

GEOFORT



Educational powerhouse contributing to the fight for our planet.



INDEX

1. INTRO
2. WHY AND WHY NOW?
3. GEOFORT A UNIQUE OPPORTUNITY
4. THE STORY
5. THE EXPERIENCE
6. THE PROJECTS
7. HOW YOU CAN HELP US



INTRO

There are many large, abstract and complex changes in motion. For example: energy transitions, circular economy, climate change, food innovations, mobility and digitalization. Additionally, dealing and engaging with pandemics. The impact of these changes is at times, too large for us to predict. We need imagination in order to predict and understand the consequences of these changes. A place to playfully learn and research how we deal with these changes in an innovative manner in the Netherlands.

The interactive museum GeoFort faces this challenge. The fortress offers astounding out- and indoor spaces and receives 100.000 visitors every year, of which 14.000 are students. By expanding GeoFort with new interactive experiences and study models, even more visitors can be inspired to respond positively to the changes, to enrich them and to contribute themselves.

Now is the time for governments, businesses and education to join forces and create a place where awareness about our future is central.

We are creating this place, and you can be a part of it.



**WE CAN OFTEN
HARDLY IMAGINE
WHAT THE FUTURE HAS
IN STORE FOR US**

**WE NEED OUR
IMAGINATION**



WHY AND WHY NOW

PAST

Humans shaped their surroundings to their own liking.

We have reclaimed land, build dykes, chopped trees, cut peat and delved raw materials.

The industrial revolution enabled us to do so at high speed, in order to acquire a high prosperity level in this part of the world.

In 1972, the Club of Rome indicates insinuatingly that this style of operating is not without consequence. Predictions regarding the environment and exhausted resources are acknowledged by few, since these consequences are yet to become tangible.

PRESENT

Meanwhile, the consequences of our actions have become quite notable.

The temperatures are rising, glaciers and ice caps are melting, desertification Australian forests are on fire and the weather has become more extreme. In many places on earth, the soil, the water and the air are heavily contaminated. The biodiversity is declining at a rapid pace worldwide.

Not until 25 years later, during the Protocol of Kyoto in 1997, world leaders agreed to reduce the emission of greenhouse gasses. Numerous climate conferences follow. During the conference of Paris in 2015, nearly 200 countries agree to a new binding climate protocol. The emission of greenhouse gasses needs to be pushed back and the global warming needs to be limited to a maximum of two degrees.

FUTURE

What can we do?

Due to the Corona-crisis, the global economy was declining. The consequences appeared immediately. The air quality improved, the waters became clearer, animals and flora were prospering. How can we keep this up? Should we stay at home and pause all production?

Humans have always been creative problem solvers. For many aspects and problems of our lifestyle, we invent smart alternatives. The key thought is the sustainable society. How can we maintain our welfare and prosperity and be less harmful to our environment at the same time?

For many aspects of our society, solutions already exist or are being developed. People are working on sustainable energy sources and raw materials, new nutritional products, recycling and short production chains. There are many initiatives to maintain, expand and enhance existing nature. It is important that these initiatives are carried out in an wide array to ensure progress and implementation. So that everyone – for as much as possible contributes. This starts with acknowledgement and belief in a better future.

GEOFORT - A UNIQUE OPPORTUNITY

GeoFort is an educational theme park about the future and is located within an exciting historical fortress in the Nieuwe Hollandse Waterlinie. GeoFort's mission is to guide a broad audience along a path to the future of planet Earth in an fascinating way.

In this 10 square hectares fortress-island, children, teenagers and adults experience all forces that influence and impact planet Earth. Interactively, they discover clever solutions for the challenges of today and tomorrow.

EXPERIENCE WORLDLY THEMES

Increasingly more often we notice the impact of the changing earth in practice: locally, nationally and globally. What are the consequences of climate developments in the long run? What will earth look like in a hundred years? What is the spatial impact of the transition towards new energy sources? How can we solve logistical problems within a country with inclining population density such as the Netherlands? To answer these questions, we need a place where knowledge and innovation meet. A place where there is room for current and future generations. A place where children aged 4 to 104 can experience the impact of the climate treaty of Paris in an fascinating way. This is the place GeoFort wants to be.

MOVING FORWARD

In the next years, the world will entail in a rapid trajectory of multiple transitions. We notice these transitions already. On April 21, 2020, The Netherlands (Europe's most tainted child) generated almost two third of her electricity using renewable technology. This is the start of a fascinating transitional period. GeoFort is, as a 'museum experience of the future', constantly developing to remain so relevant as possible and is therefore going along with this transition phase. This is the chance to build the science centrum about the future of planet earth, together.

We reach this goal by utilizing appealing examples that make the future tangible, testable and visible. How will we live in 30 years? What will we be doing? Will it be fun? These examples form the beginning of several stories after which we dive in depth.

We will be using the typical Dutch creative thinking, which has put us on the charts internationally. This way we create a stimulating combination of awareness and fun. Going through a transition together means that we are in it for the long haul. So, let's make it fun!

This new vision challenges target audiences to tackle new innovative ideas and solutions for the future.

OUR TARGET AUDIENCE

Families with children

(4-12 years)

GeoFort enthuses children from 4-12 YO about the future of planet Earth. The GeoExperience offers information adjusted to the audience's age. This means that even the (grand) parents may be surprised.

Educational institutions

(8-18 years)

Since 2019, GeoFort has received 14.000 students of which 60% came from secondary education and 40% of elementary education. In addition, GeoFort also receives students of MBO, HBO and numerous Universities. Aside from students, GeoFort is also the ideal learning environment for (future) professors.

They can come to GeoFort for additional training and study material regarding cross-curricular themes such as water management and energy transition. GeoFort's ambition is that every student within a 60-kilometer radius, has at least visited

