



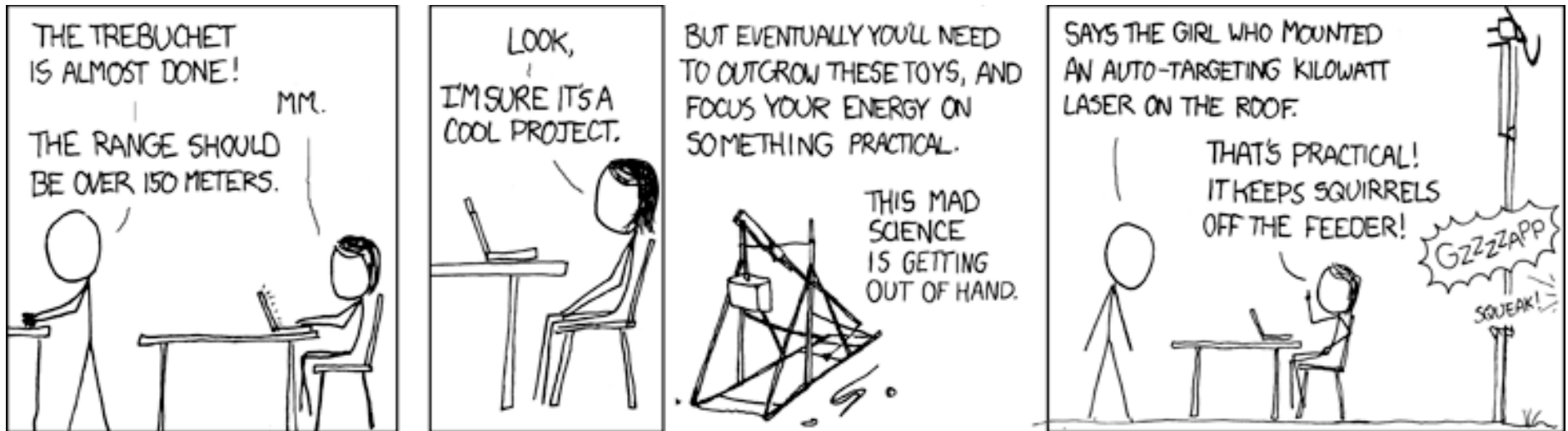
CSSE 372 Software Project Management: Software Project Work Breakdown Structures

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XKCD: In honor of the RHIT bonfire...



Plan for the Day

- Plus/Delta Evaluation Reflections
- Work Breakdown Structures (WBS)



+/ ∂ Feedback: Lectures



Pace

- 0 – much too fast
- 13 – somewhat too fast
- 24 – Somewhat too slow
- 0 – much too slow

Working well

- Lectures well-organized/paced
- Good class/group activities
- Right material & good slides
- Group games
- Daily quizzes
- Knowledgeable instructor
- Good case studies
- Cartoons/humorous slides

Improvements

- On Target
- More interactive exercises
- Bit slow (3) vs. Bit fast (2)
- More (2) vs. Less (2) depth
- More visual material
- More analogies/connect dots
- More case studies
- Avoid dry material
- Avoid random calling on people
- Less discussions with partner
- Move time to later in day ☺



+/@ Feedback: Quizzes

Quizzes

- 14** – Very helpful
- 20** – somewhat helpful
- 2** – somewhat unhelpful
- 1** – Very unhelpful

Working well

- Enforced note-taking 😊
- Focuses lecture direction
- Indicates high points
- Good study guide/aid
- Questions work well
- Integration with material
- Good coverage of important topics

Improvements

- Quizzes are fine
 - Be more specific in answers
 - Easier (4) vs. Harder (3) questions
 - More open-ended questions (2)
- ↕
- Make questions even shorter (1)
 - Avoid “list the...” questions
 - Better matching questions to slide content
 - Put a fun question on quiz!
 - Don’t have quizzes (1)



+/*o* Feedback: Reading and Homework

Reading

2 – all of it

12 – most of it

21 – little of it

2 – none of it

Homework Difficulty

0 – much too difficult

18 – a bit too difficult

18 – a bit too easy

1 – much too easy

+/ ∂ Feedback: Homework Helpfulness

Homework Helpfulness

- 2** – very helpful
- 28** – somewhat helpful
- 7** – somewhat unhelpful
- 0** – very unhelpful

