



**CASSINI**

Hackathons & Mentoring

# Participant Playbook

Digitising Green Spaces

10 June 2021

Implemented by

**VERHAERT**

MASTERS IN  
INNOVATION



**space-tec**  
PARTNERS



The participant playbook is intended to guide you through the  
**most important information** about the 1<sup>st</sup> CASSINI  
Hackathon & Mentoring.

Inside you will find information about the **tools, platforms, and communication channels** you need to make the most of the weekend.

We can't wait to see how you use EU space technologies to  
**digitise our green spaces!**



# What you will find in this playbook



## 1. Core information

- Overview of the 1<sup>st</sup> CASSINI Hackathon
- The theme and challenges
- EU Space programme
- Tools & resources
- Accessing help & support

## 2. The Hackathon

- How to get involved
- The 10 local organisers
- Overview of the hackathon platforms
- Accessing the data cube with the CREODIAS
- Accessing Galileo & EGNOS data & signals
- The demo day & awards ceremony

## 3. Mentoring programme

- Introduction to the programme
- How it will work
- How to make the most of it

**Coming soon**

## 4. Business design playbook

- Introduction
- Idea & team
- Customer problem
- Digital services
- Business
- Pitch



# 1<sup>st</sup> CASSINI HACKATHON

18-20 JUNE 2021

## Digitising Green Spaces



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# The 1<sup>st</sup> CASSINI Hackathon & Mentoring | 18-20 June

1 Hackathon

10 Locations around europe

EU Space

Hybrid

Local

European

Global Themes

You?

## Digitising green spaces

The first CASSINI hackathon challenges you to develop innovative solutions that sustainably improve our green spaces in urban and rural areas. The hackathon is open to anyone with a passion for entrepreneurship, nature, and EU space technologies and challenges them to use one or both of the following:

- 1) geospatial information from Copernicus Earth observation data and its services
- 2) positioning technologies from Galileo & EGNOS.

**No previous experience using space technologies, data, or signals? No problem!**  
The hackathon has all the tools and training you need to succeed.

Applying is easy!



Choose your location

Apply as a hacker

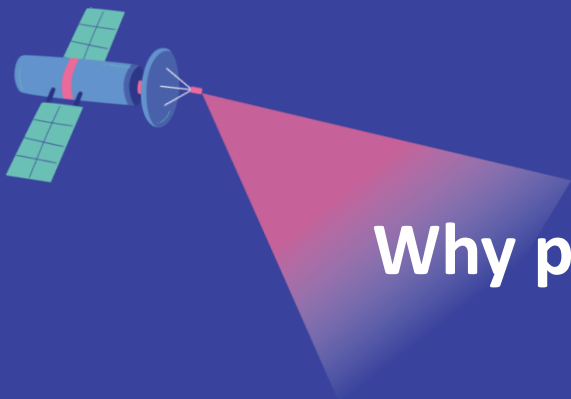
Join the launch event

Form a team

Hack your way to success



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# Why participate in the hackathon?

## { Code the future }

Draw on your unique skills to create solutions that solve critical problems that literally affect our future.

## { Put your skills to the test }

Roll up your sleeves and compete against fellow coders, creatives and business experts for your chance to win!

## { Expand you network }

Develop your understanding of Copernicus, Galileo & EGNOS with our tailor-made training and support, and learn to design for the future.

## { Discover EU Space }

Meet fellow hackers and experts from inside and outside the European space ecosystem. Gain experience networking and grow your connections.

## { Access expert knowledge }

Engage with our technical and business experts who will be on-hand throughout the event to help, advise and support you in reaching your goals.

## { Take home the prize }

Don't miss your chance to win prizes on a local and European level. Cash and mentoring opportunities are just two of the many prizes up for grabs!



# Challenge #1: Discover your city

Green spaces are an important part of urban life and contribute toward **greater biodiversity, a reduction in pollution, and better human well-being**. They are particularly important in heavily built-up areas with high population densities and can help to improve residential attractiveness and quality of life for those that live there.

This CASSINI Hackathon challenge tasks hackers to **design products, devices, services, or environments that leverage European space data, information and signals** from Copernicus, Galileo and EGNOS that help urban citizens understand their city and its green spaces. We encourage you to dive into the areas of:

- Supporting urban planning and real estate development & valuations
- Discover green factors contributing to residential life
- Promoting ecological sustainability



Understanding how green spaces enrich urban living and fostering their continued development, accessibility and protection will also contribute to the United Nation's Sustainable Development Goal 11 to make cities and human settlements inclusive, safe, resilient and sustainable.





# Challenge #2: Staying fit and healthy

**Regular exercise and spending time outdoors** is one of the most important elements of staying fit and healthy. It is good for both our bodies and minds, but it can sometimes be challenging to find the perfect place to exercise - particularly in urban environments!

This CASSINI Hackathon challenge tasks hackers to **design products, devices, or services that leverage European space data, information and signals** from Copernicus, Galileo and EGNOS that help city dwellers to stay in good health and promote well-being. We encourage you to dive into the areas of:

- Mapping and accessing green spaces for outdoor activity
- Forecasting air pollutants such as pollen, nitrogen oxide, or particulates
- Understanding and monitoring UV exposure



**3** GOOD HEALTH AND WELL-BEING



Encouraging urban citizens to utilise their local green spaces for mental, spiritual and physical exercise and rejuvenation will contribute to the United Nation's Sustainable Development Goal 3 to ensure healthy lives and promote well-being for all at all ages.





# Challenge #3: Protecting our rural areas

**Open and forested green spaces** outside of urban environments offer many benefits to citizens. From providing people with natural spaces to visit and connect with nature, through to wildlife conservation and forest health, **our rural environments are of vital importance to creating a sustainable future.**

This CASSINI Hackathon challenge tasks hackers to **design products, devices, services, or environments that leverage European space data, information and signals** from Copernicus, Galileo and EGNOS that promote the digitisation of rural green spaces. We encourage you to dive into the areas of:

- Wildlife and ecosystem conservation
- Ensure healthy and resilient forests
- Development of new green spaces and underdeveloped areas



Using technology to promote healthy and resilient rural green spaces will contribute to the United Nation's Sustainable Development Goal 15 to protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss



# Connecting you with the EU Space programme

The EU Space programme consists of several flagship programmes including Europe's Earth observation, satellite navigation, secure communications and space situational awareness programmes. The 1<sup>st</sup> CASSINI Hackathon challenges participants to use data and signals from Copernicus, Galileo & EGNOS.



Copernicus is the European Union's Earth observation programme, looking at our planet and its environment to benefit all European citizens. It offers information services that draw from satellite Earth Observation and in-situ (non-space) data.

[copernicus.eu](https://copernicus.eu)



Galileo is Europe's Global Navigation Satellite System (GNSS), providing improved positioning and timing information with significant positive implications for many European services and users.

[euspa.europa.eu/european-space/galileo/What-Galileo](https://euspa.europa.eu/european-space/galileo/What-Galileo)



The European Geostationary Navigation Overlay Service (EGNOS) is Europe's regional satellite-based augmentation system (SBAS) that is used to improve the performance of global navigation satellite systems (GNSSs).

[euspa.europa.eu/european-space/egn/what-egn](https://euspa.europa.eu/european-space/egn/what-egn)



# The EU Space programme continued

The CASSINI Hackathons & Mentoring will look to engage participants with secure communications and space situational awareness in future editions.

## GOVSATCOM

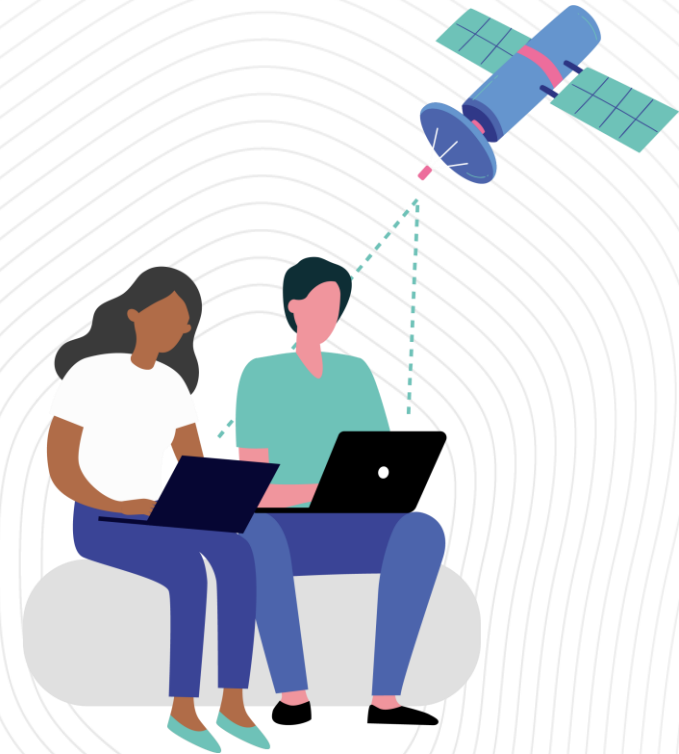
The European Union Governmental Satellite Communications (GOVSATCOM) programme provides secure and cost-efficient communications capabilities to security and safety critical missions.

[euspa.europa.eu/european-space/govsatcom](https://euspa.europa.eu/european-space/govsatcom)



The Space Situational Awareness initiative will provide Europe and its citizens with complete and accurate information on objects orbiting Earth, on the space environment and on threats coming from space.

[eusst.eu](https://eusst.eu)



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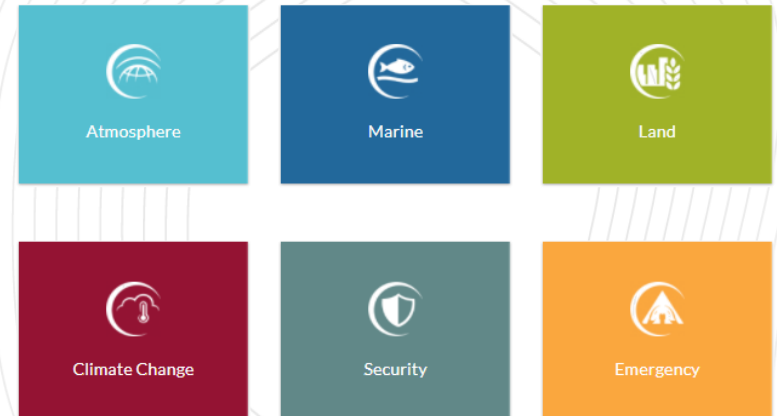


# Spotlight on Copernicus data & information

Never worked with Copernicus Earth observation data & information? No problem!