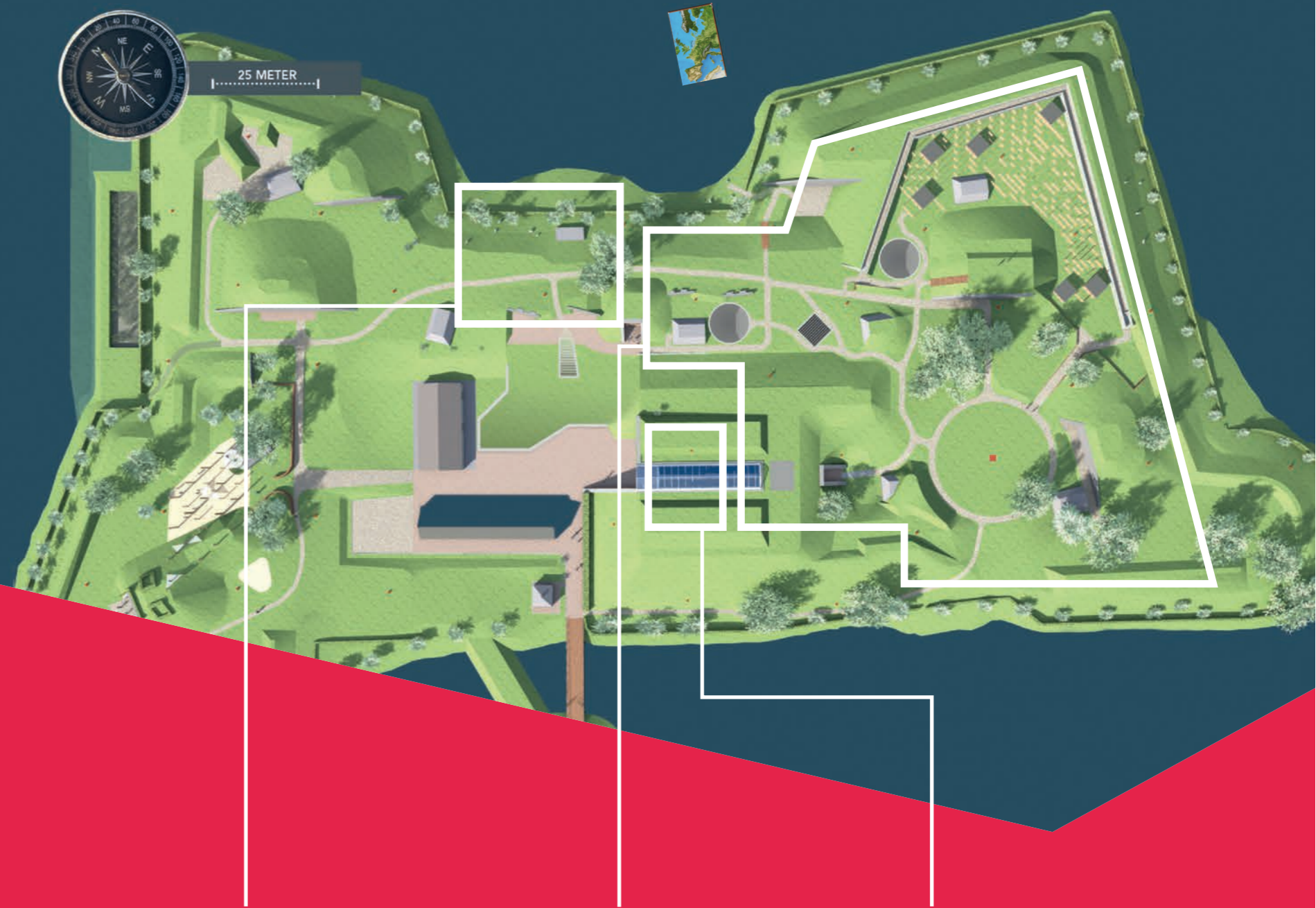
Businesses

(all ages)

The halls and activities of GeoFort already attracts a lot of attention by businesses and institutions. The premises is beautiful, the halls offer modernized conference facilities and the futuristic themes can be used perfectly for training, teambuilding or customer events. Because of the central position in the Netherlands, GeoFort is attractive to companies with a national span distance. Diverse stakeholders are connected to GeoFort



THE ZONES



What is it like to spend a day at GeoFort?

Sense of Urgency

Visitors start in the zone 'Sense of Urgency' where they become immersed in current cases like the rising sea level, the plastic soup, heat stress in cities, changing vegetation, air pollution and desertification. We will give people hope by presenting possibilities for change.

Sense of Geo

Visitors resume their way in the fortress and will arrive in the 'Sense of Geo' zone where they will experience eight themes: energy, water, climate, raw materials, mobility, nutrition, smart cities and biodiversity. The visitor will be challenged to experience every theme using countless exhibits, in- and outside. Every theme has its own location within the fortress.

Sense of Future

The route in the fortress ends with 'Sense of Future'. How would the Netherlands, Europe or the world look like in the future? Choose a scenario and experience the outcome.

THEMES

In the zone 'Sense of Geo', eight themes will be displayed and brought alive in an insightful and enthusiastic way.

Climate change

Climate change causes extreme weather more often than it used to, which results in more draught and more precipitation. For every region the impact differs, but that changes are set in motion is known to all. The plant- and animal kingdom will also adapt. The Netherlands will get a climate comparable to the current situation in the southern French city of Lyon.

Water

The water theme knows many facets. It is either too wet or too dry. How can we keep our feet dry and what are the consequences of the rising sea level? The Dutch are known for their conquests on the water, but how will this be in the future? Visitors experience how important it is to use water efficiently, on large scale as well as in their daily routines.

Mobility

The trees that were chopped to make room for GeoFort, travelled to China to be processed in chipboard. These boards were then shipped to Eastern-Europe where they made those boards into a closet. The closet travelled to a Dutch boulevard, where GeoFort purchased the closet. It is fascinating how a small country like the Netherlands, exports products while being depended on import at the same time.

Smart Cities

The digital revolution is in full swing. Sensors are used in many applications and (big) data analyses give us new insights. Everything is connected, making digitalization a force with influence in every other theme.

Biodiversity

Biodiversity is essential for the processes that support all life on Earth, including humans. Without a wide range of animals, plants and microorganisms, we cannot have the healthy ecosystems that we rely on to provide us with the air we breathe and the food we eat.

Nutrition

In a short time a lot has changed regarding nutrition. The demand of meat substitutes has strongly increased and is not neglectable from supermarkets anymore. With this trend, other facets within the food production sector have emerged. Will we take biological, free range or cultured meat from a laboratory? In GeoFort, visitors will get a taste from our culinary future.

Raw materials

This theme offers visitors insight in our current and future use of raw materials on earth. We show them that we must be aware with delving the already limited raw materials earth has in store for us. We also show intelligent and responsible ways to utilize raw materials. What developments are there right now?

Energy

Visitors will be immersed in the different facets of the energy theme. They are taught how much energy is used and how much effort it costs to generate that amount. They discover multiple ways to deal with generating energy in the future and new innovations to store that energy efficiently.

LESS, DIFFERENT, BETTER

To cover more in-depth information with all eight themes, each subject is dissected into three standpoints: How can we narrow it down? How can we approach things differently, making it sustainable and how can we do things better?

LESS



By cutting down, you – end user of materials, energy and time – will have the biggest impact on your own footprint. This is due to the leverage effect that inefficiencies have: most end products that we consume, often require many stages with each their own impact that you can eliminate with just one decision.

The challenge is not only to explain but mainly to show people that with less consumption, we can also have more fun. By spending money on nice trips nearby instead of clothing for example.

