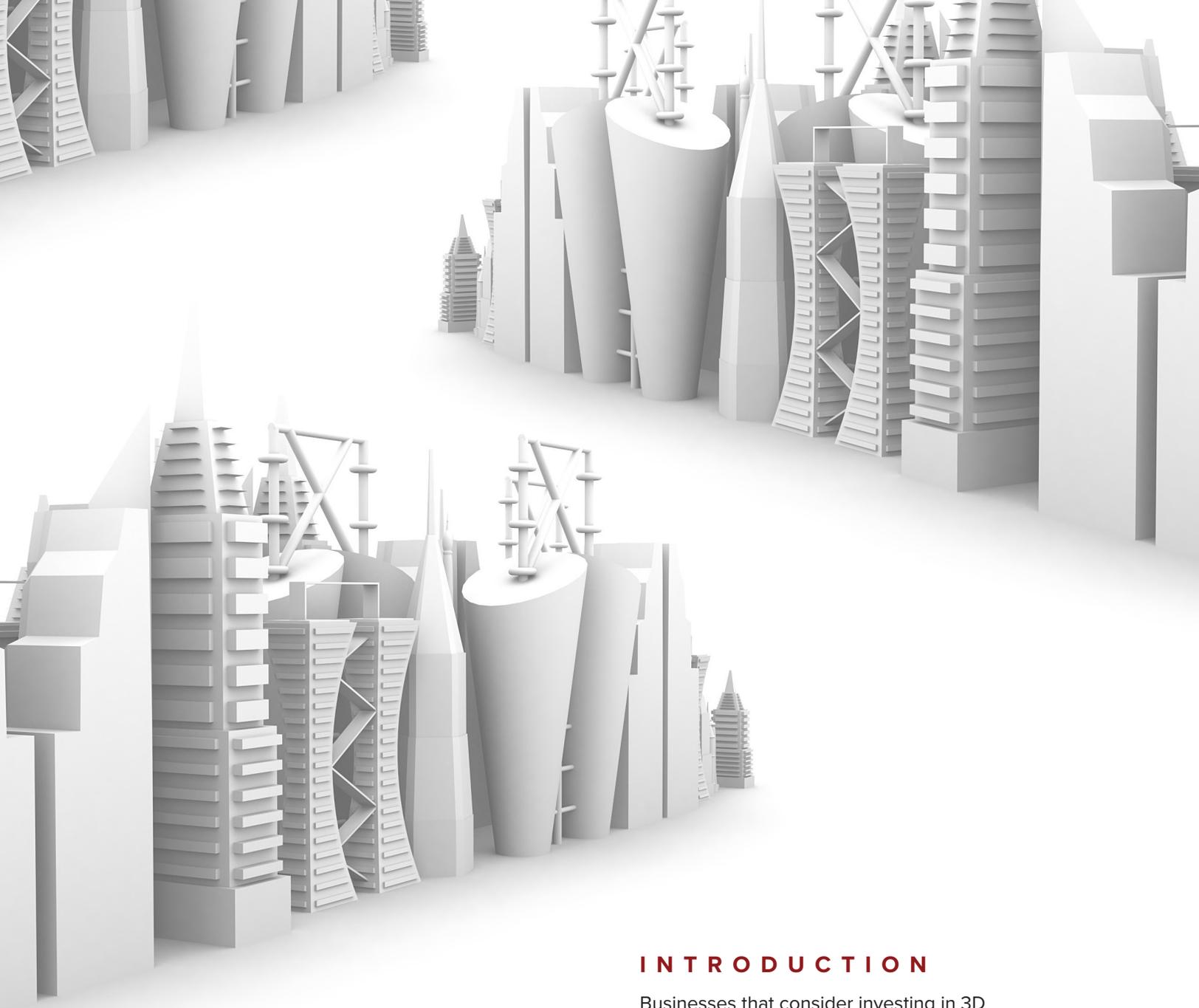


# MAXIMIZING VALUE

The ROI of 3D  
Printing in Business



## **INTRODUCTION**

Businesses that consider investing in 3D printing resources are faced with a number of considerations that can drag out the decision-making process. By truly understanding the ROI of investing in 3D printing, business leaders can make quick and informed decisions.