We have put together some important resources to get you started:

- [Overview of the programme](#)
- [Introducing the Copernicus Sentinel missions](#)
- [The Copernicus services](#)
- [Accessing data via the CREODIAS](#)



# Spotlight on Galileo & EGNOS

Just getting started using satellite positioning technologies? We have collected some important resources for you to get started:

- [EGNOS and Galileo: Programme Reference Documents](#)
- [GNSS Raw measurements white paper](#)
- [Database of GNSS raw measurements](#)
- [Glossary for GPS test](#)
- [GNSS Market Report](#)
- [Galileo-enabled devices](#)



# All the tools you need to succeed!

As participants you have access to invaluable tools, training, and support to help you with your hacking. We provide everything you need, so you can give everything you got!



## Data access

We want to minimise the time you need to spend processing data! That's why we've created a dedicated data cube for each hackathon. The data cube contains pre-processed Copernicus data & information for a specific geographical region and time period with a focus on the hackathon theme at hand. Find the data cube on the DIAS platform supporting that edition.

## Cloud infrastructure

Access virtual storage and computational resources for the duration of the hackathon. The DIAS platform supporting each hackathon will enable you to discover and manipulate Copernicus data and information. You will also have all the processing power and storage you need to hack your way to success.

[creodias.eu](https://creodias.eu)



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# Looking for additional resources?

Here are a collection of publicly available trainings:



## The Copernicus MOOC addresses 3 key topics:

- Chapter 1 - Understanding Copernicus data and services– what they are, and how they can be accessed and used
- Chapter 2 - Learning from success stories – understanding how existing Copernicus-enabled services and applications have been developed and deployed
- Chapter 3 - Doing it yourself – acquiring the key skills and knowledge to develop and deploy Copernicus-enabled products and services and to navigate the Copernicus ecosystem.

[copernicus.eu/copernicus-mooc](https://copernicus.eu/copernicus-mooc)



## Attend 14 on-demand training sessions that will steer the technical and business development of your Galileo-enabled IoT product.

In the first part of our Point.MOOC, you'll learn all about the basics of creating an IoT business by journeying through the customer problem, product concept design, business model creation and launching your product.

Not sure where to start with Galileo integration? The second part of Point.MOOC examines positioning in our connected world, and dives deep into Global Navigation Satellite Systems and the European system, Galileo.

[point-iot.thinkific.com](https://point-iot.thinkific.com)



## Access 18 webinars about entrepreneurship in the space industry by Astropreneurs Training.

From the potential for space data and funding sources, through to pitching and business plans, a wealth of knowledge and expertise awaits.

Astropreneurs is a three-month acceleration programme that includes business and technical mentorship, support to fund your business idea and access to our “SPACE Economy “Astropreneurs” network”.

[astropreneurs.eu/training](https://astropreneurs.eu/training)



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# Meet the core team behind the hackathons & mentoring

Got questions? One of us will get back to you with the answer.



Dany Robberecht



Thomas Tanghe



Benoit de Vrieze



Florentyna Smith



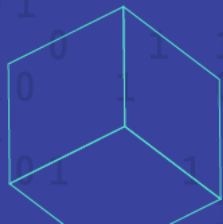
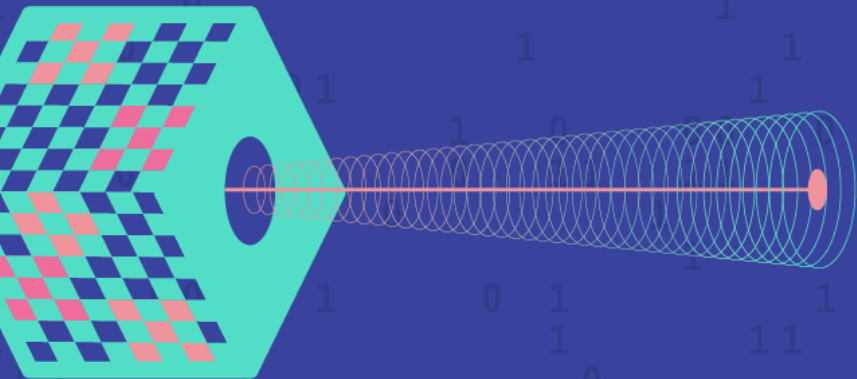
Ionut Dragan

Reach us at: [hello@hackathons.cassini.eu](mailto:hello@hackathons.cassini.eu)





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# The Hackathon

In this section, you will find all the information you need to participate in the hackathon.

# The CASSINI Hackathon event

Hackathon activities are split across three main events:



## 1. Big ideas campaign

31<sup>st</sup> May –  
4<sup>th</sup> June



## 2. THE HACKATHON

18<sup>th</sup> – 20<sup>th</sup> Jun



## 3. Demo day + Awards

24<sup>th</sup> Jun



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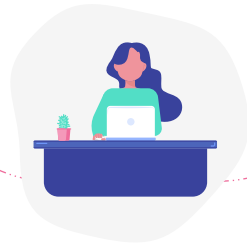
# Get involved as a participant

**Ready to apply your skills and knowledge to solve global challenges & make a positive impact?**

We are looking for determined hackers with a passion for developing sustainable solutions. No previous space experience is required. Just choose a challenge that interests you, and leverage EU space technologies to digitise our green spaces! Follow this simple process to get involved:



**Choose  
your  
location**



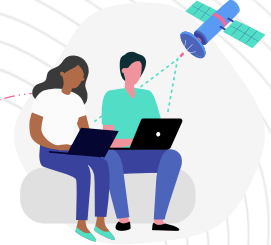
**Apply as a  
hacker**



**Join the  
launch  
event**



**Form a  
team**



**Hack your  
way to  
success**



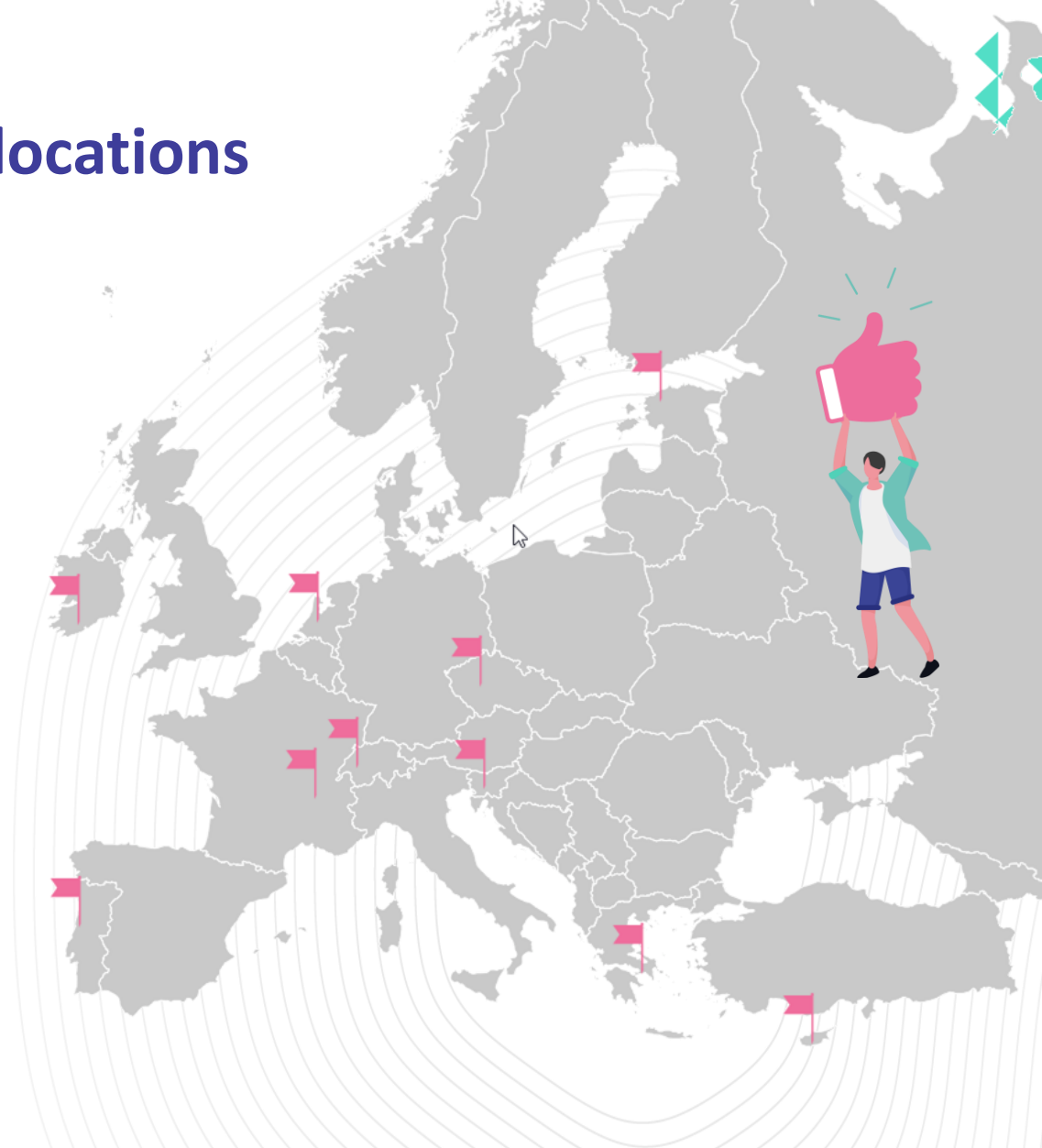
# Discover the 10 hackathon locations

The 1<sup>st</sup> CASSINI Hackathon takes place simultaneously in 10 different locations around Europe.

As a virtual participant, you can take part in any of the locations – it is up to you! You can choose from:

- Cyprus
- Czech Republic
- Estonia
- France
- Greece
- Ireland
- Netherlands
- Portugal
- Slovenia
- Switzerland

Each location will look to digitise green spaces with a focus on the problems and challenges faced by their local ecosystems. They each have their own expert mentors and prizes as well!







## The Hackathon

In Cyprus the CASSINI Hackathon is organised by CyRIC - Cyprus Research and Innovation Center Ltd in collaboration with Gravity Ventures Incubator and Eratosthenes Centre of Excellence.

We challenge hackers to develop smart solutions in areas such as encouraging outdoor activity, water conservation, improving air quality and responding to sandstorms. As an island, Cyprus is often a good testbed for developing solutions that can be implemented on islands worldwide.

