

Construction Professional in the Built Environment

The *Construction Professional in the Built Environment series* was developed in collaboration with leading construction organizations and professionals around the globe and is designed to equip project management professionals with the skills needed to transform the global construction industry and help learners understand how complex projects are properly planned, developed, monitored, and closed out.

This series introduces construction industry best practices and is designed to help practitioners work more efficiently by applying these principles and processes to their unique settings.

Participant Takeaways

We want our participants to come away from our class with more than a list of memorized concepts and processes. Instead, we want them to take the instruction to the next level by expanding their problem-solving skills, so they will be able to formulate the kinds of questions they will need to help them navigate through the construction project maze when they return to their jobs.

Collaborative Learning: A Different Way of Instruction

This series of courses has been specifically designed by PMI to enhance collaborative or group learning, which may be quite different from other courses you have taught in the past.

In other words, these courses don't just rely on a PowerPoint presentation where participants are passive observers. Instead, these classes have been designed to challenge them with real-world simulations, case studies and unique activities.

Participants will be working in breakout groups so they can discuss and work through a real-world problem they might encounter in the field.

Collaborative or group learning is designed to highlight the contributions of individual group members which promotes dialog and consensus building on topics that don't always have a clear, right or wrong answer.

Ultimately, each lesson activity is intended to build on the learning objectives that leads to a final capstone case study, where teams work through more complex construction issues.

Our Megaproject: Background

For this course, you'll be working with World Open Wheel (WOW) Racing—one of the premier international racing series for open-wheel, single seat racing cars throughout the world. Since its inaugural season in 1950, it's been one of the premier motor racing circuits in the world.





Construction Scope and Change Order
Management
Activity Workbook



Construction Project Communications
Activity Workbook



Construction
Interface Management
Activity Workbook



Construction Contract
and Risk Management
Activity Workbook



Construction Project Communications Activity Workbook

Construction Project Communications

The *Effective Communication in the Built Environment* course provides a solid foundation for project managers and stakeholders working in the construction or engineering fields and is based on the equivalent *Effective Communication in Built Environment Projects eLearning* course. Both courses align with PMI's Construction Professional in Built Environment Projects (PMI-CP™) exam certification requirements.

LEARNING OBJECTIVES

- ❖ Understanding effective communication, its importance, the damaging effects of poor communication, and techniques for effective communication.
- ❖ How to develop an effective communication strategy and plan.
- ❖ How feedback loops can be used to highlight gaps and resolve communication issues.
- ❖ How to identify and assess stakeholders and establish an effective stakeholder communication strategy.
- ❖ Understanding nuanced communication between multiple parties and the role culture plays in how we think and behave.
- ❖ Build self-awareness to improve active listening.
- ❖ Implementing project governance best practices and establishing an effective project governance structure.
- ❖ Applying a continuous improvement mindset.
- ❖ How to use Obeya (the “big room”) to enhance program activities
- ❖ Using Commitment-based Management (CbM™) to improve communication and improve performance.
- ❖ How PMIS supports effective communication, along with its key benefits and principles.
- ❖ How to leverage the Compass tool to highlight communication deficiencies and assess the data to infer meaningful insights.
- ❖ Putting together some of the main components of a communication plan.

Construction Project Communications workshop

Why Should We Invest the Time and Effort to Develop an Effective Communication Strategy?

Create a Strategy

Setting Up a Feedback Loop

Who Were Your Stakeholders?

