ACLIPS

A Capacity & Lead Time Integrated Procedure for Scheduling

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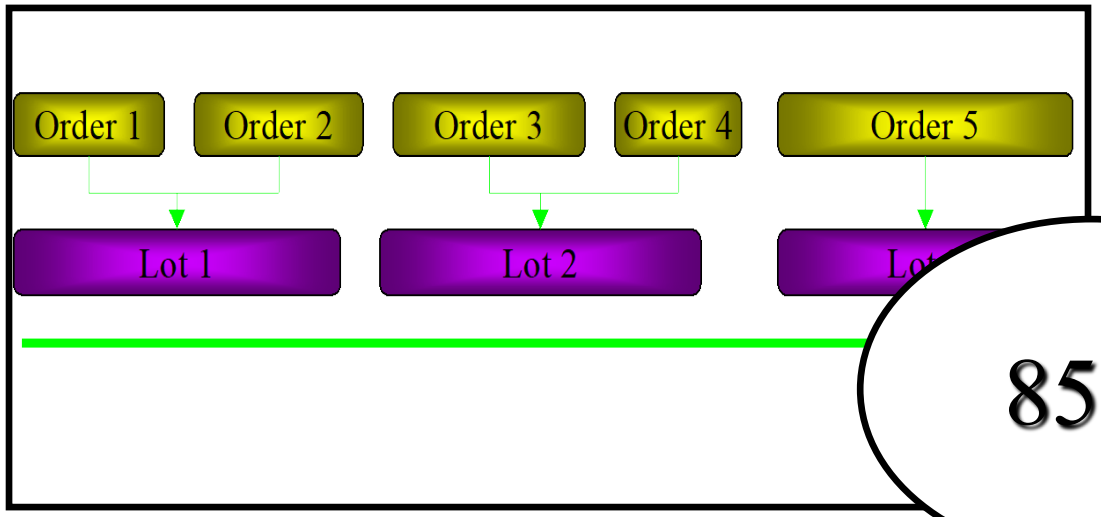
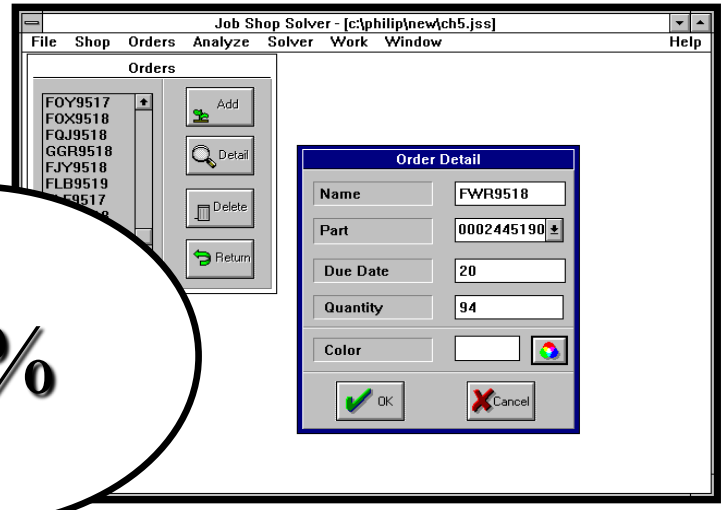
Historical Context

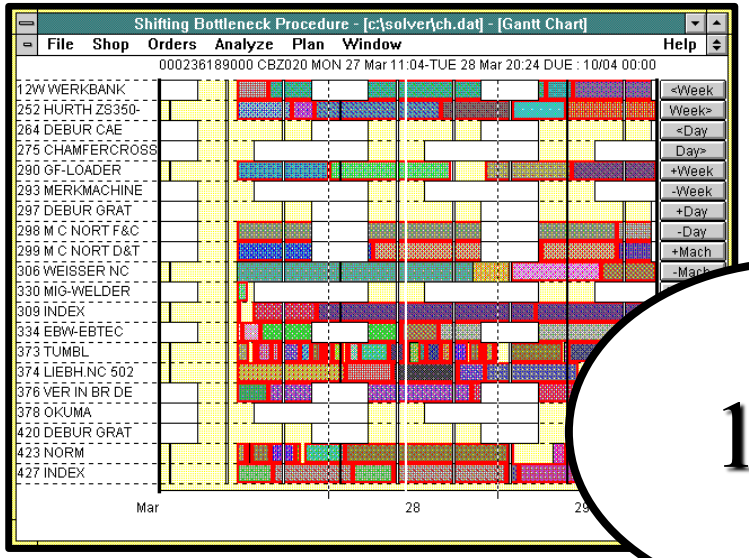
- ACLIPS – A Capacity & Lead Time Integrated Procedure for Scheduling
  - Initial plan was the development of a ‘Finite Scheduler’ based on the ‘Shifting Bottleneck’ theory (1998)
  - Conclusion: ‘Finite Scheduling’ does not work if Capacity, Lead Time & Lotsizing not properly set. Lotsize & Lead Time STATIC in most ERP systems. This should become DYNAMIC
  - New Intiative: ACLIPS
- Advanced Planning Procedure developed by KU Leuven back in 1999.
- Dana dataset used for testing.
- Software Application ‘**iCLIPS**’ developed by IBM in 2001.

