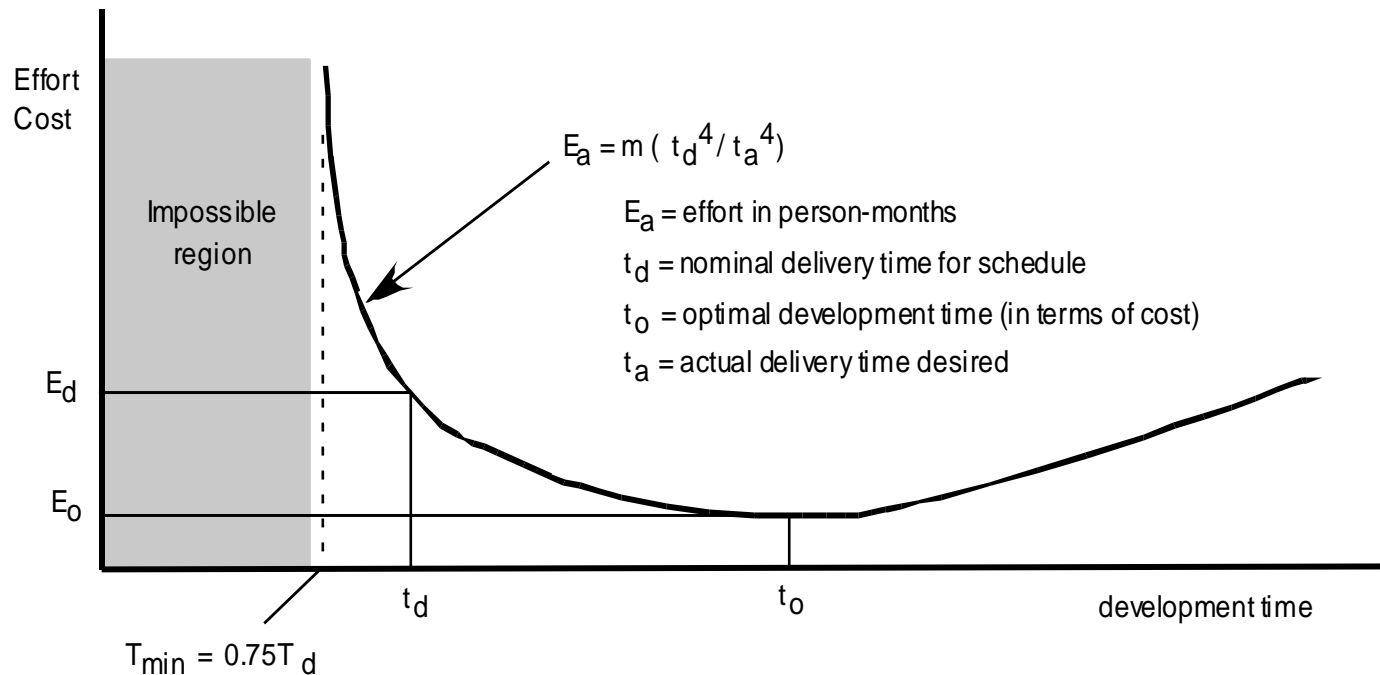# Unit 11.
Project Scheduling
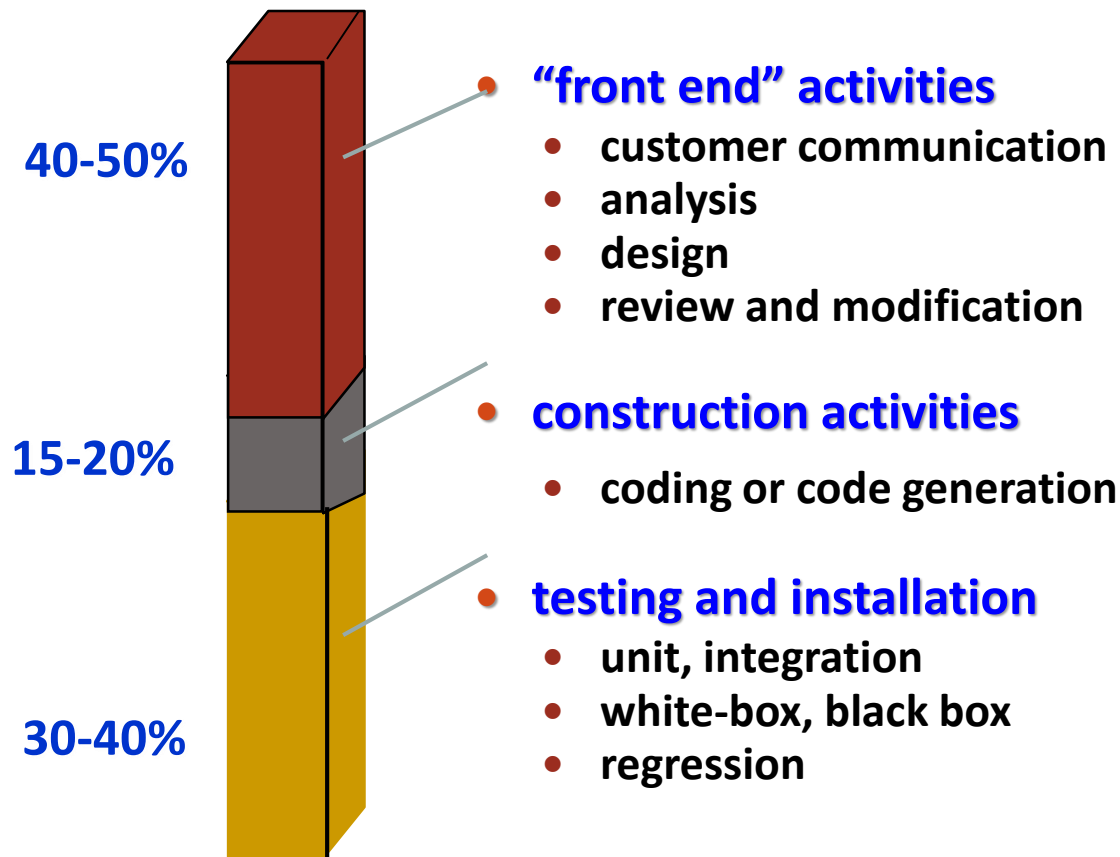
Scheduling Principles

