

Factory-in-a-day



Newsletter #4

Dear friends of Factory-in-a-day,

Our project is now in the second half of its project duration. What have we achieved so far? From a technical point-of-view, we demonstrated a first learnable skill, which was also our Milestone 2. Other results, worth highlighting here, are the dynamic path planning with obstacle avoidance and also the integration of some key technologies on robot TOMM, which was demonstrated at the IROS conference last year in Hamburg (see page 3). Results more on an applicational level are that our test cases with the two companies have shown first promising preliminary results. Nevertheless, they are far from complete. We will need to put some effort into the idea of how to be at the same speed as human workers in order to make them a real success and prove that the idea of our project is feasible. Only when the developments lead to a success on the impact side, we are really proving the point of our project idea, therefore, the next one and a half years will be challenging again! We'll keep you posted!

Best regards,

Prof. Martijn Wisse, Coordinator

Spotlight on: Randstad

The temporary worker company Randstad is a Dutch multinational human resource consulting firm and partner in Factory-in-a-day. We asked Yolanda Verveer-Born, working in Factory-in-a-day at Randstad, why robots are interesting for her company and what business model should be used in the future.

Why was Randstad interested in joining the project?

Randstad's company mission is "shaping the world of work." We help people find the right jobs, and this has a positive impact on their lives. For our clients, we focus on providing the best talent and allowing them to achieve their business objectives by focusing on core activities.

Factory-in-a-day is our first acquaintance with possible innovative solutions on how we can

help our clients to achieve their business objectives. Perhaps delivering a robot instead of a human temporary worker maybe a good solution to 'getting the work done' for our clients. Regarding the worker, we think their job might be more comfortable than before..

From your perspective as an agency for temporary workers, what are the main challenges?

We want to understand what needs we have to meet in the business model. Being innovative is not enough, so we need to know if customers want advice about the best solutions to get the work done, for example, just a robot worker or a combination of human operators with robots.

Factory-in-a-day



Newsletter #4

Is there a market for the Factory-in-a-day approach?

We certainly think there is a market for the Factory-in-a-day approach. More and more clients are struggling with the challenge to keep costs as low as possible. Certainly for SME clients it is an alternative to offshoring work to other countries where labor costs are low.

Now that the project is in the 2nd half of its duration, what are the most important issues that need to be solved?

We don't have some sort of prototype ready. So if we want to visit companies and ask them what work could be done by a robot, we have to manage with a very hypothetical situation right now. But in general, I would say that situations where workers are doing mainly repetitive and boring actions are the most obvious ones where robots could be used; certainly when a permanent level of quality is crucial.

You developed a business canvas for defining the success factors. Which of these factors is the most important one and why?

One of the – or maybe the most important – reasons for clients to make changes to their existing working methods is the promise to reduce costs. So we must make clear what the advantages are, when a client would start using a robotic solution. This means we must be able to make the calculation of 'labor' costs when a robot would be introduced.

What reason are the most convincing ones from your perspective for the success of the Factory-in-a-day?

With all new innovations in the last decades you can see that the real growth starts when the innovative solution becomes available for a wide range of customers. This was for instance

the case when computers became 'personal' and no longer something you only used at work. So for the project it is very important to stay focused on the way we can bring the robot to the customers; it must be fast and simple.

One point of criticism is the idea that robots could destroy jobs. Your opinion?

When we are talking about robots a lot of people are scared that robots will come and take their jobs. In my opinion, it is important to understand this fear and pay close attention to it by explaining that some jobs might change or disappear, but on the other hand, a lot of new jobs will be created. For instance, remember a situation quite similar a couple of years ago when the 'mobile' industry emerged – we had similar discussions and it has brought us more than 11 million jobs worldwide.



Yolanda Verveer-Born tries to convince SMEs of the potential of robotising jobs. © Randstad



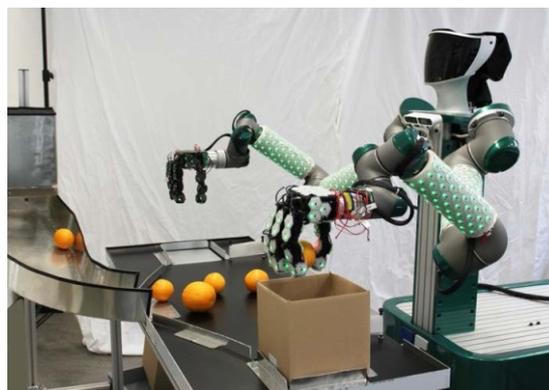
Newsletter #4

IROS Demonstration TOMM

At the IROS 2015 conference exhibition, TUM's robot TOMM (tactile omnidirectional mobile manipulation platform) was one of the attractions and got a lot of attention. The robot demonstrated the sorting of oranges. Its task was sorting oranges into good and bad ones. Many of the key technologies were developed within the Factory-in-a-day project.

Improvements made on the research side were: The latest version of the robotic skin sensors developed at TUM, including new inter-cell connector, new firmware for both the skin cells and the Tactile Section Units as well as a new skin library. Additionally, preliminary results have been obtained on a robust skin connection that supports failures in the skin cell network. Also, a method to fuse the skin cells signals for motion control, based on joint torques, has been designed.

There is a first prototype of a control architecture including motion control based on proximity sensing delivered. With respect to the motion control based on proximity sensing, a multi-modal control framework to drive both UR-5 arms and the Allegro Hands on robot TOMM has been designed and implemented. A video of the demonstration is available here: https://youtu.be/UiK0twJ_aHM



© TUM

Factory in a day project meeting in Munich

At the end of April 2016, our project meeting took place at the Chair for Cognitive Systems at the Technical University of Munich. This time the focus was on the integration of research and development results in the different test cases. In order to synchronize the demonstrations there were many discussions on integration of the different developments by the partners. The next meeting will take place in October, until then, there's still a lot of work to be done!



The Factory-in-a-day team in Munich.

Factory-in-a-day receives funding from the European Union Seventh Framework Programme (FP7/2007-2013) under grant agreement 609206. Its content does not re-present the official position of the European Commission and is entirely under the responsibility of the authors.





Short news and events

- At Robot Forum Assembly in MECSPE 2016, 16-17 March in Italy Dr. Carlos Hernandez Corbato, TU Delft, presented a talk on “Factory-in-a-Day: time and cost effective work cell robotization, with use cases”.
<http://www.robot-forum.it/en/programma/>
- At the [European Robotics Forum 2016](#), we participated in the Workshop on Hybrid Production Systems with a presentation on “Composable Skills for a Factory in a day” on March 23.
- Visit us at the [RoboBusiness 2016!](#) We are exhibiting our results from June 1-3, 2016 in Odense/ Denmark.
More at: <http://www.robobusiness.eu/rb/>



European Robotics Forum 2016,
© PAL Robotics

Welcome to a new partner!

Delft Robotics is our new partner in the project. Currently, Delft Robotics houses six engineers - boasting expertise in robotic control, mechanical design, computer vision, artificial intelligence, system integration and human machine interaction. This team of engineers analyses new challenges, advises customers in next steps of automation, and develops and installs turnkey automation systems.

www.delftrobotics.nl



The team of Delft Robotics
© Delft Robotics

New videos

We put a number of videos from our recent deliverables online. The videos on path planning, kinesthetic teaching and learnable skills are all on our [YouTube channel](#).

Contact:

Coordinator: Dr. Martijn Wisse/TU Delft

Editorial Work:

Wibke Borngesser, borngesser@tum.de



[Follow us!](#)

www.factory-in-a-day.eu

