# ARTES 4.0
# Life Skills VR

Life Skills for Employment in COVID-19 Era through VR Innovation

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# ARTES 4.0

- The ARTES 4.0 Competence Center is a highly specialized network in the areas of robotics advanced and related enabling digital technologies.
- Offers its services to all Italian companies related to Industry 4.0 (orientation, training, innovation) and is involved in European and international projects on selected highly specialized topics.

- **7** regions
- **127** public and private partners
- **10.66M** euros financed by MiSE
- **45B** euros in revenues of partners and companies

# LifeSkills VR

- ARTES 4.0 is one if six partner in the ***Life Skills VR - Life Skills for Employment in COVID-19 Era through VR Innovation*** project financed by the UK agency ERASMUS+

Due to the **pandemic**:

- Around 40% of students lost a job, internship, or a job offer, and 61% reported to have a family member that experienced a reduction in income.
- Students lowered their expectations about their labour market prospects post-college/university. Their perceived probability of finding a job before graduation decreased by almost 20%.

Emergency measures are required to help NEET realise their **strengths**, develop missing **skills** and boost their **confidence** which will ultimately help in avoiding mental health related issues.

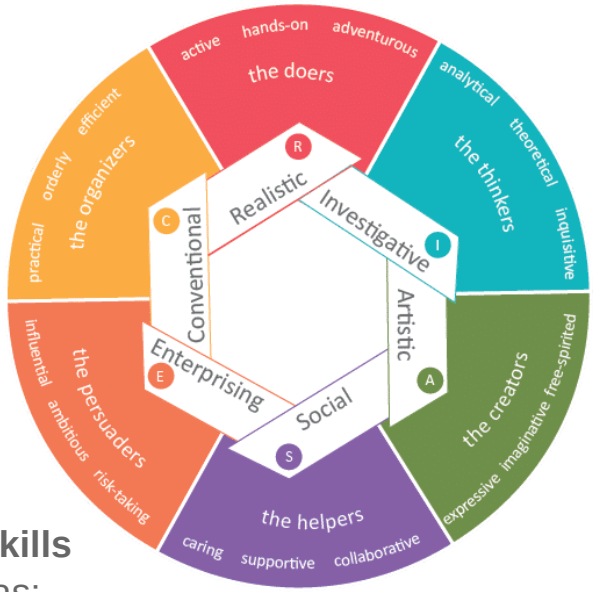
# RAISEC

John Holland’s personality criteria known as RAISEC can be used as a framework to classify **personality** types:

RAISEC profiling provides the young people an opportunity to raise **self-awareness** and **understand** what areas they are **inclined to succeed**.

The application of the RAISEC is combined with the development of **key skills** gives job applicants a greater chance of **finding and keeping a job** such as:

- developing and managing self
- working as a member of a team
- communicating effectively
- maintaining physical and mental fitness
- applying technology
- managing time
- defining and solving problems
- design skills.



# Virtual Reality

LifeSkills VR application allows users to take part in **immersive experiences,** which contains carefully curated **tests** and **quizzes** translated into real situations.

By taking **choices** and advancing into the experience (achieving or failing) the users will build their own RAISEC **profile** and test their existing and missing life skills.

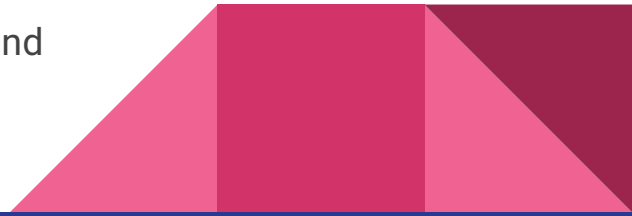
Also, by knowing their strong points the Generation C will build self-confidence and be able to develop themselves to higher levels in seeking and retaining good and well paid jobs.

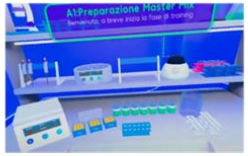
Hardware: **Meta Quest 2**

- Device is untethered, free from cables and PCs
- The user can move in the environment
- The application can be updated and distributed directly in a OTA manner (over-the-air)

# VR Experience Design

- Goals to achieve and reasons to design a VR experience
  - VR is immersive, memorable, impactful
  - Choice of VR technology based on usage scenarios
- Experience and storytelling
  - Storyboard, user stories, duration
  - Type of interaction and User Interface
- Content creation
  - Environment, objects, avatars, sounds
- Data collection
  - Collection of events during the experience, discrete choices and liminal actions





