Open Mars Project

Living in a desert is hard

The Mars Society experiments Life in Deserts

Out of this world: 'Moon and Mars veggies' grow in Dutch greenhouse

17 May 2016, by Sophie Mignon

several dozen plants in a special greenhouse at Wageningen, an agricultural university in central Netherlands.

"We wanted to use real Martian and lunar soil," to see if plants would actually grow in it, Wamelink told AFP.

Of course, getting real lunar and Martian potting soil is an impossible ask. But an Internet search revealed an unlikely supplier: NASA.

The US space agency makes ground similar to that on the Moon from sand found in an Arizona desert, while Mars' crimson "soil" is scooped from a volcano in Hawaii, Wamelink told AFP.

Deserts provide a lot of energy

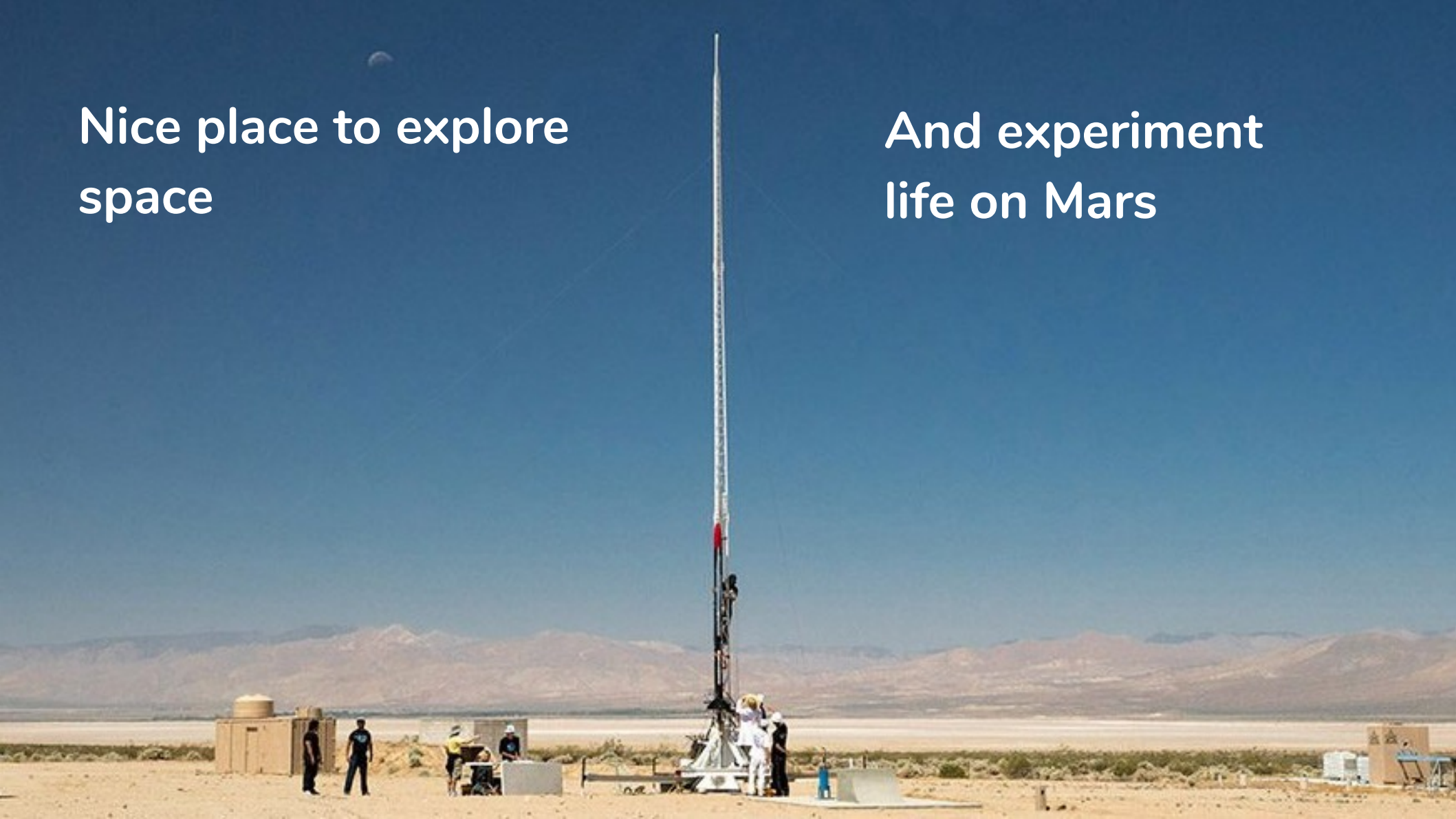
That Morocco converts into electricity

Developing High Tech agriculture


To transform desert in crops

Nice place to explore space

And experiment life on Mars



Especially if expertise is local

And you can rely on Hardware sponsors

powerdale — Charge Points, Logistics

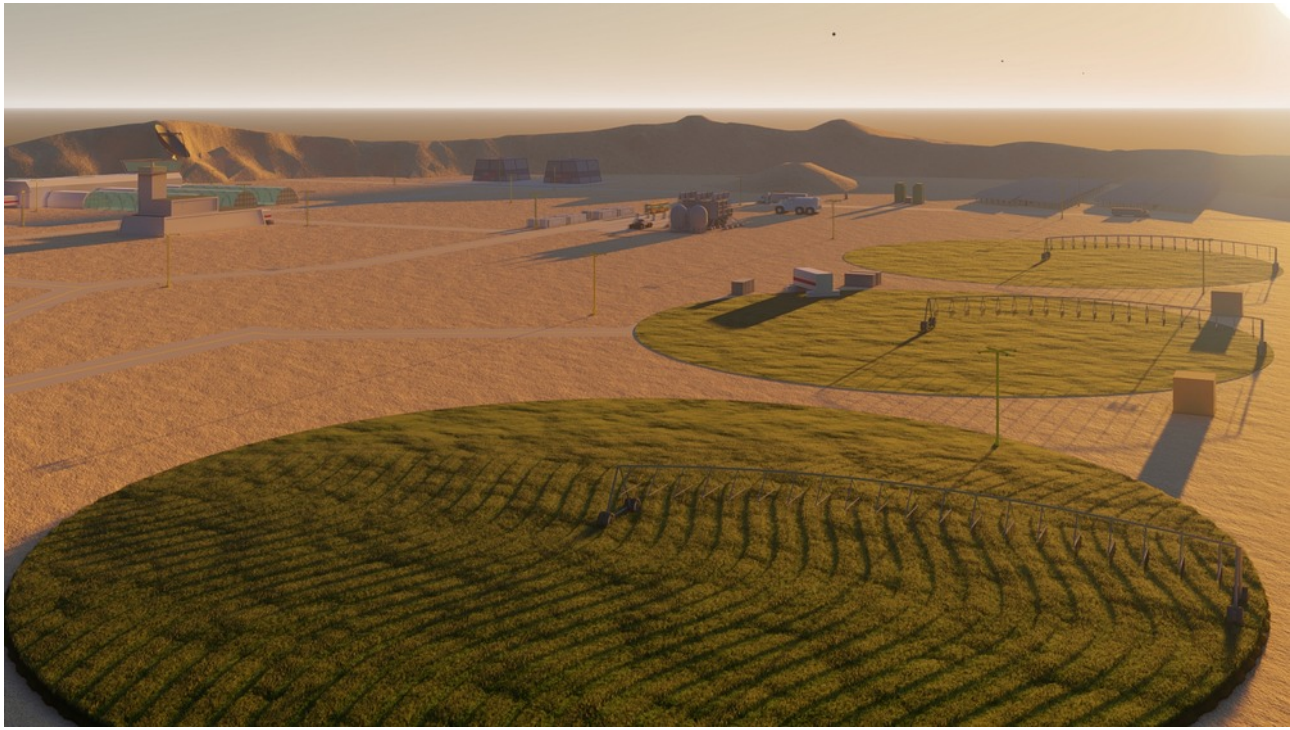
SKYSUN — Photovoltaic, Inverters, Storage

Electroplanet — Computers : 20 connected PCs

e-trofit — Electric Educational Bus

High Tech Agriculture

- Open Source technologies
- Container-based Vertical Farms
- Central Pivot Irrigation
- Internet of Objects
- Local Solar Energy



