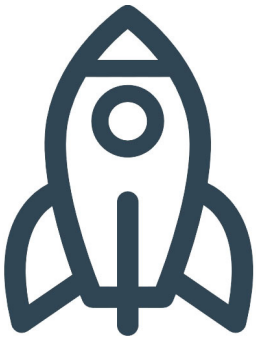
Da Vinci Satellite Project

The 'Da Vinci Satellite' project is an initiative started by a non-profit student team of Delft University of Technology, with the goal:

'To inspire and enthuse the youth of the Netherlands for technology and space travel, while emphasizing the impact of space travel on our society'.

In order to achieve this, the Da Vinci Satellite team intends to put a satellite in orbit around the earth for educative purposes. The associated educational programme will offer many primary and secondary school students in the Netherlands the opportunity to come into contact with space travel.



Mission

On the occasion of the 75th anniversary of the 'Vliegtuigbouwkundige' Study Association 'Leonardo da Vinci', it is the mission to design, build and launch the educational 'Da Vinci Satellite'. This satellite will provide a direct connection to space for primary and secondary school students.

By means of a teaching package, all satellite data will be brought directly into the classroom to make space more tangible for the children. In this way, students of all ages will be able to learn about space and everything related to space in an interactive way.

Vision

Space travel is indispensable in everyday life these days. It is of social importance that people understand what is happening to the earth. By becoming acquainted with space travel from an early age, children can become inspired and motivated to discover the world. This may have to do with technology, global warming or sustainability.

With the 'Da Vinci Satellite', school children can interactively become acquainted with and learn about space and what is involved in it. Youth has the future, so it is important to create awareness. Together we elevate education to a higher level!

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Teams:

In order to have the ability to realise this project, a team of roughly 30 students from various faculties at the TU Delft has been assembled that will develop this satellite and the corresponding educational module. These students all work together in order to achieve the aforementioned goals set. They work simultaneously in the following teams: Core team, Technical team, Team PR & Education and Team Acquisition. These teams altogether form the 'Da Vinci Satellite' project.
These teams, in collaboration with the aid of many professional partners from both educational and professional entities are working in order to be able to guarantee the quality and success of the project.

Core team:

The core team of the 'Da Vinci Satellite' is the group of students most active. They each have the most time consuming and biggest roles within the project, often leading the other teams. The core team is where the biggest decisions are made and from where it is ensured that all teams are able of effectively work simultaneous.

Technical team:

An integral part of the 'Da Vinci Satellite' project is the designing, constructing and launching of the satellite. In order to achieve this ambitious task, the technical team is solely focussed on this engineering challenge. This team works closely with the engineering knowledge present within the TU Delft and within the space industry allocated in the Netherlands, in order to assure the success of this mission

Design:

The preliminary design for this satellite has been completed by a group of 10 TU Delft aerospace engineering students as their design synthesis exercise. During this process they were guided by engineers from both the TU Delft and engineers from 'Innovative Solutions In Space' and 'Hyperion', both Delft located space travel companies specialising in CubeSats.

After this process was completed, the current technical team, in collaboration with many experts, is taking the subsequent steps in completing this design process to a more thorough, complete extent, through many specific reviews. As of this instance, they are in this process while simultaneously having started the programming of the OBC. At the start of May, this detailed design should be entirely finished.

In collaboration with our partners from the industry and the TU Delft, this detailed design will be evaluated by experts on various occasions in order to guarantee its quality.

Construction:

The different modules of the satellite will be constructed in separate manners. There are two separate payloads that will be integrated within the satellite. The first, focussed on the primary school students; is in construction process at the 'Leidse Instrumentenmakers School', this will be completed as a graduation project by one of the students there. The second payload; a secondary school focussed payload. Is an

Infrared camera, intended for the education of specific secondary school topics.
The construction of the bus will mostly consist of the assembly, as the individual modules within the satellite will be obtained from our partners within the space industry. This assembly will be done by the 'Da Vinci Satellite' engineers, assisted by both the experts within the TU Delft and experts from the industry. This will overall be conducted either within the clean room facilities within the TU Delft, or within the clean room facilities of one of our partners in the industry.

Launch:

As of this instance, no definitive launch date has been depicted. However, we are currently in extensive contact with various launch providers. We are planning to have one of these professional entities launch our satellite at the end of quarter one of 2021.

Team PR & Education

In order to achieve the goal of the project, an educative lesson program is being set up for both primary school students and secondary school students. This is the main responsibility of the educational branch of this team. This educational purpose has intentionally been branched as wide as possible, affecting all levels of education. Thus in making this project relevant and challenging for all ages, all of these age groups will have to be tailored to. This is achieved by developing two educational payloads. One specifically for the primary school students and one specifically for the high school students. In addition to this, as an educational experience for university students, this project will be a learning experience to the 'Da Vinci Satellite team', as well as a source made available to all for university research.

