IO1/A2 – Interactive Features Specification

e-Book

Space Guardians

Improving Astronomy Literacy of children at pre-school education to raise their interest in Science, Technology, Engineering and Mathematics

2017-1-UK01-KA201-036634

Co-funded by the Erasmus+ Programme of the European Union

Table of Contents

Co-funded by the
Erasmus+ Programme
of the European Union

SpaceGuardians e-Book

SpaceGuardians aims to create an educational Interactive eBook, that will be available online to teachers and parents, to improve the Astronomy Literacy of pre-school children (3-6 years old) and raise their interest regarding STEM.

The Space Guardians eBook will feature an engaging trilogy that addresses specific contents related to the Cosmos and adequate for the targeted age group. It will particularly address essential Astronomy concepts defined in a framework - Astronomy Literacy Framework - specifically developed for pre-school education.

The development of the Space Guardians eBook will also take into account the need to:

- Include interactive features (eg. different story paths, mini-games, etc)
- Good practices of storytelling and interactive stories, specifically for this age group and to engage children with mild learning disabilities.
- Apply European principles of inclusiveness and equality, especially when creating the characters and the story.

Thus, the Interactive eBook will integrate interactive features, namely it may include dynamic storyboard, decision-making, mini-games, puzzles and other elements embedded in the stories.

This document aims to summarise:

- Our technology of choice for developing the interactive e-Book
- The interactive features the SpaceGuardians trilogy will include

2017-1-UK01-KA201-036634

Co-funded by the Erasmus+ Programme of the European Union

Usability and Accessibility

The Space Guardian consortium want our e-Book to be read by the widest possible audience.

Research shows that people with print disabilities have historically been exposed to a much more restricted catalogue of titles. Just a few years ago, fewer than 5% of publications in the western world were available in an accessible format like braille, large print or audio, and fewer still were available in a more flexible digital format. At the same time, in developing countries, it was estimated that fewer than 1% of publications were available in any accessible formats, resulting in a significant barrier to education and social inclusion.

e-Book technologies have opened up an array of new opportunities for people with print disabilities to gain equal access to the same publications as their peers without delay and with no dependence on the limited resources of charitable organisations. E-Books have the potential to be enjoyed by everyone irrespective of disability and this can often be achieved very simply.

CIVICs development team are well aware of the standardisation bodies guidelines, such as the W3C, EPUB Accessibility, and are active members of HTML5 and CSS3 communities. We will follow these guidelines when developing the interactive e-Book and will ensure it meets a WCAG AAA standard, and is responsive.

Accessibility

In its broadest definition, "web accessibility" is an approach to web design that aims to include the widest number of people and users as possible. Commonly, when people speak of web accessibility they are referring to access for disabled user groups.

You have a legal obligation under the Disability Discrimination Act 1995 to develop and maintain accessible web pages. This is generally interpreted as a requirement to comply with the accessibility standards developed by the World Wide Web Consortium (W3C). These standards are the Web Content Accessibility Guidelines (WCAG 2.0). The UK's Central Office for Information offers comprehensive guidance on Public Sector websites: http://coi.gov.uk/guidance.php?page=188

The needs that Web accessibility aims to address include:

- **Visual** - visual impairments including blindness, various common types of low vision and poor eyesight, various types of colour blindness
- **Motor/Mobility** - e.g. difficulty or inability to use the hands, including tremors, muscle slowness, loss of fine muscle control, etc., due to conditions such as Parkinson's Disease, muscular dystrophy, cerebral palsy, stroke etc.
- **Auditory** - deafness or hearing impairments, including individuals who are hard of hearing
- **Seizures** - photoepileptic seizures caused by visual strobe or flashing effects
- **Cognitive/Intellectual** - developmental disabilities, learning disabilities (dyslexia, dyscalculia, etc.), and cognitive disabilities of various origins, affecting memory, attention, developmental "maturity," problem-solving and logic skills, etc.

