
Epilogue

Status of Integrated Automation in the Commercial Printing Industry - 2006

An Executive Insight Report
by

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The Status of Integrated Automation in Commercial Printing – Executive Update

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An Opinion and a Blueprint

Principal investigator for this Executive Update Report, William C. Lamparter, President of the PrintCom Consulting Group, has worked with the development of compute integrated manufacturing and its implementation for over 10 years. He is frequently asked about what he really thinks about JDF and how he would go about implementing integrated automation. In this Epilogue to the integrated automation report, he presents his opinion about the viability and future of JDF considering the industry's immediate needs and the status of JDF as described in this report.

There is little doubt that profitable survival for most commercial printers depends upon making changes in a company's business model and production technologies. The competitive electronic information environment makes it necessary for commercially printed products to be produced faster and at less cost. The question is how this can be best accomplished. This research study focused on integrated automation as a potential probable solution for lithographic commercial printers. As a practical matter, for most commercial printers this means implementation of CIP4's JDF/JMF specifications.

The results of the research and analysis are clear --- JDF is not now (early 2006) ready for broad full function across multiple brand equipment implementation. A handful of printers have successfully partially implemented

limited portions of JDF, often after considerable difficulties. Some early implementers have achieved only partial success. The most successful computer integrated manufacturing operations are in plants that ignored JDF and developed their own approach to computer integrated manufacturing, usually for well-defined and a restricted type of printed product.

In conducting the CIM/JDF discussions for the research, we uncovered all varieties of adamant believers, naysayers, the inclined-but-not-now – we-will-do-it-later group and the undecideds, --- often with no real understanding of the concepts. In these discussions and in the peer review of the research report manuscript, we were often asked for our opinion. In the report, we have tried to provide the facts as we found them --- what follows is my opinion after working with CIM developments for over 10 years and conducting this and other related research.

In my opinion the need for and general concept of computer integrated manufacturing is essential to the profitable survival of print producers. This is the promise of JDF-enabled CIM. However, the basic structure of JDF may be flawed and never able to fully deliver on its across-the-board multi-brand promises.

I tend to side with those that think the basic structure of JDF is clumsy and cumbersome. The need for interoperability testing and certification to assure the workability of the technology presents what could be an insurmountable obstacle. The resources of PIA/GATF and CIP4 in a certification program expect to yield certification for about 100 matched pairs by the end of 2006.

In January 2006, the certification program is still under development. Assuming that all goes according to plan, the amount of certified equipment available by the end of 2006 represents but a drop in the bucket. In our opinion, a large enough reservoir of certified equipment to support anything close to full-

fledged multi-brand integrated automation based on JDF is not likely to exist before 2010, if then.

Even if all of the equipment and software currently in the JDF pipeline were somehow to be available and certified this year, there still would be a significant series of voids in many printing production systems preventing full-fledged integrated automation. First, there is the legacy equipment issue, and then the MIS and data issues discussed in the report. Then there is a bevy of equipment for which the manufacturers have no immediate plans to enable with JDF protocols. This combination leaves a void in the availability of JDF-enabled (even if not certified) equipment required as an integral part of a CIM system. When or if these obstacles are likely to be removed is unclear. In 2006, significant portions of the CIM system are missing. .

Even when available and functioning as envisioned, there is concern about the economics of CIM. In our opinion, based on production floor observations, interviews and a limited amount of hands-on experience, for some press functions and bindery set-ups, a JDF-enabled approach saves little or no time or money when compared to operating a console-equipped press or touch screen automated paper cutter or stitcher.

In our investigations, what we found after more than 10 years in the making was an incomplete and largely untested JDF set of specifications as the only industry-wide effort to enable integrated automation for print. By its all-encompassing nature, with an almost incalculable number of parts and pieces, it is my opinion that JDF will slowly find its way into the industry for partial implementations but that it is unlikely to become an industry-wide all production functions, embracing data feedback CIM system touted and envisioned by some.

There are clear indications of increasing automation of individual machines and the merging of some machine functions all resulting in an

increased number of islands of automation. It is our opinion, however, that these islands of automation will largely be controlled from the production floor and will for the most part remain unlinked. The most likely exceptions are the product specialized plants that have developed their own software and CIM system and digital printing specialist operations..

If JDF is not a fully workable response to the industry's need to reduce cost and production time cycles now, what is? What would you do?

Our response to these types of questions that were frequently asked during integrated automation and JDF discussions are in two categories: legacy equipment plants and new or Greenfield sites.

An Approach for Legacy Plants

In a legacy equipped plant, the first thing we would do is conduct a series of audits to determine bottlenecks. Broadly, we would apply the "Theory of Constraints" to identify and remove bottlenecks one at a time. As a generality, we would take the following minimum actions, installing whatever equipment and taking whatever actions are necessary to improve operations before attempting to install any facet of JDF.

