Making Product Design Predictable and Profitable

By: Tony Rogers,
CEO of Creative Mechanisms

CREATIVE
MECHANISMS

TABLE OF CONTENTS

CREATIVE MECHANISMS

MEET TONY ROGERS

Tony Rogers
CEO of Creative Mechanisms

Tony Rogers is the CEO of Creative Mechanisms, the Design for Manufacturing Experts. Tony has been leading design, engineering, and prototype development teams for over 30 years.

In this short resource, Tony invites you to glean from his experience as both a product developer AND a business leader. If you are looking for a product driven business that is more predictable and profitable, Tony has the experience-driven insight you need.

We at Creative Mechanisms hope you find this eBook helpful and we invite you to meet with Tony when you're done to discuss your product design and engineering needs.

CREATIVE MECHANISMS

THE PRODUCTION-READY PRODUCT PROCESS

I like to say that in a perfect world, product-driven businesses would always enjoy 2 things: predictability and profitability

But after 30 years in the design and engineering world, let's just say I'm well aware that those things don't exactly happen by accident. The world of product development can be fairly turbulent at times as you navigate the crosswinds that threaten to throw your project off track.

If you've taken products to market before, you know how difficult it can be to keep products on schedule and under budget - let alone anticipating their success once they enter the market. As the old saying goes, "No plan survives first contact."

That's why experience matters when you're picking who's at the table. You need experience within your industry to understand the ecosystem you're designing a product for. You need Design for Manufacturing experts to iron out the production process and create a profitable product.

At Creative Mechanisms, our purpose as a firm is simple. When we partner with a company, we prioritize:

CREATIVE MECHANISMS

| **1**	**2**	**3**
Leveraging our experience to make production more financially and logistically predictable	Ensuring the final design is fully mechanically capable of meeting the need it is designed to meet	Maximizing profitability by lowering production costs and overcoming delays

Now, yes, that sounds great, but what about this eBook? What can you hope to get in exchange for the valuable 10 minutes it takes to read this?

By the end of this eBook, my aim is to clearly outline the principles that will help unlock a more predictable and profitable design process.

So to the product manager, CEO, VP, or whoever else is tired of an unstable, unreliable development process - take this guide and hold it up to your current production process.

You may just find a few ideas with the ability to transform the future of your product-driven business.