Individuals living with a disability use assistive technologies such as the following to enable and assist web browsing:

- **Screen reader software** - which can read out, using synthesized speech, either selected elements of what is being displayed on the monitor (helpful for users with reading or learning difficulties), or which can read out everything that is happening on the computer (used by blind and vision impaired users)
- **Braille terminals** - consisting of a Refreshable Braille display which renders text as Braille characters (usually by means of raising pegs through holes in a flat surface) and either a QWERTY or Braille keyboard
- **Screen magnification software** - which enlarges what is displayed on the computer monitor, making it easier to read for vision impaired users
- **Speech recognition software** - that can accept spoken commands to the computer, or turn dictation into grammatically correct text - useful for those who have difficulty using a mouse or a keyboard
- **Keyboard overlays** - which can make typing easier and more accurate for those who have motor control difficulties

When online website or applications are correctly designed, developed and edited, all users can have equal access to information and functionality. For example:

- When a site is coded with semantically meaningful HTML, with textual equivalents provided for images and with links named meaningfully, this helps blind users using text-to-speech software and/or text-to-Braille hardware
- When text and images are large and/or enlargable, it is easier for users with poor sight to read and understand the content
- When links are underlined (or otherwise differentiated) as well as coloured, this ensures that colour blind users will be able to notice them
- When clickable links and areas are large, this helps users who cannot control a mouse with precision
- When clickable links are descriptive and avoid using 'click here' or 'more information', this helps visually impaired users who prefer to use a screen reader or keyboard tab to read out links understand what the links refer to without having to read the entire context of the page
- When pages are coded so that users can navigate by means of the keyboard alone, or a single switch access device alone, this helps users who cannot use a mouse or even a standard keyboard
- When videos are closed captioned or a sign language version is available, deaf and hard of hearing users can understand the video
- When flashing effects are avoided or made optional, users prone to seizures caused by these effects are not put at risk
- When content is written in plain language and illustrated with instructional diagrams and animations, users with dyslexia and learning difficulties are better able to understand the content
- When sites are correctly built and maintained, all of these users can be accommodated while not impacting on the usability of the site for non-disabled users

Co-funded by the Erasmus+ Programme of the European Union

Interactive features specification

This specification will include every element of the e-Book that requires effects, user interaction and quizzes/puzzles that require development by CIVIC.

Effects/Content	Any movement that the e-Book requires to do on it's own, e.g. animation clip
User Interaction	When the user must interact with the e-Book for something to happen
Quizzes/Puzzles	When the user has to do a certain action in the correct order/sequence to move on
Sounds	Any sound that happens at a particular point
Class Room activities	Activities that teachers can implement in the classroom

Co-funded by the Erasmus+ Programme of the European Union

Story #1. The MOON was stolen!

1 (Home: room)

It was getting dark in (insert the name of your country). In her room, Rita had just arrived home from school. As she opened her backpack, a small piece of paper fell out.

Effects/Content	Short animation clip: 1. Rita walks in front door 2. Walks up the stairs 3. Walks into her room 4. Opens back pack 5. Paper falls out of bag onto the floor

She picked it up.

User Interaction	User must click on the paper for the note to open. The paper should read: *"I've stolen the MOON, ahahaha!* *I dare you to find it!* *Look for the locker with this symbol "SG" and leave there a note with your findings.* *You have 3 days…"*

2 (Home: close view of the piece of paper)

It said:

"I've stolen the MOON, ahahaha!

I dare you to find it!

Look for the locker with this symbol "SG" (Note: it should read "SG" in a mirror, an abbreviation for SpaceGuardians) and leave there a note with your findings.

You have 3 days…and don't tell any adults…"

Co-funded by the Erasmus+ Programme of the European Union

3 (Home: yard)

Rita ran outside. She searched the sky for the MOON…but it was not there. The MOON had disappeared! Someone had stolen the MOON!

Effects/Content	Back of Rita's head moves left to right (180 degrease) showing a black sky with no Moon.

4. (Home: yard)

She heard a noise from behind the bushes. "Who's there?" she asked, but all she could see was a distant figure moving away.

Sounds	Rustling in the bushes

Alarmed, she rushed back inside.

(Note: a figure lurking in the shadow shows in the corner of the page (and in several other pages), to create a bigger mystery and sense of urgency. At the end the figure is revealed)

5 (Home: room/device up close)

Her parents were sleeping…but perhaps she could ask her friends over the Internet, she thought.

First, she sent a message to her friend Masha, in Russia. "Have you seen the MOON?" she wrote. Masha replied after looking through her window, "No, it's dark over here, but I don't see the MOON!"

Interactive feature/Effects

- She has a phone and must introduce the phone number for her friends
- Or she may have a tablet that needs to be turned on
- We see the location of the friend on Earth in the device, to allow better understanding of day and night
- We see the sequence of the messages

6 (Home: device up close)

Rita, then sent the same message to Vivaan, in India. The day was about to begin and the message woke him up. He was also intrigued as he could not find the MOON either.

