DigiEduHack Solution
Turin - Improving the learning experience through Robotics Challenge: Turin - Improving the learning experience through Robotics Challenge 2020

e.DO Cube factory

Creating Solutions and Challenge your skills

e.DO Cube factory is a series of worldwide online challenges focusing on simulating real tasks that can occur in a big Company.

Build your team and compete against time and problems to take part in the final event.

Join the challenge to have the chance to win prizes and meet other e.DO cube teams!

Team: Megahub

Team members

Sofia Tadiotto, Michael Broccardo, Silvano Zambon

Members roles and background

Michael Broccardo, science comunicator and biotechnologist, love to work with kids and teenage
Silvano Zambon, 3d printing enthusiast, fascinated by all new technologies
Sofia Tadiotto, 3d modeller and graphic designer, waiting for a new virtual reality

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Solution Details

Solution description

e.Do Cube factory is a simulation-contest where school, fablab or robotics nerd can simulate the lifecycle of a big company like COMAU.

Participants, divided in different teams, will be involved in a real management game where they can choose the fate of their company favoring right customers and discarding not very profitable jobs.

To hinders the success of the teams there will be unexpected events, damage, exhausting days of maintenance and market fluctuations just like it happens daily inside a big company.
Participants will submit to the e.do Cube factory platform and, in a later time, they will be able to download tasks, upload solutions and to consult dedicated area with score and evolution of the challenge. This parts should be explorer in the SUB-challenge tech.You can find an example at this link edocubechallenge.wordpress.com.
E.DO cube factory will be the channel to establish a direct dialog with all realities that already have e.DO Cube (because of other educational purpose) and will be the possibility to build a loyal comunity that use the platform to enjoy.

Periodically, teams can play with the management game solving different tasks in the various sections.Tasks will be divided in different levels, difficulty and argument and it will also include plugin, texture, add/limit in the commands to help users by age.
At the end of the event a budget will be drawn up, like it happens in a real company, and best teams have the chance to win prizes or benefits.

Solution context

E.DO is cooler than E.DO Cube (maybe?).
The main problem we noticed when comparing the two products is that e.Do is certainly more engaging than e.Do CUBE.

Being able to use a real robotic arm and perform simple tasks by seeing the commands executed in real time is a unique and exciting experience.

But the potentialities that we can exploit with e.Do CUbe are different; they are extremely powerful, since we have no physical limits but virtual platforms.

The second problem we noticed is the continuity of activities. The workshops organized with e.DO have a predefined duration and are closely linked to use with the use of the robotic arm. Given the high cost of the machine, it is much easier for a school or a group of people to buy an e.DO cube in complete autonomy. This leads to having a product that can be used at any time by the user and if not properly supported, e.DO CUBE, risks becoming a simple decorative object to be placed on a desk.

Creating a constantly developing environment, with challenges and a small but active community seems to us the right way to solve this problem.

Gamification is another important part to take into consideration; using e.DO even adults can have fun simulating real life situations without anxiety or work pressure.

Using gamification, then, we increase the level of engagement in all age groups, not just adults, reaching educational goals of a certain level.

Solution target group

The target of our solution is potentially wide. In a normal context, the use of e.DO cube may be suitable for high school students in scientific fields or technical institutes because of the necessary technical/educational skills and feasible applicability in the working area.

But thanks to gamification and plugins that allow us to scale down difficulties, the target can easily be lowered to even reach the kindergarten students. Through the tasks created within the online platform, each team or individual can start from the basics up to semi-professional levels.

The target is not only to be collected inside school buildings; there are numerous realities that may be interesting in having an experience of this type: continuous, community and supported.

Fablabs, scientific/technological associations, companies, research institutes, private and equal schools, cooperatives, groups of enthusiasts, families or individuals.

Solution impact

The most important characteristic is the Engagement: the different plugins, challenges and solutions can be shared between the users.

Community of passionates will born, new challenges con be created from the developers, marketplace where people can exchange their e.DO Products, Fanpages where users discuss about ideas or tricks, Tutorials, Social media, Events… think about “Lego League” competition: in long term the e.DO Cube Competition will be the first incredible, playful and learning robotics DIgital event! The cool thing is that what you learn from the simulation, you can apply in the real world!

Solution tweet text

A Simulation Game where users will learn how to manage a Robotic Company, programming e.DO Cube to pursue the market needs. Different Contexts where You will learn and have fun simulating your Robotics solutions! Win challenges to upgrade your company and unlock new gadgets.

Solution innovativeness

What differentiates e.DoCube from an e.DO? We can expand the user experience by contextualizing each task through an engaging graphical interface and potentially with infinite possibilities. We can decide to recreate the Martian or lunar environment (by applying specific textures) and create a laboratory/activity on space exploration and colonization; we can simulate the robotic arm of an underwater drone that has to repair a transoceanic electrical conduit or talk about robotic surgery. All using e.DO Cube and then e.Do as a tool.

The user will be projected into an ecosystem designed specifically for each challenge that could even evolve with the completion of tasks into a continuous challenge. For example, using the simulation of a production line, it will be possible to interact with conveyor rollers, sensors and virtual workers. e.DOCube Factory is a real interactive job simulator where users are connected through a fun tool to the real problems that a company like COMAU could encounter from its customers.

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Another consideration we can make is that e.DO Factory could be adapted to each age group through dedicated plugins created specifically (point well explained in the Transferability section).

We therefore use gamification to approach participants in the most real and concrete way possible in the world of industry 4.0.

Solution transferability

The Game Simulator is Modular. Every experience can be collected in “plugin packages”, like the DLC of video games.

They are collected for different Targets and for this reason DLC differs from technical and graphical point of view.

For example:

1. Plugins for Elementary School: the tasks are easy (maybe they should program 2 or 3 e.DO CUbe joints). The Graphics are very “colorful” and playable.
2. Plugins for university students or for Robot Passionates: the challenges are more tricky, they could be used with different tools (maybe they need to build some objects in other competitions to use for the future). Graphics are more technical.

Ideally, the digital characteristic of e.DO CUbe, let developers create infinite possibility of contextualization.

Changing “Skins” (3D object, materials and textures in Game Developing) you can create every context you would want!

Would you like to simulate or see how the e.DO works in a Bakery? you can simulate it dìgitally with your e.DO cube and its Plugin!

Would you like to create a “scientific laboratories” where users can create a Spatial Village?

You can do digitally with your e.DO Cube!

Since the user will use an external Plugin, not only the experience and contexts change, but also the platform where they can see their goals.

Solution sustainability

The e.Do Cube Factory project can have a very long life, mainly linked to the creation of plug-ins, the use of the product and visibility on social and web.

The goals is to create strong relationship with with enthusiasts, users, courses, schools, fablabs, etc … proposing extra contents and prizes at the end of each Challenge cycle.

Developing a system that never stop improving, we have the chance to growth the community and to cause a chain effect that could attract numerous other enthusiasts.
We can use pool of people deriving from the e.Do Experience to expand the proposal to remote activities followed comfortably from home.

Summing up.

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In the medium term it can be implemented an articulated platform with social network, forums, news ecc.. where share solutions and meet other users
In the long term platform can be much more complete and teams can partecipate to hackathon to develop plugin or unique word challenge. We can add online course with school , video conference for certain issues.
An interface that support Virtual Reality can be a great solution for the user experience (always maintaining high versatility and customizations).

Solution team work

At the end of this experience we can say we worked very well together and sure it would be nice to be able to continue collaborating. We did not give ourselves roles within the team but we tried to develop all the parts together. We hope it will be a good job for you too.

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