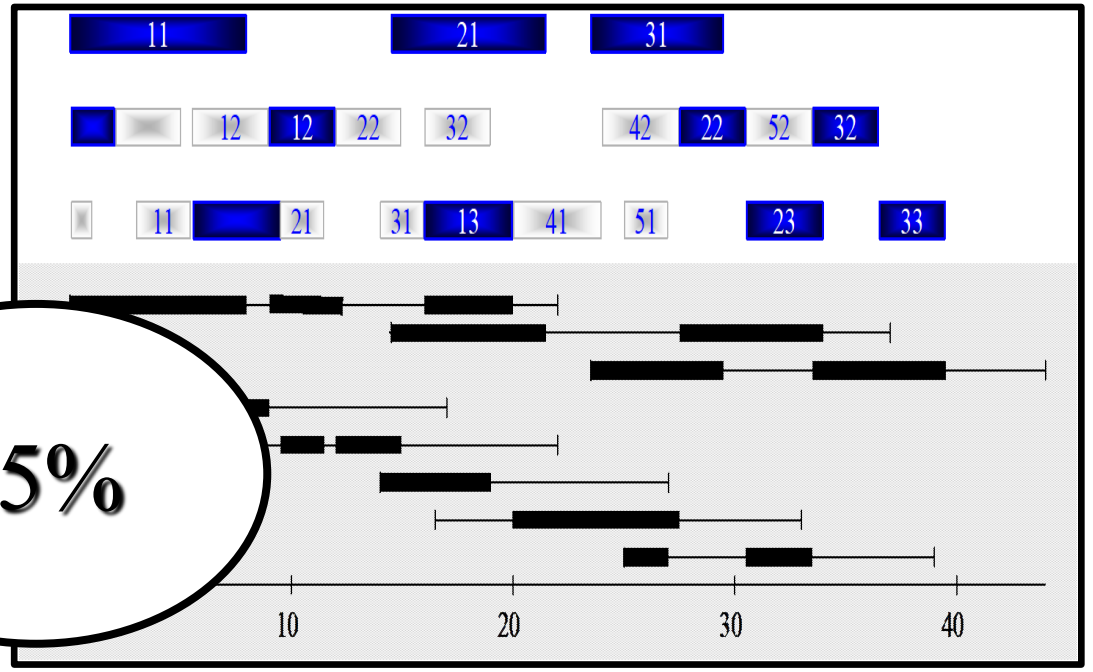




85%

Lead Time / Lotsize / Utilization



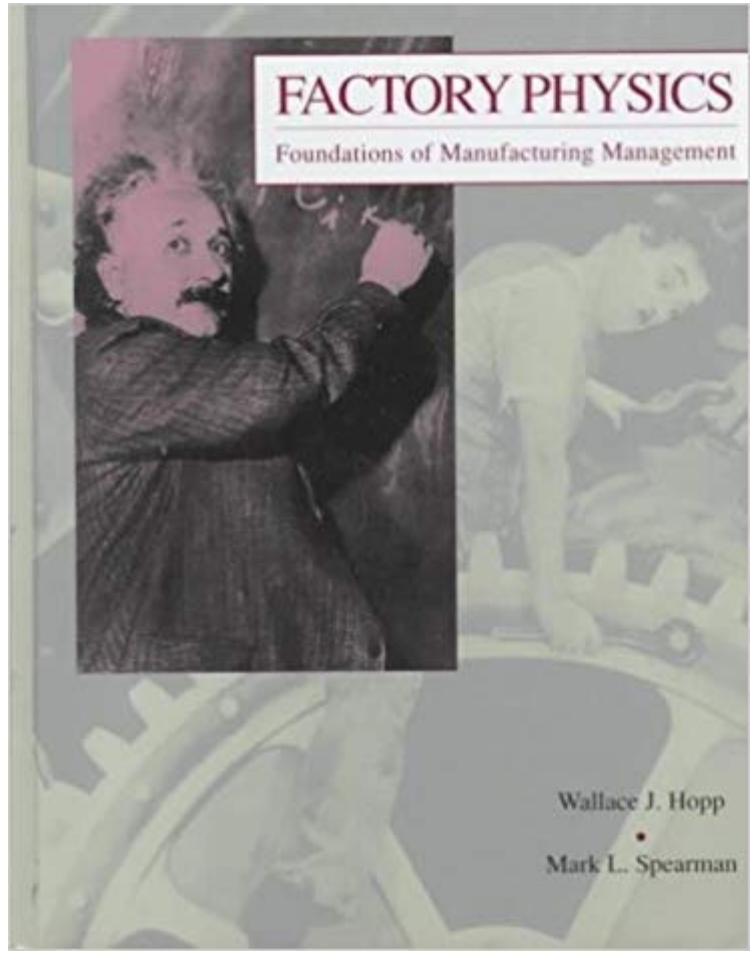


15%

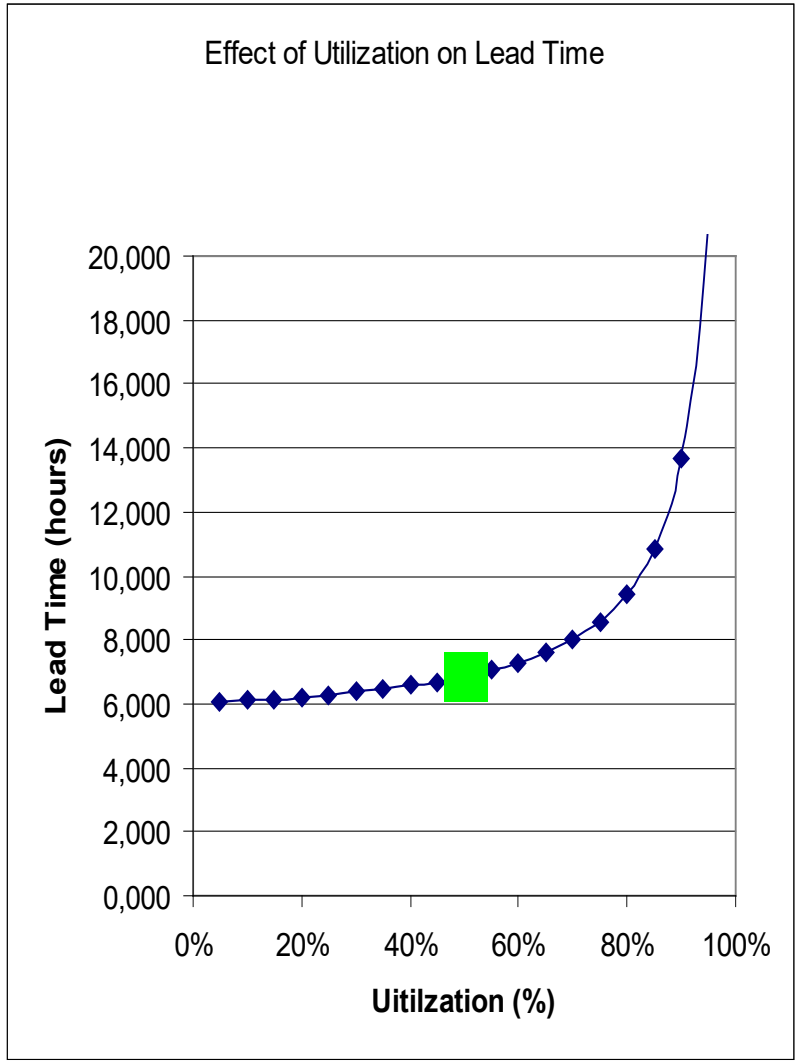
Finite Capacity Scheduling