Co-funded by the Erasmus+ Programme of the European Union

7 (Home: device up close)

Rita was getting worried. Finally, she asked her friend Tau in Australia. Tau seemed surprised by the question as it was daytime in Australia. He could see the SUN, but not the MOON.

It was getting late and Rita had no answers yet. She would start her search for the MOON again, after a good night's sleep. She bid farewell to her friends and went to bed.

Class Room activities	The teacher can explore the **concept of day and night** and **Earth rotation**

8 (Home: room)

The next day Rita woke up early. She could barely sleep that night. She had to come up with a plan to solve the mystery of the stolen MOON.

She opened a blank page on her notebook and drew a diagram. In the middle a question, "WHERE IS THE MOON?" and on the sides, 3 other questions, WHO (would steal the MOON?), WHY (would anyone steal the MOON?) and HOW (could anyone steal the MOON?)"

9 (Home: room)

She would start with the "WHO?"

She gave it some thought. The only thing clear in her mind was that WHO ever had stolen the MOON knew her. It was someone from school that had placed the note in her backpack.

She would stay alert for any suspects that day in school.

10 (In school: outside at the door)

As she was entering school she saw Alice. "Alice loved science and was super smart. She would be capable of stealing the MOON." She took note of Alice's name in her notebook.

(note: Alice has a green overcoat)

11 (In school: entrance hall)

Rita was so distracted that she almost bumped into Boris. Boris loved to play tricks on people. Could this be one of his elaborate pranks? Another name was added below "WHO?" in her notebook.

(note: Boris has a green t-shirt)

12 (In school: entrance hall)

She stopped and looked around. "Who else could have placed that note in my backpack. Who could have stolen the MOON?" Elias sits next to her in class. He could have easily placed the note in her backpack, but could he have stolen the MOON?" She did not think so, but she would keep an eye on him too, just in case. She added his name to the list.

(note: Elias has a green sweater)

Co-funded by the Erasmus+ Programme of the European Union

13 (In school: class room)

The class started. That day their teacher, Mrs. Brown was lecturing about the Solar System, the Sun, Earth and the other Planets.

She explained that we live on a PLANET called EARTH. EARTH moves around a STAR called the SUN, that provides light and heat, and is responsible for the day and night. “Without the SUN,” said Mrs. Brown, “we could not live on this PLANET.”

(Note: represent the solar system in the classroom. In the classroom, there is another kid, very discreet, wearing green – none of the 3 previously mentioned)

User Interaction	User can touch the Map of the Solar System and a close up will appear in more detail

14 (In school: class room)

Mrs. Brown continued with explanations about the other PLANETS that move around the SUN and why no one lived there. They were either too cold or too warm and they did not have water.

“Can anyone live without water to drink?” she asked the class. “Nooo,” they all answered.

Class Room activities	The teacher may explore the **solar system** Examples of materials: https://www.youtube.com/watch?v=XMIrdUNb1is&t=55s https://www.youtube.com/watch?v=8-b4XvuQo1Y https://www.youtube.com/watch?v=cGhqDqs6s8Q https://www.youtube.com/watch?v=4MfvypeOpvU https://www.youtube.com/watch?v=KYGvCuiBiJI https://www.youtube.com/watch?v=wdN6GY9uCqg also check materials from ESA and NASA

Co-funded by the Erasmus+ Programme of the European Union

15 (In school: class room)

"What about the MOON?" Rita suddenly asked.

"Good question!" the teacher smiled. "The MOON is always with us. It's like the EARTH's closest friend. The MOON provides us light during night, is responsible for the tides in the ocean and seas, helps regulate the climate on Earth and shelters Earth from asteroids…"

Class Room activities	The teacher can raise awareness about the **importance of the MOON.**

(Note: the teacher points to the MOON in the Solar system representation)

16 (In school: class room)

Suddenly a bell rang. The class ended. "For those interested, go to the Space Museum. It's a wonderful place to learn about Space," Mrs. Brown added just as the kids began running to the playground.

Sounds	Sound of a school bell

17 (In school: hall)

Rita was still trying to wrap her head around the mystery. She had 3 suspects, but that was not enough.

"WHY would any of these 3 steal the MOON? As Mrs. Brown explained, we need the MOON to survive, so why would anyone want to steal it?"

"That's it! Someone stole the MOON to keep it for him or herself." Then she took a note under "WHY".

18 (In school: hall)

As she turns her head around, she sees someone spying behind the lockers. She tried to chase the person, but the figure disappeared into a poorly lit corridor. She could only see a green piece of clothing.

