Job Tracking

Executive Summary

An important aspect of keeping ahead of our competitors is the ability to track jobs as they progress through the phases of production in a branch. Our customers value this and will begin to expect it as infomation access continues to pervade our lives. It will also fortify our reputation as a dynamic and responsive company with the skills and services for today and the future. Imagine the implicit expertise we gain by asking customers, "Would you like us to e-mail you when this job is done?" This will help overcome the biggest obstacle customers feel: confidence and trust in our ability to take care of their job.

Job tracking will also provide new capabilities and advantages for individual branches and our company as a whole. Regardless of its specifics, a job can be thought of as the fundamental unit of commerce in which we deal. Gathering information about jobs will provide new opportunities to increase quality and efficiency, show areas for potential growth, and allow us to better serve our customers' needs and make more money doing it. For example, an analysis of job trends could help make the decision to lease another 5390 or, if the number of digital originals is on a steady rise, switch to a Docutech.

There are some job tracking procedures in place and others are being implemented now. This document proposes a strategy to further develop our current tools and thoroughly educate ourselves about our needs. The aim is to gain enough experience to plan and build a consistent, unified, and largely automated system.

The first section outlines the different components that constitute a tracking system. The role of each component in the overall process is then discussed in more detail, its present form described, and recommendations for the future direction of each component are made. The second section describes a transition plan from the present state of affairs to a workable short-term solution. The final section presents a vision of such a design built into our point of sale architecture.

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Stages of a Job to Track

In order to begin tracking jobs, their journey must be quantified. There are discrete milestones that mark the progress of any job as it is worked on. These correspond roughly with the areas of production in a branch, with the addition of a few administrative steps.

Without a clear course, jobs are on their own, like bumper cars: those with a driver generally make it around the track, but those without can end up bumped aside and forgotten. With checkpoints throughout the process, all jobs follow an established route as if on a conveyor belt, and are much less likely to be forgotten somewhere along the way to completion.

Such systems are in use in some but not all branches; the Job Tracking System (JTS) will establish a virtual conveyor belt to support branches which operate this way and bring other branches up to speed. Here are the checkpoints along the conveyor belt:

Receipt of Job

Jobs come in many forms and are beginning to come in to branches by many different means. Whether handed over the counter by the customer herself, delivered by courier, brought in by an account manager, received via the Kinkonet workstation, or by some means yet unknown, the JTS will handle this variety. From this multitude of sources the JTS will encapsulate the job into a form that normalizes its passage through the production system of the branch. This packaging is done by way of the Job Ticket:

Produce Job Ticket

All information pertaining the to job is found in the Job Ticket. This includes:

- Date and time job arrives
- Coworker who takes the order
- Customer name
- Customer phone number
- Alternate customer phone number
- Customer account number
- Account Manager
- Services needed:

dtp creation	custom printing	cutting
dtp editing	b/w copies	binding
b/w printing	color copies	auxiliary
color printing	copy proofing	mounting
print proofing	oversize services	other/misc.

- Quality checks: at what stage, at what time, by whom
- Delivery info: where, to whom, when, whether to present invoice
- Current job status
- Follow up: with whom/on-time/accurate/quality ok/correct pricing/customer happy

The Job Ticket accompanies the job throughout the production process, with current status and quality checks being updated along the way. It remains in the system for reference even after the job is completed.

Storage of Job
Copies of the electronic originals are temporarily saved onto a storage device within the branch to safeguard against data loss and the possibility additional prints will be needed.

Production of Proof
The next milestone in a job, proofing can come after a DTP or Kinkonet job is printed, or after a proof set of copies are made. Whether of not the customer has requested a proof, one should be made and checked internally by branch coworkers.

Approval of Proof
If the customer has asked to see the proof, it is presented to them in person, via fax, overnight mail, or other means available to await their approval. For internal proofing, a second coworker should look over the job for any questionable production details or as a quality check.

Production of Copies
Black and white, color, and oversize production times, as well as coworkers responsible, are all recorded in this stage. If more than one type or size of copy is required, they are enumerated on the checklist.

Collating/Finishing/Binding
The type and details regarding all finishing work are listed as separate items so as not to be overlooked.

Delivery
This part of the job ticket will clearly indicate the time, the place, and, if noted, the specific person to whom the job should be delivered. Also if the job is paid for, whether to present invoice, or whether to merely have the person sign for the receipt of the job.

This stage is not considered complete until the driver returns and records the name of the person who signed for the job.

Processes Needed to Track Jobs

In order to achieve all that the term "Job Tracking" encompasses, there are several essential subsystems or processes that need to be developed and put in place. Each of these components contributes to the overall goal of monitoring the progress of any job as it is produced:

Establish job ticket: gather complete client information and job details when order is taken
Route job ticket: send originals, instructions, and necessary materials to appropriate branch(es)
Manage job tickets: direct jobs to departments, monitor deadlines, resources, performance
Update job status: provide feedback on coworker activity and progress of job
Close job ticket: upon successful completion, delivery and acceptance of job
Publish job status: gather information from remote sites and make available to various groups, customers

Several of these processes are in place in most of our branches, however they exist in many different forms and do not interact with each other across the enterprise. Approximately 250 branches are using the Production Tracking Process which is outlined in the upcoming release of the Operations Manual. Some others are using proprietary systems or databases they have developed on their own. Each of these existing attempts at job tracking fall short of being fully integrated into the production process because we have not established the subordinate methods which are the tributaries of a comprehensive system. Our goal is to make each of these building blocks fast, easy, and intuitive for our coworkers to use, compatible with the rest of the pieces of the process, and open-ended to allow future enhancement.

Each of these steps is intentionally generalized to emphasize the shift from procedural methods to object-oriented production. The job ticket is designed to be a universal object that will contain or refer to all information about a job. Adding this layer of abstraction (dealing with objects instead of specific jobs) provides a better reference point to manage the flow of work. The entire commerce flowing through the branch can be quantified, or the focus can be zoomed in to individual departments. Objects can be sorted according to their characteristics (all jobs that will require binding; all jobs currently in the binding department) and schedules or due times made out accordingly. This flexibility is also reflected in the capability of such a model to expand and change as the needs of the branch evolve.