The impact and essence of the reduction will be displayed using different example-projects in GeoFort. In which we will focus on reducing usage of energy, water, nutrition and raw materials. Also, we zoom in on the impact of the reduction on our society, on the city of the future.

DIFFERENT



Eventually, the best way to make it through a transition is to look forward to a better alternative. For example, in the year 1900 there was a surplus of horse feces in the streets of London. Ten years later this problem was solved by the arrival of the automobile... GeoFort takes young and old alike in the journey towards better alternatives for the current use of energy, certain raw materials, food and water. With one important question in mind: how will our society cope with these better alternatives?

BETTER



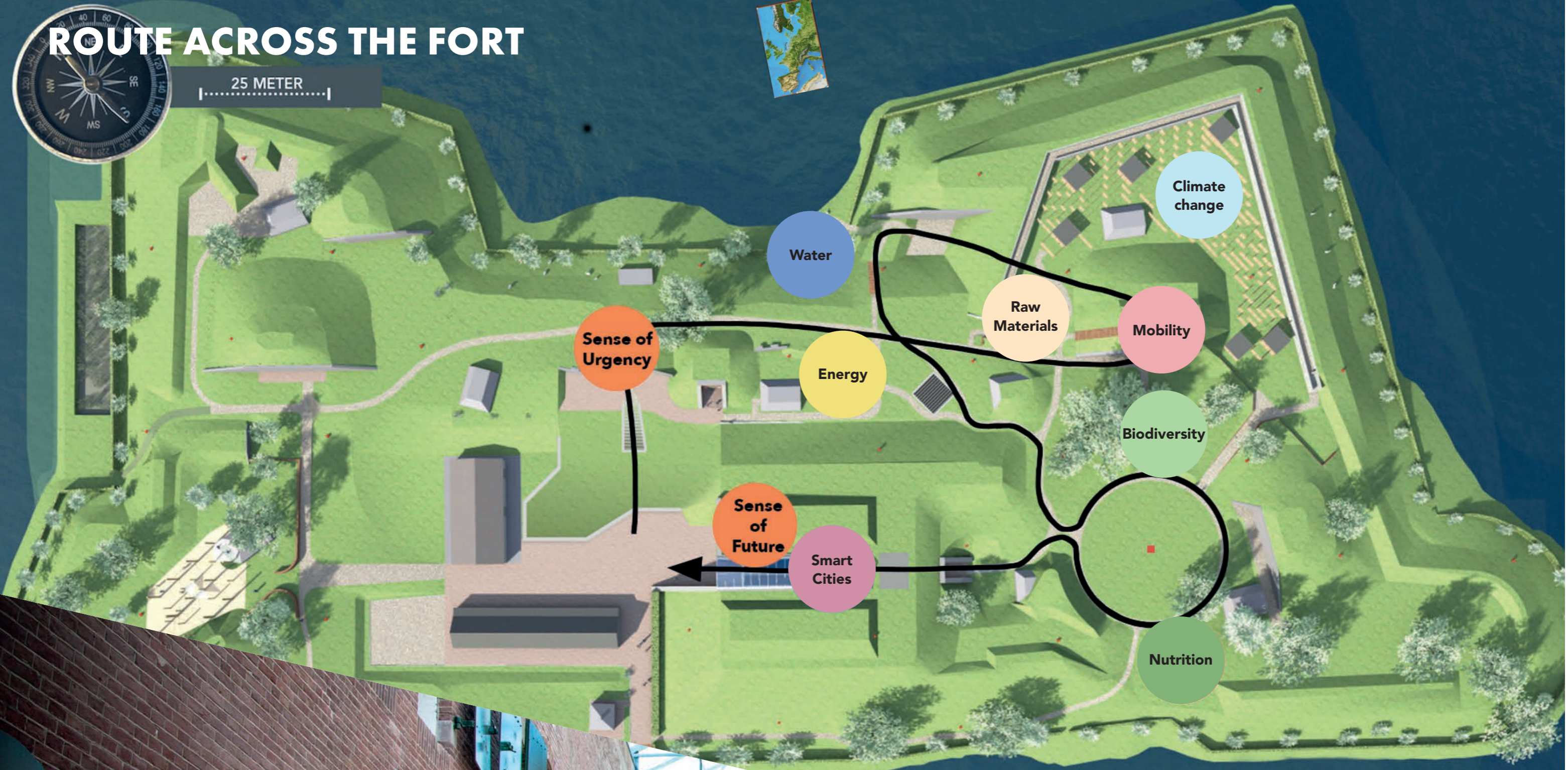
Technology offers us faster, healthier and more comfortable habits that enhance our lives. With innovative solutions, the cities and all their inhabitants will use raw materials, energy and water differently.

We are able to communicate effortlessly with people across the planet and travel from Rotterdam to London within three hours. The city of the future will be using food differently. This means that we can replace centuries old habits and needs with other habits. GeoFort teaches children, students and professionals what these changes entail and what the influence of these changes will affect within our society. What needs can we also satisfy in a sustainable manner?



ROUTE ACROSS THE FORT

25 METER
|-----|



SENSE OF URGENCY

Climate change? The opinions are divided. What is true? It is important to review changes in the long run. Where to do this better than at GeoFort? Not until we are aware of what is happening around us, we will accept the necessity of change. Only then, we will revise our lifestyle and the consequences that come with it.



SENSE OF URGENCY



Visitors make a flight around the world.

While time flies by the visitors will notice certain changes:

- Deforestation
- Urbanization
- Rising sea level
- Desertification
- Wildfires
- Hurricanes

SENSE OF URGENCY



The next room will quantify the following changes:

- Rise of temperature
- Decreasing diversity
- Melting glaciers
- Thawing permafrost
- Shifting flora and fauna zones
- etc.

SENSE OF URGENCY

HOW HIGH DOES THE WATER GET WHEN THE SEA RISES?

Visitors are able to spin a globe.

When they spin the wheel around the globe, the sea level will change.

This way they see what parts of earth will be submerged.

SENSE OF URGENCY

WORLD OVERSHOOT DAY



On a touchscreen, visitors will learn what World Overshoot Day means.

By playing with their own consumptive behavior, they can see when 'their year' has passed.

ENERGY PAVILION

It is unimaginable how much energy everyone uses without thinking about it, considering how much it actually is. For decades we consume coal, gas and oil to satisfy our needs. There used to be enough, so we weren't exactly provident. In hindsight, the end of our precious raw materials is in sight. How can we lower our consumption? How can we sustain our sources? How can we store energy the right way? The energy transition is in full swing.



ENERGY – INTRODUCTION

STEAM

ELECTRICITY

Multimedia presentation regarding the history of our energy usage. Visitors will see humans use their hands and tools for everything until the humans start using animals for their labor. Following up is the invention of fire, deforestation, turf cutting and coal extraction. The introduction of the steam engine. Oil and gas due to the combustion engine. The introduction of electricity, the discovery of nuclear energy.

