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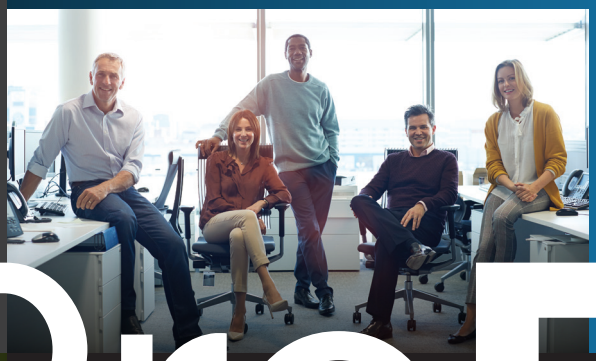
PROFESSIONAL
FACILITY MANAGEMENT
INSTITUTE



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CREDENTIAL PROGRAM

STUDENT SLIDES BOOK

Instructor-Led Student Slides
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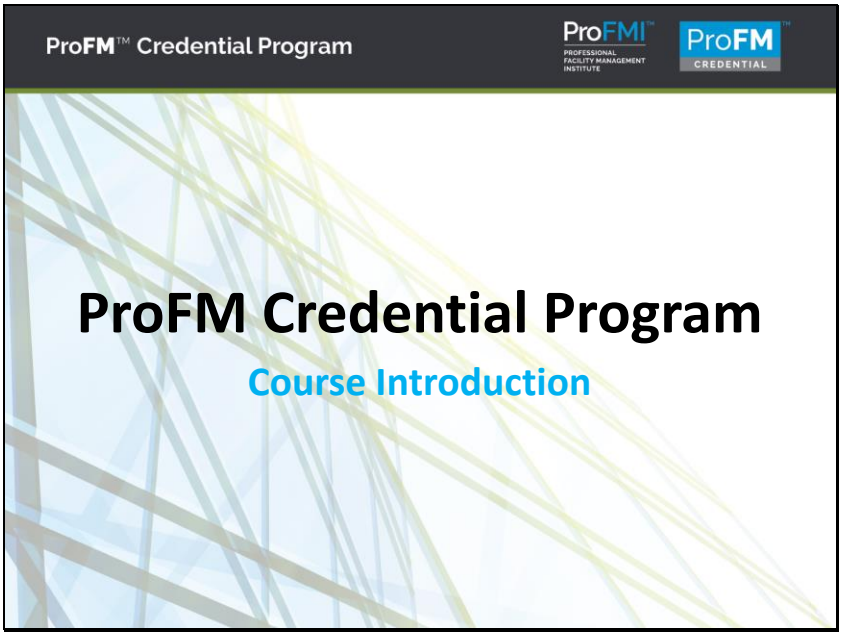
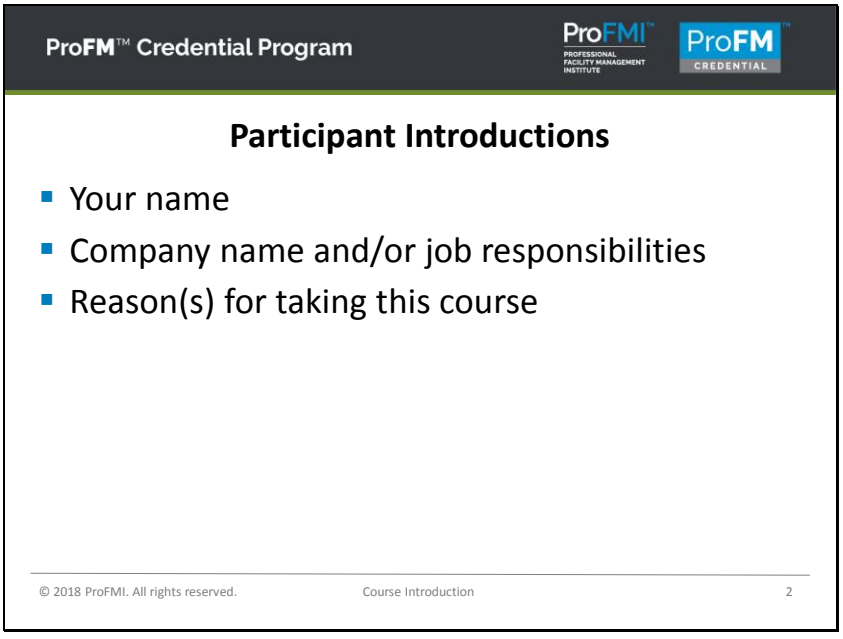
Course Introduction





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Instructor Responsibilities

- Be prepared.
- Establish a climate of trust.
- Anchor information against background and expertise.
- Be a resource for students.

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Student Responsibilities

- Be prepared—complete class pre-work.
- Take part in class discussions and activities.
- Follow the rules of common courtesy.
- Provide feedback to the instructor.

Note: You must score 70 percent or higher on the Final Assessment to earn the ProFM credential.

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Course Components

Reading materials

Five books:

- Module 1: Competencies for Facility Professionals
- Module 2: Asset Management
- Module 3: Risk Management
- Module 4: Business Management
- Module 5: Operations and Maintenance

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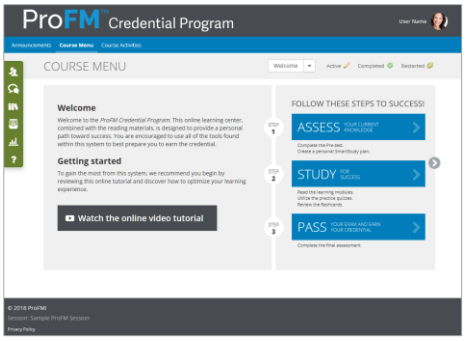
Course Components



Online reinforcement tools

- Pre-Test
- SmartStudy Tool
- Section-Specific Quizzes
- Glossary
- Module Flashcards
- Final Assessment
- Resource Center

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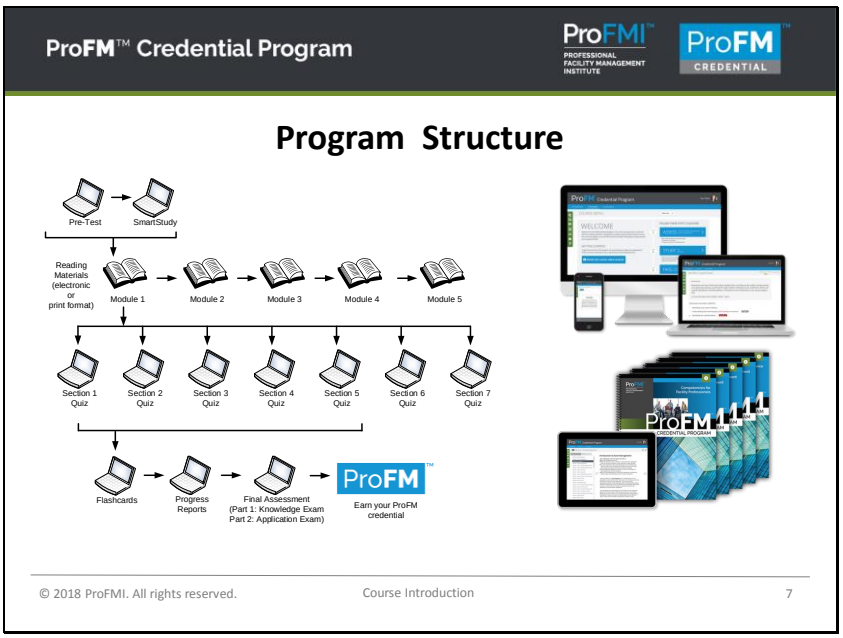
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CREDENTIAL
Program Structure
Pre-Test
SmartStudy
Reading Materials (electronic or print format)
Module 1
Module 2
Module 3
Module 4
Module 5
Section 1 Quiz
Section 2 Quiz
Section 3 Quiz
Section 4 Quiz
Section 5 Quiz
Section 6 Quiz
Section 7 Quiz
Flashcards
Progress Reports
Final Assessment (Part 1: Knowledge Exam Part 2: Application Exam)
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Course Introduction
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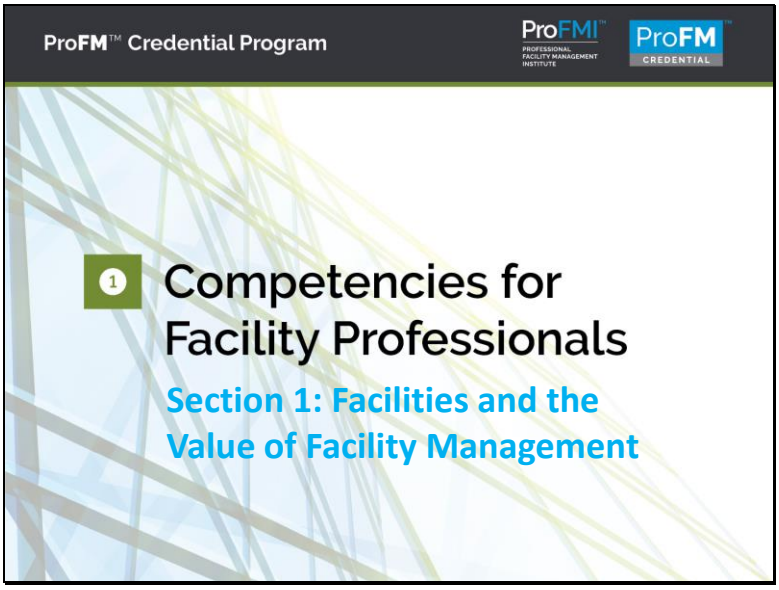
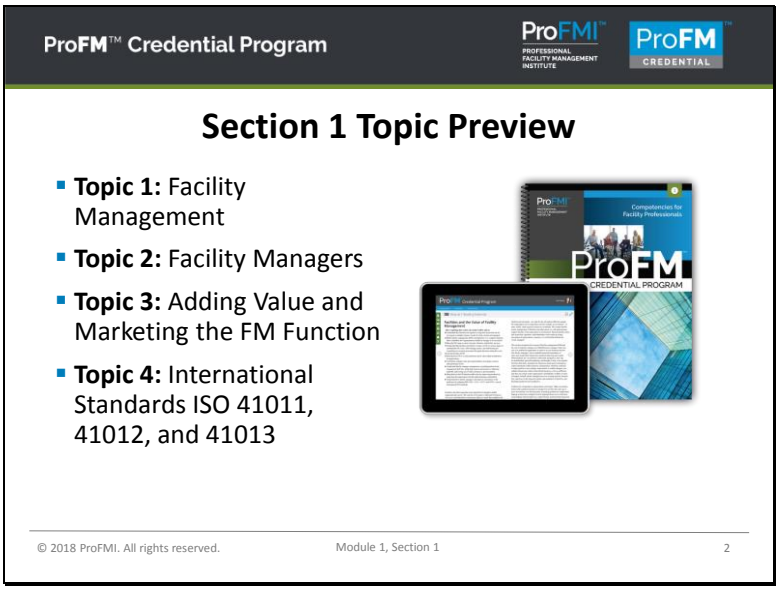
Module 1: Competencies for Facility Professionals

Section 1: Facilities and the Value of Facility Management





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ISO FM Standards

ISO standards help create validation for the FM profession.

ISO 41011:2017

- Glossary of facility management terms

ISO 41012:2017

- Strategic sourcing and the development of agreements

ISO 41013:2017

- Scope, key concepts, and benefits of facility management

ISO 41001

- Guidance on the use of management systems—planned for 2018 release

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Facility Management

Facility management:

An "organizational function which integrates people, place, and process within the built environment with the purpose of improving the quality of life of people and the productivity of the core business" (ISO 41011)

Organizations might use an internal definition that covers the unique scope of services for the organization.

