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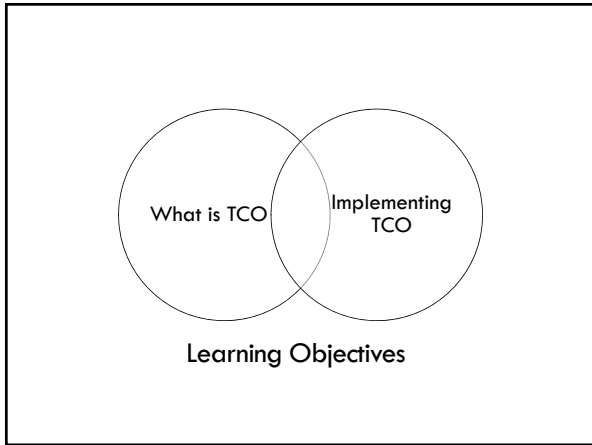
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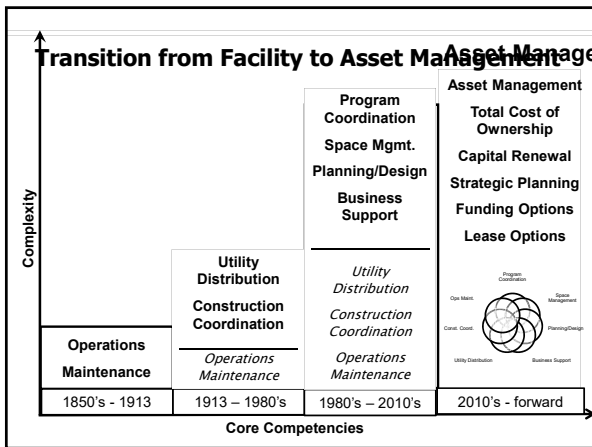
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**Radical Approaches** 

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FCI      Preventive maintenance  
Predictive analysis (R&R)  
LCCA      AGE & CONDITION OF SYSTEMS  
Historical Costs      LCC  
Benchmarking

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**Total Cost of Ownership**

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**TCO – Definition PUBLISHED**

A **holistic approach** to maximizing return on investment of managed physical assets that includes the **summation of all known and estimated costs** to include first, recurring, renewal / replacement and end-of-useful life costs revised at critical decision points to **aid in life-cycle asset management decisions.**



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“The bitterness of poor quality remains long after the sweetness of low price is forgotten.”

Benjamin Franklin



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**TCO and Your House**



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- Initial Asset Costs/First Costs (One time)
- Operations & Maintenance(Reoccurring)
- Utilities (Reoccurring)
- Renewal and Replacement (Periodic)
- End of Useful/Functional Life (One Time)

TCO Cost Groupings




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### Total Cost of Ownership


**TCO = C<sub>a</sub> + C<sub>b</sub> + C<sub>c</sub> + C<sub>d</sub> + C<sub>e</sub>**

**Where:**

- C<sub>a</sub> = Initial Asset Costs / First Cost (one Time)
- C<sub>b</sub> = Cost of Operations and Maintenance (Recurring)
- C<sub>c</sub> = Cost of Utilities (Recurring)
- C<sub>d</sub> = Cost of Renewal
- C<sub>e</sub> = Cost at End of Useful / Functional Life (One Time)

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**= TCO**



Please note this is pre-decisional TCO material and not yet the product of the APPA 1000 committee.

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### Information Sharing

Nearly every piece of information today is available electronically at some point in its life...

**Forward Thinking Approach**  
Information sharing, cumulative information gained, efficiency increases result in more information

