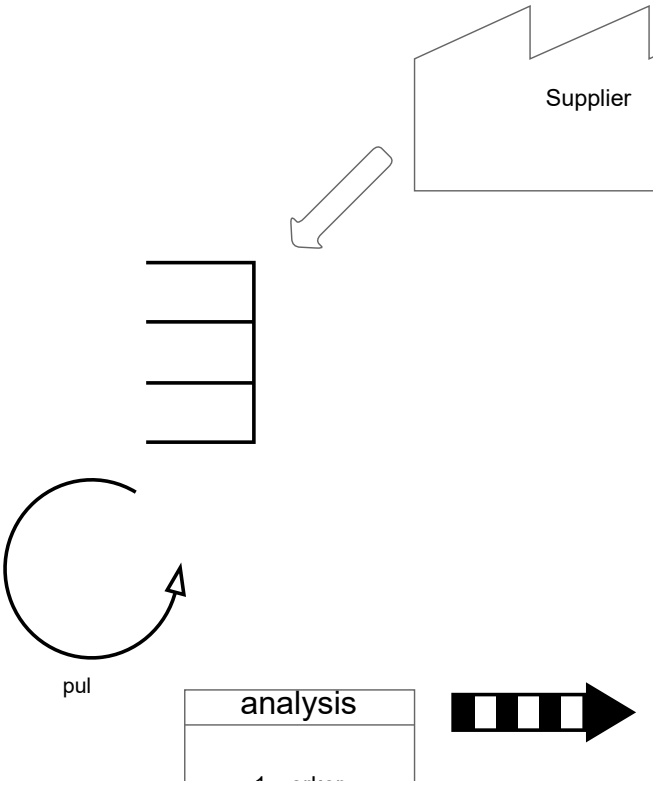
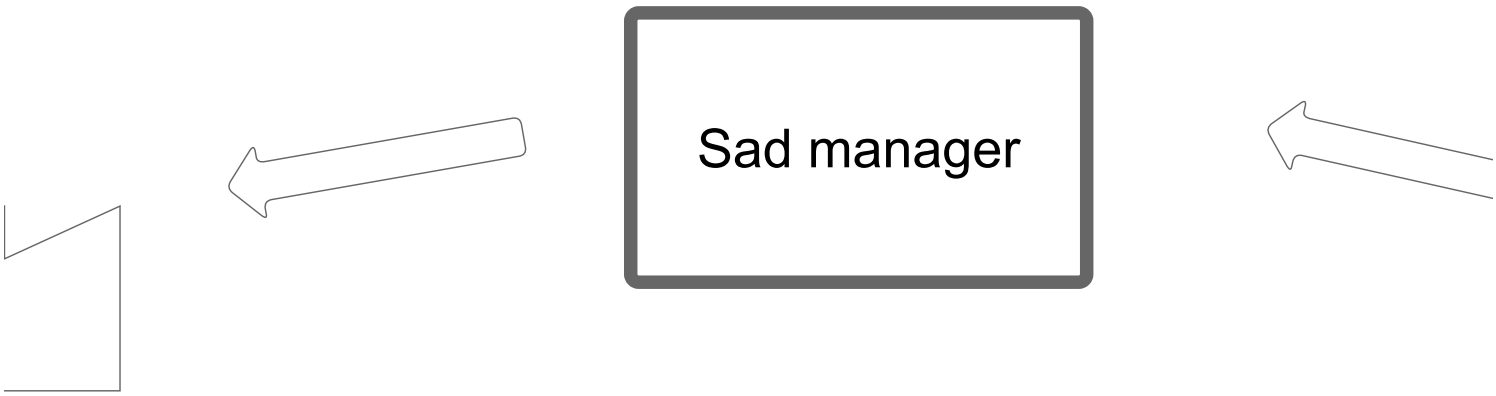