## The Prizes

### 10,000 €!

The top three teams of the CASSINI Hackathon Cyprus will win:

- 1st prize: €5,000
- 2nd prize: €2,500
- 3rd prize: €1,500

The 2 runners up will also receive €500 per team

### Gravity Venture Support!

Gravity Ventures Incubator along with CyRIC will provide an additional €1,000 worth of business and innovation services to the 3 winners, as well as the opportunity to join Gravity Ventures Incubation programme under conditions.



[hackathons.cassini.eu/cyprus](https://hackathons.cassini.eu/cyprus)



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## The Hackathon

In the Czech Republic the CASSINI Hackathon will be organised by Business and Investment Development Agency CzechInvest. The space you need to get your business ideas off the ground!

We challenge hackers to solve issues such as droughts, overheating of cities, the bark beetle calamity and the lack of cycling paths in our cities. We have a team of mentors ready to support you and will introduce you to the possibilities of using satellite data to solve the issues which interest you.

## The Prizes

### Cash Prize & Mentoring

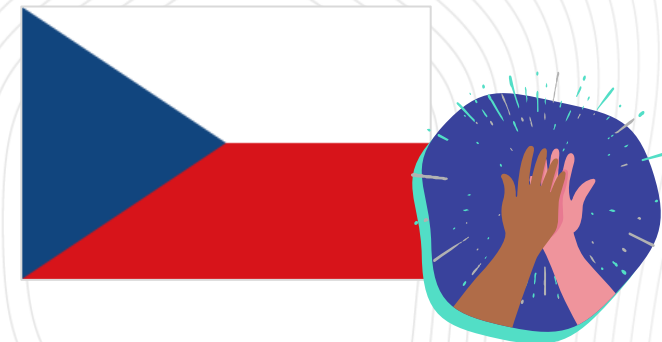
Join the CASSINI Hackathon Czech Republic to win:

- €2,000 prize money for the winning team
- 20 hours of business and technical mentoring from CzechInvest

### Support & Promotion

Winners of our hackathon will also receive:

- Individually tailored support programme from the ESA BIC Prague team (proposal preparation for an incubator, technical coaching & assistance, and business coaching)
- Promotion in dedicated marketing activities such as website appearances, press releases, social media activity, etc.



[hackathons.cassini.eu/  
czech-republic](https://hackathons.cassini.eu/czech-republic)



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## The Hackathon

In Baltic region the CASSINI Hackathon Estonia will be organised by Garage48. We build communities of like-minded people who work with each other to build solutions that make an impact!

We challenge hackers to develop smart solutions in areas such as encouraging outdoor activity, water conservation, improving air quality and responding to sandstorms. As an island, Cyprus is often a good testbed for developing solutions that can be implemented on islands worldwide.

## The Prizes

### Acceleration & Incubation

Join the CASSINI Hackathon Estonia to win a variety of acceleration and incubation opportunities. More information to follow soon!

### Exclusive networking

Winners of our hackathon can also win tickets to workshops and conferences, as well as many more exciting opportunities to support further development of your idea and expand your network.



[hackathons.cassini.eu/estonia](https://hackathons.cassini.eu/estonia)



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## The Hackathon

Are you a developer, a student, an engineer, a researcher, a creative, an entrepreneur? Or maybe just a curious person? Good news - this event is open to all! This is an amazing opportunity to put your unique skills into action and develop innovative solutions to digitise our green spaces!

The CASSINI Hackathon France will be led by In Extenso Innovation Croissance. The event will take place using a virtual hub, but we still hope to invite some of you to our venue for a hybrid event! Stay tuned.

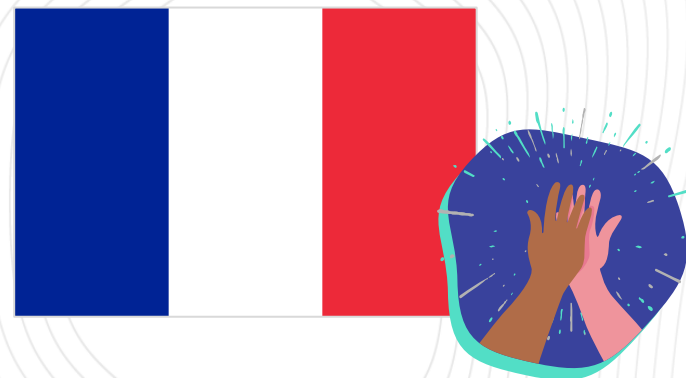
## The Prizes

### Coaching sessions!

Join the CASSINI Hackathon France to win coaching sessions with local experts. The top three teams will be awarded.

### Mentoring

The top 3 teams across all hackathons will be awarded with an additional +100 hours of expert mentoring.



[hackathons.cassini.eu/france](https://hackathons.cassini.eu/france)



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## The Hackathon

Join the **CASSINI Hackathon Greece** to access amazing hacker opportunities and solve some of the problems faced in Greece today:

- Dive into exploring and integrating green spaces in Greece by mapping trekking paths, forecasting environmental health risks, and enabling search & rescue!
- Focus on developing and promoting the value of urban green spaces in our cities through urban green solutions, pocket parks, and urban exploration.
- Propose solutions to protect Greek rural areas by monitoring forest ecosystems, identifying forest hazards, and protecting our forests from natural disasters.

## The Prizes

**5,000 €!**

The top three teams of the CASSINI Hackathon Greece will win their share of the €5,000 prize pool.

### Business Bootcamp

All participants will be offered a tailored support programme from ESA BIC Greece (proposal preparation for an incubator, business coaching) and a 4-day intensive business bootcamp for the Be Your Own Boss Programme.



[hackathons.cassini.eu/greece](https://hackathons.cassini.eu/greece)



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# CASSINI Hackathon *Ireland Hello!*

## The Hackathon

The CASSINI Hackathon Ireland is organised by the National Space Centre. Teams have the opportunity to learn from experts working with big data; to understand the green technologies landscape, sectors and market; and to pitch like a pro to the hackathon judges.

All participants will receive a Hackathon Experience care package delivered prior to the event filled with goodies and event swag to fuel their efforts.

## The Prizes

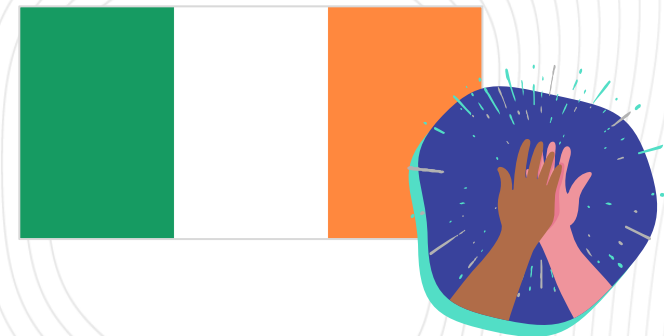
### € 4,500

The top three CASSINI Hackathon Ireland teams will win:

- 1st prize: €2,000
- 2nd prize: €1,500
- 3rd prize: €1,000

### Domain Hosting!

The top 3 teams will also be awarded a prize pack from Blacknight Solutions with one year of hosting an .earth domain.



[hackathons.cassini.eu/ireland](https://hackathons.cassini.eu/ireland)



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## The Hackathon

In Netherlands the CASSINI Hackathon will be organised by EscherCloud, a sustainable data center integrated within an AI Hub!

In the Netherlands, we encourage hackers to focus on:

- Innovatively using geospatial data to assist over 75 cities in the Netherlands to meet the Green Air Pact.
- Develop solutions for Amsterdam's Green Vision 2050, to create a fully circular economy by 2050 and increase the accessibility and efficiency of green spaces.

## The Prizes

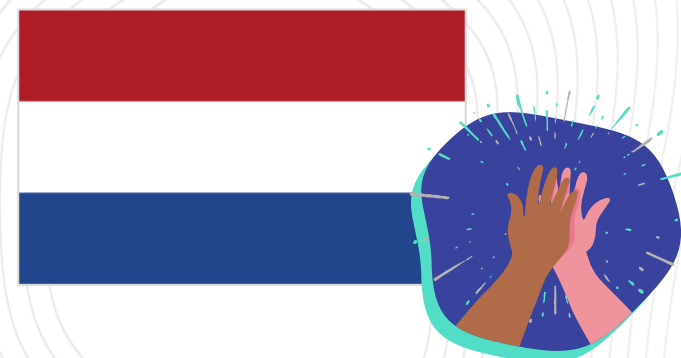
### EscherCloud Support!

Join the CASSINI Hackathon Netherlands to win:

- Cloud credits for Eschercloud
- Showcase space at EscherCloud AI Lab
- An event for 75 at EscherCloud AI Labs (when corona measures lift)

### Acceleration!

The winner will also have expedited access to NVIDIA Inception, an acceleration platform for AI, data science, and HPC start-ups (terms apply).



[hackathons.cassini.eu/netherlands](https://hackathons.cassini.eu/netherlands)



# CASSINI Hackathon Portugal Olá!

## The Hackathon

The CASSINI Hackathon Portugal is organised by IPN – Instituto Pedro Nunes, the coordinator of ESA Space Solutions Portugal.

Joining this hackathon is an extraordinary opportunity to meet the team and engage with the space community in Portugal! Come and spend two exciting days hacking to digitise green spaces and grab the opportunity to win amazing prizes. Each team taking part in our hackathon will receive a special participant kit full of goodies for the weekend.

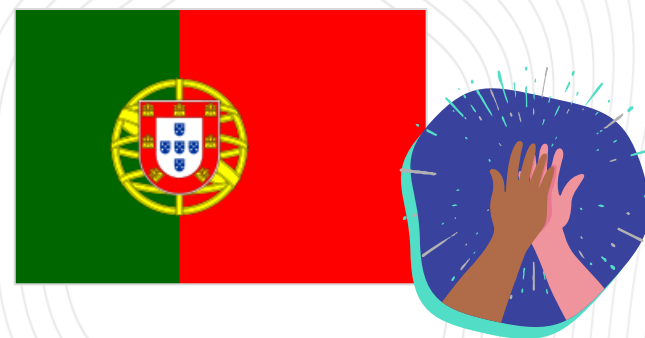
## The Prizes

### Expert Mentoring

Teams participating in the CASSINI Hackathon Portugal will have access to business and technical experts from our community.

### Incubation

The winning team will have access to 3 months of virtual incubation at IPN Incubator.



