

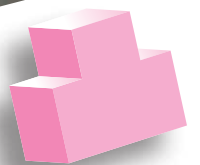
# CONVEX

- International -



Special  
Feature

New Products and Services from Toppan  
Responding to needs prompted by COVID-19 and looking to the post-pandemic era





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## Notice from the Public Relations Division

CONVEX International is an internal magazine for the Toppan Group. The title, “CONVEX,” is based on the meaning of the Chinese character “凸”, which is pronounced “totsu” in Japanese and is the first character in the word “toppan.” In the same way that a convex lens focuses light at a single point, the name of the magazine expresses Toppan bringing together its “vibrant knowledge and technology.”

## Cover Photo

The photo on the cover is a collage featuring the people who work at the Printing Museum. Thank you to everyone who took part.





# New Products and Services from Toppan

**Responding to needs  
prompted by COVID-19 and  
looking to the post-pandemic era**

The COVID-19 pandemic has brought significant change to our lives. We have to be conscious of the need to prevent the spread of infection every day, and our working lives have shifted to incorporate telecommuting and online meetings to avoid contact with large numbers of people. Toppan has responded to these changes in society with several new initiatives.



# Solutions that enhance safety and hygiene

In this special feature, we present three examples of products and services that Toppan is rolling out in Japan, and in some cases other countries as well, to cater to needs during and after the pandemic. The key concepts are “antiviral,” “contactless,” and “online.”

## □ Antiviral Card

Driving cashless transactions and supporting economic activity under the new normal



Toppan has developed an antiviral card (patent pending) that responds to needs for enhanced hygiene in a wide range of settings. The card is the first of its kind in Japan to receive certification from the Society of International sustaining growth for Antimicrobial Articles (SIAA). It can be used for a wide-range of applications, such as credit cards enabled for contactless transactions and dual interface cards that combine both contact and contactless functions.



<https://www.toppan.com/en/news/2021/02/newsrelease210222e.html>

### In the words of the developers

**W**e developed the card by establishing technology for adding antiviral performance in response to needs for settings in which cards change hands, such as at cash registers in stores and counters at public offices and medical institutions. Because we have infused the antiviral agent into the card materi-

al, it retains its performance even if the surface is scratched. The antibacterial card, meanwhile, is able to suppress the growth of *E. coli* and *Staphylococcus aureus* bacteria on its surface.



We are also responding to needs for enhanced hygiene by bolstering production of payment and access cards that incorporate an antibacterial agent. Production capacity was increased in July 2020 to facilitate economic activity by supporting more hygienic payments and helping to ensure employee safety.

Toppan's antibacterial cards are used in the financial sector and numerous other industries for such applications as cashless payments and employee ID/access cards. They are compliant with the JIS Z 2801 standard for antibacterial activity on plastics and are recognized for their performance in inhibiting bacterial growth. The cards have been shown to keep the reproduction rate of *E. coli* and *Staphylococcus aureus* bacteria on the card surface at less than 1%, meaning they are suitable for use in medical and pharmaceutical facilities as well as locations in which food is handled. Toppan's cards also withstand the wear and tear of frequent use to retain antibacterial performance because the antibacterial agent is incorporated into the card material itself.



<https://www.toppan.com/en/news/2020/06/newsrelease200629e.html>

Inquiries > [GlobalPR@toppan.co.jp](mailto:GlobalPR@toppan.co.jp)

## About the SIAA



The Society of International sustaining growth for Antimicrobial Articles (SIAA) is an organization of manufacturers and antimicrobial testing institutions for antimicrobial agents, fungicides, and treated antibacterial and antifungal products. The SIAA aims to promote appropriately treated and secure antibacterial and antifungal products, maintains rules governing the quality and safety of treated antibacterial products, and certifies the labeling and use of SIAA marks granted to products that comply with its rules and standards. The SIAA issued the ISO 22196 international standard for measurement of antibacterial activity on plastics and other non-porous surfaces in October 2007 and ISO 21702 for measurement of antiviral activity on plastics and other non-porous surfaces in May 2019.