Proces
Analys
System
Develo
Testing
Deploy

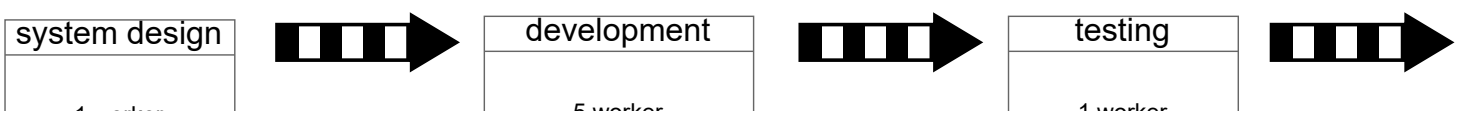

Supplier
pul
analysis

DevOps Value Stream Map

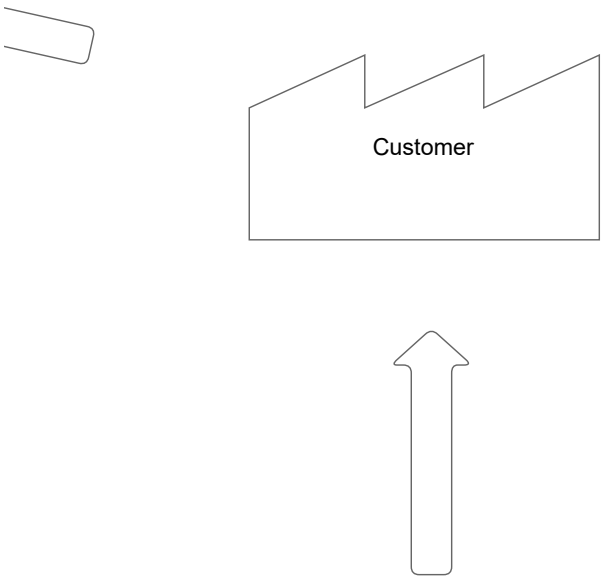
s	Cycle Time (hours)	VAT (hours)	Rework(hours)	# of employees	Qualit
sis	30	16	4	1	85%
n Design	40	20	6	1	80%
opment	120	36	12	5	65%
g	50	24	8	1	50%
yment	20	16	4	1	90%

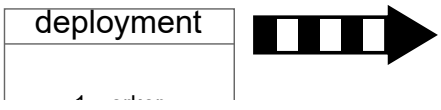
Current state value stream map



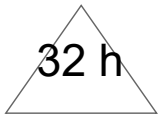


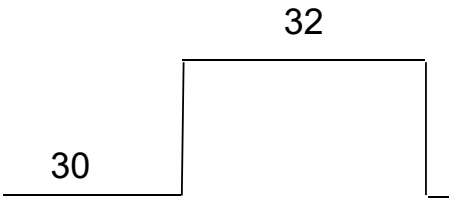
y rate	WIP
	8
	7
	12
	5
	3



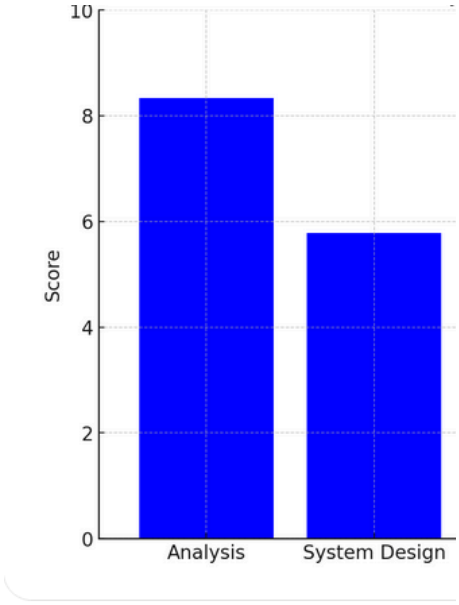


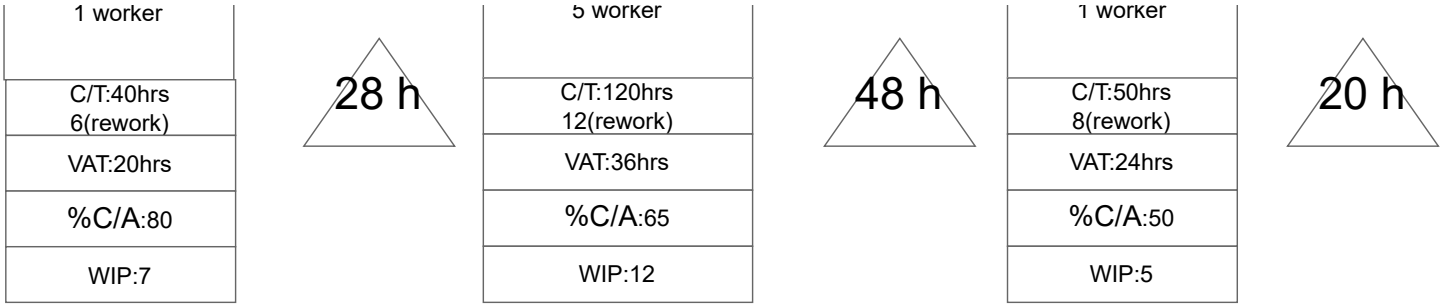
1 worker
C/T:30hrs 4(rework)
VAT:16hrs
%C/A:85
WIP:8

