

# Designing Simple Electronic Kanban based Decision support system - A Letter shop Case Study

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## Agenda

- Learning Outcomes
- Decision Support System (DSS) overview
- Letter shop process overview
- Simple electronic Kanban
  - “traffic stop light” visual control
- e-Kanban System benefits

## Learning Outcomes

- Understand a simple electronic Kanban
- Benefit from a Web-based lean decision support system
- Eliminate redundant documents
- Off-shift communication improvement

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Decision Support System

Letter shop Process

Electronic Kanban

System Benefits

## Decision Support System (DSS)

- Information tools that uses data, and models to facilitate better decisions
- Sources of data
  - legacy systems,
  - databases,
  - excel sheets,
  - datamarts

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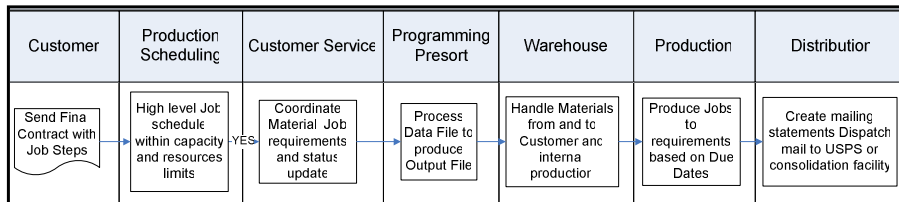
System Benefits

## DSS – Types & Components

- Types
  - Model - driven
  - Communication-driven
  - Data-driven
  - Document driven
  - Knowledge driven
- Components
  - User interface,
  - Database,
  - Model & analytical tool

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## Letter Shop Process



- Key operations drivers are
  - Delivery date (Mail date, In-home date)
  - Quality
  - Cost per 1000 pieces

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## Letter Shop Process

- A job has up to 6-7 processing steps
- On a given day there are up to 60 different jobs
- 1000's of client interactions through email/phone
- Seasonal demand fluctuation
- Shorter turn-around time
  - Time from design to In-home

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## Why e-Kanban?

- Business Situation
  - Missed delivery dates
  - Lost revenue due to schedule miss-communication in off-shifts
- Poor scheduling
  - Lack of production standards
- Data in-accuracy
  - Duplicate of data in excel files across various shifts

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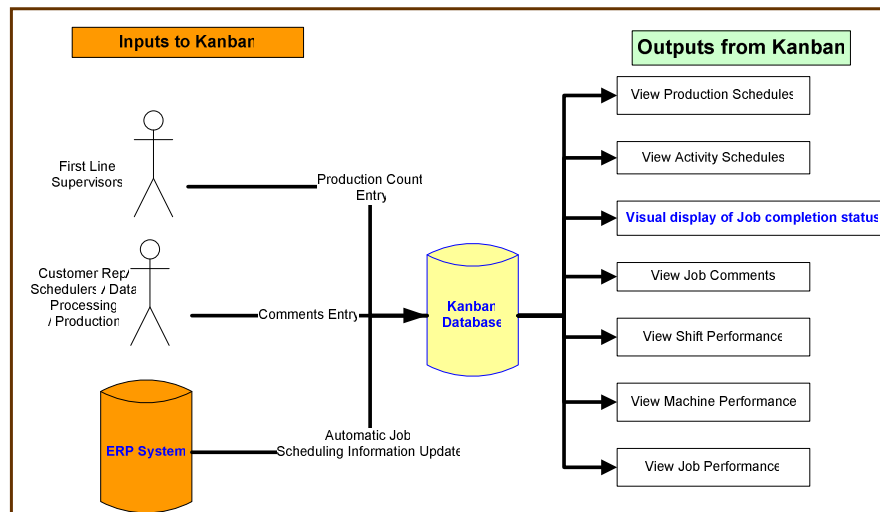
System Benefits

## e-Kanban Architecture

- Microsoft SQL Server 2000
- ASP, ASP.net, Ajax
- Single Sign on through Light Weight Directory Access Protocol (LDAP)

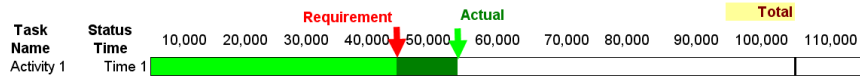
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## e-Kanban Process Flow



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# e-Kanban Model



# e-Kanban Model

Job #	Activity	Status
306543	8012140 order card[90136]: Wide Arr	Light Green
307101	6525200 Order Form[90734]:466 Laser	Light Green
307368	3025100 Postal Optimization	Red
306462	3025100 Postal Optimization	Light Green
307101	3025100 Postal Optimization	Dark Green
307255	8083100 Cartoning Inserter	Red
306462	8063123 Insert High Speed Poly/Exta	Light Green
307368	8015120 Selfmailed[90729]: EKTA-JET	Red
307038	8010120 Chesire/Labelaire	Blue
307101	8030120 Order Form[90734]:Cut/Fold	Red
307101	9999992 INSERT VIP/LABELAIRE	Red
307038	9999991 Flow Master Insert	Red
306543	8075100 Flat Poly Insert	Red
306543	8063123 Insert High Speed Poly/Exta	Red
307038	8078160 INSERT VIP/LABELAIRE	Dark Green
306543	8010120 Chesire/Labelaire	Light Green
306543	8020120 order card[90136]: Video Je	Red