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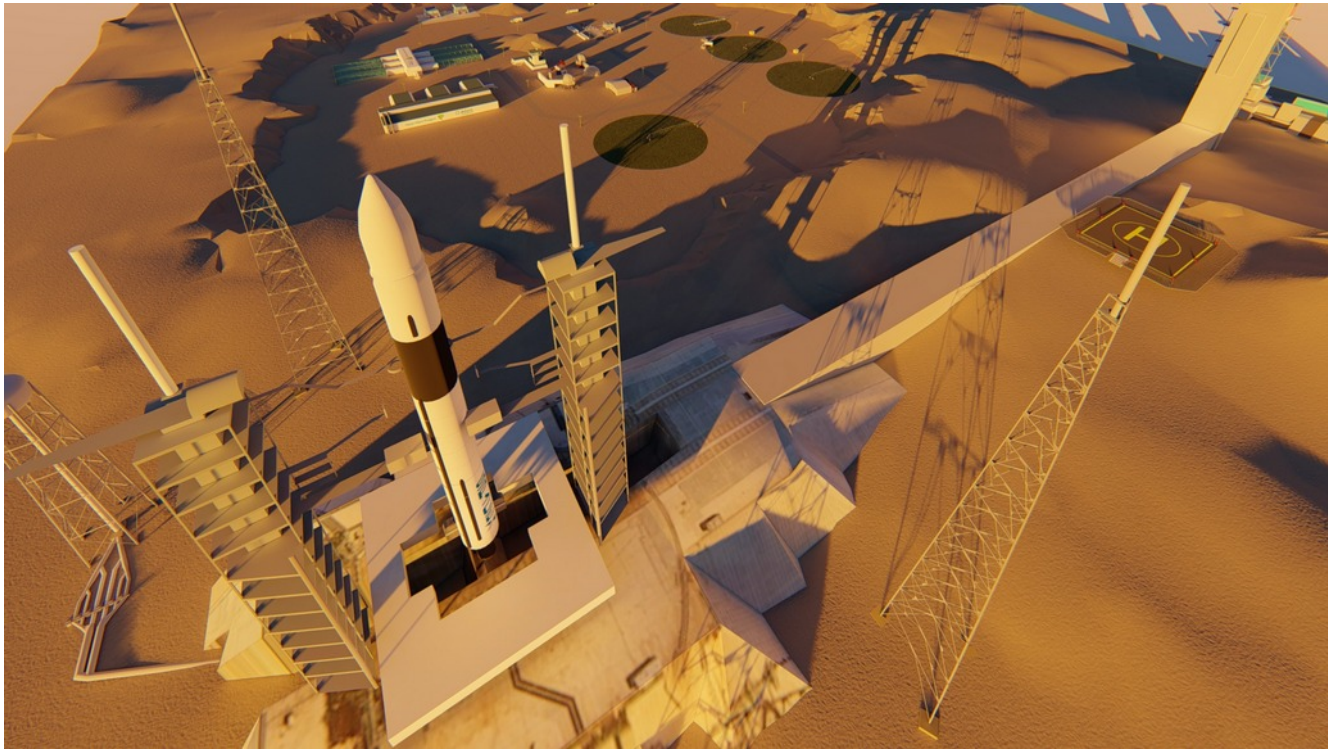
African Space Center

- European agencies want this
- Embedded Electronics
- Open Source technologies
- Building NanoSatellites
- Experimental Rocket Science
- Space Exploration



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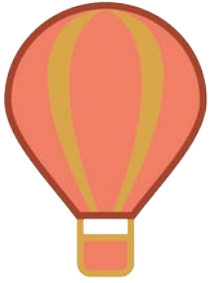
Workshop 1 : Photovoltaic

- Assembling
- Irrigation
- Air Conditioning
- Lighting
- Hydroponics

Workshop 2 : photovoltaic applied

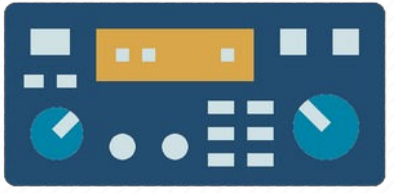
Connecting a Charge Point for Electric Vehicles

Desalinating Sea Water by Inverted Osmose



Generating Hydrogen to raise a Balloon

Refrigerate Living Areas and Culture Zones.



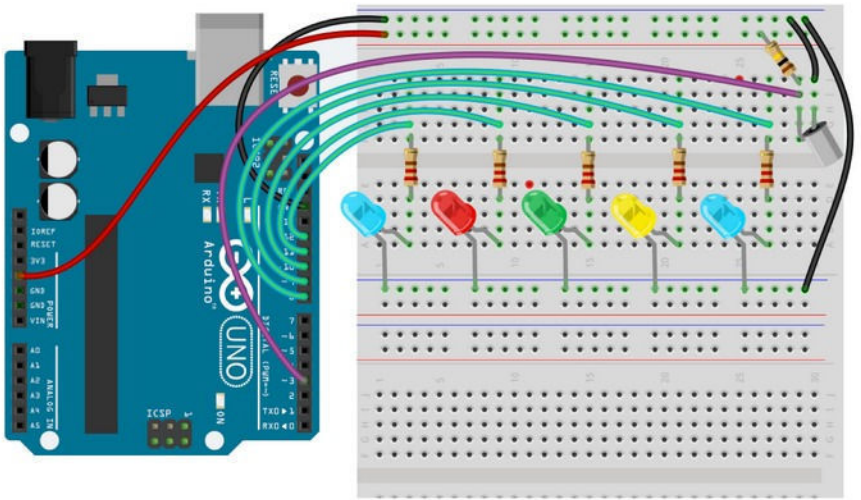
Supplying Electricity to an Amateur radio that connects with a Satellite.

