One App at a Time:
How Technology Promotes Safety in the Design and Construction Industry

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RLI Design Professionals
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Time | Quality | Safety | Cost

TECHNOLOGY

Course Description

Technology has proven to be helpful in increasing the safety of occupants and users of buildings or construction sites.

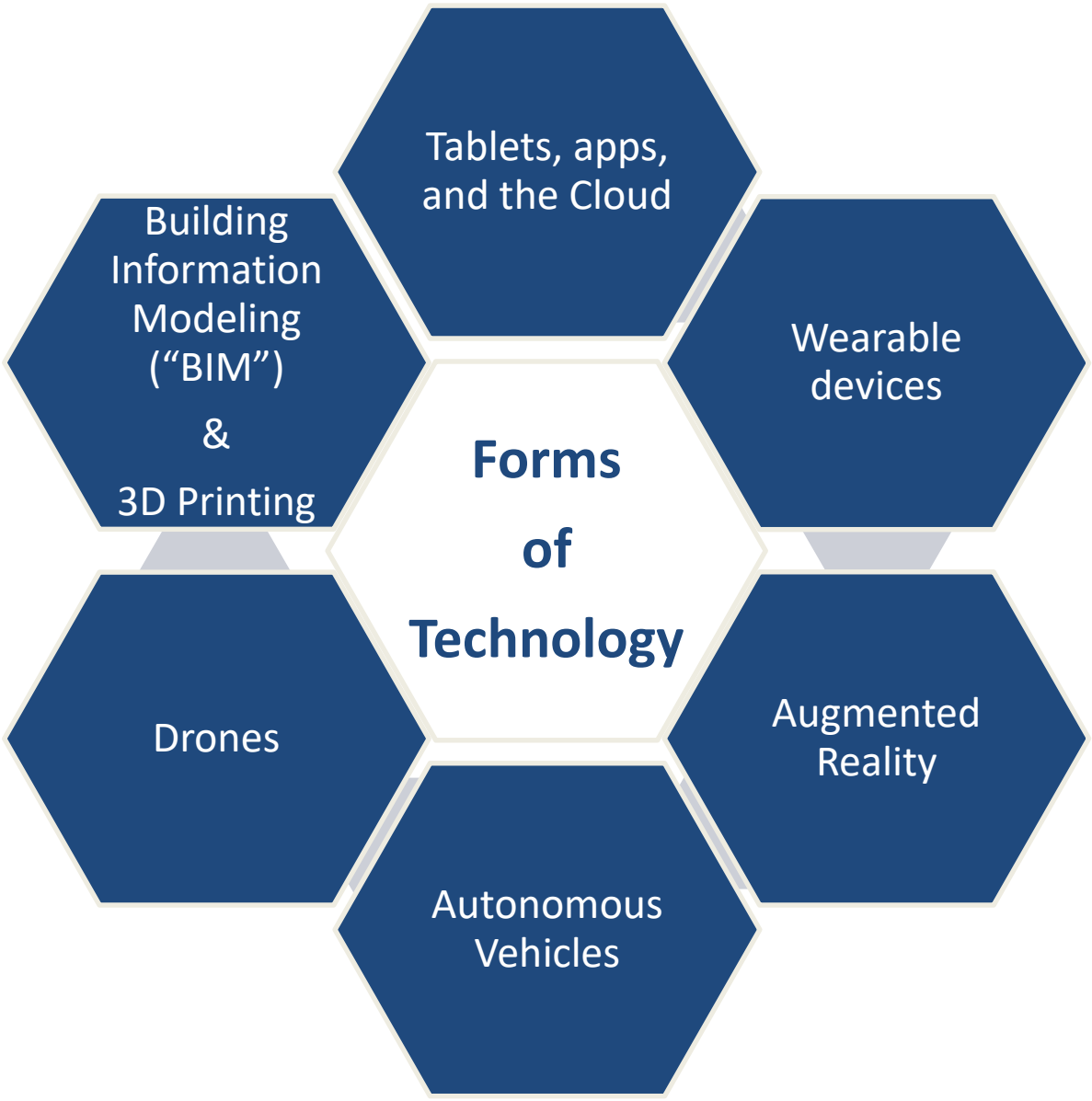
This presentation will discuss developing technological methods, systems, and products and how they impact safety and welfare within the construction and design industry.

Learning Objectives

Participants in this session will:

1	Review new technology that assists with safety audits and documentation, real-time accident inspection, OSHA reporting, and monitoring work zone conditions to protect the public health, safety and welfare.
2	Identify the forms of technology that have been found to improve safety within the industry by limiting accidental injury and death.
3	Discuss how technology such as augmented reality and GPS can serve as a distraction that can actually cause injury, and how policies and procedures for using that technology can mitigate the risks.
4	Consider precautions, particularly for those working onsite, such as written policies to limit the use of technology to designated times and areas to create safer work environments.

Today we'll review:



Tablets, Apps, and the Cloud

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How is this technology used?