(Note: several characters had green shirts…the Elias, the Alice, Boris, and another unnamed character showing in different pages)

19 (at home: room)

Later in the day and back in her room, she reviewed her notes. "I'm missing the "HOW?" How could someone steal the MOON? A giant spaceship? A special laser beam? A giant ladder?"

"That's it! Tomorrow I'm going to the Space Museum to look for answers!" she thought.

20 (Street)

Rita had no classes that morning. She took her bike to the Space Museum.

On the way, behind a street lamp, a figure observed her. "I'm being watched," Rita realised. She decided to pedal as fast as she could to mislead the spy.

Co-funded by the Erasmus+ Programme of the European Union

21 (Museum: hall with a view to a showcase with items)

The Museum was enormous. It was filled with rocks coming from space, models and objects from space voyages.

User Interaction	User touches objects and a short explanation will appear. *Note: In this case, items should be carefully chosen so that they can be portrayed in the illustrations. LAM could perhaps suggest a few objects to be represented in the museum and a short description for each.*

22 (Museum: view of the model)

She moved towards a model with the MOON, the EARTH and the SUN. A museum assistant approached her. “I’m Lisa. May I help you? I see that you are very interested in this model,” she said.

“Yes, thank you! I was wondering if anyone could make the MOON disappear?”

Lisa smiled. “Well, for that to happen we would have to be able to reach it first and the MOON is very far from the EARTH. You would need a spaceship or a rocket to get there. Then, the MOON is actually very big when you see it up close. No one could really make it disappear.”

23 (Museum: Rita’s face confused)

Rita was puzzled. “If no one could make it disappear, how come I could not see it? Yesterday, I looked up at the sky and it was not there!”

Lisa pointed to the model and said, “Try the model. You tell me why you could not see the MOON yesterday.”

User Interaction	Interactive map – user can drag the position of the sun and the earth to see what happens to the Moon. *Note: LAM’s support defining and orienting the illustration will be essential.*

After exploring the model, the solution was clear. Rita thanked Lisa and returned home thrilled. She was happy that she had solved the mystery.

23 (School: hall, next to the lockers)

The next day, Rita was still wondering who and with what purpose, had fabricated that elaborate, wild-goose chase.

When she got to school, Rita searched for the locker with the symbol “ƧϘ”.

There it was, last in the row. There was no-one around.

Co-funded by the Erasmus+ Programme of the European Union

24 (School: view with the locker and the paper)

She got closer to the locker. It was open. She placed a small piece of paper inside. The paper read "The MOON was not stolen. It was a NEW MOON."

User Interaction	User touches locker door: it opens. User then drags the paper into the locker. *Note: LAM's support defining and orienting the illustration will be essential.*

Then she stayed vigilant for anyone coming near the locker.

25 (school: hidden, seeing the locker)

Rita spent the day looking at the locker, but no one had even got near it.

Suddenly, she received a text message on her phone from a mysterious number. It said, "Well done, you got the answer right! Go to the locker and open it if you want to find out more…"

26 (School: facing the locker)

There was no one around. The school day was ending.

Rita got to the locker and opened it. Inside there was a strange pad with numbers and letters. She received another text message.

User Interaction	User touches the paper – it opens

The message said, "This is your last test. To get all the answers, you need to enter the right code on the pad."

Here is a clue: *not everything is what it appears*. *What is the reverse image of the symbol on the locker?*"

Class Room activities	The class must use a mirror to reflect the reverse image of the "SG" (abbreviation for SpaceGuardians) to work out the code.

27 (School: Inside locker)

As Rita entered the right code, the back wall on the locker opened.

Effects/Content	Short animation clip: 1. The back wall of the locker opens

"It was a secret door!" she shouted.

She entered the locker, went through the secret door that lead to a stairway and walked down with caution.

Co-funded by the Erasmus+ Programme of the European Union

28 (Stairway)

Effects/Content	Short animation clip: 1. Rita walks down the stairs to the SG HQ

When she got to the end of the stairs she could not believe her eyes. Before her was a massive room with all kinds of equipment; monitors, computers and gadgets.

And a group of kids like her, among them many familiar faces.

(Note: Alice, Elias and Boris were part of the group)

A kid with a green shirt stepped forward. “Hi, I’m Andy, the leader of the SpaceGuardians. Welcome to our Headquarters.”

(Note: Andy’s sex is not referred, and the name works for both boy or girl. The illustrations should be neutral so that through the stories we cannot tell for sure if it is a boy or girl)

29 (SG Headquarters)

Andy explained to Rita who the SpaceGuardians were, whilst showing her their HQ.