Workshop 3 : Vertical Farming

- Assembling in a container
- Irrigation and Hydroponics
- Air Conditioning
- Lighting
- Energy management

Workshop 4 : Embedded Electronics

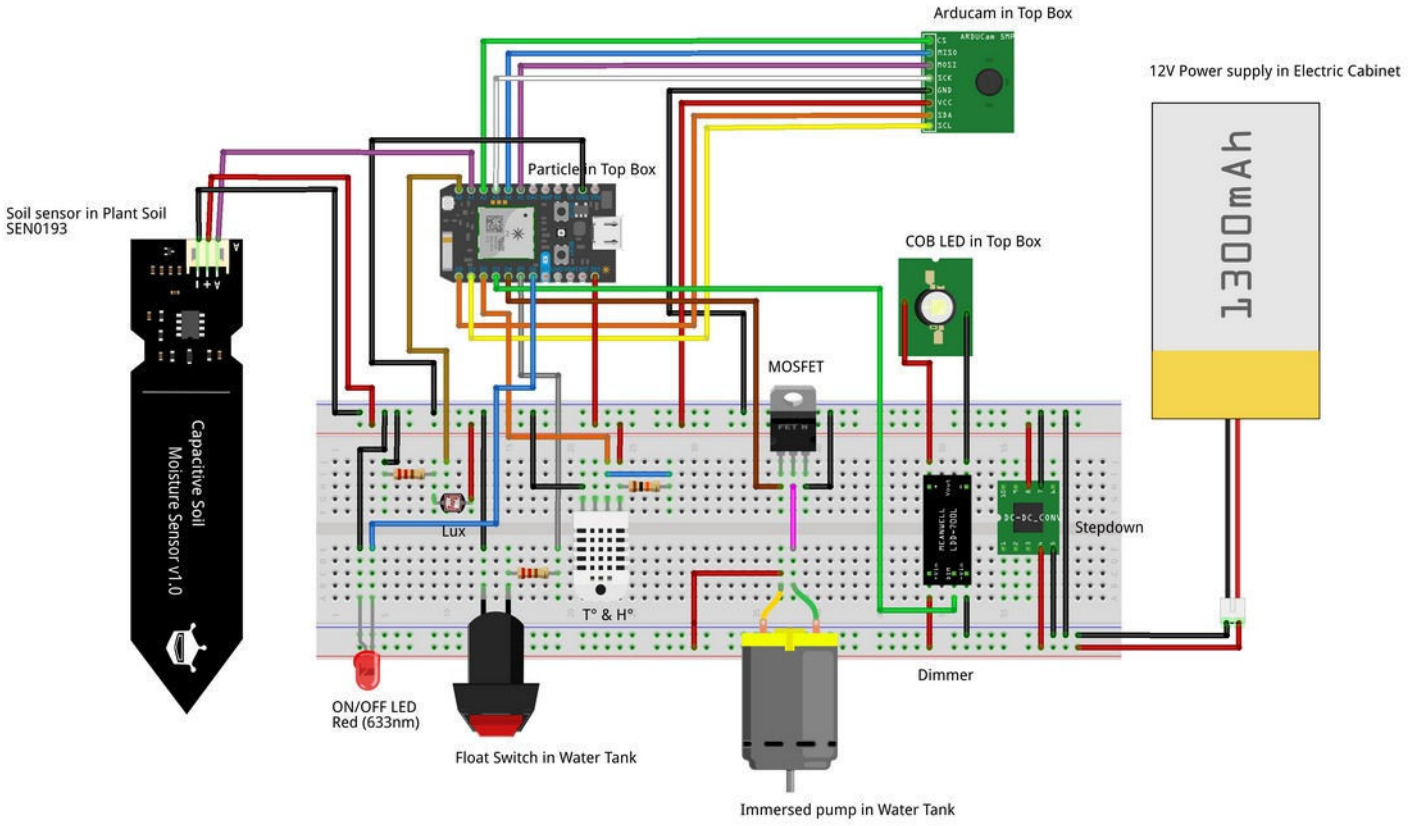
- Arduino and Microcontrolers
- Programming Basics
- C Langage
- Sensors and Actuators
- Automation



```
// the loop function runs over and over again forever
void loop() {$
  digitalWrite(LED_BUILTIN, HIGH);
  delay(1000);
  digitalWrite(LED_BUILTIN, LOW);
  delay(1000);
}
```

