Scrum: Estimation and Velocity

Lecturer: Adel Vahdati

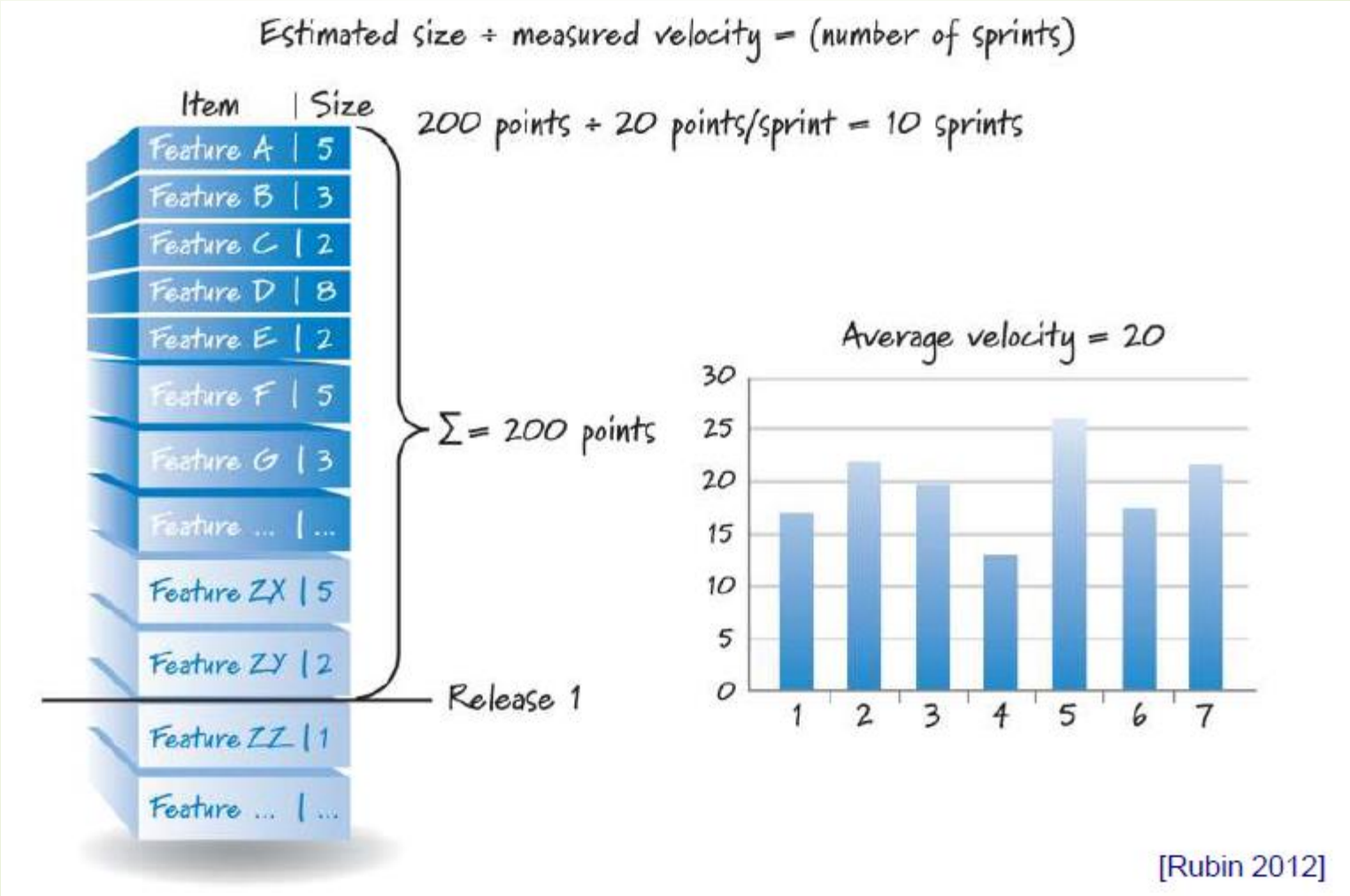
Estimation and Velocity

- When planning and managing the development of a product, we need to answer important questions such as:
  - "How many features will be completed?"
  - "When will we be done?"
  - "How much will this cost?"
- To answer these questions, we need to estimate the size of what we are building and measure the velocity at which we can get it done.
- With that information, we can derive the likely **product development duration** (and the corresponding cost) by dividing the **estimated size of a set of features** by the **team's velocity**.

Relationship Among Size, Velocity, and Duration

- Basic Question: How much time do we need to create the features in Release 1?
  - Gauge the **size** of Release 1 by adding the individual size estimates for the PBIs targeted for Release 1.
  - Estimate the team's **velocity**: How much work the team typically gets done each sprint.
    - At the end of each sprint, add the size estimates of the BPIs that were completed in the sprint; this sum is the team's velocity for that sprint.
    - Calculate an average velocity for the sprints that have been completed.
  - Now that we have estimated size and measured average velocity, calculate the **duration** by dividing the size by the velocity.