Tablets

- Streamline to save time (and money)
- Store plans, field documentation, and other relevant information

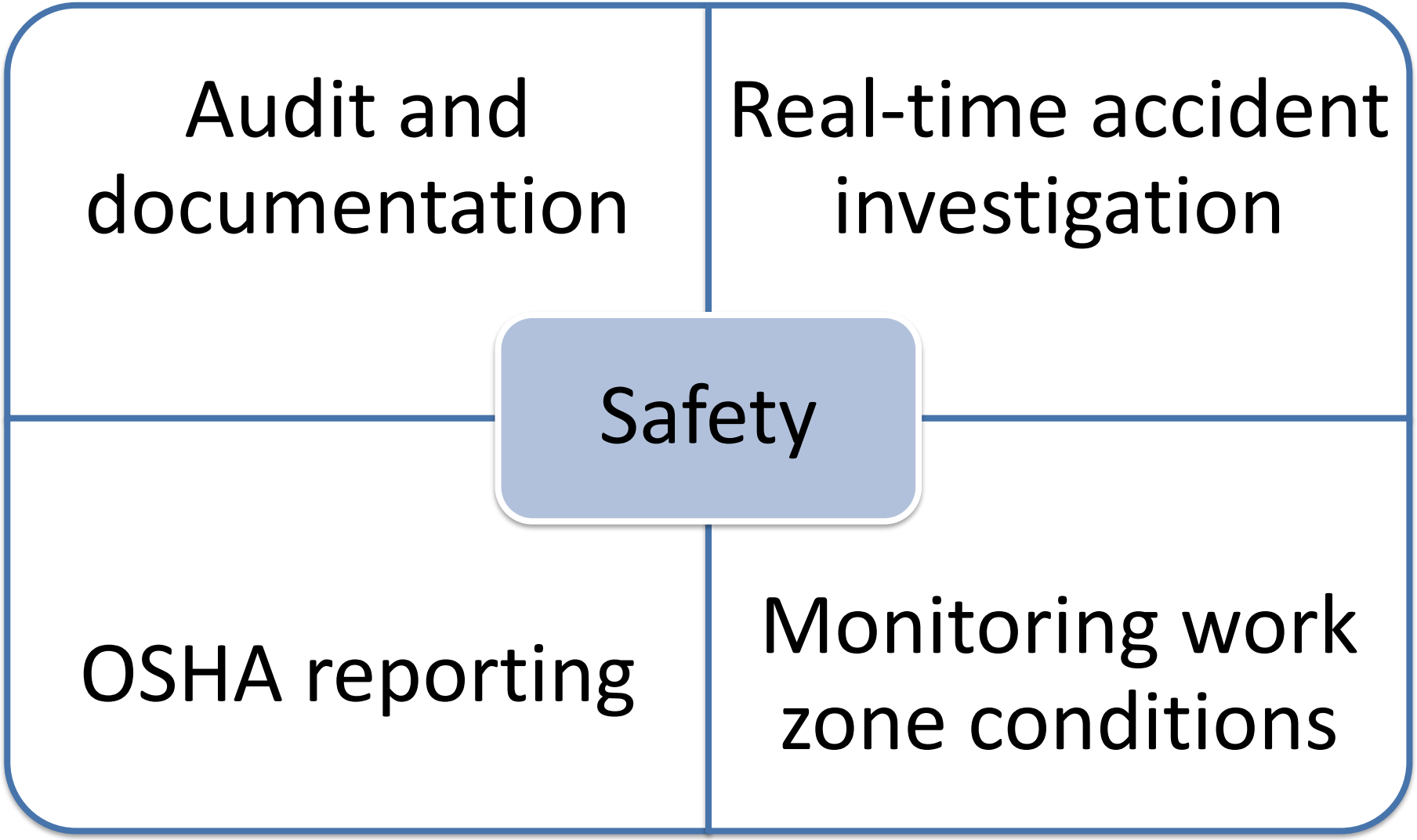
Apps

- Increase productivity
- Optimize the use of tablets and the cloud

The Cloud

- Allows all collaborators to work on one file, simultaneously
- Stores digital information