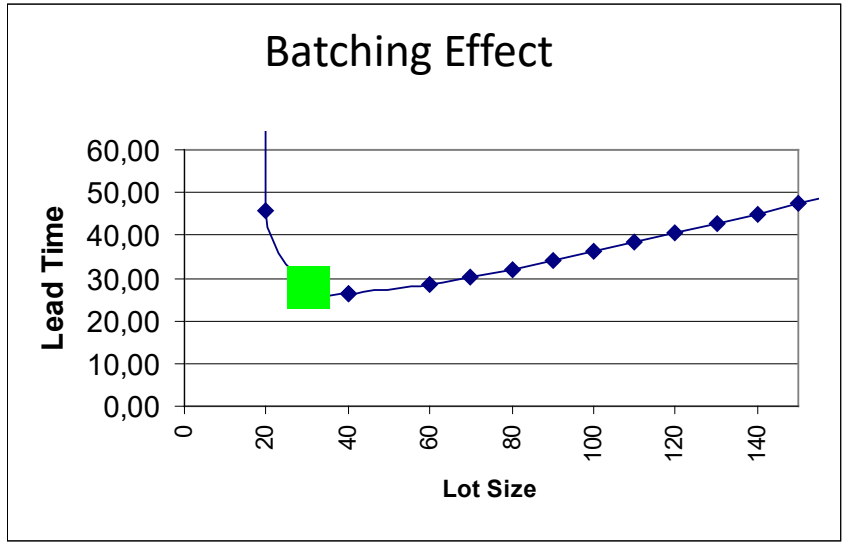
Aclips Concept

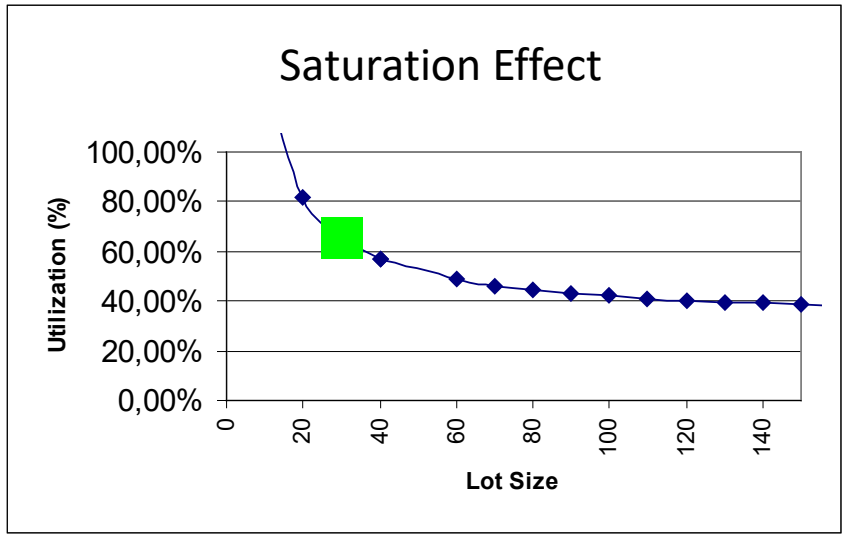
Factory Physics



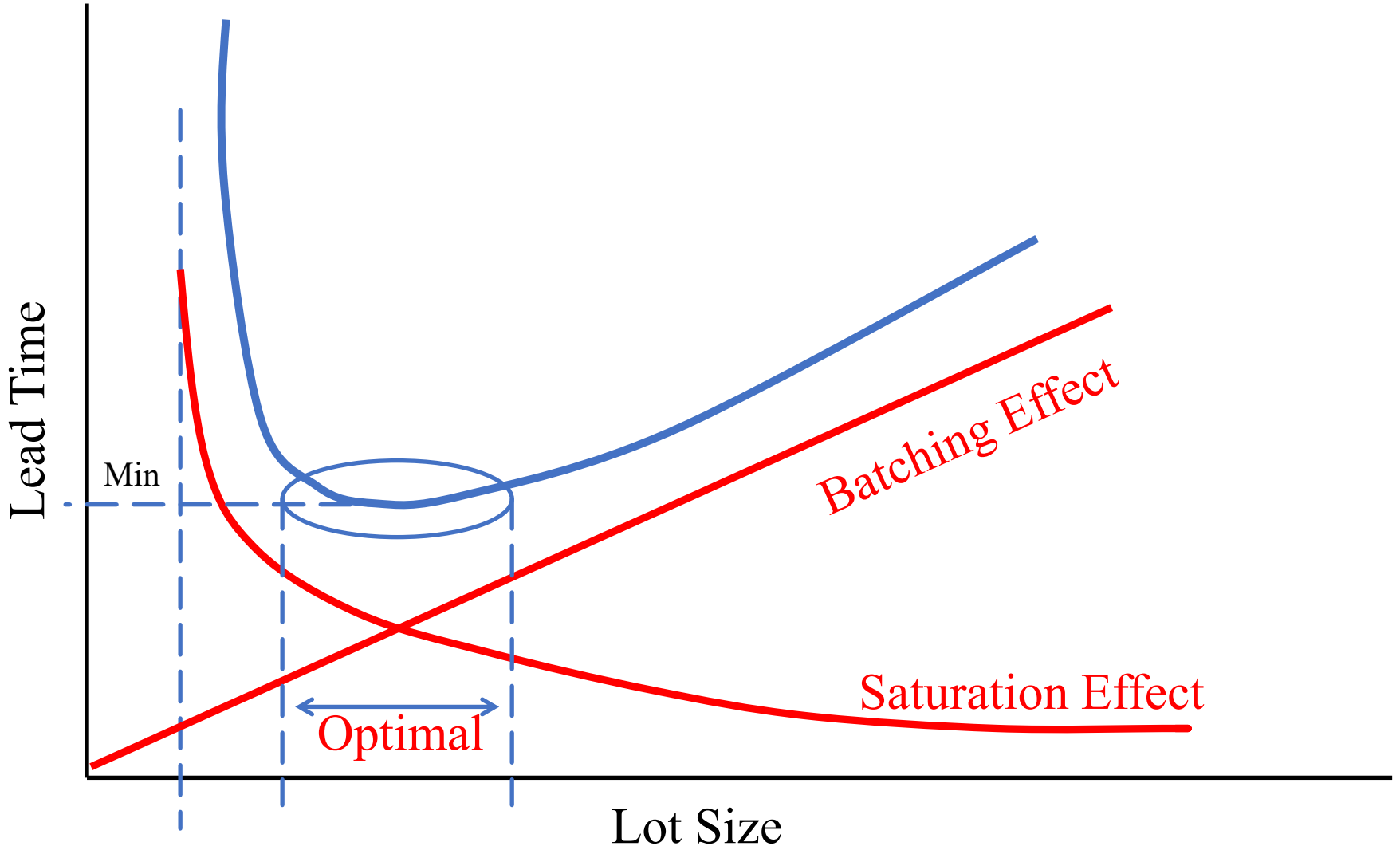
Lot Size - Lead Time - Utilization



