

CHANGING MANAGEMENT'S
VIEW
TO SIMULATION

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ABSTRACT

Two consultants from Digital Equipment Corporation's Technical Resources Group, introduced simulation to Digital's Clonmel, Ireland plant. Initially the plant management expressed serious concerns about the use of simulation and the impact this would have on the plant. Plant management did not fully understand simulation and was concerned about cost, time, involvement of plant staff, possible results and future use. The Technical Resources' consultants, working with the Clonmel plant engineers provided plant management with information about simulation and directly addressed all stated concerns. As a result, simulation of the plant manufacturing process was undertaken. The simulation results provided information which allowed the plant to modify manufacturing and storage areas thus avoiding approximately \$50K in new equipment. Today the Clonmel plant is expanding its use and knowledge base of simulation.

BACKGROUND

Digital's Technical Resources Group is a multidisciplinary, internal consulting organization which is available at no charge to all Digital manufacturing and distribution plants. The Clonmel, Ireland printed circuit board manufacturing plant requested assistance from Technical Resources on what Clonmel believed to be a raw material storage problem. Gary Farrar, the Technical Resources' industrial engineer assigned to this project recommended that the project scope be expanded to look at the entire manufacturing and warehousing process, in order to understand where problems existed. Plant management agreed and Gary and the plant project team looked for efficient tools to assist in the above effort. Gary contacted Bruce Boguslav, Technical Resources Systems Consultant. At this time, Bruce was investigating a simulation tool being used by DEC's Flexible Manufacturing Group. This tool was SIMAN and Bruce suggested that simulation of the Clonmel plant would provide some answers. Gary and the plant project team agreed and began the process to convince plant management of the value of simulating the manufacturing line to gather information to design a more effective raw material storage area. An initially skeptical and cautious management posture toward simulation was modified to a more informed and supportive view.

MANAGEMENT CONCERNS

It became clear that some serious management concerns would need to be addressed and an educational process undertaken. Among the major concerns were:

- ° TIME: How long would a thorough simulation take?
- ° DELIVERABLES: What would the deliverables be?

- ° COST: What would this cost in time lost, manpower, data collection, computer resources and the continuing warehouse problem?
- ° INVOLVEMENT: What level of involvement was needed from the plant staff?
- ° RESULTS: What would the results look like and would they be useful to the plant staff?
- ° FUTURE USE: Could the plant continue to use simulation easily or would this be a one time effort due to cost, resources, time and use factors?

ANSWERING MANAGEMENT'S CONCERNS

Our approach to address management's concerns was to ask for 1 week to further investigate SIMAN and the results we could expect. In this week we built a first model on the data Gary had been provided by the plant. We experimented with the different variables and were comfortable in our understanding of SIMAN and interpretation of the results of simulation runs. In the above effort we were assisted by Chris Kuhner of DEC's Flexible Manufacturing Technologies Group and Jean Burke and John Marshaw of Technical Resources. Based on the above we responded to the specific management concerns mentioned earlier.

- ° TIME: We asked for a one week time frame for the simulation.
 - ° DELIVERABLES: The deliverables were to be better information to design the raw material storage area and a tool to assist the plant.
 - ° COST: The cost would be one plant engineer's time for a week and computer time. Bruce's services were free.
 - ° INVOLVEMENT: Only one engineer needed to be directly involved but information would be shared and used by all plant staff.
 - ° RESULTS: Results would be useful to identify manufacturing lot sizes which would assist Gary and the plant in the design of the raw material storage area.
 - ° FUTURE USE: Potentially a valuable tool may be identified for plant use in the future.
- We were careful to highlight that simulation alone would not solve problems, but was a valuable tool in identifying problem areas and testing alternative solutions.

We received management approval to proceed. The simulation undertaken pinpointed a major problem in the manufacturing process. Removing this obstacle resulted in an improved production process and ultimately in the vastly improved material storage area. The final result of this project was that the Clonmel plant avoided the purchase of additional equipment (costing upwards of \$50,000.) and redesigned the raw material storage and assembly areas. The

above changes resulted in reduced raw material, work in process and finished goods inventories, higher machine and people utilization and better control of the production process.

CONCLUSION

The above result was possible only after we were able to allay management concerns about simulation. Our approach was to address the concerns directly with as much information as possible. We strove to keep expectations, time and cost factors realistic and provide educational information about simulation. We kept management fully informed and encouraged additional questions. Most importantly we maintained concrete, attainable objectives and involved the plant engineers in this process and maintained contact and support after the project completion. The project engineer from the plant became our disciple and spokesperson. His support of simulation was crucial to maintaining management support. Technical Resources' high credibility in DEC and successful involvement with Clonmel in the past was also a major asset. As credible consultants we had a distinct advantage in gaining management acceptance. Additionally we carefully scrutinized SIMAN to ensure that we could transfer simulation knowledge quickly to Clonmel and provide the plant with a viable tool. As a result of this project a once skeptical Clonmel management has approved the purchase of SIMAN for use in the plant to assist manufacturing and any other function which can utilize simulation. Additional simulation applications and tools are being investigated and the simulation knowledge base is expanding.

In summary, an intensive educational effort was undertaken to convince management of the value of simulation. Management concerns were addressed in concrete and specific terms which were meaningful to the individuals and the plant. An initially skeptical and cautious posture toward simulation was modified to a better informed and supportive view.

ACKNOWLEDGEMENT

The authors thank John J. Doyle, Manager of Technical Resources, for his support and assistance. Also, thank you to the Clonmel staff and management and thanks to Chris Kuhner, John Powley, Jean Burke, John Warshaw and Gretchen Somerville for their assistance with the simulation and the writing of this paper. Thanks to Rick Kelly and Linda Boguslav for their expert proofreading. Finally, much thanks to Joseph Miraglia for use of his office and William Salverson for his magic fingers which typed the entire manuscript.