Using Tablets, Apps and the Cloud to Increase Safety

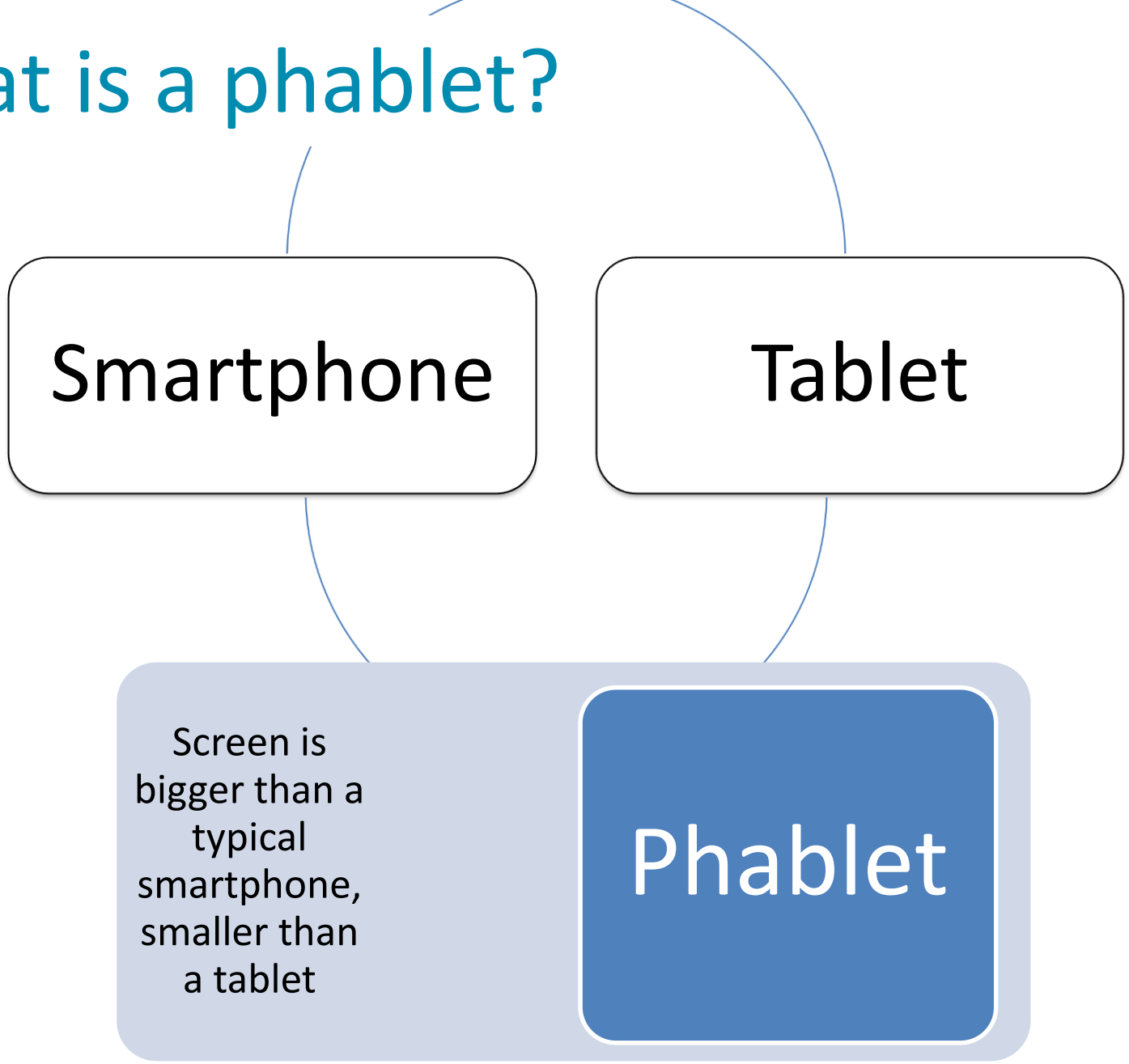


Product Example – Mobile Platform

OSHA Heat Safety Tool

Vital safety information available, whenever and wherever you need it

What is a phablet?



Product Examples - Phablets

Samsung Galaxy Note 10 Plus

- **Features**
  - 6.8” display
  - Quick to charge
  - Optional 5G
  - S pen stylus
  - Water resistant
- **Cons**
  - Expensive
  - Inferior camera
  - 65W charger not included

iPhone 11 Pro Max

- **Features**
  - Top camera
  - 6.5” display
  - Quick to charge
  - Water resistant
- **Cons**
  - Expensive
  - Display should be protected
  - 64GB base storage
  - No 5G

Sources: Digital Trends, Trusted Reviews

Keep in mind…

Risks associated with the use of tablets, apps and the cloud:

- Tablets as distractions
- Out of date software
- Difficulty in tracking cloud collaboration

Wearable Devices

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Using Wearables to Increase Safety

"Red Flag" Detection

Vital Monitoring

GPS Technology

Emergency Services Notification

Attractive to Younger Workers

Product Example - Wearables

Did you know?

Construction workers are emerging as a top group among people infected by coronavirus.

Example – Infrared Thermometers

STATE OF CONNECTICUT

GOVERNOR NED LAMONT

05/15/2020

Governor Lamont Announces Distribution of Infrared Thermometers to Eligible Small Businesses, Nonprofits, and Places of Worship

(HARTFORD, CT) – Governor Ned Lamont today announced that the State of Connecticut will be distributing 50,000 infrared thermometers it has secured for small businesses, nonprofits, and places of worship to support safe reopening activities amid the COVID-19 pandemic.

Small businesses, nonprofits, and places of worship that would like to request equipment from the state's supply of infrared thermometers should fill out a form online to indicate their request. The state has partnered with the Connecticut Business and Industry Association and its affiliate CONNSTEP to distribute the thermometers. They will be delivered to the municipalities in which the organizations are located, and then the municipalities will contact the recipient entities to inform them of a time and location they can pick up their requested equipment.

"We've secured these infrared thermometers for our businesses, nonprofits, and places of worship because having adequate screening measures is an important step in keeping people safe," **Governor Lamont said**.