To implement a successful job tracking system there must first be a defined path that all jobs follow. This path exists ad hoc in each branch, to varying degrees of effectiveness. The next step is to formalize and automate the path with a workflow management system. This is an undertaking on the order of the original POS rollout, and like the POS it can revolutionize our company. Done well, it will increase the efficiency of our branches and prepare us for whatever the future may hold.

Establish Job Ticket

Current Situation: An order is taken at the counter and an order envelope or NCR order form is filled in with customer contact information and production requirements. This is the one repository for information about a job, and the information on a job's status and evidence of its very existence is therefore limited. In a perfect example of the tradeoff between control and ease-of-use, information about some jobs is manually re-entered in a log book to attempt to overcome these limitations at the expense of efficiency and simplicity.

Future Model: It is important to realize that the job ticket is not merely a new name for our current order form. The job ticket will be an electronic identification tag for the job, which accompanies it throughout its life, wherever it goes, whether or not the job originated in digital form. All information pertaining to a job will be referenced through the job ticket, including customer information, production details, branches involved, materials and services required, coworkers involved in its production, completion status, pricing, payment method, delivery

information, on-time performance, and customer feedback. By housing the job in such a framework, all jobs are standardized into homogeneous units that can be more easily manipulated.

Route Job Ticket

Current Situation: Since the methods used vary from branch to branch, there is no established way to transfer a job between production sites. The Kinkonet system attempts to address this deficiency.

Future Model: With the advent of a standard job ticket, full instructions and digital original images can be sent to any branch and enter their production stream as seamlessly as a walk-in order. All orders will be treated in the same manner because they will all conform to a standard object model, and the ability to redirect or divide them among other sites will increase our overall capacity to get work done. If one branch is too busy to take on additional work, some of it can be offloaded to another branch or production site.

Manage job tickets

Current Situation: Branches rely on the talent and experience of the store manager, assistant manager and skilled coworkers to direct jobs to the appropriate departments on time, monitor and meet deadlines, schedule and deploy resources as needed, and track the many aspects of a branch's performance. There are countless people, programs and departments working to provide assistance to the branch to help with the increasingly difficult task of managing a branch, but the task is made difficult because we lack a unified operational architecture on which to base the aides. The fragments must be brought together.

The Production Tracking Process (PTP) is in use in about 27% of branches, and it does track jobs if they meet one or more of the following criteria:

Due in more than four hours
Customer's account manager is with the branch
Involves more than one department
Will span more than one shift
Received via Kinkonet
Pickup/delivery orders

The PTP is a well-designed process with a sound flowchart. It should be used as a model for an expanded and enhanced workflow management scheme that automates the manual log book and other processes of the PTP. Such a system will require other elements in the branch such as order taking, quality check procedures, and POS functions to be incorporated into a single coherent model.

Future Model: A system that is easy to understand and easy to use will be more accessible to the average coworker and will allow the branch or assistant manager to delegate more organizational and operational tasks to other coworkers. Managers will be able to concentrate on leading the store because much of the running of the store will be automated. Jobs can be sent to departments within the branch, received from other branches or subcontractors. They are sent to the next department whose services are needed for the job. Each department can instantly see all the work they are required to do, when it is due, and where the request comes from. Once their work is complete, a coworker from the department updates the job ticket and it proceeds to the next stage of production.

> *…images will continue on the path they have been following for the past few years, becoming yet another object type that must be managed by whatever system is managing your unstructured corporate information.*
>
> *- Ronni Marshak, Editor-in-Chief, Patricia Seybold Group (www.psgroup.com)*

Update job status

Current Situation: Most branches do not actively track the status of jobs. The PTP system helps accomplish this for some jobs, and others (such as while-you-wait jobs) may not need tracking. Most jobs would benefit from the ability for any coworker within the branch, or another branch, or at KHQ to access its the location and status.

Future Model: The best method of updating the status of a job is to do so automatically. If the process is too cumbersome, it will fall by the wayside as coworkers run short on time. Even if it is relatively easy, any step that requires a break in the normal production cycle is liable to be forgotten or overlooked. The fastest, easiest, most reliable method as proven by innumerable grocery store checkout isles is infrared scanning of the UPC bar-code printed on every product.

Every job coming into the branch is labeled with a bar-code linking it to the job ticket residing in the workflow management system. A coworker then need only scan the bar-code on the envelope holding the job materials (identifying the job), scan the bar-code on his name tag (thus identifying who is doing the work), and scan the bar-code on the piece of production equipment he is about to use (thus identifying not only the department but the specific machine in use). The system updates the job ticket with all the information, time/date stamping it and making it available to any number of chosen reporting methods.

Whether a customer is on the phone or on the Internet, they need only know their job number to get an update. They can visit any branch with their job id card (which looks suspiciously identical to our current customer comment card with a bar-code added). The card is scanned and up pops the job ticket with current status. When they pay for the job, the job ticket is updated to show "paid" and each branch that was involved in the job's production is credited with the amount of revenue corresponding to the work they actually contributed. Should the customer return their comment card, we have the complete history of the specific job available via the bar-code to determine exactly what happened and take whatever action is deemed appropriate.

> *…all of the places I have worked…have had the same problem that we have…jobs get "lost" in kinkoblivion. Althought this is common, the last place that I worked seemed to have figured out a solution…. They had a bar-code system that tracked jobs from the time they were logged in to the time that they were delivered….and a dedicated delivery courier that were linked to the production facility via radios.*
>
> *- Rich Perry, Kinko's of Ohio*

Close job ticket

Current Situation: There is no listing of completed work other than the jobs themselves in their bins, hold sales, vertical files, or case boxes in the back room.

Future Model: Upon successful completion, delivery and acceptance of job, it is marked as such and considered done. The person who signs for the job is entered into the job ticket as part of the permanent record of the job history, and the job ticket is closed (but not deleted). Jobs that are not closed in a timely manner can be assempled in summary reports for management's review and resolution. Jobs that are completed but not picked up can also be listed, allowing follow-up to get the job picked up and paid for.

Publish job status

Current Situation: There is no method of reporting job status other than on an individual basis as a response to a customer's personal inquiry.

Future Model: As the job ticket is updated, electronic messages are sent from the branch to a central database at KHQ. This requires a line of communication between the branch and KHQ.