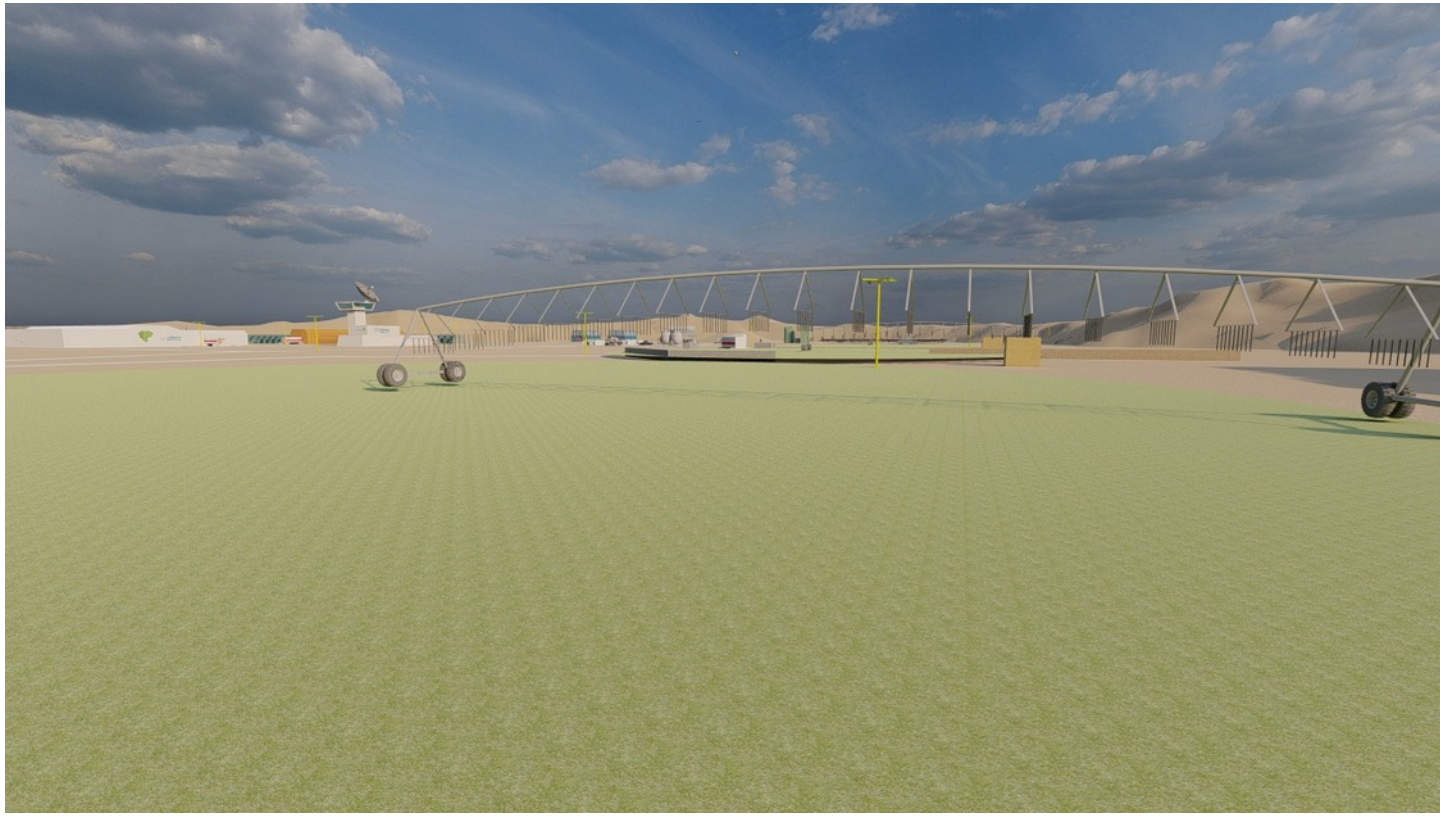
Workshop 5 : Automated Agriculture

- Arduino and Gardening
- Programming a life cycle
- Teledetection from space
- Growth recipes