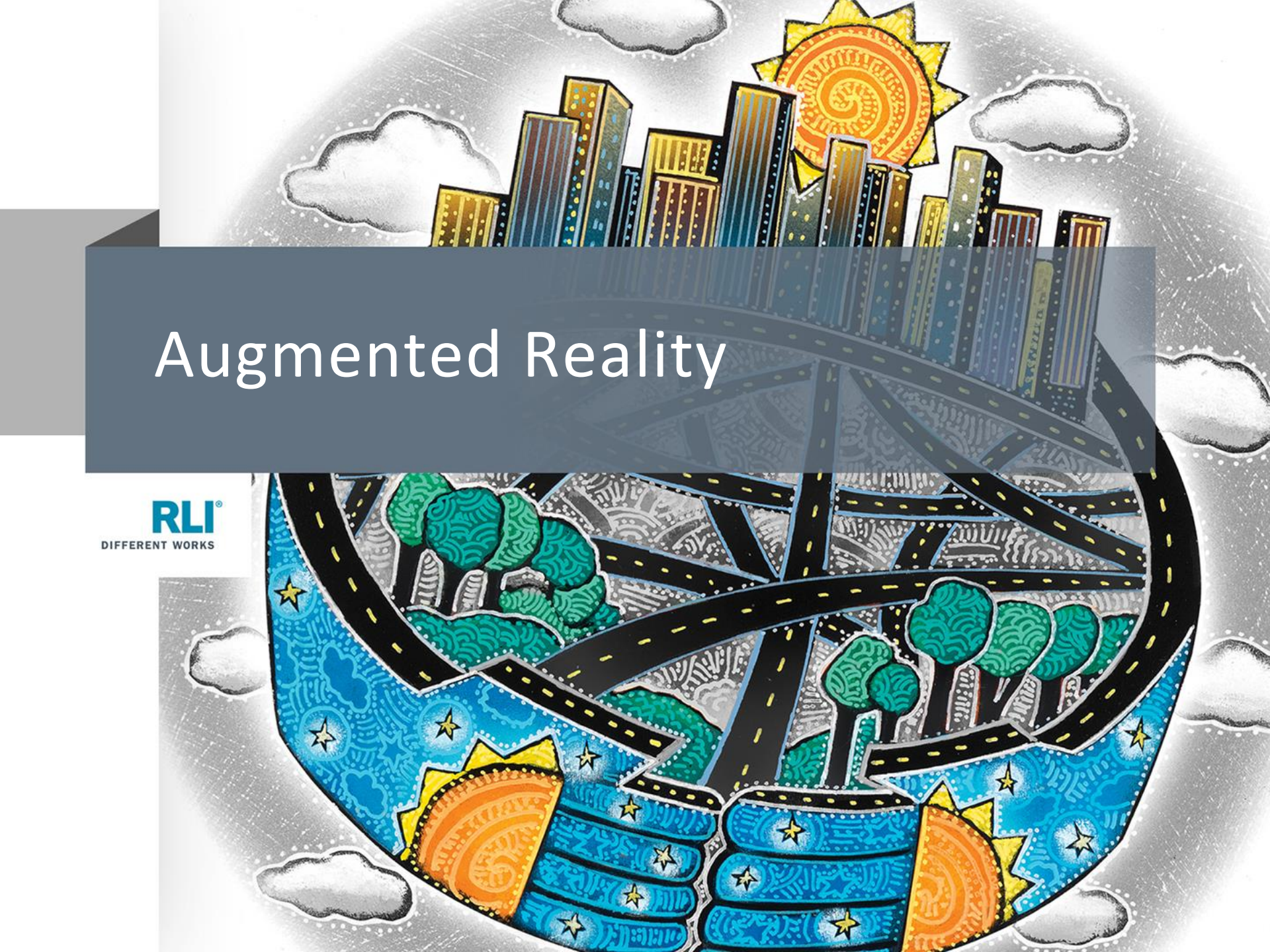
Entities that would like to request a thermometer can fill out the forms located at ct.gov/coronavirus in the "Access to Personal Protective Equipment" section, or through the links provided below:

Keep in mind…

Risks associated with the use of wearable technology:

- Worker dependency on some technologies
- Potential user error or device malfunction
- Multiple users could spread disease

Augmented Reality



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Virtual Reality

- Replaces the real world with a simulation

Augmented Reality

- Adds digital imaging to the real world

Using Augmented Reality to Increase Safety

Hands on, but virtual experience

Training and risk identification

Decreased dependency on tablets, smartphones and physical plans

Increased accuracy

Keep in mind…

Risk associated with the use of this technology:

- Additional training required
- Augmented Reality as a distraction
- Potential liability issues

Autonomous Vehicles

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Did you know?

In the United States, the use of construction vehicles and other machinery leads to about 10,000 injuries each year.

Using autonomous vehicles to increase safety

- Completing otherwise harmful tasks
- Operation from a distance
- No blind spots or distracted driving
- Fewer emissions and less fuel used

Keep in mind…

Risk associated with the use of autonomous vehicles:

- Potential product malfunction
- Distracted operators
- Lack of human instinct

Drones

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Using Drones to Increase Safety