There are two types of communications links: an on-demand channel which is opened, utilized, and closed each time a message is to be sent, or a continuously open channel available at all times. Deciding which is appropriate depends on the frequency and duration of the messages which need to be sent. For on-demand channels, there if often a connection fee to open the channel, then a per-minute charge while it is open. If frequent demands are made of such a channel, these connection fees can quickly add up to more than the cost of leasing a continuously open channel. If messages are infrequent, a continuously open channel laying dormant wastes money.

An alternative would be to use the internet to send and receive messages between the branches and KHQ. Status updates will be small and could be encoded, and the internet solves the dilemma of choosing one of the above channels. However, unless a foolproof encryption or security scheme is worked out, fake messages could be sent to branches or to KHQ. This danger, however unlikely, is severe enough to make this option unattractive.

The best alternative is to allow messages to stack up and then send them in a batch over an on-demand private channel. This is not an option for urgent or real-time information, but if the messages can be delayed the number of connection fees drops proportionally to the amount of delay. For the initial stages of our JTS, a batch send with a delay of 15 minutes is an appropriate choice. It will limit the number of calls from the branch to PHQ to 4 per hour, but will provide the database with information no older than 15 minutes, the same delay as on-line stock ticker tapes.

Once an enterprise-wide intranet is established, the above tradeoffs become moot, as status updates can be sent along with all other branch data to and from servers at KHQ.

As work flows smoothly, job status updates are sent automatically and fed into the Kinko's web page server. For exceptions or jobs which do not go well, a decision must be made to report status without any filtering, or to intervene and report only the results of problem resolution. While it may be tempting to suppress job status messages which include to words "late" or "unknown" this is a dangerous precedent. Information is only useful if it is accurate, and savvy customers will quickly evaluate the service's worth. If they find it does not disclose the true status of their jobs, they will deem it useless. Once this opinion is formed, a re-evaluation is infinitely harder and less effective than an unblemished reputation.

Near-term recommendations

Initial attempts at job management and tracking are underway with the PTP system. Though the process has the drawback of being a manual one, it will be useful in evaluating the concept for mainstream production in branches. Once rolled out and field certified nationwide, comments and suggestions will be used to help plan the development and release of an automated workflow management and job tracking system.

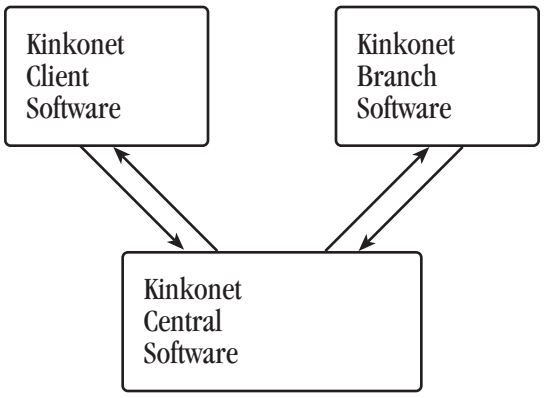
As an adjunct to the PTP, the Kinkonet software should be enhanced in order to begin collecting job status updates electronically. Not only will this fulfill a current demand voiced by Kinkonet clients, it will also provide us with experience in job status tracking and remote updates that will be used as input into the development of the workflow management and job tracking system.

> *A successful implementation is framed between the need for improvement, the costs and risk of improvement, the evolution of the technology and the rate at which the culture can adapt. Although not all of those elements can be controlled, you can increase your chances for a successful imaging project by effectively balancing them with an enterprise assessment and planning project.*
>
> *-Joe Abrams & George Smith, Senior Consultants, Apex Associates (www.apexvision.com)*

The PTP system will become operational with the next release of the Operations Manual in the third quarter of this year. Following the recent trend in soliciting feedback from the field on new systems, the PTP should be amended with an overt advertisement to collect user opinions and ideas. In order to generate a stream of input from the field, the effort should be fairy aggressive – perhaps a KVMX hotline which appears at the bottom of each page of the log book. This would encourage any and all coworkers to pitch in with their ideas, and maybe the five best contributors have the option of coming to KHQ for some period to work on the development project. This is one way to put together an "enterprise assessment and planning project."

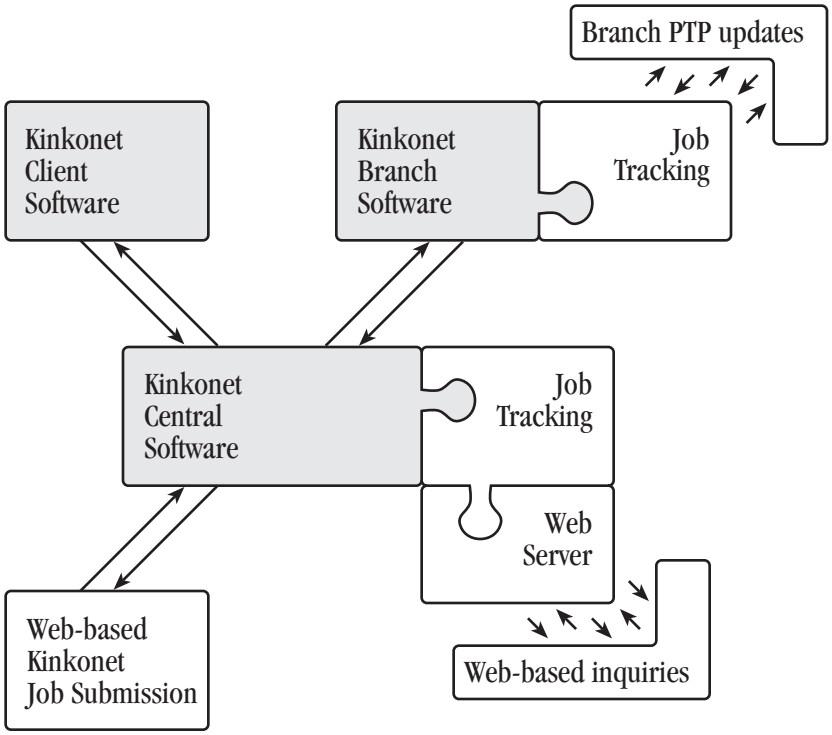
While operational input is being collected, a mapping of the technical considerations can be accomplished using Kinkonet. The current model is illustrated as follows:

- Client software sends jobs to Kinkonet Central, and can receive messages from Kinkonet Central.
- Kinkonet Central receives jobs and messages from clients. Single-destination jobs are sent to the branch requested by the client without any pre-processing. Multipoint jobs are converted to Adobe's Portable Document Format (PDF), priced, proofed, and sent to the branches requested. Kinkonet Central also receives messages from branches.
- Branch software runs on the dedicated Kinkonet workstation in the branch's production area, waiting for Kinkonet Central to call and deliver jobs. Messages can be sent to Kinkonet Central.



