Exhibition's elements ought to be equipped with locks and keys. The Contractor will hand over the keys, together with a spare set, to the Awarding Entity.

**3.5.8** Operation of the Exhibition (all its elements at the same time) has to meet the standards concerning the level of noise in workplaces and public utility places.

**3.5.9** It is necessary to provide for the production of spare parts which can be used for repairs (referred to in clause 2.3.4.) made during the warranty period by trained workers of the Awarding Entity, for each element of the Exhibition.

**3.5.10** It is necessary to provide for the protection of consumables for a six months' activity of the Innovation Centre Mill of Knowledge, for each element of the Exhibition which requires it.

**3.5.11** The Awarding Entity requires that all the movable elements of stations or arrangements have magnetic stripes, protecting them against theft.

**3.5.15** The Awarding Entity requires that the free standing stations be situated at least 2 m from the side walls of the exhibition room, to allow free passage.

## PART II - EXHIBITS SPECIFICATION

	<b>Whispering Wall</b>
<b>Location</b>	Central exhibit located around the banister which secures the "Foucault Pendulum" zone.
<b>Educational aim</b>	The station will represent linguistic diversity of the world. A user will be able to familiarize himself with the origin of a given language, its evolution, and impact on other languages.
<b>Size of the station</b>	Eight walls positioned on an octagonal plan, at min. 80cm and max. 100 cm from the banister, securing the "Foucault Pendulum" zone.
<b>Elements</b>	The Awarding Entity suggests the assemblage of the total of eight light walls, from the floor to the roof, to be based on an octagonal plan. The Awarding Entity allows for other constructional characteristics. Seven of the walls are to have monitors with RAM (no touchscreen) built-in. Each of the seven walls is to have 6 monitors with min. 26" diagonal of the screen. Each monitor should display a film with at least three people of different nationality, each of whom utters a sentence in their mother tongue. The walls should also be equipped with speakers. Additionally, on each of the seven walls should be fitted a pair of headphones that will allow a chosen language to be heard, and also a button that will allow a language to be selected and heard on a given monitor. The eighth wall is to have a min. 50" touchscreen fitted on it.
<b>Use</b>	Visitors who are close to the exhibit should only be able to hear a murmur coming out of the speakers caused by various languages overlapping one another. As the user approaches the exhibit he will be able to put on headphones and listen to the sound of a given language with the use of a button, which is integrated with the monitor. Additionally, the visitor may further investigate a given language on the touchscreen, by selecting the person they have just listened to on the small screen.

<p><b>General Requirements of the Awarding Entity</b></p>	<p>The Awarding Entity requires that the monitors are built in the wall in such a way, that none of their parts, the case in particular, must project from the wall. Start buttons of the monitors are to be fitted in such a way, that they do not project from the wall, and are easily available for visitors. The start buttons fitted on the walls are to be integrated with the monitors, and the selection of a button is to be intuitive e.g. the case colour of a given monitor is to match the colour of the corresponding button. Each person appearing in the film should be uttering an identical sentence in their mother/tribal tongue. The people selected for the films should be genuine (not animated), and wear their national dress, folk or tribal costume. Each screen should display three people of different nationality. Images of the people on a given screen should change cyclically. The application containing information on a given language on the touchscreen should include images of the people displayed on non-touch screens. The application should contain information on the languages used in the exhibit i.e. the origin of a given language, its development, its location on the world map, characteristic features, age, impact on other languages and foreign elements that shape the language. The eighth wall with the touchscreen should be openable in a way that will afford free passage to the banister and allow servicing of the exhibit.</p>
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## Exhibits in the Communications Zone

<b>1.</b>	<b>How Are You Feeling Today (Verbal - non-verbal)</b>
<b>Location</b>	Zone: Communications Portable information kiosk built in the zone wall or stand-alone.
<b>Educational aim</b>	The station will demonstrate the essence of verbal and non-verbal communication and the necessity for both types of communication to be complementary.
<b>Size of the station</b>	Measurements for a built-in exhibit: Min. 1.5m x 1.5m For a stand-alone portable kiosk  the measurements should be as follows: height min. 100-120 cm, width min. 60cm, depth min. 60cm. A 1920x1080 high definition LCD panel with min.32" diagonal.
<b>Elements</b>	The station consists of: <ul style="list-style-type: none"> <li>• a min. 32" touch-sensitive display;</li> <li>• a multimedia presentation by way of short videos and additional presentations containing station-related information;</li> <li>• a pedestal or other element upon which the display is mounted, as well as headphones.</li> </ul>
<b>Use</b>	When approached, the unit screen displays images of various people (all at once). After selecting one of the people on the touch-sensitive display, the visitor watches a silent film where the chosen person demonstrates a number of various gestures while telling a story, uttering sentences, etc. The visitor is supposed to conjecture what emotional state a given person is in by selecting one of the possible options. As the task finishes, the user may listen to the spoken text on the headphones. Additionally, the user may learn about verbal and non-verbal communication, as well as see the significance of both in the context of interpersonal communication.
<b>General Requirements of the Awarding Entity</b>	The application should take the form of a quiz at the end of which the user may check the number of correct answers. The Contractor is to prepare videos with characters whose gestures are both consistent and inconsistent with the spoken text. The



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Awarding Entity requires that the Contractor installs 10 short videos in the exhibit. The length of one video should not exceed 10-15s.