1. Review management attitudes and capabilities and re-educate as necessary, instilling an understanding of the value of information in business and production systems and how to evaluate automation potentials. Retrain, replace individuals as necessary.
2. If not already available and operative, install a brand-name fully functional MIS as described in the report.
3. For a specific situation, evaluate and install as is necessary the best automated prepress software including the ability to automate preflighting and prepare files for imposition and platemaking.

4. If not already available, install computer-to-plate and use prepress data to automatically set ink fountains.
5. Identify, analyze and remove roadblocks in all portions of the company, prioritizing the work based on overall potential cost and timesavings.

With the exception of prepress software and utilizing CIP3/CIP4 protocols for automatic ink fountain key setting, no attempt would be made to install integrated automation in an established plant with legacy equipment until these basic steps were satisfactorily completed.

After completing these basic steps, production operations should be reviewed to define islands of automation and the feasibility, cost and ROI of integrating operations. This step includes consideration of replacing legacy, non-automated/manually controlled equipment --- replacement would only be made when equipment condition required it, and/or profitable advantage could be established.

Where feasible, islands of automation would be integrated using JDF, if available and proven, for the specific equipment involved. If JDF is not feasible, consideration would be given to the internal development of automated integration.

Over an extended period of time as new equipment is purchased and as JDF specifications are refined and individual pieces of equipment are certified in an appropriate match pair, JDF integrated automation would be expanded and added.

The basic approach for existing plants is to maximize the effectiveness of current production operations and then to provide the underpinnings for integrated automation before giving consideration to integrated automation implementation --- JDF or home-grown.

This is a “creeping integrated automation” approach that may not be fast enough to satisfy marketplace time and cost reduction requirements. It appears, however, to be the only logical game plan realistically available.

This is a brief outline of an approach to integrated automation for an established plant with legacy equipment. In actual practice, a very detailed integration plan individualized for a specific situation would have to be developed.

An Approach for Greenfield Plants

If I were involved with the establishment of a Greenfield plant, I would take a completely different approach. Any new plant would be an integrated operation to the fullest extent possible. The following approach is predicated on that premise.

The first step in establishing production operations would be to understand the products that are to be produced. I believe that the most successful plants are and/or will be those that limit their production operations to a well-defined group of products with virtually identical printing specifications and a homogenous type of customer. This is the type of plant most suitable for integrated automation, and we believe to have the best profit potential. While there is a place in the market for smorgasbord printers, they are unlikely to be the most profitable operations and will increasingly (unsuccessfully) compete with integrated production specialists.

Once a product type and its requirements are established, the next major decision point is to determine the printing process to be utilized; in most cases, the options will be among digital, offset – sheet or web – or a combination of these processes.

If the selected product is to be produced in whole or part by lithography, an early decision about the approach to integrated automation is required.

JDF is not functionally viable across a wide spectrum of multi-branded products. However, several equipment manufacturers usually in conjunction with established first tier partners can offer an almost complete turnkey operation depending specifically on the printing requirements.

Our approach would be to determine the exact most productive equipment types required that can cost-effectively and production cycle-time effectively produce the required product from start to finish. As a part of their proposal each manufacturer would be asked to specify in detail exactly what they would supply, with what interfaces, and what their partners would supply, with a clear indication of what I would have to supply/create in order to develop a fully integrated printing operation. This approach is intended to utilize whatever combination of JDF-enabled and proprietary integration software that may be commercially available so as to minimize what has to be developed in order to create a fully integrated plant.

This is not an easy low-cost approach, but we believe it to be the approach that could be most effective in creating an integrated Greenfield printing production operation that would provide a substantial competitive advantage in the marketplace.

This is a barebones description outlining an approach to establishing an integrated printing production operation. It is suggested that the reader go back into the PRIMIR Executive Insight report "The Status of Integrated Automation in Commercial Printing" and re-read the case study for VistaPrint and Frank Cost's presentation from Print Outlook '06. These present a basic model for an approach to integrated automation.

It Shouldn't Be Necessary BUT

If there were prospects for the development of a JDF specification encompassing most of the industry's equipment and if most suppliers were to conform to those specifications and complete a broad range of interoperability tests proving that their integrated approach worked, our suggested approach for a Greenfield plant would not be necessary. If everything was available and worked, bringing integrated automation to legacy operations would be easier. But, after conducting this research, it is our opinion that the need for automated integration is now. The likelihood of an effective JDF implementation approach is sometime in the future, if ever.

Therefore, my approach is to do it now with the parts of JDF that are available and usable for a specific situation and develop home-grown links wherever it can be shown that these are feasible and cost effective. For existing plants the most important thing to do is maximize current operations before spending time and resources on considering integrated automation.

For the printing industry, integrated automation is a necessary technological step forward --- but a cumbersome, difficult-to-implement JDF has a strong likelihood of being too little, too late.

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