With this basic infrastructure in place to provide the remote reporting mechanism, all that is needed to effect a job tracking system are two components: one to collect job status information, and one to store and report the information. The first will by necessity operate in the branch, just as the PTP log book does. It will periodically poll coworkers when there in an active Kinkonet job in production, and then use the existing messaging function of the Kinkonet system to send the update to Kinkonet Central. This is where the second component will work, as an addition to the Kinkonet Central software to intercept and codify the incoming status messages:

- The existing Kinkonet structure remains intact, with additions.
- The Branch software is modified to interact with a job tracking module. This module is another application running concurrently on the Kinkonet workstation which is active whenever a Kinkonet job is in production in the branch. It demands updates from coworkers at predefined intervals and reports job status back to the Kinkonet Branch software, which forwards the message to Kinkonet Central.
- Kinkonet Central software is modified to pass these special status messages on to the corresponding module interfacing with it. This module keeps track of all jobs in the system, and updates the status of each job as it receives information from branches. This module publishes job histories to our web server so that customers browsing our web site may obtain the progress of their jobs. It can also send e-mail "job done" messages to customer addresses if they have requested such notification. This internet support will complement the upcoming capability to submit jobs to Kinkonet Central using a web browser.



As with the placement of the PTP system, the Kinkonet-based tracking system should have an open condiut for feedback from the users in the field as well as those at Kinkonet Central. This will allow for a thorough understanding of the challenges and considerations we must keep in mind as we undertake the design of a unified workflow management system for the entire branch.

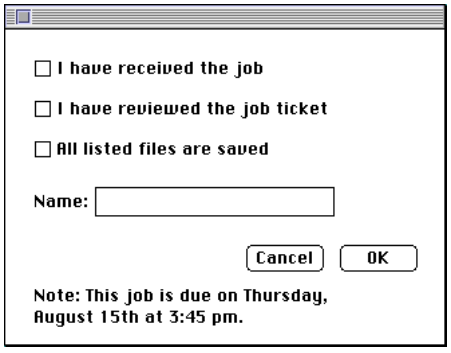
> *All the KGC stores are experimenting with the Production Tracking Process. Southeast Kinko's is using a system called Document Management. These type systems can and should be computerized on the POS…. [Focusing exclusively on] Kinkonet is a huge mistake. Less than .1% or less of all jobs are using Kinkonet. The emphasis needs to be in the field for the 40+ jobs in each branch everyday that are being tracked by hand with the PTP system.*
>
> *-John Trentanove, Kinko's Graphics Corporation*

With both the Production Tracking Process and the Kinkonet-based status reporting in place, we will have satisfied the immediate client demand for information and we will have covered the two main areas needed to learn how to design a single system that does both. Actively soliciting input from the users in the field, incorporating their suggestions into the effort, and remembering the all-important human interface will help ensure a realistic "enterprise assessment" crucial to a successful project implementation.

Kinkonet enhancements

The Kinkonet job tracking enhancement will be comprised of three components. The first collects and reports single- and multi-point job status information from the branch and forwards it to Kinkonet Central. The second, at Kinkonet Central, receives and organizes the information into a database and makes reports available to Kinkonet Central coworkers and other departments as necessary. The final component extracts information from the database and makes it available to customers using the web to retrieve job status.

The first component will run on the Kinkonet workstation (an IBM-PC compatible) located at each branch. Its job will be to monitor the system for incoming jobs and then demand status updates from users as the jobs move through the branch's production system. Each job ticket will include details about the different services required to produce the job, with deadlines at each milestone. Once a job is received, a timer for activity number one begins, with the screen blinking from green to yellow to orange to red, with a countdown timer and hourglass animation as time to the deadline runs out. At each stage of the process, the software will assume the task is incomplete until expressly marked as finished by a coworker in the branch. If the job progresses through its requisite stages promptly, with coworkers notifying the software at each step, the software will periodically dial up Kinkonet Central and update the job status. If time runs out on a certain stage of the job, Kinkonet Central is dialed and notified of the tardiness and an audible and visible alarm goes off in the branch. The coworker is asked to explain the delay and Kinkonet Central is updated. The job will remain flagged as behind schedule, with periodic alarms as reminders, until the problem is resolved and the software, and Kinkonet Central in turn, is informed of the fact.