# □ Aerial Touch Display

## World's First to Generate Images Parallel to the Panel

In October 2020, Toppan's Electronics Division announced its aerial touch display, a compact display that can be operated without touching the screen. Controlling light pathways makes it possible to install the reflective plate parallel to the display and project floating images. This enables a flat body with a depth of 6 cm. Taking advantage of its LCD manufacturing technology, the Electronics Division has designed an inter-

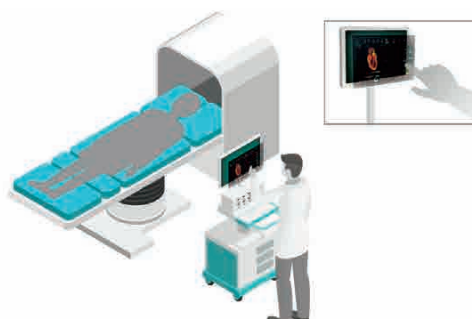
nal structure that prevents the appearance of ghost images. The display can be used for ATMs and other settings in which security is required because the screen cannot be seen from the side. Infrared spatial position sensors detect the movement of people's fingers over the aerial images. The display can be used in medical settings or clean rooms because it can be operated with wet hands or when wearing gloves.



ATM



Reception/check-in terminal



Medical device

Inquiries > [GlobalPR@toppan.co.jp](mailto:GlobalPR@toppan.co.jp)

## In the words of the developers

In the field of industrial devices, there has been demand for contactless displays for some time, and we started research and development several years ago. For example, contactless devices are needed in medical settings to enhance hygiene, while on the manufacturing floor they can prevent devices from being covered with dirt and oil on the hands of the people operating them. Heightened security concerns also mean that people do not want to leave fingerprints on screens.

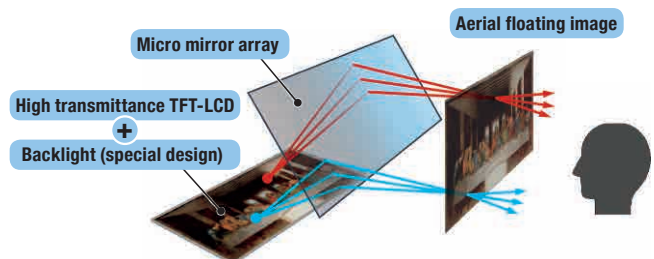
The COVID-19 pandemic has become a catalyst for raising awareness of contactless

panels, but for us it actually stalled development and led to a delay of several months in announcing the prototype.

Since we made the announcement in October last year, there has been a significant response around the world. Due to restrictions, however, we have not yet been able to visit customers to show them the demo device. Based on feedback from customers, we will drive full commercialization by working on internal components and other considerations to create a more complete product.

## Display Principle

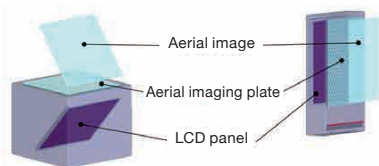
Light emitted from the LCD module is retro-reflected on a micro-mirror-array to form an aerial image. Toppan's high-transmittance LCD panel, high-brightness backlight, and proprietary optical design expertise enable vivid aerial imaging and suppress ghost images.



## Aerial Image Position

The image on an aerial floating display has conventionally been at a 45-degree angle to the device's panel, but Toppan's unique optical design makes it possible to position the floating image parallel to the panel. The mod-

ule of Toppan's new display is also about 50% thinner than those of conventional floating image displays.



45-deg floating

Parallel floating



Floating image is simulated.



Contactless operation

# □ Profound Tourism Online

## Immersive Online Tours Offering Experiences of Traditional Japanese Culture

Profound Tourism Online provides web-based experiences of Japanese culture by combining state-of-the-art virtual reality (VR) content with interaction with people with strong links to the country's traditional culture. The service leverages online conferencing technologies to allow users from anywhere in the world to get a taste of what it is like to visit Japan.

During the online tours, users can talk to

experts at the heart of Japan's culture and traditions, such as priests from World Heritage-listed Buddhist temples and master craftspeople from an ukiyo-e woodblock printing studio that has been in operation since the Edo period. Workshops and other content are also added to provide a new way in which to experience Japan as an alternative to travel for employee training or educational trips for students.



During a live feed from a studio, the cultural expert talks directly to users while they watch high-definition visuals.



Users can engage in a dialog with a cultural expert online.



A corporate training instructor acts as facilitator and asks the expert about how traditions have been passed down and what challenges have been taken on in different eras.



<https://www.toppan.com/en/news/2020/09/newsrelease200910e.html>



## In the words of the developers

**W**ith Profound Tourism, we want to provide experiences of Japanese culture to visitors from overseas. In light of the need to prevent the spread of COVID-19, however, we decided to take on the challenge of offering a new online service.