- **Compartmentalization**
  - **Define distinct tasks.**

- **Interdependency**
  - **Indicate task interrelationship.**

- **Effort Validation**
  - **Be sure resources are available.**

- **Defined Responsibilities**
  - **People must be assigned.**

- **Defined Outcomes**
  - **Each task must have an output.**

- **Defined Milestones**
  - **Review for quality.**

Effort and Delivery Time

$$E_a = m \left(t_d^4 / t_a^4 \right)$$

E_a = effort in person-months

t_d = nominal delivery time for schedule

t_o = optimal development time (in terms of cost)

t_a = actual delivery time desired

Effort Cost

Impossible region

E_d

E_o

t_d

t_o

development time

$T_{min} = 0.75 T_d$

Effort Allocation

40-50%

15-20%

30-40%

- **"front end" activities**
  - customer communication
  - analysis
  - design
  - review and modification

- **construction activities**
  - coding or code generation

- **testing and installation**
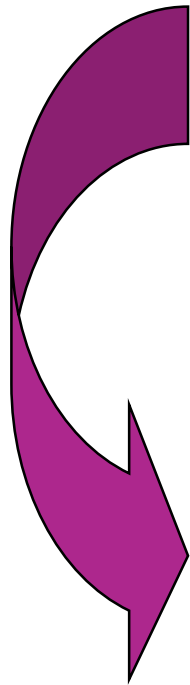 - unit, integration
  - white-box, black box
  - regression

Defining Task Sets

- **Determine type of project.**

- **Assess the degree of rigor required.**

- **Identify adaptation criteria.**

- **Select appropriate software engineering tasks.**

Task Set Refinement

1.1 **Concept scoping** determines the overall scope of the project.

Task definition: Task 1.1 Concept Scoping
1.1.1   Identify need, benefits and potential customers;
1.1.2   Define desired output/control and input events that drive the application;
                       Begin Task 1.1.2
                       1.1.2.1   FTR: Review written description of need
                 FTR indicates that a formal technical review (Chapter 26) is to be conducted.
                       1.1.2.2   Derive a list of customer visible outputs/inputs
                       1.1.2.3   FTR: Review outputs/inputs with customer and revise as required;
                       endtask Task 1.1.2
1.1.3   Define the functionality/behavior for each major function;
                       Begin Task 1.1.3
                       1.1.3.1   FTR: Review output and input data objects derived in task 1.1.2;
                       1.1.3.2   Derive a model of functions/behaviors;
                       1.1.3.3   FTR: Review functions/behaviors with customer and revise as required;
                       endtask Task 1.1.3
1.1.4   Isolate those elements of the technology to be implemented in software;
1.1.5   Research availability of existing software;
1.1.6   Define technical feasibility;
1.1.7   Make quick estimate of size;
1.1.8   Create a Scope Definition;
endTask definition: Task 1.1