[hackathons.cassini.eu/portugal](https://hackathons.cassini.eu/portugal)



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## The Hackathon

In Slovenia the CASSINI Hackathon will be organised by Space-SI. The focus of our hackathon is the detection and preservation of green and blue corridors in urban areas that both protect biodiversity and assist urban planning.

Our added bonus? The unique opportunity to work with the first Slovenian microsatellite, Nemo-HD. Participants will be able to see behind the scenes on the design, launch and operation of a satellite.

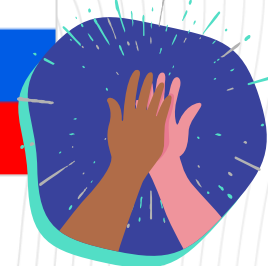
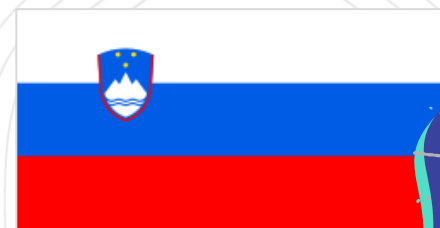
## The Prizes

**>1,000 €**

Join the CASSINI Hackathon Slovenia to win financial and practical rewards worth more than 1000€ in total.

### Mentoring

The top 3 teams across all hackathons will be awarded with an additional +100 hours of expert mentoring.



[hackathons.cassini.eu/slovenia](https://hackathons.cassini.eu/slovenia)



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## The Hackathon

In Switzerland, the CASSINI Hackathon is organised by Space4Impact with the goal to maximise the positive impact of space tech on Earth.

With the support of our partners, you will receive the training and mentoring required to create your own business model. The best ideas that come out of the hackathon have the chance to be developed further with our local prize sponsors ESA BIC Switzerland, EPFL VPI Startup, and the UZH Innovation Hub.

## The Prizes

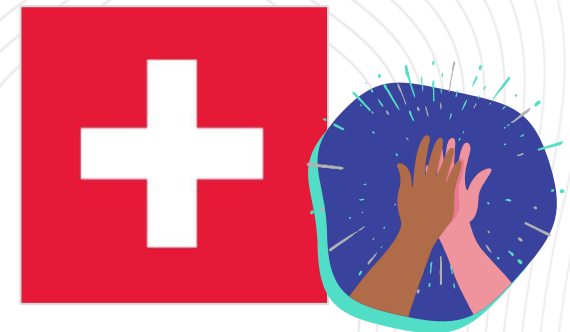
### 10,000 CHF

The top three CASSINI Hackathon Switzerland teams will take home a cash prize:

- 1st prize: 5,000 CHF
- 2nd prize: 3,000 CHF
- 3rd prize: 2,000 CHF

### Start-up Support

The winning teams at our hackathon will also receive an invitation to pitch for professional coaching and additional financial support by the EPFL Startup Launchpad and the UZH Innovation Hub.



[hackathons.cassini.eu/  
switzerland](https://hackathons.cassini.eu/switzerland)



# Participating in the virtual hackathon

Register on our website: [hackathons.cassini.eu/#apply](https://hackathons.cassini.eu/#apply) then engage with us across the following platforms:

## Hackathon platform

Registered on the website as a participant? Great! Head to the hackathon platform, register, and join/form a team.

[app.hackjunction.com/events/digitising-green-spaces](https://app.hackjunction.com/events/digitising-green-spaces)

JUNCTION

## Event platform

Join the hackathon event from your home via our event platform. The livestream from the virtual hub awaits!

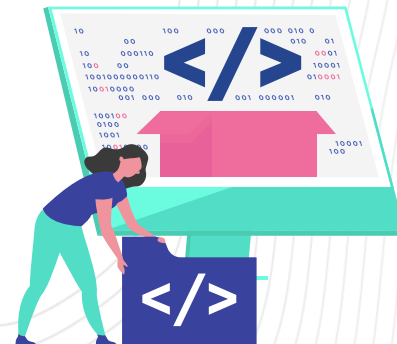
[virtual-stage.eventtia.com/en/digitising-green-spaces/login](https://virtual-stage.eventtia.com/en/digitising-green-spaces/login)

eventtia

## Community platform

Keep up to date with the latest hackathon information, find team mates and ask questions on our community platform.

[discord.gg/cassinihackathons](https://discord.gg/cassinihackathons)



# Getting started with the CREODIAS



**CREODIAS**  
powered by  CloudFerro

[creodias.eu](https://creodias.eu)

The 1<sup>st</sup> CASSINI Hackathon is supported by CREODIAS, providing participants with free access to cloud processing infrastructure and data storage for the duration of the event.

For data processing, each team will have access to a Virtual Machine (VM) with the following features:

- Ubuntu operating system
- [OSGEOLive image](#), providing open-source geospatial software and tools
- [TensorFlow](#), an open-source library for machine learning
- On request: VMs with [SEN4CAP tools](#) or access to VM with GPU processing power

Instructions on how to test the VMs and then set up your team's own VM can be found on the following slides. But, to get started with CREODIAS, we encourage you to review the following resources:

- [Copernicus & the CREODIAS training session](#)
- [The data & challenges collide training session](#)



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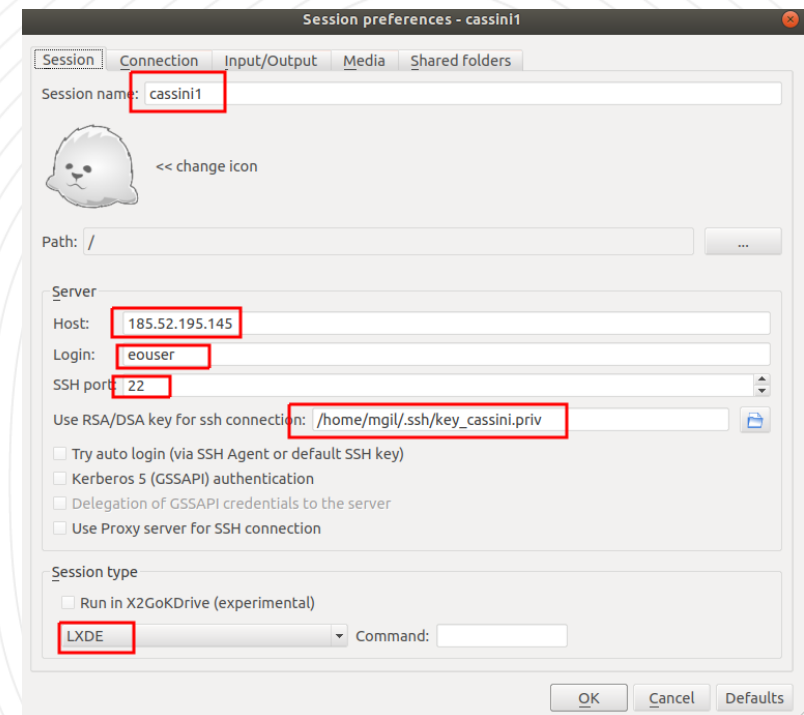


# Testing the virtual machines before the hackathon

Windows  
users

**You have never used the CREODIAS platform? No problem.** Access one of the five test Virtual Machines from Windows with the following process:

1. Download the [private SSH key](#)
2. Install [x2go client](#)
3. Create a new session in the x2go client
4. In the session preferences, update the following fields →
5. Use one of the following 5 server hosts (VMs):
  - cassini1 185.52.195.145
  - cassini2 185.52.193.17
  - cassini3 185.52.193.82
  - cassini4 185.52.193.78
  - cassini sen4CAP 185.52.195.187
    - Username: sen4cap
    - Password: sen4cap
6. Use the file location button to browse to the location of your key file from step 1.
7. Click OK to connect to the server.

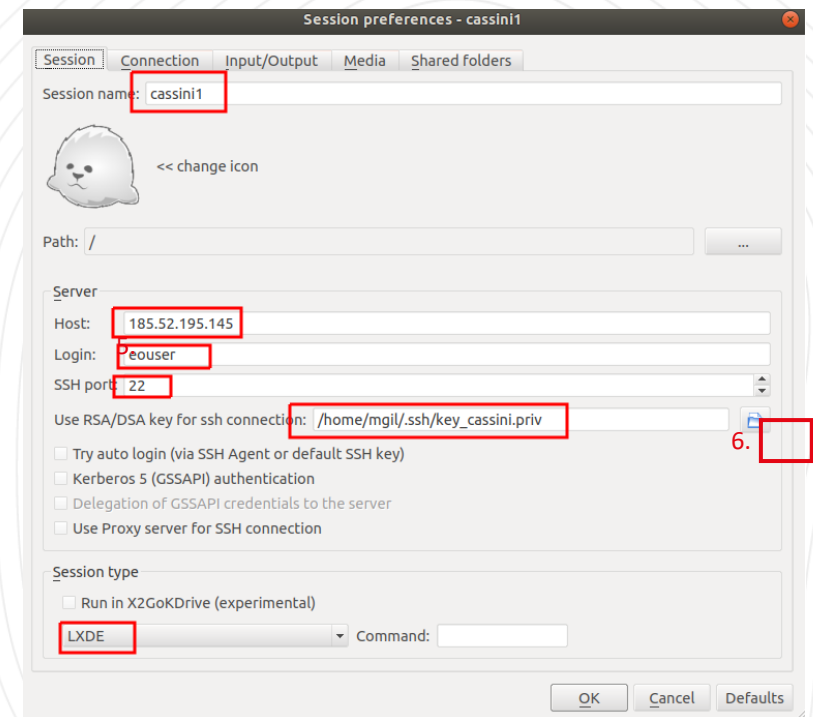


# Testing the virtual machines before the hackathon

Linux users

**You have never used the CREODIAS platform? No problem.** Access one of the five test Virtual Machines from Ubuntu with the following process:

1. Download the [private SSH key](#)
2. Install x2go client: <https://wiki.x2go.org/doku.php/download:start>
3. Create a new session in the x2go client: Ctrl+N
4. In the session preferences, update the following fields →
5. Use one of the following 5 server hosts (VMs):
  - cassini1 185.52.195.145
  - cassini2 185.52.193.17
  - cassini3 185.52.193.82
  - cassini4 185.52.193.78
  - cassini sen4CAP 185.52.195.187
    - Username: sen4cap
    - Password: sen4cap
6. Use the file location button to browse to the location of your key file from step 1.
7. Click OK to connect to the server.