We have put a lot of effort into working out how to create an experience that is close to the real thing for online users. For example, with the help of cultural experts, we have produced high-definition visual media to recreate the experience of actually being at the locations and included workshops in which users can interact directly with the experts. This has enabled us

to create a range of experiences that can be enjoyed online. By making it possible for users to learn about real Japanese culture underpinned by the country's rich history and talk to people who it is not usually possible to meet, we offer an experience that will resonate with everyone.

Users have commented that having the opportunity to enjoy this interaction has invigorated their daily work, and this tells us that they have been able to feel the power of Japanese culture. At a time when people cannot visit Japan, we want to expand Profound Tourism Online in Japan and throughout the world.

### Project Planning Department 1, Cultural Project Division



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# The Underlying Technology

Toppan's VR is built on fundamental digital archiving technology that fuses high-definition digitization and a color management system (CMS) developed in the printing business with advanced technologies such as 3D shape measurement. It is also supported by academic supervision from experts and the owners of major pieces of Japanese cultural heritage.

To faithfully reproduce buildings, artifacts,

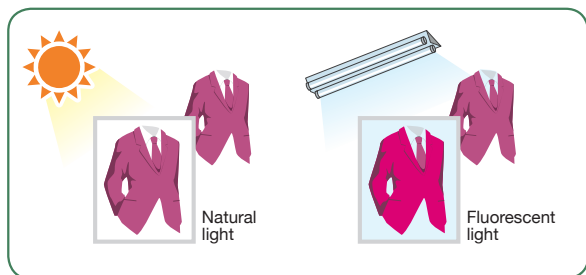
relics, and other cultural assets down to small details such as patterns and scratches, we use 3D modelling, which involves combining the results of precise 3D shape measurement with texture that has undergone color management. Adding real-time rendering enables us to put together the historical story of the cultural asset and produce a complete piece of VR content.

## Color Management System, Texture, and Reproduction

We are enhancing the CMS developed for printing and researching spectral color reproduction and how to record and reproduce the "look" of real objects. By recording the light reflection characteristics of an object and using real-time

rendering, we can accurately communicate the texture of the object to viewers in a way that is not possible with conventional photographs or computer graphic images.

### Conventional Technology



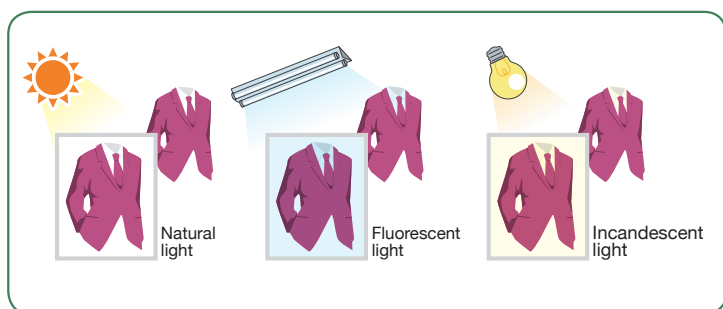
The color of the object under a fixed light source is reproduced by printing. However, because the color of the object changes depending on the light source under which it is viewed, the color of the printed material tends to differ from that of the actual object.

#### KEY POINT

Color matching that is not dependent on viewing conditions.



### New Technology



Changes in the color of the object due to different light sources can be reflected in the printed material. This has made it possible to match the color of the printed material with that of the actual object regardless of the type of light source under which it is viewed.

## 3D Shape Measurement Technology

We conduct research and development of multi-view stereo (MVS) technology to facilitate high-definition digitization. MVS technology applies a technique called “phase-only correlation” and matches multiple high-definition images to make it possible to reconstruct 3D shape with unprecedented accuracy. In contrast to conventional measurement using large instruments, multiple photographs taken from different positions with a compact digital camera are used to capture the shape of the cultural asset.

