PERT Example

Using PERT in your plan

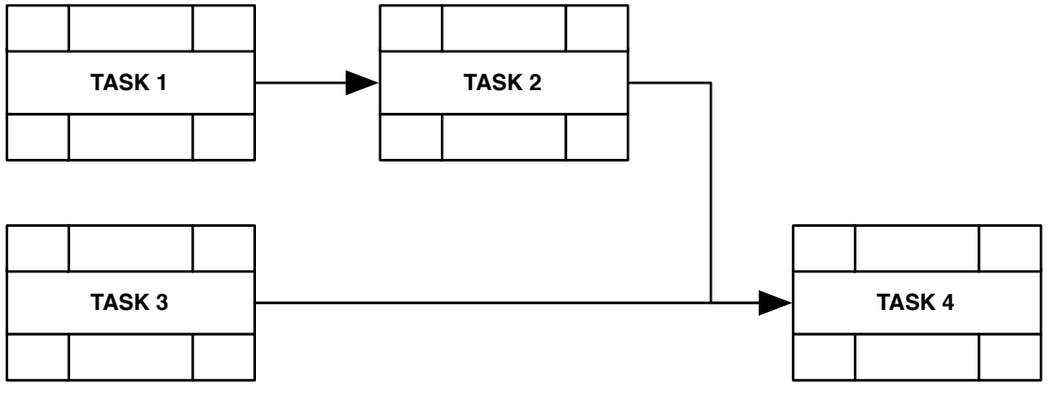
- When you use PERT you can use your optimistic, pessimistic, and most-likely estimates to define three plans (the optimistic, pessimistic, and most-likely plan).
  - This allows you to reason in best and worst case scenarios
- Sooner or later, however, you need to commit to a plan.
- The following assumptions are usually made:
  - The critical path of your (actual) plan is the *critical path of the most-likely plan*
  - Estimation of tasks in the critical path are *statistically independent*
  - Distributions are all *normal distributions*
- Under these assumptions:
  - The mean of the critical path is the sum of the means of the activities
  - The variance of the critical path is the sum of the variances

Using PERT in your plan

- Given the assumptions above PERT is used to:
  - determine the probabilistic duration of each activity
  - determine the critical path and its probabilistic duration
- The critical path is then used to:
  - determine the probabilistic duration of the plan

A Simple Example (1/3)

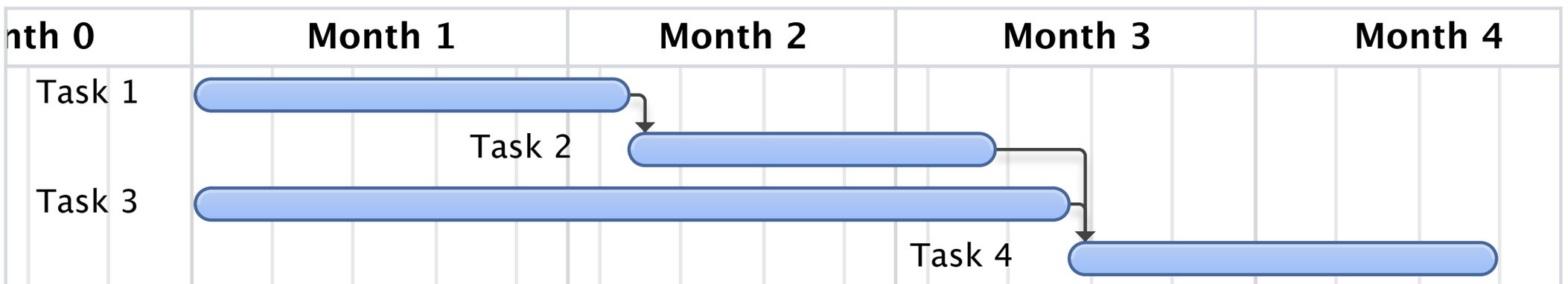
a



b

	P	M	O	Average	Variance	Std. Deviation
	b	m	a	μ	σ^2	σ
Task 1	10	5	2	5.3	1.8	1.3
Task 2	8	4	3	4.5	0.7	0.8
Task 3	20	10	4	10.7	7.1	2.7
Task 4	10	5	1	5.2	2.3	1.5