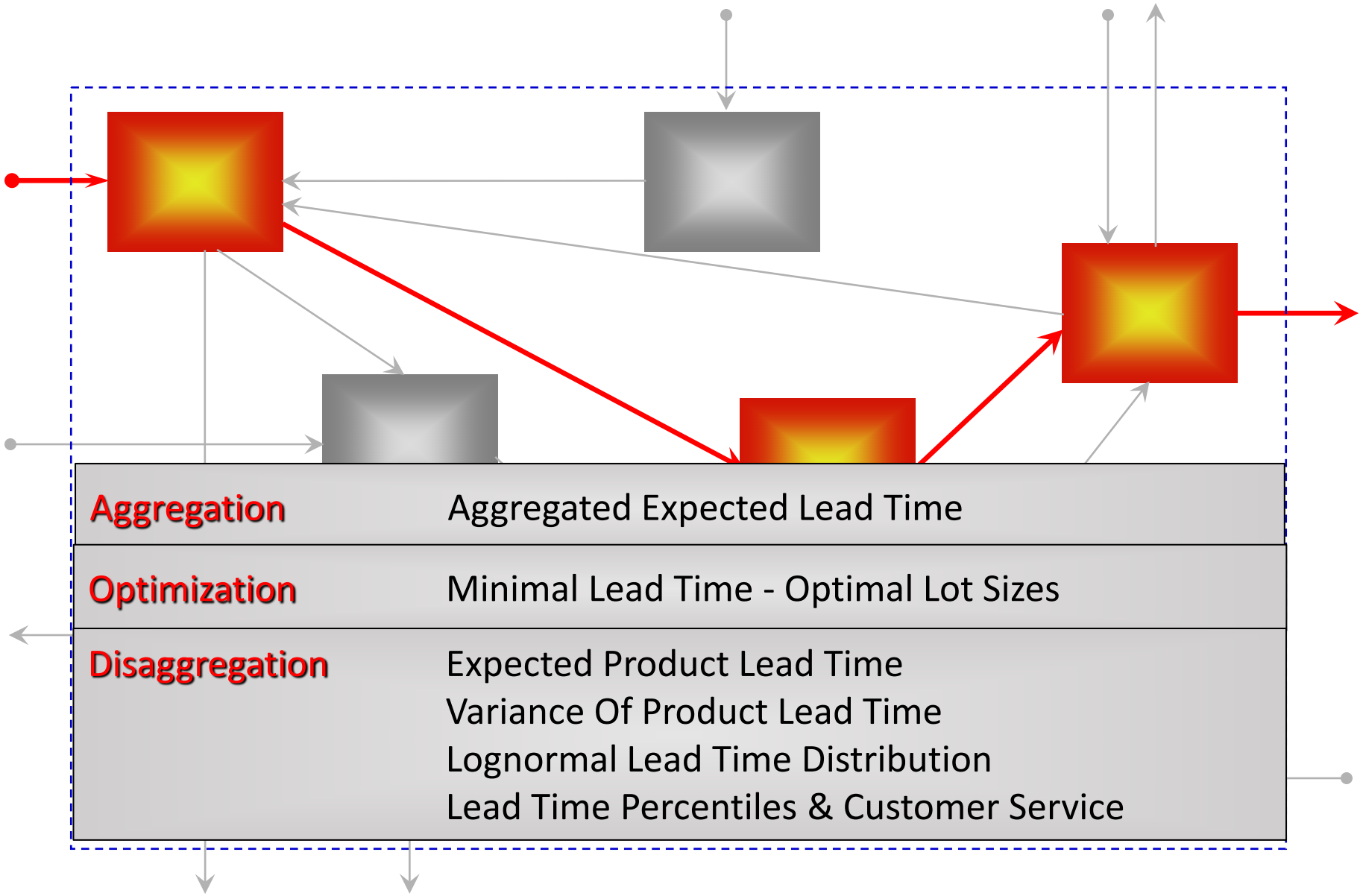




Lead-time & Lotsize

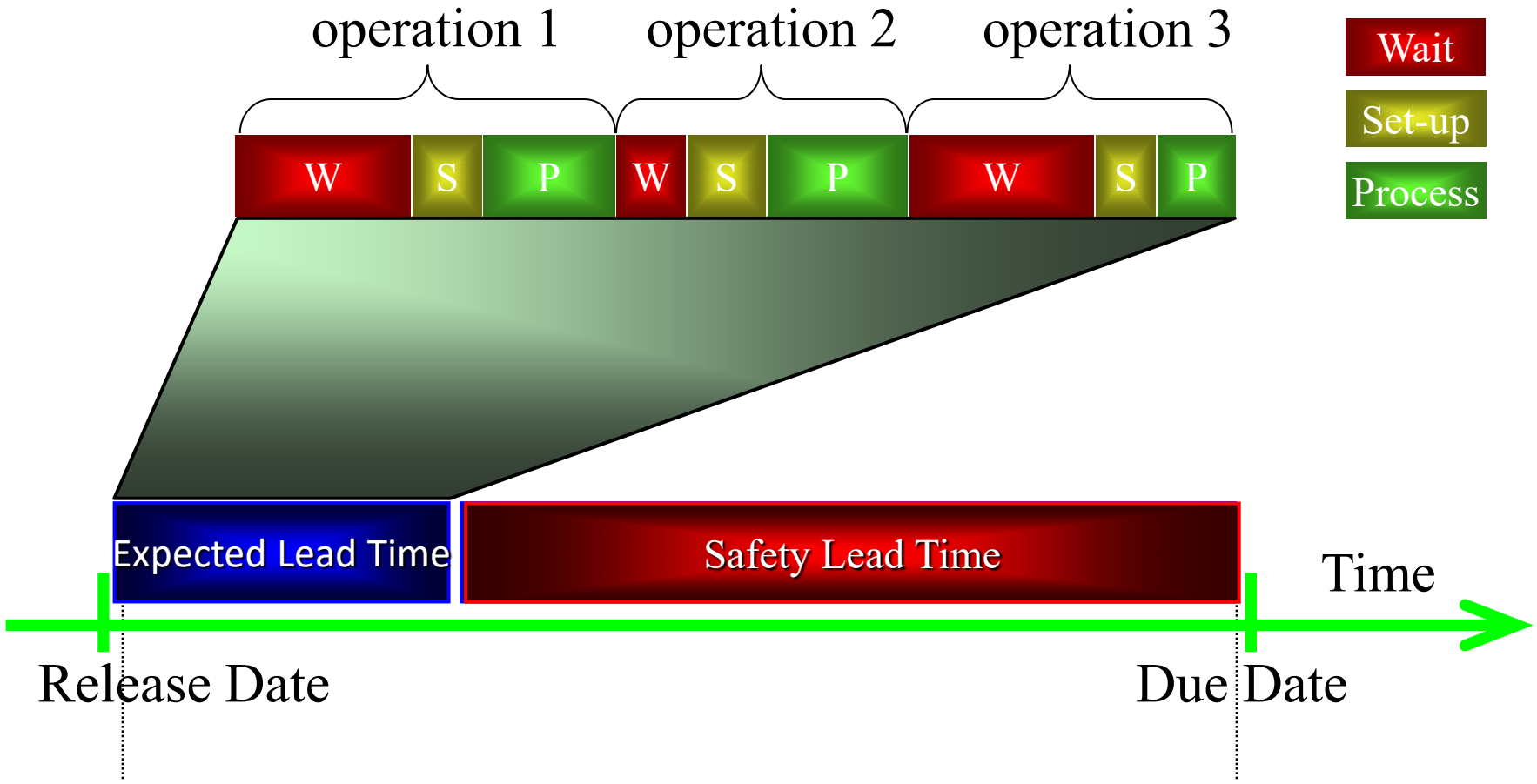


Queuing Network

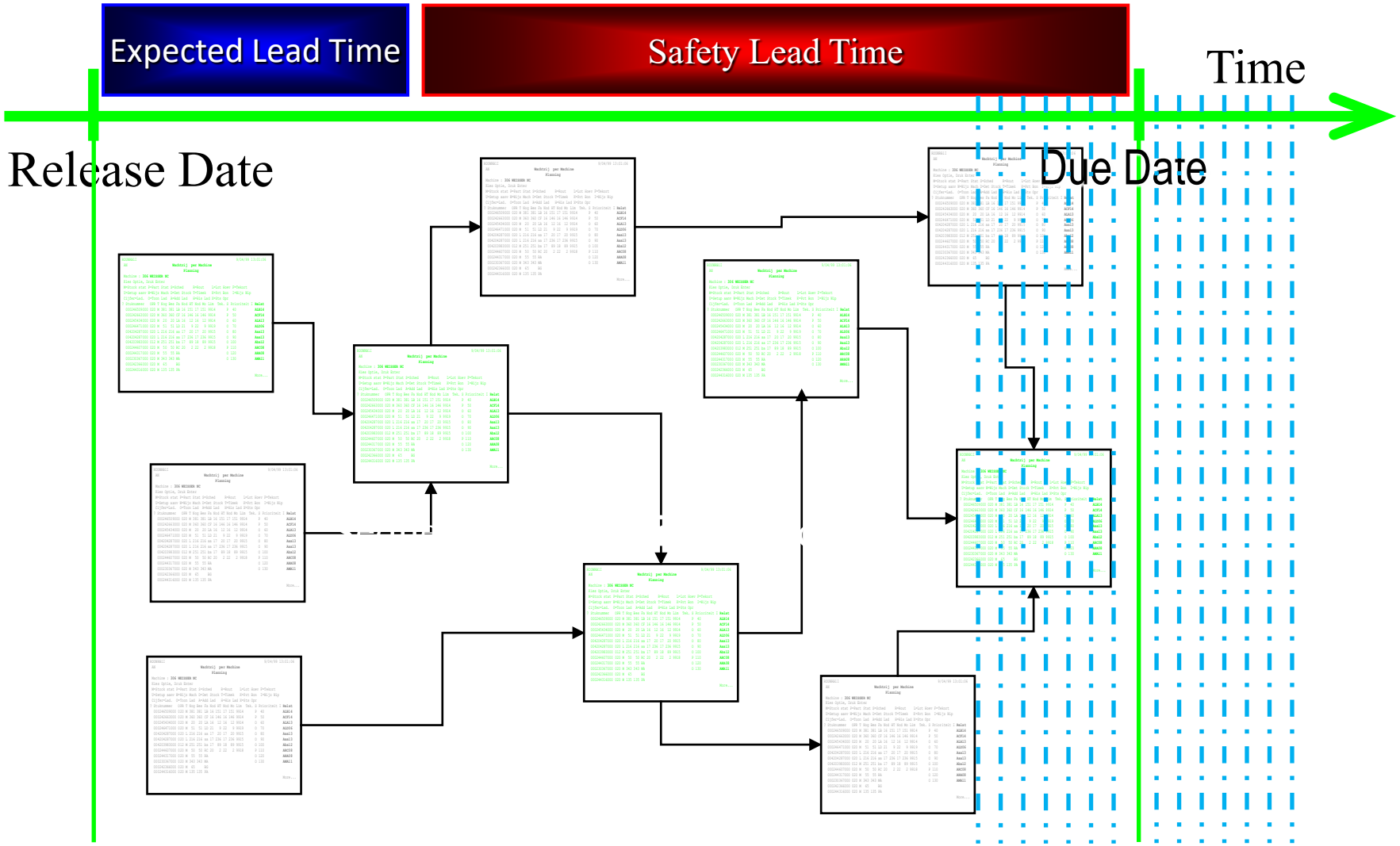


Aggregation	Aggregated Expected Lead Time
Optimization	Minimal Lead Time - Optimal Lot Sizes
Disaggregation	Expected Product Lead Time Variance Of Product Lead Time Lognormal Lead Time Distribution Lead Time Percentiles & Customer Service