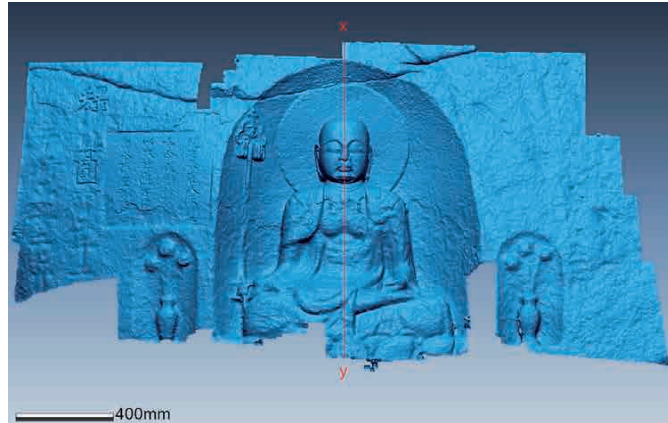


Fig. A: Orthographic projection of the Wareishi Rock Cliff Sculpture. The x-y line shows the position of the cross section in fig. B.

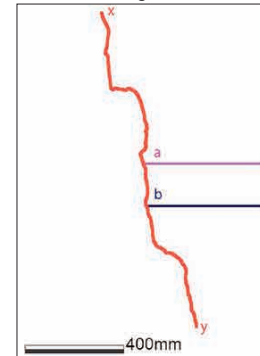


One person took approximately 6 minutes to photograph the sculpture using a compact digital camera.



The Wareishi Rock Cliff Sculpture at low tide in 2016

Fig. B: Cross section. The positions of “x” and “y” are shown in fig. A.



Source: Kuchitsu et al., 2019. Simple evaluation of the degradation state of cultural heritage based on multi-view stereo. *Progress in Earth and Planetary Science*. <https://doi.org/10.1186/s40645-019-0260-7>

This special feature has introduced some of the products and services that Toppan has launched in Japan to address needs during and after the COVID-19 pandemic based on the keywords of “antiviral,” “contactless” and “online.”

By providing such solutions aligned with changes to the world in which we live, Toppan aims to transform business models and create value for society.

Why not take a look at the Toppan website and explore the possibilities of the Toppan Group?



<https://toppan.com/en/>





# Printing Museum Celebrates 20th Anniversary

A look at the refurbished exhibition space and commemorative publications

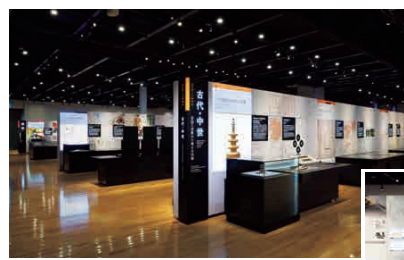
## About the Printing Museum

The Printing Museum, Tokyo was established in October 2000 as part of events marking the 100th anniversary of Toppan Printing's founding. It is open to the public and presents a wide range of information covering the history, social role, and technologies of printing.



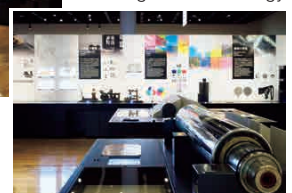
Entrance to the Printing Museum

general exhibition is now divided into three zones—"History of Printing in Japan," "History of Printing Worldwide," and "Printing and Technology." The History of Printing in Japan zone presents the development and growth of printing in Japan, while the History of Printing Worldwide section enables visitors to understand the expansion of printing on a global scale through a chronology. Printing and Technology focuses on the techniques and technologies of printing, introduces its basic elements, and



Printing and Technology

History of Printing in Japan



## Refurbishment

The Printing Museum re-opened on October 6 last year after a major refurbishment to celebrate 20 years since its opening. The

demonstrates how various prepress methods produce different kinds of printing expression.

An archive of European fonts has been created in the space in front of the Printing House. The 600 fonts of European type in the museum's collection have been systematically organized and presented in a large-format graphic display accompanied by digital content.



European font archive in front of the Printing House



History of Printing Worldwide

### Highlights of the Printing Museum's collection



#### 1) Hyakumanto Dharani (So-rin)

These Buddhist sutras printed and housed inside small pagodas from the 8th century are thought to be the oldest extant printed matter in the world.

#### 2) Suruga-ban Copper Type (Important Cultural Property of Japan)

The first copper type in Japan was



made under the orders of shogun Tokugawa Ieyasu at the beginning of the 17th century. It provides valuable testament to his efforts to govern Japan using the "power of words over weapons."

#### 3) Maurin Quina

This four-meter poster was painted by Leonetto Cappiello in France in the early 20th century.