We keep needing more and more energy and our global footprint keeps increasing.

Our visitors will learn that we appear to be addicted to energy; we cannot live without it. But also, that we have survived several energy transitions.

ENERGY – LESS

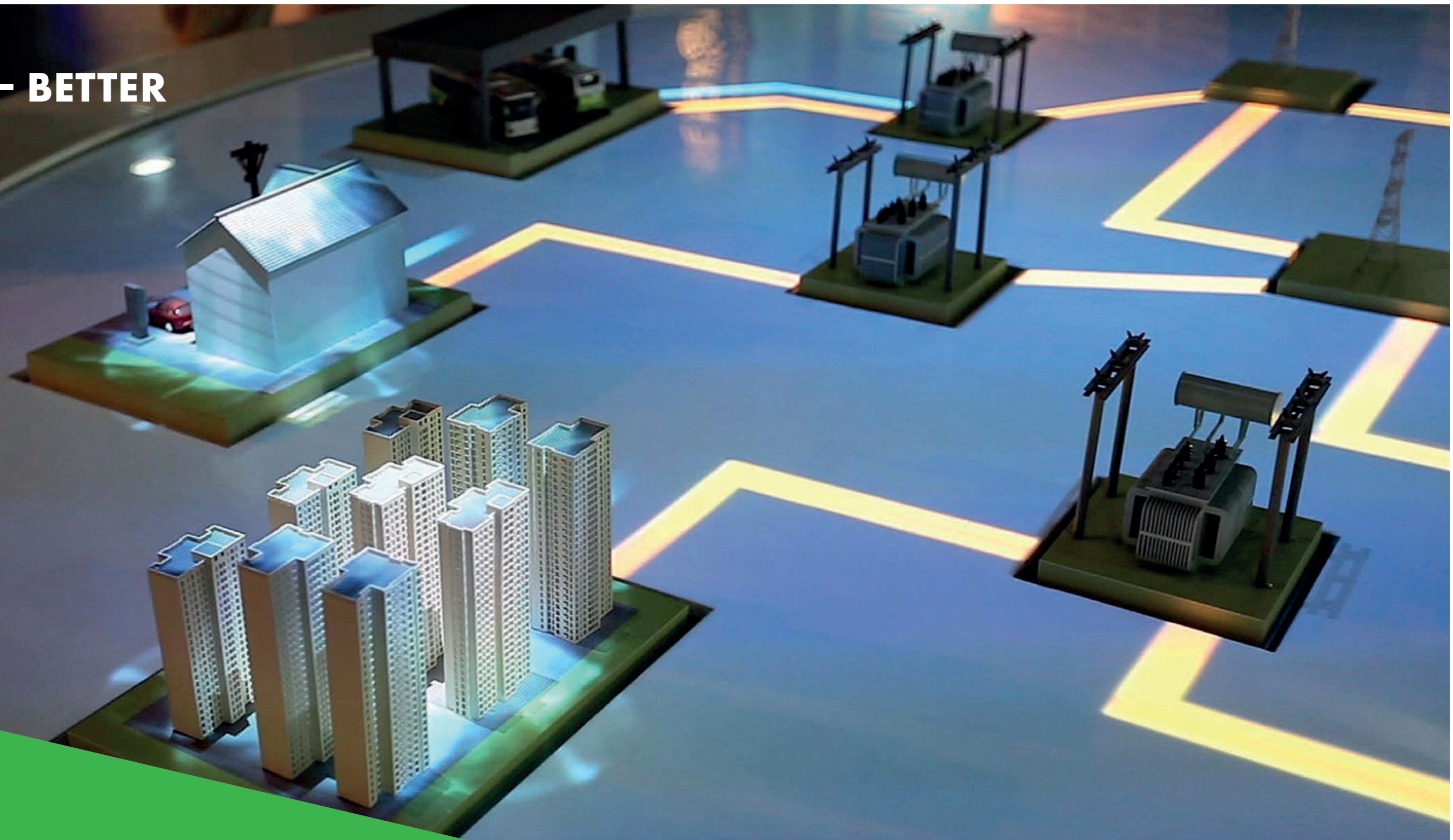
MORE WITH LESS

HOW MUCH ENERGY CAN YOU GENERATE?



Two interactive setups where visitors can play with their own energy consumption. They will do so on a bicycle where they see how little energy they can generate themselves compared to how much they use in a day. With a scale, visitors can discover how much energy saving changes certain behavior.

ENERGY – BETTER



If everyone would start producing and consuming electricity, that would demand a great deal of our network. In this interactive game, visitors will connect households with a surplus (orange light) with households with a deficit. They do, however, need to pay attention and keep (re)connecting because supply and demand keep changing continuously. They are also able to deploy powerplants, but the goal of the game is to stop the need of powerplants.

ENERGY – BETTER



During the energy transition several variables play a crucial role, one question that arises; is it more effective to isolate or to place solar panels on your roof? These considerations are not only important to individuals, but also to municipalities or provinces. Via a Serious Game, visitors will tackle several parameters. The first version of the game will be financed by RVO, where the municipalities West Betuwe and Utrecht are centered. We hope to launch the game for the

whole Netherlands. This is possible by live data of the Netherlands that is used by two leading companies: Quitel Intelligence (with their Energy Transition Model) and Tygron (with their 3d model of the Netherlands) "you can fly across the terrain and see which houses you have isolated or where you have installed solar panels and windmills." This game will be developed in stages.