Using Active Listening with the Avocet Island Stakeholders

Putting Together the Big Room

Set Up Governance



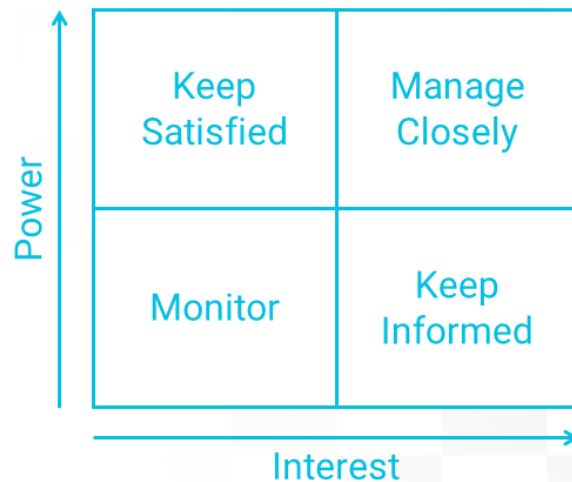
Construction Project Communications
Activity Workbook

Task One: Power Interest Matrix	33
Task Two: Determine a Key Message for Each.....	34
Task Three: Decide on the Most Appropriate Media.....	35
Task Four: Determine Frequency	36
Task Five: Set Up Governance.....	37
Task Six: Whom Should You Invite to the Obeya?	38
Conclusion	39
Introspection	39
Appendix One: Homework	41
Earnie Becklesten, Head of WOW	41
Cody Bielbaugh, SAFER Barriers, Inc.	42
Tyrell Chapman, Owner, Pit Construction Company	43
Francesco Gehri and Wright Francis, Project Manager's Bosses.....	44
Monisha Klarewill, Main Developer.....	45
Edison Lumos, Track Lighting Team Lead	46
Carson Rachelsen, Free the Birds of Avocet.....	47
Helmut Schmidt, Track Designer	48



Edison Lumos is an Avocet native who left the area to find his success as a **lighting consultant**. He jumped at the chance to help the area he grew up in succeed and bring the eyes of the world to it for no other reason than the civil war that decimated the area for three decades. While the need for a 900-million Lumen track lighting solution is daunting, Edison is certain his group can handle it.

He has asked the project managers to provide him with detailed communications related to the lighting work, and he has also asked them to let him know of any issues that are elevated to Francesco and Wright. This is due to his offering his local experience free of charge if it can help solve an issue. Edison got a lot from Avocet and this offer is his way of giving back to the community that made him.



Lesson Six

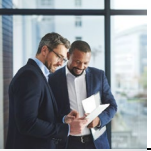
Putting Together the Avocet Island Big Room

You need to go through the physical considerations for setting up the Avocet Island *Obeya*. Specifically, you need to focus on three areas: (1) the approach—that is, whether the room is physical, virtual, or some sort of hybrid; (2) what will drive the technology you'll be using; and (3) the visuals.

Approach	Technology	Visuals
☐ Colocated ☐ Recurring ☐ Hybrid ☐ Virtual	☐ Video conference ☐ Smartboards ☐ File and information sharing ☐ Internet	☐ Flip charts ☐ Markets ☐ Sticky notes ☐ Whiteboards

Who Should Participate?

Where—if anywhere—do each of these stakeholders fit in the governance structure?

Monisha Klarewill		☐ Should be part of the Obeya ☐ Should not be part of the Obeya
Carson Rachelsen		☐ Should be part of the Obeya ☐ Should not be part of the Obeya
Francesco Gehri and Wright Francis		☐ Should be part of the Obeya ☐ Should not be part of the Obeya
Edison Lumos		☐ Should be part of the Obeya ☐ Should not be part of the Obeya
Helmut Schmidt		☐ Should be part of the Obeya ☐ Should not be part of the Obeya
Earnie Becklesten		☐ Should be part of the Obeya ☐ Should not be part of the Obeya
Tyrell Chapman		☐ Should be part of the Obeya ☐ Should not be part of the Obeya
Cody Bielbaugh		☐ Should be part of the Obeya ☐ Should not be part of the Obeya

Cody Bielbaugh, SAFER Barriers, Inc.



Ms. Bielbaugh is a late addition to the project. The barriers her company provides were added to the project after Mark Laucolth's near-fatal wreck at Mount Vista's Devil's Bend corner brought the lack of safety in track fencing on the WOW circuit into sharp focus. Mark's car went into the fence at approximately 225 km/h, with nothing to stop it from ending up within 50 m of the grandstand.