### Commemorative publications

Two books have been published to commemorate the museum's 20th anniversary. They are titled *History of Japanese Printing Culture* and *Printing Museum Collection*. The former explains the concept for the revamped exhibition and traces the history and culture of printing and publishing in Japan. It has been published in both Japanese and English. For the latter, 77 items from the Printing Museum's collection of 70,000 artifacts have been selected. Its four chapters cover Japanese books, Western books, printed art and posters, and printing tools and machinery.



From left, *History of Japanese Printing Culture* (Japanese edition), *Printing Museum Collection*, and *History of Japanese Printing Culture* (English edition)

### Printing Culture Studies

Over the years the Printing Museum has researched and held exhibitions on the role that printing has played in people's lives over the course of history. The Printing Museum sees this as an ongoing mission. It has therefore launched Printing Culture Studies as a new field of academic research to shed light on what printing means for human civilization, take a fresh look at it from long-term historical and cultural perspectives, and explore the activities of the people and societies involved.

#### Visit the Printing Museum's website

English: <https://www.printing-museum.org/en/>

Japanese: <https://www.printing-museum.org/>



**Siam Toppan Honored With WorldStar Packaging Award for Second Consecutive Year**

Siam Toppan Packaging, based in Samut Prakan, Thailand, has been honored in

the WorldStar Packaging Awards 2021, receiving an award for the second year

in a row.

The WorldStar Packaging Awards, organized by the World Packaging Organisation, recognize outstanding packaging technology and design. This year 345 packages from 35 countries were nominated, with awards being bestowed on 194 of the entries.

Siam Toppan received the accolade for the Microgreens Growing Kit,<sup>1</sup> a handbook-style package that leverages the company's folding carton technologies and creative capabilities. In addition to being sustainable and having an environment-related theme, the package received plaudits for being reusable as a storage box or decorative item.

1. [https://www.worldstar.org/winners\\_detail/56/](https://www.worldstar.org/winners_detail/56/)



Siam Toppan's prize-winning package features unique structural and graphic design.

**Toppan eSports Festival 2021 Held Online**

Toppan eSports Festival 2021 was held as an online event on January 24. Employees who had qualified from preliminary rounds held around the world competed in a finals tournament, playing games such as *Street Fighter V: Champion Edition* and *eFootball PES 2021 Season Update*. A large number of employees and their families were able to enjoy this new event for the Toppan Group by either taking part in the contests or supporting the competitors.

About 1,000 people participated from Japan. Participation from overseas was limited by regional time differences, but roughly 30 employees and family members from Shanghai were able to join in the fun.





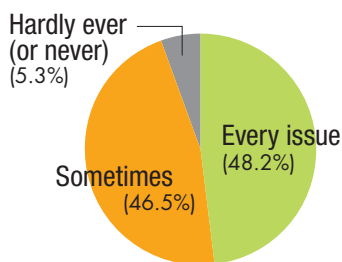
# Results of Questionnaire About CONVEX International

In November 2020 a large number of overseas employees helped us by responding to a questionnaire about CONVEX International.

We received 169 responses from employees all over the world. Thank you very much. Below is a summary of the results of the questionnaire, showing the percentages of readers who selected responses and some of the most common comments. If you have any requests, please contact us! (GlobalPR@toppan.co.jp)

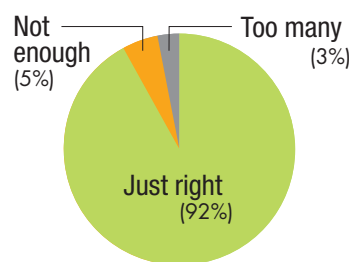
## Q1

How often do you read it?



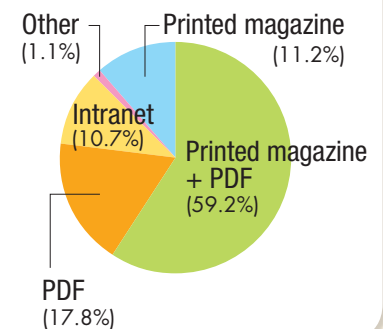
## Q2

Number of issues



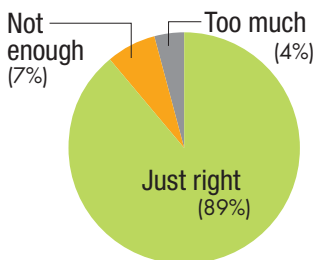
## Q3

What format is best?



## Q4

How much content?