Working well

- Frequency/Length about right
- Reflects in-class material
- Good feedback
- SimSE useful and fun
- Real-world insights
- Tool experience – COCOMO
- Relevant/applies concepts
- Not overwhelming

Improvements

- Nothing, it's working well (8)
- More challenging homework
- More frequent, but shorter
- First assignment tedious
- Provide small FAQ for 1st HW
- Provide examples of good HW to manage expectations
- Align HW and lectures better
- SimSE contrived, not useful
- Too easy (2) vs. Too hard (3)
- Case study papers long/hard
- Spread out case studies
- Clarify when case studies due
- Assignments due at 11:55pm



+/ ∂ Feedback: Workload

■ Workload

- 0** – much higher than average
- 7** – somewhat higher than average
- 30** – somewhat lower than average
- 0** – much lower than average

■ General Comments

- Just about right / keep up good work (8)
- Hard course, but making it interesting
- SimSE/games good in class
- Should use “just right” (porridge not always too hot/cold)
- Better align times for CSSE 371 & 372 – 5 hrs apart
- Encouragement (37), Neutral (0) Discouragement (0) 😊



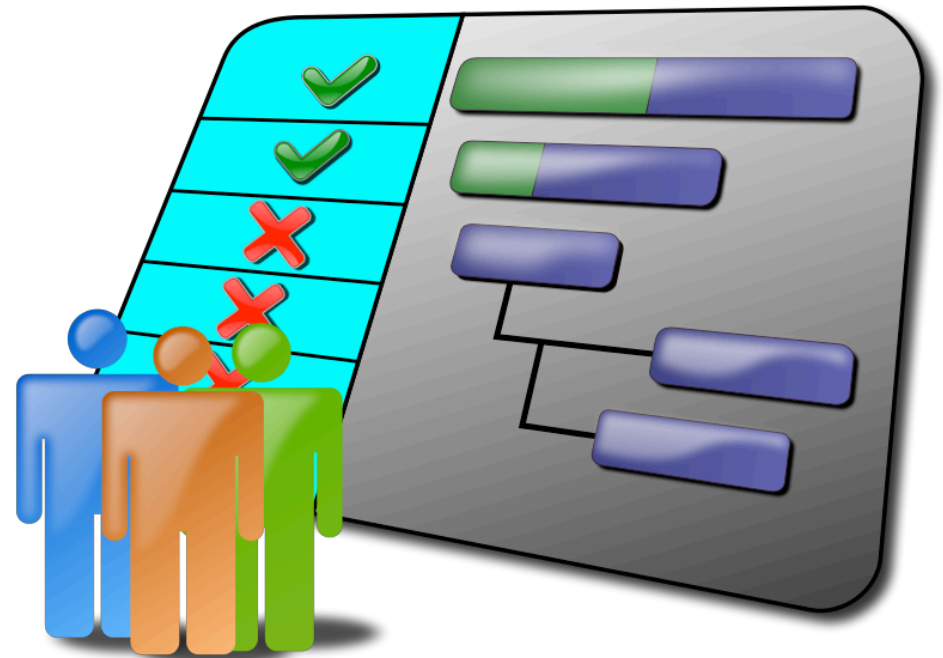
Summary of $+/\partial$ Actions

- **Pick up the pace and challenge**
 - Project Plan will help...
- **Continue games, interactive and group exercises**
- **More visual material for class slides**
- **Move homework due time to 11:55pm**
 - Better clarify case study due dates

Learning Outcomes: Schedule

Create and maintain a software project schedule.

- Identify project tasks for planned work
- Develop a Work Breakdown Structure (WBS)



What are some examples of software “work” products?

What activities produce these work products?

