

# Event Management in Automotive Supply Chains: People, Systems, and Decisions

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## Interviews Conducted

First tier supplier

- 1- Director, eCommerce
- 2- eCommerce, Engineering
- 3- eCommerce, Manufacturing

First tier supplier

- 1- Manager, Manufacturing and Process Support Systems, Worldwide Information Technology

Automotive OEM

- 1- 21st Century Business Model Analyst
- 2- Product Design Engineer, Advanced Vehicle Technology

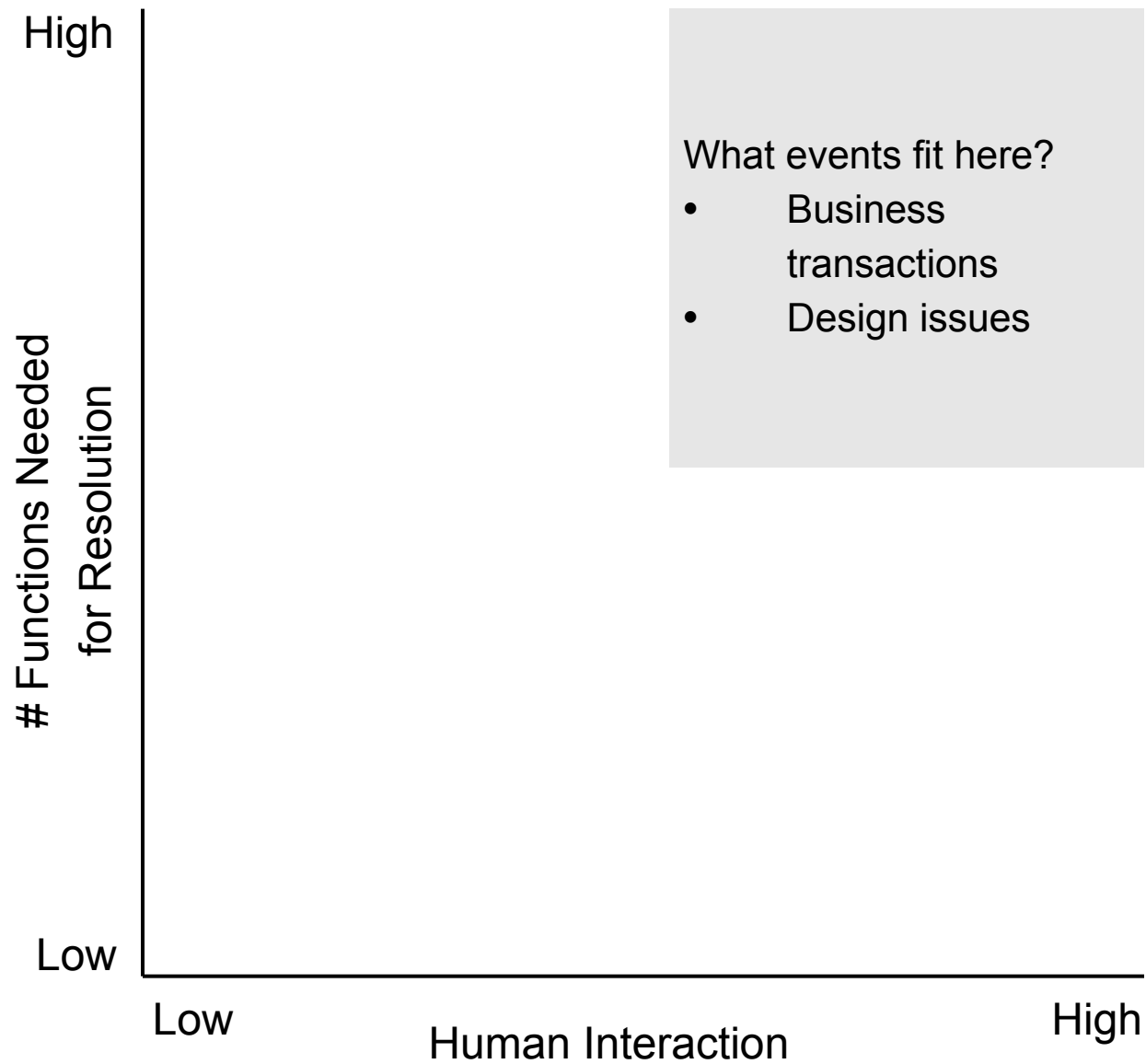
Truck, heavy equipment OEM  
and first tier supplier

- 1- Director, Truck and Field Support Systems
- 2- Director, IT Projects Office
- 3- Manager, Systems

Design/engineering

- 1- CAD Design Team Leader

## What transactions require human participation?



# Interview Questions

## Description

1. What is the issue or problem that is the subject of the interaction?
2. Where does this event fit in the product life cycle?
3. How frequently does this event occur?

## Solutions

4. What makes this event complex and in need of human resolution?
5. Why hasn't automation played a larger role in dealing with these kinds
6. Relative to the solutions you would like to see, how well do you deal

## Consequences

7. In terms of cost, quality and time, how important is it to deal with this issue successfully?
8. If you could resolve this issue better, are there another problems that would also be helped?