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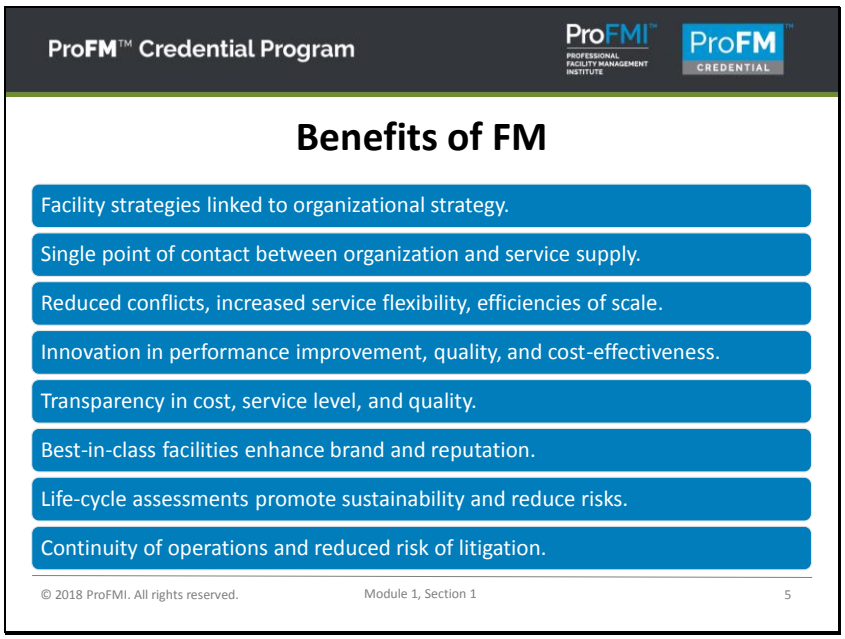
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Benefits of FM
Facility strategies linked to organizational strategy.
Single point of contact between organization and service supply.
Reduced conflicts, increased service flexibility, efficiencies of scale.
Innovation in performance improvement, quality, and cost-effectiveness.
Transparency in cost, service level, and quality.
Best-in-class facilities enhance brand and reputation.
Life-cycle assessments promote sustainability and reduce risks.
Continuity of operations and reduced risk of litigation.
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Module 1, Section 1
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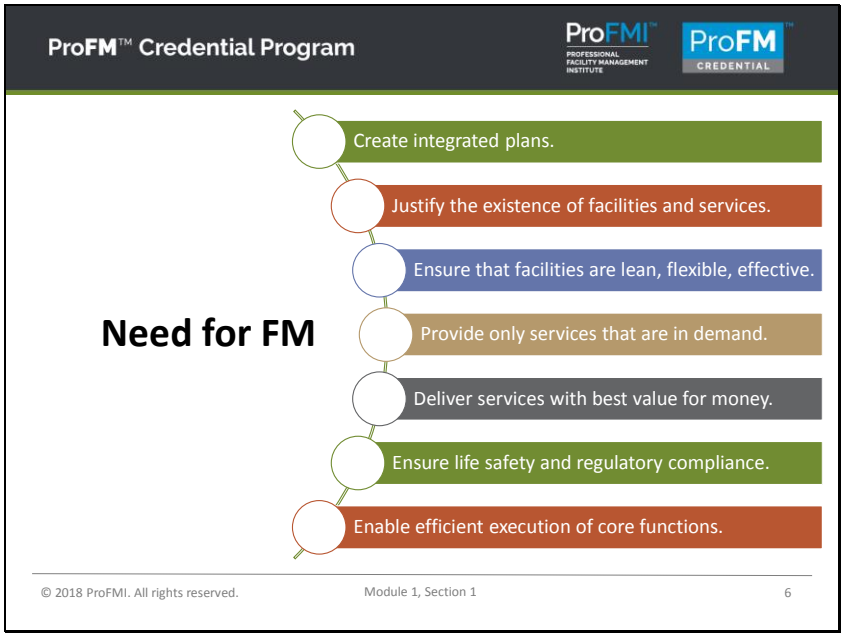
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Need for FM
Create integrated plans.
Justify the existence of facilities and services.
Ensure that facilities are lean, flexible, effective.
Provide only services that are in demand.
Deliver services with best value for money.
Ensure life safety and regulatory compliance.
Enable efficient execution of core functions.
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Module 1, Section 1
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Assets, Facilities, Services

- **Asset**
  "Item, thing or entity that has potential or actual value to an organization"
- **Facility**
  "Collection of assets which is built, installed or established to serve an entity's needs"
- **Facility service**
  "Support provision to the primary activities of an organization, delivered by an internal or external provider"

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Factors Influencing Scope

Private sector

Public sector

Educational sector

Nonprofit sector

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Discussion Question

Which of the different sectors do you have FM experience with? In what ways did the characteristics of that sector shape your responsibilities?

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Demand Organization

Demand organization, defined by ISO 41011:

"Entity which has a need and the authority to incur costs to have requirements met"

Demand organization characteristics
• Typically an authorized representative from an organization.
• Could be internal or external.
• Customers must be kept satisfied, healthy, safe, and productive.

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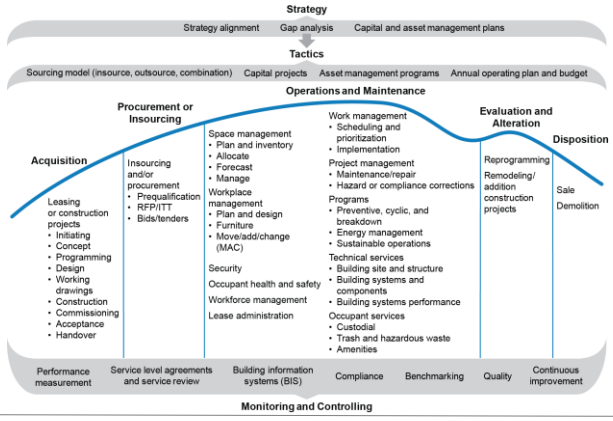
Facility Management Life Cycle



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FM Profession

- The core of FM consists of both “hard” and “soft” services.
- An **occupant** is “any employee, contractor, customer, or guest who spends time in a facility and provides or uses its services.”
- Recognition of the profession is driven by vocabulary and processes, the presence of undergraduate/graduate degrees, and the publication of international standards.

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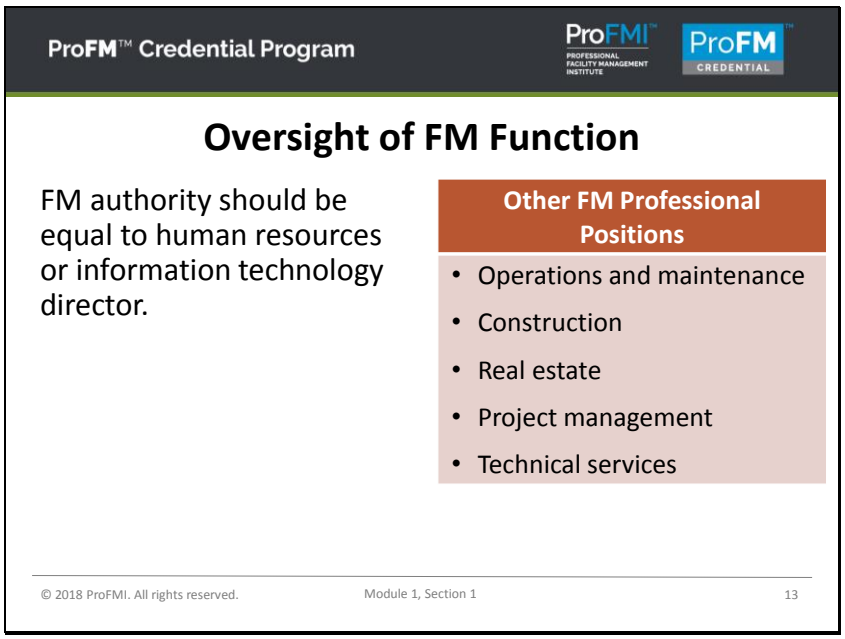
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Oversight of FM Function
FM authority should be equal to human resources or information technology director.
Other FM Professional Positions
• Operations and maintenance
• Construction
• Real estate
• Project management
• Technical services
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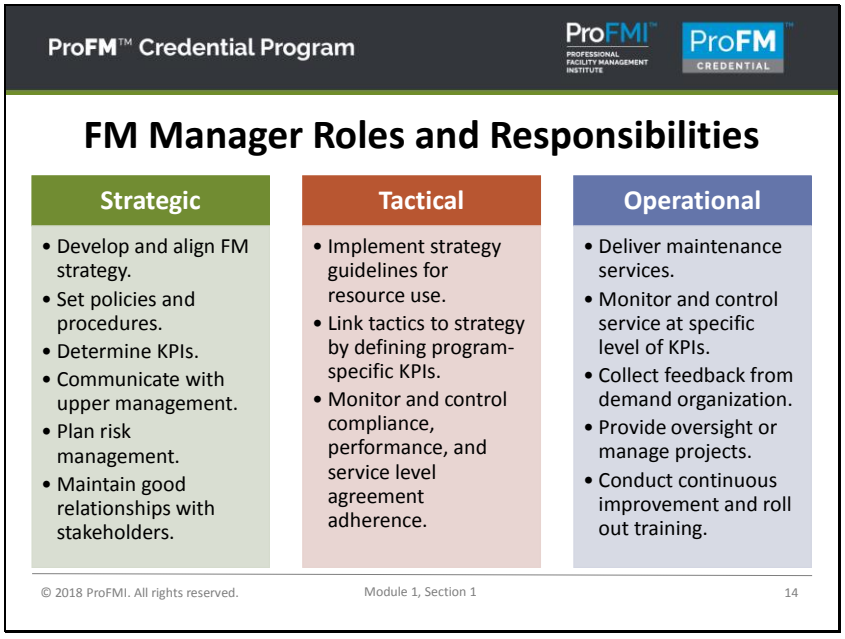
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CREDENTIAL
FM Manager Roles and Responsibilities
Strategic
• Develop and align FM strategy.
• Set policies and procedures.
• Determine KPIs.
• Communicate with upper management.
• Plan risk management.
• Maintain good relationships with stakeholders.
Tactical
• Implement strategy guidelines for resource use.
• Link tactics to strategy by defining program-specific KPIs.
• Monitor and control compliance, performance, and service level agreement adherence.
Operational
• Deliver maintenance services.
• Monitor and control service at specific level of KPIs.
• Collect feedback from demand organization.
• Provide oversight or manage projects.
• Conduct continuous improvement and roll out training.
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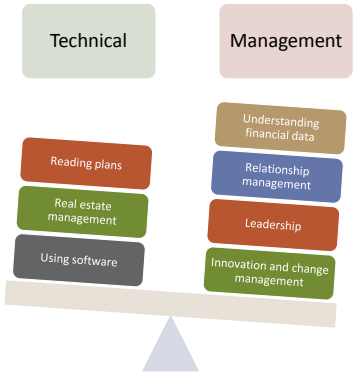
Technical Versus Management Expertise



Organizations may favor either, depending on industry.

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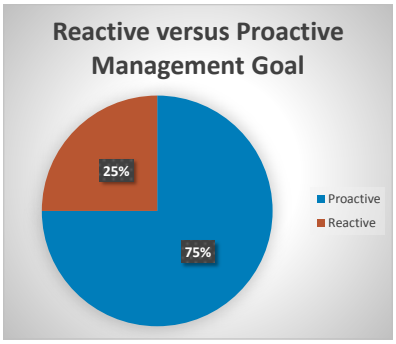
Reactive versus Proactive Management

Proactivity may include:

- Involvement with organizational strategic planning.
- Innovating.
- Collaborating.
- Integrating.
- Risk and cost analysis.
- Cyclic, predictive, and preventive maintenance.



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Discussion Question

What has been your experience with deploying proactive management? Have you found situations where you could demonstrate that proactive management created cost savings for your organization?

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Managing Tradeoffs

Conflicting goals that may need to be managed include:

- Saving money but being more responsive to user needs.
- Improving productivity and efficiency while improving work environment.
- Providing work/life balance and staying on schedule.
- Investing in sustainability but staying on budget.
- Being reactive and proactive.
- Being consistent and reliable yet innovative and flexible.