Manufacturing Order Lead Time Offsetting



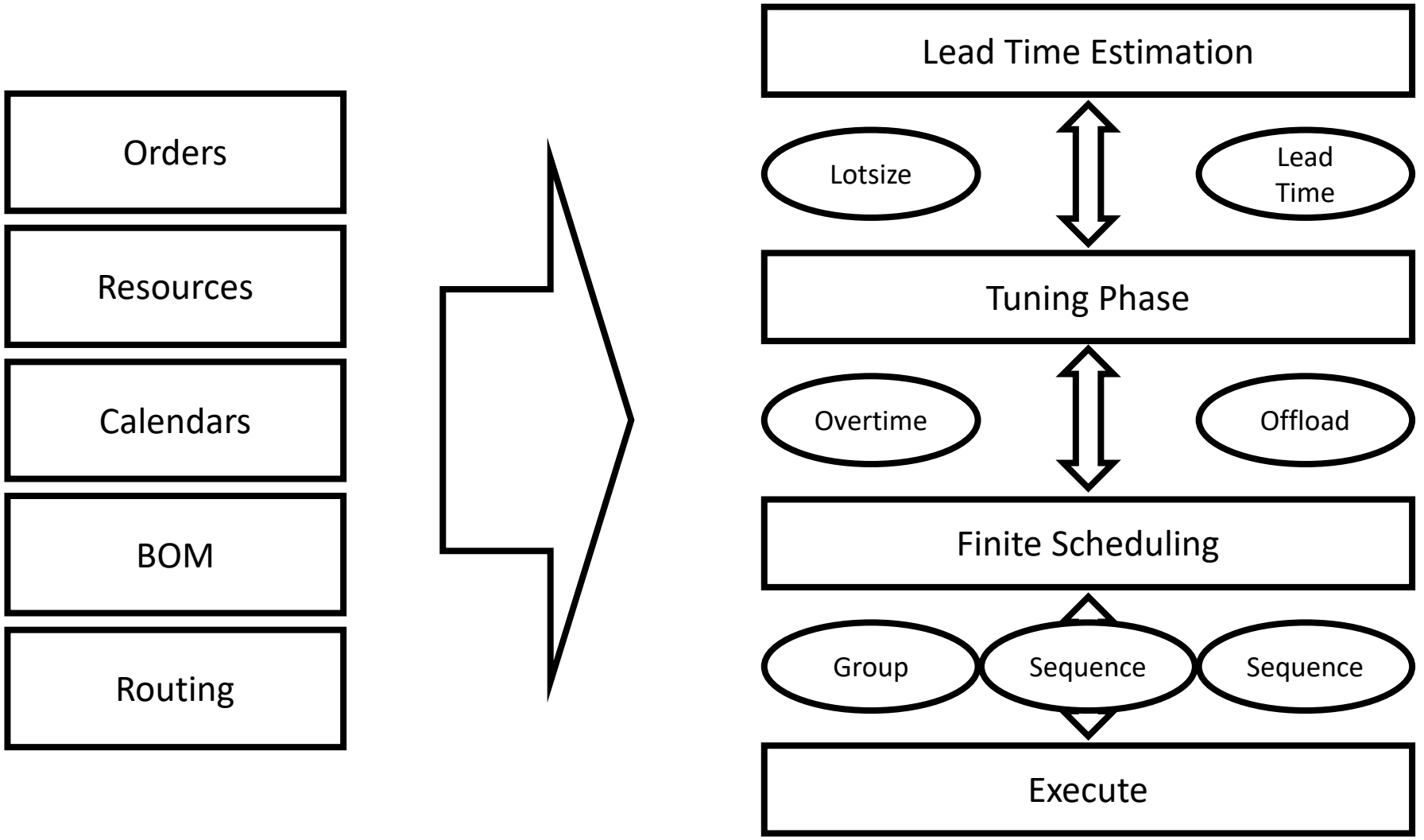
i CLIPS


Expected Lead Time
Safety Lead Time
Time
Release Date
Due Date

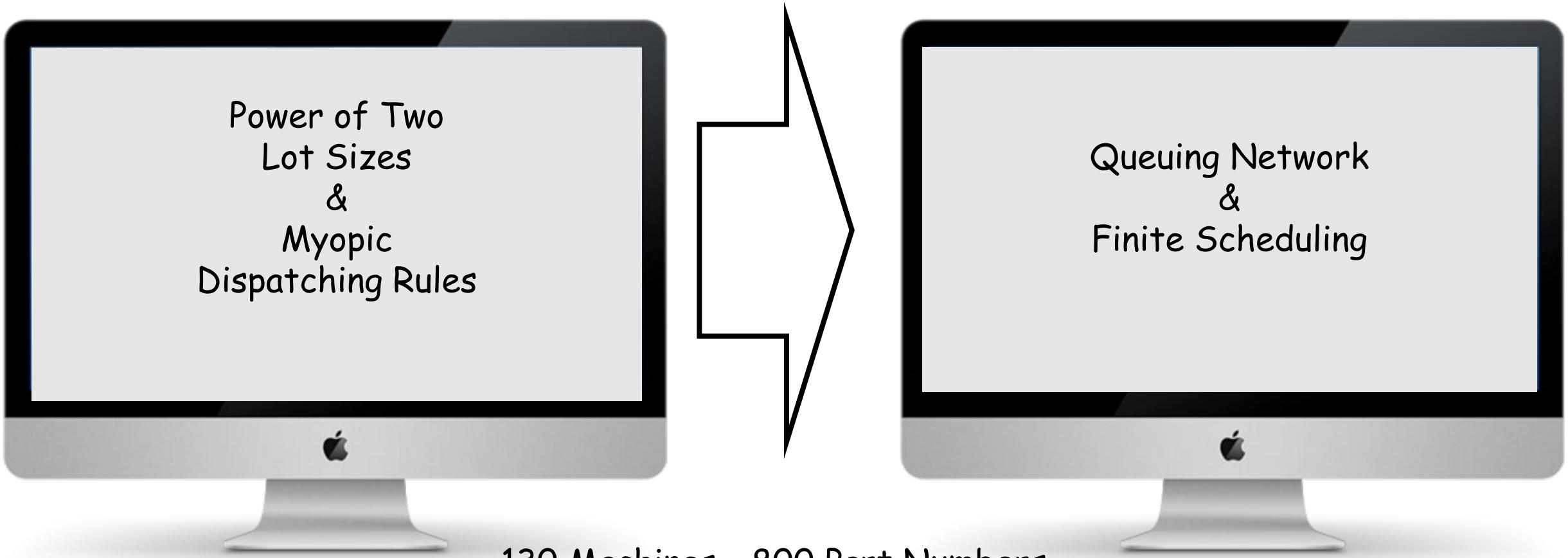
Aclips Procedure

Factory Physics

ACLIPS Procedure

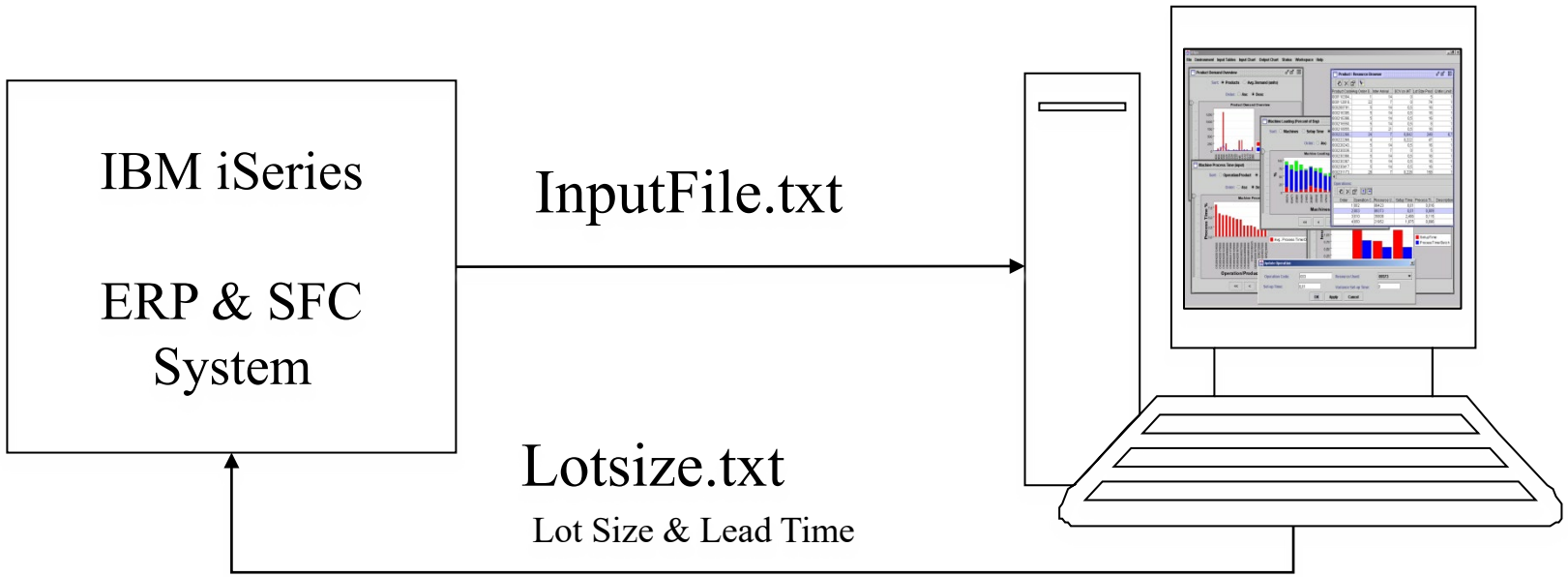


Change Impact



130 Machines - 800 Part Numbers
10,000 Shop Orders - 4,900 Operations

Generic Solution



Monthly, bi-monthly or quarterly basis

ACLIPS Input File

Products

Avg Demand - IAT - SCV - #Oper - Act. LS - P/N

Service level

Machines

```
1
090
MACHINES
00130
00001  001  0,830  01309
00002  001  0,830  02427
00003  001  0,830  03X15
00004  001  0,830  03290
00005  001  0,690  06652
00006  001  0,230  11X80
00007  001  0,690  11966
00008  001  0,230  11991
00009  001  0,690  13256
00010  001  0,690  13531
00011  001  0,690  13662
00012  001  0,690  13784
00013  001  0,700  13997
00014  001  0,230  14539
00015  001  0,460  14975
00016  001  0,500  16A17
```

```
PRODUCTS
00692
00001 0000011 00014,0000 00000,0625 00004 00007 000110304000
      00109 00000,0100 00000,0000 00000,0091 00000,0000 003
      00069 00001,7250 00000,2975 00000,1560 00000,0012 015