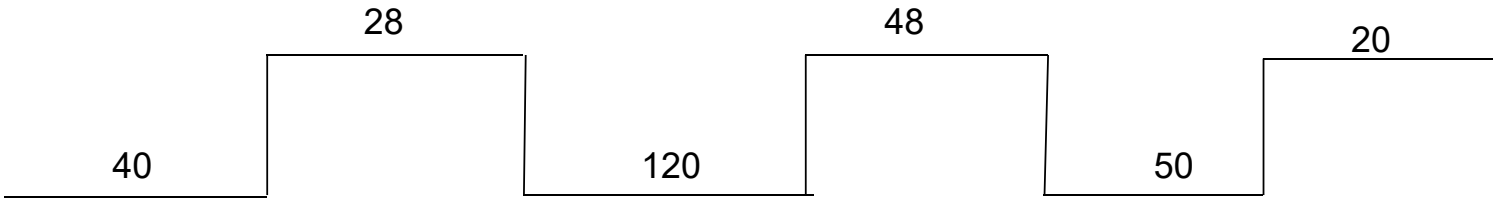




Takt time = 40h/1
h/task
Waiting time = 4



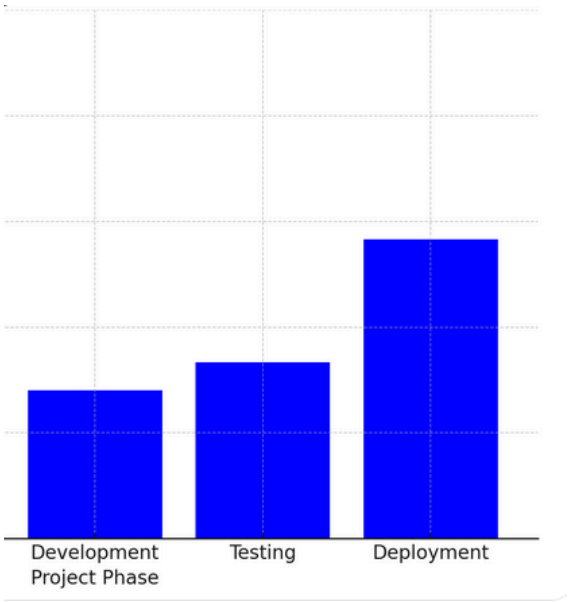


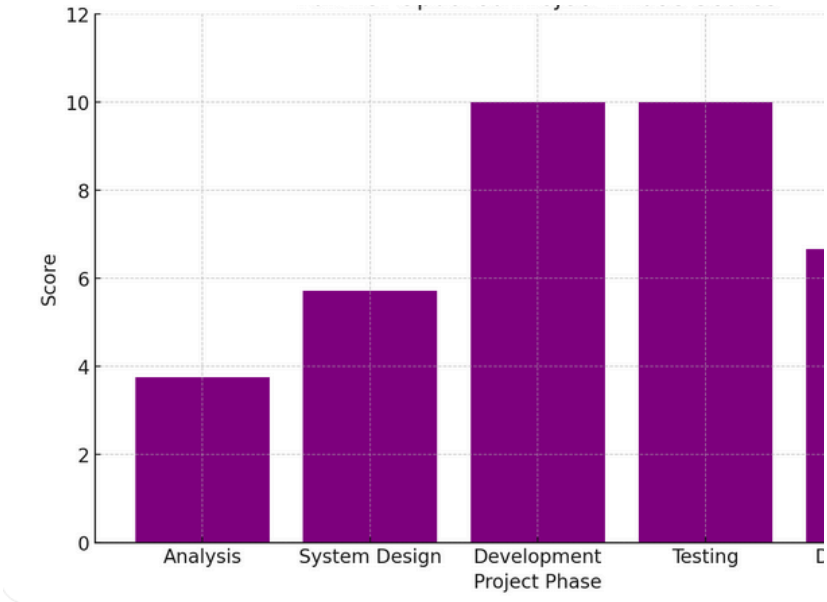


0 = 4

* WIP

Rework analysis
Analysis: 0,15 * 8 = 1,2 => 4 * 1.2 = 4,8 I
Sys design: 0,2 * 7 = 1,4 => 6 * 1.4 = 8,4
Development: 0,35 * 12 = 4,2 => 12 * 4,2 = 5
Testing: 0,5 * 5 = 2.5 => 8 * 2,5 = 20 h
Deployment: 0,1 * 3 = 0,3 => 4 * 0,3 = 1,2
=> development and testing have highest re





1 worker
C/T:20hrs 4(rework)
VAT:16hrs
%C/A:90
WIP:3

12 h

12

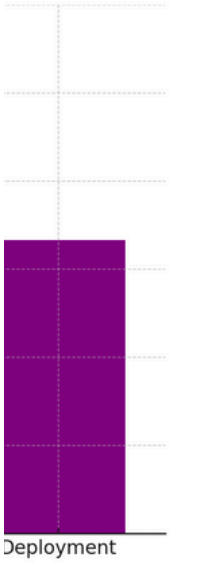
20

Total lead time: 400 + 34h rework
Total value add time: 112h

Procces effeciency: 112/434 = 25,80%

h
h
50,4 h

2 h
work



Throu
Available time

**** Analysis: 40 / 30 =***
**** System design: 40***
**** Development: 40 ****
**** Testing: 40 / 50 = 0.***
**** Deployment: 40 / 2(***

