

## 2. A SENSIBLE LIST

**“A PROBLEM WELL STATED IS A PROBLEM  
HALF-SOLVED.”**

**CHARLES KETTERING**

# A Sensible List

- Pete = Crazy Person
- Work Breakdown Structure (WBS)
- A Sensible List
- Why This Matters
- Organization Schemes
- WBS Examples



2. A SENSIBLE LIST

# Pete = Crazy Person



Read about industry impacts on our blog at [www.petefowler.com](http://www.petefowler.com)

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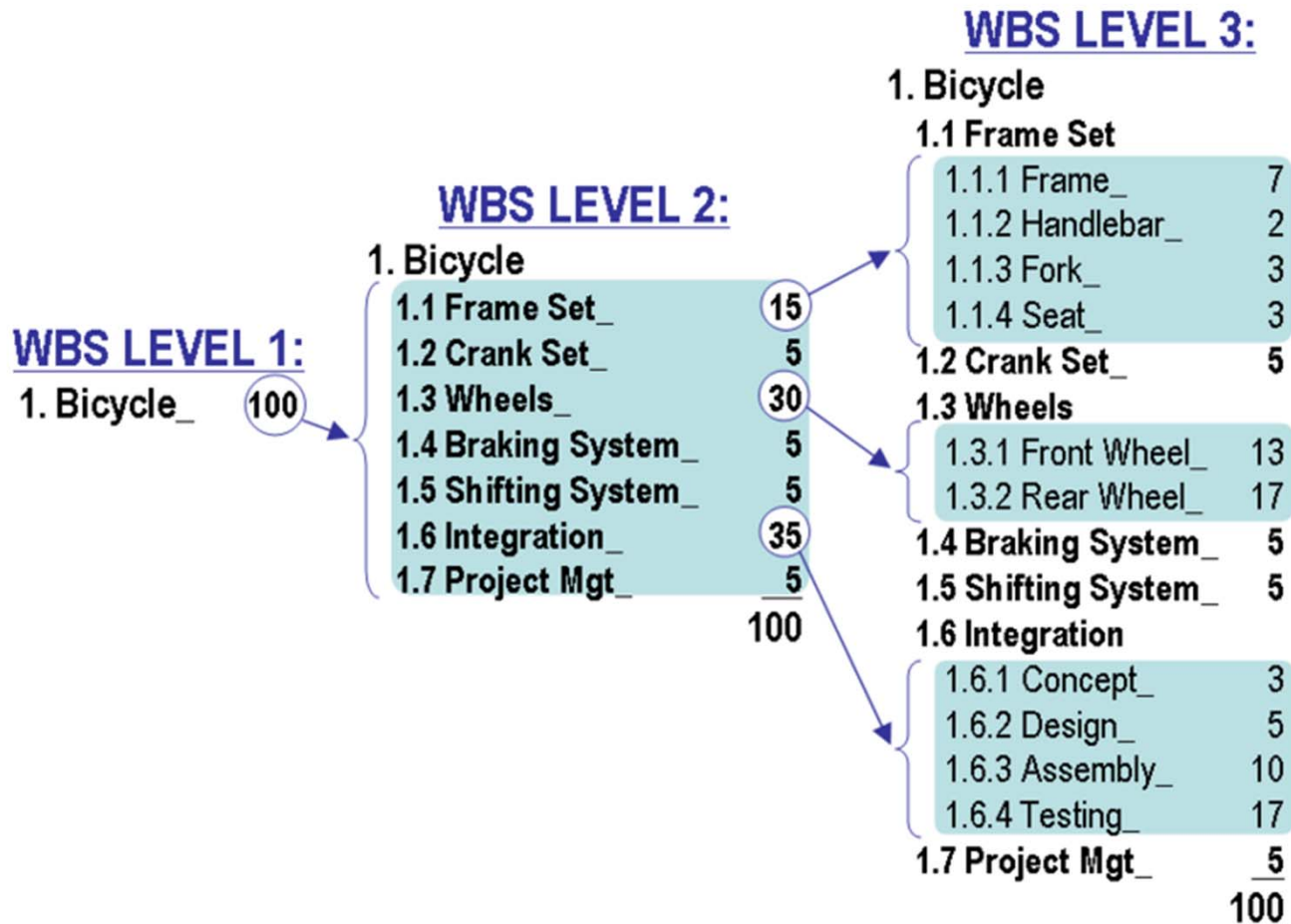
# Work Breakdown Structure (WBS)