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Adding Value

FM can add value to an organization by:

- Ensuring legal compliance.
- Cutting costs.
- Improving productivity and flexibility.
- Supporting the demand organization's brand.
- Contributing to sustainability.

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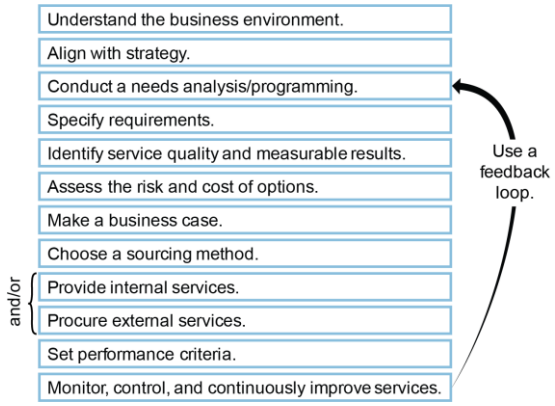
ISO 41012's Sourcing Process



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Questions?

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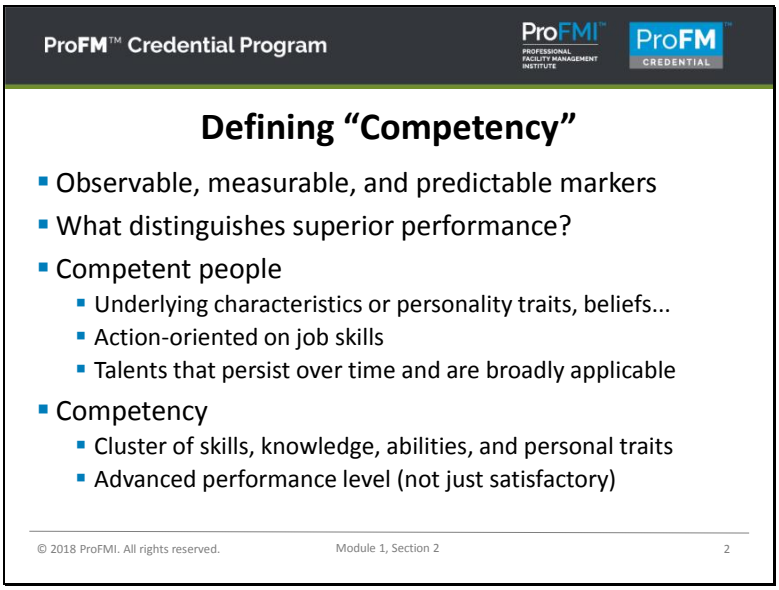
Section 2: Cross-Functional Competencies



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Types of Competencies

Technical	• Role's functional expertise (skills, knowledge) • Asset, risk, and business management; O&M
Managerial	• Planning, organizing, and directing work
Cognitive	• Pattern recognition and abstract thinking • From strategic to tactical to operational
Interpersonal	• Communicating, motivating, resolving conflicts, collaborating • Emotional intelligence (self and others)

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Discussion Question

Which is a type of "super competency" that combines technical, managerial, cognitive, and interpersonal competencies?

a) Core competency
b) Leadership
c) Trust

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Core Competencies

Something done especially well in comparison to competitors or other individuals; directly tied to strategy and culture.

Learn more about your organization's core competencies.

Develop FM core competencies that align with organizational core competencies.

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How Are Competencies Developed?

- Natural aptitude exists in some, but skills, knowledge, and abilities can be developed over time.
- **Technical and managerial:** Education, training, and on-the-job practice.
- **Interpersonal:** Practice; get coaching.
- **Cognitive**
  - Novel experiences for "plasticity."
  - Challenge self.
  - Think creatively to find connections.
  - Do it the hard way sometimes.

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ProFM Cross-Functional Competencies

Competency "threads"

- Communication
- Sustainability
- Quality
- Collaboration
- Innovation

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Questions?

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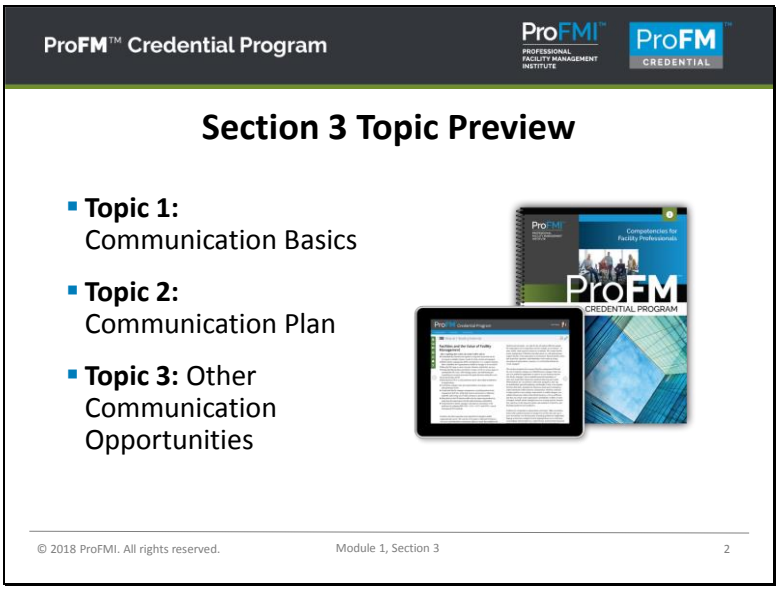
Section 3: Communication



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Forms of Communication

Communication comes in many forms, including:

- Giving/receiving feedback.
- Staff meetings.
- Daily status meetings.
- Operations logs.
- Weekly planning.
- Monthly engineering reports.
- Monthly EH&S reports.
- Incident reports.
- Process or procedures updates.
- Board presentations.

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Discussion Question

In addition to the examples shown on the previous slide, what are some other examples of communication that you may use in your role as a facility manager?

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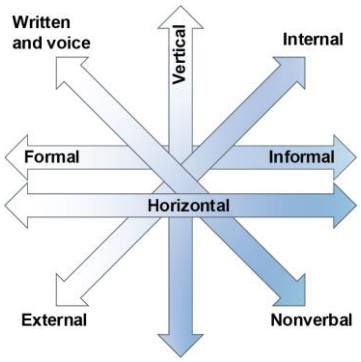
Dimensions of Communication

There are four primary dimensions of communication:

- Vertical/horizontal
- Internal/external
- Formal/informal
- Written and voice/nonverbal



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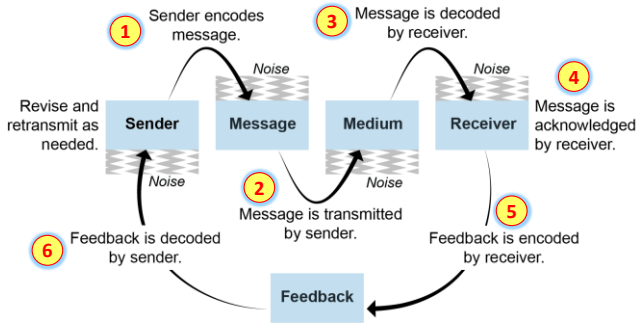
Communication Model

There are **6 primary steps** in the communication model:



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Communication "Noise"

- At each point during the communication exchange, certain obstacles may prevent good communication. These obstacles are known as **noise**.
- Examples of noise include:
  - Wrong receiver.
  - Preconceived notions.
  - Culture.
  - Language barriers.
  - Previous interactions.

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Discussion Question

Noise impacts every step of the communication exchange. Other than the examples we just saw, what are some other examples of noise you have experienced firsthand?

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Clarity

Lack of clarity is a common cause of communication breakdowns.

To avoid this, senders must ensure that they are:

- Communicating the right message.
- Using appropriate language.
- Stating what response or action, if any, is required.
- Placing emphasis on the right things.
- Selecting the best media.

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Communication Options

Communication Option	Most Effective When…
Face-to-face	• Building trust or new relationships • Sharing sensitive information • Sharing difficult messages
Telephone (voice-to-voice)	Best alternative when you cannot be face-to-face
Voice mail	• Brief messages • When you need to communicate the same message to multiple people
Email	• More complex messages that require detailed information • When the receiver needs to refer to the message • When you need to communicate the same message to multiple people • To create a record of the communication

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Communication Options *(continued)*

Communication Option	Most Effective When…
Text/chat	• Brief messages • When the sender or receiver is in a location where he or she cannot conduct a phone call
Written	• When the message is complex or lengthy or requires detailed information • When the message will need to be referenced in the future • When the message is meant for a larger audience • To create a record of the communication
Oral	• When an immediate action or response is required • When questions are anticipated • When a message needs to be communicated to a larger group • When the group's buy-in is needed

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Communication Challenges

- **Technical speak**
  Speaking at a level the receiver doesn't understand.
- **Poor listening skills**
  Not taking the time to listen during the communication process.
- **Over-communication**
  Sending too many messages for the receiver to decode and respond to.

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Importance of Being a Good Communicator

Being an excellent communicator can help a facility manager:

- ✓ Establish credibility.
- ✓ Create a safer workplace.
- ✓ Get a promotion.
- ✓ Gain additional budget.
- ✓ Build the trust of employees, colleagues, and contractors.
- ✓ Become a trusted advisor to the board of directors.

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Effective Listening

5 key steps in becoming a better listener:

1) Be alert.
2) Demonstrate that you are listening.
3) Offer feedback.
4) Postpone judgment.
5) React appropriately.

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Communication Plan

- Road map for getting message delivered to right people at right time.
- Can help facility manager focus message.
- Must be continually used and revised based on facility managers' experience.

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Communication Plan Development Process

There are **6 steps** for developing a communication plan:

Step 1: Identify the purpose and objectives.

Step 2: Identify the audience(s).

Step 3: Determine the message.

Step 4: Select the communication method.

Step 5: Establish a timetable.

Step 6: Evaluate the results.

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Step 1: Identify the Purpose and Objectives

Make sure that your objectives are SMART:

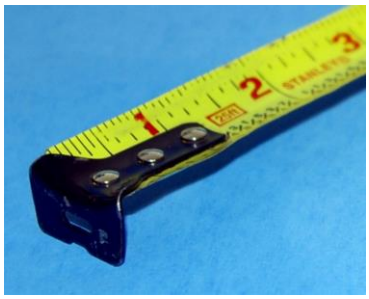
Specific

Measurable

Achievable

Relevant

Time-bound



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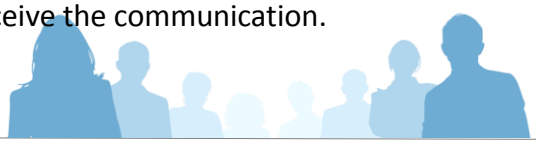
Step 2: Identify the Audience(s)

- Understanding the target audience for a message will help you communicate more effectively.
- Includes knowing:
  - Who the audience is.
  - Their interests, needs, priorities, and concerns.
  - How and when to communicate with them.
- Be sure to consider if there are audiences that should not receive the communication.



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Step 3: Determine the Message

- Determine the key messages that need to be conveyed—and if there is any information that should not be shared.
- Audience wants to know what the initiative is, what the purpose is, why it is important, and what impact it will have on them and the organization.
- Tailor the content of the message to the specific needs of the intended audience.

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Step 4: Select the Communication Method

- Determine which methods are most suitable in light of purpose, objectives, target audience, key messages, and budget.
- May need to use different communication channels to reach different audiences.

Communication Methods	
Oral Communication	**Written Communication**
• Meetings • Public announcement system • Walkie-talkies • Public radio broadcast • Face-to-face conversation • Voice mail • Briefings • Town hall meetings	• Newsletters • Email • Internet (social media, website) • Notice boards, posters, banners • Leaflets or flyers • Short message service (SMS) or text • Newspaper • Reports

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Step 5: Establish a Timetable

- Based on the purpose and objectives of the first step and the resources available, develop a well-thought-out timing strategy for executing the communication plan.