Throughput is 0.8 ta

Process	# of e
Analysis	
System Design	
Development	
Testing	
Deployment	

Throughput
Available time (40 h) /

ughput =
(40 h) / Cycle time

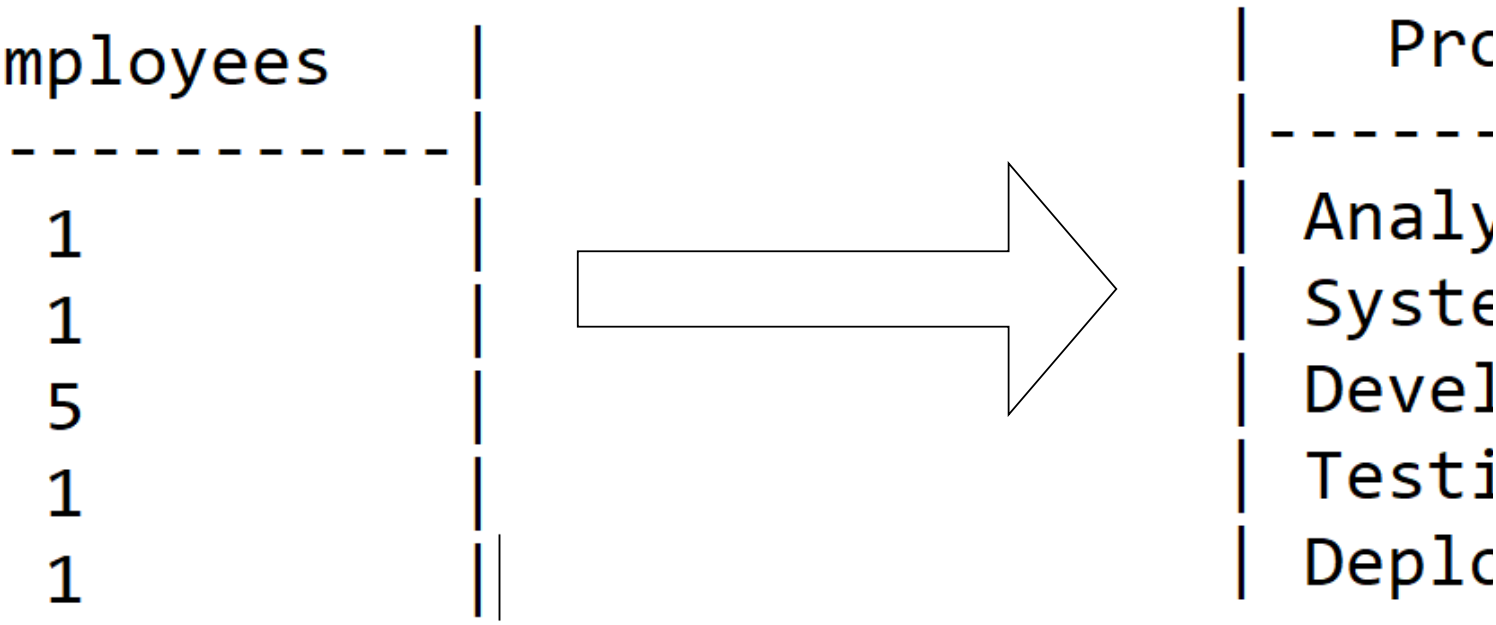
1.33
/ 40 = 1
5 / 120 = 1.67
.8
0 = 2

---

sk/week if QR -> 100%

Adjusted Throughput(количество
выполнить за 40 h)
*Throughput **
** Analysis: 1.33 * 0.85 = 1.13 t*
** System design: 1 * 0.8 = 0.8*
** Development: 1.67 * 0.65 = 1*
** Testing: 0.8 * 0.5 = 0.4 task/*
** Deployment: 2 * 0.9 = 1.8 tas*

Throughput = 0.4 task/



=
/ Cycle time

о работы, которое команда может
=
QR
task/week
task/week
1.09 task/week
week <-(Bottleneck)
sk/week

---

week (Testing)

We need to increase number of operators in testing

ocess	# of employees
ysis	1
em Design	1
lopment	4
ing	2
oyment	1

Adjusted Throughput(*количество работы, которое команда может выполнить за 40 h****) =***
Throughput * QR

* Analysis: 40 / 30 = 1.33
* System design: 40 / 40 = 1
* Development: 40 * 4 / 120
* Testing: 40 * 2 / 50 = 1.6
* Deployment: 40 / 20 = 2

Throughput is 1 task/wee

= 1.33

k if QR -> 100%

We need to increase Quality Rate

System Design QR 80% - 90%
Development QR 65% - 80%
Testing QR 50% - 70%

Adjusted Throughput(*количество работы, которое команда может выполнить за 40 h****) =***

Throughput * QR

**** Analysis: 1.33 * 0.85 = 1.13 task/week***
**** System design: 1 * 0.9 = 0.9 task/week***
**** Development: 1.33 * 0.8 = 1.07 task/week***
**** Testing: 1.6 * 0.7 = 1.12 task/week***
**** Deployment: 2 * 0.9 = 1.8 task/week***