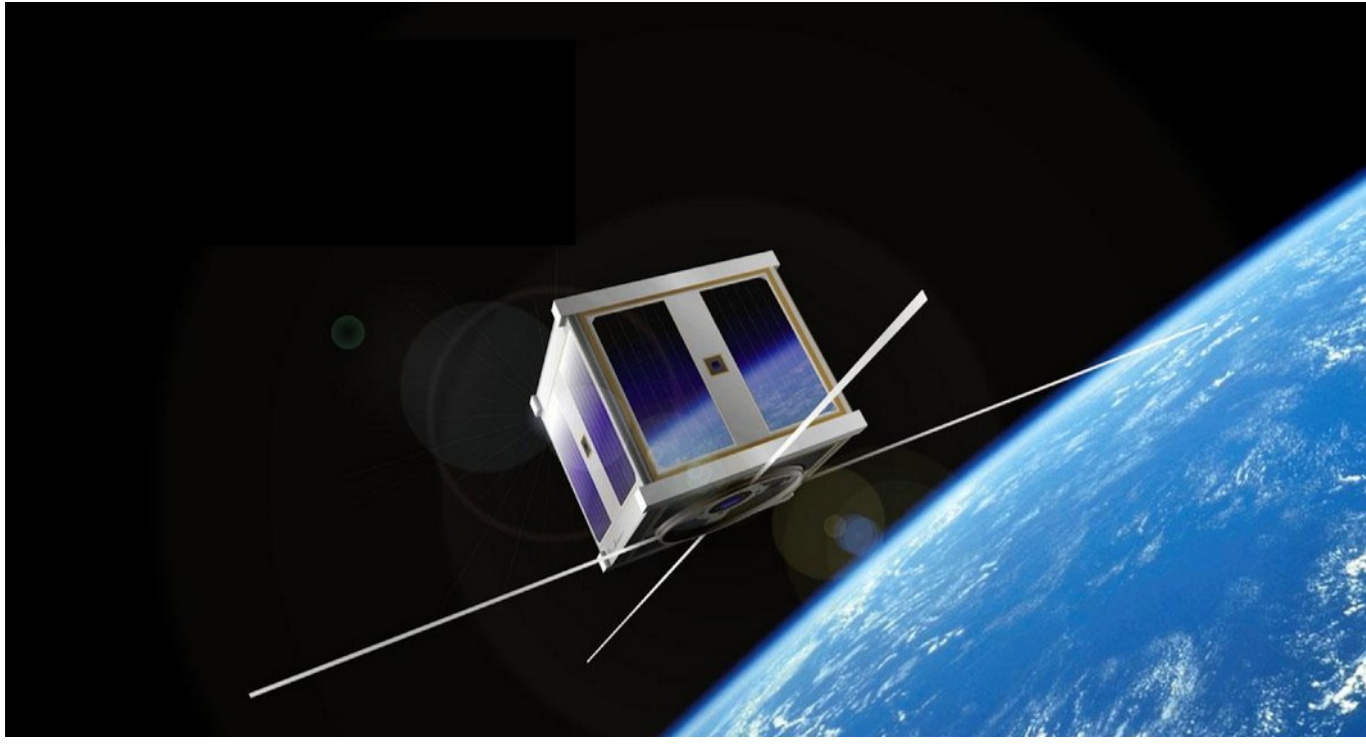
Workshop 6 : Central Pivot irrigation

- Drilling and Pumping
- Soil Improvement
- Central Pivot Management
- Fertilisation



Workshop 7 : Communicating with a Satellite

- YAGI antennas
- Geographical Coordinates
- Signal Detection
- Signal Decoding
- AMSAT community
- Amateur radio management



Worksop 8 : Weather Balloon

- 30 Km high
- Shooting images
- Temperature monitoring
- GPS beacon
- Parachute and recovery
- Radio telecommunications

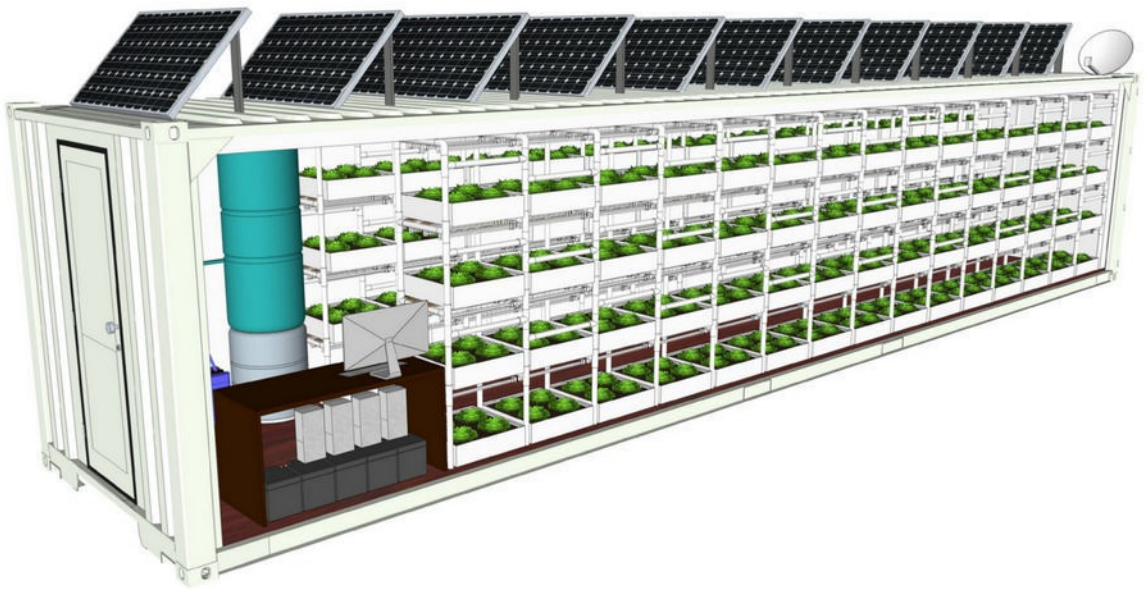
Workshop 9 : Propergol rockets

- Laws of Physics
- Thrust calculation
- Technological options
- Building & assembling
- Route management
- Image shooting

