THEORY OF CONSTRAINTS

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UTAH’S CORE CONFLICT IN ACTION

Department of Workforce Services
Public Assistance - Eligibility Services
Caseload, Cost, Full-Time Equivalent (FTE) FY 2008 - FY 2013 (est.)

Bar chart showing caseload trends from FY 2008 to FY 2013.
THE SEDUCTIVE 7

- More money/arbitrary budget cuts
- Reorganize
- Blame people/staff
- Training
- Technology
- Mistaking strategic plans for performance outcomes
- Data clutter
UTAH’S 8 WORK ENVIRONMENTS

PROJECT

RESOURCE MANAGEMENT

PEOPLE/
SOCIAL SERVICES

TRANSACTIONAL

POLICY

INVENTORY/DISTRIBUTION

REGULATORY

MARKETING AND OUTREACH
1. **Identify** the constraint
2. **Exploit** the constraint
3. **Subordinate** to the constraint
4. **Elevate** the constraint
5. **Repeat**
Applying the principles of flow: maximize and subordinate to the system critical activity

INPUTS

Feeding:
- Quality at Source
- Triage
- Full Kit

Critical Activity

Work in Process Synchronization

THROUGHPUT

Following:
- Good Enough
- Standard Work

SYSTEM MAP AND FLOW
WORK IN PROCESS SIMULATION

# 1
2 Hrs
20/Week

# 2
3 Hrs
13.3/Week

# 3
6 Hrs
6.6/Week

# 4
1 Hr
40/Week

# 5
4 Hrs
10/Week
Queue

#1 2 Hrs

#2 3 Hrs

#3 6 Hrs

#4 1 Hr

#5 4 Hrs

Wait 1

Wait 2

Wait 3

Hour 3
Queue

#1 2 Hrs

#2 3 Hrs

Wait 1

#3 6 Hrs

Wait 2

#4 1 Hr

Wait 3

#5 4 Hrs

Hour 4
Wait 1

#1 2 Hrs

Queue

#2 3 Hrs

Wait 2

#3 6 Hrs

#4 1 Hr

Wait 3

#5 4 Hrs

Hour 13
Queue

#1
2 Hrs

#2
3 Hrs

#3
6 Hrs

#4
1 Hr

#5
4 Hrs

Wait 1

Wait 2

Wait 3

Hour 14
Queue

#1 2 Hrs

#2 3 Hrs

Wait 1

Throughput

#3 6 Hrs

#4 1 Hr

#5 4 Hrs

Wait 3

Hour 21

Wait 2
Queue

#1 2 Hrs

#2 3 Hrs

Wait 1

#3 6 Hrs

Throughput

#4 1 Hr

Wait 2

#5 4 Hrs

Wait 3

Hour 24
Queue

#1 2 Hrs

#2 3 Hrs

#3 6 Hrs

#4 1 Hr

#5 4 Hrs

Wait 2

Wait 1

Throughput

Hour 27
<table>
<thead>
<tr>
<th>Queue</th>
<th>#1</th>
<th>2 Hrs</th>
<th>#2</th>
<th>3 Hrs</th>
<th>#3</th>
<th>6 Hrs</th>
<th>#4</th>
<th>1 Hr</th>
<th>#5</th>
<th>4 Hrs</th>
<th>#6</th>
<th>4 Hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Throughput</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wait 1</td>
<td>#1</td>
<td>2 Hrs</td>
<td>#2</td>
<td>3 Hrs</td>
<td>#3</td>
<td>6 Hrs</td>
<td>#4</td>
<td>1 Hr</td>
<td>#5</td>
<td>4 Hrs</td>
<td>#6</td>
<td>4 Hrs</td>
</tr>
</tbody>
</table>

Hour 29
#1 2 Hrs

#2 3 Hrs

#3 6 Hrs

#4 1 Hr

#5 4 Hrs

Hour 30

Queue

Wait 1

Wait 2

Wait 3

Throughput
Queue

#1
2 Hrs

#2
3 Hrs

#3
6 Hrs

#4
1 Hr

#5
4 Hrs

Wait 1

Wait 2

Throughput

Wait 3

Hour 34
Queue

#1 2 Hrs

#2 3 Hrs

Wait 1

Throughput

#3 6 Hrs

#4 1 Hr

Wait 2

#5 4 Hrs

Wait 3

Hour 36
#1 2 Hrs

#2 3 Hrs

Queue

Wait 1

Throughput

Wait 2

#3 6 Hrs

#4 1 Hr

Wait 3

#5 4 Hrs

Hour 37

Throughput
Throughput: 92
The way WIP and flow are managed impacts the fixed costs per unit. In the first simulation:

- Assume fixed costs for operating expenses based on 5 FTE’s
- Assume the hourly rate is $60 (includes overhead)
- Therefore, total fixed costs per week are $12,000
- The throughput rate is one unit every six hours or 6.67 units per week (40 / 6)
- The cost per unit is $1,800 ($12,000 / 6.67)
Queue