CREATIVE MECHANISMS
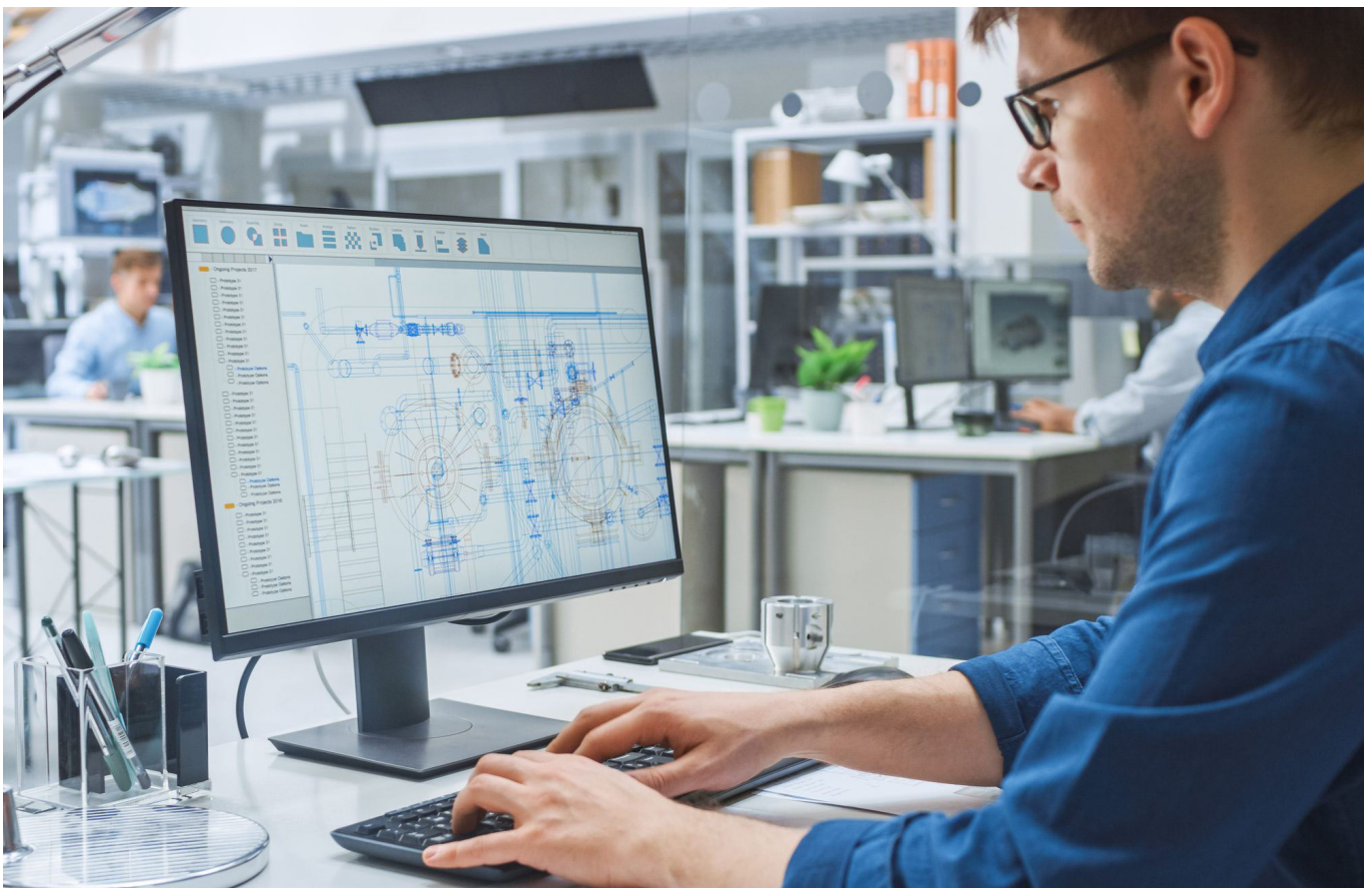
MAKING PRODUCTION MORE PREDICTABLE

Let me start by admitting something - and I imagine it's something you already know well.

In any product-driven company, risk is baked into the cake. The investment is front-heavy with design, engineering, and then the manufacturing process. It's just how the business works.

That's why predictability is a precious resource wherever you can find it.

But in a risk-inherent world, there's not always a clear roadmap to follow. Enjoying predictability is less about intentions and more about *philosophy* and *capability*.

CREATIVE MECHANISMS

Prioritizing Design for Manufacturing (DFM)

This is where we start our answer to the question of predictability. Having the right design and engineering philosophy is the cornerstone of your planning.

To make sure we're working from the same definitions, let's pause for a second and outline exactly what I mean by Design for Manufacturing (DFM):

Design for Manufacturing is an engineering philosophy that prioritizes designing parts, components, and products for easier manufacturing. The end goal of DFM is enabling companies to achieve better products and lower costs.

In our line of work, it's not uncommon to see companies start with the aesthetic design of their product and then move forward with their process from there. Which is understandable - it seems like it would make sense to start with the end result in the hands of a customer.

The problem? Even great ideas fail if they neglect the question of manufacturability. Many promising designs have found themselves shipwrecked on the rocks of

production costs, faulty designs, and other manufacturing pitfalls.

And unexpected outcomes in manufacturing generally aren't a good thing. They're the most expensive mistakes that carry consequences far beyond one project.

In the spirit of predictability, manufacturing is the lynchpin you need to get right. A DFM approach filters every step of the design and engineering process through the lens of manufacturability.

You know the phrase, "An ounce of prevention is worth a pound of cure." In the same way, a healthy investment in a thorough DFM process is the key to preventing much more costly errors.

Bringing the Right Expertise to the Table

Our first pillar of predictability is philosophy - specifically a commitment to DFM.

The second pillar is capability. It's a self-evident point, but one that deserves more consideration when it comes to the actual decision at hand.

In my experience, there are unique circumstances where your team is looking for additional resources to supplement specialized expertise. In my experience, we see a couple common kinds of situations that call for additional voices at the table.

Here's a few examples:

► When you need specific help with a new material or mechanism

► When you are looking to reduce your part count for manufacturing costs

CREATIVE MECHANISMS

- ▶ When you are running into delays in engineering and need a fresh set of eyes to tackle a challenge
- ▶ When you need access to more advanced 3D modelling capability for prototyping

My point is that there are a variety of specialized needs product teams might encounter, and at times, the answer is to supplement the capabilities you bring to the table.

For example, at Creative Mechanisms, our firm specializes in DFM at every stage of the production process. We help companies create production-ready products from prototyping and initial design all the way up to final testing before manufacturing.

Let's sum it up. When you're looking for supplemental capabilities for your product, make a habit of looking for these three things:

1. **Experience Taking Products to Market:** "Learn from other people's mistakes. It's less expensive."

2. **Technical Expertise:** From mechanisms to materials to manufacturing, find someone who's familiar with what you need.

3. **Access to Technology:** The right tools make the work lighter (and more predictable).

Predictability Anticipates Costly Failures

I've had a few unique experiences that highlight the other side of predictability well. That other side is this: a successful design process doesn't always result in a successful product.

A successful design process can also result in shutting down a product.