(Note: we see kids experimenting, others at the computers and looking at large monitors with space-related content, etc.)

“We are scientists, adventurers and protectors. We study Space, we go on dangerous missions and we defend our Planet,” said Andy.

Rita was speechless.

Andy continued, “I know this is too much to take in. But we need people like you and that is why we challenged you…and you passed! Will you join us?”

30 (SG Headquarters)

“WOW, this is just awesome! And YES, I want to be a SpaceGuardian!”

That day they all celebrated the arrival of the new member and Rita was given her SpaceGuardians badge!

Effects/Content	Short animation clip: 1. SpaceGuardians badge blinks
Class Room activities	The teacher will be able to access version of the badge to print to give to pupils/stick on the classroom wall

Co-funded by the Erasmus+ Programme of the European Union

Story #2. Is there anybody out there?

1. (SG HQ: meeting room with Rita, Andy, Boris, Alice)

That day, Andy had an important new mission for Rita and her SG friends.

“For the past few months we’ve been picking up strange signals coming from somewhere on the Moon,” said Andy.

“Yeah! Aliens, finally!” interrupted Boris excitedly.

“We can’t figure out what it is, so there is only one solution… Go there and have a look for ourselves!” continued Andy.

“How?” replied Rita, astounded.

“On SG One, our spaceship,” said Andy with a smile on his face.

2. (SG HQ: spaceship hangar)

“This is SG One. We finished building it last week and it’s ready for space travel,” said Andy, pointing to the large spaceship.

Rita could not believe her eyes. “It is a real spaceship!”

“Yes, it was built according to detailed plans left by the Pioneers,” continued Andy.

3. (SG HQ: spaceship hangar)

It was the first time Rita was hearing of the Pioneers. “Who are they?”

“The Pioneers were space explorers, like the SG. Years ago, Alice and I found their head quarters by chance. It was abandoned but we decide to continue their mission, creating the SG and taking their space station as our own”

“But where are the Pioneers now?”

“Unfortunately, no one knows,” replied Andy. “Well, we have a big mission to plan. You depart in a few days.”

4. (SG HQ: view of the control room – spaceship on monitor)

The big day had arrived. Inside SG One, Rita, Boris and Alice wondered what they would find out there. Could it be aliens or was there another explanation?

In the control room, the excitement of the first space mission gave way to complete silence. The launching sequence was playing on the big screen: 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, TAKE-OFF!

User Interaction	User must drag and drop the numbers 1 to 10 into reverse order

Co-funded by the Erasmus+ Programme of the European Union

	Note: It may be visible a scheme with the Earth (layers of the atmosphere) and the Moon a simulation of the trajectory.
Effects/Content	Short animation clip: 1. Rocket taking off after completion of the numbers being reversed.
Class Room activities	Teacher practices counting up and counting down from 1 to 10

5. (SG One: view right after take-off)

The spaceship had just taken off. Rita looked out from the hatch. She could see the ground, tiny houses, the clear sky and clouds passing by.

6. (SG One: view of the Earth getting farther away from the hatch of the ship)

Finally, the spaceship left Earth's atmosphere. All around was dark except for the Moon, which appeared bigger as they got closer, and the small bright dots sprinkling the vast space.

Rita looked down to the Earth. It was beautiful. She could distinguish the ocean's basins, continents and the clouds in the sky.

The mission would still take some hours to complete.

Effects/Content	Short animation clip: 1. Monitor following the ship's trajectory so that the kids can better understand the concept of atmosphere, distance, etc
Class Room activities	The teacher can explore several topics: • the atmosphere • difference between sky and space • how big is the Earth, how big is the Moon • how distant is the Moon • World maps as a representation of the Earth

7. (SG One: view of the ship getting closer to the Moon)

When, at last, they landed on the Moon, Rita and her friends were relieved. Now they had to find the exact location of the signal.

"What happens if we find aliens?" she wondered.

(Note: shows an image with the Earth, the Moon with the far side showing and the Sun in perspective, to help understanding how the position of the 3 contribute for having the Moon phases)

Co-funded by the Erasmus+ Programme of the European Union

Class Room activities	The teacher may explore: • the landscape of the Moon and its importance for life on Earth • Day/night • Moon phases • Eclipses eventually using simulation. In the Facilitator's Guide we might propose and activity in which the sun, the moon and earth are represented by kids and the teacher does a series of simulations changing their position to see what happens)

8. (SG One: inside – gear room)

"Ok, let's go!" said Rita. "Put on the spacesuit, strap the oxygen tanks to your backs so that you can breathe outside and put on the special heavy boots so that you can walk on the Moon without floating away."