## WHAT IS A WBS?

- A Work Breakdown Structure (WBS) is a decomposition of a project into smaller components.
- 100% Rule
- The magical number seven, plus or minus two
- Mutually Exclusive Elements

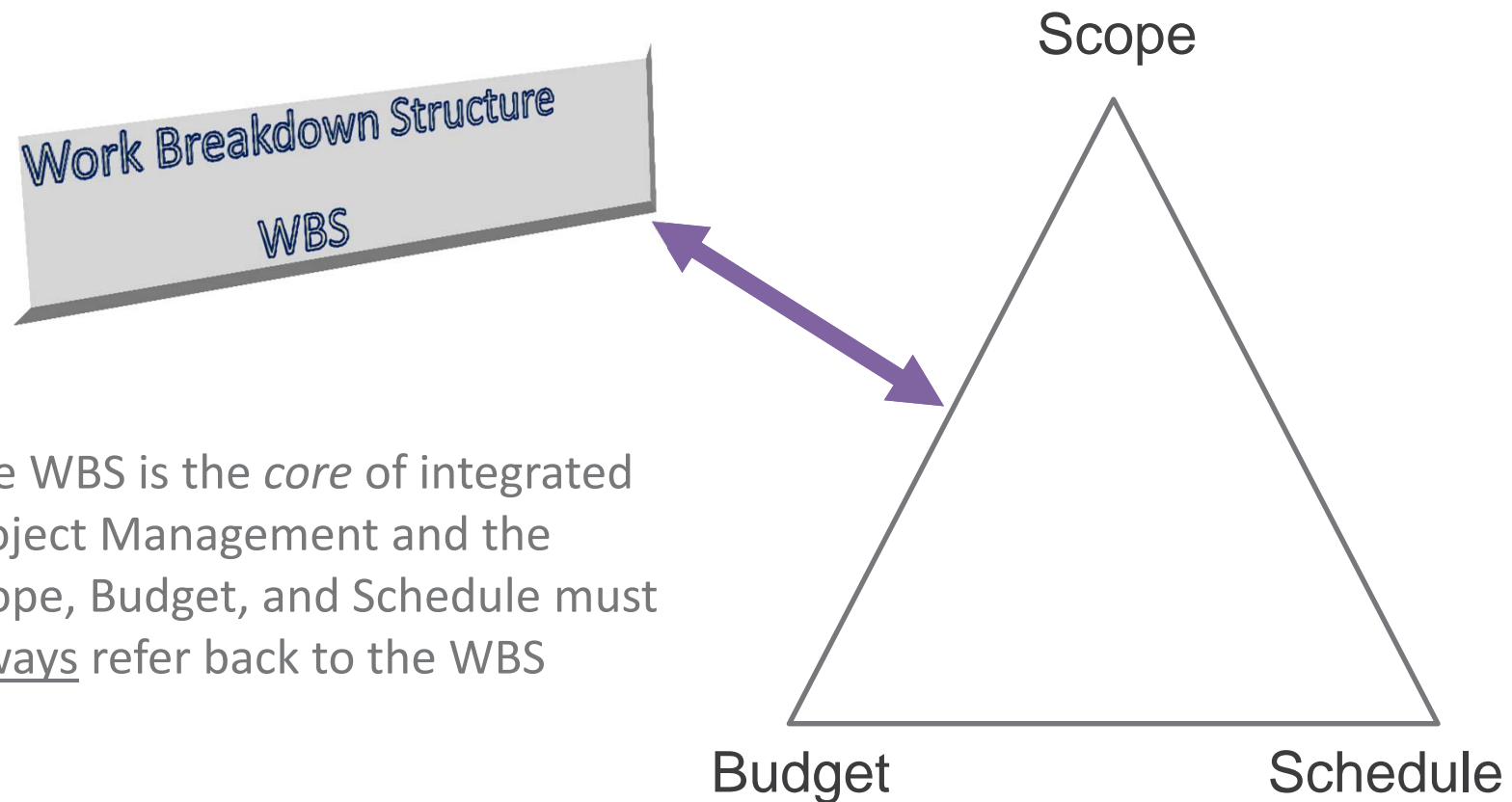


# WBS Examples



# WBS Examples

## WBS AS OUTLINE FOR SCOPE, BUDGET AND SCHEDULE



The WBS is the *core* of integrated Project Management and the Scope, Budget, and Schedule must always refer back to the WBS