She has been involved with SAFER since she was a student at the University of Nebraska. She and her fellow students performed their initial impact tests at the famed Nebraska Speedway. This is by far the highest profile project she has been involved in, and she wants to make sure she doesn't leave anything to chance. She has requested that the project managers let her know anything related to safety on or related to the track, as she is an expert, due in part to her work.

Recommended
Communication

- ☐ Keep satisfied
- ☐ Manage closely
- ☐ Monitor
- ☐ Keep informed

Key Message

Communication
Method

- ☐ Email
- ☐ Voice calls
- ☐ Video
- ☐ Teleconferences
- ☐ In-person meetings

Governance
Role

- ☐ Project board
- ☐ Finance board
- ☐ Design authority
- ☐ Regulatory authority
- ☐ Government group
- ☐ Community stakeholder group
- ☐ Procurement board

Obeya
Participation

- ☐ **Should be** part of the Obeya
- ☐ **Should not be** part of the Obeya



Construction Scope and Change Order
Management
Activity Workbook

CONSTRUCTION SCOPE AND CHANGE ORDER MANAGEMENT

The Construction Scope and Change Order Management course provides a solid foundation for project managers and stakeholders working in the construction or engineering fields and is based on the equivalent Construction Scope and Change Order Management eLearning course. Both courses align with PMI's Construction Professional in Built Environment Projects (PMI-CP™) exam certification requirements

LEARNING OBJECTIVES

- ❖ Determine the role and importance of business objectives and how project scope impacts them.
- ❖ Articulate the connection among scope, scope changes, business objectives, and value.
- ❖ Distinguish between and apply tools and methods to define robust business objectives and performance outcomes to inform project scope.
- ❖ Implement approaches to monitor changes to business objectives.
- ❖ Increase stakeholder buy-in from project inception.
- ❖ Establish a clear project scope in the front-end planning phase
- ❖ Apply the methods, tools, tips, and techniques you need to develop project scope.
- ❖ Apply the PDRI tool to identify gaps and optimize scope coverage.
- ❖ Recognize which tools to use on various project types.
- ❖ Apply the six-step process to scope definitions.
- ❖ Identify causes of scope creep and apply approaches, tools, and techniques to reduce its prevalence in built environment projects.
- ❖ Apply scope management tools as a means of managing scope.
- ❖ Leverage target value delivery (TVD) on projects.
- ❖ Set up scope governance structures and practices on your projects.
- ❖ Identify different types of change orders and associated pricing mechanisms.
Recognize the causes of change orders on built environment projects.
- ❖ Apply the components of effective change order management.
- ❖ Apply the principles of change order management.
- ❖ Apply recommendations for reducing or eliminating unwanted change orders.
- ❖ Leverage technologies to support scope and change order management.
- ❖ Create advantages through technology to manage scope and change orders.
- ❖ Apply best practices for using technology to support scope and change order management.
- ❖ Identify when and where in the project life cycle you should implement technology to support scope and change order management.

Construction Scope and Change Order Management

Creating Business Objectives and Performance Outcomes

Apply the Basic Logic Model

Getting Ready with Front-End Planning

Defining and Evaluating Scope

Which PDRI Tool Should I Use?