Acknowledgment

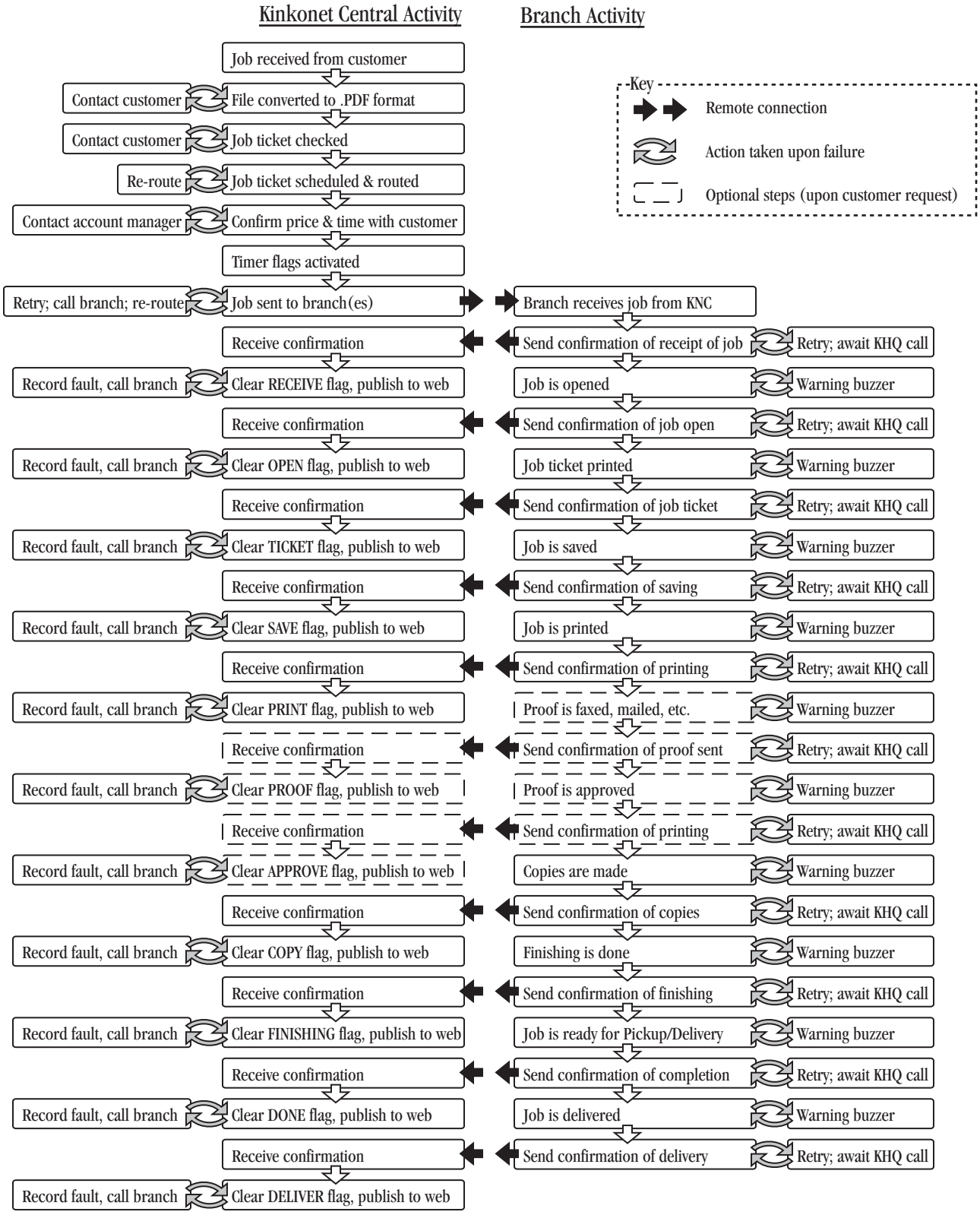
The second component will reside at Kinkonet Central, collecting data from all the Kinkonet sites. There will be a master record for each job which includes production details, client information, the branch(es) involved, and the job's current status at each branch. A timer for each active job mirrors the timers in the branches. As the branch software calls in, the status for the relevant job is updated. If a branch fails to call in, or calls in with a update indicating the job is behind schedule, the software alerts Kinkonet Central coworkers, and keeps track of the branch's performance track record. The software will provide the ability to search by job number, client information, status of job, next upcoming deadline, branches with active jobs, and all jobs done by a certain branch. All searches will be sortable by key fields, e.g., the software will be able to show all branches with jobs in progress sorted from least complete to most complete.

The third component will provide a user interface for inquiries coming in from the internet. Customers will access the service through our web page, and upon supplying a matching job name and number, they will see the status of their job at each participating branch. The display will list the individual branches' address and phone numbers for customer reference. At right is a sample display for a single-destination job. One future enhancement would be to show a miniature preview of the title page to help identify the job.

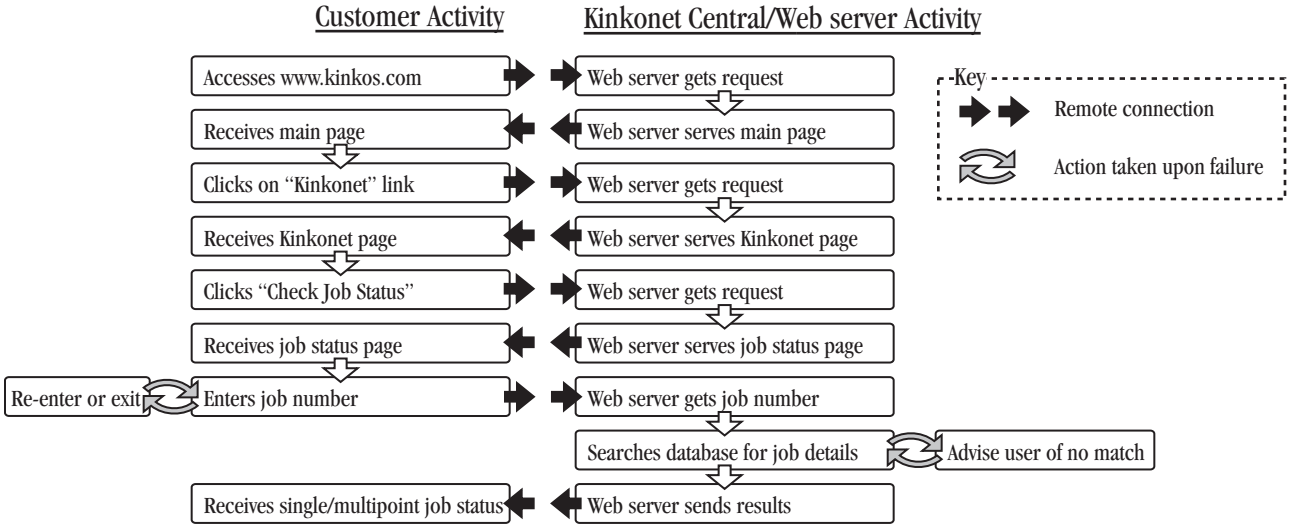
Job number: 9610-66-251	Reference: Betsy's wedding album
Status: **in bindery**	at branch: Santa Cruz I 105 Laurel Street
Job due: 8/15/96 4:00 pm	tel: (408) 425-1177 fax: (408) 425-3945

The three components work together to help keep the branch on schedule (by warning branch personnel of jobs in danger of becoming late), keep Kinkonet Central apprised of the smooth functioning of the system (with regular communication to and from branches),

