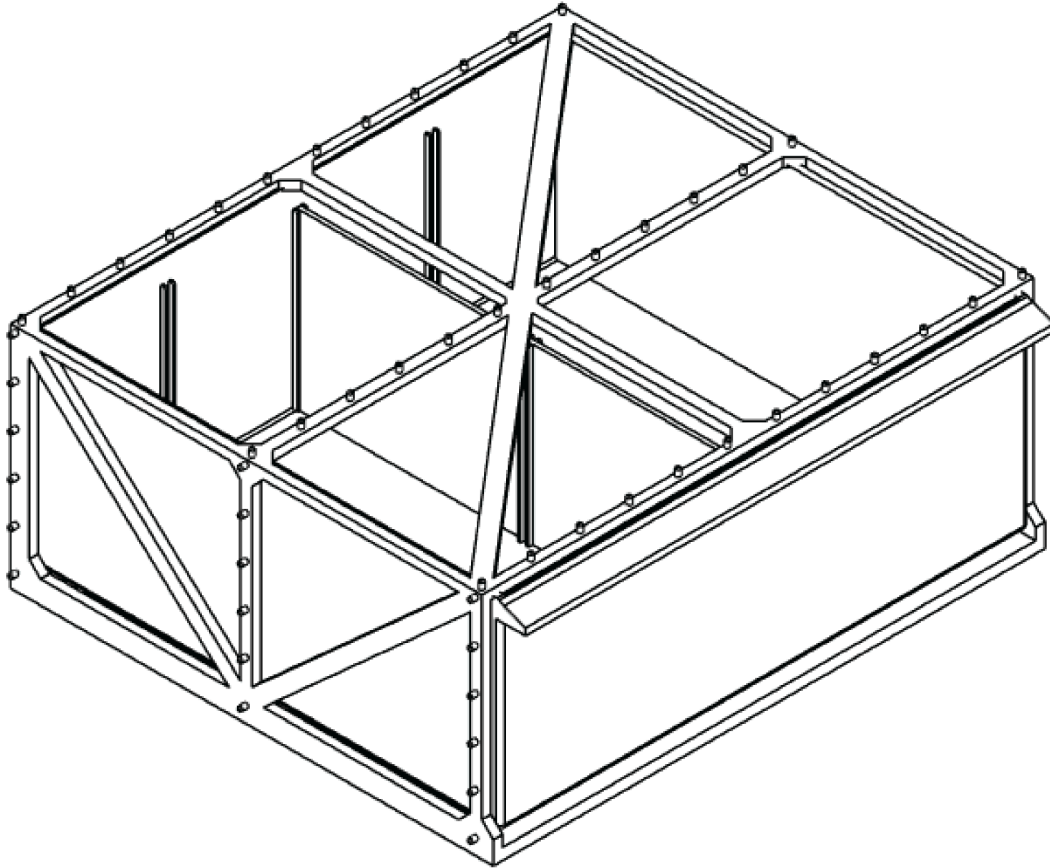Aiden Kuemmerle
4/8/2025

MODULUS

DRAWERS

The Future of Customizable Storage

Scalable, Adaptable, Automated

Today's storage solutions are rigid and one-size-fits-all. The overhead of choosing an

organization system to meet your needs along with the rigidity of current solutions bars many

from organizing their belongings. Modulus Drawers solves this problem for buyers.

Mcneds.dev

Contents:

Executive Summary

Modulus Drawers is a modular, <u>optionally</u> AI assisted system designed to serve a wide range of users; from the average person looking to sort their belongings, makers, hobbyists, and enterprises, a linear upgrade path is provided between each stage. It offers unmatched flexibility in organizing small-medium sized parts and tools like screws, various art supplies, electronic components, or even LEGO. This is done in a standardized form factor developed by the open source project Gridfinity[1] to allow for extended flexibility. Buyers are guided through the process of purchasing by an intelligent configurator that analyzes the user's collection of items and available space. Using that information, it generates a pre optimized configuration that the user can choose to tweak by intuitively dragging storage items around visually or immediately purchase. The design scales in all directions, allowing for future expansion and reconfiguration if more space is available, or more parts and categories are acquired by the user. With automation-ready design, integrated inventory management, and features like voice assistant control, smart labels, and USB expansion, Modulus Drawers addresses growing market demand for smarter, more adaptable organization solutions. Supported by research on part grouping, kitting, and organizational coherence, this system reduces cognitive friction, saves time, and future-proofs physical organization. With a projected development budget of $600,000, this proposal outlines the roadmap for bringing Modulus Drawers from prototype to scalable market release.

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[1]Gridfinity is a standardization for storage sizing designed by **Zack Freedman.** Read more at *Gridfinity: Modular, Open-Source Storage System*. GitHub, https://github.com/ZackFreedman/Gridfinity.