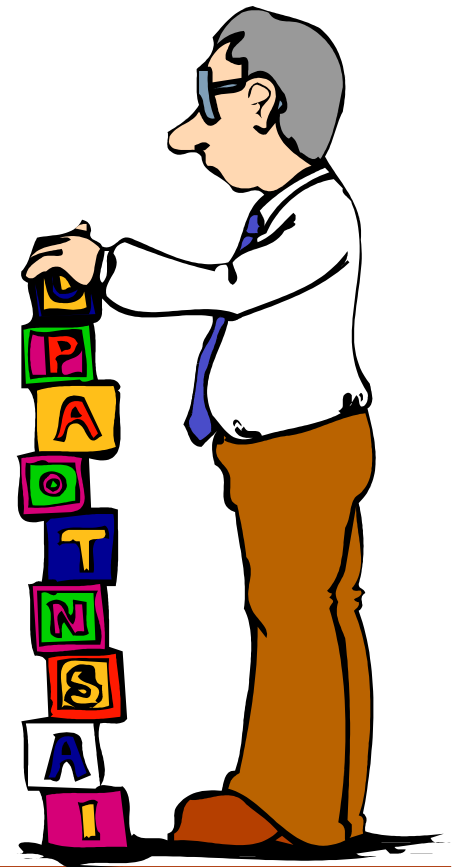
- Think for 15 seconds...
- Turn to a neighbor and discuss it for a minute



