Agile and Lean development of Software Intensive Systems

Course Outline

Mikael Svahnberg[1]

[1]Mikael.Svahnberg@bth.se
School of Computing
Blekinge Institute of Technology

2014-11-07

in real life

PROMPT

- Collaboration between MDH, Chalmers, GU, SICS, Swedsoft, BTH
- Ultimate goal: A Software Engineering Master's Education for Industry Practitioners
- Current Status: Four pilot courses:
  - Agile and Lean (BTH)
  - Functional Safety (MDH)
  - Project Course (MDH)
  - Software Testing (SICS/MDH)
- Focus is to *find methods for teaching that enables studying and learning in combination with a job in industry*

Structure

- Assignments
  - Centered around a process of your choice, charted with *Value Stream Mapping*[1]

  A1 Plan and create VSM
  A2 Modify process from the perspective of different agile/lean frameworks
  A3 Challenges with Implementing Agile/Lean
  A4 Scaling Agile/LEan
- Resources: Research Articles, Course Book, Lecture Videos

[1] more on this soon

Useful Web Pages

- BTH Library: `http://www.bth.se/bib`

VSM – Value Stream Mapping

- Analyse a process flow and identify *wastes*
- Originally from manufacturing industry, some translation into software engineering is needed:

Lean manufacturing	Software development
Inventory	W1: Partially performed work
Overproduction	W2: Extra features
Extra processing	W3: Extra processes
Transportation	W4: Handovers
Motion	W5: Motion/task switching
Waiting	W6: Delays
Defects	W7: Defects

VSM – An example

- You and a friend want to share a cake.
- What is the process by which to reach this goal?
- Where can you optimise this process?

VSM Example – Step 0

- Purpose:
- Values:
- Scope:
- Stakeholders:
- Roles of Team members:

VSM Example – Step 0

- Purpose: Get cake faster
- Values:
- Scope:
- Stakeholders:
- Roles of Team members:

VSM Example – Step 0

- Purpose: Get cake faster
- Values: Avoid waiting
- Scope:
- Stakeholders:
- Roles of Team members:

VSM Example – Step 0

- Purpose: Get cake faster
- Values: Avoid waiting
- Scope: Start: Enter bakery, End: Eat Cake
- Stakeholders:
- Roles of Team members:

VSM Example – Step 0

- Purpose: Get cake faster
- Values: Avoid waiting
- Scope: Start: Enter bakery, End: Eat Cake
- Stakeholders: You, Friend, Baker, Sales rep.
- Roles of Team members:

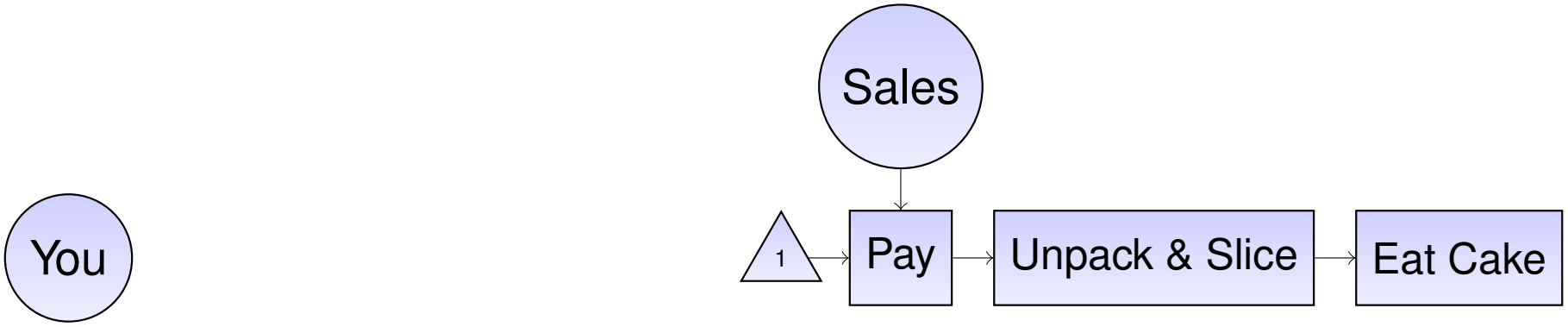
VSM Example – Step 0

- Purpose: Get cake faster
- Values: Avoid waiting
- Scope: Start: Enter bakery, End: Eat Cake
- Stakeholders: You, Friend, Baker, Sales rep.
- Roles of Team members: You: end-to-end process owner