Scope Management Best Practices

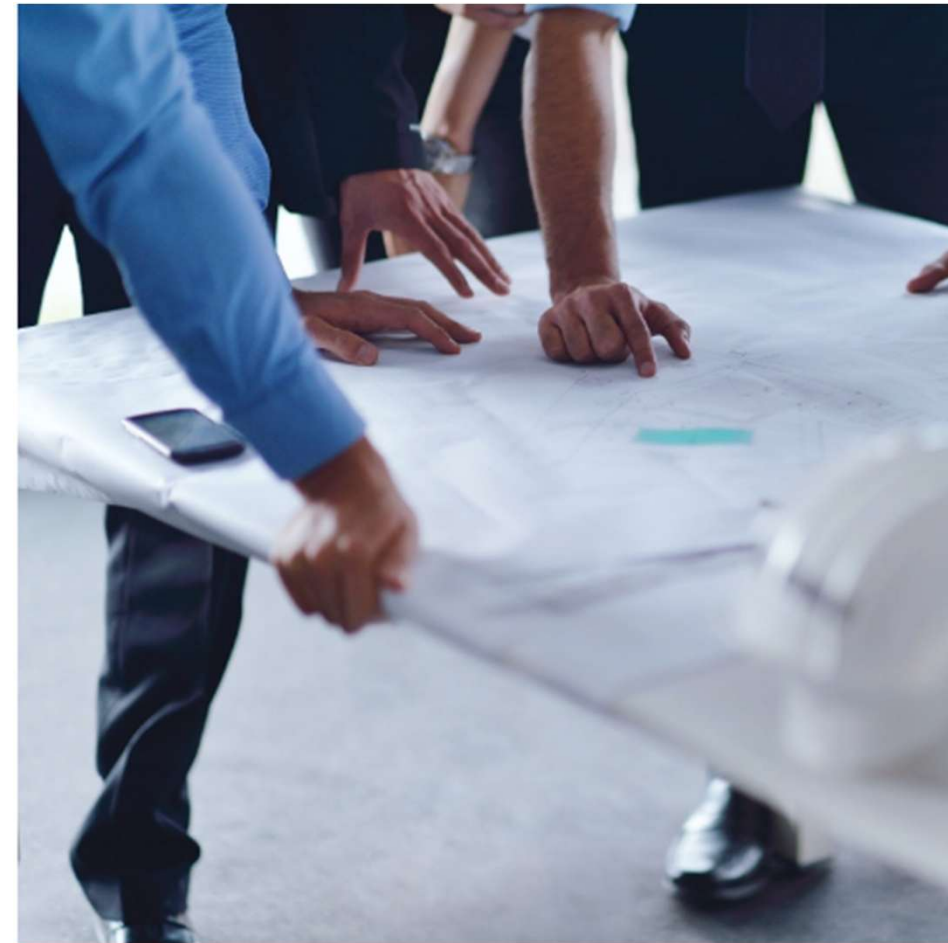
Scope Change or Scope Creep?

Scope Governance

Identifying Change Order Types

Reducing Changes

Leveraging Technology in the Built Environment



Construction Scope and Change Order
Management
Activity Workbook

Contents

Contents	2
Introduction.....	4
Gearing Up on Avocet Island: Background	4
Avocet Transportation Upgrades: Focus of this Course	4
Lesson One	5
Creating Business Objectives and Performance Outcomes.....	5
Apply the Basic Logic Model	6
Lesson Two	7
Getting Ready with Front-End Planning	7
Reflect	8
Lesson Three	9
Defining and evaluating scope?	9
Which PDRI Tool Should I Use?	11
Lesson Four	13
Scope Management Best Practices.....	13
Scope Change or Scope Creep?	14
Scope Governance.....	15
Lesson Five	16
Identifying Change Order Types	16
Reducing Changes.....	18
Lesson Six.....	19
Leveraging Technology in the Built Environment.....	19
Lesson Seven Capstone	21
Capstone Scenario	21
Additional Stakeholders	21
Task One: Apply the SMART Method.....	23
Task Two: Develop a Scope Baseline and SOW.....	24
Task Three: Evaluate Scope with PDRI for Infrastructure Projects.....	25
Task Four: Target Value Delivery on the Bridge to WoW.....	26
Task Five: Create a Change Order Request.....	27



Lesson Three

Defining and Evaluating Scope

Score the following scope statements leveraging the PDRI scoring framework.