Able to access locations typically inaccessible to humans

May be used for more accurate surveys and inspections

Can transmit real-time images from a construction site

Attached cameras can be used to increase security measures

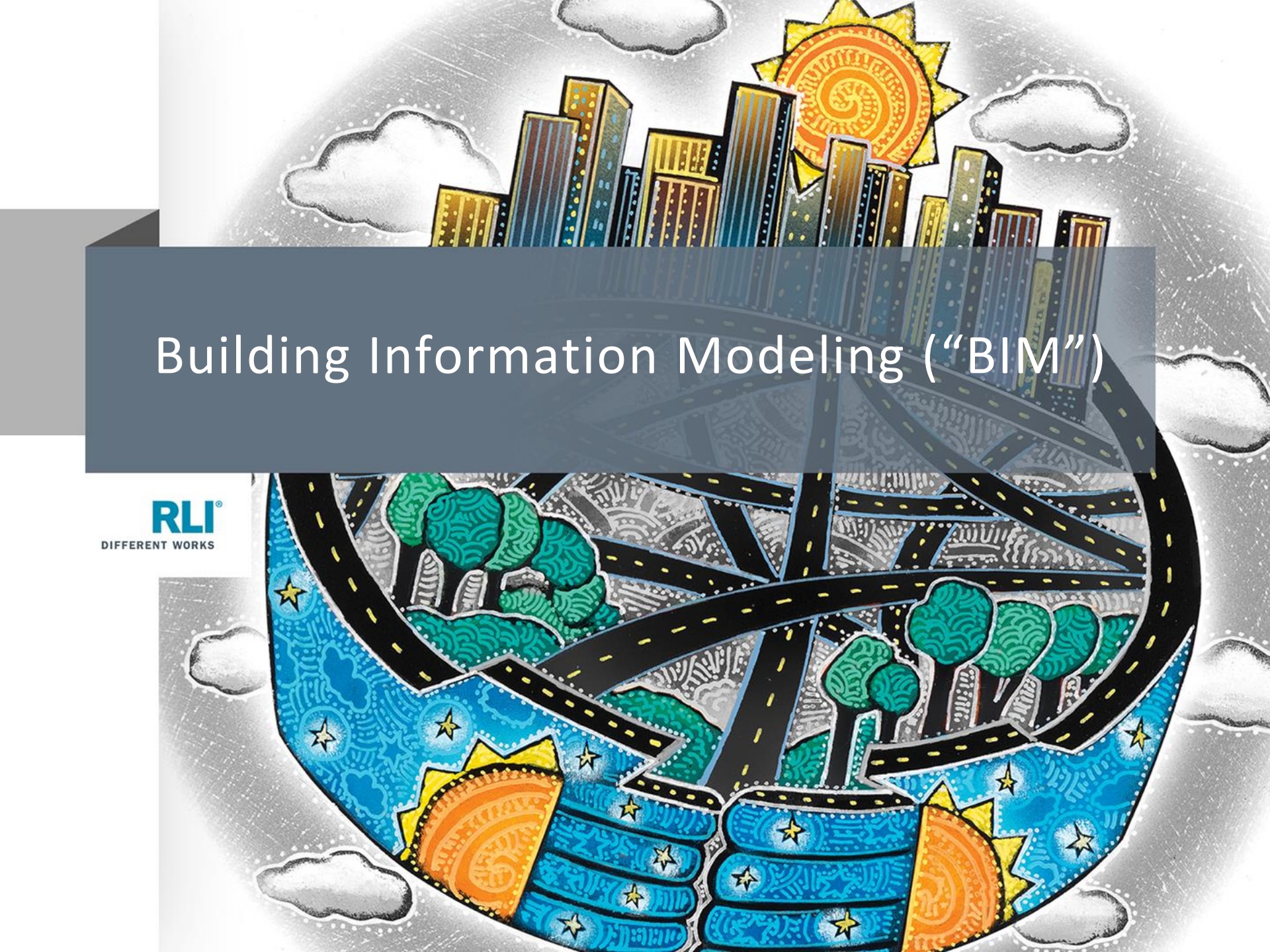
Product Example - Drones

Keep in mind…

Risk associated with the use of this technology:

- Drone crashes or near misses
- Property damage
- Threat to privacy
- Unmeasured learning curve

Building Information Modeling (“BIM”)