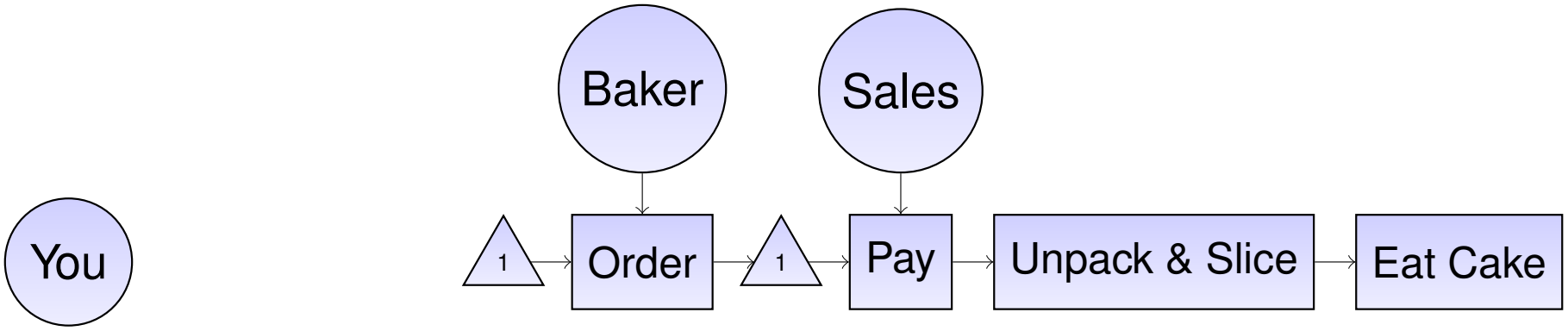
VSM Example – Current State Map

VSM Example – Current State Map

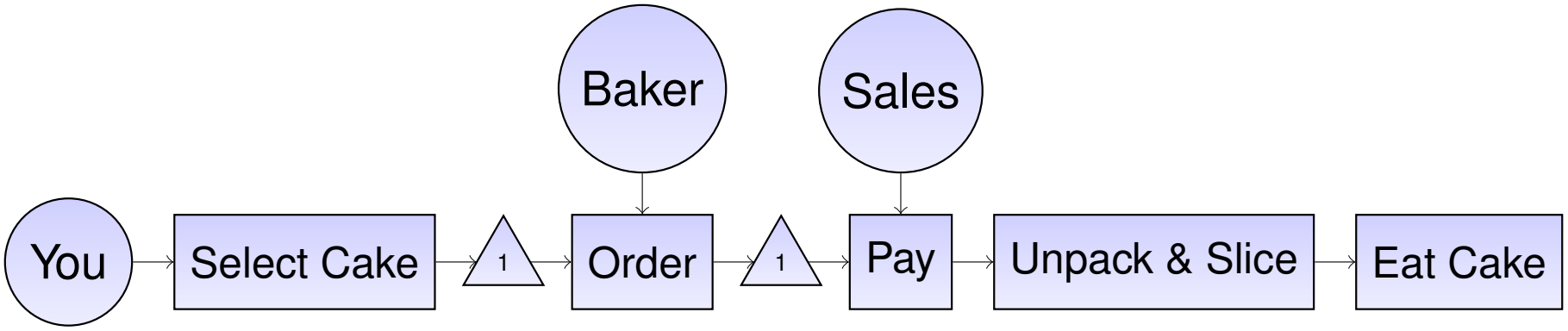
VSM Example – Current State Map



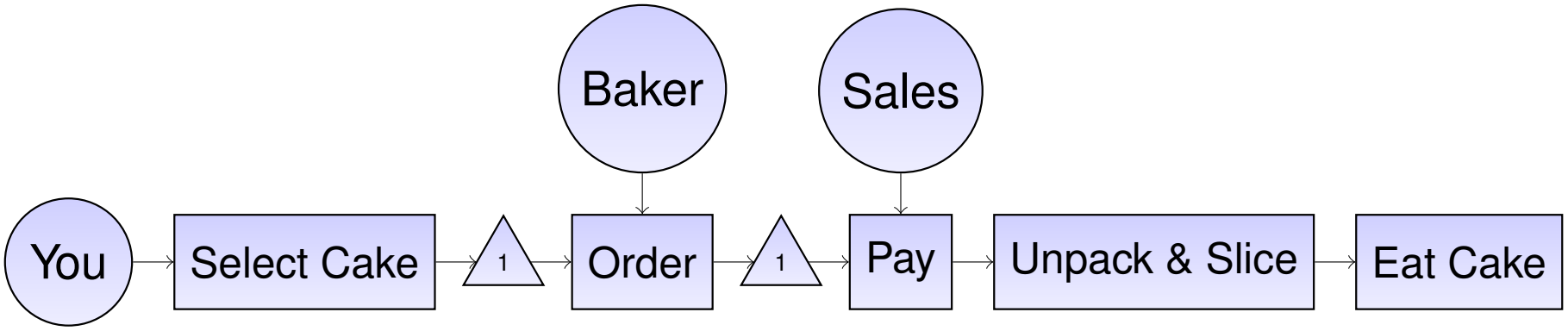
VSM Example – Current State Map



VSM Example – Current State Map