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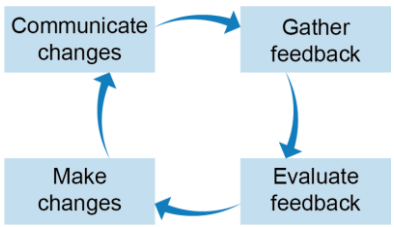
Step 6: Evaluate the Results

- Measure the impact of the communication—this enables you to make adjustments to improve communication in the future.
- Use a **feedback loop** to measure the effectiveness of communication.



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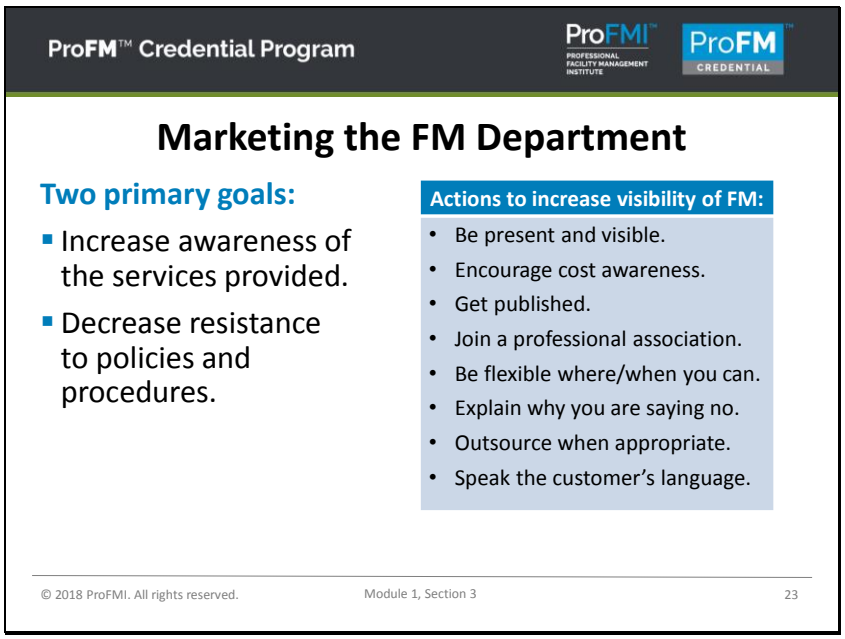
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Marketing the FM Department
Two primary goals:
Increase awareness of the services provided.
Decrease resistance to policies and procedures.
Actions to increase visibility of FM:
Be present and visible.
Encourage cost awareness.
Get published.
Join a professional association.
Be flexible where/when you can.
Explain why you are saying no.
Outsource when appropriate.
Speak the customer's language.
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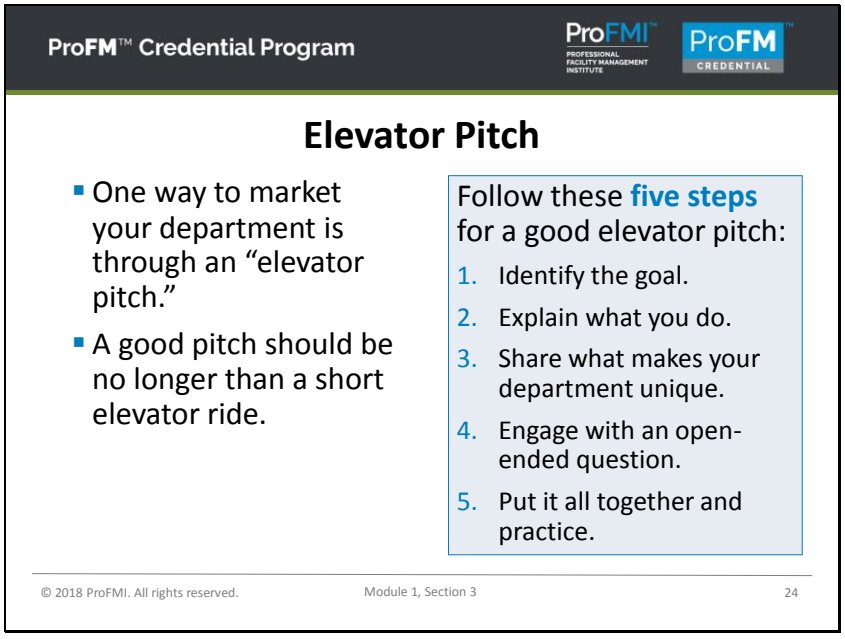
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Elevator Pitch
One way to market your department is through an "elevator pitch."
A good pitch should be no longer than a short elevator ride.
Follow these five steps for a good elevator pitch:
1. Identify the goal.
2. Explain what you do.
3. Share what makes your department unique.
4. Engage with an open-ended question.
5. Put it all together and practice.
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Discussion Question

In addition to the elevator pitch, what are some good ways to market your facility management department?

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Communicating Regarding Specific Issues

Sample Situations:

Sustainability	Policies/Procedures	Change
▪ Be proactive. ▪ Determine if sustainability report is being created. ▪ Be transparent. ▪ Provide information grounded in science. ▪ Don't use threatening messages. ▪ Tell a story to highlight key points and behavior changes required.	▪ Share why created, purpose, and how document(s) will be used. ▪ Develop communication strategy before documenting policy/procedure. ▪ Use simple wording for ease of understanding.	▪ Share what is changing and why. ▪ Avoid using acronyms or jargon. ▪ Share relevant information as soon as possible. ▪ Use variety of communication methods. ▪ Ensure two-way communication.

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Questions?

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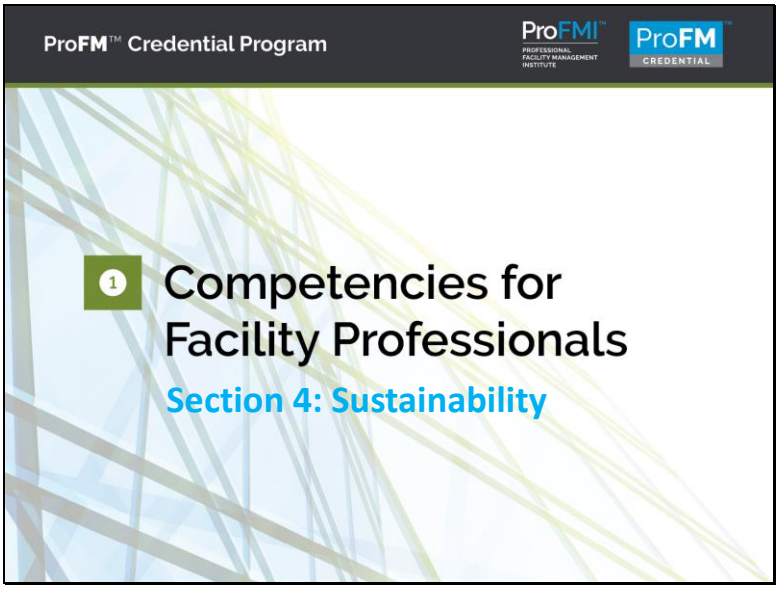
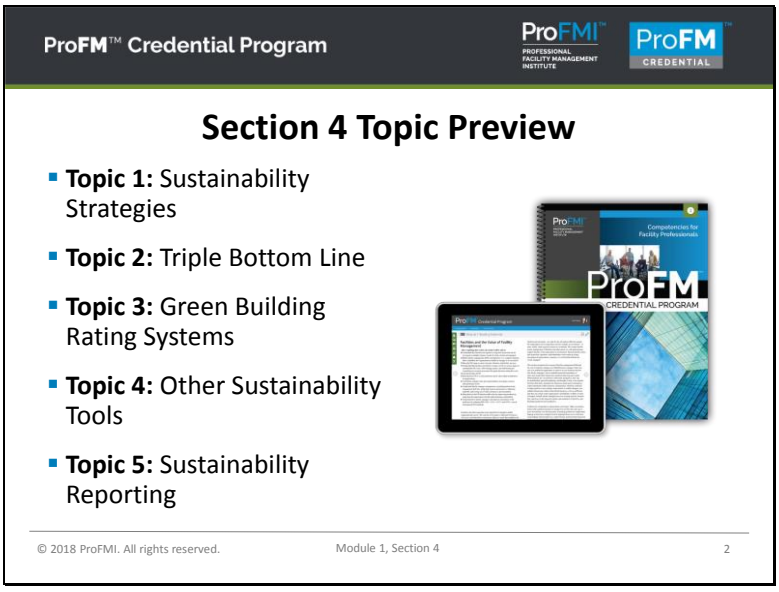
Section 4: Sustainability





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What Is Sustainability?

- Customers, economic interests, public attitudes, and regulations shifting from "all-eyes-on-profit" mentality
- Safety and health of customers, workers, community
- Good conduct toward workers
- ISO: Needs of present met without compromising future
- Documented evidence of changes in practices
- Key part of strategy: FM alignment

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Benefits of Sustainability

Productivity and health: Indoor environmental quality

Optimized systems for energy and water that cost less from life-cycle perspective

Tax benefits, subsidies, and community goodwill

Better employees attracted at less expense

Consumer awareness

Ethical imperative

FM: More satisfied and productive occupants, longer equipment life

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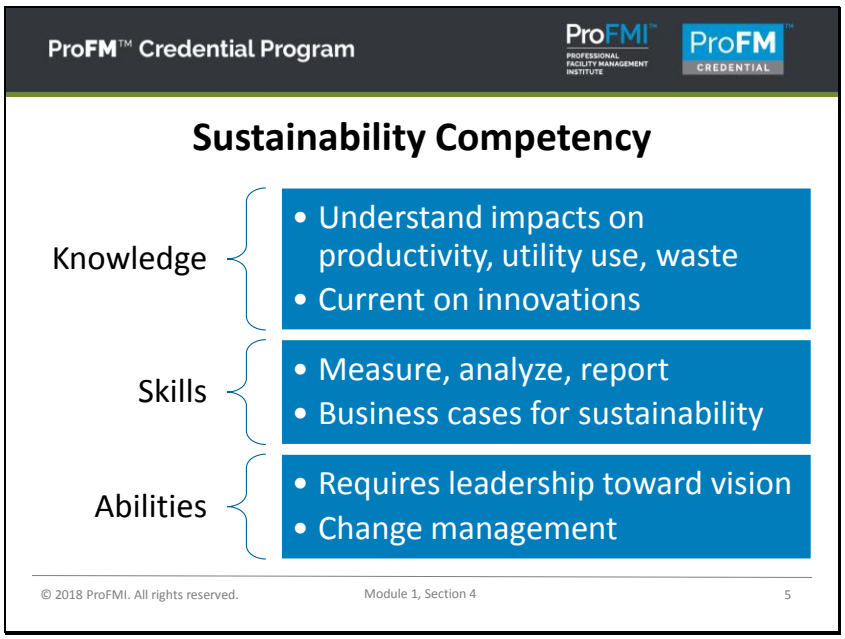
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CREDENTIAL
Sustainability Competency
Knowledge
• Understand impacts on productivity, utility use, waste
• Current on innovations
Skills
• Measure, analyze, report
• Business cases for sustainability
Abilities
• Requires leadership toward vision
• Change management
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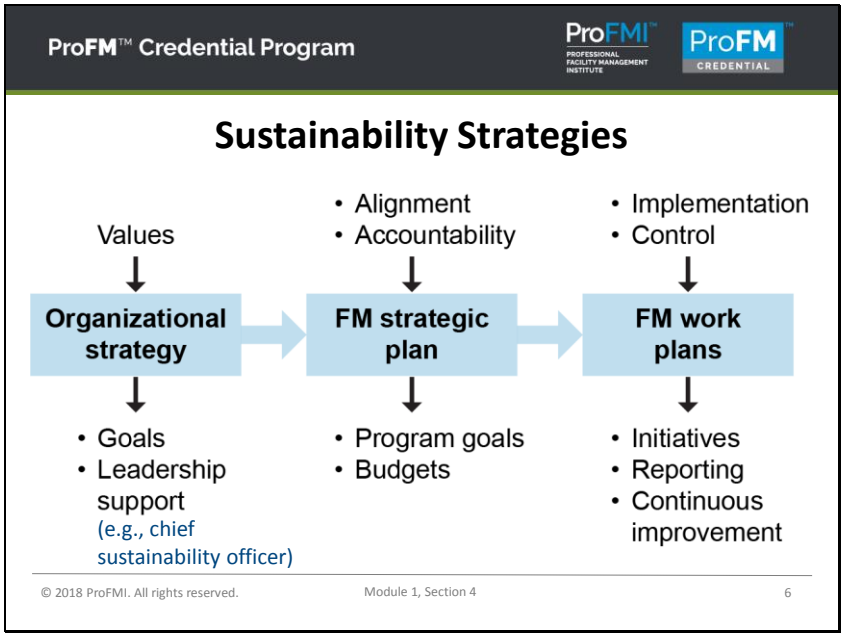
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Sustainability Strategies
Values
Organizational strategy
• Goals
• Leadership support
(e.g., chief sustainability officer)
• Alignment
• Accountability
FM strategic plan
• Program goals
• Budgets
• Implementation
• Control
FM work plans
• Initiatives
• Reporting
• Continuous improvement
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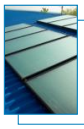
FM Sustainability Initiatives