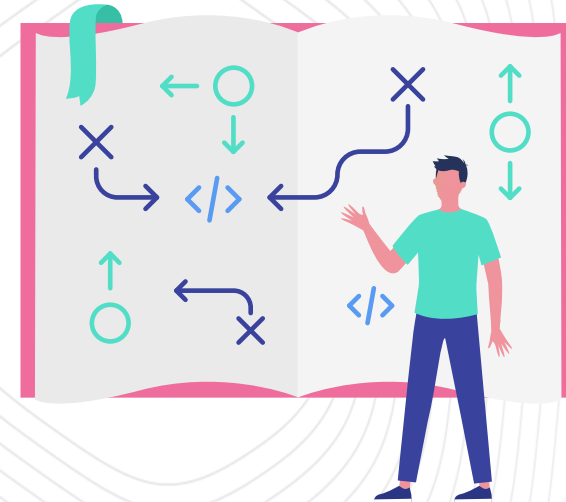


# Setting up your team's virtual machine

**Ready to set up your team's own virtual machine for the hackathon? Let's go:**

1. Make sure you have your team formed on Junction
2. Email [creodias@hackathons.cassini.eu](mailto:creodias@hackathons.cassini.eu) to request set up. Include:
  - Your team leader name & email address
  - Whether you require access to [SEN4CAP](#)
  - You will need to create a public SSH key to get access!More info [here \(Windows\)](#) and [here \(Linux\)](#).
3. Team leader can set up additional team members on the same VM.

Note: You can request your own VM until 17:00CEST, Friday 18<sup>th</sup> June. Any additional requests will be Actioned from 09:00CEST, Saturday 19<sup>th</sup> June.





# Explore the 1<sup>st</sup> CASSINI Hackathon data cube

In order to support participants new to Copernicus data & information, a dedicated data cube has been set up to support the theme of digitising green spaces. The data cube contains pre-processed data for the area between Coimbra & Porto, Portugal.

## Copernicus Sentinel imagery (2018-2019):

- Sentinel-1
- Sentinel-2, including Sen4CAP preprocessed imagery for 2018
- Sentinel-5P

## Copernicus Land Monitoring Service data

- Urban Atlas 2018
- Natura2000 2012
- Coastal Zones 2018
- Imperviousness density & Built-up 2018
- Tree cover density 2018
- Forest Type 2018
- Dominant Leaf Type 2018
- Grassland 2018
- Corine Land Cover 2018

## Copernicus Atmosphere Monitoring Service data

## Copernicus Emergency Management Service

- [Activation 372](#): Fire in Castelo Branco
- [Activation 386](#): Forest fire in Aveiro District

## Local datasets

- Predicted forest fire risk 2020-2030
- Burnt areas 2018 & 2019
- Critical areas forest risk
- National land cover map
- Boundaries of protected areas
- National tree network of public interest





# CREODIAS repository

Access the data sets in our data cube with the following information:

## Copernicus Sentinel-1

Data	Source	Access
Sentinel-1 GRD	Full archive in CREODIAS	/eodata/Sentinel-1/SAR/GRD/
Sentinel-1 SLC	Full archive in CREODIAS	/eodata/Sentinel-1/SAR/SLC/
Sentinel-1 CARD-BS	Orderable - CREODIAS Finder or given scripts	<a href="https://gitlab.cloudferro.com/bjaroszkowski/ordering_script">https://gitlab.cloudferro.com/bjaroszkowski/ordering_script</a>
Sentinel-1 CARD-COH6	Orderable - CREODIAS Finder or given scripts	<a href="https://gitlab.cloudferro.com/bjaroszkowski/ordering_script">https://gitlab.cloudferro.com/bjaroszkowski/ordering_script</a>
Sentinel-1 COG	Orderable - CREODIAS Finder or given scripts	<a href="https://gitlab.cloudferro.com/bjaroszkowski/ordering_script">https://gitlab.cloudferro.com/bjaroszkowski/ordering_script</a>

## Copernicus Sentinel-2

Data	Source	Access
Sentinel-2 L1C	Full archive for Europe	/eodata/Sentinel-2/MSI/L1C/
Sentinel-2 L2A	Orderable - CREODIAS Finder or given scripts	<a href="https://gitlab.cloudferro.com/bjaroszkowski/ordering_script">https://gitlab.cloudferro.com/bjaroszkowski/ordering_script</a>



## Copernicus Sentinel-3

Data	Source	Access
Sentinel-3	Full archive in CREODIAS	/eodata/Sentinel-3/

## Copernicus Sentinel-5P

Data	Source	Access
Sentinel-5P L1B	Full archive in CREODIAS	/eodata/Sentinel-5P/
Sentinel-5P L2 Aerosol, Cloud, CO, HCHO, NO2, NP, O3, SO2	Full archive in CREODIAS	

## Copernicus Atmosphere Monitoring Service

Data	Source	Access
Olive pollen	CAMS	<a href="https://ads.atmosphere.copernicus.eu/cdsapp#!/dataset/cams-europe-air-quality-forecasts?tab=form">https://ads.atmosphere.copernicus.eu/cdsapp#!/dataset/cams-europe-air-quality-forecasts?tab=form</a>
PM10	CAMS	^
PM2.5	CAMS	^
Dust	CAMS	^
Global solar UV Index forecast	CAMS	<a href="https://apps.ecmwf.int/datasets/data/cams-nrealtime/levtype=sfc">https://apps.ecmwf.int/datasets/data/cams-nrealtime/levtype=sfc</a>





## Copernicus Land Monitoring Service

Data	Source	Access
Urban Atlas 2018	CLMS	<a href="https://land.copernicus.eu/local/urban-atlas/urban-atlas-2018?tab=download">https://land.copernicus.eu/local/urban-atlas/urban-atlas-2018?tab=download</a>
Natura2000 2012	CLMS	/eodata/CLMS/Local/Natura_2000/N2K_2012
Imperviousness density 2018	CLMS	/eodata/CLMS/Pan-European/High_Resolution_Layers/Imperviousness/Status_Maps/Imperviousness_Density_2018
Imperviousness Built-up 2018	CLMS	/eodata/CLMS/Pan-European/High_Resolution_Layers/Imperviousness/Status_Maps/Impervious_Built-up_2018
Coastal Zones 2018	CLMS	<a href="https://land.copernicus.eu/local/coastal-zones/coastal-zones-2018?tab=download">https://land.copernicus.eu/local/coastal-zones/coastal-zones-2018?tab=download</a>
Tree cover density 2018	CLMS	/eodata/CLMS/Pan-European/High_Resolution_Layers/Forests/Tree_Cover_Density/Status_Maps/Tree_Cover_Density_2018
Forest Type 2018	CLMS	/eodata/CLMS/Pan-European/High_Resolution_Layers/Forests/Forest_Type/Status_Maps/Forest_Type_2018
Dominant Leaf Type 2018	CLMS	/eodata/CLMS/Pan-European/High_Resolution_Layers/Forests/Dominant_Leaf_Type/Status_Maps/Dominant_Leaf_Type_2018
Grassland 2018	CLMS	/eodata/CLMS/Pan-European/High_Resolution_Layers/Grassland/Status_Maps/Grassland_2018
Corine Land Cover 2018	CLMS	/eodata/CLMS/Pan-European/CORINE_Land_Cover





## Local data for the Porto region

Data	Source	Access
Sentinel-1 CARD-BS	2018-2019	/eodata/Sentinel-1/SAR/CARD-BS/
Sentinel-1 CARD-COH6	2018-2019	/eodata/Sentinel-1/SAR/CARD-COH6/
Sentinel-1 COG	2018-2019	/eodata/Sentinel-1-COG/SAR/GRD-COG/
Sentinel-2 L2A	2018-2019	/eodata/Sentinel-2/MSI/L2A/
Sentinel-2 NDVI	2019	Sen4CAP
Sentinel-2 LAI	2019	Sen4CAP
Sentinel-2 FAPAR	2019	Sen4CAP
sentinel-2 FCOVER	2019	Sen4CAP

## Data provided by local hackathons: FTP 185.52.194.172

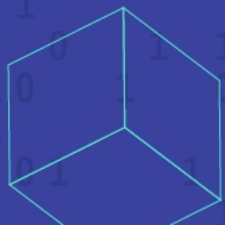
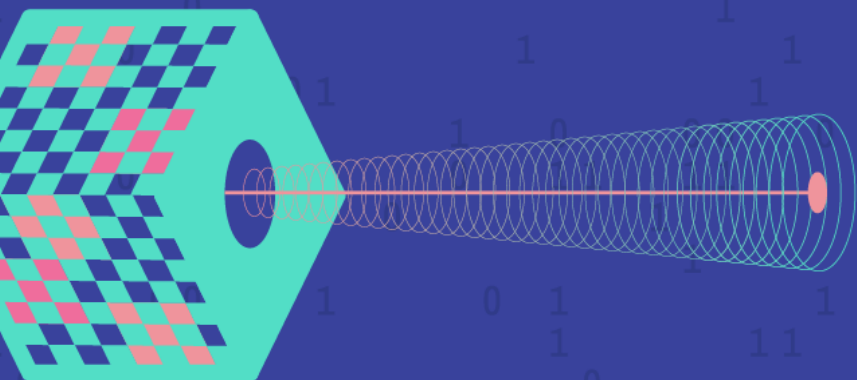
Data	Source	Access
Portugal		Access e.g. with FileZilla: <a href="https://filezilla-project.org">https://filezilla-project.org</a>
Switzerland		Access e.g. with FileZilla: <a href="https://filezilla-project.org">https://filezilla-project.org</a>
Slovenia		Access e.g. with FileZilla: <a href="https://filezilla-project.org">https://filezilla-project.org</a>
Estonia		Access e.g. with FileZilla: <a href="https://filezilla-project.org">https://filezilla-project.org</a>





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# Business Design Playbook

Follow this playbook to discover, build and tap into business opportunities to accelerate your ideas.



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# STEP 1: IDEA & TEAM

Lead questions to ask in this section:

- Who is who?
- What is the team formation?
- How do we organise teamwork and team roles?
- What are your goals as a team?

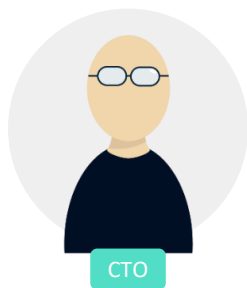


# Build your perfect team

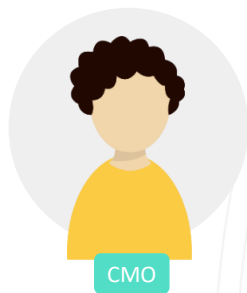
Fill in the names of your team members.



