

MOTOR-1

(**M**obile **C**on**Tr**uci**O**n **R**obot Project – Phase 01)

Construct Innovate Industry Day
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Introduction...

- Emlyn Long – Ecolux Modulares, Director
- Dr. Noel Harrison - University of Galway, Principal Investigator
- David Flynn – University of Galway, Research Assistant

Introduction...

- Irish Company Formed in January 2023
- R&D phase
- Entering Residential Homes Market
- Initially import Homes from EU
- Develop Irish Facility



Project Rationale...

- Manual or Automation Process?
- Assess Feasibility
 - Cost
 - Time
 - Materials
 - Labour
- Seed Funding allowed assessment



Workflow Overview...

- Identify target processes for automation using Autonomous Mobile Robot (AMR) technology.
- Establish the requirements and tender a suitable Autonomous Mobile Robot.
- Identify the tooling and sensors required to automate the target process.
- Combine all the technology together and validate the entire system using laboratory trials.

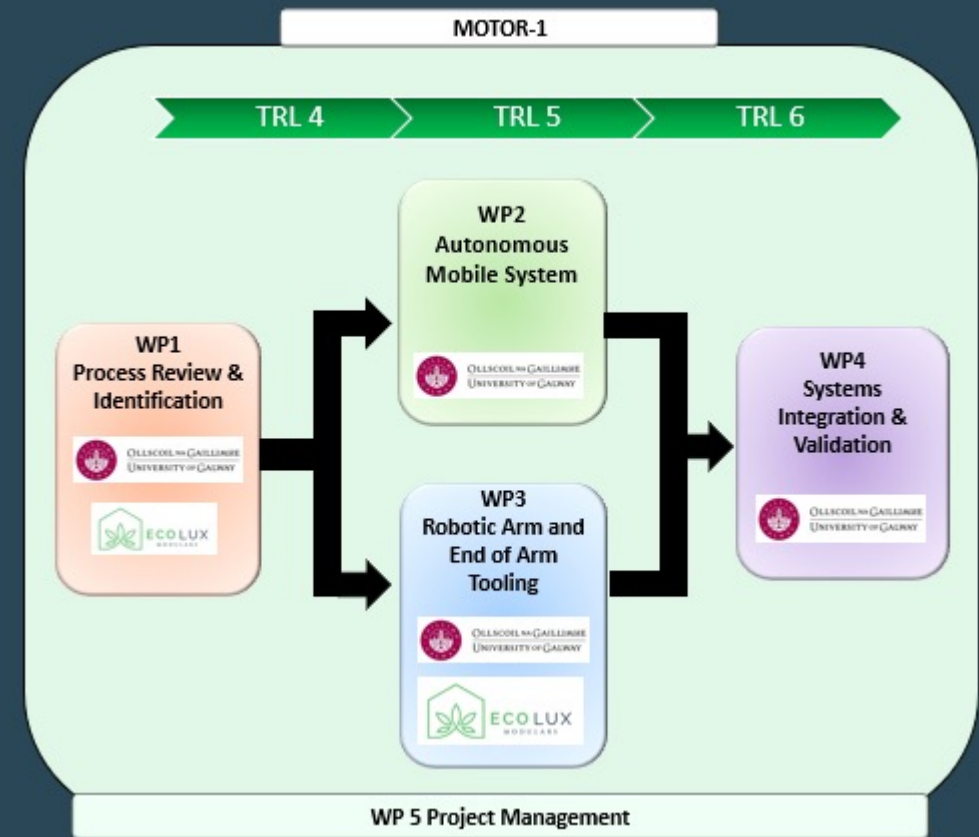


Fig 1: Illustration of roadmap for MOTOR-1

WP1...

- Autonomous Mobile Robots are a state-of-the-art technology.
- Enable processes to be automated which previously weren't possible.
- By reviewing the entire manufacturing process, target processes were identified which cannot be automated using conventional robotic solutions.
- Project aims to develop automated solutions which contribute to Ecolux Modulares roadmap for a fully automated manufacturing process.



Fig 2: Illustration of manufacturing process for modular home.

WP2...

- Establish the requirements for the Autonomous Mobile Robot (AMR).
- Requirements include the payload capacity, manoeuvrability, and positioning accuracy of the mobile base and robotic arm.
- Using requirements identified, a suitable robot can be tendered for the project.
- Work enables a SME like Ecolux Modulars to carry out R&D and speed up the deployment of technology.



Fig 3: Illustration of Autonomous Mobile Robot.

WP3...

- Determine the tooling and sensors required to automate the target process.
- Sensors required include a vision system; photoelectric distance sensors and force torque sensors.
- Sensors enable precise positioning of the end effector, accurate control of process forces, and allow for quality inspection.
- Work provides a SME like Ecolux Modulares with the expertise to implement state of the art technology into their manufacturing process.



Fig 4: Illustration of tooling and sensors required to automate target process.

WP4...

- Combine all the equipment together and validate the entire system using laboratory trials.
- Process involves programming of the vision system and integration of force torque sensors.
- Validation & testing process enables improvements to be identified prior to deployment in industry.
- Overall, the project aims to provide Ecolux Modulares with an effective and reliable solution.



Fig 5: Illustration of equipment being integrated together to automate target process.

Future Activities...

- MOTOR-2
- Deployment of system in an industrial setting.
- Further development of inspection capabilities for automated system.
- Identification of further target processes for automation.
- Secure DTIF and Horizon Europe funding.

Thank You!