		WELL Defined				POORLY Defined		
CATEGORY	Element	0	1	2	3	4	5	Score
Not Applicable		←						
COMPLETE Definition	No further work required	←						
MINOR Deficiencies	No further work required prior to Phase Gate 3	←						
SOME Deficiencies	Needs more work prior to Phase Gate 3	←						
MAJOR Deficiencies	Needs a lot more work prior to Phase Gate 3	←						
INCOMPLETE or POOR Definition	Little or nothing known	←						

Reducing Changes

Using the changes from the last activity, apply one or more of these tips for reducing unwanted change orders.



Change 1: _____

Change 2: _____

Change 3: _____

Change 4: _____

Change 5: _____

Change 6: _____



Construction
Interface Management
Activity Workbook

CONSTRUCTION INTERFACE MANAGEMENT

The Construction Interface Management course provides a solid foundation for project managers and stakeholders working in the construction or engineering fields and is based on the equivalent Built Environment Interface Management eLearning course. Both courses align with PMI's Construction Professional in Built Environment Projects (PMI-CP™) exam certification requirements

LEARNING OBJECTIVES.

- ❖ Apply interface management in built environment projects
- ❖ Apply common industry language for IM
- ❖ Employ interface management effectively throughout the project
- ❖ Leverage the key benefits that the implementation of effective IM brings to built environment projects
- ❖ Apply key project interfaces and aspects of IM that lead to project success
- ❖ Employ the IM maturity model
- ❖ Leverage the project interface risk impact (PIRI) matrix
- ❖ Apply the interface complexity assessment tool (ICAT)
- ❖ Classify different interfaces by type and categorization
- ❖ Leverage interface-specific attributes
- ❖ Apply mechanisms that enable interface configuration management

Interface Management

Identifying Key Interfaces

PIRI Matrix

Implementation Maturity

Identifying Interface Roles

Interface Data Register

Interface Types and Categories

Interface Complexity Assessment Tool (ICAT)