Leadership, Management  
and Business Development



Technical EO Product and  
Service Development



Marketing, Pricing  
and Sales



UI and UX Creative



Business Modeling and  
Value Engineering



# Team formation

The goal of starting with this preparation segment is to form a team of at least 3 people. Those people should share a passion for solving the same problem and work towards the same goals. On top of that, you'll have to demonstrate excellent team dynamics in your daily teamwork and you will have to feel that you would go to the end of the world together. To put together that dream team you need to revisit and thoroughly re-discuss all the potential problems - their possible solutions - and how everyone in the team can contribute to develop these solutions. This helps you see and decide who you would best fit together with.

## GOALS

Form a team of 3 - 5 members

## TASKS

Team formation - Ideation

## TOOLS

Mapping team roles & competences



### TASK 1

#### Team formation

- If you have a team of 3-5 people formed already:
  - Review whether you have all the necessary competences and experiences
  - Discuss the complementary assets you have, the strengths and weaknesses each of you have
- If you don't have a team of 3-5 people formed yet:
  - Identify networks and contacts that could help to connect you with people who might be interested to join your team
  - Meet, greet and discuss your entrepreneurial ideas, initiatives and visions



### TASK 2

#### Ideation & first vision

- If your team has already agreed on an idea:
  - Each team member describes the idea according to their understanding
  - Present & discuss your viewpoints
  - Develop the idea further and assess its potential
- If your team has NOT agreed on an idea yet:
  - Each team member describes their idea
  - Present and discuss the ideas
  - Go through the idea assessment and select the idea that you want to develop together.

GET INSPIRED

[The Secret Phrase Top Innovators Use](#) - by Warren Berger (HBR)



# Partner up with coaches and mentors!

Fill in the names of your coaches and mentors.



CHIEF MENTOR

Business (within EO market)  
and team management



PRODUCT MENTOR

Product development  
and prototyping



DESIGN MENTOR

UX design for  
products/services



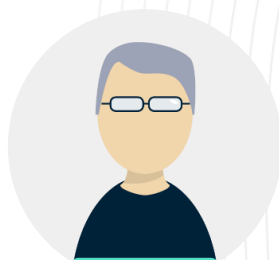
MARKETING MENTOR

Marketing



IP LAWYER

Intellectual property



INVESTOR

Fundraising and financial  
management



EO EXPERT

Earth observation /  
Copernicus data & services



## List your goals as a team

What would the final destination of your team's journey be? What's the big dream?

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4

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## STEP 2: CUSTOMER OPPORTUNITY

Lead questions to ask in this section:

- Who are your customers and users?
- What problems do your customers and users have?
- How do you recognize & nail the most important customer questions?

# Discover who your customer and user are! Size the opportunity

Customer development can happen if

- you have evidence (data) that your solution (product/service) is actually creating value for your customer
- your product scales in the market.

Basically this means choosing a good market with a product that can satisfy that market. In a great market - a market with lots of real potential customers - the market pulls the product out of the start-up. Lack of market is the #1 start-up killer, and neither a stellar team nor a fantastic product will redeem a bad market fit.



## TASK 1

### Customer description

- Use the tools (see following pages) to describe your global customers (B2B or B2C) and customize your solution. Describe your customer as detailed as possible - you'll need to talk to him/her at a later stage to validate your idea.



## TASK 2

### Target market selection

- The target market is the actual customer group to which your business will attempt to sell its products and services. For the target market definition, consider geography and industry segments.
- Use the tools in the following pages to select the market with the biggest potential and define your target market.

## GOALS

Customer discovery

First 'Solution/Customer/Market fit' identified

## TASKS

Customer description - Target market selection

## TOOLS

Customer persona template - Customer insight tool - Discover who your customers are - Target market template

GET INSPIRED

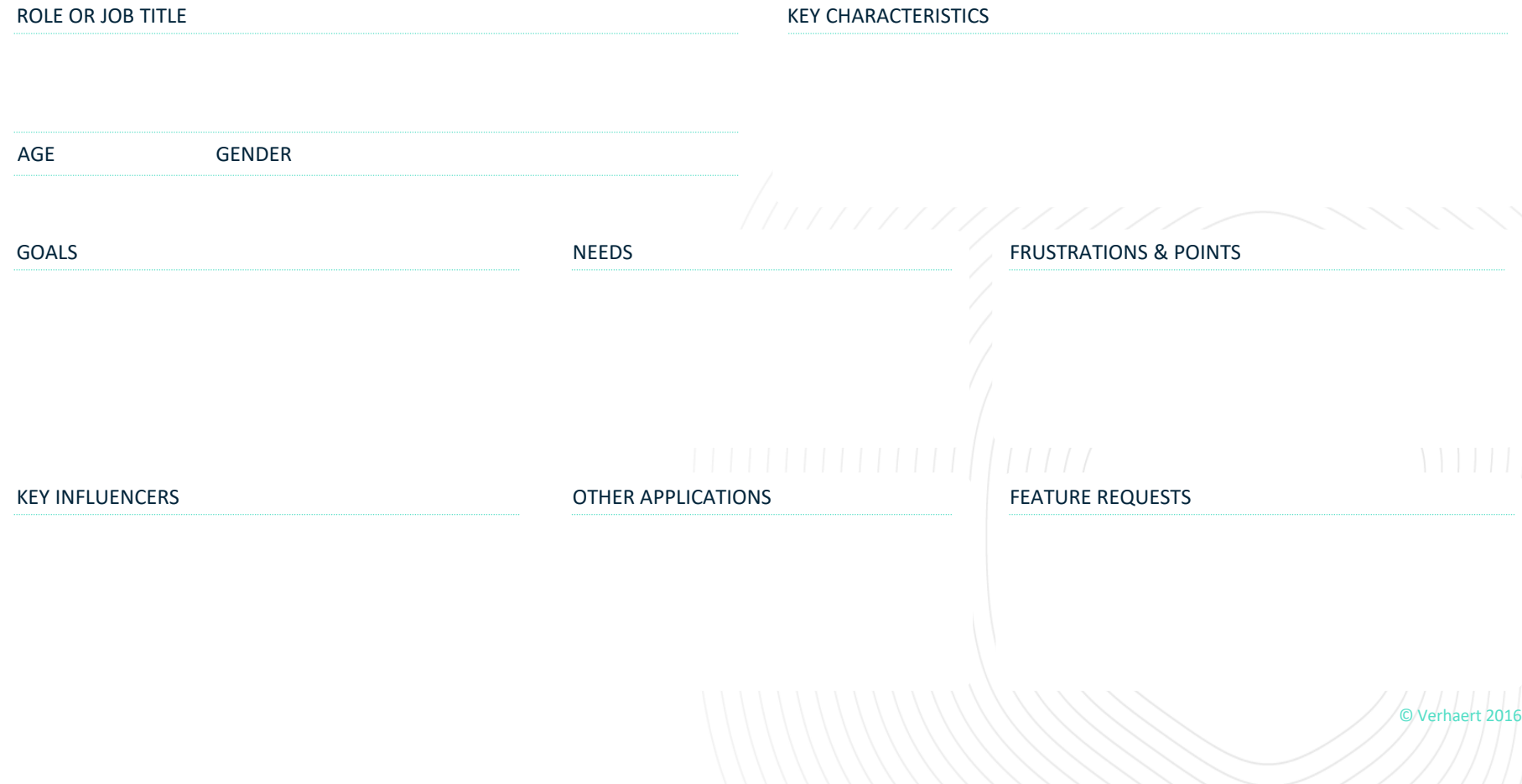
Market selection - [How to Select a Target Market for New Product Launch](#) - Motarme

Customer persona - [Personas for Need finding, Design & Growth](#) - by Alexander Cowan





# Tool: Customer persona



ROLE OR JOB TITLE

KEY CHARACTERISTICS

AGE GENDER

GOALS NEEDS FRUSTRATIONS & POINTS

KEY INFLUENCERS OTHER APPLICATIONS FEATURE REQUESTS

© Verhaert 2016



## Tool: Choose the target segment

SEGMENT 1

SEGMENT 2

SEGMENT 3

SEGMENT 4

### MARKET VALUE

- Size
- Growth rate
- Profit margins

### MARKET ACCESS

- Competitors
- Availability & access to distributors/ channels
- Regulatory path

### YOUR MARKET EXPERTISE

- Financial resources to enter the market segment
- Network & contacts
- Capability & market knowledge



# Homework list

What do you need to do to get to know your customers and users even better? Fill in your own goals to complete this sprint.

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- 6 

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## STEP 3: CUSTOMER PROBLEM

Lead questions to ask in this section:

- Does your solution fit the problem and customer?
- How can you validate the fit?
- How to get the X-factor in?

# Nail your customer problems

To show you have found the right problem-solution fit you need to have evidence that customers care about certain problems (gains/pains) and that you have designed a solution that addresses those problems.

Customer gains are outcomes and benefits your customers expect, require, desired or be surprised by. Customer problems (pains) are anything that prevents them from getting a job done smoothly. “Right” customer problems are:

- problems/pains/passions that many others have
- problems that occur often enough
- problems that are serious enough so that customers are ready to pay to get (rid of) them

If you succeed in finding a truly unique problem, addressing both pains and gains that nobody has tried to solve yet you can grow 10 X instead of 10% per year.

## GOALS

Business idea fine-tuned

## TASKS

Online evidence search - Idea development - Team roles planning

## TOOLS

Recognise customer problems & segments – visual diary- Problem redefinition instructions



### TASK 1

#### Online evidence search

- Use Google tools to search for online evidence about your problem and solution:
  - Popularity and relevance of keywords describing your problem and solution (Google Trends, Google AdWords Keyword Planner)
  - Competition and similar solutions existing already (Google Search, YouTube, Google Patent Search, Start-up databases, Copernicus Masters winners, Copernicus Incubation Programme winners, Copernicus accelerator participants and other sources)
  - Alternative solutions existing already (Google Search).
- This is your first Moment of Truth. If necessary, fine-tune your idea or search for a new one. And then do an online check again!



### TASK 2

#### Idea development

- If you found good online evidence to continue with your initial idea, apply the problem redefinition and ideation techniques to develop it further.



### TASK 3

#### Team roles planning

- Discuss through and divide your team roles and responsibilities. On top of your professional skills take into account your different personality traits and individual strengths and weaknesses.