An additional application with information on verbal and non-verbal communication should include the following content scope:

1. What is verbal and non-verbal communication?
2. The role of both types of communication in the society.
3. How does the inconsistency between verbal and non-verbal communication affect reception of information?
4. How do animals communicate compared with people?

The multimedia information kiosk:

1. If the station is to be a stand-alone unit, then the assembly should be based on ground anchoring. The material used for constructing the station must be durable enough to ensure a day-to-day, multiple and mass use.

2. The information kiosk should operate in 230V electric wiring and structural network through the RJ45 connector.

3. Standard configuration of the central unit (server is hidden within the structure casing) is based on the processor that scored *no less than 2880 points* in the CPU Benchmark performance test, equipped with a 4GB DDR RAM, a 500 GB hard drive, a DVD-RW, USB 2.0 connection, graphics and sound cards, a 10/100/1000 Mb/s network interface card, a serviceable keyboard and mouse hidden within the case, ventilating system, active stereo speakers, the MS Windows 7 operating system or its equivalent. The touchscreen monitor, with the diagonal of minimum 32", must be resistant to day-to-day, multiple and mass use, the resolution must be no less than 1920x1080, brightness no less than 300 cd/m<sup>2</sup>, contrast no less than 600:1. Provided that the station requires additional equipment, the Contractor should supply: an external keyboard and a trackball intended for a day-to-day, multiple and mass use, a camera, a microphone, a magnetic stripe and chip card reader.

4. The multimedia software working over the operating system installed on the information kiosk server should be designed in a technology that takes full advantage of Flash, Java, or any

	<p>other multimedia formats, in a way that is approachable for visitors of any age group through the intuitiveness of the user's interface, and the possibility to extend the installed applications, or its component modules by additional functions, as specified by the Awarding Entity.</p>
<p><b>Special requirements of the station arrangement</b></p>	<p>The Awarding Entity requires the structure arrangement to be in the form of walls or other elements of architecture with displayed pictures, graphic arts, miscellaneous trivia in the form of text (in the colour code matching that of the entire zone) thematically related to the station and corresponding to the nature of the station.</p>

<b>2.</b>	<b>Your Newspaper</b>
<b>Location</b>	Zone: Communications A stand-alone station
<b>Educational aim</b>	The user is introduced to a simple printing method and the history of print.
<b>Size of the station</b>	Min. 1.5mx1mx1m
<b>Elements</b>	<ul style="list-style-type: none"> <li>• The pedestal upon which the main part of the exhibit will be mounted</li> <li>• The main element of the exhibit is arranged as a movable printing plate</li> <li>• Paper feeder</li> <li>• Printing paste feeder</li> <li>• Elements with letters and designs</li> <li>• Casing of the exhibit</li> <li>• A brush or other element which allows the application of printing paste</li> <li>• 4 aprons on braces (reusable, eg rubber)</li> </ul>
<b>Use</b>	As the user approaches the station, they are presented with the task of editing their own newspaper. After putting on the apron, the user selects the elements with letters and designs, places them in the flap of a movable printing plate, and applies printing paste onto the letters. Next, the user places a sheet of paper onto the immovable part of the plate and shuts the flap where the letters, designs and the paste have before been placed. After the flap has been opened, the user may pick up the paper with a design and printed inscription on it.
<b>General Requirements of the Awarding Entity</b>	The Awarding Entity requires that the exhibit can be operated intuitively by people of different age. Movable elements must be secured in case of theft.
<b>Special requirements of the station arrangement</b>	The Awarding Entity requires the structure arrangement to be in the form of walls or other elements of architecture with displayed pictures, graphic arts, miscellaneous trivia in the form of text(in the colour code matching that of the entire zone) thematically related to the station and corresponding to the nature of the station.

3.	<b>The Morse</b>
Location	Zone: Communications A stand-alone station
Educational aim	The visitor has the opportunity to get acquainted with the construction and the use of a telegraph.
Size of the station	Min. 1,5m x 1m x 1.2m
Station elements	<ul style="list-style-type: none"> <li>• a pedestal or mounted station</li> <li>• assembly set for two telegraphs</li> <li>• Morse code charts</li> </ul>
Use	The station is intended for two users operating simultaneously. As they approach the station, the users put the elements of the set together to assemble a telegraph. The telegraph must be comprised of all the elements to ensure its functioning. After the set has been properly assembled, the users are able to send each other messages by the Morse code. The messages can be heard as sound signals and seen as light signals.
General Requirements of the Awarding Entity	The Awarding Entity requires that the station is approachable by people of all age groups, and that the elements of the telegraph can be assembled intuitively.
Special requirements of the station arrangement	The Awarding Entity requires the structure arrangement to be in the form of walls or other elements of architecture with displayed pictures, graphic arts, miscellaneous trivia in the form of text (in the colour code matching that of the entire zone) thematically related to the station and corresponding to the nature of the station.