Energy use and emissions
- Controls
- Solar

Water use
- Use and re-use
- Local availability, treatment

Site impacts
- Storm water discharge, erosion
- Light pollution

Materials and waste
- Depletion of limited resources
- Sourcing, recycling, hazards

Business processes
- O&M: Life-cycle extension
- Procurement: Supplier validation

Occupants
- Indoor environmental quality
- Motivation, retention

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Discussion Question

What is the best way to communicate the sustainability strategy?

a) Use stand-alone initiatives and events.
b) Champion both profit and sustainability.
c) Criticize the profit growth motivation.
d) Keep stakeholders guessing but innovate.

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FM's Role in Creating Sustainable Facility

Direct approach

- Present your ideas.
- New hire with a plan.
- Compelling arguments.
- Long-term profit.
- Stakeholder networking.
- Build support.
- Only way for large scale.

Indirect approach

- Work behind scenes.
- Stay in area of influence.
- Present successes after.
- Quick wins:
  - Can execute change.
  - How change helped.
  - Team motivation.
  - Get experience.

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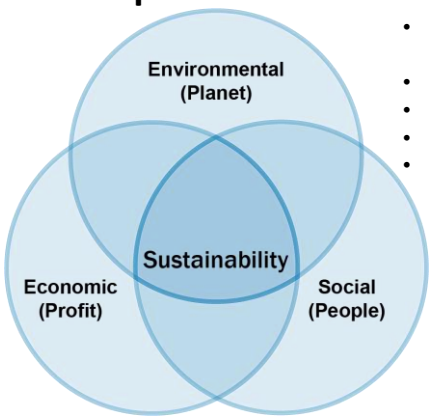
Triple Bottom Line



- Emissions/waste management
- Energy use
- Climate impact
- Site/ecological impact
- Resource management

- Profits
- ROI
- Tax benefits
- New jobs
- Cash flow

- Occupant satisfaction
- Health/safety
- Training/ development
- Labor practices
- Human rights

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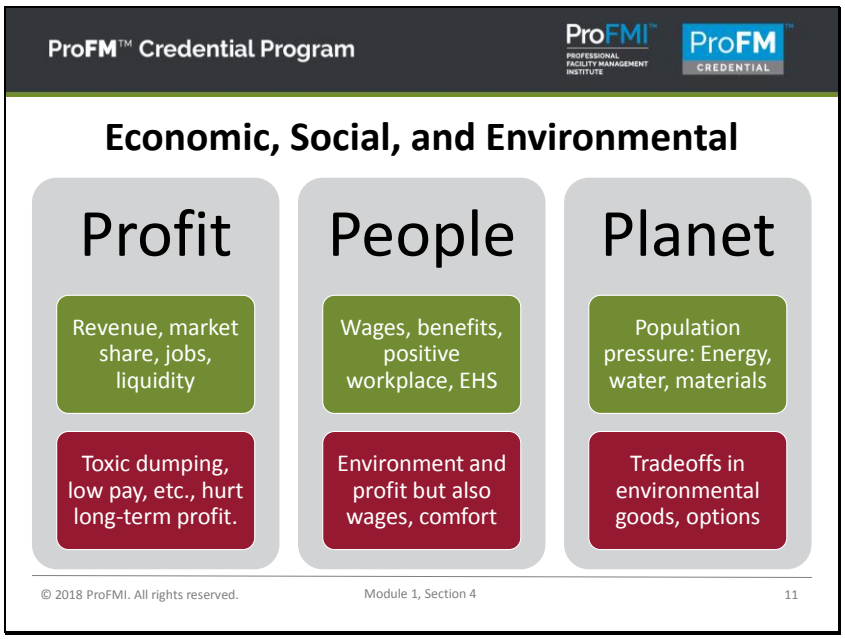
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Economic, Social, and Environmental
Profit
Revenue, market share, jobs, liquidity
Toxic dumping, low pay, etc., hurt long-term profit.
People
Wages, benefits, positive workplace, EHS
Environment and profit but also wages, comfort
Planet
Population pressure: Energy, water, materials
Tradeoffs in environmental goods, options
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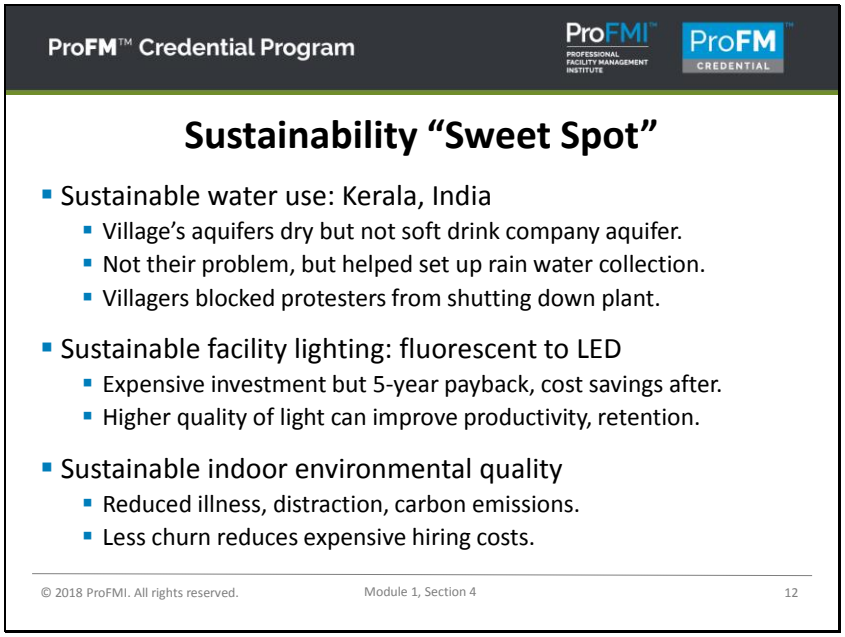
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Sustainability "Sweet Spot"
Sustainable water use: Kerala, India
Village's aquifers dry but not soft drink company aquifer.
Not their problem, but helped set up rain water collection.
Villagers blocked protesters from shutting down plant.
Sustainable facility lighting: fluorescent to LED
Expensive investment but 5-year payback, cost savings after.
Higher quality of light can improve productivity, retention.
Sustainable indoor environmental quality
Reduced illness, distraction, carbon emissions.
Less churn reduces expensive hiring costs.
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Green Building Rating Systems

- Whole-building certification or as source of ideas
- May require third-party or government inspection; possible periodic evaluation
- Transportation category
- Choosing a system
  - Government regulations
  - Government preference
  - Group affiliation
  - Facility fit
- Advantages
  - TBL transparency
  - Minimize impacts
  - O&M savings
  - Marketing and recruiting

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Leadership in Energy and Environmental Design (LEED)

- Leading US measurement for sustainable facilities
- Number of certifications for types of facilities/construction projects
  - LEED-NC: New Commercial Construction
  - LEED-EB: Existing Buildings
  - LEED-CS: Core and Shell
  - LEED-CI: Commercial Interiors
- Nongovernment certification (peers govern)
- Corporate social responsibility in profitable way

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LEED Point System

- Points:
  - Certified (40–49)
  - Silver (50–59)
  - Gold (60–79)
  - Platinum (80+)
- Category prerequisites to meet

Categories:
- Sustainable Sites
- Water Efficiency
- Energy and Atmosphere
- Materials and Resources
- Indoor Environment Quality
- Innovation

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UK/Canada/US: BREEAM/Green Globes

- For existing buildings but can use for new construction
- Original green building rating system
- No penalty for lack of system if unnecessary to design
- Percentage of possible points
  - 1 Globe: 35 to 54%
  - 2 Globes: 55 to 69%
  - 3 Globes: 70 to 84%
  - 4 Globes: 85 to 100%
- Third-party verification

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China (Three Star) and Australia (Green Star)

China: Three Star System

- Government program encourages cost savings
- Requires one full year of operation for rating
- Similar to LEED
  - Categories
  - Stars match Silver, Gold, and Platinum ratings

Australia: Green Star

- Local ecology focus
- Involved community

Green Star Categories

- Management
- Indoor environment quality
- Energy
- Transport
- Water
- Materials
- Land and ecology use
- Emissions
- Innovation

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Japan (CASBEE) and Green Building Council

Japan: CASBEE

- Government agency
- Academia, industry
- Similar categories plus focus on co-efficiency
  - Profit, environmental can coexist
- Pre-design, design, post-construction

Green Building Council

- World Green Building Council
- Not rating system
- Research system to use
- Gather support for business case

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Sustainability Scorecard

Align with vision or present business case to promote

	Focus Area	Change	Goal	Difference	Weighted Score
Economic	Debt	–1	+2	–3	–1
	Cash flow	+3	+3	0	+1
	Portfolio	+1	+2	–1	+1
Environment	Energy	+2	+4	–2	+2
	Waste	–1	+2	–3	–2
	Emissions	+2	+1	+1	+4
Social	Wages	+3	+1	+2	+3
	Workspace	0	+1	–1	0
	Community	+1	+1	0	+1
Sustainability score					**+9**

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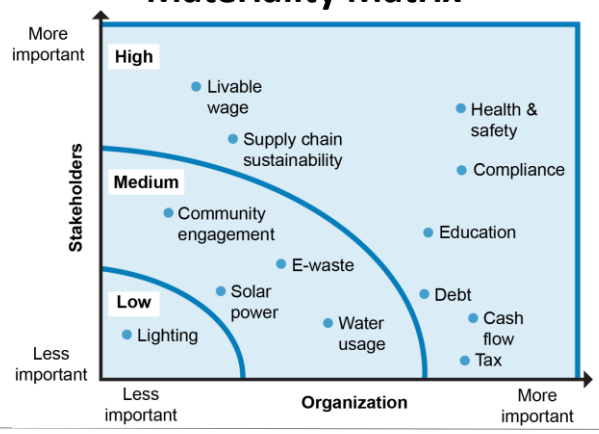
Materiality Matrix



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Carbon Footprint

- CO_2 emissions
  - Direct: From facilities, operations
  - Indirect: From utilities, supply chain, commuting
- Measure; then set reduction goals (1% can be a lot)
- Intended versus unintended
- Add solar panels: Indirect may increase footprint at first
- Ride sharing, public transportation, telecommuting
- Remodel or demolish and start new?