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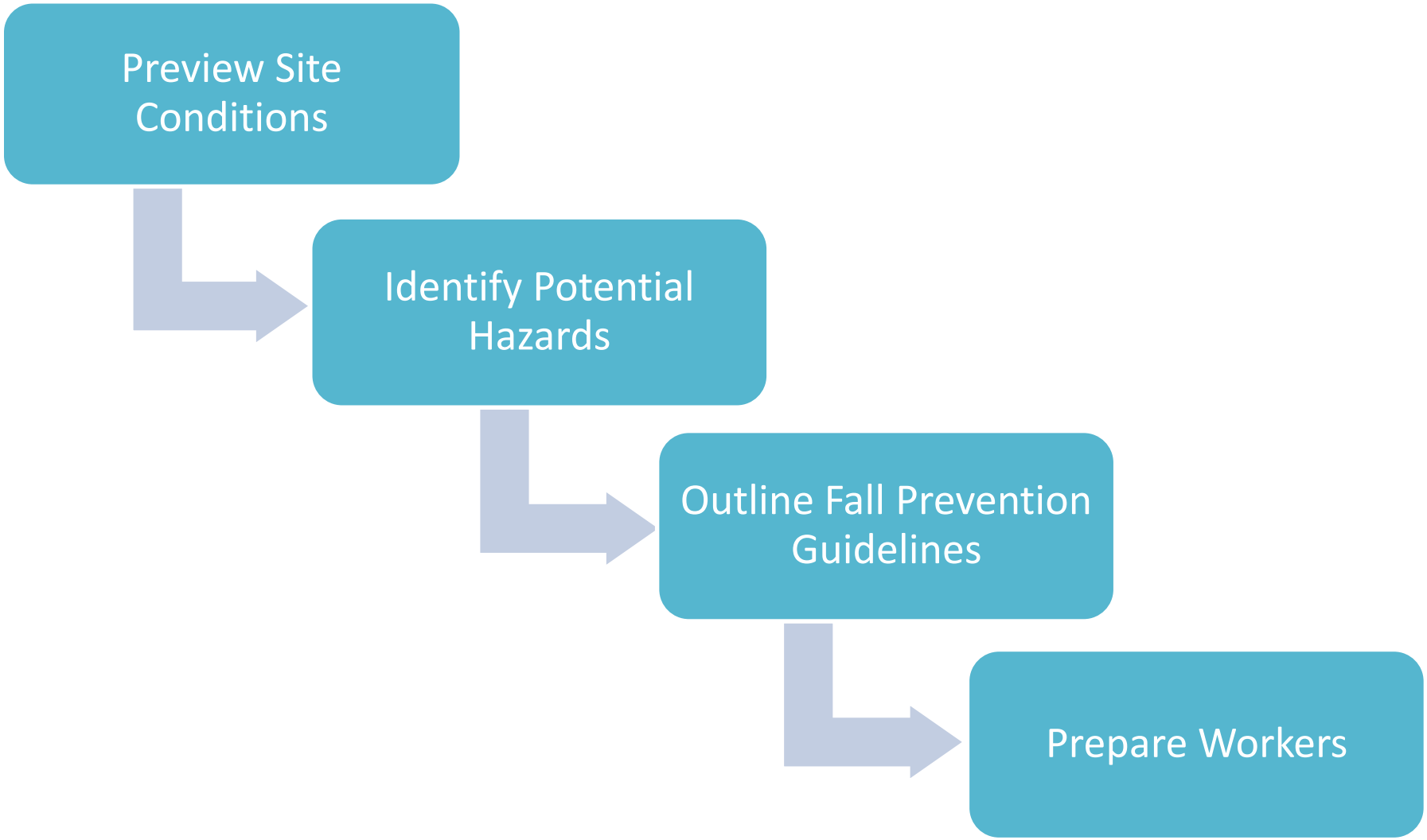
Using BIM to Increase Safety