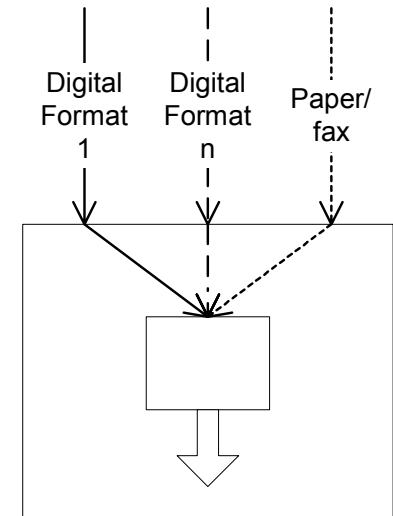
## Who is involved in problem resolution?

9. Who are the key decision makers?
10. What major functions *within* your company are required for dealing with
11. What major functions in companies *outside* your own that are required for dealing with these events?
12. Are there groups you would like to get involved in dealing with these issues, but which you usually do not consult?

# Information Management: Data Format

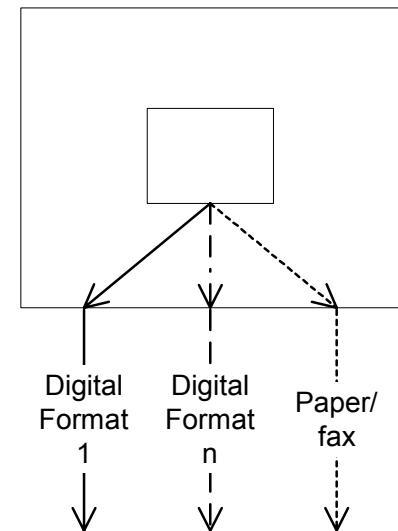
**Diverse input formats must be expressed in a common format**

Examples: different ways of ordering, or different CAD formats.



**Multiple outputs of the same information to different sources**

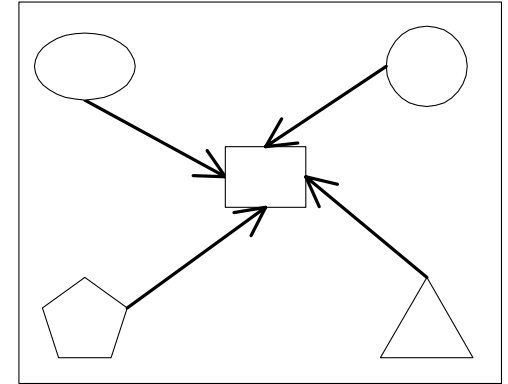
Output side of the above. Company has to accommodate multiple outputs of the same or similar information.



# Information Management: Finding Existing Information

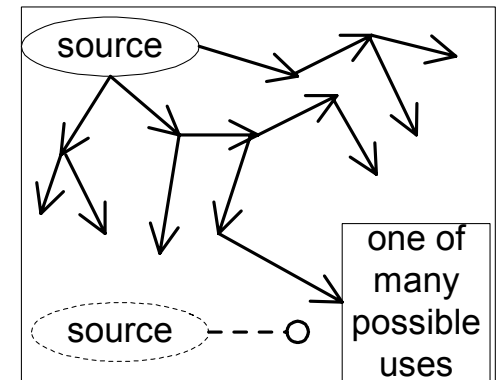
## Diverse pieces of information are needed to make a decision

Problem is to find information from multiple sources to bring to bear on a problem. A lot of the production scheduling and warranty examples fit here



## “Paper trail” as information moves within a system

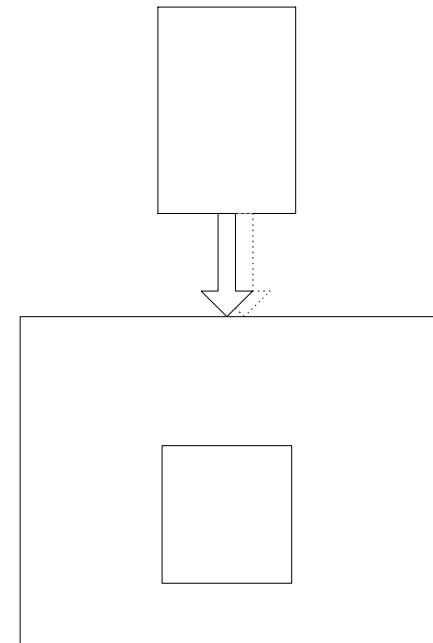
Information in one location needed for use far removed from source. Hard to know what company has, or where. Format may not be accessible or usable for the work at hand.



# Information Management: Getting Information from the Outside

## **Information Flow Into the Organization is Restricted**

Information generated outside a company, but only some of it gets into the organization.  
Common problem with warranty analysis.