**Value of Improvement (ROI)**  
Information collected one time  
Supports decision making over the life of the facility



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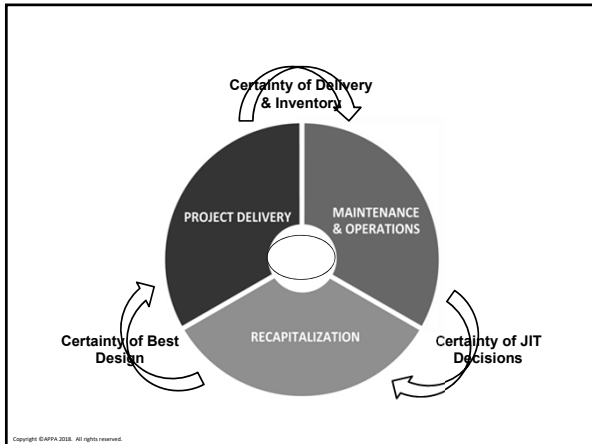
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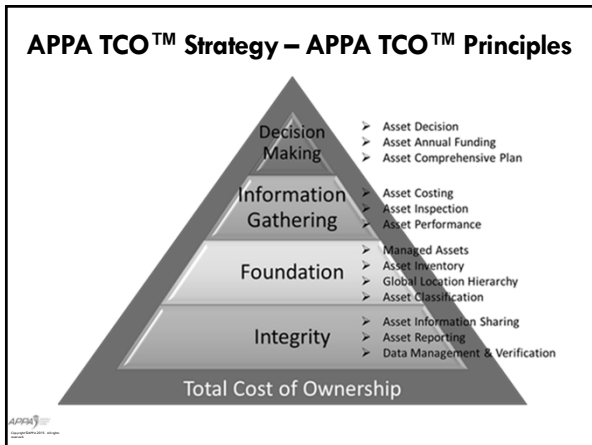
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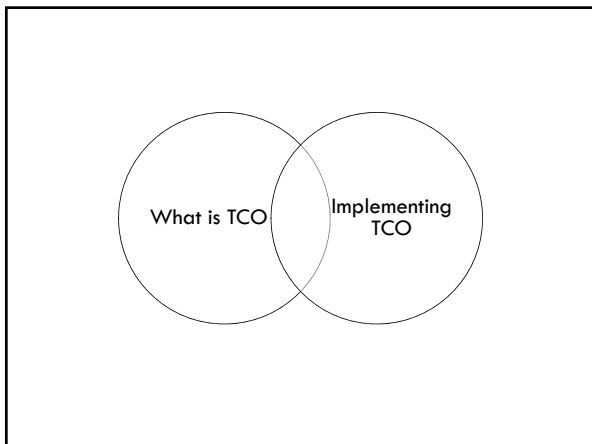
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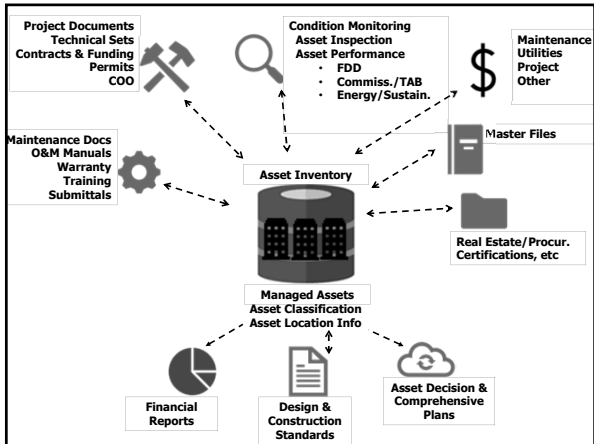
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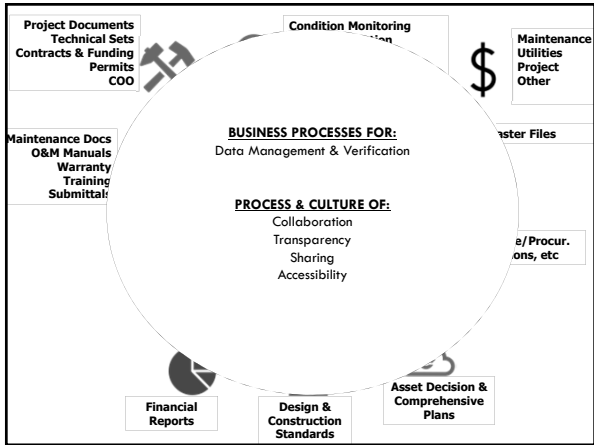
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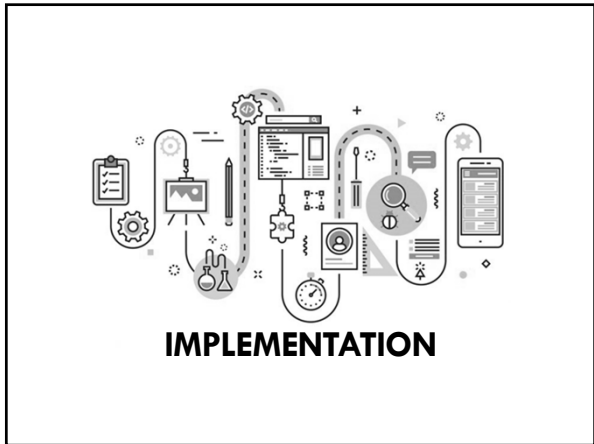
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SCALABLE  
small to large  
one or many  
basic to complex