is refined to
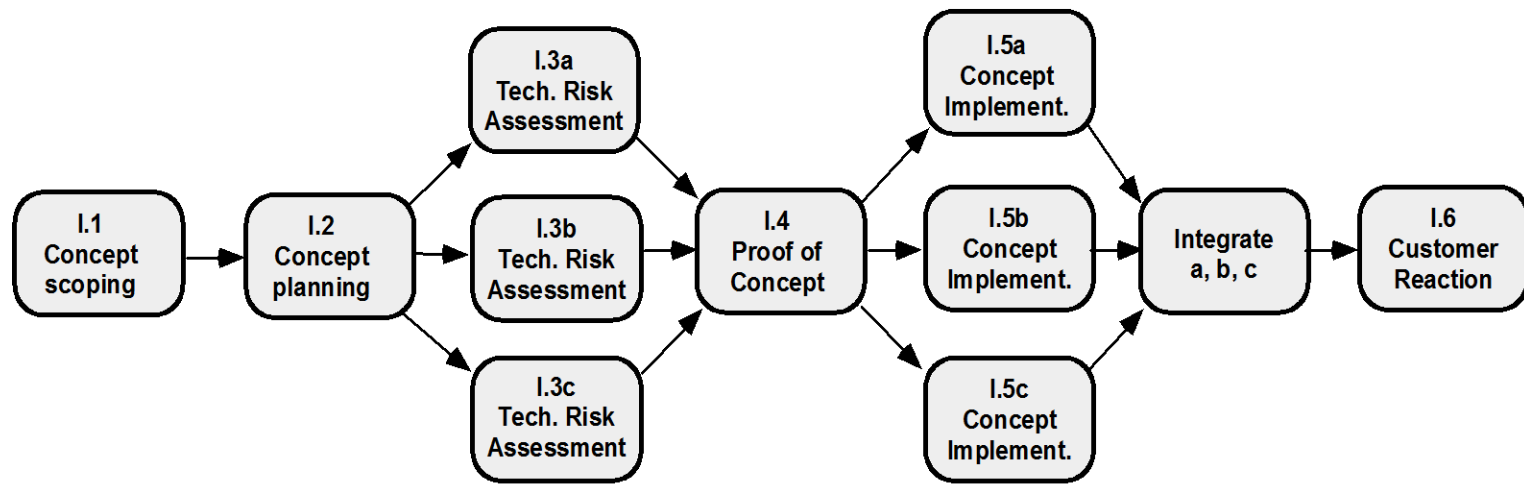
Three I.3 tasks are applied in parallel to 3 different concept functions