c

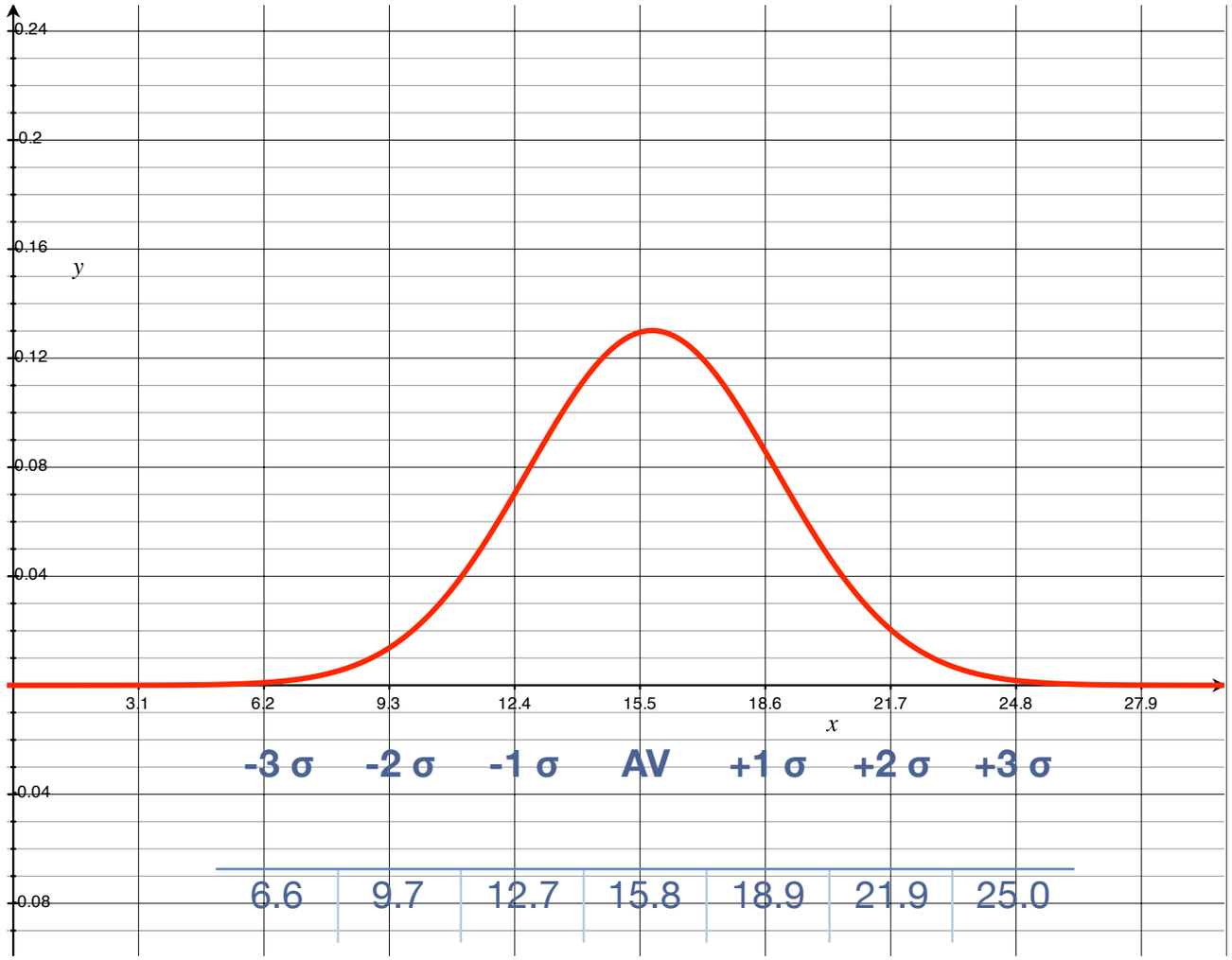


A Simple Example (2/3)

	P b	M m	O a	Average μ	Variance σ^2	Std. Dev σ
Task 1	10	5	2	5.3	1.8	1.3
Task 2	8	4	3	4.5	0.7	0.8
Task 3	20	10	4	10.7	7.1	2.7
Task 4	10	5	1	5.2	2.3	1.5
CRITICAL PATH				**15.8**	**9.4**	**3.1**

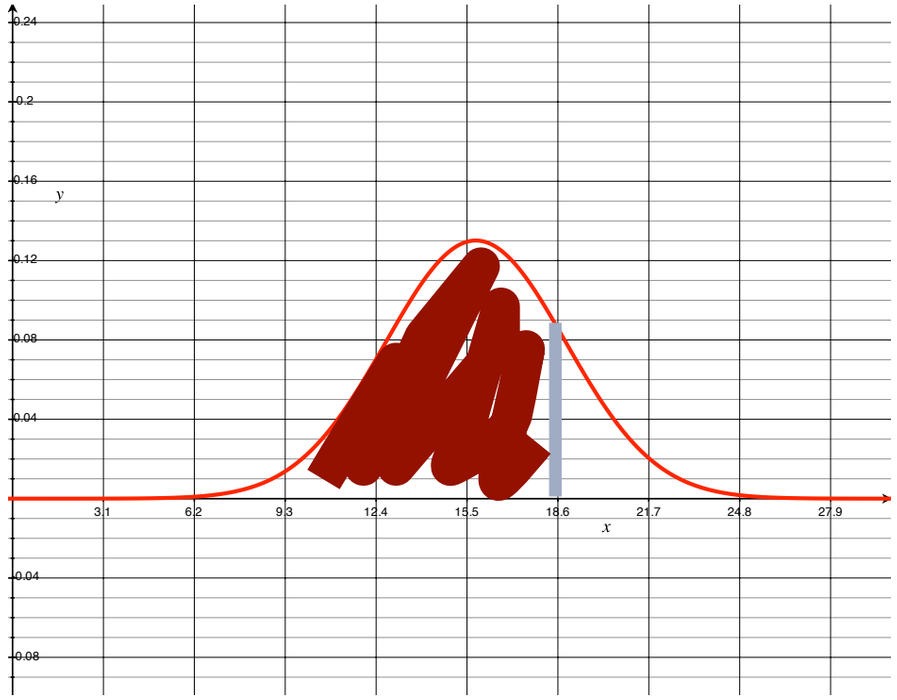
(*) decimal point approximation

(*)



A Simple Example (3/3)

	VALUE	CUMUL NORM on or before:	PROB Later than:
NORM DIST	10.0	2.8%	97.2%
	11.0	5.7%	94.3%
	12.0	10.5%	89.5%
	13.0	17.7%	82.3%
	15.0	39.3%	60.7%
	17.0	64.9%	35.1%
	18.0	76.1%	23.9%
	20.0	91.3%	8.7%
	21.0	95.4%	4.6%



In my estimation I could stick to a conservative estimation; e.g. 20 days, which has a 91.3% probability.

(Remark: Critical Chain Management takes a different approach, in which the estimations are more optimistic.)