# WBS Examples

## WBS AS OUTLINE FOR SCOPE, BUDGET AND SCHEDULE

Scope	Budget	Actual	Schedule
1. Item 1	\$ XXX	\$ XXX	Plan/Actual
2. Item 2	\$ XXX	\$ XXX	Plan/Actual
3. Item 3	\$ XXX	\$ XXX	Plan/Actual
4. Item 4	\$ XXX	\$ XXX	Plan/Actual
5. Item 5	\$ XXX	\$ XXX	Plan/Actual
6. TOTAL	\$ X,XXX	\$ X,XXX	

And compare performance to plan.





# Why This Matters

## DURING CONSTRUCTION

- Scope of Work
- Request for Proposal incl. Bid Forms and Schedule of Values
- Bid Analysis
- Contracting
- Insurance Information
- Scheduling
- Payment Processing
- Change Order Processing
- Quality Assurance Inspections
- Project Closeout



# Why This Matters

## IN LITIGATION

- Defect List
- Reports of All Experts
- Expert Responsibility Matrix: Who is testifying about what
- Scope of Repair
- Cost Estimates, Bids & Cost Comparisons
- Progress Schedule for Construction / Repairs
- Payment Schedule for Construction / Repairs
- Allocation of Responsibility
- Trade Contractor “Claim Packages”



# Organizational Schemes

1. By Importance
2. Room-by-Room
3. SB800
4. Who Did the Work: Masterformat
5. Building Elements: Uniformat  
(PFCS Standard)



# Organizational Schemes

## UNIFORMAT (PFCS STANDARD)

### Level 1 Structure

- A. Substructure
- B. Superstructure
- C. Interiors
- D. Services
- E. Equipment & Furnishings
- F. Special Construction & Demolition
- G. Building Site work
- H. Other