Relationship Among Size, Velocity, and Duration

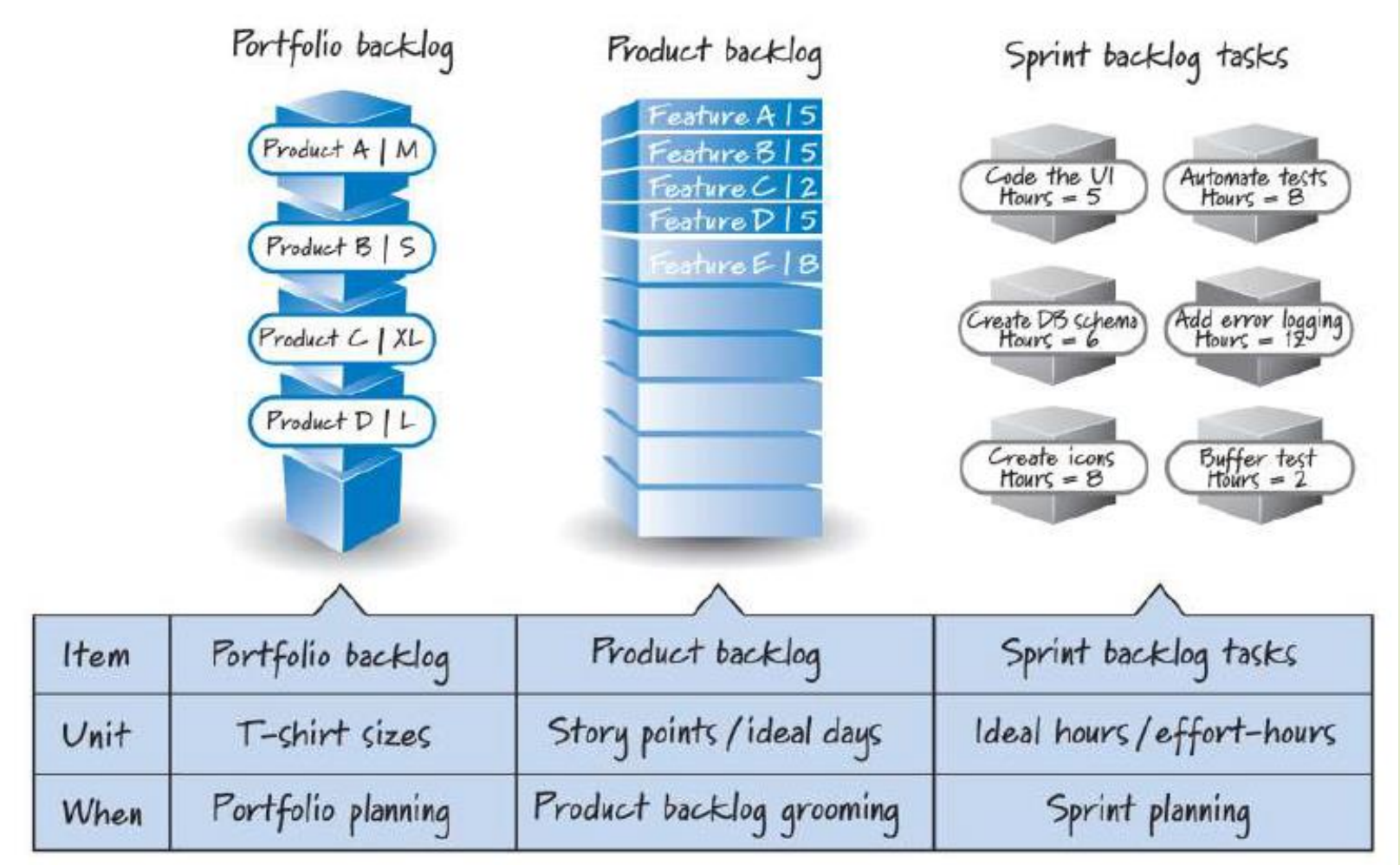


[Rubin 2012]

Estimation: What and When

- Throughout the development life of a product, we need to estimate at varying levels of granularity and, thus, will use different units to do so.
- Most organizations make estimates for planning purposes at three different levels of detail:
- **Portfolio backlog:** Contains a prioritized list of all of the products (or projects) that need to be built.
  - To estimate portfolio backlog items, rough, relative size estimates like Tshirt sizes are typically used (S, M, L, XL, and so on).
- **Product backlog:**
  - To estimate coarse-grained PBIs, T-shirt sizes are typically used.
  - For fine-grained PBIs which have risen in priority and been detailed, teams put relative numeric size estimates on them, using story points or ideal days.
- **Sprint backlog:**
  - Development tasks are typically sized in ideal hours (also referred to as effort-hours, man-hours, or person-hours).

Estimation: What and When



Item	Portfolio backlog	Product backlog	Sprint backlog tasks
Unit	T-shirt sizes	Story points / ideal days	Ideal hours / effort-hours
When	Portfolio planning	Product backlog grooming	Sprint planning

References

- Rubin, K.S., Essential Scrum: A Practical Guide to the Most Popular Agile Process, Addison-Wesley, 2012.
- Schwaber, K., Sutherland, J., The Scrum Guide, Published online at: http://www.scrumguides.org/, July 2013 (last visited on: 7 November 2014).
- Ramsin, Raman. "Home." Department of Computer Science and Engineering, Sharif University of Technology. Accessed February 15, 2025. https://sharif.edu/~ramsin/index.htm.