Training / Simulation

Usage Report / User Profile

Animated / Scripted Avatars

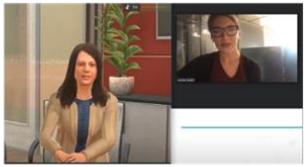
Hard Skills

Soft Skills

**O2 VR System**

Node.based Dialogue script


Applied Games / Gamification



Natural Language API 4

Google Cloud Platform

AI / Natural Language Processing
Sentiment Analysis

Personality Traits

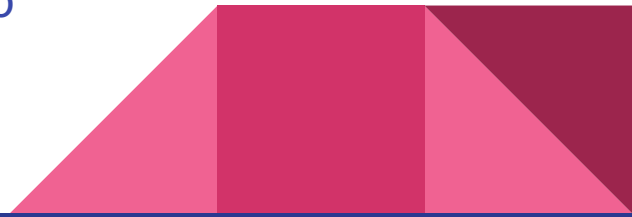
Games and Activities
+ choices modeling

# Experience and Storytelling

The very first step is defining the experience **Storyboard**

- A collection of **phases**, composed of different **tasks**
- Each phase is usually situated in an **environment**
- **Tasks** are a sequence of actions that the user must / should perform
- Storyboard can be linear or nonlinear
  - Some task can block the user from continuing the experience
  - Some task can be optional
  - Some task can also be critical and terminate the experience (ex: safety training)

Starting from unstructured **user stories** is the best way to understand the granularity level of phases and tasks



# Interaction and User Interface

Life Skills modeling in VR can lead to many different types of interaction paradigms in order to **make decisions** and advance in the experience:

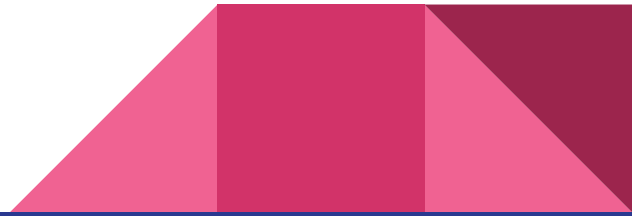
- Explicit interaction with **physical objects** on the environment (controller, hands)
- Cognitive choices using a textual / icon-based **User Interface**
  - Plays well also with hand interaction
- Audio STT (speech to text) and NLP (natural language processing). Takes a lot of effort and relies on external services (ex: Google)

# Content Creation

From the Storyboard definition derives a list of **digital assets** that need to be created / obtained.

- Environment
- Objects
- Avatars
- Information Panels

Avatars have the **highest complexity** because they need to look realistic, with different animations, lip-sync and dynamic reactions to the user’s choices.

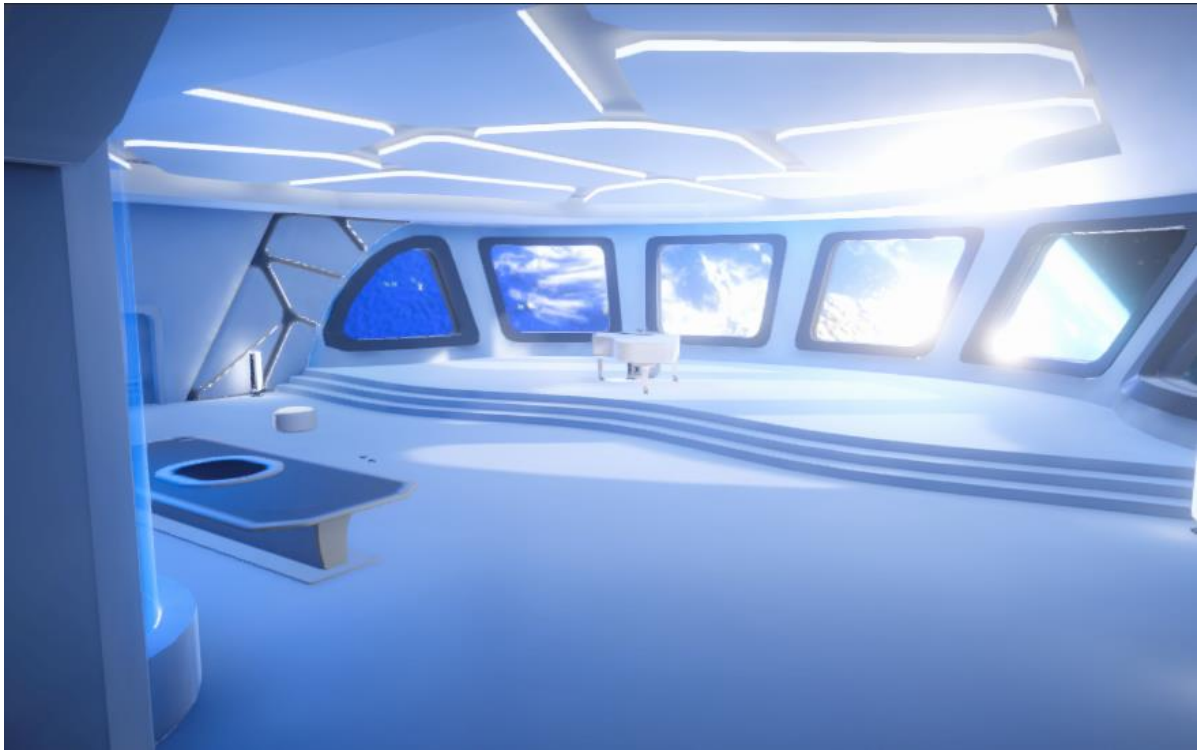


# Data Collection

The VR application should produce a report of **user actions and choices**, in order to extract data to be later processed and analyzed.