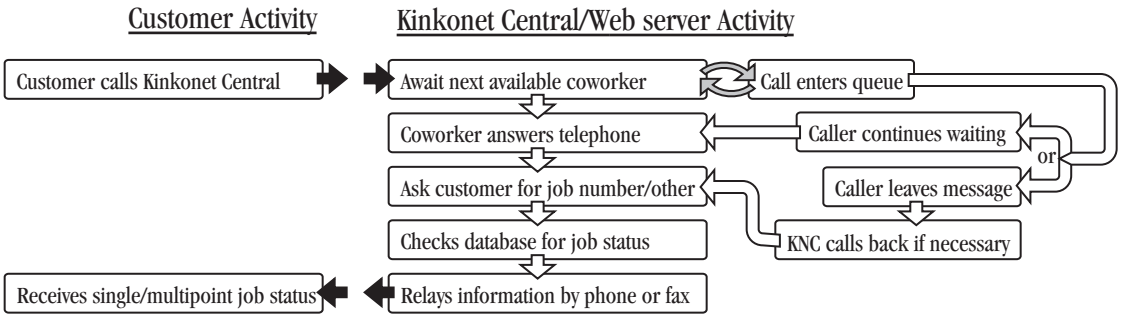
and keep the customer informed as to the status of their job (by their choice of methods). A flowchart of the steps involved in the process of a standard job is shown below.



The following flowchart shows the process which occurs when a customer visits the Kinko's web page to check the status of their job. Branches with internet access (even those without Kinkonet) can use this method for their own information or as a service to a customer who comes into the branch asking about a Kinkonet job at another branch or a multi-point job.



This flowchart shows the process which occurs when a customer telephones Kinkonet Central to check on the status of their job. Essentially the Kinkonet Central coworker acts as the customer's proxy, checking the database on the customer's behalf.



In the event that a Kinkonet Central coworker cannot answer the call, an on-hold recording will include the following: "We're sorry we to keep you waiting. You may continue to hold, or press X to leave a message. Please include your name and number for Kinkonet Central to call you back, or leave your fax number to receive a hard copy of your job's status. If we do not call you back with in XX minutes, we may be unable to reach you, so please call us again. Status updates are also available via the internet – visit www.kinkos.com and click on Kinkonet."

Once the is in the customer's hands, much of the tracking data can be erased since the job details, required services, due times, etc., are no longer relevant. Some information should be retained for internal audits, performance analysis, and quality control statistics (what percentage of jobs are on time?, etc.) This remaining information will consume a small amount of storage, and with the falling price on on-line storage it could be kept indefinitely. This database is a good candidate for Informix: to keep storage space to a minimum, there will be a

single database which serves several applications. Kinkonet Central, web inquiries, and Internal Audit will query the database to retrieve whatever information or report they need.

An important point to realize is that all of these revisions and additions do not affect the installed base of client software. The Kinkonet software in use today provides feedback to the customer, sending them a Kinkonet mail message informing them that their job has been successfully received by the destination branch, and again when the job is completed. With the above enhancements, customers can continue sending jobs the same way they do now, and will simply receive additional details when they contact Kinkonet Central, check their e-mail, or browse the web page. We will not need to undertake a massive upgrade effort for every Kinkonet client.

Other options

There are other ways to accomplish this task, and depending on the results of our pilot programs we may end up choosing one of the following options:

Rely on the Production Tracking Process

The Production Tracking Process in place in about 250 branches is a workable system suitable for refinement and adaptation to include Kinkonet jobs and deliveries. It has the drawbacks of being a manual process with a fair amount of repetitious data entry and no manipulation or search capabilities. Also, there is no way to export the information without another round of data entry. This system is best suited for its original purpose: a limited amount of job management and internal tracking within a particular branch. Its contribution to a universal job tracking system is properly limited to that of an specialized, informative precursor to a future system as discussed in the previous section.

Track only Kinkonet jobs

Kinkonet jobs most strongly evidence the need for tracking due to the remotely processed and distributed nature. It is feasible to develop the additional functions for the Kinkonet system, implement them, and not pursue further development. This would leave us with a complete solution from a Kinkonet perspective but an inconsistent one when viewed from the branch or customer perspective. Like the PTP, this should be viewed as a working model upon which to base a future system.

Stand alone job tracking system

There are existing job tracking applications which come close to matching our needs, and workflow management systerms which digitize paper-based forms and route them electronically through their required steps of processing and approval. These packages were designed for single-site use and lack the ability to interface with a remote database. Any off the shelf application would have to be tailored for our specific environment, and augmented with a communications module to transmit the tracking data it gathered. Despite these requirements, this option might still be the easiest to implement from a technological standpoint. However, it is far from the best strategically or operationally. The expense of another special-purpose machine in every branch, and the difficulty of integrating a foreign procedure into the routines of a branch make this unrealistic. Even with the best human interface, interaction with a standalone machine is hampered by being a totally separate step required in the process of a job. This would lead to the machine either being ignored or interfering with productivity.

POS 2 - the sequel

Integrating job tracking, remote reporting, and workflow management into the successor to the current POS is the second-best option. The best option is to base the next POS upon these principles. This is the most difficult choice because it will require us to rethink our expectations of the POS. It will require a focused and sustained development effort that is also flexible and open-minded.

The benefits to be gained by a well-designed, well-implemented system are worth the time, the money, and the breaking of a few paradigms. Whereas our current POS is a highly developed cash register with add-on modules to perform other tasks, the new system will be entirely different. It will be designed from the beginning to integrate seamlessly into all the various inner workings of a branch, becoming the central nervous system and backbone of operations: a tool which is literally used to manage jobs from their inception to their delivery. It will be a virtual conveyor belt which handles every type of job, and does not let them fall off or get stuck along the way. It will be

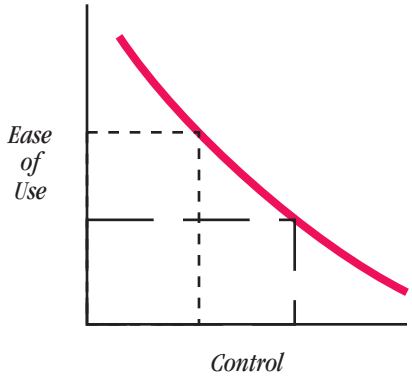
eagerly accepted as a real aide. Customers and coworkers will find it useful, and they will like it. It will be connected to everything. It will be able to do everything. And it will be easy and intuitive to use.