Primary School:

For the primary school education module, a contest amongst primary school students was held in order to determine what would be the most interesting educational payload to them. What would spark their interest in space travel the most? What did they want to learn about space? For they themselves are eventually the best at determining what they want to learn about space, what intrigues them about space. As a result of this contest the payload was decided, it is what the primary lesson package will be centred around. The primary school payload will be a zero-gravity dice game. A mechanism that can physically throw dice and make a video of said dice 'hanging' in zero gravity. In this manner, we will bring a direct enjoyable connection to space and technology into the primary school classroom in order to achieve our mission within this age group.

Secondary School:

When it pertains to the secondary school education module. In communication with many teachers and educational entities the team is currently working to construct lesson packages, fort this age-group. It was determined that the most effective method to include these lesson packages into the Dutch educational system, was to make it such that they can be used to teach principles that have to be taught simultaneous to the information about space travel. As a result, the planning is to have the secondary school payload be an infrared camera observing Earth. This will be applicable for secondary school teachers in order to teach students, not only about space travel and its impact on society, also about infrared

frequencies, global warming, and a multitude of other topics. In this manner, for the secondary school students, we try to reach them in an educational manner to provide a direct connection to space, and make space a more tangible topic to discuss.

Team Acquisition:

When realising this project, there is a significant financial burden to bear. In order to guarantee that we are able to complete this project financially, we have team acquisition. This team is exclusively focused on obtaining the finances required to launch this entire project. Through communication with external parties, obtaining funds is made possible by them.

This team works in different strategies of obtaining funds on differnet schedules. Please refer to the attached general overview for these timelines.

Partners

This project would not be possible without the numerous parties involved in every branch of this entire project. From the technical parties, supplying us with the parts and field expertise to truly produce this satellite, to the educational partners allowing us to truly bring this into the classroom, to the financial partners making all the required investments possible. The project would not be possible without all of their efforts.
These are some of the current partners we are collaborating with:

HYPERION TECHNOLOGIES

ISIS

nlr

AIRBUS DEFENCE & SPACE

GTM ADVANCED STRUCTURES

Universiteit Utrecht

LiS Leidse instrumentmakers School

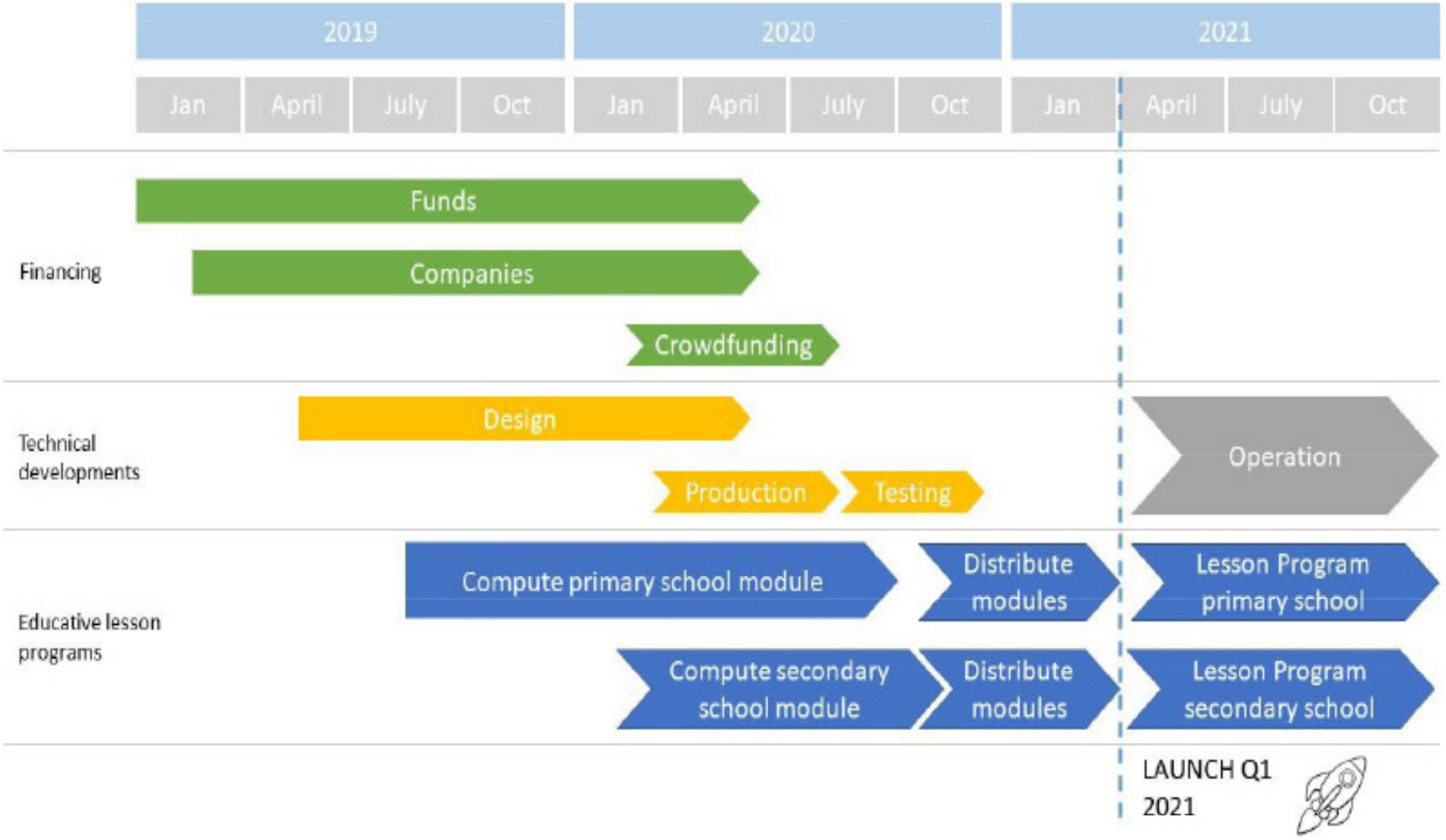
Netherlands Space Office

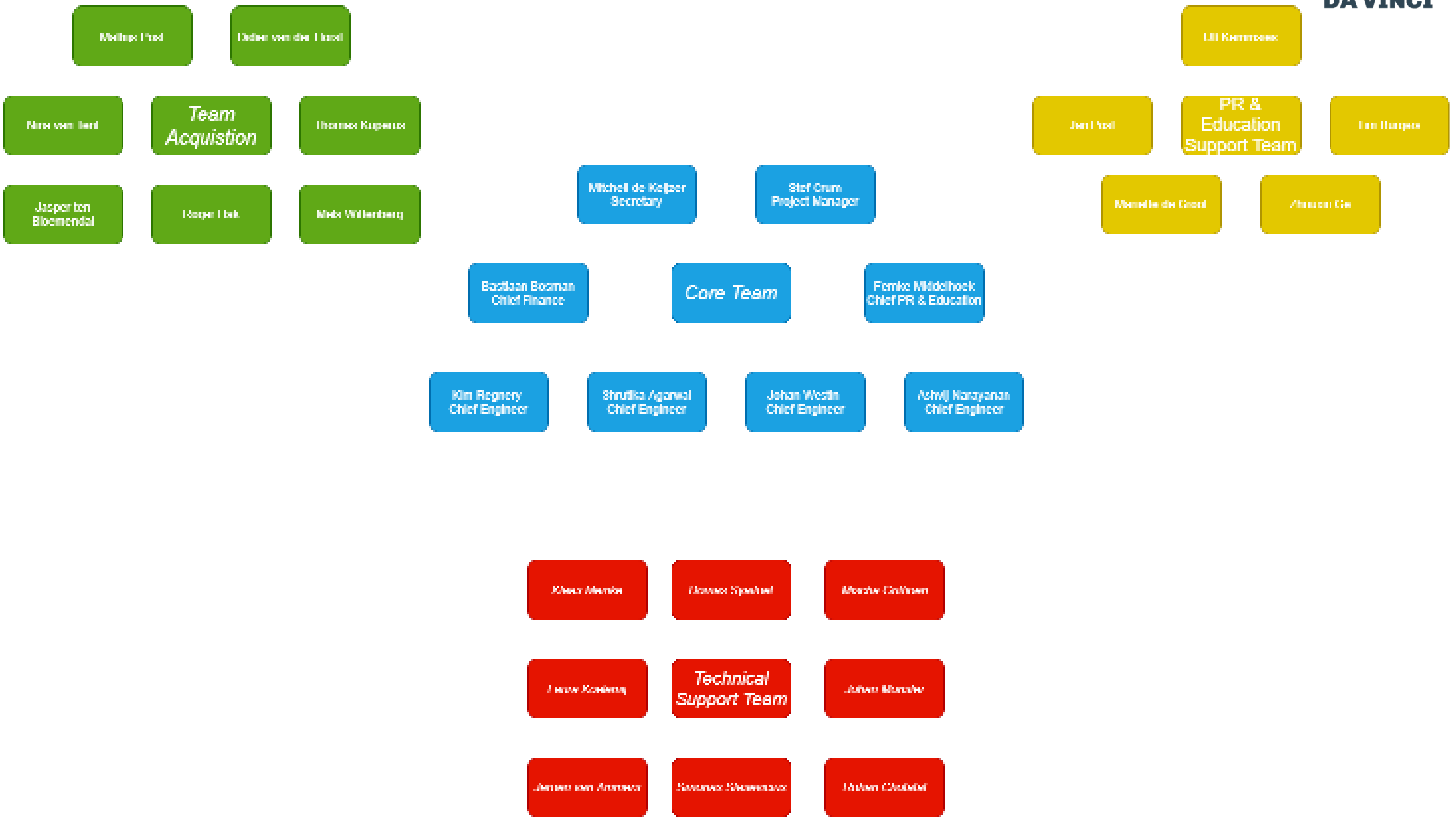
VALISPACE

Leonardo da Vinci

TU Delft

On basis of the following planning there is being worked towards a launch at Q1 of 2021

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Bastiaan Bosman
Chief Finance
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Femke Middelhoek
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