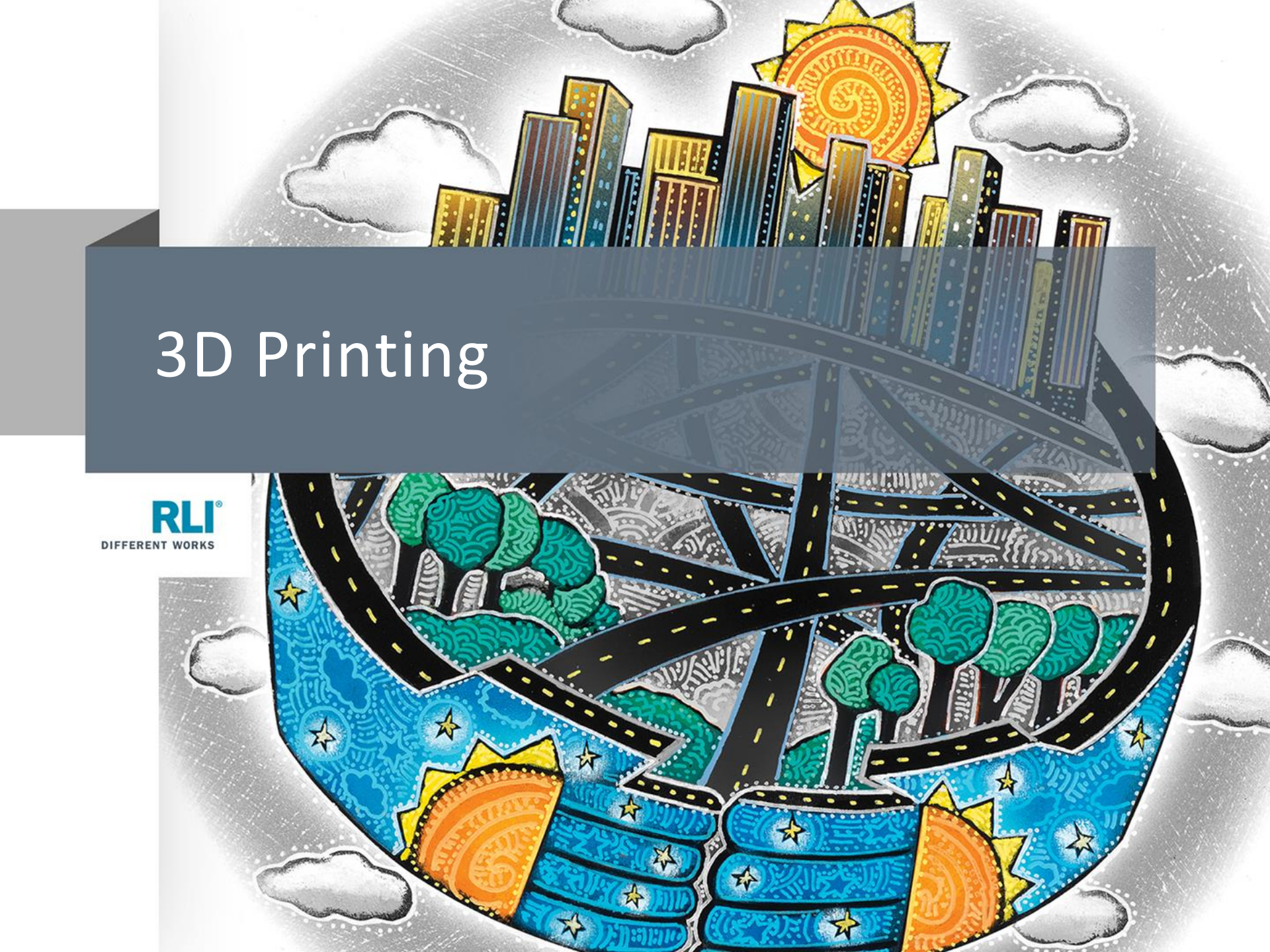


Keep in mind…

Risk associated with the use of BIM:

- Unresolved or undetected legal implications
- Limited number of experts in the industry
- Issues involving collaboration and control
- Difficulty in assessing liability

3D Printing



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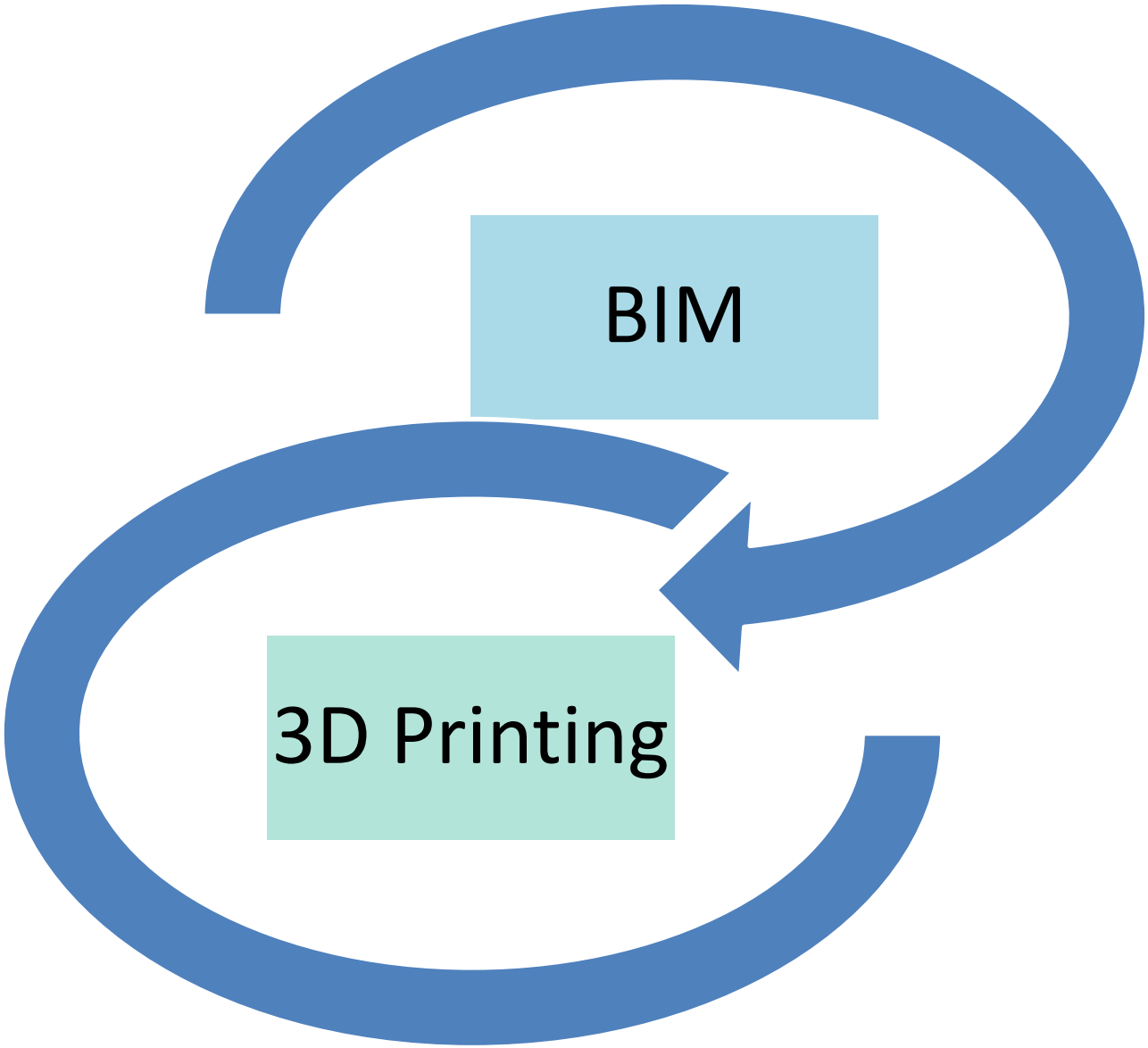