ENERGY – DIFFERENTLY



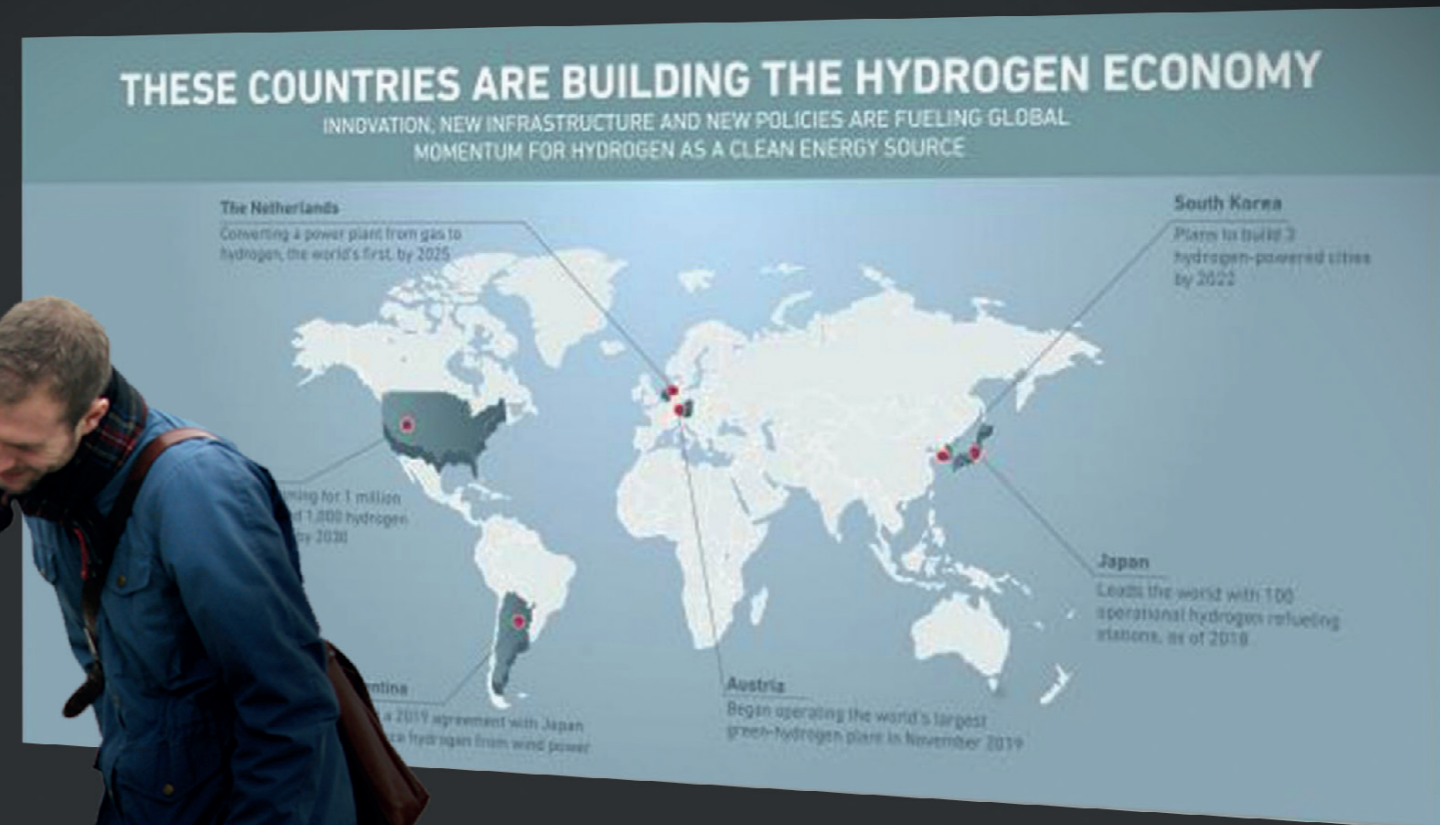
We know electrical cars driven by solar energy of the Solar Challenge. But these kind of planes have yet to exist. At GeoFort you can participate in a competition of Solar Flying. Who can fly the most laps by illuminating the solar panels on the plane?

ENERGY – DIFFERENTLY



Different energy? It is good to know what kinds of energy there are and how to convert one kind into the other. This is how you discover that a solar panel converts radiant energy to electrical energy and that a hydrogen cell contains energy that stores well.

ENERGY – DIFFERENTLY



Visitors can turn a flywheel that drives a dynamo. The electricity produced converts water into hydrogen and oxygen. When there is enough hydrogen they may press a button that launches a rocket.

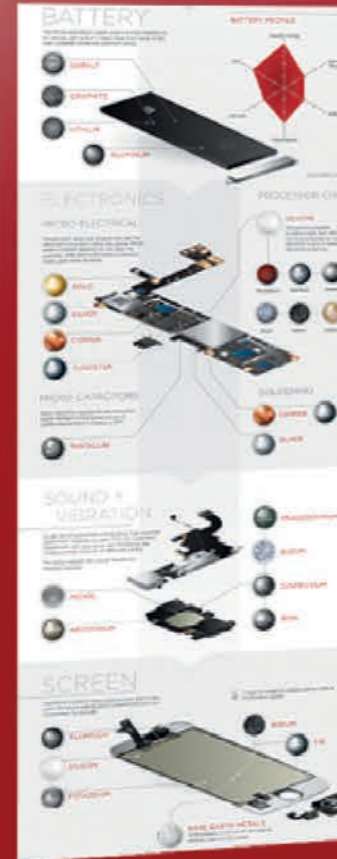
RAW MATERIAL PAVILION

In order to build something, you need materials. Since human recollection, humans consume raw materials from earth. The more we consume, the more we need. And the more we waste. Many materials disappear on garbage dumps, during combustion or as litter while still being usable. Earth is not an endless source of raw materials. Another reason to think carefully about what we use or throw away is that making materials out of raw materials demands a lot of energy and water.



RAW MATERIALS – LESS

WHAT'S INSIDE YOUR PHONE?



A lower consumption of raw materials starts with the realization raw materials that are depletable. In this exhibit visitors discover what materials are used for their mobile phones and how much there is on earth (for now).

RAW MATERIALS – BETTER



We literally and figuratively throw a lot of stuff away. Much litter can easily be recycled. This will save raw materials and energy. In this exhibit visitors may contest other visitors. Are you the best recycler?

RAW MATERIALS – DIFFERENTLY



Exhibition of new materials

- Plastic from elephant grass
- Clothing from cow feces (Mestic)
- Ink from CO₂ (AIR:Ink)
- Leather from fruit
- Beer from rainwater
- Plastic from cellulose (Zeoform)
- Clothing from wood (Lycell)

MOBILITY PAVILION

Freedom of movement. We travel far and wide, preferably whenever and however we want to. There is not a place on earth where we have not been yet. This freedom of mobility has consequences. We exhaust energy sources, use large pieces of land for the sole purpose of transportation trajectories and pollute the environment. In addition, our trade and consumption lead to enormous movements. We export all unions we produce and import all unions we eat. Transport by road, water and air all contribute to the environmental problems. How can we keep moving while decreasing our impact on our planet? Are we moving less, cleaner and more efficiently? Or are we finding new ways to get from point A to B?



MOBILITY – LESS



Many products we consume travel enormous distances before they arrive at our doorstep. Is there no other way? Will it differ if we deploy other modalities? Visitors discover how they can limit their footprint by making different choices in the stores.

MOBILITY – BETTER



We like driving far and wide. Traffic jams, detours and crossing speed limits lead to redundant usage of energy and more pollution. In this exhibit, the visitors discover how big data, AI and guided vehicle techniques lead to more efficiency.

MOBILITY – DIFFERENTLY



In a swirling multiscreen presentation, visitors get acquainted with the mobility concepts of the future.