Workshop 10 : Low Orbit Nanosatellites

- CubeSat © 1,33 Kg
- 10x10x10 cm
- VEGA launcher
- Standardised Electronics
- Raster Scan Imaging

Open Source Code and Blueprints




```
▼ object {1}
  ▼ array {4}
      _id : peter_arugula_from_seedling
    ▼ plant_type [2]
        0 : arugula
        1 : warm
      date_created : 2017-08-11
    ▼ phases [1]
      ▼ 0 {4}
          name : growth
          cycles : 28
          time_units : hours
        ▼ step {8}
          ▼ air_temperature [2]
            ▼ 0 {3}
                start_time : 0
                end_time : 17
                value : 21.1
            ▼ 1 {3}
                start_time : 17
                end_time : 24
                value : 15.6
```

Business Moel

Education
Public funding
Partnering with universities
Associate professors

Research & dev
Nano-satellites production
Innovation to market
High Tech Agriculture

Tourism
Science Park : tickets
Wheather ballon show
Rocket show
Mars Simulation seminars

Advertisement
Hardware partners
Branding of partners
Desert filmed from the sky
Hollywood-like show

Scalability

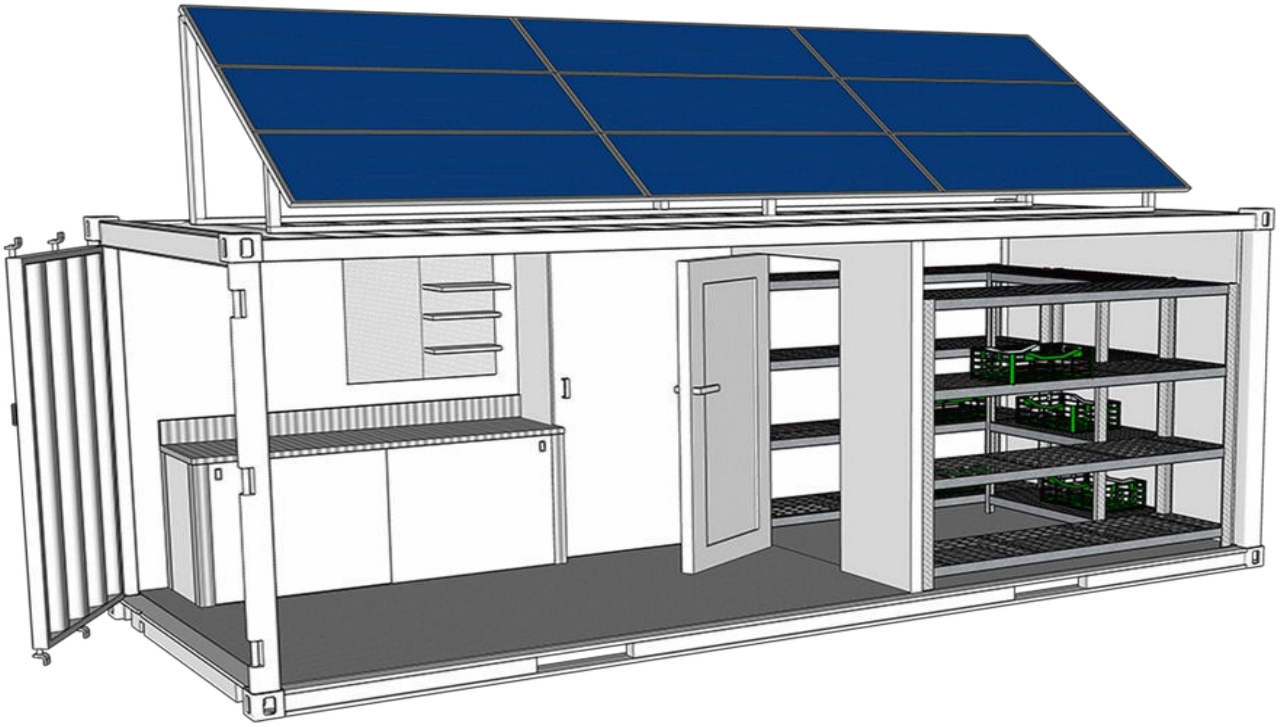
150 K€
Education workshops

1 M€
Research Center

10 M€
Innovation Cluster

Bootstrapping

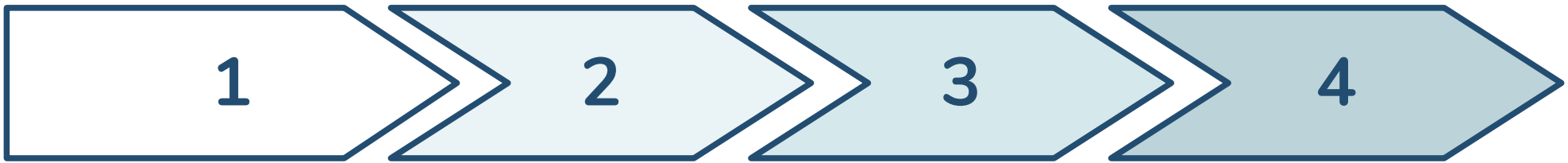
- Start small
- Simplified delivery
- Solar & storing
- Pumping & watering
- Lighting & ventilation
- Air Conditioning
- Telecommunications



MARS SOCIETY gathering

THE MARS SOCIETY

Milestones



2022

Authorisations
Partnerships
4 HA area configuration
Expenses: 150 K€
Sponsors: 150K€
Containers

2023

+ Education & Research
+ Partnerships
+ Video marketing
Budget : 300 K€

2024

Education & Research
+ Science Park
10.000 visitors x 25 €
Profits: 250 K€
Sponsors : 250 K€

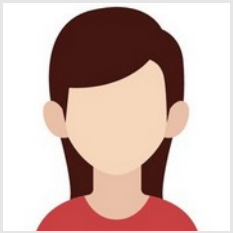
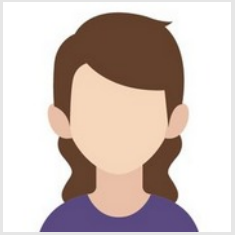
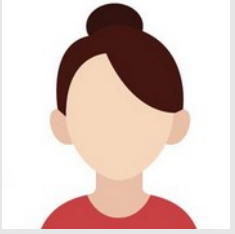
2025

Education & Research
Science Park
+ Nanosatellites assembly
+ High tech Ag Consulting
+ Desert advertisement

Open Mars phase 1 Budget

Expenses	2022	Sponsor	Contribution
4 HA field	20.000	n.a	
3 containers	30.000	n.a	
Watering	8.000	n.a	
Photovoltaic 12 Kwc	30.000	Skysun	30.000
Metal cut	6.000	n.a	
Signage	2.000	n.a	2.000
Video capture	5.000	n.a	
Transports	4.000	n.a	
Construction & assembly	6.000	n.a	
Electric charge points	7.000	Powerdale	7.000
Computers	8.000	Electroplanet	8.000
Accomodation	4.000	Dokeos	4.000