<b>4.</b>	<b>Are We Here Alone...?</b>
<b>Location</b>	Zone: Communications Zone corner
<b>Educational aim</b>	The station gives the user an opportunity to get acquainted with astronomical issues, with a special focus on the history of searching for extraterrestrial forms of life. The essential aim of the station is to demonstrate the loneliness of man in Cosmos.
<b>Size of the station</b>	Min. 5mx2m
<b>Elements</b>	<ul style="list-style-type: none"> <li>• Seats for min. 5 people</li> <li>• a film designed by the Contractor;</li> <li>• a projector or other device for playing the film;</li> <li>• bulidings with light walls</li> </ul>
<b>Use</b>	The users watch the film after they have taken their seats
<b>General Requirements of the Awarding Entity</b>	<p>The Awarding Entity requires that the projection time of the film is no less than 5min</p> <p>Content of the film:</p> <p>The film is to present a journey to the boundaries of the Universe, and during the projection, the user is to experience a feeling of drifting away into space. CNMW (the Innovation Centre Mill of Knowledge) is to be the starting point of the journey. The film is to be divided into stages that correspond to the dimensions of a given space area:</p> <ul style="list-style-type: none"> <li>• the first stage is related to the dimensions of the Solar System,</li> <li>• the second stage is related to the dimensions of the Milky Way,</li> <li>• the third stage is to be related to our galaxy group,</li> <li>• the fourth stage is related to galaxy filaments</li> </ul>

	<p>Each stage of the film should be duly captioned with figures that relate to:</p> <ul style="list-style-type: none"> <li>• Dimensions of a given expanse</li> <li>• Number of stars in a given expanse</li> <li>• Number of planets in a given expanse</li> <li>• Number of inhabited planets in a given expanse</li> </ul> <p>The last, fifth, stage of the film is to present human accomplishments in the search of extraterrestrial forms of life. This part of the film may be designed as a series of slides that contain the information on:</p> <ul style="list-style-type: none"> <li>• the plaques placed on board of Pioneer 10 and Pioneer 11 spacecraft</li> <li>• a message broadcast into space via frequency modulated radio waves by the Arecibo radio telescope</li> <li>• a golden record that was placed on board of two Voyager programme probes</li> </ul>
<p><b>Special requirements of the station arrangement</b></p>	<p>That part of the projection wall that has not yet been put to use is to be arranged in conformance with the nature of the exhibit. The examples of elements that the arrangement needs to include are: graphic arts, pictures, inscriptions, quotations, miscellaneous trivia thematically related to the station.</p>

<b>5.</b>	<b>What the Tattoo Says</b>
<b>Location</b>	Zone: Arts and Beauty Built-up station
<b>Educational aim</b>	The station gives the user an opportunity to get acquainted with visual sociology, with a special focus on the history and culture of tattooing and piercing.
<b>Size of the station</b>	Min. 1.5mx2mx2m A 1920x1080 high definition LCD panel with min. 50" diagonal.
<b>Elements</b>	<ul style="list-style-type: none"> <li>• Light structure consisting of three walls and a ceiling. Inside the structure are:</li> <li>• one camera;</li> <li>• a touchscreen;</li> <li>• a multimedia application;</li> <li>• speakers;</li> <li>• voice-over narration or comments in other form</li> </ul>
<b>Use</b>	As the user enters the station, the touch screen displays an information message with instructions. At the beginning the user's image is captured by cameras in the front and at the back. As the user selects sex by means of the touchscreen, both his profiles are displayed as avatars. Next, the user is presented with a selection of tattoo and piercing designs. After a given tattoo or piercing design has been selected, it is then applied onto the avatar. As the design has been applied, a voice-over narrator provides the user with information on the tattoo, what it symbolises, what message it conveys and who the user has become having chosen that particular tattoo or piercing. The Awarding Entity allows the voice-over narration to be replaced by another, as long as the informative role is preserved.
<b>General Requirements of the Awarding Entity</b>	<p>The Awarding Entity requires that the database of tattoos and piercings is divided according to the sex of the user. The database is to contain different types of tattooing, e.g. ink tattoos, branding tattoos etc. as well as different types of piercing from all over the world.</p> <p>1 Standard configuration of the central unit (server is</p>