WATER PAVILION

The Netherlands and water. We rather have too much than too little. Our history shows how we compete and profit of the water. Our water management is world famous. These days we prepare for a further rise of the sea level but are also confronted with something new: we have a water deficit. Periods of persistent draught lead to a far-reaching drop of our ground water, soil subsidence, dry dykes, salinization of soil and a possible water shortage. How can we cope when the weather becomes more extreme?



WATER – BETTER



how much water do you use in a day?

sometimes too much
sometimes too little

Visitors can play in a sandbox. How can you prevent that domestic areas (with projected houses) fill with water, but also keep the environment from drying out?

During the game, players get acquainted with periods of lots and little water.

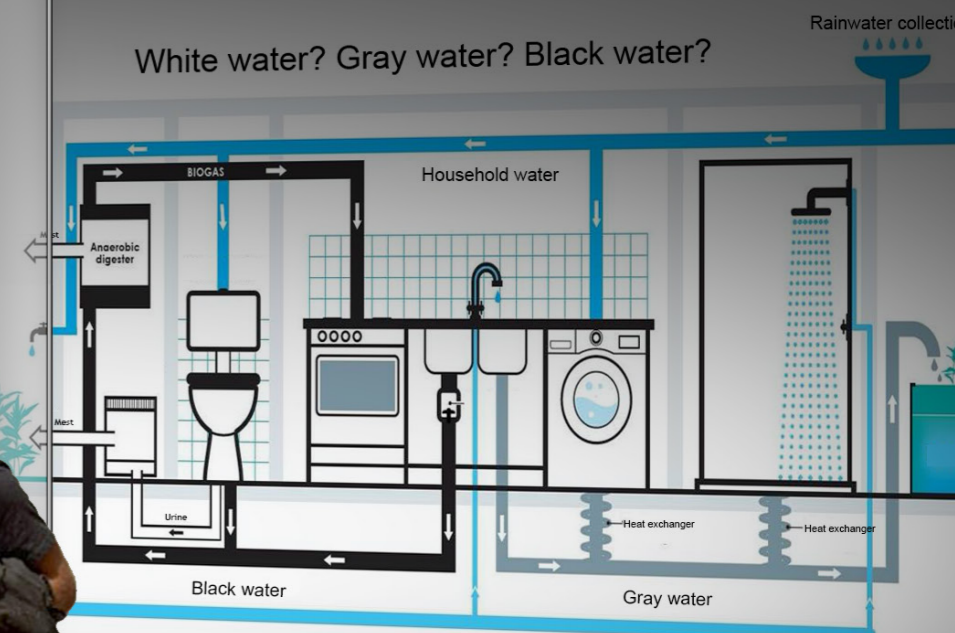
WATER – BETTER

WHITE WATER

GRAY WATER

BLACK WATER

White water? Gray water? Black water?



How does it work?

Visitors discover how much water they consume during their daily activities. The level in the large water reservoir drops. Especially when you are going to spray your garden.

Afterwards they then experience how much less clean water they consume when the grey water system is switched on.

WATER – DIFFERENTLY

BUILDING WITH NATURE



How do we keep our feet dry when the sea becomes more extreme? In a set-up with wave simulation, visitors can protect their home. What works better, a mound, a high dike or another coastal reinforcement?

CLIMATE MAZE

140
Liter

Om één kopje koffie van te maken is 140 liter water nodig. Het grootste gedeelte hiervan wordt gebruikt bij het laten groeien van de koffieplanten. Daarom spreken we ook wel over virtuele waterimport als Nederland koffie koopt in andere delen van de wereld. Per jaar gebruikt iedere Nederlander ongeveer 2000 kubieke meter water. Slechts een kwart hiervan is 'Nederlands' water.

(bron: Unesco-IHE Institute for Water Education)

VEILIGHEIDSNORM
PER DIJKRING

Kiloliter wateroverstrooming per jaar

- 0-100
- 100-500
- 500-1000
- 1000-2000
- 2000-5000
- 5000-10000
- 10000+

Hoogte grond
Bekwaamheidsgebied



Kaarten die een ruimtelijk overzicht geven van het watersysteem Noordzee (fysische, chemische en biologische aspecten), het gebruik van de Noordzee (o.a. scheepvaart, zandwinning, platforms en leidingen) en het beleid en beheer van de Noordzee kunt u vinden op www.noordzeetlas.nl.

WELANGRIJKSTE
NEDERLANDSE
RENNENS EN
SHEEPVAARTROUTES

Grondwater kan er een heel mensenleven over doen om zich 1 kilometer te verplaatsen.



97.5%
water
is zout

van het
op aarde

'Escape maze'. Visitors pass through the maze during a number of pavilions where they can solve a climate problem. With good answers they receive codes which open the exit door.

NUTRITION PAVILION

The Netherlands is known as one of the best food producers in the world. Thanks to intensification and economies of scale, our food is grown in a safe and efficient way. In addition, we import food from all parts of the world on a large scale. Yet change is needed. Our way of consuming and producing has a major impact on the environment. The recent nitrogen crisis shows us the facts. Eating meat in particular is up for debate. There are many initiatives to continue to eat healthy and tasty in a sustainable way.



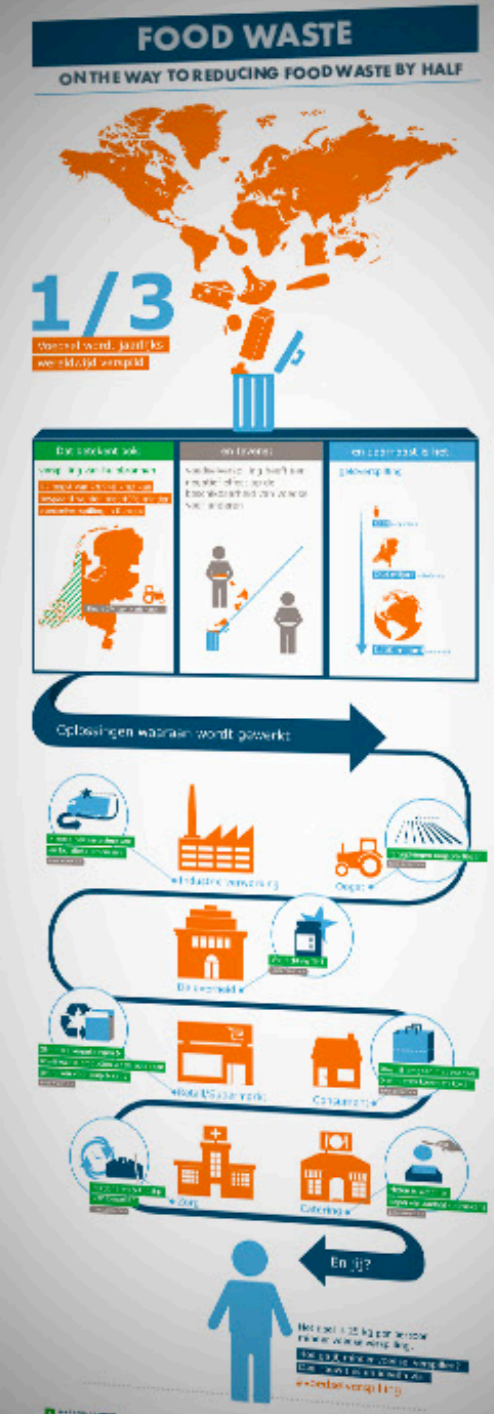
NUTRITION - LESS

HOW MUCH PROTEIN?