Outline the Phases and Components of the MIP

RACI Matrix

Developing Capability for IM



Construction
Interface Management
Activity Workbook

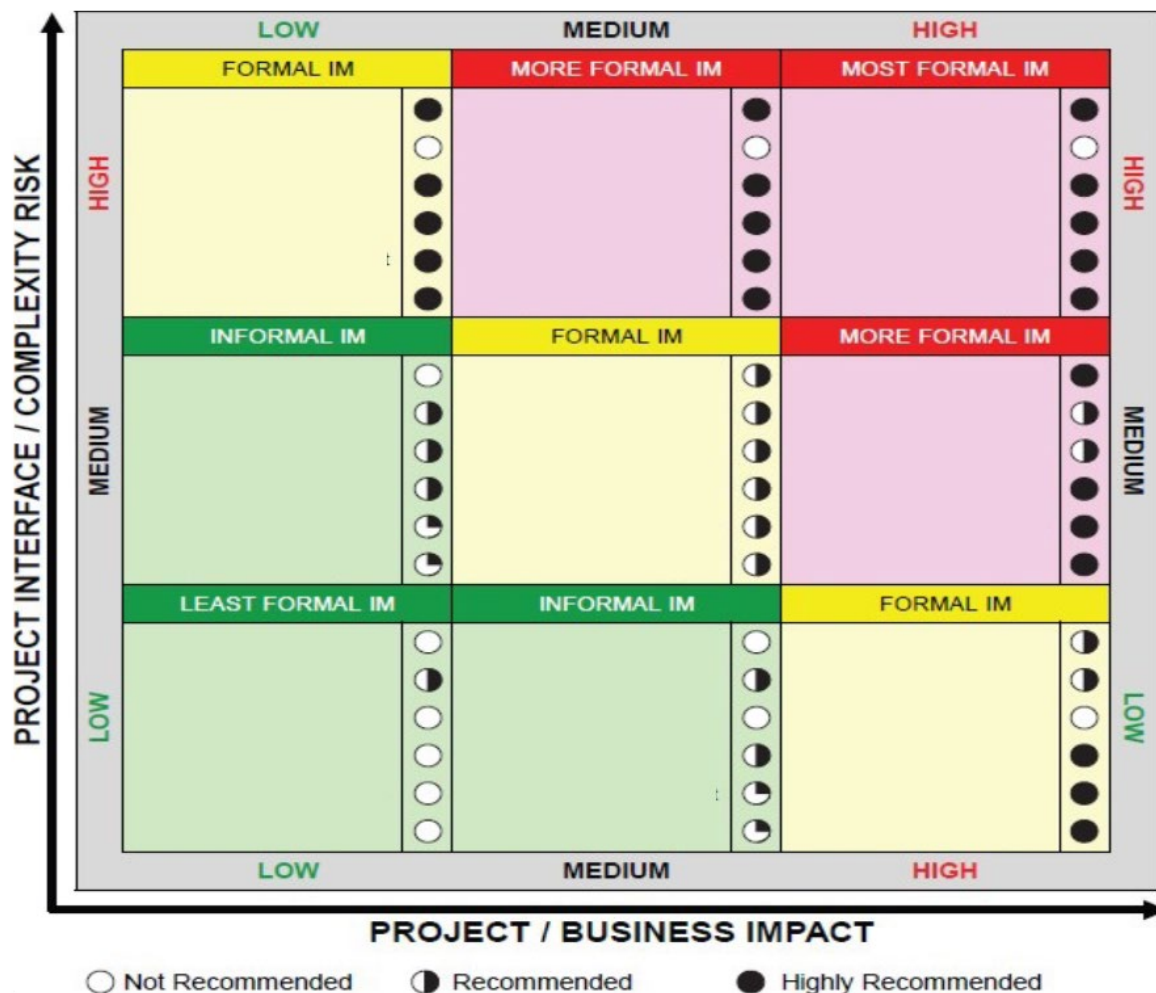
Developing Capability for IM.....	22
Putting It All Together	23
Scenario 2: WOW Concessions Project.....	23
Additional Stakeholders	23
Task One: Identify Interface Components.....	25
Task Two: Applying IM.....	26
Task Three: Apply the Interface Agreement Form (IAF).....	27
Task Four: Interface Management Framework Efficiencies and Waste Reduction.....	28
Task Five: Life Cycle Interface Management	29
Task Six: Interface Management Maturity Model.....	30
Conclusion	31
Introspection	31



Lesson Two

PIRI Matrix Exercise

Recall your list of risks or issues that the 'Here Fishy Fishy' project could encounter if IM isn't appropriately implemented? How many of those issues could be solved through the implementation of the PIRI matrix? Use the blank version here to prepare your responses.





Putting It All Together

Scenario 2: WOW Concessions Project

'Here Fishy Fishy' seems to be off to a great start, thanks to your hard work. You'll need to turn your attention to some of the other restaurants and concession projects now, as they are all happening simultaneously. While 'Here Fishy Fishy' is one of four dine-in options, ranging from gourmet burgers to gourmet steaks, there are also the regular concession vendors who have their own sets of wants and needs. Let's meet some of the vendors and their project managers.

Additional Stakeholders



Vivienne Parks, Project Manager, Fried but Feisty

Vivienne Parks is the project manager for the concession outlet, Fried but Feisty. Fried but Feisty evolved from a food truck on the mainland where it soared in popularity. The owner and chef of Fried but Feisty is Steve McMullen. He started the food truck in 2019 after retiring from the Army. Steve is a local celebrity on the mainland and jumped at the chance to snag a fast-service outlet within the WOW Racetrack. Steve hired Vivienne to be his advocate in the project and to serve as project manager, as he is still running the food truck until the new site opens. Vivienne sympathizes with Steve's need to make a seamless transition from food truck to brick and mortar, so she's most concerned about the schedule.



Construction Contract and Risk Management

Activity Workbook



Copyright ©2024 Project Management Institute, Inc. All rights reserved.
This material is being provided as part of a PMI course.