User Interaction	User must drag and drop items of clothing onto Rita *Note: This enables them to realize what and why they need certain items -oxygen, special suits, heavy boots.*
Class Room activities	The teacher may explore: • Conditions for life on the Moon • Gravity

9. (Moon: getting off SG One)

As they stepped out of the spaceship they immediately felt lighter.

"HELP!!!" Boris shouted, as he floated away, unable to set his feet on the ground.

Rita rapidly stretched her arm out and grabbed him. "You forgot to put the boots on!" she said.

10. (Moon: surface)

Now with Boris fully equipped, they were back searching for the strange signal.

Rita observed the locator device on her hand. The unknown signal was getting stronger and appeared to come from the far side of the Moon, the side of the Moon that is not visible from the Earth.

May have a close-up of the devise showing where they are and where is the far side of the Moon

"For so long, I have heard of an alien base on the far side of the Moon," said Boris.

Co-funded by the Erasmus+ Programme of the European Union

"You should not pay attention to rumours. There is no proof of alien existence," said Alice.

"Whatever it is we are going to find out!" said Rita as they marched in the direction of the signal.

Class Room activities	The teacher may explore the idea that the Moon does not rotate and that we see always the same side of the Moon from Earth. Hence, there is a far side on the Moon that we never see from here.

11. (Moon: surface with view to a structure)

They were now very close to where the signal was coming from. In the distance they noticed something.

"There is a big structure over there!" said Rita surprised.

"I told you so!" added Boris. "It must be the alien base!"

"There are no aliens!" replied Alice.

"We will see about that!" mumbled Boris.

12. (Moon: next to the big structure)

They approached the big structure. It was a big metal tower attached to a small building. The tower seemed to be damaged.

"Well, it seems you are right, Boris, it's some kind of base," said Rita. "We must go there and solve the mystery once and for all."

13. (Moon: in front of the door)

They were now just outside the building. There was a small crater next to it.

"It looks like a meteor might have hit the big metal tower, causing the damage," Alice observed.

There was no one around. The heavy metal door on the small building wouldn't open.

"There is a pad next to the door," Rita said.

They looked closer. "We must figure out the code to open the door," said Boris.

Class Room activities	The teacher may explore what is a meteor

14. (Moon: close-up of the door pad)

"I think these symbols are the phases of the Moon. Perhaps we should put them in the right order," proposed Alice.

Co-funded by the Erasmus+ Programme of the European Union

User Interaction	User must click on the pad for it to zoom. This will show representations of the phases of the Moon in the wrong order. The user must then put the phases of the moon in the right order to progress.

The door finally opened.

“Aaaaaaaaaaaaaaaah!” Boris shouted.

Class Room activities	The teacher may revisit the topic of the phases of the Moon introduced in ebook #1

15. (Moon: inside the structure)

“Why did you scream?” asked Rita.

“Sorry, I was just sneezing…” Boris excused.

The three were intrigued by what they saw. It was a room full of screens, buttons and switches.

“It looks like a control room,” Alice said.

Boris smiled. “This is a communication room and the big tower is an antenna.”

Class Room activities	The teacher may briefly explain what an antenna is and what its purpose

16. (Moon: inside the structure, close-up of a metal plate on the equipment)

Despite being a prankster, Boris was also an electronics expert. “From what I see, this must be an antenna to receive and send long distance messages!”

They were more and more intrigued. “Who would have built an antenna on the Moon?”

“Wait, there is something here,” said Rita.

17. (Moon: inside the structure, close-up of a metal plate on the equipment)

They all approached. Rita cleaned the dust to uncover a metal plate.

User Interaction	User must click the plate to clean the dust off the plate and reveal the message/symbol

Co-funded by the Erasmus+ Programme of the European Union

"It has the Pioneers' symbol!" said Alice. "This is an antenna from the Pioneers!"

"So…it's not from aliens?" mumbled Boris, disappointed.

"We have to report this to SG HQ," concluded Rita.

18. (Moon: Rita with radio to mouth in hand)

As Rita informed Andy over the radio about their discovery, Andy was excited.

"I had heard of a Pioneers' project to set up an antenna on the far side of the Moon to search for alien life in space. But I thought it was only rumours," said Andy. "Is there a way to fix the antenna?"

"I can try!" replied Boris promptly.