This is the future system that the PTP and Kinkonet job tracking are working toward. They are each inherently useful, but can serve an even greater purpose by educating us on how to achieve a greater goal. This option is discussed further in the "Future Implementation" section of this document.

Human Interface

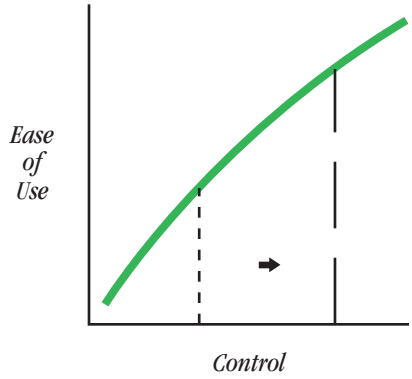
As with any monitoring system, there is a tradeoff between control and ease-of-use at the root of the Job Tracking System. In retail environments the tendency is to favor of ease-of-use, sacrificing capability so as not to adversely affect the speed and level of service to customers. With the arrival of more advanced technology, this tradeoff can be alleviated if accompanied by an equally developed means of interaction between the system and its users. This is the human interface.

Poor Interface



A poor human interface forces a choice between control or ease-of-use. As one increases, the other suffers.

Good Interface



A good human interface allows control to increase without degrading ease-of-use. Efficiency increases.

Our choice must be to serve the customer by not impeding the ease-of-use of the system. By designing a good human interface, ease-of-use can be preserved while increasing the control and power of the system. This will in turn benefit our coworkers who will have fewer customer service issues and increased job satisfaction, branch managers will enjoy better customer satisfaction and branch performance, and KHQ will shoulder fewer support calls and costs. This will lead to better operations within the branch, increased knowledge available to the branch manager and appropriate departments at KHQ, and further justification for the expenditure involved in development of the system.

> *Anything we can do to remove obstacles from our operations people we should do. This will speed up production and increase customer satisfaction and confidence.*
>
> *- David Vogias, Kinko's of Ohio*

Human interface design is a complex topic suitable for study in its own right. For example, the paradigms and logic invoked to build an intuitive and flexible system will vary depending on the task, but should also be consistent within the elements of an overall system. The importance of including human interface development time into the development process and budget cannot be overemphasized.

Success or failure of a system can hinge upon the quality of the human interface. Since we are a high volume retail operation with many different tasks occurring simultaneously, used by many different coworkers at multiple terminals throughout the branch, the human interface must be of the highest caliber if it is to actually be used to its fullest potential.

How to proceed

The actions needed can be broken down into five discreet yet cumulative stages as follows:

Stage 1 (in progress via Operations Manual)

Roll out PTP to all stores in upcoming Operations Manual
- Ensure store's production system is working
  - Production Tracking in place
  - Useful to coworkers
  - Adhered to by coworkers

Kinkonet jobs will be tracked in house by PTP
- Integrate Kinkonet jobs into the store's regular production system
  - Send only output ready jobs to Kinkonet workstation
  - Job entered into PTP and flagged as Kinkonet job
  - Job enters normal production queue

Stage 2

Enhance status database at Kinkonet Central

Begin using/testing Kinkonet status database with manual (phone) status updates from PTP

Stage 3

Code enhancements to Branch software: communication of job status via Kinkonet software
- Two-way communication between Branch software and new tracking module
  - Coworker updates job status module
  - Status send to Kinkonet Central by Branch software

Code enhancements to Kinkonet Central software: receive and collate job status information
- Route status to database
- Send status message to customer mailbox

Begin using/testing integration with stage 2 database

Release/upgrade all stores and Kinkonet Central

Stage 4

Design and build interface to web site including API for client search functions

Begin using/testing interface with stage 2 database

Stage 5

Decision: Are these valid prototypes for a store-wide system for all jobs?

Approve, design, build, test & release *Gestalt* with bar-code scanning workflow management

Future Implementation ("*Gestalt*")

> **gestalt** \gə-'stält\ *n: a structure, configuration, or pattern of physical, biological, or psychological phenomena so integrated as to constitute a functional unit with properties not derivable by summation of its parts.*
>
> *- Merriam Webster's Collegiate Dictionary, Tenth Edition*

Objective: Design a point of sale system based upon the management of job tickets which detail the requirements, deadlines, status, and charges for all jobs which pass through the branch. For this discussion, we will call this proposed future system *Gestalt*.

Case 1: A customer enters the store with a two page handwritten letter. After talking to a coworker (greeter or front counter) they are sent to typesetting to place and pay for their order, receiving an order confirmation number. They can check on the status of their job using their internet browser and this number. They return the next day to pick up their order, copied onto the specified paper and bound according to their instructions.

Case 2: A customer sends a job from home via Kinkonet to three destinations using their Kinko's account. They are again given an order confirmation number – on-line – and can track the job as it is produced in each of three locations, to the point of knowing who signed for the deliveries. The job is sent from KNC to the branch and enters the system along with the same job ticket which all other jobs get, including all job details and pricing. The customer's account is billed when each branch's delivery driver returns and confirms delivery on the job ticket.

Case 3: KHQ accesses the branch to determine the percentage of waste in the color copy department, the utilization of the branch's 5390, amount of actual work-in-progress, on-time completion percentage of jobs, etc. Special recognition or remedial training can then be scheduled. Managers can actually see how much and what kind of work each coworker does based on their electronic signoff of tasks completed.

