



The Human Side of Technological Innovation



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Nuala Beck:

Shifting Gear (1992)

“Smart Industries”

- “Dumb Industries”



% of Knowledge Workers “*Knowledge RATIO™*”

In manufacturing:

- Area space, weapon technology
Electronic Equipment 60-65%
- Communication Equipment 45%
- Aircraft 38%
- Automotive 20%
- Furniture Industry 11%

(Source: Nuala Beck)

How realistic are these numbers?

I believe, they have not drastically changed over
the last 15 years!



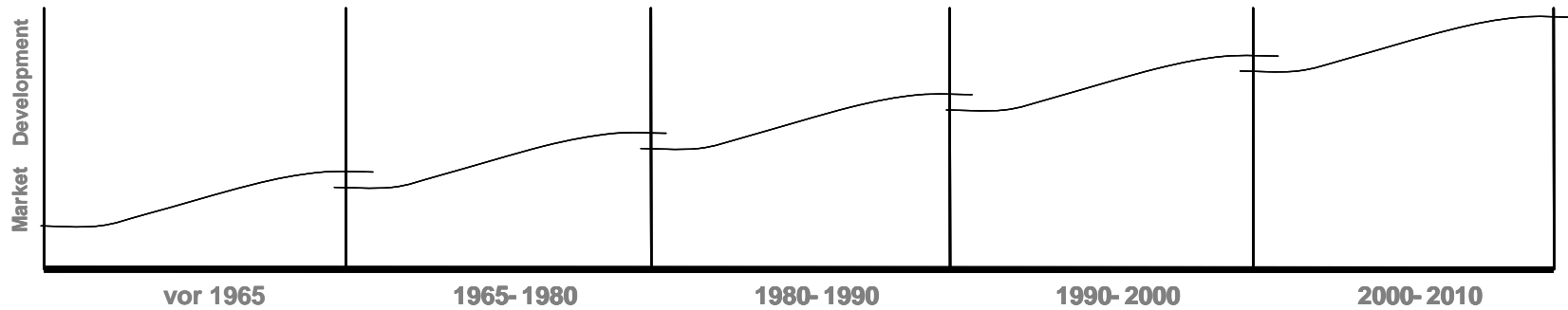
What difference ... _____

...does a score of 10% vs. 20% make?

- Ability to adopt new technology.
- Ability to implement systems.
- Speed of change.



Technology Migration



Single Machines	Thru-feed Machines Linked Machines	Manufacturing Systems	Automated Factory	Automization of the Supply-chain
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Market Share	50 % Mechanical	100 % Mechanical	10- 20 % Software	20- 30 % Software	5- 10 % Integration	
	50 % Manual		10- 20 % Electronic	20- 30 % Elektronik	25- 35 % Software	
	60 - 80 % Mechanical		40 - 60 % Mechanical		25- 35 % Electronic	
	40 - 50 % Mechanical		40 - 50 % Mechanical			

Development Features	Increased use of Machinery	Performance increase in in feed speed and cycle times	Utilization increase thru Set-up and interruption reduction	Optimization and Information	Integration Communication Optimization
	MANUAL	MECHANIZE	AUTOMATE	ORGANIZE	INTEGRATE

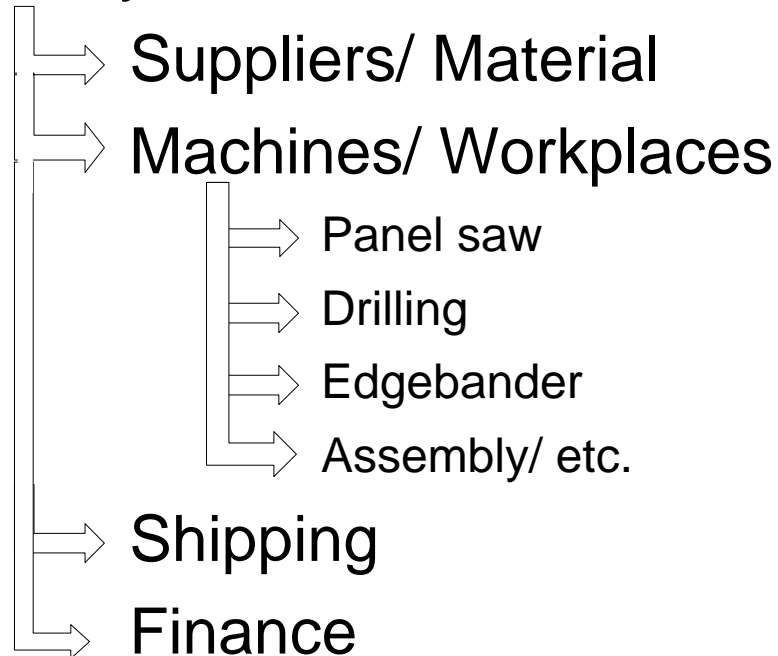
Integrate

Customers

↗
↘ Dealers

↗
↘ Customer Service

↗
↘ Factory



Challenges

- People → with software knowledge and implementation skills
- People → with equipment knowledge (operation, trouble shooting, maintenance and programming)
- People → with people skills to manage a much more technology oriented workforce

Challenges *(cont.)*

- Change & speed of change
- Psychology of change
- Culture
- Leadership/ ownership



Alternatives

- Not integrate, just basic technology
- Stand-alone-solutions
- Not utilize the full extent of technology
- Slow down implementation speed



Risk

- Lower productivity – higher cost.
- Widening the technology gap.
- Loss of competitiveness.



Suggestions/ Caution

Technology must not become too complex.

- Your core knowledge holder group must still feel comfortable with it.
- Smaller pieces of technology are often outperforming larger, more complex equipment.

Suggestions/ Caution

People must adopt to technology.

- Educate the people about the projects before decisions are made.
- Include all stakeholders in information flow and even some decision making.
- Avoid at all cost “cultural walls” between plant and office.

Conclusion

Any successful technology strategy needs to be combined with the matching HR/ Skills development strategy.



Possible Starting Points

- Hire/ develop staff for Manufacturing Engineering (i.e. UBC/ CAWP, Rosenheim)
- Hire/ develop forward thinking HR professional
- Implement Lean, Process Flow improvement
- Get outside help for strategy, and initiation
- Visit seminars, other plants and tradeshow

If you know the goal – you will find
the solution!



Thank you.

Questions?

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