Three I.3 tasks are applied in parallel to 3 different concept functions

Timeline Charts

Tasks	Week 1	Week 2	Week 3	Week 4		Week n
Task 1	▬▬▬▬					
Task 2		▬▬▬▬▬				
Task 3		▬▬▬▬▬▬▬▬▬▬▬▬▬▬				
Task 4			▬▬▬▬			
Task 5		▬▬				
Task 6				▬▬▬▬▬		
Task 7					▬▬▬▬▬▬▬▬▬	
Task 8			▬▬▬▬▬			
Task 9				▬▬▬▬		
Task 10				▬▬▬▬▬▬		
Task 11					▬▬▬▬▬▬▬▬▬	
Task 12		▬▬▬▬▬▬				
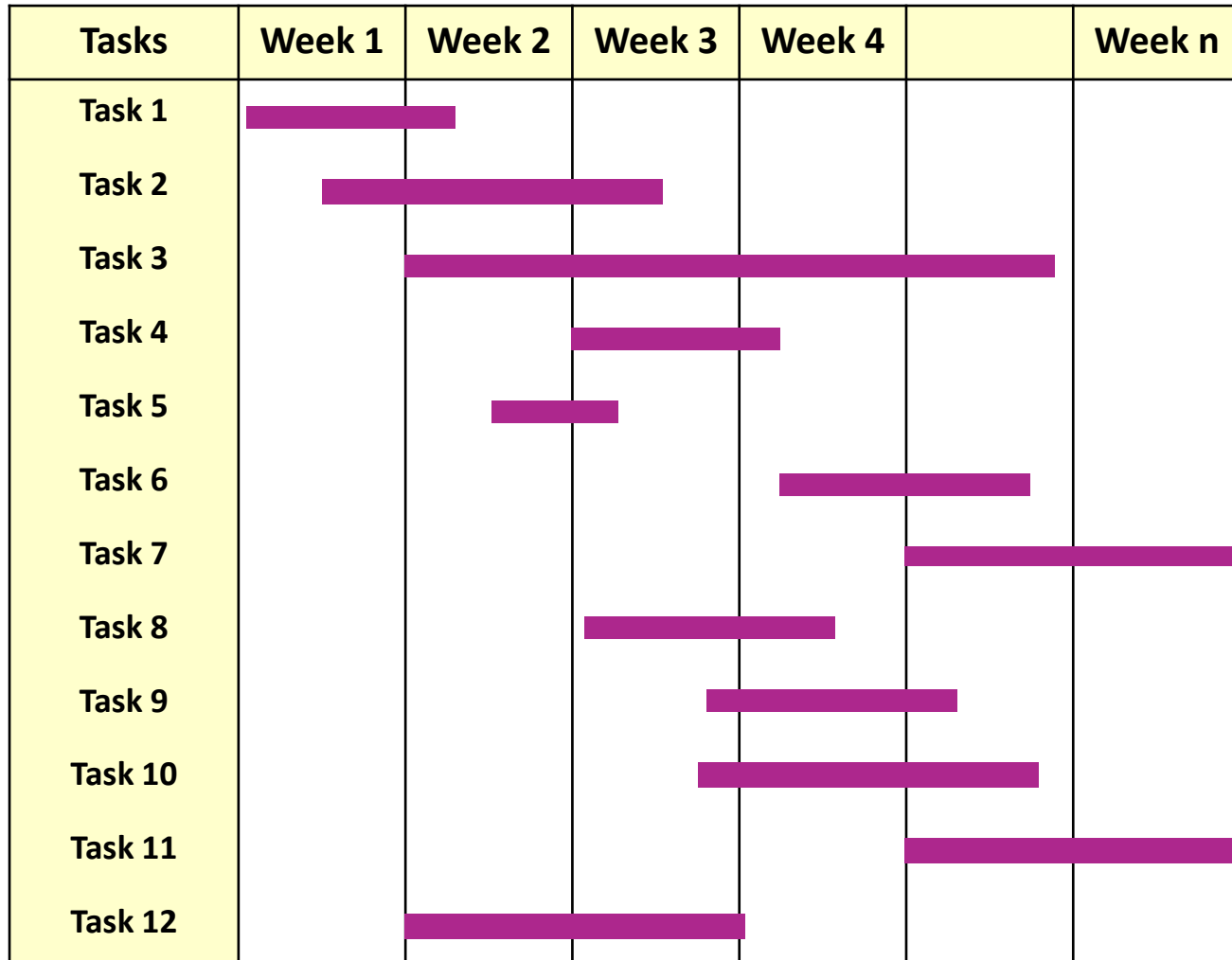
Tools for Timeline Charts

Work tasks		week 1	week 2	week 3	week 4	week 5
I.1.1	Identify need and benefits					
	Meet with customers					
	Identify needs and project constraints					
	Establish product statement					
	Milestone: product statement defined					
I.1.2	Define desired output/control/input (OCI)					
	Scope keyboard functions					
	Scope voice input functions					
	Scope modes of interaction					
	Scope document diagnostics					
	Scope other WP functions					
	Document OCI					
	FTR: Review OCI with customer					
	Revise OCI as required;					
	Milestone; OCI defined					
I.1.3	Define the functionality/behavior					
	Define keyboard functions					
	Define voice input functions					
	Decribe modes of interaction					
	Decribe spell/grammar check					
	Decribe other WP functions					
	FTR: Review OCI definition with customer					
	Revise as required					
	Milestone: OCI definition complete					
I.1.4	Isolate software elements					
	Milestone: Software elements defined					
I.1.5	Research availability of existing software					
	Reseach text editiong components					
	Research voice input components					
	Research file management components					
	Research Spell/Grammar check components					
	Milestone: Reusable components identified					
I.1.6	Define technical feasibility					
	Evaluate voice input					
	Evaluate grammar checking					
	Milestone: Technical feasibility assessed					
I.1.7	Make quick estimate of size					
I.1.8	Create a Scope Definition					
	Review scope document with customer					
	Revise document as required					
	Milestone: Scope document complete					

Thank You !