GET INSPIRED

[The 7 All-time Greatest Ideation Techniques](#) - by Chuck Frey (Innovation Management)



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## Tool: Recognise most important customer problems & segments



**CUSTOMER PROBLEM**  
Customer problems, pains



**IMPORTANT**  
Does failing the job lead to extreme problems?



**TANGIBLE**  
Can you feel or see the pain?



**UNSATISFIED**  
Are there unresolved problems, jobs?



**LUCRATIVE**  
Are there many with that problem & ready to pay?



**TOTAL SCORE**  
Focus on the highest value jobs & related problems.

1

2

3

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5

Scoring scale: 1 (low) to 5 (high)

Adopted from: Strategyzer, A. Osterwalder, Customer segments, available at <https://www.strategyzer.com/>



# Homework list

Fill in your own goals to complete this sprint.

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## STEP 4: DIGITAL SERVICES

Define a compelling & meaningful offer

Lead questions to ask in this section:

- How do you design a differentiated value proposition: functionalities, features, USP's?
- How do you design a minimum viable product?
- How do you further secure growth – product/service platform planning?

# Design a differentiated value proposition: functionalities, features, USPs

Product definition is an important milestone in your business planning. It forces you to make choices on specific set of features and functionalities. This will serve a pathway for estimating time2market as well as necessary development efforts. Moreover, you will be able to use it for first prototypes in order to test and validate with customers in several iteration cycles. This will help you to improve and eventually have a validated attractive product/service proposition with optimal development efforts and costs.

## GOALS

Product/service definition

## TASKS

Define your value proposition - Elaborate on features and functionalities - Outline your differentiation strategy & USP

## TOOLS

Value proposition design diagram - Value & attribute map - Concept sharpening tool - Differentiation & USP tool



### TASK 1

#### Design your value proposition

- Define a value proposition of your product (service) starting from customer job2be done statements (value proposition design diagram)
- Come up with the key product/service values & corresponding features and functionalities to get a first top level product/service definition (left side of value proposition design diagram).



### TASK 2

#### Value - attribute mapping

- Make a map of your product / services values by connecting them to specific functionalities and features (value & attribute map)
- Do a sanity check with your team whether the defined set of features and functionalities nail the promise of your product/service.



### TASK 3

#### Differentiation strategy & USP

- Decide on features that will be the key for your differentiation strategy. Make sure that your USP are features have high value perception in the eyes of your customers and users.
  - Use concept sharpening tool to assess the value perception of each feature from the perspective of customers & users
  - Use differentiation & USP tool to map your proposition against other alternatives in market (competitive benchmarking). Discuss the necessary performance level of all your features. Pay extra attention to the desired performance level of your USPs.

## GET INSPIRED

[Product differentiation strategies](#) – Dany Robberecht

[Blue ocean strategy](#) - Kim & Mauborgne. Blue Ocean Strategy



# Tool: Valuation proposition design

## Design your value proposition starting from basic solution ideas & customer problems/needs

This will allow you to make a transition from a top-level product concept to a more specific product definition with specific list of functionalities and features.

### Task 1: Describe the customer need and critical customer values

Rank each statement on importance to facilitate your exercise.

### Task 2 : Create product/services promises as answers to specific customer problems

At this stage you can work with general product/service promises. The aim is to define the key building blocks of your products/services based on its promises.

### Task 3: List features/functionalities of your solution to fulfill the service/customer promises.

How will you deliver the promise? What service features will be needed? What would be the easiest (most useful) for your customer to take advantage of your solution?

YOUR CUSTOMER PROBLEMS/NEEDS		SERVICE/PRODUCT PROMISES	KEY FUNCTIONALITIES & FEATURES
<b>need/pain</b> 1. Get most out of agricultural fields 2. Optimize costs • ...	<b>critical value</b> • Accuracy of info • ...	Provide <b>estimate of the yield for the crop and field in question</b> Provide advice on optimal field treatment (fertilizers, water..) <b>to maximize field potential</b>	<ul style="list-style-type: none"> <li>Yield simulator for different crops / different parts of field</li> <li>Fertilizer prescription plan</li> <li>Irrigation alerts based on soil conditions, growth model and weather insights</li> </ul>

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# Prototyping

Paper prototyping is mostly known for prototyping **user interfaces**, but can also be used to make customer journeys, visualize ideas or just to have some fun. People say a picture is worth a thousand words. If that's true, a prototype is worth a thousand pictures. Prototyping on paper is cheap, allows rapid iteration, increased creativity and engages all team members in making their idea tangible.

## GOALS

MVP (Minimum Viable Product) prototype is ready for validation

## TASKS

Sketch a storyboard - Build a paper prototype - Prepare for customer validation

## TOOLS

MVP Checklist – Paper prototyping toolkits – Test your prototype – Test & Learning cards - SurveyMonkey



### TASK 1

#### Sketch a storyboard

- Draw a storyboard with up to 15 frames. Start with an opening scene where customers/users find your solution and add all other scenes. Check the tools to get instructions.
- Storyboarding means sketching an actual situation showing how a user would use your solution (e.g. web, mobile app, product):
  - where (s)he clicks
  - what info (s)he enters
  - what (s)he thinks etc.



### TASK 2

#### Build a paper prototype

- Use the storyboard tool to make sure that your product/service will be the most minimalistic version of your solution still delivering great value to your customer (MVP). Aim to build the prototype around 1 product feature or functionality only.
- Based on the storyboard, define and prototype the individual interactions (screens) on paper.



### TASK 3

#### Customer validation preparation

- For validation by testing:
  - prepare the Test & Learning Card for validating your problem and solution with your customers tomorrow via testing hypotheses.
- For validation by customer interviews:
  - prepare a questionnaire on [SurveyMonkey](#) for collecting more detailed customer feedback - use these questions for reference. Digitalize your paper prototype with [popapp.in](#)

## GET INSPIRED

Prototyping - [Prototyping for Web and Mobile Workshop](#) - by Simon Phillips (Slideshare)  
Customer validation - [How to Interview your Customers](#) - Customer Development Labs



## Tool: MVP checklist

Before starting with product/service development make sure that the product that you will be building is really the minimum viable product (MVP).

FEATURE	IMPORTANCE OF THE FEATURE			MVP (YES/NO)
	CRITICAL Delivers customer short term value	SECONDARY Nice-to-have	MUST-HAVE Critical for technical feasibility	
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				





# Homework list

Fill in your own goals to complete this sprint.

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# STEP 5: BUSINESS

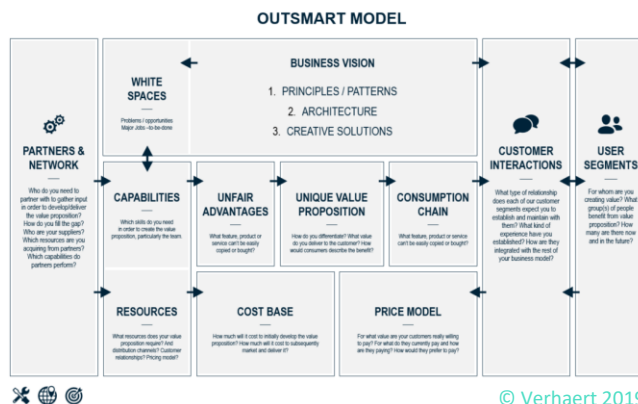
Make sure it brings enough money

Lead questions to ask in this section:

- How can you make money (revenue & business model)?
- How do you get traction in the market?
- How do you get the business growing (marketing strategy, campaign and roadmap)?

# How to make money (revenue with the outsmart model)

Monetization is one of the aspects key to your potential investors. They look for the frequency of the revenue stream, and whether or not it is recurring and easily predictable. A strong Outsmart Model is particularly important, it shows how you will monetize your solution.



## GOALS

Outsmart model designed

## TASKS

Design outsmart model

## TOOLS

Outsmart model design



### TASK 1

Design a outsmart model for your business

- Use inspiration from other industries to define the best fitting Outsmart model for you. Study different models with examples and design your revenue model.



### TASK 2

Run quick tests with customers on your revenue model

- Organize brief interviews with a few customers to question your new outsmart model and pricing ideas
- If necessary re-visit your outsmart model to improve it based on customer feedback

## GET INSPIRED

Revenue Model - [6 Drivers That Determine Your Revenue Model](#) - by George Deeb (The Next Web)

Marketing strategy - [15 Early Traction Growth Hacking Strategies For Startups](#) - by Stuart McKeown (Gleam)

# Tool: 7 questions to test your business model

Assess your business model design. Circle how you perform on a scale from 0 to 10.

## 1. Switching Costs



## 2. Recurring Revenues



## 3. Earning vs. Spending



## 4. Game-changing Cost Structure



## 5. Others Who Do the Work



## 6. Scalability



## 7. Protection from Competition



Adopted from: Business model alchemist, A. Osterwalder, 7 questions to assess your business model design, available at <http://businessmodelalchemist.com/blog/2011/09/7-questions-to-assess-your-business-model-design.html>

# Homework list

Fill in your own goals to complete this sprint.

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## STEP 6: PITCH

Lead questions to ask in this section:

- How to make my story stick?
- What is my compelling storyline?
- How will I become unique?



# How to act during a pitch?

As a start-up, you need to raise interest and build confidence in your idea! This means that you have an convincing proposition as well as motivation to carry it out!

Firstly, it is a story that needs to have the right content packaged in a concise way. Secondly, it's a story that needs to be communicated as irresistible investment opportunity. Thirdly, it's a story of your team that will make it happen with passion and hard work!

## GOALS

To perform a good funding pitch

## TASKS

Evaluate and improve your own skills

## TOOLS

Pitching frameworks



### TASK 1

Building your story and pitch deck!



### TASK 2

Practice the story telling

- Organize a few dry-runs
- Ask others to listen and give you feedback
- Iterate as many times as needed



## Tool: 5 P's of any good pitch

- Problem - What is the real problem that you solve with your product/service?
- Promise - What do you promise to your customers?
- Proof - Why would I believe you?
- Profit - In which way will you make money?
- Passion - I'll do whatever it takes!