Throughput = 0.9 task/week (System Design)

need t

Throughput = QR

**** Analysis: 1.33 * 0.85 = 1.13 task/week***
**** System design: 1 * 0.8 = 0.8 task/week***
**** Development: 1.33 * 0.65 = 0.87 task/week***
**** Testing: 1.6 * 0.5 = 0.8 task/week***
**** Deployment: 2 * 0.9 = 1.8 task/week***

Throughput = 0.8 task/week (System Design and Testing)

9 operator * 40h = 360 h / week
360 h / week / 10 task = 36 hour / per task

ideal C/T

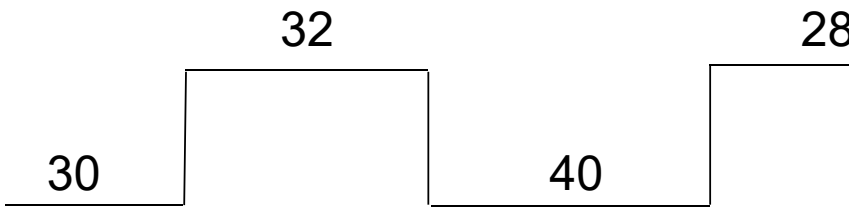
o decrease rework (NVAT) and waiting time in cycle time

L/T = 260 h + 34h rework + 140h buffer = 434 h

if QR is increased therefore WIP has to get better → We ne Syster Develc Testing

if QR is increased therefore C/T has to get better → We Sys De Tes

before



ed to increase Quality Rate

n Design QR 80% - 90%
opment QR 65% - 80%
g QR 50% - 70%

We need to decrease WIP

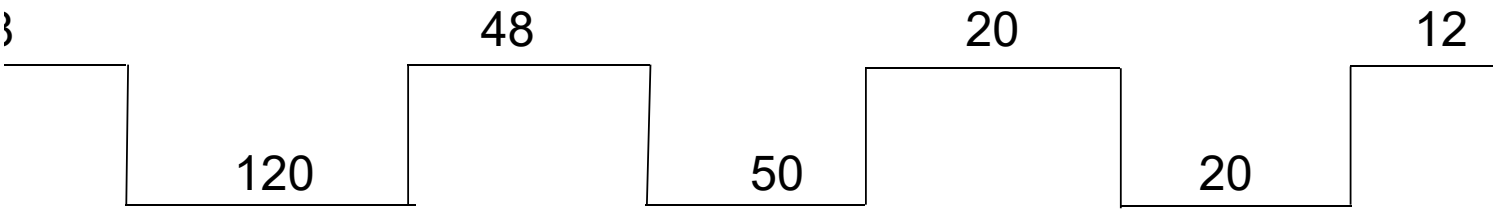
System Design WIP 7 - 6
Development WIP 12 - 10
Testing WIP 5 - 3.5

need to decrease WIP

stem Design WIP 7 - 6
velopment WIP 12 - 10
sting WIP 5 - 4

We need to decrease C/T

System Design C/T 40 - 34
Development C/T 120 - 100
Testing C/T 50 - 40



Waiting Time = Takt Time * WIP

* ***Analysis: 4 * 8 = 32 h***
* ***System design: 4 * 6 = 24 h -- (28h)***
* ***Development: 4 * 10 = 40 h -- (48h)***
* ***Testing: 4 * 3.5 = 14 h -- (20h)***
* ***Deployment: 4 * 3 = 12 h***

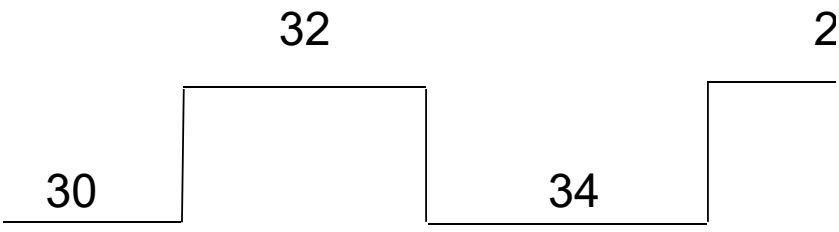
Waiting Time = Takt Time * WIP

* ***Analysis: 30 h***
* ***System design: 34 h -- (40h)***
* ***Development: 100 h -- (120h)***
* ***Testing: 40 h -- (50h)***
* ***Deployment: 20 h***