The diagram consists of three circular arrows forming a clockwise cycle. The top arrow is labeled 'New Assets or Products', the middle arrow is labeled 'Existing Assets', and the bottom arrow is labeled 'Financials'.

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New Building

- Costs
- Mission
- Standards

New Asset

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Roof System

The photograph shows a close-up, low-angle view of a roof with grey, interlocking tiles. A white label with the text 'Existing Asset' is positioned in the bottom right corner of the image.

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**Past costs + future costs**  
*for each of the five decisions*

**Do nothing**  
**Repair**  
**Retrofit/Renew**  
**Replace**

Existing Asset

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The diagram shows a horizontal bar representing the 'Life of Asset' with a total duration of '20 YRS'. A vertical line marks the start of the asset's life at '5 YRS'. Below the bar, three cost categories are identified: 'First \$' (at the 5-year mark), 'Reoccurring \$' (between 5 and 20 years), and 'Future \$' (at the 20-year mark). Brackets indicate that 'First \$' and 'Reoccurring \$' are 'Estimated or Actual', while 'Future \$' is 'Estimated based on estimates or actuals'. The text 'Past costs + future costs' is written below the diagram.

Past costs + future costs

Existing Asset

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**Reporting**  
**System Name**  
**System Cost**  
**System Age**  
**System Life Cycle**

Financials

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### Predictive Modeling

System Name	System CRV	System AGE	System LCC
Roof 1	\$ 1,000,000	New	20
Roof 2	\$ 2,000,000	10	20

Financials

Example by Ana Thieme

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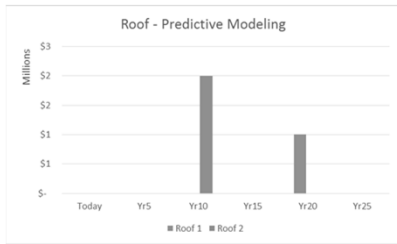
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Financials

Example by Ana Thieme

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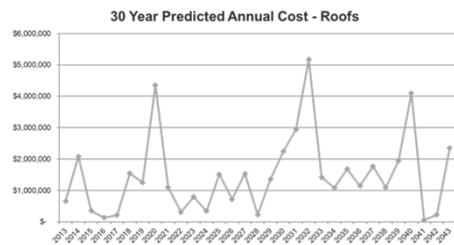
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Financials