# Organizational Schemes

## UNIFORMAT (PFCS STANDARD)

### A. Superstructure

#### B 2010 Siding

Leaks

Incorrect Nailing

#### B 2060 Exterior Paint

Deteriorated Trim

Delaminating

#### B 3001 Roof

Damage

Leaks

Missing Underlayment

### B. Interiors

#### C 3011 Interior Paint

Inadequate Coverage

Wrong Color



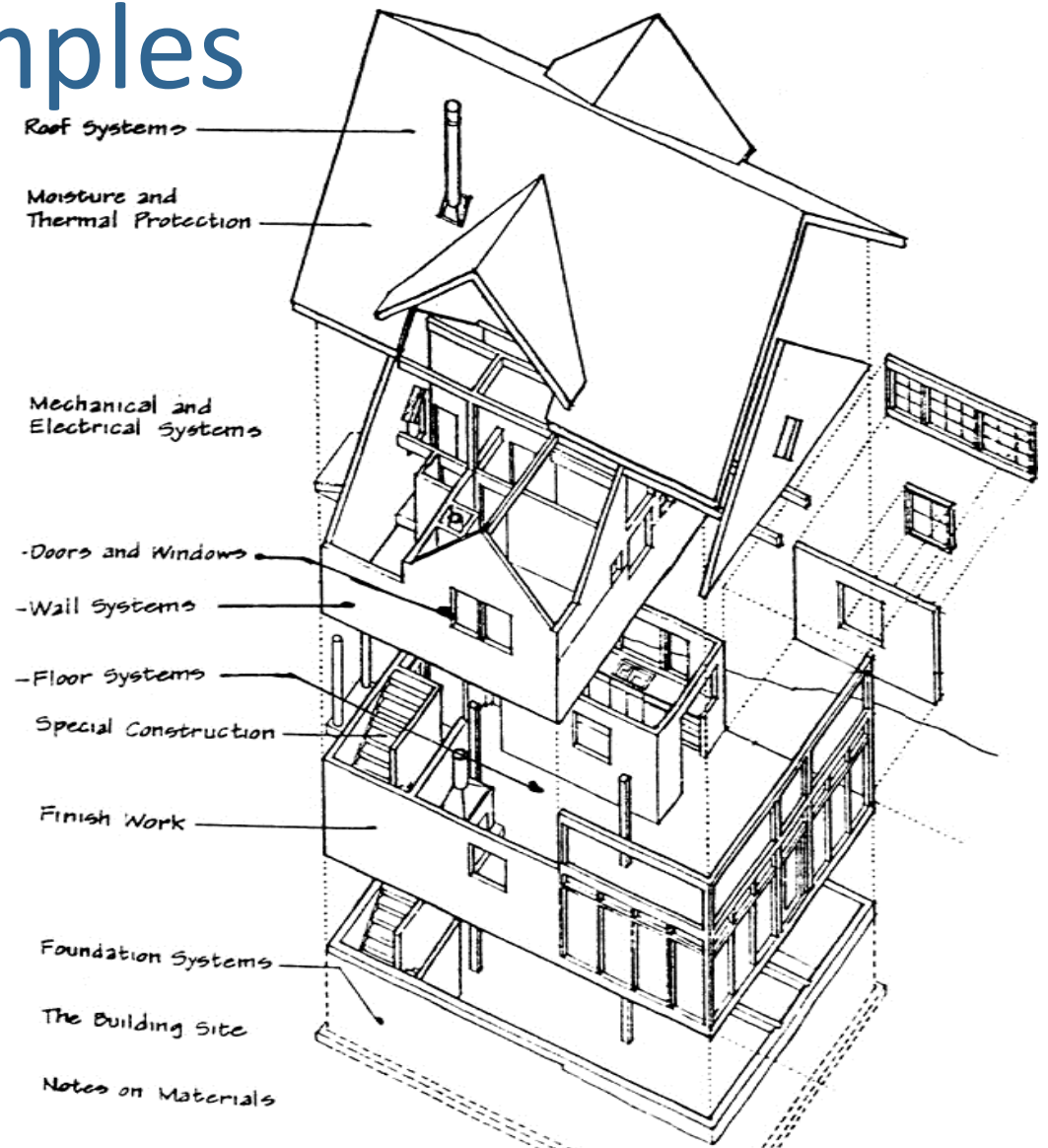
# WBS Examples

## ELEMENTS:

Buildings are composed of elements like foundations, walls and roofs.

A masonry wall is a building “Element.”

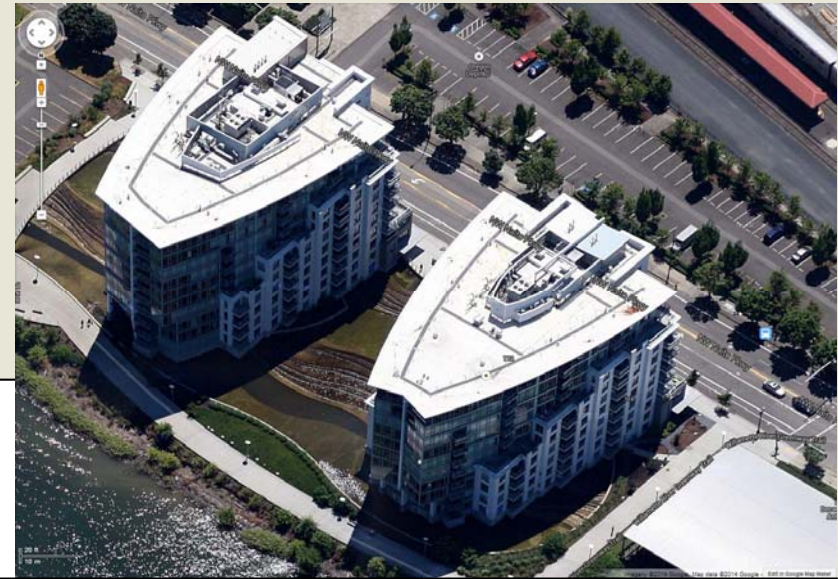
The bricks and mortar are the individual “components” of masonry walls.