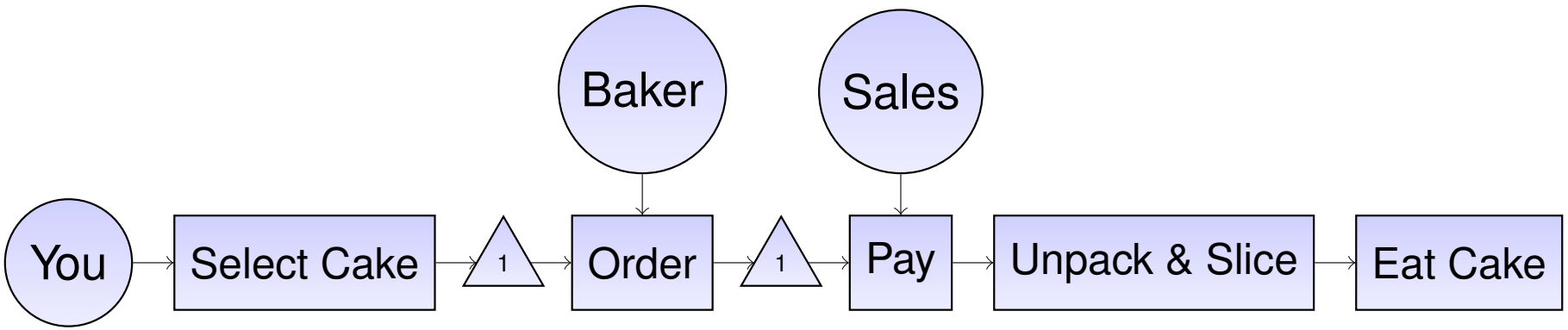
VSM Example – Current State Map



Value Adding

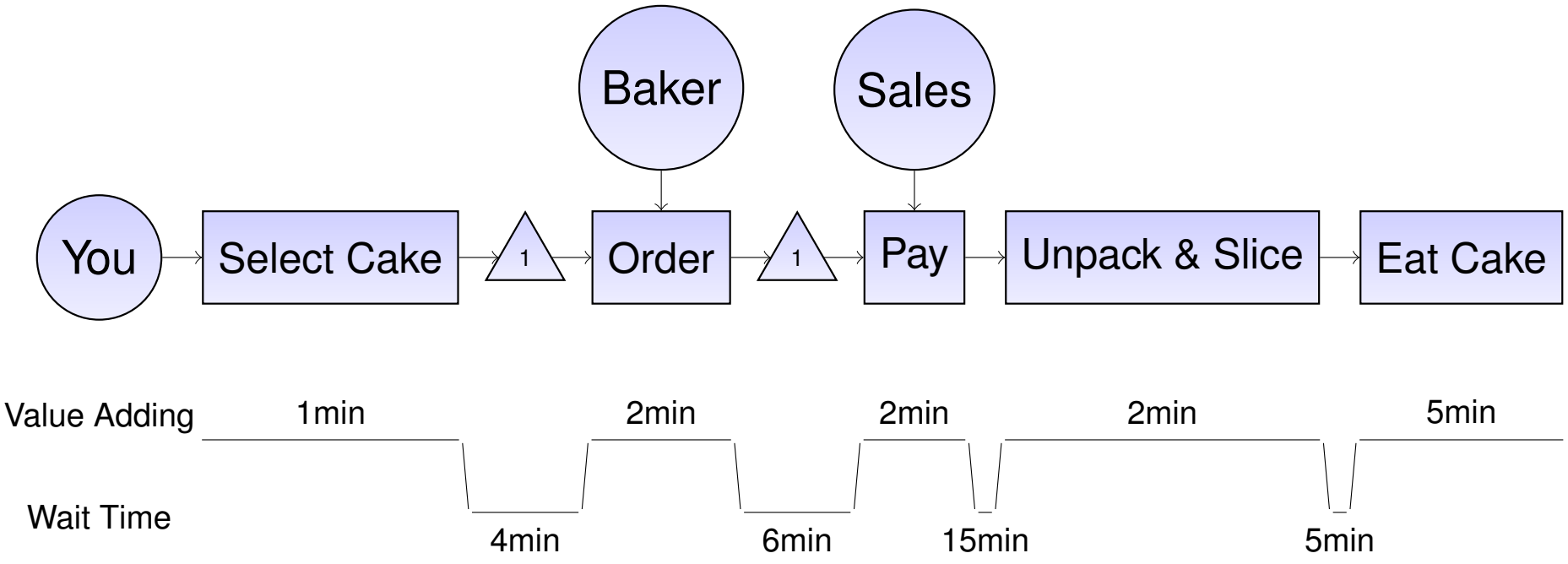
Wait Time

VSM Example – Current State Map

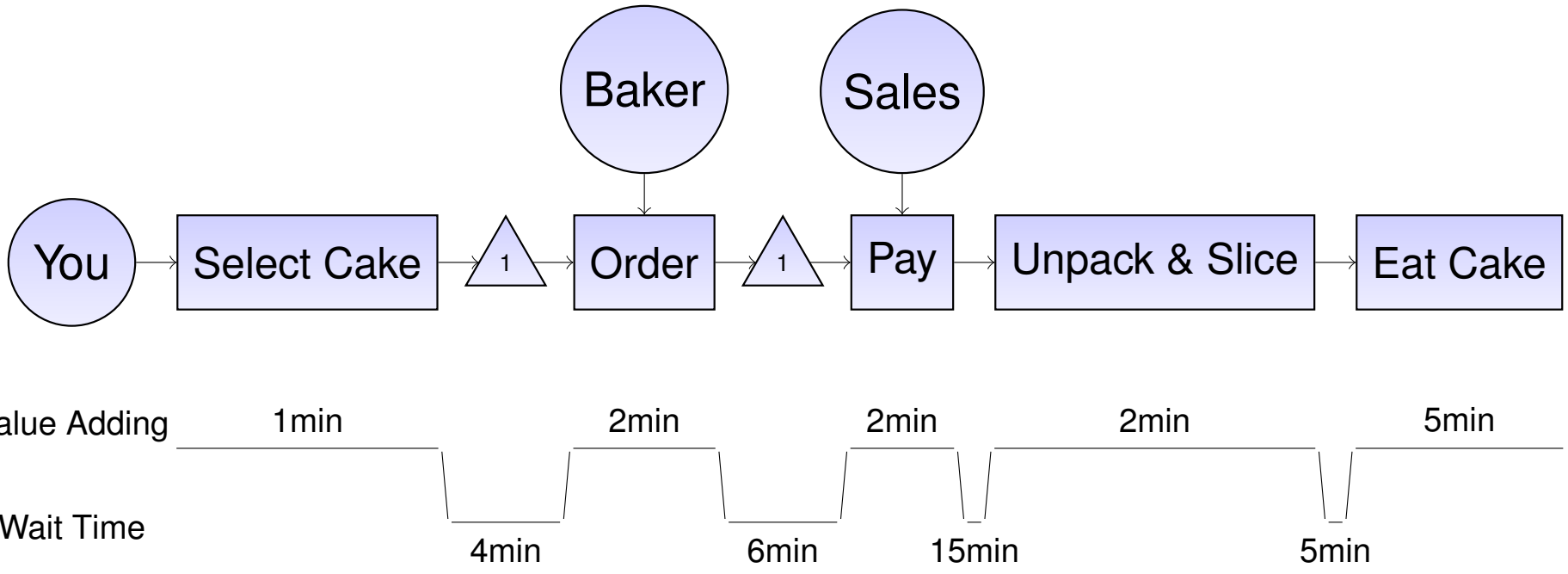


Value Adding	1min	2min	2min	2min	5min
Wait Time					

VSM Example – Current State Map