### TIP

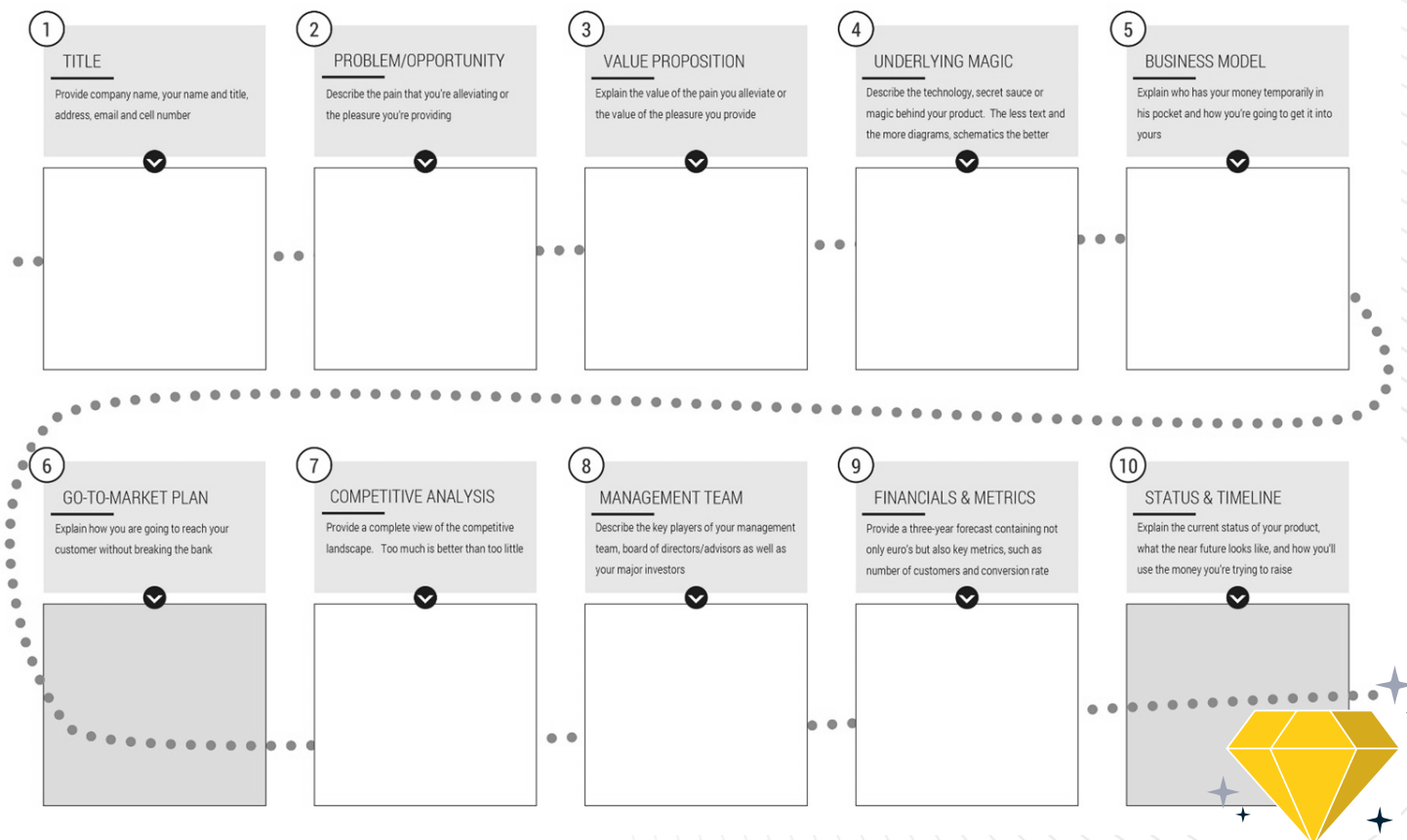
Guy Kawasaki's 10/20/30 Rule for PowerPoint

- 10 slides
- 20 minutes to present the slides
- 30 point font or greater



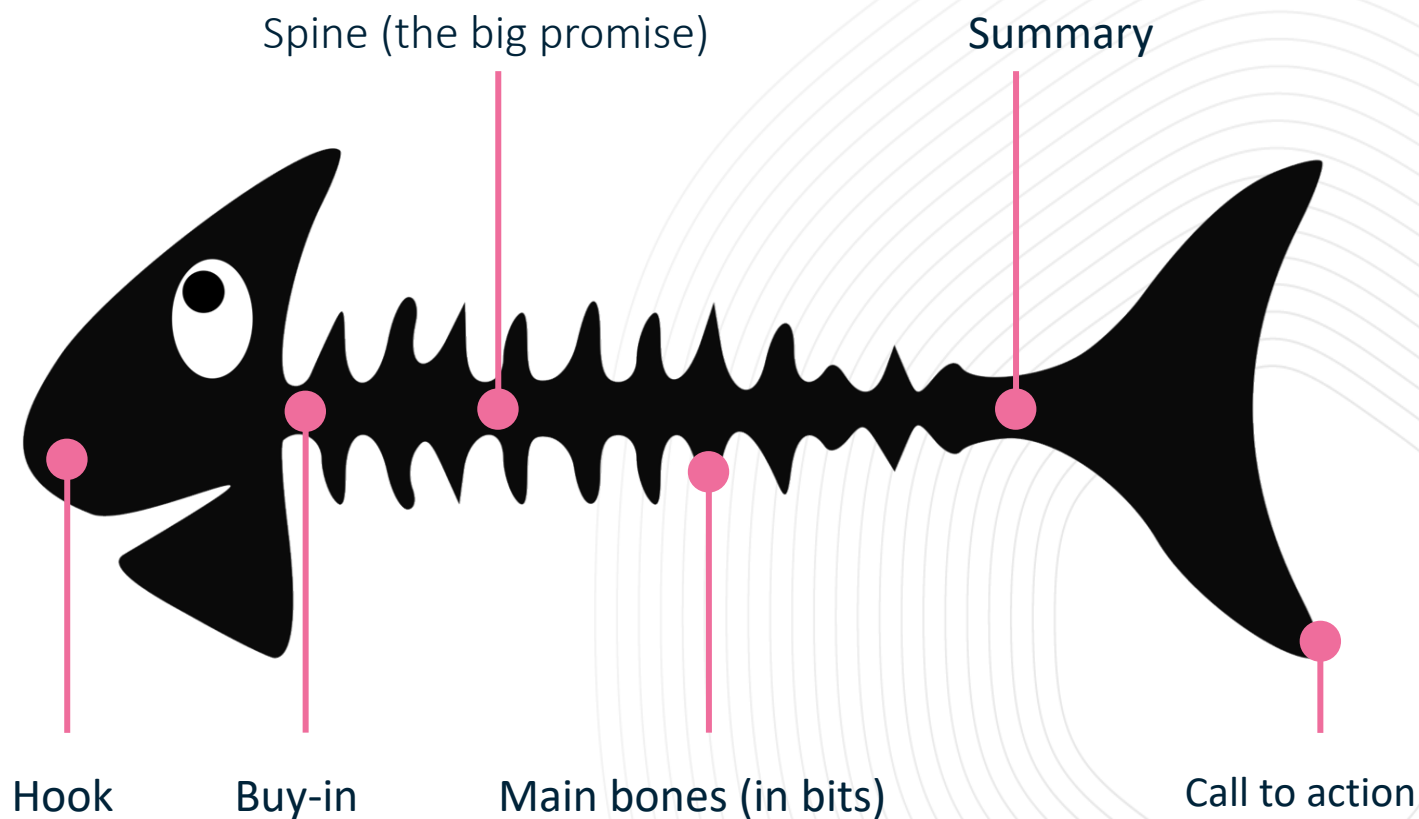
# Tool – 10 Slide pitch

The purpose of a pitch is to stimulate interest, not to cover every aspect of your startup and bludgeon your audience.



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## Tool: Structure of the story



# Tool: Cast – method

## CONTENT

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Why? What? Who? What if?

## TELLING

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Who designed your story ? Who will validate it?

## AUDIENCE

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Who is your audience? And which lean- and decision styles do they have?

## STORY

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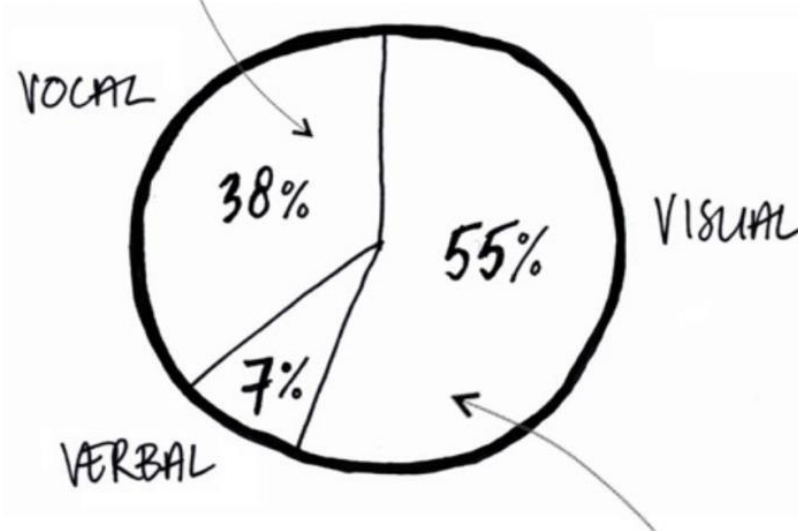
What is the structure of your story? What are the characters of your story? What's the sense of urgency? Do you have a presentation plan?

Adopted from: Miro, Visual story map, available at <https://miro.com/templates/visual-story-map/>



## Tool: Mehrabian's tool

Do you know when to use a low voice?



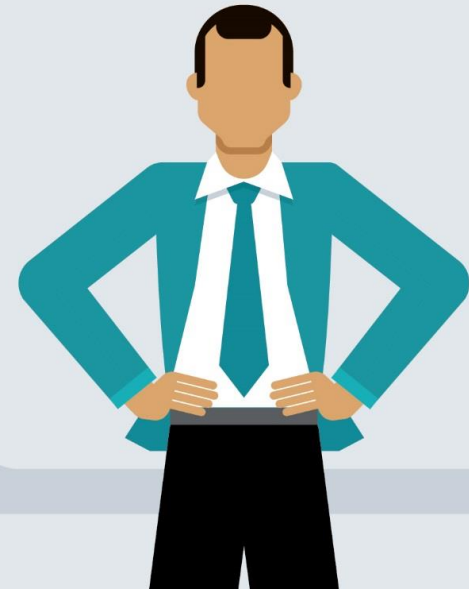
Do you know when to wear a power suit?

Source: Albert Mehrabian, PhD



## Tool: Speaker body language

Smile  
Avoid tics  
Move around  
Keep eye contact  
Keep frontal contact  
Use your arms/hands  
Have an open attitude



# Homework list

Fill in your own goals for this sprint.

1

2

3

4

5

6





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# Thank you