UT Austin data compiled by Ana Thieme

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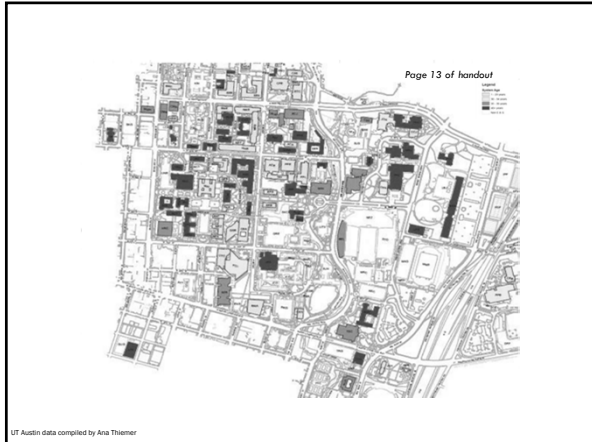
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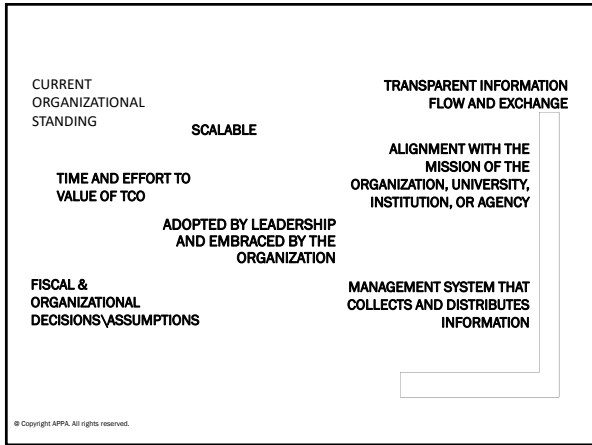
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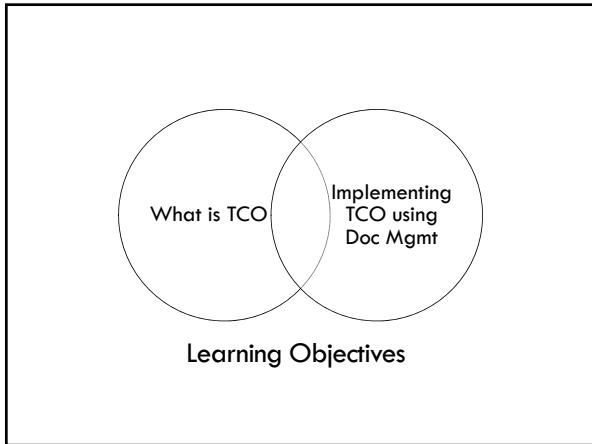
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### APPA TCO™ Definition

A holistic approach to maximizing return on investment of managed physical assets that includes the summation of all known and estimated costs to include first, recurring, renewal / replacement and end-of-useful life costs revised at critical decision points to aid in life-cycle asset management decisions.

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### APPA TCO™ Strategy – APPA TCO™ Principles



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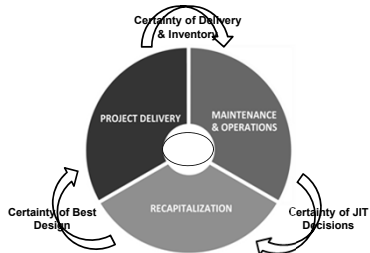
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**SCALABLE**  
**small to large**  
 one or many  
 basic to complex

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**APPA 1000-1**  
 Total Cost of Ownership for Facilities Asset Management (TCO) – Part 1: Key Principles

Approved 12/14/2017

**PHASE 1 OF THE STANDARD HAS BEEN RELEASED.**  
 AVAILABLE FOR PURCHASE ON APPA.ORG

**PHASE 2 IMPLEMENTATION COMING Q1 – 2020.**

**BILLIE.ZIDEK@APPA.ORG**

Abstract  
 This standard establishes the best practices, definitions of ownership, and management responsibilities to implement the principles of Total Cost of Ownership (TCO). TCO is a long-term, holistic, and multi-disciplinary approach to managing the lifecycle of facilities. The goal is to reduce the total lifecycle cost of facilities while maintaining the highest quality of service. The standard is designed to provide a framework for the development of a TCO program that is tailored to the specific needs of an organization. The standard is intended to be used as a guide for the development of a TCO program that is tailored to the specific needs of an organization. The standard is intended to be used as a guide for the development of a TCO program that is tailored to the specific needs of an organization.

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**APPA 1000-1**  
 Total Cost of Ownership for Facilities Asset Management (TCO) – Part 1: Key Principles

Approved 12/14/2017

**TRAINING & EDUCATION**  
 The Standard is but the first Step....

**Watch for a series of educational tools to support APPA TCO in the future!**

Abstract  
 This standard establishes the best practices, definitions of ownership, and management responsibilities to implement the principles of Total Cost of Ownership (TCO). TCO is a long-term, holistic, and multi-disciplinary approach to managing the lifecycle of facilities. The goal is to reduce the total lifecycle cost of facilities while maintaining the highest quality of service. The standard is designed to provide a framework for the development of a TCO program that is tailored to the specific needs of an organization. The standard is intended to be used as a guide for the development of a TCO program that is tailored to the specific needs of an organization. The standard is intended to be used as a guide for the development of a TCO program that is tailored to the specific needs of an organization.

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**APPA TOTAL COST  
OF OWNERSHIP**  
the APPA 1000™ Standard  
and Document Management

Ana.Thiemer@Austin.utexas.edu

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