Background Info

Traditional storage solutions are often rigid, inefficient, and lack a clear path for expansion. As users' workflows and inventories evolve, so do their storage needs, and yet most commercial systems fail to adapt alongside them. Whether in engineering labs, assembly lines, classrooms, or home craft rooms, there is a growing demand for modular, intelligent organization systems that can scale with minimal overhead and setup time. Research shows that recurring access to logically organized, clearly labeled bins improves task efficiency and reduces user fatigue (Pentland et al. 114–122; Madan et al. 49). Modulus Drawers emerged directly from these frustrations, designed to solve real problems with scalable, high-tech functionality for both casual and professional use.

Market Analysis

The market for customizable storage is rapidly expanding, driven by the boom of DIY culture fueled by the mainstream adoption of 3D printing and other accessible fabrication technologies. While many individuals seek better ways to organize garages, art supplies, or electronics, the demand extends far beyond the home. Businesses around the world are actively pursuing smarter organization strategies to improve efficiency, boost profits, and increase employee satisfaction. The 5S methodology, widely adopted in industrial and corporate settings, demonstrates that companies actively seek out scalable organizational systems to reduce inefficiency and support streamlined workflows (Mazur et al. 503). Modulus Drawers aligns with these values, offering a modernized, technology-enhanced version of workplace optimization that requires minimal setup while remaining adaptable to growing operational needs.

Functionality

Modulus Drawers combines:

- **Modular Drawer System** — Scalable, Gridfinity-sized drawers with customizable depth

- **Web/App Configurator** — Imports part collections (e.g., Rebrickable, a lego collection organizing website), runs packing algorithms, and suggests optimal drawer layouts.

- **Smart Visual Features** — Drawer lighting for part search, soft backlighting for visibility, and QR-coded smart labels.

- **Automation & AI** — Optional auto-sorter, inventory tracking, drawer locking, and project-based "build mode."

- **USB Power/Data Ports** — Support for firmware updates, scanners, label printers, and expansion modules.

- **Offline Functionality** — Fully operational on LAN or offline setups, ideal for privacy-focused or remote users. No pesky cloud connections!

These features directly address the inefficiencies found in poorly grouped or static storage systems (Madan et al. 40; Hanson and Medbo 1).

Key Seller Benefits

Modulus Drawers opens the door to:

- A scalable product line with high-margin add-ons (e.g., auto-sorters, smart labels,)

- Tiered service options (manual config vs. AI-driven, free vs. subscription-based).

- Community-driven growth through open integration with Gridfinity and shared layout templates.

- Future partnerships with maker platforms, educational institutions, or tool companies

This structure supports recurring revenue and strong brand recognition.

Key Buyer Benefits

For end users, Modulus Drawers means:

- Personalized drawer layouts without DIY hassle.

- Faster access to parts and reduced time spent searching (Pentland et al. 118).

- Visual clarity and mental ease from a tidy, recurring workspace (Mazur et al. 503).

- Integration with LEGO, electronic, or tool inventories via app or QR.

- Optional upgrades for automated sorting, inventory tracking, and hands-free access. Buyers get a product that grows with them, whether for weekend hobbies or enterprise-level workflows.

Marketing Avenues

Modulus Drawers will be marketed through:

- **Influencer Sponsorships** in LEGO, electronics, maker, and crafting communities.

- **Social Media Ads** targeting DIY, ADHD productivity, and workspace optimization.

- **Content Creation** (YouTube series, Reddit AMA, Instagram reels) showing real-world transformations.

- Partnerships with Gridfinity, Hackaday, or maker fairs.

- **Referral incentives** and a **community hub** for sharing configurations and mods.

The strong visual appeal and community engagement make this product viral-ready.

Production Timeline

Phase	Timeline	Milestones
Phase 1	Months 1–2	Finalize prototype, refine modular drawer design
Phase 2	Months 3–6	Launch web configurator MVP, begin app development
Phase 3	Months 7–9	Complete auto-sorter prototype, begin injection mold prep
Phase 4	Months 10–12	Manufacturing kickoff, marketing launch, early adopter shipments

Budgeting

Category	Estimate
Engineering Salaries (2 × $80k/year)	$160,000
Injection Mold Setup	$200,000
Initial Manufacturing & Inventory	$200,000
Website/Server + DevOps	$400
Marketing & Branding	~$39,600
Total Estimate	**~$600,000 CAD**

Conclusion

Modulus Drawers presents an innovative solution to a widespread problem that transforms how we interact with and organize small parts across domains. By combining the best of modular design, user-centric customization, and digital automation, this system answers the call for efficient, intelligent organization. Backed by research in part grouping, workflow recurrence, and digital integration (Pentland et al. 114–128; Madan et al. 49; Palad 92), Modulus Drawers is not just a product, it is a platform with a potential for a vibrant community. With the right investment and development strategy, it has the potential to become the gold standard in customizable storage.

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