	<p>hidden within the structure casing) is based on the processor that scored <i>no less than 2880 points</i> in the CPU Benchmark performance test, equipped with a 4GB DDR RAM, a 500 GB hard drive, a DVD-RW, USB 2.0 connection, graphics and sound cards, a 10/100/1000 Mb/s network interface card, a serviceable keyboard and mouse hidden within the case, ventilating system, active stereo speakers, the MS Windows 7 operating system or its equivalent. The touchscreen monitor, with the diagonal of minimum 50", must be resistant to day-to-day, multiple and mass use, the resolution must be no less than 1920x1080, brightness no less than 300 cd/m<sup>2</sup>, contrast no less than 600:1. Provided that the station requires additional equipment, the Contractor should supply: an external keyboard and a trackball intended for a day-to-day, multiple and mass use, a camera, a microphone, a magnetic stripe and chip card reader.</p> <p>2 The multimedia software working over the operating system installed on the information kiosk server should be designed in a technology that takes full advantage of Flash, Java, or any other multimedia formats, in a way that is approachable for visitors of any age group through the intuitiveness of the user's interface, and the possibility to extend the installed applications, or its component modules by additional functions, as specified by the Awarding Entity.</p>
<p><b>Special requirements of the station arrangement</b></p>	<p>The walls of the station should be decorated with additional elements of the arrangement such as: graphic arts, inscriptions, pictures related to the station thematically, miscellaneous trivia in the form of text on the culture of tattooing and piercing in different countries and communities.</p>



## Stations in the Arts and Beauty Zone

<b>1.</b>	<b>Beautiful Man</b>
<b>Location</b>	Zone: Arts and Beauty Information kiosk - a stand-alone station or built in a wall
<b>Educational aim</b>	The station provides the user with an opportunity to get acquainted with the notion of beauty canon in reference to man. Visitors are shown how man and his attire have evolved over time, as exemplified in selected works of art.
<b>Size of the station</b>	Measurements for a built-in exhibit: Min. 1mx1m For a stand-alone portable kiosk the measurements should be as follows: height min. 100-120 cm, width min. 60cm, depth min. 60cm. A 1920x1080 high resolution LCD panel with min. 32" diagonal.
<b>Elements</b>	A multimedia touchscreen, a multimedia application, a pedestal (if the station is to be stand-alone)
<b>Use</b>	The user operates an application that consists of three modules. The first module demonstrates how a human being has been changing over time (facial features, body shape, clothing), as exemplified in selected works of art. In the second module the user will be able to generate his own avatar, clothe it, and visualise it in a selected epoch or year. The third module allows the user to explore beauty canons in various cultures; the visitor can get acquainted with what is (or has been) perceived as an epitome of beauty in other countries e.g. small feet in Japan, elongated neck in women of the Karen People from Thailand, body scarification in African peoples, etc.
<b>General Requirements of the Awarding Entity</b>	The Awarding Entity requires that the Contractor implements in the application dates that are important for the city of Toruń (in consultation with the Awarding Entity at the stage of content creation for multimedia presentations) The Awarding Entity requires that graphic arts, pictures or videos used in the application should be accompanied by an educational commentary. <u>The multimedia information kiosk:</u> 1. If the station is to be a stand-alone unit, then the assembly should be based on ground anchoring. The

	<p>material used for constructing the station must be durable enough to ensure a day-to-day, multiple and mass use. The information kiosk should operate in 230V electric wiring and structural network through the RJ45 connector.</p> <ol style="list-style-type: none"> <li>2. Standard configuration of the central unit (server is hidden within the structure casing) is based on the processor that scored <i>no less than 2880 points</i> in the CPU Benchmark performance test, equipped with a 4GB DDR RAM, a 500 GB hard drive, a DVD-RW, USB 2.0 connection, graphics and sound cards, a 10/100/1000 Mb/s network interface card, a serviceable keyboard and mouse hidden within the case, ventilating system, active stereo speakers, the MS Windows 7 operating system or its equivalent. The touchscreen monitor, with the diagonal of minimum 32", must be resistant to day-to-day, multiple and mass use, the resolution must be no less than 1920x1080, brightness no less than 300 cd/m<sup>2</sup>, contrast no less than 600:1. Provided that the station requires additional equipment, the Contractor should supply: an external keyboard and a trackball intended for a day-to-day, multiple and mass use, a camera, a microphone, a magnetic stripe and chip card reader.</li> <li>3. The multimedia software working over the operating system installed on the information kiosk server should be designed in a technology that takes full advantage of Flash, Java, or any other multimedia formats, in a way that is approachable for visitors of any age group through the intuitiveness of the user's interface, and the possibility to extend the installed applications, or its component modules by additional functions, as specified by the Awarding Entity.</li> </ol>
<p><b>Special requirements of the station arrangement</b></p>	<p>The Awarding Entity requires the structure arrangement to be in the form of walls or other elements of architecture with displayed pictures, graphic arts, miscellaneous trivia in the form of text (in the colour code matching that of the entire zone) thematically related to the station and corresponding to the nature of the station.</p>