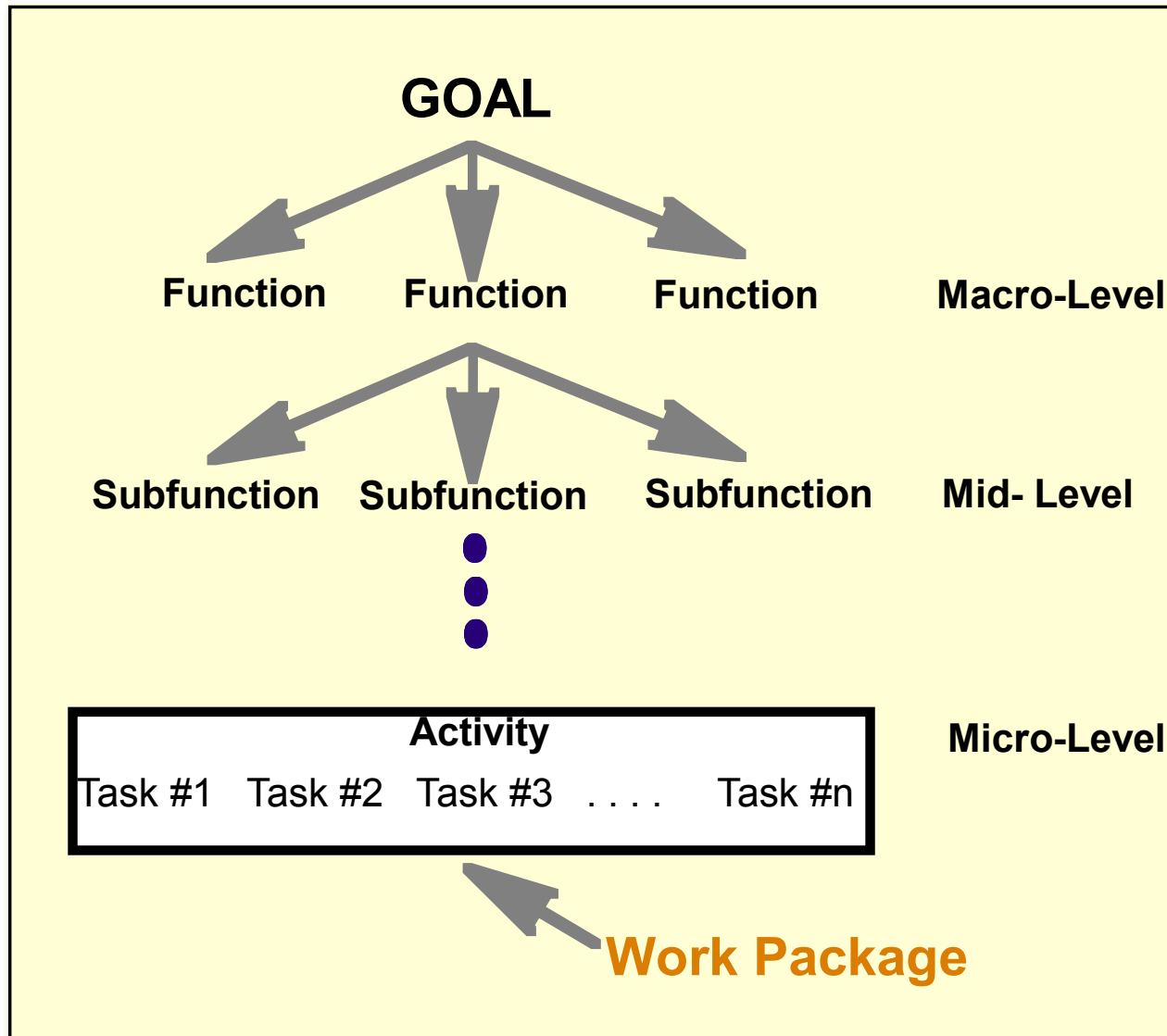
Definition: Work Breakdown Structure

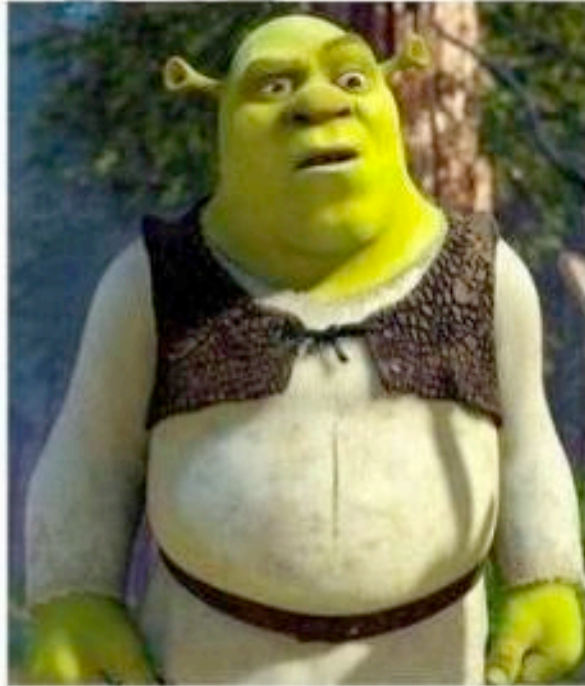
The **Work Breakdown Structure** (WBS) is a hierarchical description of all of the work that must be done to meet the needs of the client.

1. *Thought process tool*
2. *Architectural design tool*
3. *Planning tool*
4. *Project status reporting tool*



Hierarchical Visualization of the WBS





BEFORE



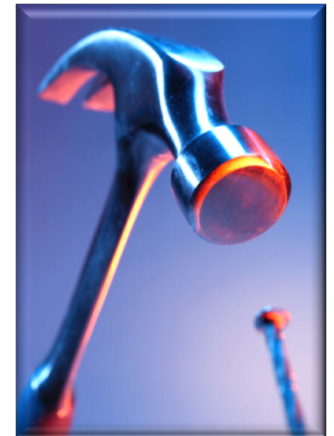
AFTER

P90X

It really works

WBS Completion Criteria

1. Can I determine activity status at any point in time?
2. Is there a defined start and end event?
3. Does the activity have a deliverable?
4. Can I easily estimate time and cost?
5. Is the activity duration within acceptable limits?
6. Can the activity work be done without interruption?