3D printing has many applications. The flexibility makes it difficult to quantify the ROI for a business. This guide is written to help business leaders understand how 3D printing can benefit their business through cost reduction, decreased risk, addition of new business opportunities, and decreased time to market.

## COST REDUCTION: PERSONNEL EXPENSES

To get a true ROI from a 3D printer, a business used to need a skilled engineer with expertise in Computer-Aided Design (CAD) software plus a dedicated operator to keep the machine running. Some businesses sacrifice only 25% of an engineer's time to keep a 3D printer running while others may require one or more full-time employees.

Today's software allows **anyone to easily design 3D objects** in their web browser for free. Services like Tinkercad and Onshape allow us to create digital models of our ideas in record time. After a 2-minute video, any employee can create basic shapes and objects in design software. Although we will always trust our most critical designs to experienced engineers, you no longer need an engineer in the equation to produce parts needed by non-engineering members of your team.

**Automated 3D printing solutions** drive the cost down further by taking the operators out of the equation. 3D printers available today can 3D print 24/7 without the need for a human operator to remove each and every job from the 3D printer plus the hassle of maintaining a 3D printing schedule.

## DECREASED RISK: PROTOTYPES, FIXTURES, AND TOOLS

3D printing was popularized by rapid prototyping, but every day new applications are discovered by businesses to help their bottom line. In addition to prototypes, 3D printers can produce concept models, fixtures, jigs, tools, replacement parts, custom components, and much more.

## TYPICAL COSTS

### PROTOTYPES

Outsource	\$2,000 - \$4,000
In-House Fabrication (conventional methods)	\$400 - \$800
In-House Fabrication (3D printed)	<\$50

### MID-VOLUME PRODUCTION

Outsource	\$10,000 - \$100,000+
In-House Production with automated 3D printing	<\$1,000