#1 2 Hrs

#2 3 Hrs

Wait 1

#3 4 Hrs

#4 2 Hrs

Wait 2

#5 4 Hrs

Wait 3

Hour 1
#1 2 Hrs
#2 3 Hrs
#3 4 Hrs
#4 4 Hrs
#5 4 Hrs
Hour 5
Wait 1
Wait 2
Wait 3
Queue
Queue

Wait 1

#1 2 Hrs

Wait 2

#2 3 Hrs

#3 4 Hrs

#4 2 Hrs

Wait 3

#5 4 Hrs

Hour 7
Queue

#1 2 Hrs

#2 4 Hrs

#3 2 Hrs

#4 4 Hrs

#5 4 Hrs

Wait 1

Wait 2

Wait 3

Hour 8
Queue

#1 2 Hrs

#2 3 Hrs

Wait 1

#3 4 Hrs

Wait 2

#4 2 Hrs

#5 4 Hrs

Queue

Wait 3

Hour 11
Queue

#1
2 Hrs

#2
3 Hrs

Wait 1

#3
4 Hrs

Wait 2

#4
2 Hrs

#5
4 Hrs

Wait 3

Hour 13
Queue

**Wait 1**

1. #1 (2 Hrs)

**Wait 2**

2. #2 (3 Hrs)

**Hour 14**

3. #3 (4 Hrs)
4. #4 (2 Hrs)
5. #5 (4 Hrs)

**Wait 3**
#1 2 Hrs

#2 3 Hrs

#3 4 Hrs

#4 2 Hrs

#5 4 Hrs

Queue

Wait 1

Wait 2

Wait 3

Hour 16
Queue

Wait 1

#1 2 Hrs

Wait 2

#2 3 Hrs

#3 4 Hrs

#4 2 Hrs

Wait 3

#5 4 Hrs

Hour 19
# Queue #1: 2 Hrs
#2: 3 Hrs
#3: 4 Hrs
#4: 2 Hrs
#5: 4 Hrs
Wait 1
Wait 2
Wait 3
Hour 20
Queue
#1
2 Hrs

#2
3 Hrs

#3
4 Hrs

#4
2 Hrs

#5
4 Hrs

Wait 1

Wait 2

Wait 3

Hour 21
1. Wait 1
   - #1: 2 Hrs

2. Wait 2
   - #2: Wait 1 3 Hrs
   - #3: Wait 2 4 Hrs
   - #4: Wait 3 2 Hrs

3. Queue
   - #5: Wait 4 4 Hrs

4. Hour 24
Queue

#1 2 Hrs

#2 3 Hrs

#3 4 Hrs

#4 2 Hrs

#5 4 Hrs

Wait 1

Wait 2

Wait 3

Hour 26
Hour 29

Wait 3

#5 4 Hrs

Queue

Wait 2

#2 3 Hrs

Wait 1

#1 2 Hrs

#3 4 Hrs

#4 2 Hrs
Wait 1

#1 2 Hrs

Wait 2

#2 3 Hrs

#3 4 Hrs

#4 2 Hrs

Queue

#5 4 Hrs

Wait 3

Hour 30
Queue

#1
2 Hrs

#2
3 Hrs

Wait 1

#3
4 Hrs

Wait 2

#4
2 Hrs

#5
4 Hrs

Wait 3

Hour 36
#1
2 Hrs

Wait 1

#1
2 Hrs

Queue

#2
3 Hrs

Wait 2

#3
4 Hrs

#4
2 Hrs

Wait 3

#5
4 Hrs

Hour 40
“Starting work earlier does not lead to earlier finishes”
In the second example:

- Total fixed costs are unchanged at $12,000 per week
- The throughput rate is one unit every four hours or 10 units per week (40 / 4)
- The cost per unit is $1,200 ($12,000 / 10) - $600 less per unit

If the backlog in the queue is seasonal (temporary) then it will be absorbed in time. If it’s a new trend, additional resources may be necessary; however, only add staff if throughput increases.
TAX POLICY UNDESIRABLE EFFECTS (UDEs)

- Pressure to increase taxes
- Tax base is getting narrower and narrower
- Insufficient tax revenue
- High administrative cost for government, businesses, and individuals
- Tax code is very complicated
- Government is choosing winners and losers
- Trust in the system is eroding
- Some perceive an unfair playing field
TAX POLICY CURRENT REALITY

- Increased pressure for exemptions and deductions
- Insufficient tax revenue
- Tax base gets narrower and narrower
- Pressure to increase taxes
Tax Policy Vicious Cycle

- Pressure to increase taxes
- Insufficient tax revenue
- Tax base gets narrower and narrower
- Increased pressure for exemptions and deductions
- Tax code is very complicated
- Government is choosing winners and losers
- Trust in the system is eroding
- Government is choosing winners and losers
Lower tax rates

Trust in the system is growing

Government is not choosing winners and losers

Tax code is simplified

Decouple economic development and social engineering considerations from revenue collection

Broaden tax base

Less pressure for exemptions and deductions

Sufficient tax revenue

TAX POLICY VIRTUOUS CYCLE
CONFLICT CLOUD

Goal

Need 1

Actions…

Need 2

Actions…
Be sure to attend the

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