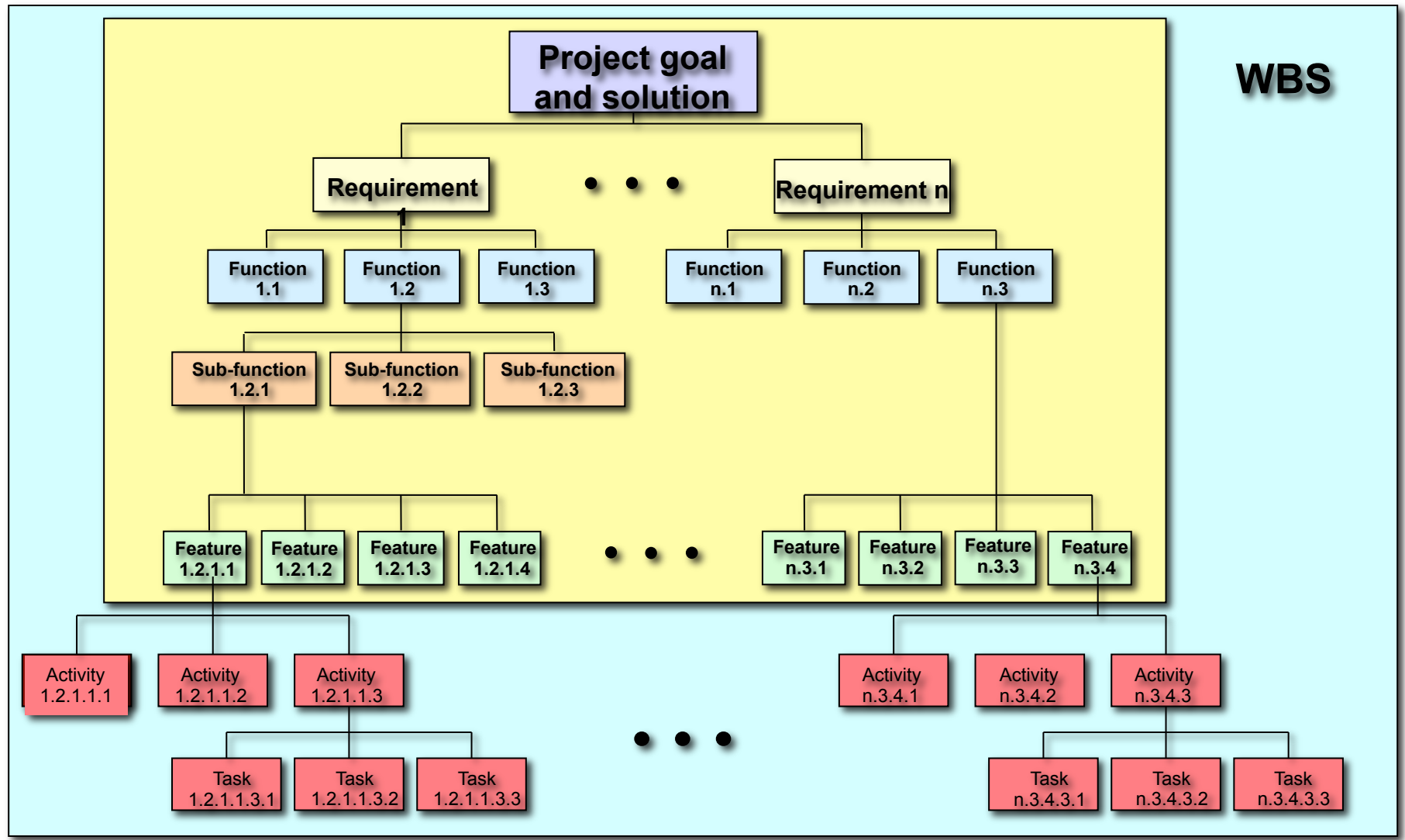
WBS 7th Completion Criterion

- Client didn't participate in building WBS like you hoped
- You may have an uncomfortable feeling
- Scope change is likely to be a big part of the project