### Brief Summary of Scenario

System proliferation # EB systems increasing. Consequences for people and \$. E.g. \$9K/plant/year first year, then \$6K/plant/year. \$1.5K for a site license

Product design OEMs bid programs as individual modules. Sub-tiers have unique ECN tracking systems. Overall view lost by OEM

Product design ECN tracking w ithin OEMs. Have different systems across the engineering groups. Requires manual matching or re-entry of data.

Order entry /processing Incoming orders multitude of methods, fax, paper, EDI. w eb. Top 5 customers digital, others not. Each system costs \$.

Order entry /processing Within a single method, format is not consistent. Different divisions of Ford use different 830/862 combination, each has a separate log in.

Outbound logistics "A"s customer is " X". "X" uses "Y" to ship. "A" → "X" EDI. "Y" → "A" w eb. ASN's to both. More responsibility for "A", decide ship route. Z has different

Production scheduling Lots of considerations w ith trucks – suppliers, labor, dealer relations, product make up, finance, inventory, sales. Data not available. Need for iterations.

Production Scheduling Issues: delivery dates, optimizing lines, capacity, etc. G groups: customers, production, engineering, sales, PM. Weekly or daily. Personal experience

Prod. Process improvement Process transfer one site to another. Only sometimes works. Hard to document relevant issues, get information from people w ho know necessary

Know ledge transfer As w ith production process improvement, there is a know ledge transfer problem w ith R&D→ practice.

Warranty Coverage Complicated OEM/supplier w arranty pass through. Customized w arranties. Involved: customer, dealer, company, supplier. Restricted info from dealer.

Product design Tracking of an ECN through mfg. legacy systems. ID all impacted components & SW. People retiring. Carbon-based know lede lost.

Order entry /processing Ordering information is alw ays checked manually. Customer data on cumulatives can't be trusted.

Product design Prtotype testing. Lots of component sw apping. Lots of ECNs, inaccurate know ledge of component or softw are that w as actually tested.

Warranty QA Difficult to track many variables. Variations in the problem definition, etc. Especially problematic in non-catestrophic cases.

Warranty QA Warranty data reported monthly or if queried. Often engineering does not seek this. Too hard, time consuming. Engineers w ant easy pull, or push.

	Information Flow Category				
	Multiple input → single format	Multiple output → single format	Diverse information for decisions	Paper trail	Restricted / unreliable info from outside
	X	X			
	X				
	X				
	X				
		X			
			X	X	
			X	X	
			X		
			X		X
				X	
					X
				X	
				X	X
				X	

# Reasons Why Information Management is Difficult

## Problem

## Explanation of Label

Legacy

Time, effort, disruption, cost, risk involved in changing entrenched information systems

Money

Primary difficulty is cost

Complex problem /  
cross linked  
components

Many variables, change in any one can change overall decision..

Uncontrolled input  
from the outside

Frequent revision necessary. Important inputs have high uncontrolled variability.

Data not captured /  
reliance on human  
knowledge

Systems contain data in unusable form, or information only exists in people' heads.

## Frequency of Information Management Difficulties

	Uncontrolled input from outside	Data not captured / reliance on human knowledge	Legacy systems	Complex problem / cross linked components	Money
Product design	X				
Order entry / processing	X				
Order entry / processing	X				
Order entry / processing	X				X
Warranty	X				
Warranty	X	X			
Product design		X			
Product design		X			
Process improvement		X			
Outbound logistics		X			
Knowledge transfer		X		X	
Production scheduling			X	X	
Production scheduling			X	X	
Product design			X		
Warranty			X		

# Event Management Application Priorities

Event Type	Importance	Centralized databases?	Data			
			Technical	Business	Access	Diversity
Design / ECN	High	Yes*	Major	Minor	Hard	High
Production scheduling	High	Yes	Minimal/none	Major	Hard	High
Warranty coverage	Low	Yes	Minimal/none	Major	Easy	Low
QA (warranty)	Low	Yes	Major	Minimal/none	Hard	High
Process transfer	Low	No	Major	Minimal/none	Hard	High

\* Most of the time. Prototype testing is the exception

## **We also got some insight on EB proliferation in the Automotive Industry\***

Each Division we ship to has a different log-on and a different 830/862 EDI format

Division X implemented an electronic kanban. Reduces variance, but not used exclusively and is the 4th system to master

Customer uses Supply Solution / Covisint, but also uses traditional 830/862. Adds both responsibility and work

With third party logistics company in the middle, we have to manage e-communications with two companies instead of one.

OEM has 110 systems for suppliers. Some are good, some are not.

\* From one company. We could not check the views of others

## **EB proliferation in the Automotive Industry - continued\***

OEM's systems cost \$9K/plant/year for the first year, and \$6K/plant/year each year thereafter.

\$1,500 site license, in addition to a monthly subscription fee of \$200/user, and they have 10 plants.

Costs are \$33/month/user

Toyota and transplants are cautious Applications adopted as company standard. Toyota makes fewer demands and the demands make sense. Extensive training meetings, do not just send documentation.

European OEMs are quite slow to adopt new technology.

\* From one company. We could not check the views of others