19. (Moon: Close up of antenna)

It took some hours and the help of Rita and Alice, but Boris fixed the antenna.

User Interaction	User must drag and drop parts of the damaged antenna and complete correctly before moving on.

"We can now receive and send messages from the SG HQ to the space!" Rita informed Andy on the radio.

Meanwhile, whilst Rita and Alice were still reporting to Andy, Boris was typing on a keyboard, "Is there anybody out there?" Then he pushed "enter."

20. (Moon: view of the antenna transmitting a message to space)

"Time to return home. Mission accomplished!"

"So, Boris, as you see, there are no aliens," said Alice with a smile.

"Yes, no aliens…for NOW!" replied Boris.

Class Room activities	The teacher will be able to access version of the badge for Moon walking to print to give to pupils/stick on the classroom wall

Co-funded by the Erasmus+ Programme of the European Union

Story #3. We are not alone!

1. (SG HQ: main hall)

The silence in the SpaceGuardians' headquarters was broken by Elias, as he shouted, "The antenna on the Moon just picked up a message from space!"

"Aliens! They are reaching out to us!" said Boris enthusiastically.

"Could it be a glitch in the antenna?" observed Alice.

Rita took the message from Elias. "It looks like a real message, and it's coded!"

2. (SG HQ: close-up of coded message; Boris on the background holding a door key)

The message had strange symbols. "We need a key to decode it."

- "…str#nded…pl#net next to S#turn…it's very cold…volc#noes…ple#se help me…"

(Note: the "a" letter is missing, for example)

"I have one!" said Boris, joking whilst holding a door key.

"Ahaha," the others laughed.

3. (SG HQ: close-up of coded/decoded message)

"I think I can figure it out," said Rita.

User Interaction	There is a simple missing words or missing letters puzzle the reader must solve to get the meaning of the message. Note that the message has a few elements that together should help identifying the right planet on the solar system – the provenance of the message. These combined elements may vary randomly each time the story starts so that each time the planet may be different. This way the reader must identify the right planet to progress and reaches a different planet each time as well. - Important the support of **LAM** to define 3 combinations of elements for each planet of the solar system that can make them distinctive. - **CIVIC** must confirm if they can do this (depending on the technological solution this may be very simple to do with a bit of programming).

Co-funded by the Erasmus+ Programme of the European Union

"Done!"

The message read "…stranded…planet next to Saturn…it's very cold…volcanoes…please help me…"
(Note: the elements chosen for this example are completely random)

The message was incomplete, but now they had something to go on. Suddenly there was a fuzz in the room. Someone was crying for help from a distant planet, but who was it?

Class Room activities	The teacher may practice the writing of some words, the vowels, the ability visually project a word and to recognise it even when is missing a letter…

4. (SG HQ: meeting room)

Andy did not waste any time. He asked Rita to find out which planet of the Solar System fitted what they knew from the message, using the SG computer database. Then he asked Alice and Boris to prepare SG One for a rescue mission in space.

5. (SG HQ: computer screen shows a map of the solar system)

In front of the computer, Rita analysed all the information stored on the database for each planet in the Solar System. She would have to find out where the message had come from. For now, she only knew that she was looking for a planet next to Saturn, that was very cold and had volcanoes.

User Interaction	User must click each planet to view a wider image of the planet and specific information. To proceed they must choose the right planet. Earth may also appear to provide information to kids on our Planet. Moon? (Note: this implies some research with the help of LAM for the scientific data and for proposing, for instance, an image of the solar system to guide the illustrator. We will also need illustrations for each planet)

"I think I've got it!" shouted Rita.

Class Room activities	The teacher may explore **solar system** with many respects and the notion of a map as a simplified representation of reality.

Co-funded by the Erasmus+ Programme of the European Union

6. (SG HQ: control room)

Rita was thrilled to share their findings with her friends.

"The distress message came from Planet X!" she announced. (Note: planet will vary each time)

"Is SG One ready?" asked Andy.

"Yes! Let's go and save some aliens!" said Boris immediately.

"Dream on!" replied Alice, scorning at Boris' obsession with aliens.

7. (SG HQ: control room; view of ship taking off)

SG One was ready to take off with Rita, Alice and Boris on board. Andy would stay in the HQ coordinating the rescue mission.

The countdown showed on the main screen. After a few seconds, SG One was on its way to Planet X.

8. (SG One: view from the hatch)

Inside SG One, the voyage would take some time. They would take the chance to collect information about the Solar System.