Choose an appropriate process model that accommodates requisite change and rigor

WBS Reflects Goals & Requirements

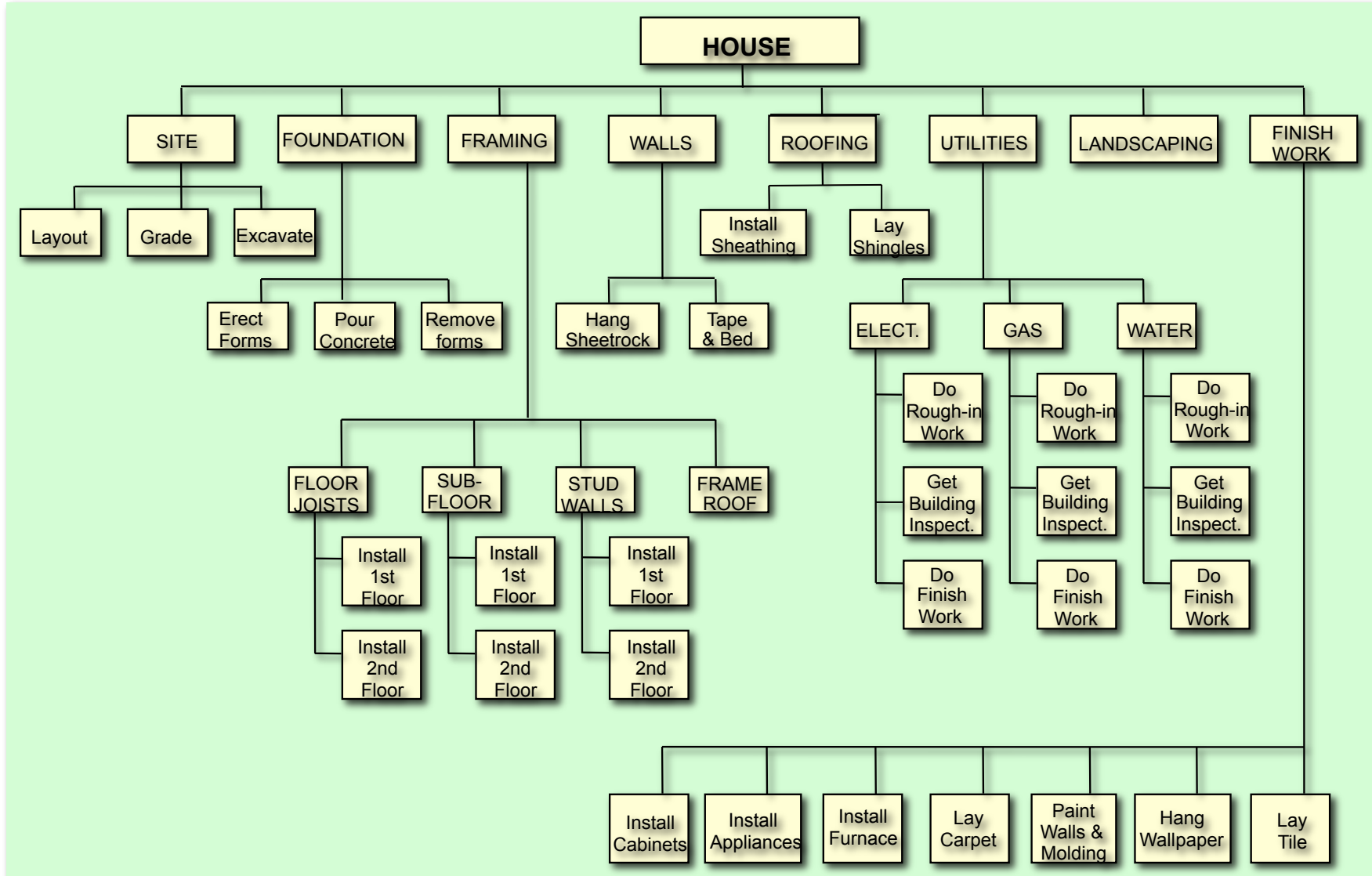


Basic Structures of the WBS

- Deliverables-based structures
 - Physical decomposition
 - Functional decomposition
- Task-based structures
 - Design-Build-Test
- Organizational structures
 - Geographic
 - Departmental
 - Business Function