<b>2.</b>	<b>Beauty Painted with Light</b>
Location	Zone: Arts and Beauty A built-in station
Educational aim	The user has an opportunity to create a unique picture/photo with the use of light.
Size of the station	Min. 4mx2mx2m
Elements	<ul style="list-style-type: none"> <li>• The structure is made up of four light walls and a ceiling, with an entrance in one of the walls,</li> <li>• various types of LED light,</li> <li>• a camera,</li> <li>• a multimedia touchscreen with a 50" diagonal placed within or outside the structure,</li> <li>• a timer that starts the procedure</li> </ul>
Use	As the user enters the structure, he is to follow sound instructions, or instructions in other form e.g. displayed on the screen, on how to proceed. The visitor's task will be to create an image with a source of light that he will manipulate manually. The image will be recorded by a camera installed inside the structure, and later it will be displayed on the screen. From there, the user will be able to send it to his e-mail address.
General Requirements of the Awarding Entity	The Awarding Entity requires that the Contractor takes into account the necessity to transfer the copyright ownership of the users' photos to the CNMW, e.g. after the photos have been sent to an e-mail address, a question about the agreement to transfer copyrights might be displayed on the screen.
Special requirements of the station arrangement	The Awarding Entity requires that the walls of the station and its nearest surroundings are arranged in keeping with the station's nature. The arrangement of the walls should include miscellaneous trivia on various painting techniques and techniques of other forms of artistic expression.

<b>3.</b>	<b>Beautiful Nature</b>
<b>Location</b>	Zone: Arts and Beauty A stand-alone station
<b>Educational aim</b>	The user has an opportunity to become acquainted with the notion of a fractal, as well as its presence in nature (snowflake, leaf structure)
<b>Size of the station</b>	Min. 1mx1m
<b>Elements</b>	A pedestal, temperature-sensitive colourless sheet, a small hose or water dispenser, a cooling and freezing device, a polarizer, extra lighting of the station, a power-on switch-key, casing construction of the station, support frame for all the elements
<b>Use</b>	After the user has approached the station and read the instruction manual, he pours a thin layer of water onto the colourless sheet with the hose or the dispenser. As he turns on the power switch, the cooling device freezes the water and the user may observe ice patterns forming on the surface of the colourless sheet. Next, the polarizer, which is mounted on the station casing construction, may be placed over the ice patterns, so that the user may view it in polarized light.
<b>General Requirements of the Awarding Entity</b>	The Awarding Entity requires that the device is approachable to any user and is operated intuitively.
<b>Special requirements of the station arrangement</b>	The Awarding Entity requires the structure arrangement to be in the form of walls or other elements of architecture with displayed pictures, graphic arts, miscellaneous thematic trivia in the form of text (in the colour code matching that of the entire zone).

<b>4.</b>	<b>Sculpted Beauty</b>
<b>Location</b>	Zone: Arts and Beauty A stand-alone station
<b>Educational aim</b>	The user has an opportunity to become acquainted with the concept of abstraction.
<b>Size of the station</b>	Min. 3mx3m - built-up station Length of a single block min. 0.5m
<b>Elements</b>	<ul style="list-style-type: none"> <li>• Blocks of arbitrary shapes made up of light and durable materials,</li> <li>• Built-up station</li> <li>• Models of sculptures, statues and works of art to be reproduced</li> </ul>
<b>Use</b>	As the user approaches the station, he has at his disposal to construct a sculpture of any abstract shape or assigned shape.
<b>General Requirements of the Awarding Entity</b>	The Awarding Entity requires that the Contractor supplies the station with block types that will enable the construction of both abstract sculptures, as well as reproduction of existing ones e.g. The Nicolaus Copernicus Monument in Toruń
<b>Special requirements of the station arrangement</b>	The Awarding Entity requires that the Contractor allots space for the station using any available methods. On account of the fact that the station is intended primarily for the youngest visitors, the Awarding Entity requires that the arrangement of the station includes such elements as seats, or other furniture set ensuring relaxation

<b>5.</b>	<b>Mysterious Beauty</b>
<b>Location</b>	Zone: Arts and Beauty A stand-alone station
<b>Educational aim</b>	At the station the visitor may experiment with various physical phenomena and observe their impact on the perception of reality - images in this particular instance.
<b>Size of the station</b>	Size of the station must be adjusted to the zone dimensions. Size of a single image/picture min.: 0.5mx0.5m
<b>Elements</b>	Images of three pictures, stands or pedestals for the images to be erected, tools for viewing images such as: specific source of light, a mirror device with appropriately moulded curvature, etc.
<b>Use</b>	As the user approaches the station he may see information (another image of a person, an animal, or an object, etc.) hidden in the picture by using an appropriate tool, or performing a given action (e.g. by looking at the right angle, setting the image in a different position, using other source of light).
<b>General Requirements of the Awarding Entity</b>	The Awarding Entity requires that the method of viewing varies from image to image - the user must perform a different action each time he attempts to view another hidden image e.g. set the image in a different position, use a mirror device with appropriately moulded curvature
<b>Special requirements of the station arrangement</b>	The Awarding Entity requires the structure arrangement to be in the form of walls or other elements of architecture with displayed pictures, graphic arts, miscellaneous trivia in the form of text (in the colour code matching that of the entire zone).