- **Red** → Job not complete as per Kanban
- **Blue** → Job completed more than the required
- **Light Green** → Job on track
- **Dark Green** → Job production rate is higher than standard rate

## e-Kanban DSS

Job Total Quantity	Activity Total Quantity	Std. Rate Per Hour	Job Description				First Mail Date			
447,035	482,237	2,800	simplex laser 11" 2up slit fold stamp affix OE insert 3 sort mailQuote #C0937				3/18/2008			
Prod Date	Shift	Opr.#	Amount	Hours	RPH	Pkg#	Drop#	Ops	Mach#	% EFF
3/15/2008	Ni	500694	2,877	1.30	2,213	76	1	1	153	79%
3/14/2008	Ev	501103	16,879	6.30	2,679	76	1	1	152	96%
3/14/2008	Ev	500513	20,500	8.00	2,563	76	1	1	153	92%
3/14/2008	Da	616071	23,009	8.00	2,876	76	1	1	153	103%
3/14/2008	Da	613546	24,150	8.00	3,019	76	1	1	152	108%
3/14/2008	Ni	501262	11,400	8.00	1,425	76	1	1	152	51%
3/14/2008	Ni	501270	16,750	8.00	2,094	76	1	1	153	75%
<b>Total</b>			<b>439,516</b>	<b>197.80</b>	<b>2,222</b>				<b>79.36%</b>	
Actual	Amount Needed	Remaining to Make	Est. Completion Date and Shift	Est. Hours Needed	Shifts Needed	Shifts Scheduled	Machines Scheduled	Machines Needed	New Rate	
439,516	352,003	42,721	3/17/2008 4:00:00 PM	9.09	1.1	4	2	0.6	668	

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## e-Kanban Features

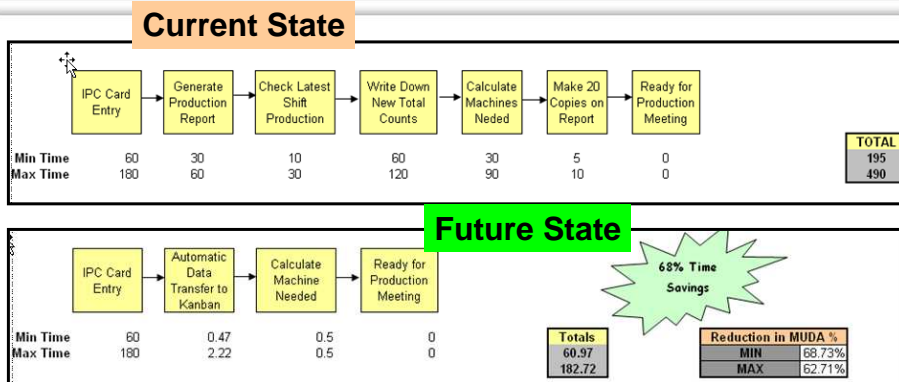
- Machine Scheduling Knowledge
- Accurate job completion forecast
  - Based on current run, calculate number of machine, shift, operators needed for on-time completion
- Operator, machine performance tracking
- Job profitability analysis
- Revenue forecast

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## e-Kanban Roles & Responsibility

- Schedulers
  - Schedule the job information in ERP system
- First Line Supervisors
  - Enter production counts for each shift in e-Kanban
  - Monitor production performance
- Customer Service Representatives
  - Enter all job related comments
  - Monitor overall job performance

## Current Future State Process Flow



- Elucidates the time spend on jumping from one spread sheet

## Benefits

- Eliminated duplicate spread sheets and paper copies of production report
  - **3** spread sheets to **0** spread sheets
- Reduced scheduling time
  - **195** minutes to **60** minutes
- Reduced employee turn-over
- Better visibility across off-shifts
- Achieved 100% on-time delivery

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## Benefits

- Eliminated Tribal Knowledge
  - Machines needed to complete the job on time is more scientific
- Improved data accuracy
  - Surfaced all mistakes in production data entry
- Centralized communication
  - Customer Service, Production team, Schedulers on same page
  - Single point job information update

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## Lessons Learned

- Involve the area decision makers
  - First Line Supervisors, Operator etc
- Make one change at a time
- Develop a training roadmap
- Use data based process improvement
- Help the internal customers to see value
- Eliminating muda

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# Questions



Thank you