Blue cheese	412
Seaweed balls	144
Insect burger	630

Eating meat is less of a burden for the environment. Meat is an important source of protein in our diet. How can we compensate for that? Visitors scan new food concepts. They discover that there are many alternatives to meat. They receive additional information on the impact of meat substitutes on the environment.

NUTRITION – BETTER



So much food gets wasted. In production, our food must look flawless, after all. In the stores because it's past its date. But also at our house. We throw away about 40 kilos of food per person every year.

On this touchscreen, visitors can get some ideas about what they can do with the residual products of their food preparation. After choosing a recipe, follows a funny animation.

Possible recipes

Strawberry stem syrup,
cucumber pickle,
broccoli stem salad,
potato peel soup,
kale chips, etc.

NUTRITION – DIFFERENTLY

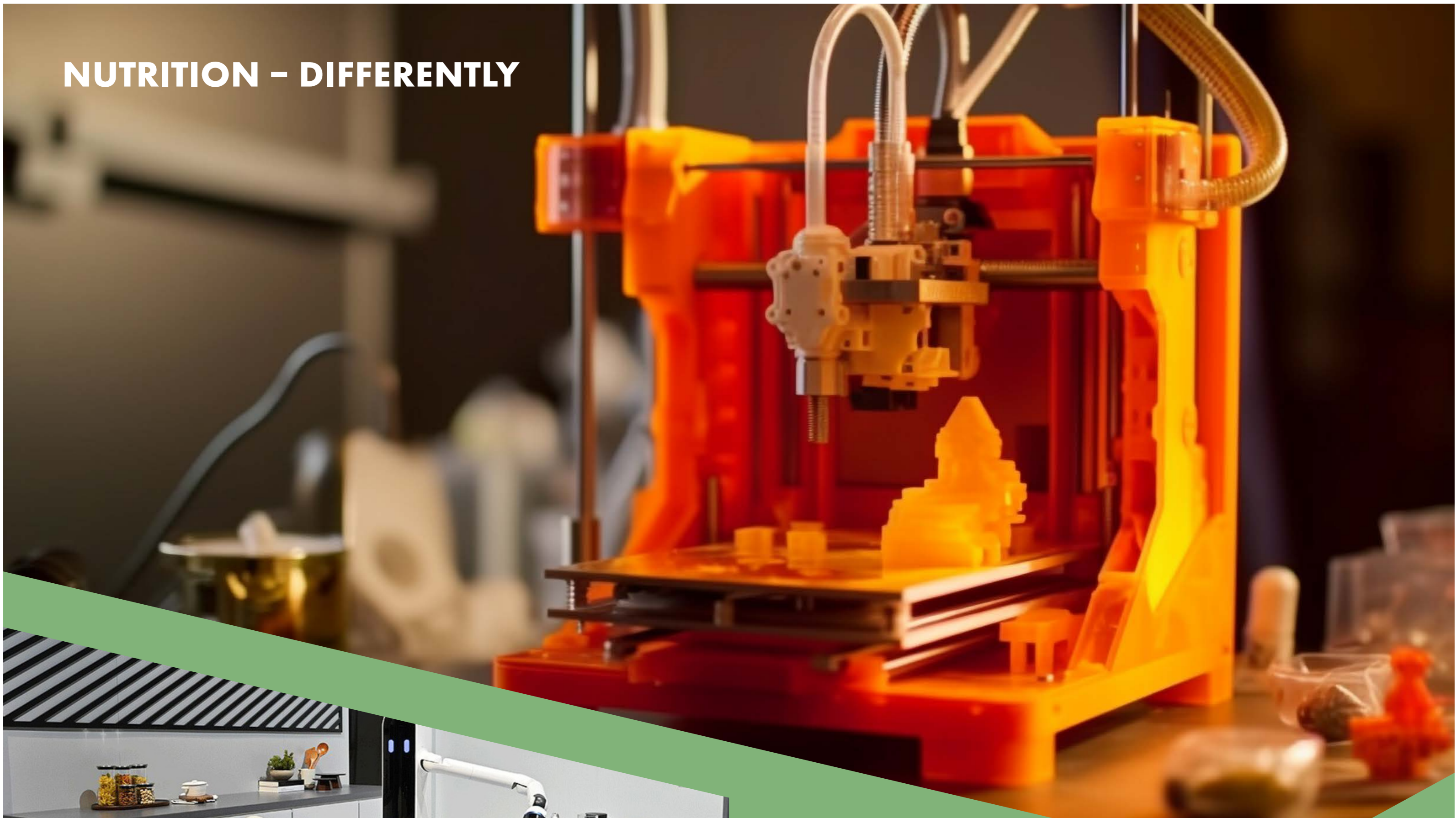


PROTIX



Science fiction or reality? Visitors step into the world of new food production. The run through an algae farm, a vertical farm and an insect farm.

NUTRITION – DIFFERENTLY



In an exhibition, visitors see new "devices". Will we have these in our kitchen in a few years?

SMART CITY



Visitors come face to face with a large model of the city of the future. Screens with AR-apps allow them to look “in the city” and discover what makes this city smart. What systems are closed and what a sustainable society looks like.

SENSE OF FUTURE



When visitors have walked around GeoFort, they have come into contact with all kinds of possible ways in which our future can become more sustainable. In this area, visitors are asked what appeals to them and what doesn't. Based on their personal preference, they can virtually take a look at their own future.

THE PAVILIONS

PAVILIONS AS EXHIBITS

Building with polluting materials that we write off, demolishing and dumping: of course we don't do that anymore. That's why GeoFort tackles its urgent spatial demand with a pavilion that connects two innovative philosophies.

Firstly: clean, biobased materials that leave the world a little better. We all know that wood absorbs CO₂, but did you think of hemp and mycelium?

Secondly: innovative business models. By shifting ownership, the producer remains involved and we encourage him/her to upgrade their materials.

This is how we create an ever-upgrading building with a positive impact.