Contract and Risk Management

The Contract and Risk Management course provides a solid foundation for project managers and stakeholders working in the construction or engineering fields and is based on the equivalent Construction Contract and Risk Management eLearning course. Both courses align with the PMI Construction Professional in Built Environment Projects (PMI-CP)[™] exam certification requirements.

LEARNING OBJECTIVES

- ❖ Introduce the concept of contract and risk management *associated with the built* environment.
- ❖ Introduce and review the contract life cycle.
- ❖ Review contract and delivery method strategies.
- ❖ Introduce and review the risk management framework as well as the risk classification and risk prioritization processes.
- ❖ Review risk management tools and techniques.
- ❖ Review the common causes of claims.
- ❖ Learn and review methods for preventing and reducing claims and disputes.
- ❖ Review the claims pursuance and dispute resolution processes.

Construction Contract and Risk Management

Contract and Delivery Method

Defining Risk

Risk Management Process

Risk Mitigation Treatments

Risk Mitigation Tools and Techniques

Claims Management Process



**Construction Contract
and Risk Management**

Activity Workbook

Contents

The Project Setting3

Lesson 34

 Activity 1: Avocet Island Project Scenario 4

 Activity 2: Contract and Delivery Method 5

Lesson 46

 Avocet Island Project: Baby Avocet 6

 Activity 1: Defining Risk – Baby Avocet 7

 Activity 2: Risk Management Process 9

 Activity 3: Risk Mitigation Treatments 12

Lesson 615

 Activity 1: Claims Management Process 15

Lesson 7: 19

 Capstone Activity Question 1 19

 Capstone Activity Question 2 20

 Capstone Activity Question 3 21



Lesson 4

Avocet Island Project: Baby Avocet

The Unexpected Happens

We are now 6 months into the Avocet Island project. After a few days of weather disruptions, the construction crew is in their own race to make up for lost time. A few meters away from where the construction team has resumed paving, an avocet mother has set out with her family of hatchlings in search of food.

As the family approaches the course, the mother spots a potential food source on the other side of the track and takes flight to explore. The hatchlings, still too young to fly, dutifully remain in place—except for one adventurous little tyke, who sprints after his mother onto the newly paved track.



Inevitably, the small hatchling gets stuck in the still-curing asphalt. Fortunately, an alert member of the construction crew notices, halts the paver about to make its second run through that section of the track, and radios the site foreman. With the avocet mother screeching and circling above the track, a crew member pulls out their cell phone and starts livestreaming the event.

By the time the foreman arrives, the video has been viewed by a local environmental group, which contacts the environmental ministry and a local wildlife rescue agency. The rescue agency then springs into action, dispatching a team of specialists to attempt to save the hatchling, which by now has been adopted by a growing online community and been given the name of Avo. Local news organizations having been alerted and are sending their own crews to cover the story.

As rescue efforts get underway and online interest grows, the foreman engages with the Becklesten Group's project team and Helmut Schultz & Associates executives, as well as representatives of the environmental ministry, all of whom are heading to the site to assess the situation.

Lesson 4

Activity 3: Risk Mitigation Tools and Techniques

Documentation reviews and
experience interviews

Risk registers

Brainstorming and facilitation
workshops

The Delphi technique

Monte Carlo Simulations

Lesson 7:

Capstone Activity Question 2

Instructions

1. Review your breakout group's initial risk management lesson recommendations (on pages 7- 14 of this Activity Workbook) and consider the risks your group identified and prioritized, and to which you applied a risk mitigation strategy.
2. Answer the question below.
Knowing what you know now, how would you advise the stakeholders to proceed after the Avo incident went viral?
3. Justify your response and prepare for the class discussion to follow.
4. If requested by the instructor, continue to the next question.



Thank You and Good Luck!

Best wishes as you train people on the many concepts that go into creating a successful built environment project. PMI is grateful for everything you do to advance the project management profession.