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Equipment Rating Systems

Energy Star	• US EPA and DOE rating • Performance for set task
GreenSpec	• Environmental Building News • Recycled, nontoxic, conserving...
Building Energy Quotient	• ASHRAE energy quantifier • HVAC large % of energy

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EMS and Waste Audits

Environmental Management System (EMS)

- ISO 14001; ISO 9000 (Quality Management) and 26000 (CSR) also useful
- Collect data, evaluate conditions, implement improvements, monitor results
- Demonstrates commitment
- Cost savings and optimization

Waste Audits and EPA's WasteWise Program

- Difficult due to volume and variety
- Air, water, land
- WasteWise
  - Reduce, reuse, recycle efficiently
  - Recognizes achievements

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Sustainability Reporting

- Risks versus dividends
  - Honesty and transparency even of failures?
  - Trust and support
  - New business or revenue sources
  - Recruitment and retention
  - Important to know your audience
- Much data already gathered for other uses
  - Beware of diminishing returns from data collection
  - Transparent about what is and is not collected

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Global Reporting Initiative (GRI)

- Not a replacement for LEED, Green Star, etc.
- TBL perspectives and holistic measures (carbon footprint)
- Helps quantify progress toward TBL goals, though many measures are non-numerical
- GRI framework
  - Universality
  - Pick and choose standards that apply

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GRI Series

Series	Standard	Description
Universal Standards (100 series)	GRI 101: Foundation	Reporting principles and requirements
	GRI 102: General Disclosures	Context on organization, strategy, ethics, governance, stakeholder engagement, and reporting process
	GRI 103: Management Approach	Why each topic-specific standard is used, where impacts occur, and response
Topic-Specific Standards	GRI 200 (Economic), 300 (Environmental), and 400 (Social)	Disclosures on TBL topic areas with many subtopics

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Reporting Principles

General principles

- Stakeholder inclusiveness
- Sustainability context
- Materiality
- Completeness

Quality of report principles

- Accuracy
- Balance
- Clarity
- Comparability
- Reliability
- Timeliness

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Discussion Question

A facility manager gathers information on occupational and customer health and safety, equal opportunity employment, and local communities. What else is in this series of GRI reporting standards?

a) Effluents and waste
b) Security practices and customer privacy
c) Indirect economic impacts and anti-corruption

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Building Performance Measurement Systems

- Energy efficiency a top priority (cost, carbon footprint)
- Energy use intensity (EUI) index

$$EUI = \frac{\text{Annual Building Energy Consumption (in MJ or KBtu)}}{\text{Building Area (in square meters or square feet)}}$$

- Utilities supply data: Index uses direct sources only
- Baselines used to set goals and plan projects
- Water consumption: Education, upgrades, recapture
- Waste: Inflow, use, waste handling by category

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Questions?

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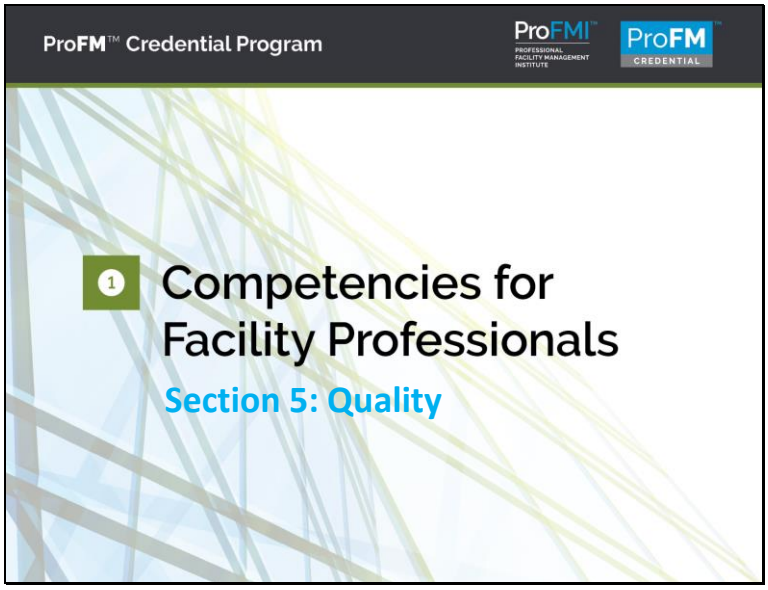
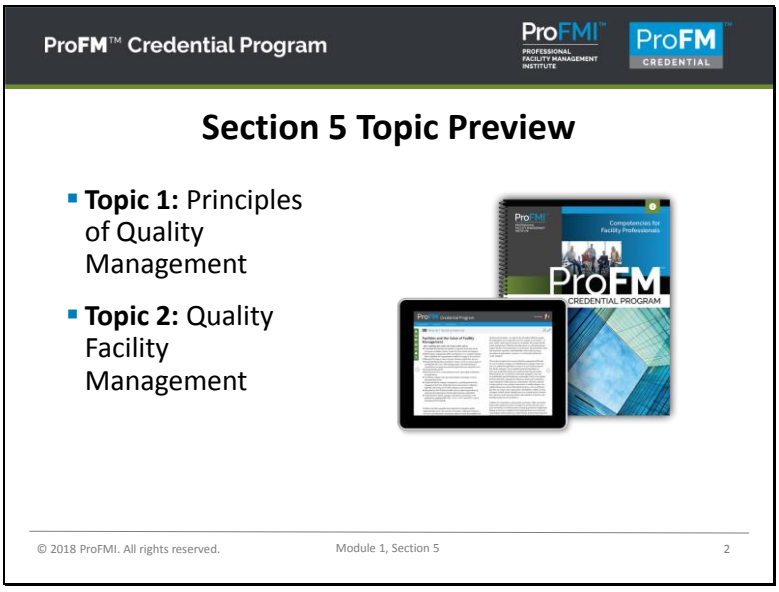
Section 5: Quality





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What Is Quality?

- **Quality** is about:
  - Fulfilling customer requirements.
  - Expectations and deviations from expectations.
- **Quality** is not about:
  - High grade materials.
  - Personalized attention.

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What Is Quality Management?

Quality management comprises all activities needed to:

- Identify and prioritize customer requirements.
- Plan processes.
- Define standards and objectives.
- Measure and analyze performance.
- Continually advance quality performance.

A **quality management system** consists of organizational policies to institutionalize efforts to satisfy customer requirements.

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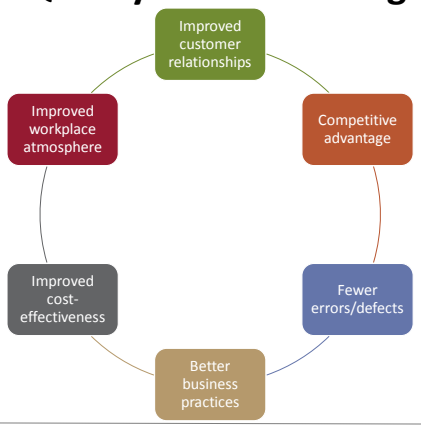
How Does Quality Benefit an Organization?



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Discussion Question

What are some specific instances that you've experienced where quality benefited your organization?

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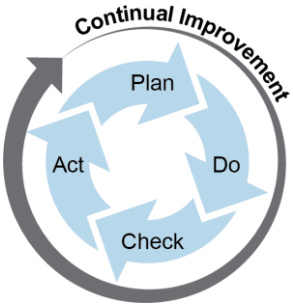
PDCA Cycle



Introduced by Walter Shewhart

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W. Edwards Deming

Deming's 14 Principles	
1. Define improvement of product/ service as organization's purpose.	8. Drive out fear.
2. Adopt philosophy.	9. Eliminate barriers between staff.
3. Don't rely on inspection to solve quality problems.	10. Don't rely on performance targets or slogans to motivate employees.
4. Don't prioritize price/cost when purchasing materials or services.	11. Eliminate numerical quotas and goals.
5. Improve constantly.	12. Remove barriers to taking pride in performing task.
6. Train in quality techniques.	13. Encourage education for everyone.
7. Lead.	14. Make transformation of business every employee's job.

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Other Quality Gurus

- J. M. Juran
- Philip B. Cosby
- Armand Feigenbaum
- Kaoru Ishikawa
- Genichi Taguchi
- Karl Albrecht and Ron Zemke

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TQM

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ISO 9001

Covers:

- Requirements for quality management system.
- Management's responsibilities.
- Alignment of quality objectives.
- Continuous improvement process.

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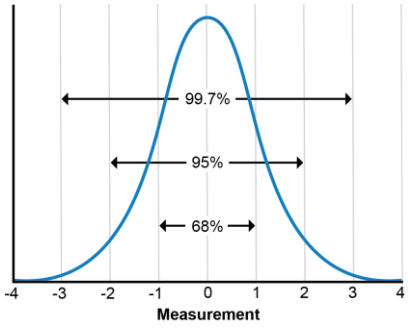
Six Sigma

Six Sigma discipline emphasizes:

- Producing real value.
- Statistical analysis.
- DMAIC.
- Organizational incorporation.



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European Foundation for Quality Management

EFQM Excellence Model is based on:

- Adding value.
- Aligning with sustainable objectives.
- Developing organization's capabilities.
- Fostering creativity.
- Leading with vision and integrity.
- Agile managing.
- Empowering employees.
- Short- and long-term objectives.

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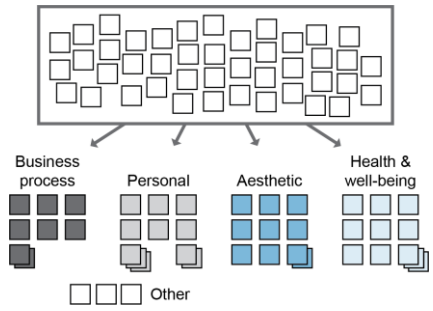
Affinity Diagram



Groups similar concepts; can be used in conjunction with brainstorming

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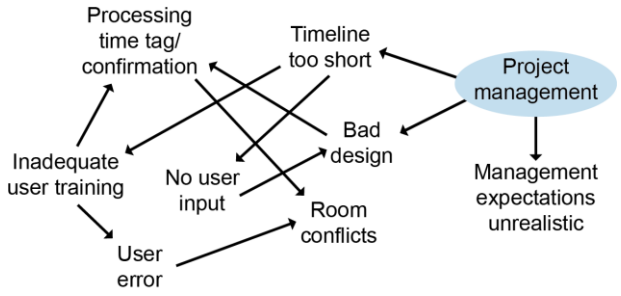
Relationship Diagram



Shows logical relationships between ideas in complex situations

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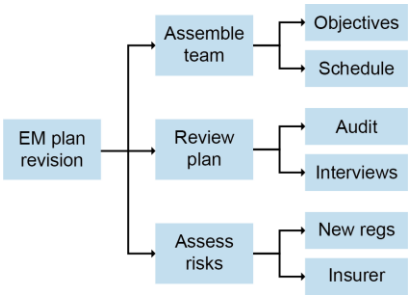
Tree Diagram



Maps complex processes from start to lowest level of task or requirement

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Prioritization Matrix

	Factors					
	Cost	Staff size	Staff training	Safety record	Sustainability program	Total
Weight	**2x**	**1x**	**1x**	**2x**	**1x**	
Supplier A	3	2	4	3	4	**22**
Supplier B	2	3	3	3	4	**20**
Supplier C	2	3	2	3	1	**16**
Supplier D	1	2	1	3	0	**11**

Used to rate various options based on set criteria

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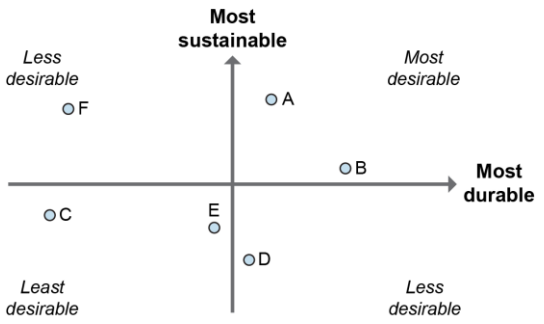
Matrix Data Analysis



Compares a group of items against two variables

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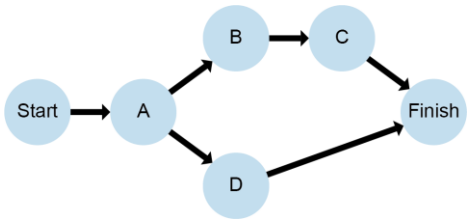
Activity Network Diagram



- Maps the steps in project completion, highlighting dependent relationships
- Can be used to estimate project duration