Now, why would I call that success?Obviously, there's a little bit of an asterisk next to success there, but if you've ever had the following experience, you know what I mean.

It's usually more of an outlier, but there are times that the cost per unit of a product just doesn't add up to a profitable relationship with its sale price. Even after we have refined materials, reduced part count, and worked every angle we know, some don't have an apparent path to profitability.

That's the key to this side of profitability - we have had companies come to us with an idea to actualize or a challenge to solve.

We don't *just* look for the mechanical solution. We are always looking for a *profitable* solution. And wouldn't it be nice to know as soon as possible if the mechanical solution isn't a profitable solution?

With the right design philosophy (DFM) and the right capabilities, you get the benefit of anticipating unprofitable solutions sooner - translating into less time, attention, and money sunk into unprofitable products.

The bottom line is that predictability isn't always about improving products. Sometimes a design partner's highest value comes in preventing unprofitable ones.

A Quick Myth: "Always Look for Industry Specialization"

There's one last thing I wanted to note here before moving on, and it's this: there's a difference between *engineering* specialization and *industry* specialization.

CREATIVE MECHANISMS

Engineering specialization reflects competence in mechanisms or materials. I think industry specializations are self-explanatory enough, but there are myths surrounding them. One of these is the perceived value of industry specialization.

Yes, industry specialization has value, but *what* exactly is that value? This kind of partner brings a measure of efficiency due to their familiarity with an industry, but in many cases, it also often results in a limited scope of innovation.Think of a "copy-paste" approach to problem solving.

The challenge is that this limits a product's ability to innovate into a leading role in an industry. It might be a simple fit for a quick problem, but it's not going to result in a competitive edge.

There's a term you'll want to remember that is the other side of this coin: "**industry agnostic**".

An engineering firm that is **industry agnostic takes a different approach.** They are better equipped to bring a wider array of engineering solutions to your product. Their cross-industry expertise helps you find solutions that others in your industry haven't discovered.

So all of this to say - don't assume that an industry-specialized partner is always the right choice. You may just find that the right course of action is with an industry agnostic partner.

MAKING PRODUCT DESIGN PREDICTABLE AND PROFITABLE

CREATIVE MECHANISMS

SO WHAT'S YOUR NEXT STEP?

Hopefully, this brief overview has given you some food for thought when it comes to high-level direction for your product development approach. A clear view of your final destination certainly does prescribe specific steps to accomplish your ultimate goal: a profitable product.

So now that we've covered the principles of predictable, profitable product development, what are a few tangible actions you can take today to get the ball rolling on your journey towards reliable, repeatable growth?

Here's a few places you can start.

1. Educate Your Team

When your team starts from the same page, you maximize the output for your time, energy, and money.

While every project will have its own unique questions and challenges, here's a few resources you can share directly with your team to help instill a common vision for the big picture.

► **Why We Start with Design for Manufacturing**

► **Preventing Challenges in New Designs**

► **Critical Steps in Testing Product Viability**

CREATIVE MECHANISMS

2. Set Aside Time to Keep Learning

Have you ever heard the saying, "An expert is someone who knows more and more about less and less"? Well, it's certainly true in product development - you can never reach the bottom in the deep sea of constant innovation and ideation.

The problem is that we are all busy "up to here". Having a practical plan for keeping an eye on the leading developments is a hard discipline to maintain.

My personal practice for years now looks something like this. Find a resource or two that:

1. Routinely equips you with *tangible* improvements
2. Is realistic for your schedule and habits

If you can get both of those, your continual growth becomes doable. And the impact is huge.

To help you cut to the chase, here's two high-value, schedule-friendly sources that might help:

- ▶ Our 3-minute weekly DFM Email Journal
- ▶ Our on-demand resource center with **topical courses**, **blogs**, **videos lessons**, and **podcasts**

They're condensed to provide tangible ideas that are easy on your calendar and even easier to share with your team so you can grow together.

Take an Inventory of your "Table"

In the nautical world, it's common for a ship with its captain and crew to work alongside local captains when in unfamiliar waters.

In a similar picture, when your projects find themselves in new territory - whether that's a certain kind of material, mechanism, or any other challenge - consider supplementing your expertise with a guide who is "local" to your needs. Someone who knows the waters well.

If our philosophy of profitable, production-ready product development resonates with you, I invite you to **reach out to us here at Creative Mechanisms**. I would be happy to personally talk with you about your project to determine if we are a good mutual fit for your specific needs.

Until then, I wish you the best!

(And a few less production-induced headaches...)

MEET WITH TONY

If you'd like to discuss a current product design project with Tony, use this link to schedule a free review session. *(https://app.hubspot.com/meetings/tony18)*

ACCESS NEW RESOURCES

Did you find this short guide helpful? Access our collection of videos, courses, articles, and more! *(https://www.creativemechanisms.com/resources)*

CREATIVE MECHANISMS