User Interaction	User must slide the hatch, revealing the sequence of planets until they reach their destination. This gives an idea of distance and of being travelling. It can be also added a fun image – e.g. a detour sign, a space slug …
Class Room activities	The teacher may explore **solar system** with many respects. Explore the idea of distance, size of the planets, living conditions etc.

9. (Planet: Close up of Rita (Which planet?))

SG One finally arrived at destination, Planet X! They landed not far from the location where the message had originated.

"We have to gear up before leaving the spaceship," said Rita.

User Interaction	User drag and drop the correct items of clothing on Rita to move on. There might be different suits, etc. and they have to choose the right one – e.g. suit for radiation, extreme cold, extreme heat, types of boots according to gravity, etc.

Co-funded by the Erasmus+ Programme of the European Union

Class Room activities	The teacher may explore the specific conditions on every planet of the solar system

10. (Planet)

Already on the Planet's surface, they were amazed by the landscape. It was different from anything they had seen before.

"We are probably the first humans to set foot on Planet X!" said Rita, excitedly.

"What are we going to do when we find the alien? And what if he is ugly or has bad breath?" continued Boris.

"Don't worry, that won't happen," replied Alice, making fun of Boris. "The only alien you are going to see is the stuffed one you sleep with!"

11. (Planet: Rita holding locator)

It was time to find who had sent them the message. The locator on Rita's hand would lead the way.

A few moments later, they began hearing a strange sound, "BZZUZIUUUUU BZIIIIIIUZZ."

12. (Planet: behind small elevation with rocks)

"Did you hear that? What is that?" whispered Boris.

"M-m-m-maybe it's the wind?" said Alice, clearly frightened.

"It sounds more like…an alien talking," continued Boris. This time Alice did not make any funny comments.

"It seems to be coming from behind those rocks over there," said Rita. "Let's be careful and have a peek."

13.

Rita stretched her neck to see over the rocks.

"What do you see?" Alice whispered.

"I see a crashed spaceship! I think that is where the sound is coming from."

"Do you see the alien?" asked Boris.

Suddenly, they heard a noise behind them.

14. (Planet: image of the shadow behind them and they are shouting facing the shadow)

"Ahhhhhhhhhhhhhhhh!" They all shouted.

"We come in peace," was the only sentence Boris was able to say.

Co-funded by the Erasmus+ Programme of the European Union

"Awf!" someone replied from the shadows as it got closer and closer.

15. (Planet: team and Rita)

"It's…it's…a dog?" Alice was relieved.

"No," said Boris. "It is an alien dog!"

"It looks like a normal dog to me," said Rita, getting closer.

The dog had a tag. "I know this symbol…It is the Pioneers symbol!" said Alice.

"So, it's a "human" dog…" Boris could not disguise his disappointment.

"Look, the dog has a name, Bones," said Rita.

16.

Bones looked happy to see them. Over the radio, Rita informed Andy of their findings.

"So, the Pioneers had a spaceship and sent a dog on a mission to Planet X! That is just amazing! Retrieve the mission log from the crashed spaceship as it might contain valuable information and then return to Earth."

"Let's go to the ship," said Rita.

17.

The spaceship, although badly damaged, was strangely familiar. "That's it! It is just like SG One. After all, SG One was built following the plans from the Pioneers."

They easily got to the cockpit where all the computers were.

18.

"I can't access the computers, it is no good," said Boris. "We need a password."

Unexpectedly, Bones ran to a console and dropped his paw on a pad. All the equipment lit up, and the screens filled with images, graphs and strange symbols.

"WOW! There must be tons of information!"

"Well done Bones, you are a smart dog!" Rita said.

19.

Rita and Alice were distracted searching for the mission log on the computers.

Bones seemed unsettled. "What's happening Bones?" Boris asked. The dog ran over to a pile of objects on the ground and barked. It seemed like their new friend was pointing to a box. Boris picked it up. It had a label saying, "Project A.L.I.E.N." Boris was ecstatic. He tried to open it, but it was firmly closed.

"We found it," interrupted Rita. "Unfortunately, there was nothing useful on the mission log. The file seems to have been damaged by the crash"

Co-funded by the Erasmus+ Programme of the European Union

Boris put the box in his pocket. That would be his secret for now, at least until he was able to open the box and prove the existence of aliens.

20. (Planet: surface entering the SG One)

“Come on, Bones. Earth is waiting for us!”

Class Room activities	The teacher will be able to access version of the badge for completing the mission to print to give to pupils/stick on the classroom wall

Co-funded by the Erasmus+ Programme of the European Union