## Exhibits in the Life Zone

<b>1.</b>	<b>Man</b>
<b>Location</b>	Zone: Life
<b>Educational aim</b>	The user has an opportunity to become acquainted with the anatomy of man and the functioning of internal organs.
<b>Size of the station</b>	Min. 2mx1m One full-size human phantoms
<b>Elements</b>	<ul style="list-style-type: none"> <li>• One human phantom with arms and thighs</li> <li>• internal organs placed in a separate case/container</li> <li>• pedestal upon which the phantoms will be positioned</li> <li>• station structure</li> </ul>
<b>Use</b>	The user's task consists in transferring the organs from the case and placing them in proper places in one of the phantoms.
<b>General Requirements of the Awarding Entity</b>	The Awarding Entity requires that the phantoms demonstrates the circulatory and nervous system with the alimentary system and the most important internal organs. The end parts of arms and legs are to represent a realistic section through a human body, e.g.: with visible endings of bones, nerves, veins, etc.
<b>Special requirements of the station arrangement</b>	The Awarding Entity requires the structure arrangement to be in the form of walls or other elements of architecture with displayed pictures, graphic arts, miscellaneous thematic trivia in the form of text, in the colour code matching that of the entire zone.

<b>2.</b>	<b>The Cell and DNA</b>
<b>Location</b>	Zone: Life A stand-alone station
<b>Educational aim</b>	The user has an opportunity to become familiarised with human, animal and plant cell structures as the basis for their existence, as well as to get to know the DNA structure in living organisms
<b>Size of the station</b>	Min: 1.5mx1m
<b>Elements</b>	Pedestals or structure upon which the main station components are located, puzzles, blocks or elements for an assembly of cells, animal and plant cell patterns, as well as puzzles, blocks or elements for an assembly of DNA chains, balls, plastic sticks, etc.
<b>Use</b>	Upon approaching the station the user will have the possibility to assembly various cells and compare them, as well as create DNA chains from different elements.
<b>General Requirements of the Awarding Entity</b>	The station is to take the form of a puzzle or game. The Awarding Entity requires that the number of provided elements enables the use of the station to at least two visitors simultaneously.
<b>Special requirements of the station arrangement</b>	The Awarding Entity requires the structure arrangement to be in the form of walls or other elements of architecture with displayed pictures, graphic arts, miscellaneous thematic trivia in the form of text, in the colour code matching that of the entire zone.



<b>3.</b>	<b>Operation</b>
<b>Location</b>	Zone: Life A stand-alone station
<b>Educational aim</b>	The user has an opportunity to become familiarised with the laparoscopic surgery technique and demonstrate his manual dexterity.
<b>Size of the station</b>	Min: 1,5mx1,5mx1.5m
<b>Elements</b>	<ul style="list-style-type: none"> <li>• a pedestal upon which the main part of the exhibit will be placed</li> <li>• a container in the shape of a cube made from PMMA or another colourless material with the dimensions of min. 0.5mx0.5mx0.5m</li> <li>• two manual manipulators placed in the container with protruding parts enabling their manoeuvring and the remaining fragments located inside the container</li> <li>• tiny models of human internal organs, with the dimensions of min. 1cm x 1cm and max. 2cmx2cm</li> <li>• station structure</li> </ul>
<b>Use</b>	Upon approaching the station the user is required to displace the models of internal organs with the use of manual manipulators and position them in an indicated place inside the container.
<b>General Requirements of the Awarding Entity</b>	Station operation is required to be intuitive for persons of various ages. All elements are to be produced from durable materials resistant to day-to-day use.
<b>Special requirements of the station arrangement</b>	The Awarding Entity requires the structure arrangement to be in the form of walls or other elements of architecture with displayed pictures, graphic arts, miscellaneous thematic trivia in the form of text, in the colour code matching that of the entire zone.

<b>4.</b>	<b>Chamber of Secrets</b>
<b>Location</b>	Zone: Life Structure with sub-assemblies
<b>Educational aim</b>	The user has an opportunity to become acquainted with the structure of the human body, the skeletal, muscular and circulatory systems
<b>Size of the station</b>	Min: 2mx2m
<b>Elements</b>	* Light wall in the shape of semicircle shape *cubic seats with an option of their amphitheatric arrangement, *a multimedia touchscreen table with supporting structure,
<b>Use</b>	Upon entering the chamber the visitors may conduct an independent virtual dissection of the body by means of a multimedia application installed in the multimedia table.
<b>General Requirements of the Awarding Entity</b>	<p>The Awarding Entity requires that the multimedia table is supplied with an application that will afford the display of at least a full-size human skeletal system, full-size circulatory system, full-size muscular system, full-size alimentary-digestive system, full-size respiratory system, and full-size nervous system. The application is to enable:</p> <ul style="list-style-type: none"> <li>• selection of a particular element, its magnification and rotation in space</li> <li>• placing different systems upon one another</li> </ul> <p>The Awarding Entity requires that the touchscreen mounted in the table is secured in such a way as to prevent its damaging by the visitors.</p> <p>Assembly of the multimedia table based on ground anchoring, the material used in its construction must ensure its durability in a day-to-day, multiple and mass use.</p>
<b>Special requirements of the station arrangement</b>	The Awarding Entity requires that Contractor place on the light structures the graphic with the modern and Middle Ages people in the autopsy hall. The graphic is to imitate the audience.