BIM
3D Printing

Using 3D Printing to Increase Safety

- Complete hazardous tasks
- Less exposure to harmful materials
- Visualization prior to construction
- Environmentally friendly

Project Example – 3D Printing

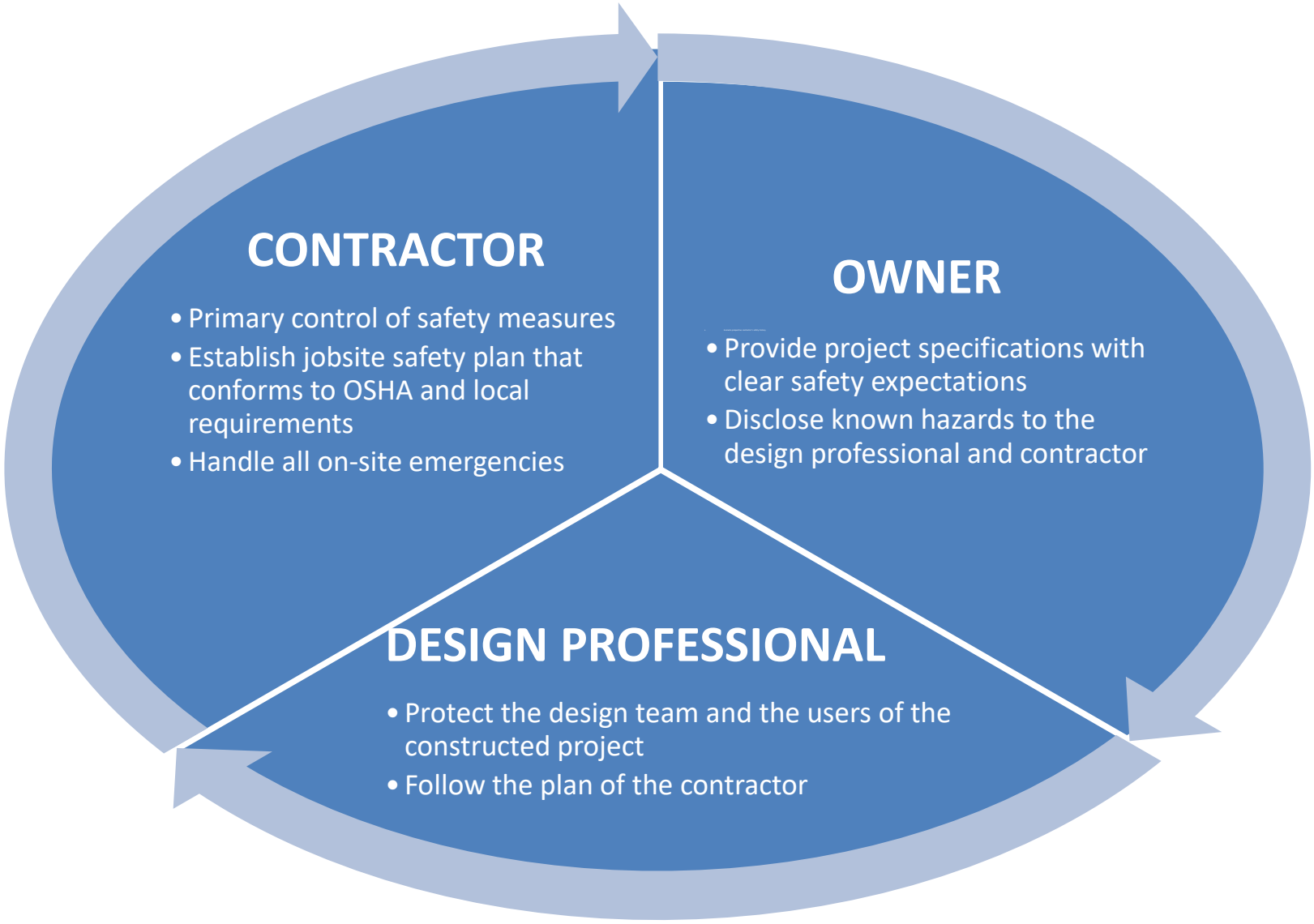
https://3dprinting.com/construction/dubai-unveils-worlds-largest-on-site-3d-printed-building/

Keep in mind…

Risk associated with the use of BIM and 3D printing:

- Errors in the digital model
- Potential liability issues
- Novel technology
- Lack of skill set or training

Summing it Up: What is your duty?



Best Practices and Tips

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Best Practices

Create clear, written policies for technology use	• Define appropriate use of technology • Designate team technology leaders
Obtain and use resources from technology manufacturers	• Request training material • Check manufacturer's customer support
Provide training and conduct safety orientations	• Wearables, self-driving vehicles, and other new technologies require more training

Remember…

1	Technology can enhance accuracy and safety
2	There are risks associated with choosing not to use evolving technology
3	The standard of care will change for design and construction professionals
4	There are potential insurance implications
5	Comparative risk analysis can help assess pros and cons for your business

Thank you for your time!

QUESTIONS?

This concludes The American Institute of Architects Continuing Education Systems Program

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