      00070 00001,9900 00000,0000 00000,1080 00000,0005 025
      00106 00002,4625 00000,6063 00000,1080 00000,0005 030
00002 0000043 00014,0000 00000,4725 00004 00071 000112619000
      00109 00000,0100 00000,0000 00000,0144 00000,0000 003
      00069 00003,7800 00001,4288 00000,1560 00000,0012 015
      00070 00000,7800 00000,0000 00000,1080 00000,0005 025
      00106 00002,4750 00000,2256 00000,1080 00000,0005 030
00003 0000011 00021,0000 00000,3209 00012 00022 000123483000
      00110 00000,0100 00000,0000 00000,0160 00000,0000 002
      00109 00000,0100 00000,0000 00000,0100 00000,0000 003
      00015 00001,7825 00000,0664 00000,0230 00000,0000 010
      00003 00002,8566 00000,8160 00000,0700 00000,0002 020
      00041 00000,9860 00000,0972 00000,0380 00000,0000 030
      00034 00002,0775 00000,4316 00000,1320 00000,0008 050
      00045 00002,7875 00000,7770 00000,0632 00000,0001 070
      00112 00000,0100 00000,0000 00000,0904 00000,0004 090
      00116 00000,2840 00000,0080 00000,0178 00000,0000 095
      00115 00000,2250 00000,0050 00000,0300 00000,0000 100
      00084 00002,2000 00000,0000 00000,0740 00000,0002 120
      00099 00000,3010 00000,0090 00000,0190 00000,0000 140
```