Educational Bus	20.000	E-Trofit	20.000
TOTAL	**150.000**		**71.000**

Science team

	Instructor Embedded electronics **Duration** : 12 mois		Instructor Controled Culture **Duration** : 12 mois
	Instructor Electricity & solar **Duration** : 12 mois		Instructor Project management **Duration** : 12 mois
	Instructor Vertical Farming **Duration** : 12 mois		Instructor Agronom**ics** **Duration :** 6 mois

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Foundation Team

Dr Yousra CHARROUF
Docteur in psychology of education
President
Contribution : le projet

George OMONDI
Architect
3D designer
Contribution : les plans

Léopold COPPIETERS
MA Bio Sciences
CEO of SKYSUN
Contribution : solar

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Saad DAHMI
MA Finance
Project Management
Contribution : Programme

Stéphane FRISQUE
Bio Engineer
Rural Development
Contribution : agronomics

Meryem SALMI
Journalist
Communication
Contribution : community

President

Now that life is smiling on me, I feel, with my friend Meryem Salmi, the need to intervene in the destiny of my country through a local and concrete action of popular education and support to the economy.

As a consultant in the digital sector and in contact with engineers on a daily basis, I know that this field is a reserve of jobs for young Moroccans and an opportunity to gain a foothold in the world.

That's why I decided to initiate young girls from the province of Errachida to digital skills and engineering professions.

Dr Yousra CHARROUF

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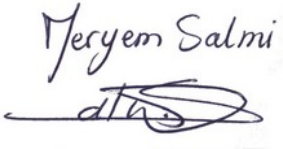
Contact

Hello,

My name is Meryem Salmi. I am proud to accompany my friend Yousra in this wonderful project within the Dokeos Foundation. I will be the contact person for all the collaboration steps. In particular :

- Partnerships
- Finances: donations, gifts in kind, coordination with other foundations
- Volunteers: you wish to offer your expertise, your time, to live with us in the Space Center contact me!

Meryem SALMI, meryem.salmi@dokeos.com +212 24 45 54



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Dokeos Foundation

Transform the world through Education to Dogital Tools and Skills.

We are experts in digital Skills : e-learning, e-commerce, e-communication.

The Dokeos Foundation helps students to align to the skills they will need tomorrow.

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