Graphical WBS for a House





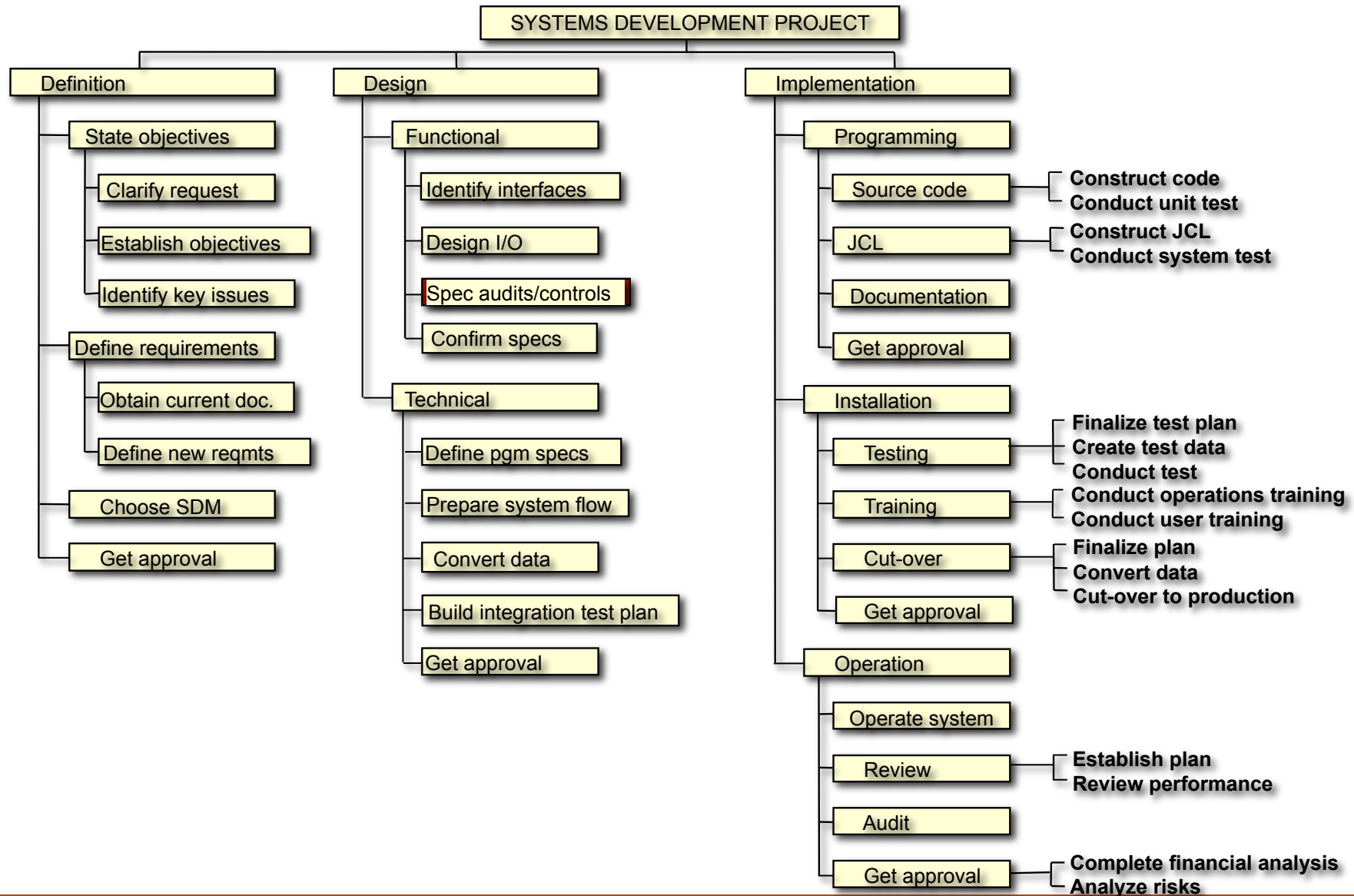
Indented Outline WBS for a House

- 1. SITE PREPARATION**
 - 1.1. Layout**
 - 1.2. Grading**
 - 1.3. Excavation**

- 2. FOUNDATION**
 - 2.1. Erect Forms**
 - 2.2. Pour Concrete**
 - 2.3. Remove Forms**

- 3. FRAMING**
 - 3.1. Floor Joists**
 - 3.1.1. Install first floor joists**
 - 3.1.2. Install second floor joists**
 - 3.2. Sub-flooring**
 - 3.2.1. Install first floor sub-flooring**
 - 3.2.2. Install second floor sub-flooring**
 - 3.3. Stud Walls**
 - 3.3.1. Erect first floor stud walls**
 - 3.3.2. Erect second floor stud walls**
 - 3.4. Frame the roof**

WBS for a Waterfall Development Method



Mythical Man Month 20 years later

By Fred Brooks

- How does Harlan Mills' making "programming a public process" improve software?
- What did Prof. Brooks mean by "People are everything?"
- How does Prof. Brooks feel about David Parnas' information hiding?





General Perspective on Exam 1:

- **Exam will be 45 minutes**
 - Some multiple choice/short answer (40%)
 - Some essay/exercises/problem sets (60%)
 - Close book/notes/computer...
- **What is fair game?**
 - Class slides and daily quizzes
 - Book/Readings/Case Studies
- **Study Strategy**
 - Daily quizzes → Slides → Books/Readings/Cases
- **Can have a help sheet**
 - 1 page, no less than 6 font



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MIDNIGHT
DREARY IT WAS,
PONDERED DID I.
WEAK AND
WEARY I WAS.



EDGAR
ALLAN
PODA

©/awe



Homework and Reading Reminders

- **Prepare for Friday's Examination**
 - We will have a short review on Thursday

- **Complete Homework 3 – Software Estimate Using COCOMO-II or Costar**
 - Due by 11:55pm, Today, September 25th, 2012

- **Complete Homework 4 – Software Risk Tables and Risk Sheets**
 - Due by 11:55pm, Tuesday, October 2nd, 2012