- Every user should have an identifier (login)
- A server-side application receives data during the usage (choices, task outcomes, time of execution)
- Data can be later downloaded in human and machine readable formats (CSV, JSON) and processed to analyze the results.

# The Environment: Space Station



- “Metaverse” Sci-Fi inspired.
- Main hall with view of the planet, object of the mission.
- Other rooms specific to skill-related scenes.

# The Crew




Juana Hernandez
*Scientist, clever, funny, piano player*

Jayla Spencer
*Captain, direct, calm, a real leader loves pets*

Horace Davies
*Doctor, serious, chess player*

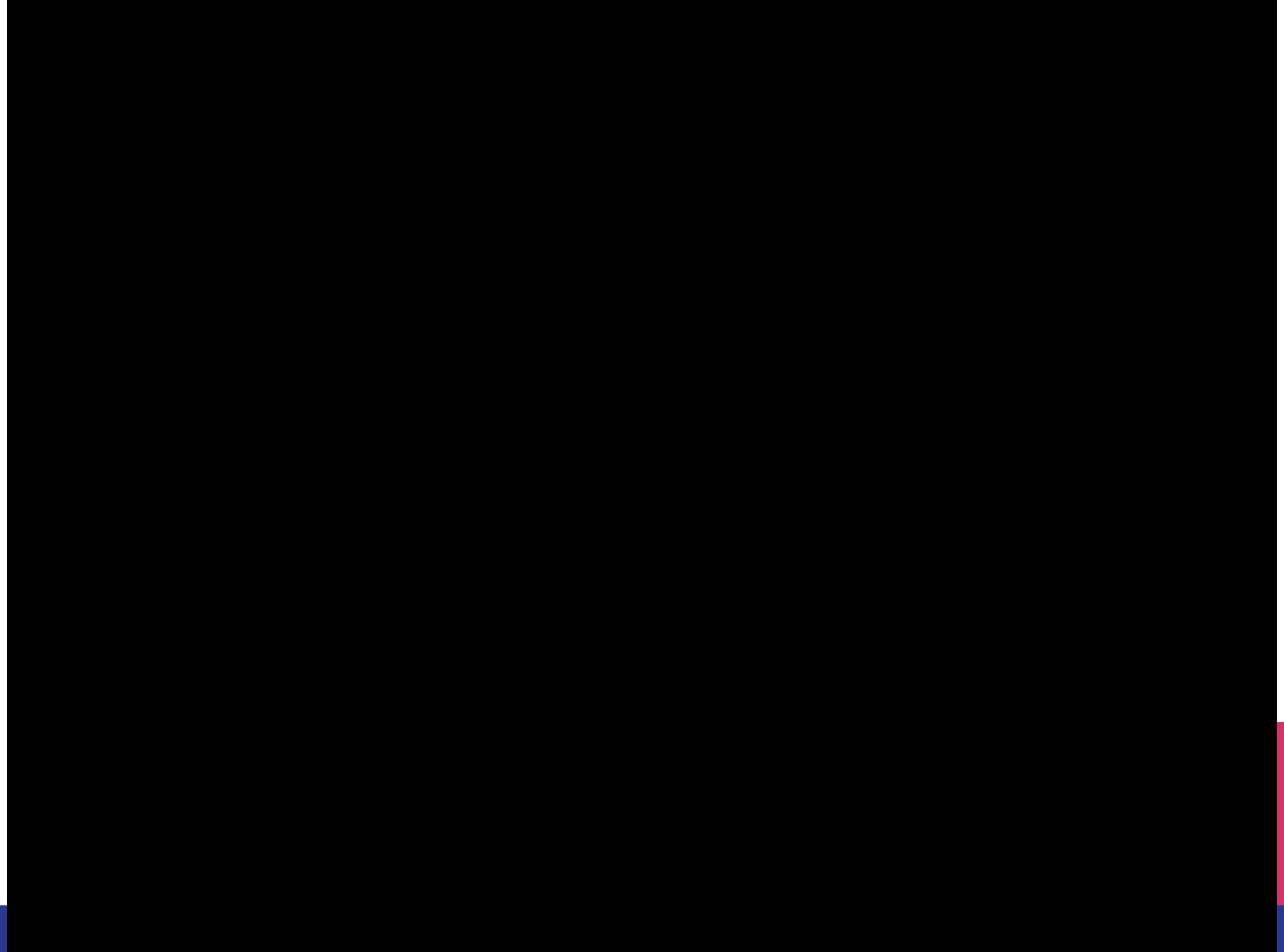
Haru Tanaka
*Engineer, practical, self-confident, martial artist*

# Introductory Situation

The player (a junior trainee) is taken on-board of the Space Station to complete its **training**.