Images

- 1-3 Educational Pavilion inside the earth of the kazerne
- 4 Additional museum building "Globe": facing the water

HOW TO JOIN

There now is a distinct opportunity for the realization of this science center about the future of planet Earth. We are looking for parties who want to build on this together with us. There are several ways to do this:



PARTNERS

There now is a distinct opportunity for the realization of this science center about the future of planet Earth. We are looking for parties who want to build on this together with us. There are several ways to do this:

OPTION 1

You can support a separate exhibit. Within each theme there is the possibility to choose from different exhibits.

OPTION 2

You can support an entire pavilion. This enables the complete visitor experience of one of the themes: the building, further decoration and related information.

CUSTOMIZATION

Of course, every combination is possible, we can always compose a package that suits your organization. We are happy to talk to you about how this can match with the ambitions, goals and conditions of your organization. Many projects are organized easily and approachable by organizing a so-called design print together, in which we develop the concept further and enrich it with the specifications of your organization and test and increase the feasibility.

GEOFORT



The GeoFort foundation is an interactive museum about the future of planet Earth since 2012. The educational attraction is located on a beautiful fortress island of the New Dutch Waterline. Every year 100,000 visitors come to GeoFort. In 2016, the museum was named the best children's museum in the world!

willemijnsvl@geofort.nl

MMEK'



MMEK' is an award-winning experience design agency in Utrecht. The agency's focus is on devising, designing and realizing high-profile environments for museums and science centers, A-Brands and healthcare environments. Their core is always to integrate spatial-, graphic- and media design from a clear storyline, thereby providing visitors and users with an optimal experience. MMEK' co-founded GeoFort and has been helping to develop this unique science center ever since, by designing exhibits and storylines.

erik@mmeek.nl / martijn@mmeek.nl

9GRADEN ARCHITECTUUR



9graden architectuur is a creative firm distinguished for specializing in sustainable design. This architecture firm focuses on the health of people and on planetary health. Sustainable, social and above all, enjoyable and beautiful.

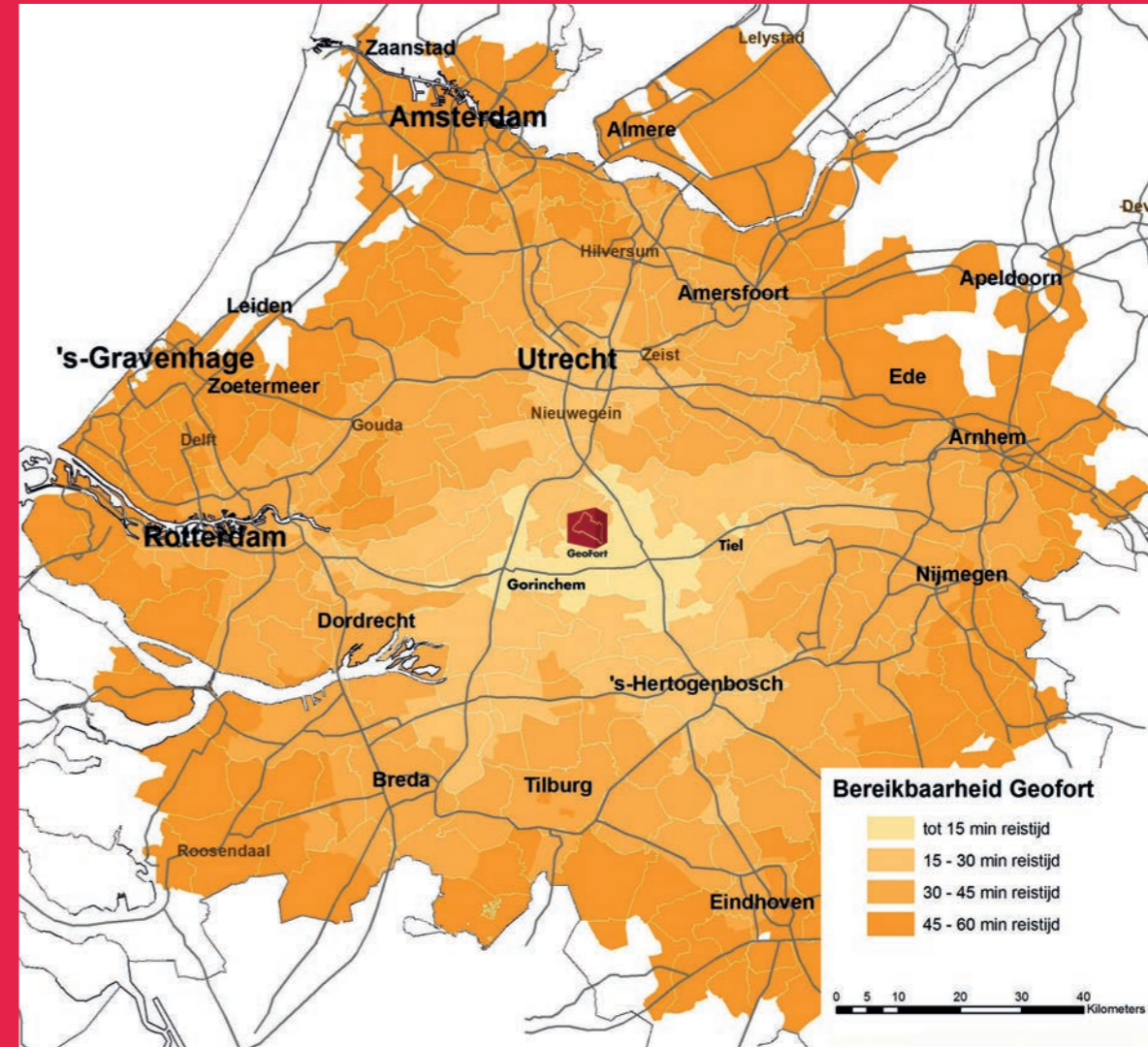
info@9graden.nett

GAMES FOR HEALTH



Games for Health creates games and apps designed to change people's behaviour, contributing to a healthier planet. We have a wonderful fusion of game developers, designers and healthcare & planet professionals. The reason we create playful apps is simple. Humans are intrinsically motivated to play. Through play, people interact with others in a natural way, learn and gain new insights, and change their way of thinking. We do this with one goal - to deliver better health to people & planet.

jurriaan@gamesolutionslab.com



Contact GeoFort

www.geofort.nl

willemijnsvl@geofort.nl

www.planetaryhealth.world

+31 06-20614572

This is a GeoFort publication in co-production with MMEK', 9graden architectuur and Games for Health.



GeoFort

Nieuwe Steeg 74
4171 KG Herwijnen
www.geofort.nl
www.planetaryhealth.world
willeijnsvl@geofort.nl
+31 6 206 14 572

GEOFORT: THÉ INTERACTIVE MUSEUM OF THE FUTURE