## Q5

Views on the magazine overall

- I really like the Japanese-style design. I would like to see slightly larger photos.
- I would like to see more concise text with more photos.
- The pages can be a bit crowded and "busy."
- Double-page layouts are difficult to read in PDF format, so a single-page layout would be better.
- A lot of the articles are too superficial. I'd like to read articles with more depth.

## Q6

What kind of articles do you read?

- I like to read the messages from the president.
- The Meet Our People feature is always interesting.
- Articles about the Toppan Group's business are interesting. I'd like to learn more.

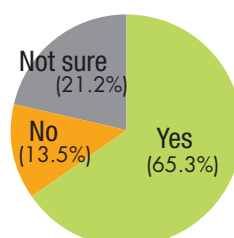
## Q7

What kind of articles would you like to read?

- I would like to know more about the businesses of overseas sites.
- I would like an easy-to-understand introduction to what each factory manufactures.
- I would like to see more about employees.
- I would like to read more articles about the direction the company is taking and its employees.

## Q8

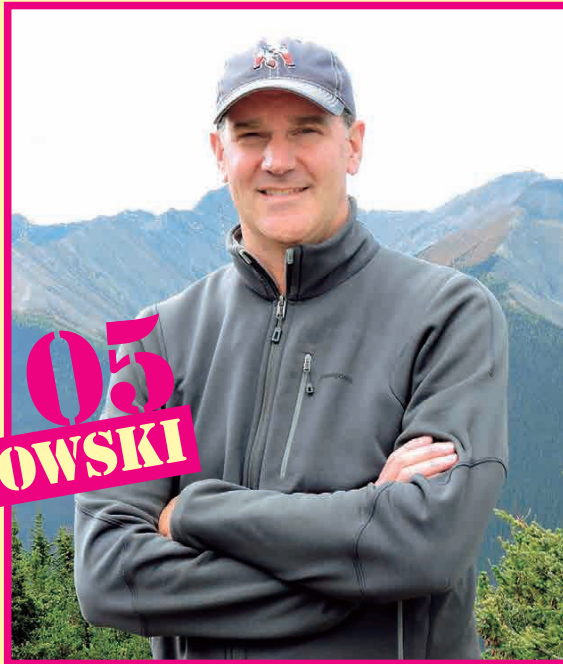
Would you participate in a networking event?



The Meet Our People section on the back cover introduces unique employees from Toppan companies around the world. We are looking for people to feature in this section. You can put yourself forward or suggest someone else. Please get in contact with us if you or someone you know would be interested.

## MEET OUR PEOPLE

# Keeping the Body and Mind Active



**05**  
**PETER STASIOWSKI**

At Banff in the Canadian Rockies

### Position & job

**Communications & Human Resources**

### Department & company name

**Interprint, Inc.**

### Location

**Pittsfield, Massachusetts, USA**

For me, the key to a good work-life balance is always keeping the body and mind active. Although my favorite hobby is baseball: as a player, fan, or even as an announcer, I like to participate in many of the sports popular in my area, including golf, basketball, mountain biking, and skiing. I've also kept busy at home during the pandemic by building a small recording studio in the hopes of launching a podcast someday.

### What advice or message do you have for Toppan colleagues around the world?

We are fortunate to work for a company like Toppan that encourages change. For me, "Go Beyond Expectations" means always bringing new ideas and skills to the table—because the simple act of learning even one new skill benefits the company, makes you more valuable and makes your work more rewarding.

**P**eter is responsible for the marketing communications and human resources functions at Interprint, Inc., a North American décor printer located in Pittsfield, Massachusetts. Peter also leads the company's continuous improvement and safety programs.

### Tell us a bit about how you came to work for Toppan

I joined Interprint 14 years ago, after a career in the advertising industry as a creative director, where I also provided account management, graphic design and copywriting for a variety of business and consumer brands. The Interprint Group joined the Toppan family in 2019.

### What experience have you built up since joining Toppan?

Unlike working for many clients in an agency, focusing on a single business like Interprint has afforded a deeper understanding of customer needs, so I'm able to support colleagues in Pittsfield and throughout the Interprint Group to promote products that provide very specific solutions. Lead-

ing Interprint, Inc.'s human resources department means I'm also listening and communicating to our employees, which has been especially important during the pandemic. Finally, I promote Interprint, Inc. as a progressive manufacturer throughout Massachusetts, and as employer of choice in our local community.

### How do you maintain a good work-life balance?

Giving a speech about Interprint's décor materials



Connecting with government



Announcing a baseball game



Enjoying a round of golf

