# AI INTEGRATED LOCAL PRODUCTION – SETUP AND TESTING OF AN AI INTERGATED PLATFORM FOR LOCAL PRODUCTION

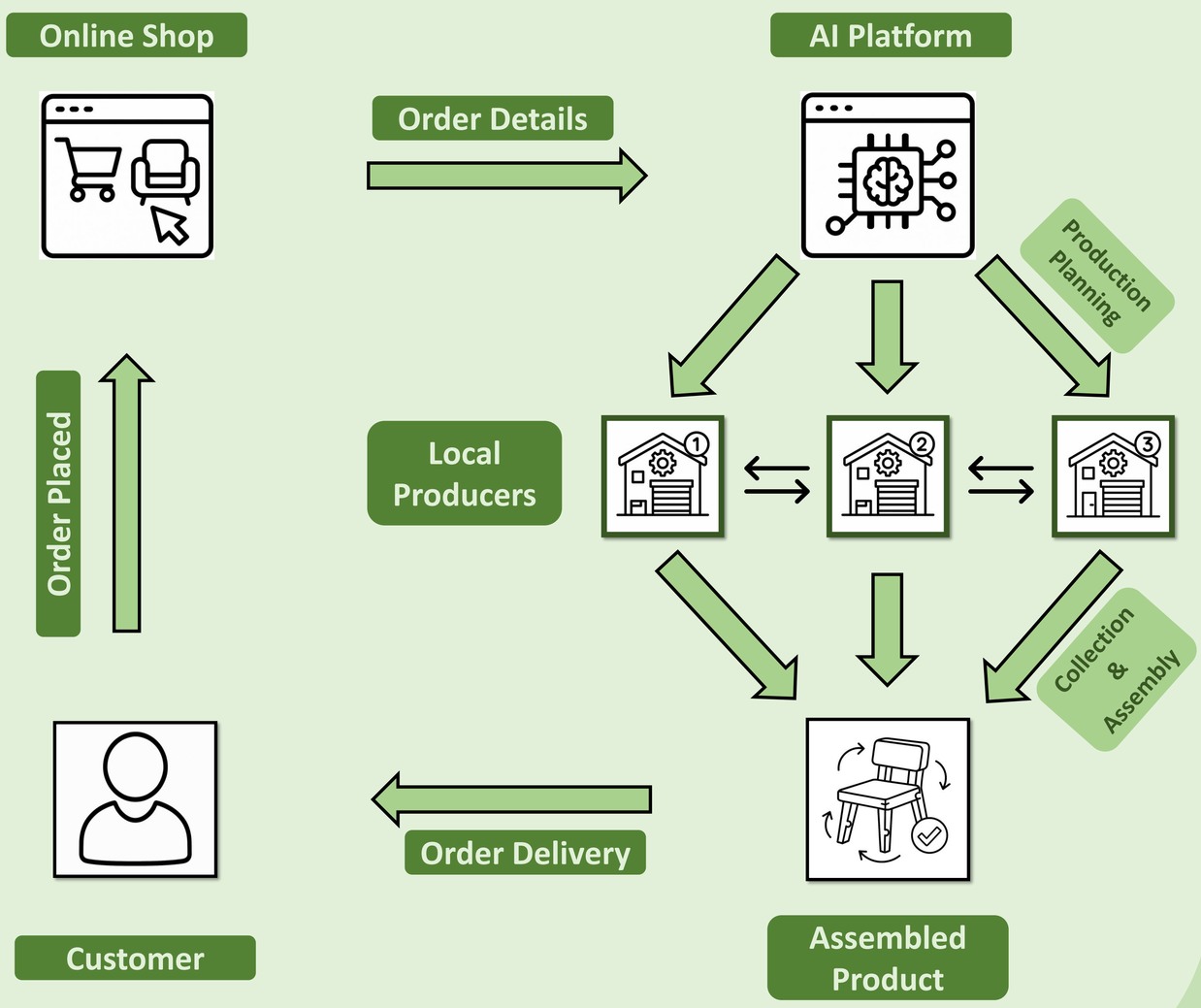
## PROBLEM STATEMENT

**Local producers and designers face major challenges in realizing open-source products due to fragmented production environments. Laboratories differ in equipment and specialization, making it difficult to match designs with suitable facilities. Designers struggle to find the right producers, while producers face difficulties in coordination and planning. These barriers lead to inefficiency, higher costs, and delays in the production process. Within this context, the project addresses the need for a structured process and digital platform by focusing on the setup and testing of such a system, the comparison of open-source hardware designs in terms of manufacturability, the presentation of produced prototypes, and the evaluation of the process and platform regarding their feasibility for the economy.**

## AIM

**This project aims to setup and test an AI-powered platform that streamlines the entire production process of open-source products by connecting designers with suitable local producers and laboratories. The platform coordinates production stages, matches design requirements with available facilities, and facilitates planning, cost estimation, and deadlines. By integrating these processes into a single system, it enables more efficient, accessible, and cost-effective realization of open-source designs.**

## WORK FLOW




## IMPLEMENTATION

- **Roles: Admin (orchestrates), Developer (defines product), Producer (plans & makes)**

1. **Onboard (Admin): Invite Developer and Producer to register.**
2. **Define product (Developer): Create item; add size, material specs (final state, surface condition), description; upload drawings/images; submit.**
3. **Set timeline (Admin): Assign overall process deadline per product.**
4. **Plan production (Producers): List steps; estimate hours; enter production and parts costs per step; submit plans by deadline.**
5. **Generate options (System): After the planning deadline, run Calculate Options to build value-chain configurations.**
6. **Select chain (Admin): Review options and choose the most suitable value chain.**
7. **Publish (System): Post the product to the online shop.**
8. **Order trigger (Customer → System): On purchase, auto-send production requests to all Producers in the selected chain.**
9. **Prepare (Producers): Accept request; download CAD files, manufacturing/assembly manual, and related resources.**
10. **Execute & close (Producers): Manufacture/assemble; mark the job as finished.**

## CONCLUSION

**This project shows that an AI-integrated platform can coordinate decentralized, small-series production within cities by coupling open-source hardware designs with Hamburg's maker ecosystem. Our process indicate reduced reliance on global supply chains and a credible path toward resilient, sustainable, and circular local economies. A key contribution is a user-configurable value chain: customers can prioritize factors and act as co-developers by open-sourcing product ideas. This expands community innovation, strengthens local producers and early-stage startups through visibility and orders, and reinforces the open-source ecosystem, suggesting a scalable pathway from individual pilots to networked urban manufacturing.**

## COMPANY REPRESENTATIVE

**Jonathan Kröger**

| TEAM MEMBERS | INTERNAL TEAMS | HOURS CONTRIBUTION |
|---|---|---|
| Rajdeep Barad | Product Owner, Labs Team | 99.6 |
| Siri Chandana Kakarla | SCRUM Master, Prototype Team | 95 |
| Gayathri Shiburaj | Platform Team | 93 |
| Sangeun Lee | Prototype Team | 95.5 |
| Akshay Nasare | Labs Team | 92.2 |
| Mehmet Emin Zaza | Platform Team | 92.7 |