Machine ID

Availability% 24/7

Same machines

Machine Avg SU - Var - Runtime - Var - Oper

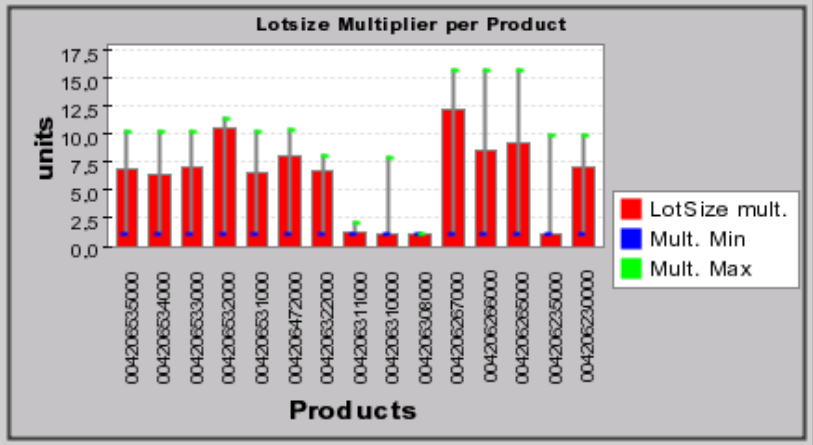
IClips

File Environment Input Tables Input Chart Output Chart Status Workspace Help

Lotsize Multiplier per Product

Sort: Products LotSize mult. Mult. Min Mult. Max

Order: Asc Desc



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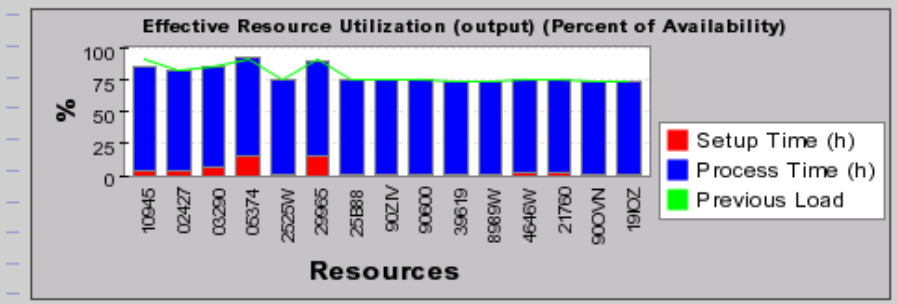
Effective Resource Utilization (output) (Percent of Availability)

Sort: Resources Setup Time (h) Process Time (h) Previous Load

Order: Asc Desc



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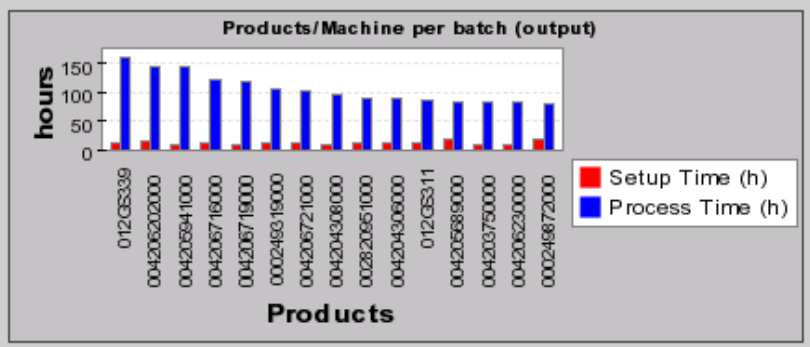
Products/Machine per batch (output)

Sort: Products Setup Time (h) Process Time (h)

Order: Asc Desc 05374



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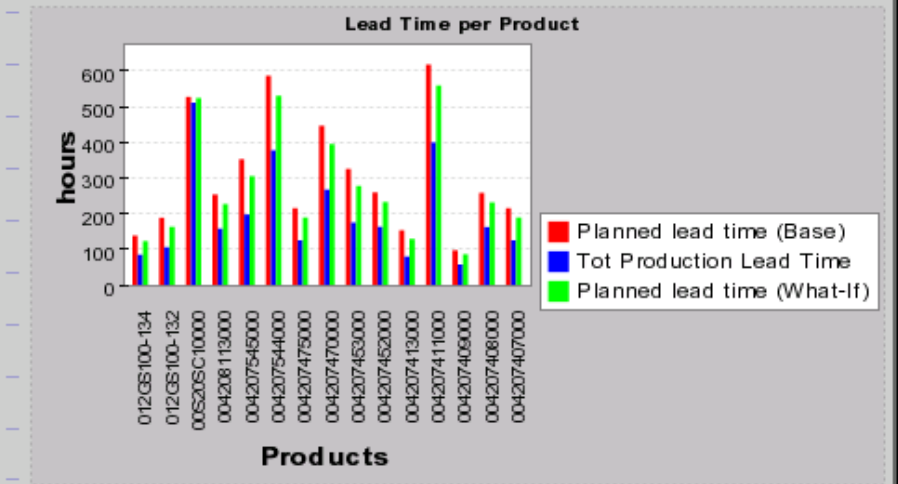
Lead Time per Product

Sort: Products Planned lead time (Base) Tot Production Lead Time

Order: Asc Desc Service Level: 85 Update



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