Total lead time: 260 + 140 + 34h rework
Total value add time: 112h

Procces effeciency: 112/434 = 25,80%

after



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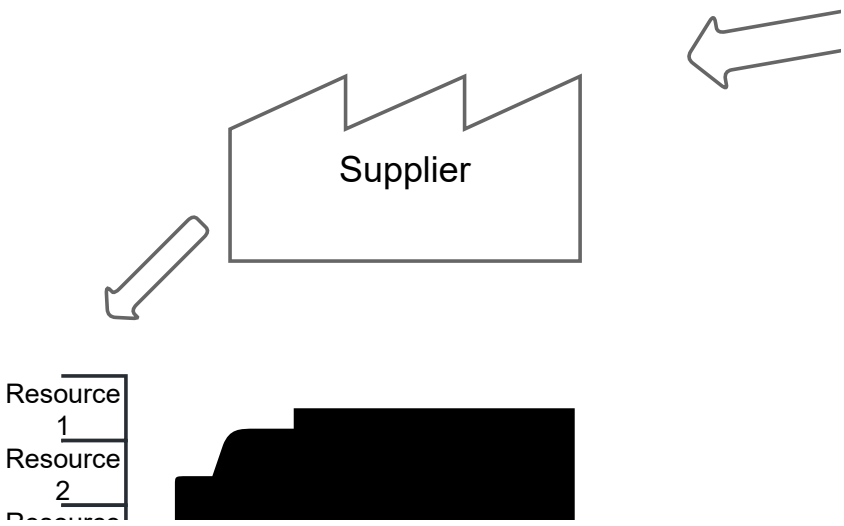
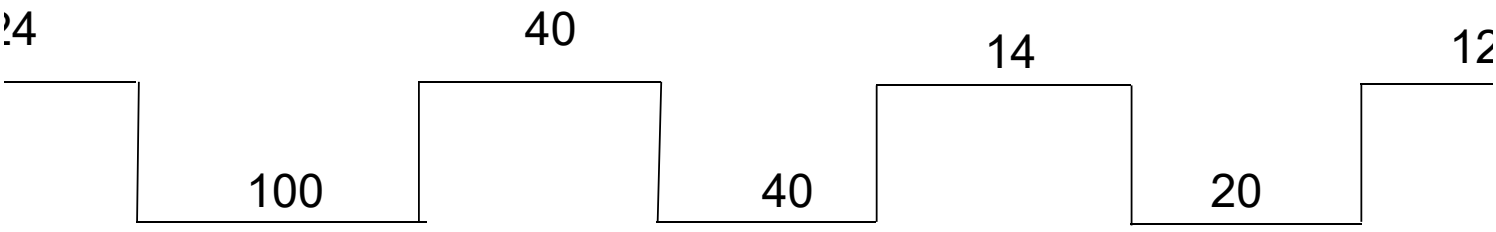
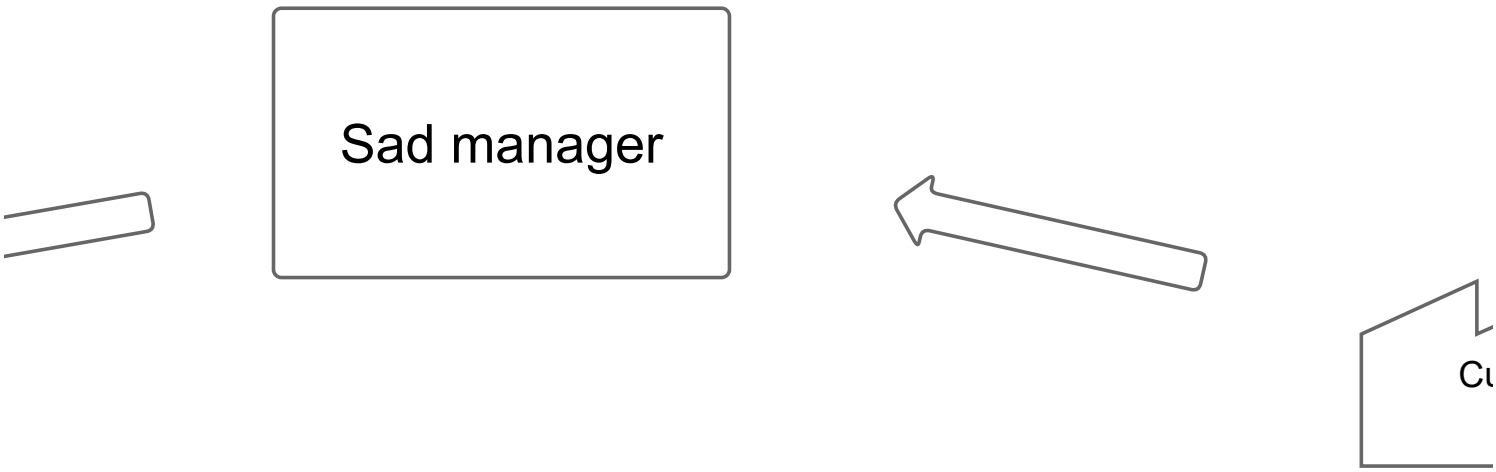