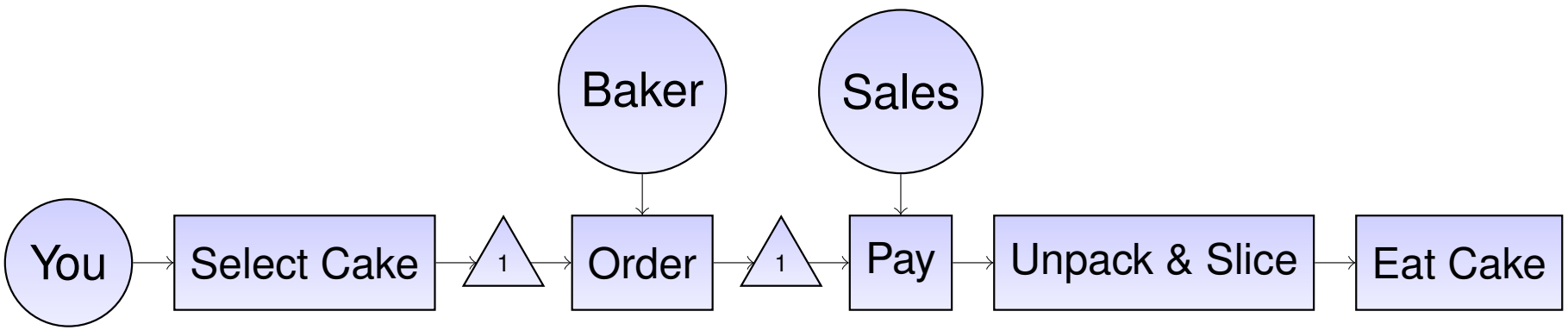
VSM Example – Current State Map

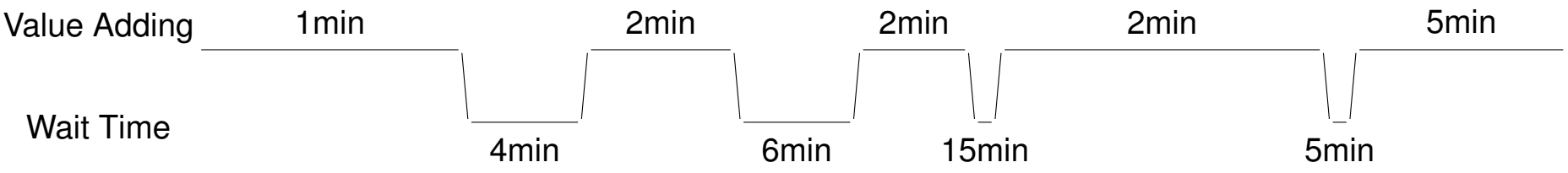


Total Cycle Time = $VA + Wait$

Process Cycle Efficiency = $\frac{TVA}{TCT}$

VSM Example – Current State Map





Total Cycle Time = $VA + Wait$ $\quad TCT = 42min$

Process Cycle Efficiency= $\frac{TVA}{TCT}$ $\quad PCE = \frac{12min}{42min} = 29\%$

Another Example

- Map the process flow for a *Customer Adaptation*
- Start: CA Request enters company
- End: CA delivered to customer

Next Step

- Start reviewing the course material and working on the assignments

Good Luck