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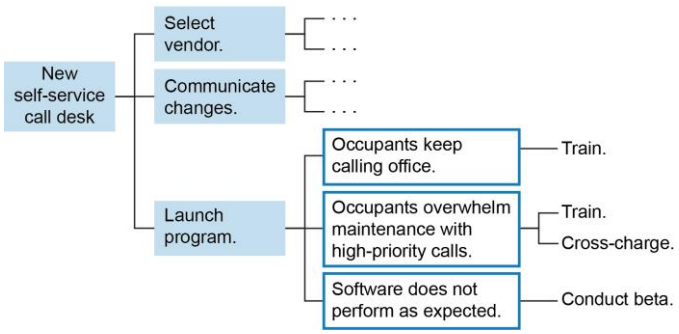
Process Decision Program Chart



Used to identify and manage risks

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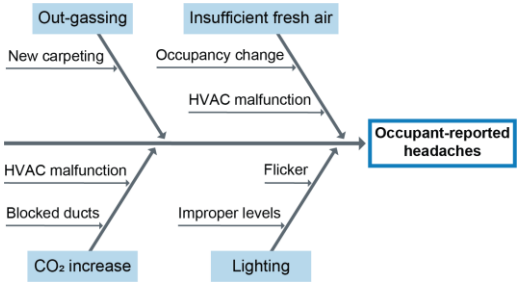
Cause-Effect Diagram



- Also known as Ishikawa or fishbone chart
- Used to identify potential causes of a problem

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Check Sheet

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Building A	1		1			2				1		2	**7**
Building B	3		1	1		2		1			1	1	**10**
Building C	8	7	8	9	6	10	12	12	10	9	8	8	**107**
Building D	2	4	2	3	2	1	4	3	1	2	1		**25**
Total	**14**	**11**	**12**	**13**	**8**	**15**	**16**	**16**	**11**	**12**	**10**	**11**	**149**

Captures and sorts data about a condition or process

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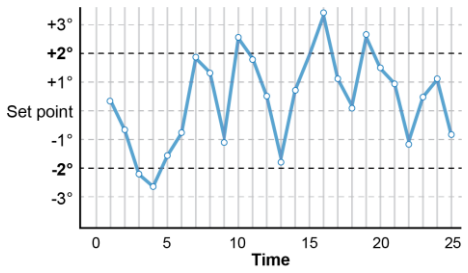
Control Chart



- Shows process variance over time
- Includes average and upper and lower limits

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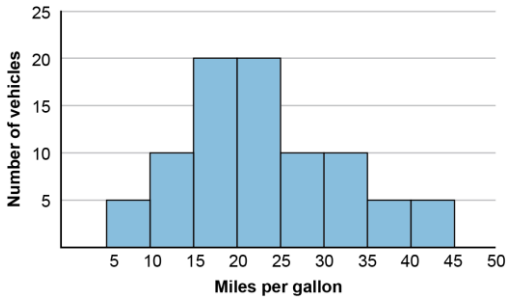
Histogram



- Groups and arranges data
- Suggests statistical distribution

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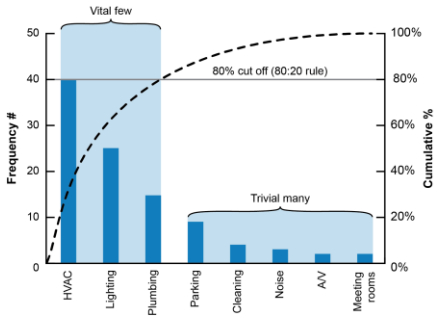
Pareto Chart



- Histogram with Pareto principle applied
- 80:20 rule

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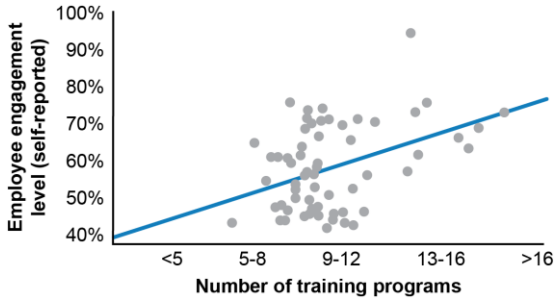
Scattergram



Shows how data relates to two variables

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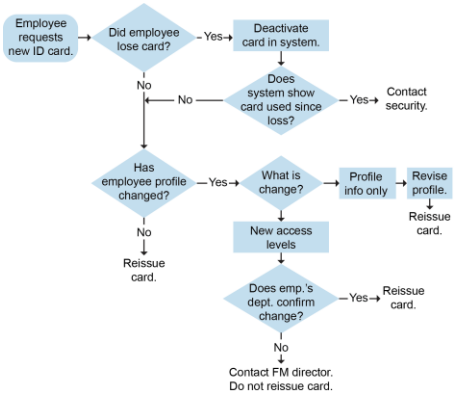
Flowchart

- Diagram of process
- Shows start, steps/ tasks, decision points, consequences of decisions, end point



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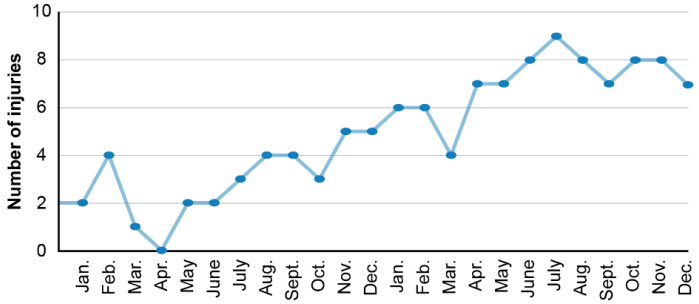
Run Chart



- Data points for specific time periods
- Line illustrating trend over time

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Discussion Question

You are tasked with providing estimates for the remaining life span of the generators at your hospital campus. What chart will best illustrate the grouping of generators by hours of usage so that you can begin to estimate how many generators will need to be replaced in the next year?

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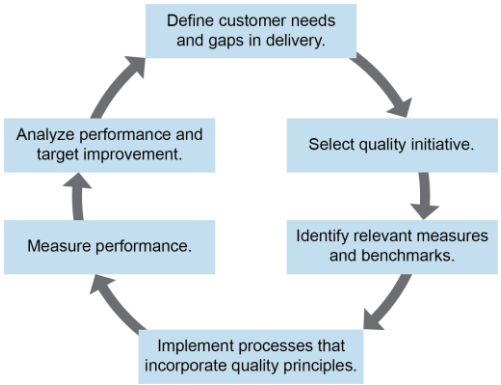
Delivering Quality FM



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Define Customer Needs and Delivery Gaps

Internal customers may include:

- Occupants and department managers.
- Facility management staff.
- Management.

External customers may include:

- Visitors.
- Vendors.
- Tenants.

Remember: Differentiate between purchasers and end users when determining needs.

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Customer Expectations and Perceptions of FM Delivery

Difference of expectations and perceptions creates a service gap.

Be aware of customer's sense of:

- Why service is needed.
- How necessary it is.
- How important it is to customer's job.
- What service should provide.
- How much service should cost.
- How much risk is associated with customer's choice of using FM.

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Select Quality Initiative

Initiatives are prioritized according to:

- Alignment with facility or business strategy.
- Alignment with customer needs or expectations.
- Cost-benefit analysis.
- Likelihood of making impact.
- Opportunity to develop staff core competencies.

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Identify Relevant Metrics and Benchmarks

- Collect measurements during service delivery.
- Use maintenance scorecard, including:
  - ✓ Backlog levels.
  - ✓ System downtime/uptime.
  - ✓ Work distribution.
  - ✓ Interrupted/incomplete work.
  - ✓ Percentage of work completed.
  - ✓ Costs saved.
  - ✓ Repair/replace decision management.
  - ✓ Inventory control.

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Implement Processes That Incorporate Quality Principles

- Collaboration with contractors
- Fact-based decision making
- Innovative and sustainable solutions

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Questions?

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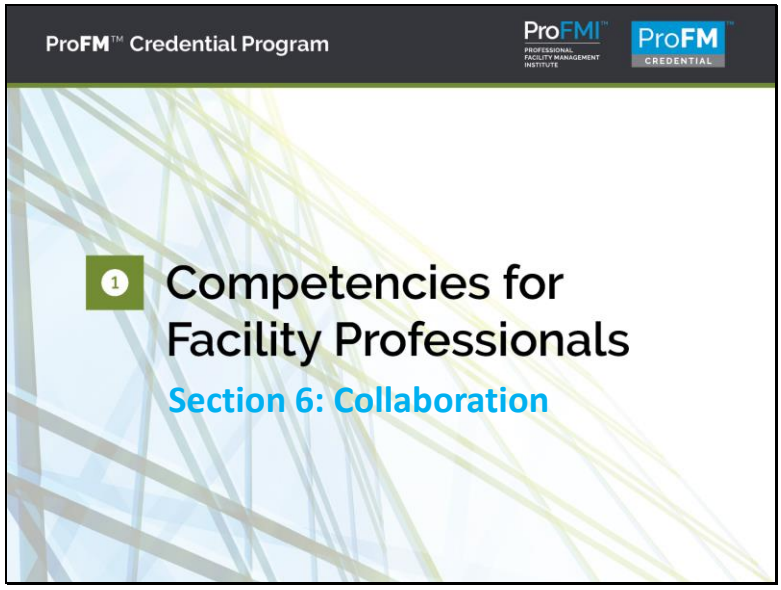
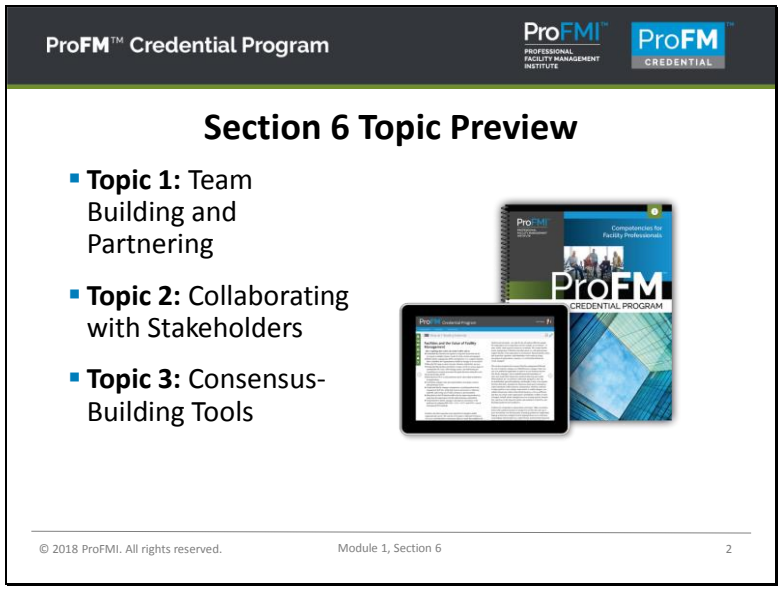
Section 6: Collaboration





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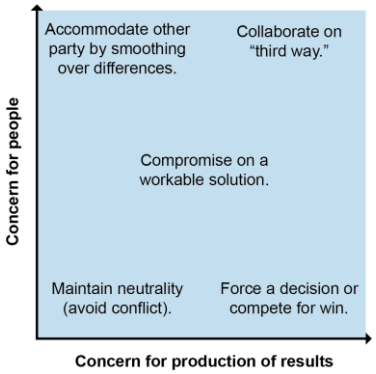
Collaboration

- Both conflict resolution method and process for working together
- Does not occur in every situation
- Finds novel solution that accommodates more parties' goals
- Requires hard work by all parties



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Elements of Successful Partnerships

Commitment	Clarity	Mutual respect	Responsibility
Mutual accountability	Collaborative mindset	Continuous improvement	Trust

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Learn to Work Successfully in Your Environment

- Organization's industry, culture, organizational structure, delegation and limits of authority, and roles and responsibility will affect your team.
- Job descriptions and organizational structure can be challenges to team building.

