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Explore Lab 13: 2011/2012
Faculty of Architecture
TU Delft

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I am fascinated by extreme sports. It is their endless dynamics and tangible flow I admire the most. My initiative to experience intensity of a space through motion of unknown limits rises a question how to design an extreme playground?

5 the fascination
the research

brief description of methodology:
- collection of samples to establish definitions
- defining groups, sub-groups and classes to enable predictions of further disciplines
- establishing final list of extreme disciplines recognized by nowadays society

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collecting sport disciplines considered as “extreme”...
...defining them and sorting to groups, sub-groups, branches and classes

to generate comprehensive list of extreme sports

the research/methodology

brief description of methodology:
- collection of samples to establish definitions
- defining groups, sub-groups and classes to enable predictions of further disciplines
- establishing final list of extreme disciplines recognized by nowadays society

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p5
the research/the number
final number of extreme disciplines established as relevant for my research was 161

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...and the goal?

the research / the goal

main goal of the research is the establishment of typological rules for the extreme sport-grounds
the project / building site
NSA Radiostation Teufelsberg, Berlin, Germany

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the project/ building site
-urban relations

NSA station: Teufelsberg/Berlin/Germany
in relation to city
52.49734, 13.24185

olympic stadiums complex
berlin fair
free-time activity complex

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the project/building site
-plans of nowadays state

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the project/process

objects to preserve are known (their construction is recognizable), they are still in good condition, and they offer convenient spatial capacities
the project/program

programmatic relations

description of mutual co-existence of four different groups of users: athletes, public, research and clinic workers.

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the project/program

spatial demands

description of a scale and proportions of demanded area for each programatic parts, their demands in terms of interior/exterior placement and their common circulation
the project/program

volumetry of applied program

following the demands of previous programatic schemes first volumetry emerged.

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the project/process

definition of three main "urban/landscape" axes as a determination/restriction elements for further volumetry development

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the project/process
establishing of the first floor plan and pre-determination of new functions for existing structures

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the project/process
extrusion of the floor plan to get the first volume, which is way too big demands wise
the project/process
lowering of the western peak of the plan to extend the ski slope

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the project/process
landscaping the northern peak of the volume to create an extension of existing bike-park

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athletes public
'5 the BEMA project

BEMA: Berlin Extreme Motion Academy

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the BEMA project/masterplan

masterplan is very important drawing in terms of explanation of complexity of connection between the structure of BEMA facilities and their environment

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the BEMA project/ southern elevation

this elevation is crucial in terms of being the representative gesture of all complex, transient up to opaque facades reveals interior layout and allows changes of appearance of the building itself.

Existing complex still maintains its monumentality.
the BEMA project/southern section

southern section briefly explain interior layout and structural scheme inside the new building

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Red Bull X-Fighters event.

The idea for the Red Bull X-Fighters event came from energy drink
producer Red Bull. The first competition took place in 2003
in the bullfighting arena in A Coruña, Spain. The event moved
to Madrid’s La Venta building for 2004. Soon it became
Europe’s biggest and most important bullfighting arena. With 75,000 spectators,
the competition in Madrid has been an annual event since 2006. The
BEMA project/
eastern elevation shows the relationship between volumes of research labs and
cinema with Shaper’s labs

eastern elevation

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the **BEMA project/eastern section**

interior setting of entertainment hall, research labs, shaper’s lab and underground parking lot

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the BEMA project / 1. floor plan
this floor plan introduces basically the masterplan of the BEMA complex

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the BEaMa project
visual impression of project development

graduation project & research by: Tomáš Kozelský
the **BE\textsc{MA}** project

visual impression of project development

graduation project & research by: Tomas Kozelsky
Indoor base is a specialized facility designed for practice sessions of athletes. Besides the physical training, this facility offers obstacles to improve the technique of their motion (riding, running, jumping, climbing, etc.) and enhance their endurance and power.

p5 
BEMA: Indoor Base

My major focus in this project is narrowed on the indoor base facility (extension of the existing building+existing building itself).

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BEMA: Indoor Base

collection: existing, removed, new

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BEMA: IndoorBase
basic interior layout

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primary layout

Primary layout consists of the most spatially demanding structures such as sloped ones, jumps and landings. Therefore this setting offers a set of three jumps (two straight ones and “quarter pipe”) and less steep slope for jib contests (rails or funboxes can be applied in the middle of the ramp).
secondary layout introduces the spatial extensions of the
primary layout (rhythm zone, pipeline and massive quarter
pipe air), new park and street spots (street line, miniramp
and vertical half-pipe) and base of freerun academy.
tercial layout

tercial layout introduces the “cave” which is a main space of climbing academy containing all different types of walls and voids convenient for rappelling, ice climbing, bouldering, practicing of free climb or just classic climbing. another part of tercial layout is extension of existing sport grounds as a trampoline grounds using foam pit placed below them (4m high flight) or extension of existing stair-case turned into fire escape of freerun academy and/or free runing obstacle set.