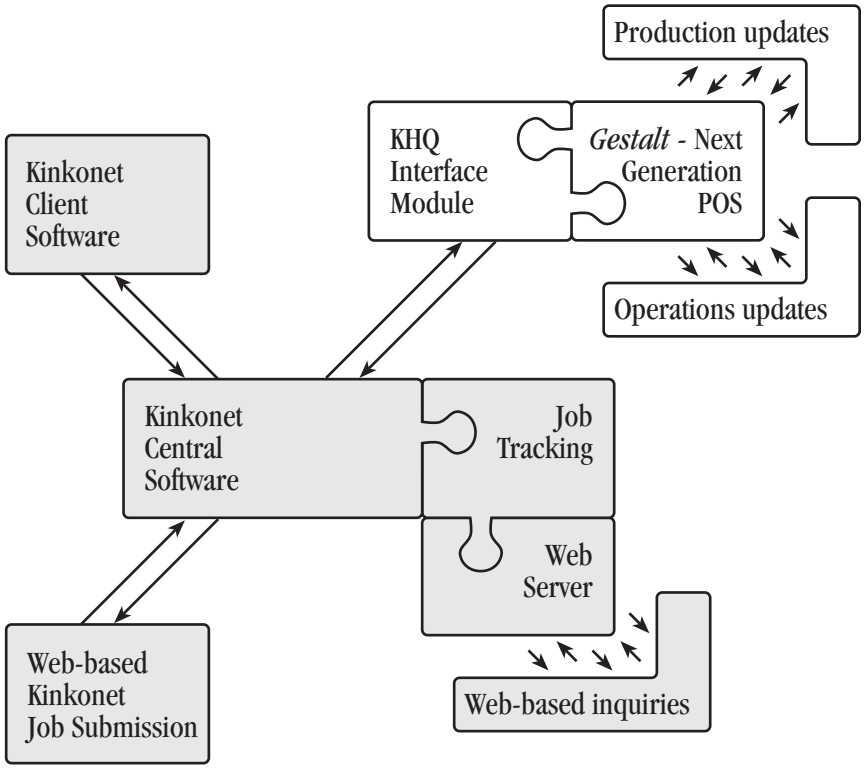
All of these capabilities are easily implemented as part of the *Gestalt* system if they are incorporated into the design from the beginning. The increased scope of the project is more than offset by the gain in functionality, either immediate or in future enhancements. If we are to undertake the effort of developing a new system, then we should do so in an open-minded, interdepartmental, cooperative manner that will guarantee the realization of the best system possible.

The new system must depart from the old concept of being an isolated network in order to tie in to as many systems as we may choose to connect. This is a fundamental choice which will determine if the system will be able to grow and adapt with our needs, or remain a closed loop of limited capability. In order to design a truly useful and robust system which will be welcomed and really help our stores, we must consider as many uses and eventualities as possible. Even if all features are not implemented immediately, ideas should be collected and compiled for future versions, and allowances made in the architecture for the future addition of such capabilities. The question we should be continually asking ourselves is "What other functions can *Gestalt* take over?"

The new system should run on the existing POS hardware in our stores. The savings of reusing the infrastructure already in place in all branches is tremendous, and and though there may be incremental upgrades required, the majority of the original POS investment can be retained. The machines are powerful enough, can accept bar code scanners, and will run new software and even operating systems if need be.

Though development time and testing make a new system like this at least 1 - 1.5 years from release, it will eclipse all other tracking and management methods. This approach will require careful consideration of how our

branches operate, and a rethinking of our methods of product development, but the investment and increased scope of the project will be justified by the immense capabilities of a well designed and implemented universal system.



- *Gestalt* terminals will show QC & other reminders (like MS "Tips") when coworkers punch in and out, log in and out, and as screen savers. Pop-up help will be context-sensitive (like Mac "Balloon help")
- Each coworker will have their own e-mail box to receive messages from branch management and KHQ. A memo to all field coworkers (or any subset thereof) can be sent without using a single sheet of paper. Mail is presented when coworkers log in, so delivery is guaranteed.
- Terminals available for use by all coworkers for quotes, searches, etc. Cash drawer access is only possible when responsible coworker logs into terminal.
- Quotes can be converted to full job tickets by adding info to complete ticket.
- Will interpret and learn from branch history to suggest timelines for incoming jobs.
- Inventory check warns if demand exceeds supply when jobs come in. Will learn best inventory level for all supplies, and notify specified coworker when it is time to reorder (or will automatically send message to vendors or KHQ distribution). Monthly reconciliation with branch's actual physical inventory tracks waste/theft.
- Will interface with e-mail system to send "delivery ready to go" message to on-line couriers.
- Will interface with branch's in-store electronic marketing displays to provide status of jobs for while-you-wait customers, much like the boards at train stations and airports.
- Job ticket closed only when picked up / delivered & signed for / shipped / canceled
- Job record and electronic original retained for a certain period of time after job has been completed.
- Can generate reports listing all jobs in production, in a specific department, on hold, due in next x hours, completed but not yet picked up, etc…

… the possibilities are unlimited. What else do we *want* it to do?

Summary

Job tracking is best implemented by first establishing a comprehensive workflow management scheme and building the tracking into that system. This is a major undertaking which will require a significant development effort and rearrangement of how our branches work. As a prelude and preparation for this change, the PTP is going into effect as a pioneering job management system, and enhancements to the Kinkonet software will provide us with some experience and groundwork in the area of job tracking.

These two vanguards are useful in their own right, and they can provide valuable information to contribute to the design and construction of our future *Gestalt* system. They will be operating in the same environment - and subject to the same demands - as the future system, and so can provide singularly germane insights into how *Gestalt* should work in most every respect. It is therefore important to include in both scout programs a mechanism to solicit feedback from the field. This information will help us get from where we are now to the features we want for *Gestalt*.

Feature	**Now**	**Interim**	***Gestalt***
Jobs binned & retrieved by customer name	Yes	Yes	Yes
Bin number linked to hold sale record	some	Yes	Yes
Bin number recalled by scanning bar-code id	no	no	Yes
Job information & production details kept with job	Yes	Yes	Yes
Job flow managed & monitored by manager / assistant	Yes	Yes	Yes
Job flow information compiled for analysis	no	Yes	Yes
Information compiled automatically as jobs come in	no	no	Yes
Total branch workflow snapshots available in real time	no	no	Yes
Job status available in real time	Yes	Yes	Yes
Job status compiled in one place of reference	no	Yes	Yes
Status updates entered automatically	no	no	Yes
Job status recalled by scanning bar-code id	no	no	Yes
Perpetual, automatic branch performance self-audit	no	no	Yes
All jobs tracked & managed with status available	no	no	Yes

Equally important as the feature set is the human interface built into *Gestalt*. As we learned with the many features of the current POS which are underutilized, a system that is difficult or cumbersome to use will not be easily adopted. Technology is a tool, and its proper use can allow us to fulfill our mission to serve the customer better, faster, and easier.

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Douglas Gauck
Kinkonet Systems Engineer
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