<b>5.</b>	<b>Body Imaging Methods</b>
<b>Location</b>	Zone: Life An information kiosk, a stand-alone station
<b>Educational aim</b>	The user may become acquainted with various body imaging techniques and methods as well as pictures obtainable with their use.
<b>Size of the station</b>	The dimensions of the information kiosk should be as follows: min. height 100-120 cm, min. width 60 cm, min. depth 60 cm. A 1920x1080 high definition LCD panel with minimum 36" diagonal.
<b>Elements</b>	Touchscreen multimedia display with 36" diagonal, multimedia application, pedestal, station structure
<b>Use</b>	Upon approaching the station the user becomes familiarised with various methods of body imaging by operating an application on the touchscreen.
<b>General Requirements of the Awarding Entity</b>	<p>The Awarding Entity requires that the application contains information concerned with various body imaging methods, and, in particular, that it provides information on:</p> <ul style="list-style-type: none"> <li>• what a given method consists in, which phenomena are used and which phenomena occur in the course of an examination with the use of such a method</li> <li>• what are the results of conducting examinations with the use of a given method, what are medical indications and contraindications regarding a particular method</li> <li>• what are the most important elements of devices used for a particular method</li> <li>• what is the diagnostic efficacy of a given method</li> <li>• what may be diagnosed with a given method</li> <li>• examples of non-medical uses of a given method</li> </ul> <p>The imaging methods to be demonstrated by the application are as follows:</p> <ul style="list-style-type: none"> <li>• USG</li> <li>• RTG</li> <li>• OCT</li> </ul>

	<ul style="list-style-type: none"> <li>• MRI</li> <li>• PET</li> <li>• CT</li> </ul> <p>Application interface must be intuitive and suitable for users of various ages.</p> <p><u>The multimedia information kiosk:</u></p> <ol style="list-style-type: none"> <li>1. The assembly is to be based on ground anchoring, the material used in the construction must ensure its durability in a day-to-day, multiple and mass use. The information kiosk should operate in 230V electric wiring and structural network through the RJ45 connector.</li> <li>2. Standard configuration of the central unit (server is hidden within the structure casing) is based on the processor that scored no less than 2880 points in the CPU Benchmark performance test, equipped with a 4GB DDR RAM, a 500 GB hard drive, a DVD-RW, USB 2.0 connection, graphics and sound cards, a 10/100/1000 Mb/s network interface card, a serviceable keyboard and mouse hidden within the case, ventilating system, active stereo speakers, the MS Windows 7 operating system or its equivalent. The touchscreen monitor, with the diagonal of minimum 36", must be resistant to day-to-day, multiple and mass use, the resolution must be no less than 1920x1080, brightness no less than 300 cd/m2, contrast no less than 600:1. Provided that the station requires additional equipment, the Contractor should supply: an external keyboard and a trackball intended for a day-to-day, multiple and mass use, a camera, a microphone, a magnetic stripe and chip card reader.</li> <li>3. The multimedia software working over the operating system installed on the information kiosk server should be designed in a technology that takes full advantage of Flash, Java, or any other multimedia formats, in a way that is approachable for visitors of any age group through the intuitiveness of the user's interface, and the possibility to extend the installed applications, or its component modules by additional functions, as specified by the Awarding Entity.</li> </ol>
<p><b>Special requirements of the station arrangement</b></p>	<p>The Awarding Entity requires the structure arrangement to be in the form of walls or other elements of architecture with displayed pictures, graphic arts, miscellaneous thematic trivia in the form of text, in the colour code matching that of the entire zone.</p>

## Exhibits in the Constructor Zone

<b>1.</b>	<b>Labyrinth of Light</b>
<b>Location</b>	Zone: Constructor a stand-alone exhibit
<b>Educational aim</b>	The station will allow the visitors to become familiarised with the data transmission technology with the use of fibre optics as well as the issues concerned with the field of optics describing the principles of operation of optical fibres (the total multiple internal reflection)
<b>Size of the station</b>	Min. 1mx1mx1.5m
<b>Elements</b>	<ul style="list-style-type: none"> <li>• pedestal upon which the labyrinth will be mounted;</li> <li>• various elements made from colourless polyacrylic;</li> <li>• connectors for mounting polyacrylic elements;</li> <li>• LED light source;</li> <li>• disk in the form of a graphic art or sign, symbol, permanent element, etc.;</li> <li>• labyrinth structure</li> </ul>
<b>Use</b>	Upon approaching the station the visitor is asked to arrange polyacrylic elements in such a way so that the light escaping the source and entering an "optical fibre" will hit the disk on its way out.
<b>General Requirements of the Awarding Entity</b>	The Awarding Entity requires that the quantity of polyacrylic elements allows construction of various correct labyrinths, i.e. the user must be able to arrange at least five different correct paths.
<b>Special requirements of the station arrangement</b>	The station is to be equipped with small portable cuboidal pedestals enabling task performance to shorter-height users. The Awarding Entity requires the structure arrangement to be in the form of walls or other elements of architecture with displayed pictures, graphic arts, miscellaneous thematic trivia in the form of text, in the colour code matching that of the entire zone.