**BEMA: Indoor Base**
puzzle of interior layout: 3

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The only new sport ground introduced in this layout is basically the exterior (though sheltered) dirt park. The other introduced sets are the walkable plateaus and platforms enabling users to "walk" around.
BEMA: Indoor Base
The “Cave” - Climbing Academy
visual impression of applied research

graduation project & research by: Tomas Kozelsky
BEMA: Indoor Base
Flow Zone - Riders Academy
visual impression of applied research

graduation project & research by: Tomas Kozelsky
BEMA: IndoorBase
The Foam pit – Riders Academy
visual impression of applied research

graduation project & research by Tomas Kozelsky
facade build-up scheme

- air-co piping
- suspended ceiling
- corrugated steel plates support beam
- stiffening cross beam
- corrugated steel plates support beam
- main load bearing beam
- main load bearing beam; corner piece
- reinforced concrete with asphalt top
- construction of roof edge
- extruded polyester insulation
- main load bearing beam
- corrugated steel plates
- horizontal I beam for stiffening of glazed facade
- glazed facade wind-load support truss
- main load bearing column
- profile glass panels
- main load bearing beam
- stiffening cross beam
- thermal insulation
- main load bearing beam; corner piece
- floor construction

BEMA: Indoor Base

facade build-up scheme

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BEMA: Indoor Base

facade elements: roof layout and cladding

load-bearing construction
thermal insulation
adjustable joint
cladding system: construction
Hunter & Douglas aluminium cladding plates

grass soil 80mm
filtration and separation membrane
retention panels 10mm
geo-textile membrane
vapour-proof foil
hydroinsulation membrane 10mm
thermal insulation 120mm
asphalt layer 20mm
reinforced concrete 200mm
corrugated steel plates 180mm
distant adjustment tool for suspended ceiling
suspended ceiling

reinforced concrete layer
corrugated steel plates hidden
load-bearing construction ('I' beams)
load-bearing beam doubled for better longitudinal stiffness
wind-bearing supportive construction
load-bearing column

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BEMA: IndoorBase
facade elements: glazing

vapor piping and perforated facade—berarring construction element to enable air exchange inside the panels

stages of opacity

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8mm thick plywood boards are attached to the wooden frame to create base layer.

construction layout & interior obstacles

snowflex membrane (for winter sports) on silicon strips - removable

wood coating finishes (increasing durability of the plywood boards, elevating seems, increasing grip - adhesive power)

plywood base layer

load-bearing construction wooden frame (ribs)

load-bearing construction stands with stiffening cross

side wall from plywood

BEMA: Indoor Base

construction and materialization of the interior obstacles

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artificial climbing wall layout (exploded view)

existing load-bearing construction concrete wall

metal frame anchored to the load bearing concrete wall

maintenance access (perforated steel platforms placed in the frame)

plywood surface

BE:MA: IndoorBase
construction and materialization of the artificial climbing wall

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climbing wall: structural detail

L-beams enable platform placing

anchors to the existing construction

stiffening cross

maintenance platform

plywood surface

distance adjustment positioner (tool-free manipulation)

artificial climbing wall surface made from plywood with grid of holes for grab attachments (triangular folding)

BEMA: IndoorBase

construction and materialization of the artificial climbing wall

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Climate design

Main climate feature is usage of existing tower. Used air is sucked out through pipeline with exhaust pipe at the top platform of tower. Fresh air is led to the interior via two lines. Line A is led from underground to heat up incoming air through ground temperature. Line B comes through piping starting at the tower platform one below the exhaust of used air.

Line A is designed for usage during summer and hot weather periods, cause underground piping cools the air down. Piping B is designed for low-temperature periods. Incoming air is led through recuperation device and is significantly heated up by outcoming air.

Facade and incoming direct sunlight facade is made from double layered glass panels. These panels are transparent but translucent. The feature turns incoming sunlight into diffused light which doesn’t transmit such amount of heat (also double glazing rapidly lowers amount of heat exchange).

Interior is designed from light color surfaces and therefore passive heating shouldn’t be a problem. The only remarkable sunlight problem that may occur is a glare. Anyway, sun is able to get deeper inside the interior from a toweringle and in this scenario the indoor base shaded by the new building.

BEMA: Indoor Base

Climate design

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Thanks for your attention!

THE END

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