## AVERAGE SALARY FOR UNITED STATES WORKERS:

Mechanical Engineer

\$88,000



Mechanical Technician

\$53,000

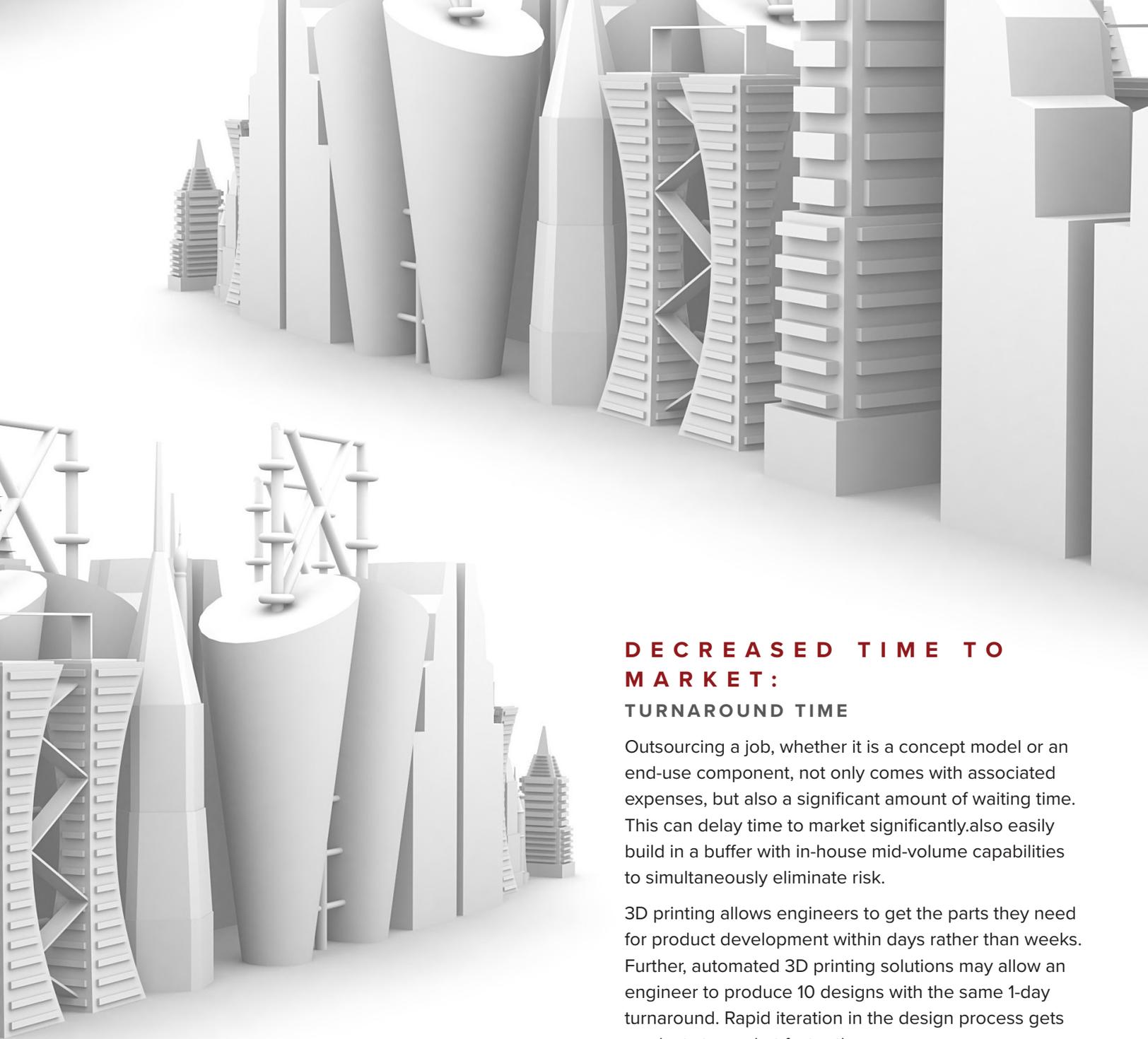


## NEW OPPORTUNITIES: MID-VOLUME PRODUCTION

Although businesses desire to help their customers in any way, most manufacturers turn down a number of low- volume and mid-volume contracts every year because the numbers are too low to make financial sense.

With automated 3D printing solutions, it is now affordable to perform **mid-volume production runs of 1000+ parts** with inexpensive equipment in-house. 3D printing is a solution for a number of mid-volume production applications including branded collateral for trade shows and custom medical devices. Additionally, 3D printing allows every part to have a custom geometry, whether the requirement is part serialization or custom human interfaces.

Eliminate **bridge time** between the prototyping phase and the full-production phase. Mid-volume production not only allows you to eliminate bridge time, but to also easily build in a buffer with in-house mid-volume capabilities to simultaneously eliminate risk.



## DECREASED TIME TO MARKET: TURNAROUND TIME

Outsourcing a job, whether it is a concept model or an end-use component, not only comes with associated expenses, but also a significant amount of waiting time. This can delay time to market significantly, also easily build in a buffer with in-house mid-volume capabilities to simultaneously eliminate risk.

3D printing allows engineers to get the parts they need for product development within days rather than weeks. Further, automated 3D printing solutions may allow an engineer to produce 10 designs with the same 1-day turnaround. Rapid iteration in the design process gets products to market faster than ever.

## TYPICAL TURNAROUND FOR A FABRICATION JOB

Outsource	1-3 weeks
3D Printed	< 1 day

7420 Kilby Road  
Harrison, OH 45030

(513) 367-7100 | [info@e-ci.com](mailto:info@e-ci.com) | [www.e-ci.com](http://www.e-ci.com)

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