# Case Study

## ELEMENT LIST

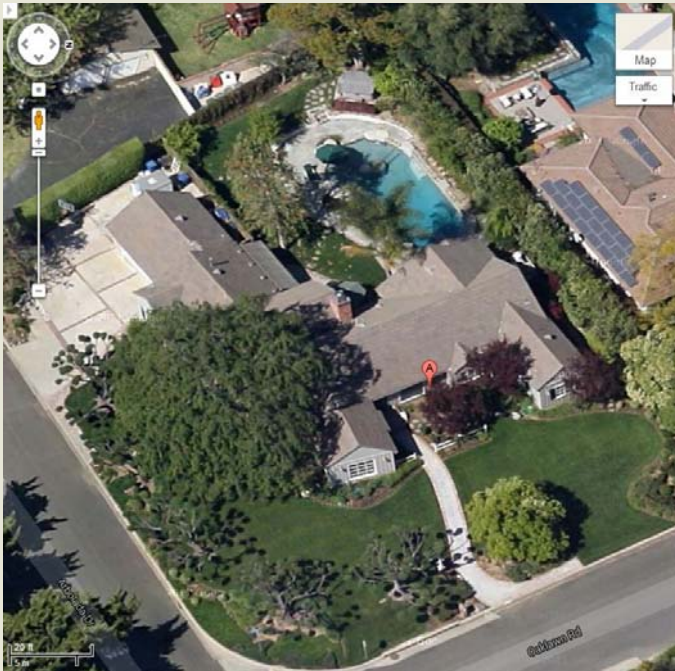
- Substructure
  - A1010 Foundations: Subterranean Concrete Walls and Columns
  - A2000 A Concrete Subterranean Parking Garage
  - A2000 B Parking Garage Insulation
  - A2000 C Garage Venting
- Superstructure
  - B1002 Masonry Panels
  - B2010 Exterior Enclosure: Exterior Gypsum Ceiling
  - B2013 Exterior Enclosure: Metal Cladding System
  - B2018 A Exterior Railings with Glass Railings at Decks
  - B2018 B Exterior Wall Accessories & Decorative Metal: Metal H
  - B2018 C Exterior Wall Accessories & Decorative Metal: Metal H
  - B2018 D Exterior Wall Accessories - Metal Louvers
  - B2020 Windows
  - B2030 Exterior Doors - Building Entry Doors
  - B2031 Exterior Doors: Garage Doors and Controls



- Interiors
  - C1020 Interior Doors
  - C2000 Stairs (Interior and Exterior): Metal Stairs
  - C3011 Interior Paint - Common Areas
  - C3021 Floor Finishes: Vinyl Flooring
  - C3024 Floor Finishes: Carpet at Common Areas
- Services
  - D1010 Elevators and Lifts
  - D2010 Plumbing Fixtures: Restroom Fixtures
  - D3000 A HVAC: Cooling Towers
  - D3000 B Elevator Cooling Unit
  - D3050 Natural Gas Fuel Distribution
  - D4000 A Fire Protection: Sprinkler System / Distribution
  - D4000 B Fire Protection: Fire Extinguishers / Defibrillator
  - D4050 A Fire Protection / Fire Alarm



# Case Study



## ISSUES LIST

- B1000 Structural Frame (incl. Floor, Wall and Roof)
  - B1000 A: Floor sheathing, floor joists, rim joist and rim blocking damaged by water intrusion from tub/shower.
  - B1000 B: Lack of adequate framing below walls and floor joists in bathroom #2.
- B2012 Exterior Enclosure: Masonry Veneer
  - B2012 A: Lack of a drainage plane behind the brick veneer on the chimney to direct water out of the assembly.
- B2013 Exterior Enclosure: Siding & Trim
  - B2013 A: Exterior siding buried by the concrete flatwork and brick.
- B2040 Exterior Wall Flashing & Sheet metal
  - B2040 A: Exterior trim flashing at roof to wall did not direct water out of the building envelope.
  - B2040 B: Exterior sheet metal on chimney not properly installed into full bed of sealant.
- B3001 Sloped Roofs
  - B3001 A: Valley sheet metal on sloped roof has the roof tiles butted too close together which causes debris to clog the valleys.
- B3004 Roof Flashing & Trim
  - B3004 A: Sheet metal tile pan on the downhill side of the chimney, east and north, was covered by roof tiles and did not provide an area for debris and water to flow around the chimney.
- C3015 Tile & Stone Assemblies (Incl. Showers)
  - C3015 A: Water intrusion at the horizontal tile surfaces to the horizontal cast iron surfaces.
- D2040 Rain Water Drainage
  - D2040 A: Rain water overflowed the rain gutter above the laundry room exterior wall and entered the building envelope at the roof to wall.

