

trinity

# DYNAMIC TASK PLANNING & WORK RE-ORGANIZATION

First Name Last Name  
Affiliation – Other Info

 [www.trinityrobotics.eu](http://www.trinityrobotics.eu)



The TRINITY project has received funding from the European Union's Horizon 2020 research and innovation programme under the GA 825196

# Dynamic task planning & work re-organization basics

## Task planner module



Decision making algorithm



Enables the dynamic reconfiguration



In a Human-Robot collaborative environment



## Description of component's functionalities

Task planner module provides a **User Interface** for production manager's interaction with the task planner in order to:

- ✓ Initialize task plans creation and evaluation parameters.
- ✓ Visually check the top 3 task plan alternatives generated by the task planner.
- ✓ Select the best alternative and save the task plan for execution in the physical environment.



## Module's suitability

### Suitable areas of application

- ✓ Manufacturing SMEs that are looking for effective ways of interaction between managers and operators/machines
- ✓ Semi-automated HRC workstations
- ✓ Different kinds of industries (e.g., Automotive, White Goods, Electronics, etc.)



# Pre-requisites

Software components	Hardware components
OS: Linux Ubuntu 16.04	CPU: Intel Core i7 10th Generation
ROS Kinetic	Disk: SSD 250 GB
Gazebo simulation engine 10	RAM: 32 GB
Development environment JDK 13	GPU: NVIDIA GTX 1050
Apache Tomcat 9	
Docker Engine for Linux Ubuntu 16.04	
Web browser (Firefox, Chrome etc.)	
Selected robots ROS controllers for simulated motions' execution	
Gradle build tool for Ubuntu Linux 16.04	
GZWeb software for GAZEBO simulation visualization in a Web browser tab	



# Environmental requirements



This module applies in specific areas inside the whole workplace.

Must be identified before start using it so the module will be customized according to tasks executed there.

There are no restrictions regarding environmental aspects



# Module integration in production line

## Resources to interact with it

---

This module can interact with:

- Operators
- Robots
- Machines

## Benefits of integration

---

Algorithm takes into consideration any task planning issue

Reduction of time of designing any required modifications to an existing assembly line

Reduction of the team size required to make modifications to an existing assembly line

Suitable for any HRC scenario



More information about the module can be found in:

<https://trinity-trainingplatform.eu/use-case-9/>

The image shows two overlapping screenshots of the TRINITY website. The background screenshot is the 'TRINITY TRAINING PLATFORM ROADMAP', which features a winding road graphic with various icons representing different stages: 'Identified Industrial training needs', 'Use Case Demonstrators', 'TRINITY Modules', and 'TRINITY Training Material'. Below the road, there are sections for 'BIG KNOWLEDGE TRANSFER MECHANISMS', 'based interactive multi-media training methods', and 'Access to Online Web Lectures and workshops by Industry Experts'. The foreground screenshot is a detailed view of the 'DYNAMIC TASK PLANNING & WORK RE-ORGANIZATION' module. It includes a header with the TRINITY logo and navigation menu, followed by a sub-header and a paragraph: 'Material from the design and execution of this demonstration will become available here.' Below this is a button that says 'CLICK HERE FOR MORE INFORMATION'. The main content area contains a paragraph: 'This video is an introduction to online training material for TRINITY Use Case titled "Dynamic Task Planning & work re-organization". This Use case suggests a multi criteria decision-making tool enabling the automatic generation of a workplace layout considering the task planning issues.' It also includes a section for 'Web Lectures:' with a sub-section 'Part 1:' and a list of bullet points: 'How our TRINITY solution contributes to agile manufacturing', 'What are the benefits of this solution in Human-Robot Collaboration', 'How could manufacturing companies benefit from this solution', and 'What kind of investments are required and short conclusions.'



The TRINITY project has received funding from the European Union's Horizon 2020 research and innovation programme under the GA 825196



 [www.trinityrobotics.eu](http://www.trinityrobotics.eu)

 @eu\_trinity

 @TRINITY Robotics DIHs



# trinity

## Thank you!

First Name Last Name  
Affiliation – Other Info



[info@trinityrobotics.eu](mailto:info@trinityrobotics.eu)



The TRINITY project has received funding from the European Union's Horizon 2020 research and innovation programme under the GA 825196