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Lead, Manage, and Clarify Goals

- Leadership and management skills are required to establish teams.
- Expect formal and informal challenges to management and leadership.

To combat challenges:
Ensure top management support.
Work to establish credibility.
Use regular meetings to reinforce team goals and identity.

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Promote Individual Benefits of Team Participation

- Engage team members early about fears and concerns.
- Assign roles and tasks that suit individuals' desires and skill sets.
- Assign incentives and goals based on individuals' values.

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Discussion Question

What type of incentives or goals have you used in the past to motivate members of your team?

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Constructive Personality Types

- **Encourager**
  Champions good ideas and makes criticism seem constructive
- **Initiator**
  Turns ideas into actions
- **Consensus builder**
  Ensures that people weigh in on decisions
- **Harmonizer**
  Finds common ground in areas of conflict
- **Clarifier**
  Restates what others have said to validate team comprehension
- **Gatekeeper**
  Prevents hasty decisions by ensuring due diligence
- **Researcher**
  Asks questions and looks for internal and external information
- **Educator**
  Educates teams on lessons learned, objective facts, and benchmarking information

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Disruptive Personality Types

- Disruptive personalities can unravel teams and partnerships.
- Includes dominators, naysayers, and withdrawn or unfocused individuals.
- To mitigate disruptive personalities:
  - Partner them with an offsetting constructive personality.
  - Remove them from meetings or from the team.

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Ground Rules

- Establish ground rules for how the team will operate.
- Rules should be set proactively.
- Rules must take organization's culture into account.

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Discussion Question

Ground rules are a good way to set the stage for a team to perform well, without unnecessary conflict. What are some of the most effective ground rules you have used when organizing a team?

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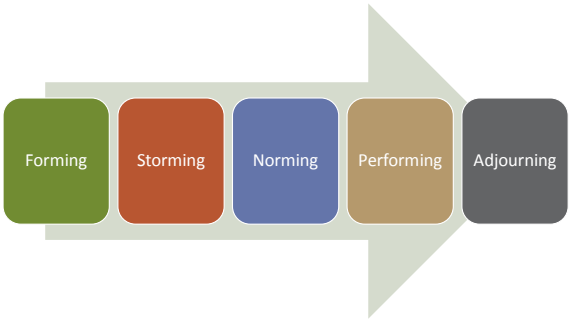
Tuckman's Team Life Cycle Model



- Leadership and management are required to move from step to step.
- Teams may regress if mismanaged.

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Keeping Teams in Performing Phase

- Pay attention to warning signs.
- Diagnose problem before solving.
- Engage team members regularly to identify issues.

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Stakeholders

- **Stakeholders** are people or organizations that can affect, be affected by, or perceive themselves to be affected by a decision or activity.
- Can be internal or external

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Internal Stakeholders

- Manage internal stakeholder relationships closely.
- Committees may be the official authority for a given subject.
- Assume that you need to win over internal stakeholders.

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External Stakeholders

- Indicate desire to work with external shareholders early to prevent relationships from becoming adversarial.
- Being in good standing with authorities can be valuable to gain needed approvals.

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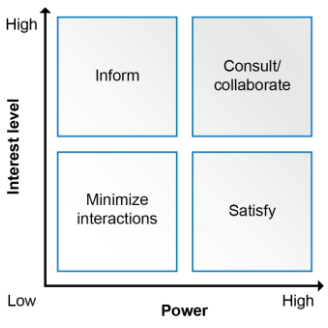
Stakeholder Assessments

- Create a power/interest matrix to differentiate stakeholders by their level of power and interest.
- Use this to determine how to initially approach stakeholder interactions.



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Stakeholder Impact

Stakeholder	Job Description	Complaint Response Time	O&M Cost Reduction	System Downtime
Facility staff	x	x	x	x
Service providers	x			x
Employee union	x			
Human resources	x			
Customers		x		x
Landlord		x	x	x
Help desk		x		x
Controller			x	x

Used to identify which stakeholders will most likely want to collaborate on certain issues.

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Stakeholder Prioritization

Stakeholder	Help Rating (1–low to 5–high)	Harm Rating (1–low to 5–high)	Probability	Priority (help/harm sum x probability)
Facility staff	5	5	0.7	7.0
Employee union	3	5	0.5	4.0
Customers	3	3	0.6	3.6
Help desk	3	2	0.6	3.0
Landlord	5	2	0.4	2.8
Controller	3	2	0.5	2.5
Human resources	3	1	0.3	1.2
Service providers	1	2	0.4	1.2

- Create a chart that rates each stakeholder's ability to help or harm the project and the probability of their acting.
- Next, determine how to best interact with stakeholders of high importance.

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Partnering Agreements

- Can be used with supply chain stakeholders to design collaboration into an agreement.
- Produce mutual satisfaction and interdependence for both organizations when successful.
- Require work from both organizations to jointly develop goals, objectives, strategies, and formal and informal lines of communication.

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Brainstorming

Brainstorming has **two phases**.

- Generating ideas:
  - Make as many suggestions as possible in allotted time period.
  - No one is allowed to criticize or comment on suggestions at this point.
- Narrowing down ideas:
  - Build on an idea to make it better.
  - Suggest the flaws of an idea.

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Nominal Group Technique

- Describe an issue to the group and then have the members list potential solutions.
- Record all nonredundant ideas and then work to improve and build on them.
- Use a secret vote to rank ideas.
- Continue to discuss, refine, and vote on ideas as necessary until a solution is found.

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Delphi Technique

- Used to achieve consensus from a group of experts.
- Done remotely with several rounds of voting.
- Summary documents are created to follow up on continued areas of concern.
- Keeps participants from worrying about contradicting a more experienced or powerful colleague.

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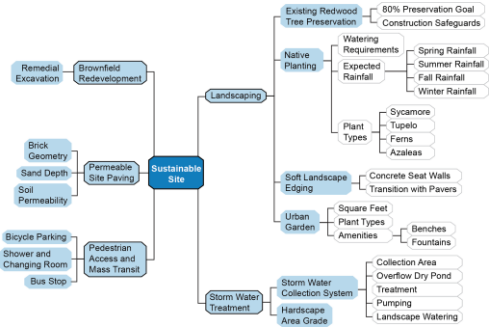
Mind Maps

- Begin with central topic and branch into different subcategories.
- Help identify how various parts of issue are related.



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Discussion Question

Different situations call for different consensus-building tools. What are some situations in which you have applied the tools we've covered? How effective were the tools in those situations?

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Questions?

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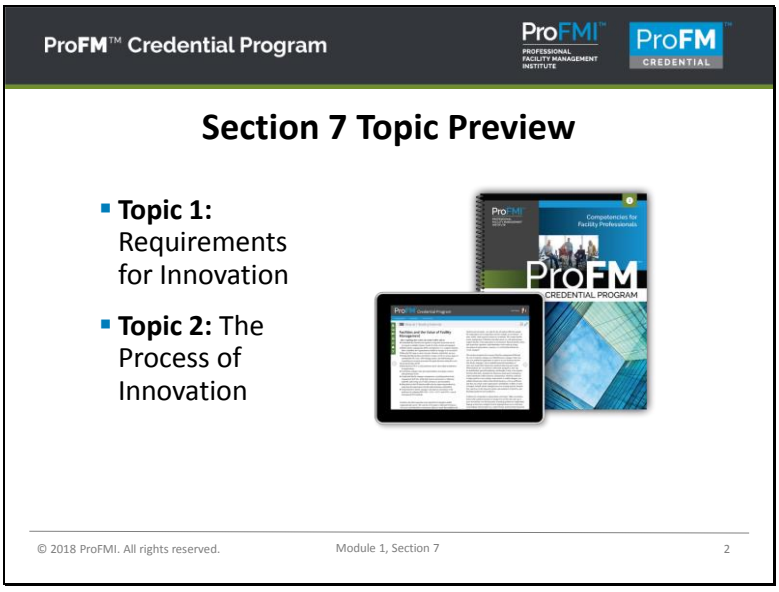
Section 7: Innovation



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Innovation in FM

- Involves discovering ways to increase effectiveness and efficiency.
- Often results from repurposing existing technology.
- Results-oriented.

Innovation as a competency involves:
Seeing connections.
Sensing new solutions.
Reframing information or situations.
Constant curiosity.
Lack of fear about future and unknown.
Willingness to change.

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Types of Innovation

- **Sustaining innovation**
  - Works to improve on what organization is already doing
  - Occurs close to center of action
- **Breakthrough innovation**
  - Reframes problem in new way to suggest new solutions
  - Occurs at leadership or team level
- **Disruptive innovation**
  - Sees that what has worked in past doesn't fit current situation
  - Driven downward from organizational leadership
- **Preparing the ground**
  - Begins with awareness of new tools and processes without defined uses
  - Applicable at all levels of organization

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Discussion Question

Which of the types of innovation would originate only from a member of the organizational leadership team?

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Challenges to Innovation

- Lack of time, space, funding, competencies, motivation, and courage
- Poor understanding of requirements of innovation
- Inadequate transparency
- Contracts or agreements that don't accommodate innovation
- Silo mentality inhibiting collaboration
- Growing areas of responsibilities overshadowing FM expertise

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Strategy

Use the added value of innovation to create team performance objectives.

Added Value of Innovation

- Increases in quality of service
- Reduced operating costs
- Elimination of unnecessary travel
- Improved occupant work satisfaction
- More efficient use of facility resources
- Improved FM staff job satisfaction
- Improved workplace health and safety measures
- Improved sustainability performance

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Structure

- Supporting innovation requires supportive organizational structure.
- Leadership must provide resources.
- Structural integration and free-flowing communication are keys to innovative organizations.

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Processes and Culture

- Successful organizations have clear processes of innovation.
- Organizational culture encourages the behaviors needed for innovation:
  - Long-term dedication
  - Conscious risk taking
  - Collaboration
  - Willingness to try new ideas

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Discussion Question

How is the organization you work for set up to support innovation?

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Personal Requirements

Five skills essential to innovation:

- Associating
- Questioning
- Observing
- Experimenting
- Networking

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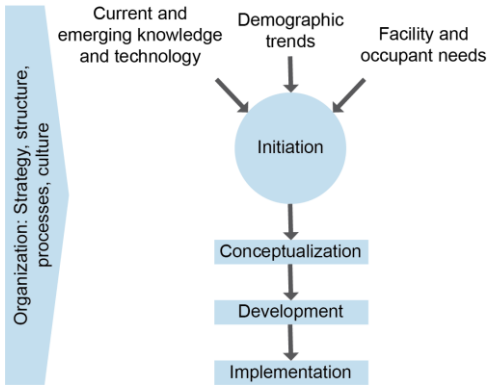
Innovation Model



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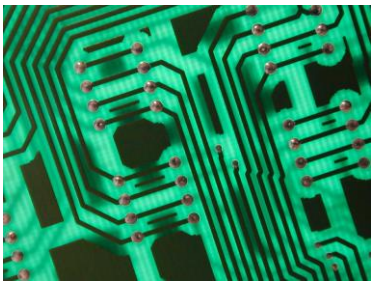
Initiation

Spark for innovation may come from:

- Facility and occupant needs.
- Demographic trends.
- New and emerging knowledge and technology.



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Conceptualization

- Team considers innovative idea or opportunity.
- Possible ideas are proposed.
- Team prioritizes most promising, seeks management support.

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Development and Implementation

- During development, concept is elaborated and prototype is tested and refined.
- If test is successful, concept is adopted.
- Following adoption, innovation is reassessed for effectiveness.

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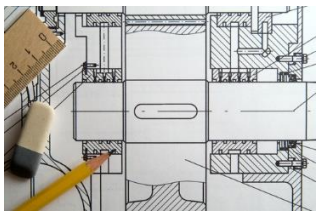
Innovation in Facility Management

Examples to create value:

- Sustainability initiatives
- Power over Ethernet (POE) to improve customer service—integrating reservation systems, HVAC, and occupancy sensors
- Drones to collect data
- Assisting travelers with disabilities
- Designing for changing environment



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