During her first day, where she meets some of the **crew members**, a particular and dangerous event takes place: the Mission, and the whole Space Station is in danger.

Jayla, the Captain, asks the player to **follow and help** her manage the situation. The trainee will have to **make decisions** and test some important **Life Skills**.



# Scene design

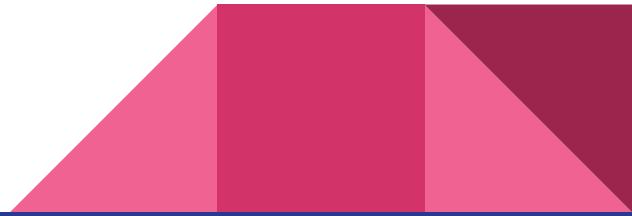
This sample scene is an example that contains the elements needed to create more skills-related scenes.

For example:

- A clear description of what **happens** (like a screenplay) related to the life skill experience
- The **environment** where the scene takes place (3d)
- The **actors** (3d characters) and the actions (animations)
- The **dialogues** and the voices (audio)
- The **objects** (3d)
- The **choices** the player must make (storyboard)
    - how these choices are interpreted for final reporting

# Assets

- Space Station environment
  - Different rooms for different situations / skills
- 3D Characters are quite complex to create
  - Quite complex to create
- Animations
  - Usually purchased, can use motion capture
- Objects
  - Can be modeled or purchased
- Dialogues
  - Current audio has been generated with Text-to-Speech
  - Real audio should be voice-acted



| | | |
|---|---|---|
| Juana | Hello Trainee, no time to waste, it is time to start testing your Lifeskills! | |
| Jayla | Please remember that everything you will experience here is a simulation. | |
| Jayla | The goal is to test your LifeSkills in a realife environment. | |
| Jayla | You will have the option to fail and try again until you can master your skills. | |
| Jayla | But before we start I must ask you, are you familial with Lifeskills Theory and especially Time Management? | i. Yes => Go to 6<br>ii. No => Go to 5 |
| Jayla | If you need refreshing first go to the training room and take the short course on Time Management | Go to Training Room - Time Management => Return to step 6 |
| Jayla | Since you have the basic knowledge of Time Managemet we will provide you with a series of tasks which you can find by accessing your Holo tablet. | |
| Jayla | You have task list uploaded onto your Holo Tablet, you will always find it in front of your belt. Touch it to access the task list. | |
| | *Jayla waits until the trainee touches the holotablet to open it. When the task list opens up* | |
| | *The Holotablet opens and display a list of tasks:* | |
| Holotablet | ○ Support the Scientist in treating the stations plants<br>○ Go and follow your favorite Lifeskills short courses to update your knowledge<br>○ Help the First Mate to check the oxygen level sensors<br>○ Assist the Doctor with sorting the new medical supplies<br>○ Help the Engineer repair a module of the environmental climate regulator | Task 4 (Science Officer)<br>Task 5 (Training)<br>Task 3 (First Mate)<br>Task 2 (Doctor)<br>Task 1 (Engineer) |
| Jayla | You must finish them all today so we will need you to divide them according to time management principles | |
| Jayla | There are 4 panels in front of you where you can divide the tasks according to time management principles: | |
| Holotablet | *Panels*<br>1. Urgent and Important – do it now<br>2. Important not Urgent – decide when to do it<br>3. Urgent not Important – Decide when to do it / Delegate<br>4. Not Important not Urgent – Delegate/Park it | The correct division of tasks per panels is:<br>Task 1 (engineer) = Panel 1<br>Task 2 (doctor) & Task 5 (training) = Panel 2<br>Task 3 (First mate) = Panel 3<br>Task 4 (Science officer) = Panel 4 |

# Development Milestones

| September 22 | October 22 | November 22 | December 22 | January 23 | February 23 | March 23 | April 23 |
|---|---|---|---|---|---|---|---|
| agreement on scenarios and partner tasks | definition of scenes for each life-skill situation | scenes implementation | partner testing | external testing | | dissemination | data analysis |
| | production or purchase of needed assets | | | | | | |

# Thank You









lifeskillsvr.com