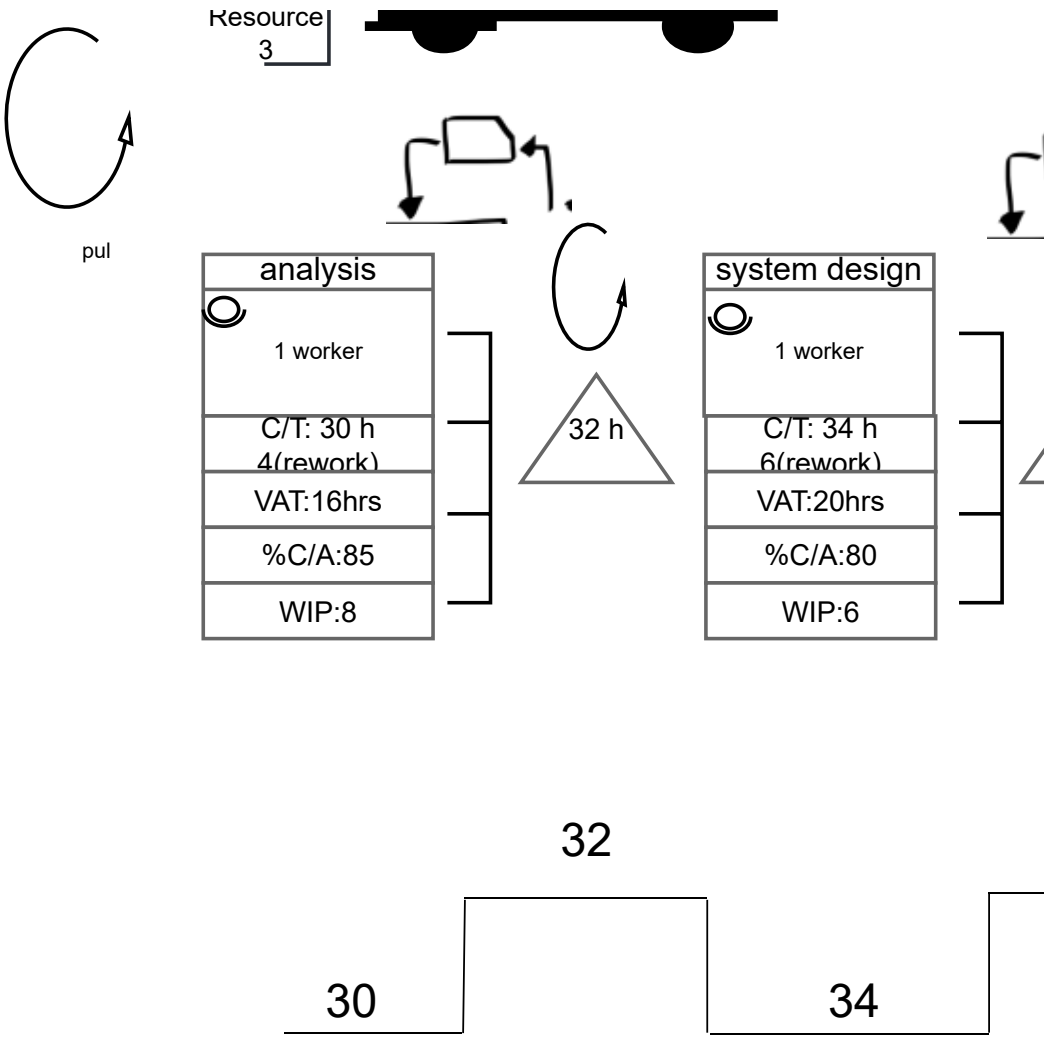
uture state value stream map



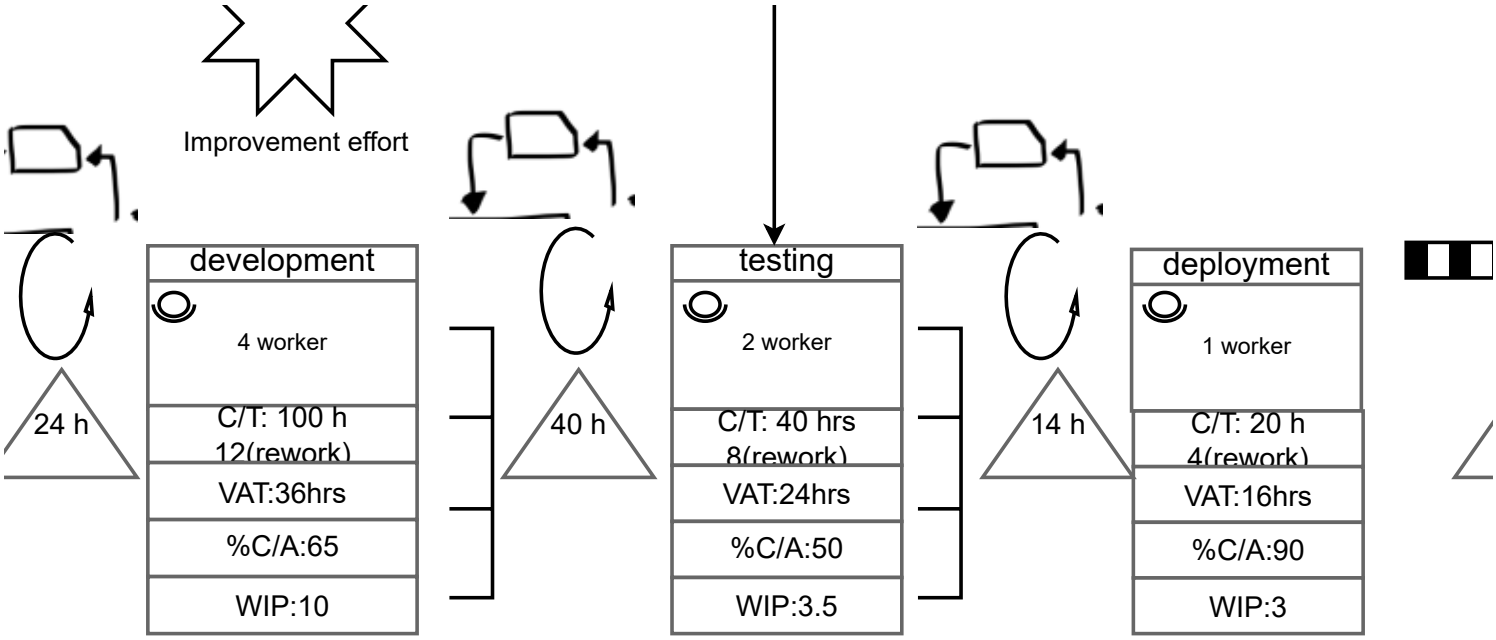
Total lead time: 224 + 122 buffer + 34h rework
Total value add time: 112h

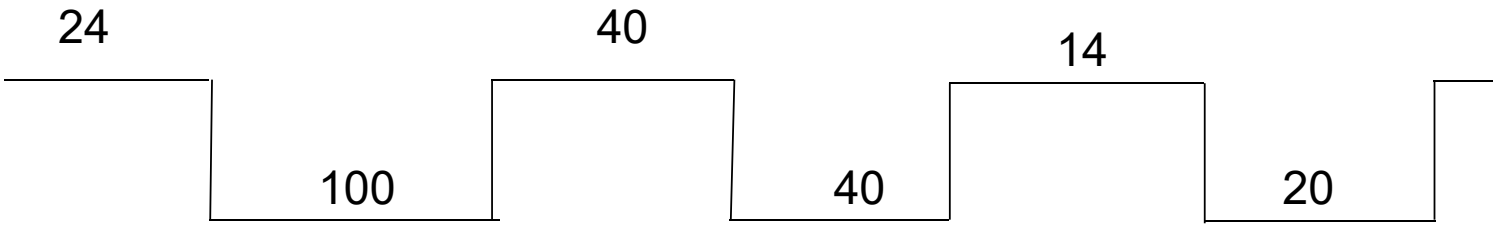
Procces effeciency: 112/380 = 30%

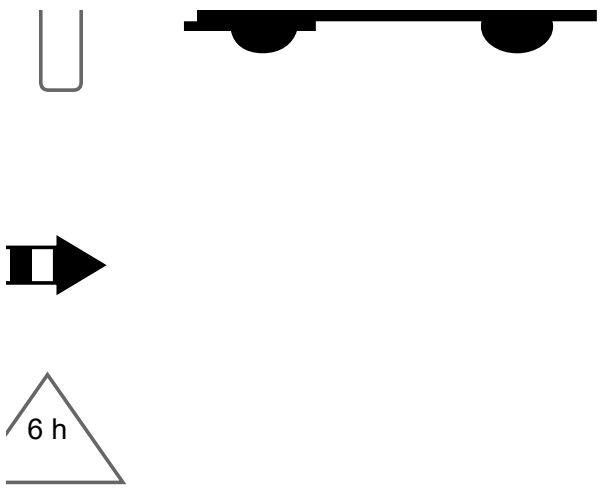
ustomer


Resource
3
pul
analysis
1 worker
C/T: 30 h
4(rework)
VAT:16hrs
%C/A:85
WIP:8
32 h
system design
1 worker
C/T: 34 h
6(rework)
VAT:20hrs
%C/A:80
WIP:6

32
30
34


Improvement effort
development
4 worker
C/T: 100 h
12(rework)
VAT:36hrs
%C/A:65
WIP:10
testing
2 worker
C/T: 40 hrs
8(rework)
VAT:24hrs
%C/A:50
WIP:3.5
deployment
1 worker
C/T: 20 h
4(rework)
VAT:16hrs
%C/A:90
WIP:3
24 h
40 h
14 h


24
40
14
100
40
20



Total lead time: 224 + 122 buffer + 34h rework
Total value add time: 112h

Procces effeciency: 112/380 = 30%