<b>2</b>	<b>Acoustics</b>
<b>Location</b>	Zone: Constructor a stand-alone exhibit
<b>Educational aim</b>	The user has an opportunity to become familiarised with the concept of the speed of sound
<b>Size of the station</b>	Adjusted to the zone size
<b>Elements</b>	<ul style="list-style-type: none"> <li>• station structure,</li> <li>• properly coiled hose with the length of min. 900m,</li> <li>• elements arranged for the mouthpiece and the headphones</li> </ul>
<b>Use</b>	Upon approaching the station the user uttering words into the mouthpiece should hear his voice after the lapse of approx. 3s (with hose length of 900m).
<b>General Requirements of the Awarding Entity</b>	The Awarding Entity requires that the station is adjusted for people of all ages.
<b>Special requirements of the station arrangement</b>	The Awarding Entity requires the structure arrangement to be in the form of walls or other elements of architecture with displayed pictures, graphic arts, miscellaneous thematic trivia in the form of text, in the colour code matching that of the entire zone.

<b>3</b>	<b>Telephone</b>
<b>Location</b>	Zone: Constructor a stand-alone exhibit
<b>Educational aim</b>	The user has an opportunity to become familiarised with the principle of operation of a traditional phone and its construction
<b>Size of the station</b>	Min 1mx1.5m
<b>Elements</b>	<ul style="list-style-type: none"> <li>• pedestal or station structure,</li> <li>• two devices imitating telephones with a dial,</li> <li>• two telephone receivers with the length of min. 30cm,</li> <li>• all elements necessary for operating the station, radio dramas/broadcasts</li> </ul>
<b>Use</b>	The station is intended for two users whose task consists in the arrangement of all elements of the telephones in such a way as to enable communication. After assembling the devices the users may dial a number (as indicated in the description) in order to call each other. Additionally, by dialling other indicated numbers the users may listen to voice mail informing them on the history of telephone.
<b>General Requirements of the Awarding Entity</b>	The Awarding Entity requires that the station is adjusted for people of all ages. The Awarding Entity requires that within the station the Contractor installs 5 radio dramas/broadcasts concerned with history and interesting facts related to the telephone and telecommunication.
<b>Special requirements of the station arrangement</b>	The Awarding Entity requires the structure arrangement to be in the form of walls or other elements of architecture with displayed pictures, graphic arts, miscellaneous thematic trivia in the form of text, in the colour code matching that of the entire zone.

<b>4.</b>	<b>Radio station</b>
<b>Location</b>	Zone: Constructor a stand-alone exhibit
<b>Educational aim</b>	The user has an opportunity to become familiarised with the principle of operation of a simple sending-receiving radio station
<b>Size of the station</b>	Min: 1mx1.5m
<b>Elements</b>	<ul style="list-style-type: none"> <li>• pedestal with station structure and sub-assemblies,</li> <li>• two sets of ready-made elements/components for instance in the form cubes, blocks, necessary to construct two sending-receiving radio stations, connectors, conduits, dials, etc.</li> <li>• two large radio station models upon which blocks, connectors, conduits and elements necessary for operating the station are placed</li> </ul>
<b>Use</b>	The station is intended for two users whose task will consist in proper placement of the receiver and transmitter components in such a way that both stations operate correctly and afford transmission of voice information between them.
<b>General Requirements of the Awarding Entity</b>	The main elements of the radio stations consist of a radio transmitter and a receiver. The transmitter must include of a microphone, while the receiver must include a speaker. The Awarding Entity requires that the station enables transmission of voice information between the radio stations. The Awarding Entity requires that the station is adjusted for people of all ages.
<b>Special requirements of the station arrangement</b>	The Awarding Entity requires the structure arrangement to be in the form of walls or other elements of architecture with displayed pictures, graphic arts, miscellaneous thematic trivia in the form of text, in the colour code matching that of the entire zone.



<b>5.</b>	<b>SmartPhone</b>
<b>Location</b>	Zone: Constructor a stand-alone exhibit
<b>Educational aim</b>	The user has an opportunity to become familiarised with the principle of operation of a cell phone and cellular network
<b>Size of the station</b>	Min: 1mx1.5m
<b>Elements</b>	<ul style="list-style-type: none"> <li>• pedestal with station structure and sub-assemblies,</li> <li>• the main element of the station arranged for a large smartphone (a casing, touchscreen, built-in camera)</li> <li>• componentry in the form of e.g. cubes or blocks necessary for the construction and operation of the station</li> </ul>
<b>Use</b>	To be proposed by the Contractor.
<b>General Requirements of the Awarding Entity</b>	The Awarding Entity requires that the station is adjusted for people of all ages.
<b>Special requirements of the station arrangement</b>	The Awarding Entity requires the structure arrangement to be in the form of walls or other elements of architecture with displayed pictures, graphic arts, miscellaneous thematic trivia in the form of text, in the colour code matching that of the entire zone.

Attachments:

No. 1 - Installation of sockets

No. 2 - Electrical switchgears

No.3 - Floor plans