Training for Success and Cost-Effectiveness in LRT

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Many factors influence the success of a new or rehabilitated light rail transit (LRT) operation. These range from car procurement, facilities construction, and infrastructure design to personnel selection and must be integrated for smooth and efficient system operation. One aspect, however, serves as the catalyst to ensure the best possible odds for system safety, success, and cost-effectiveness. That factor is training. Training efforts, both before start-up and delivery and during ongoing operations have a direct impact on safety, operational success, quality, and customer satisfaction—and the expenditures that result from inadequate or ineffective training. Training specifications, contractor liaison, instructor selection and qualification, course presentation, and evaluation and follow-up are important for both emerging and existing systems. Specific challenges are involved with start up of a rail operation from an existing "bus only" system.

Eavesdrop on a conversation on a new rail start-up and invariably financial issues, the need for community involvement, the place of federal, state, and local government, and labor concerns are mentioned, especially if the system is an adjunct to an existing bus system. Include in the discussion those people involved in the engineering, design, and construction of the system, and immediately visions are conjured up of shiny new cars, ribbons of steel rail, webs of overhead, state-of-the-art command and control systems, and facilities to handle every maintenance requirement.

Press a little and the talk will veer to the essential role of system safety, personnel needs, customer service, management information systems (MIS), and so on. But rarely does one aspect come up immediately even though it is one that ties together so many of these considerations and has a direct impact on them—training.

Why is training such an afterthought, an adjunct to primary efforts? Maybe because many people involved in light rail transit (LRT) start-ups or operations have not previously had the opportunity to witness just how crucial training really is.

Perhaps the stage can be set by the following questions: Which one common element directly bears on how well operators use those new cars, or mechanics maintain them, or support personnel troubleshoot and rectify system problems on line, power, signals, and overhead components? Or, on how satisfied customers are about the way they are treated in face-to-face moments of truth with the system? Or on how the public, press, and officials perceive the success or failure of their investment in the system? Or on how safely or cost-effectively both contract and management employees carry out their assignments in a quality manner? Again training is the one commonality.

PREOPERATION

For any of these suggestions to be viable, the newborn rail organization must be imbued with an understanding of and commitment to the importance and role of training. While these perspectives may be shared and supported by the senior management team, insinuating them into the systems approach can be helped considerably by employing at a very early stage an individual with transit management and operations experience as well as training expertise.

Such an operational background will greatly assist the selected individual in both integrating the training efforts with the overall system needs and selling training to fellow team members who are focused on other priorities. This professional must, of course, be well versed in the principles of training, adult learning theory, course design and construction, evaluation techniques, creative use of audiovisual and training aids, and effective interpersonal skills. Do not just settle for someone who was a good "train operator" elsewhere. Recruitment may be facilitated by seeking an individual with a safety/training background, because at many properties these two disciplines are intertwined.

Do not look for someone who will simply write lesson plans and produce slides and graphs. Choose an individual who understands his/her role as an advocate and catalyst, who can appreciate the system view and needs, and advance creative and innovative ways of training designed to support all system elements. He or she should also be excited about light rail transit (LRT). Because many other key personnel will be focused on specific system aspects, look at the trainer as a honey bee, flitting from one area to another, pollinating as he/she goes and providing cross-fertilization that may not otherwise be done. Having the trainer serve in these roles can produce unexpected results.

Indoctrinate the trainer immediately in the various aspects and considerations of the system design, so he/she has a thorough understanding of what training must support. Involve the trainer in the design of the operating plan—he/she will not only be able to provide meaningful contributions, but will also structure the training for the environment in which it will meet its true test.

Develop a training plan, and ensure it has sections for the following audiences: train operators, line supervisors, control center personnel, vehicle maintainers and supervisors, infrastructure technicians, and general management. Ensure that
the last group includes support staff such as public relations, operational planning, customer service, claims, and labor relations personnel. Without training and an understanding of the basics of car and system operation, none of these people can do their jobs effectively once the system is carrying passengers.

Write specifications for the training to be given to each of these groups and decide if the training will be done by the manufacturers and suppliers, consultants, or in-house staff. Outside training that is inadequate or inappropriate may occur if objectives and expectations are not fully detailed. But provide a detailed specification and most contractors will say they have never had to do it that way because no one has ever asked. You'll get what you ask for.

Remember that most bids give training short shrift if the training spec is vague or incomplete, because the bidder will interpret that as a lack of importance and devote few dollars to the area. Attempting to get more or better training after the contract is signed is difficult.

Ensure that the training spec includes sections on who pays for which training-related expenses (course development, instructors, handouts and manuals, classroom needs, participant salaries); scope of training (classroom, practical work, and follow-up); objectives to be reached; course content; training plan submission and approval requirements, format, and dates; instructor qualifications; training aids and equipment and their disposition after training is completed; training materials; training facilities (who provides) and locations; hours and days of the week of training; pilot course procedures; safety; course listings and lengths; schedules for individual course design, approval, presentation, and updating; the numbers to be trained in each type of course, the number of sessions for each course, and a parameter on course duration. Final course length should be determined after vendor submissions are examined.

If the project is not too far along, seek a modification to the line items to pay for salaries of those attending training sessions. This can avoid a substantial hit on the operating budget.

Begin early to develop the template for computerizing training attendance. Without it trying to keep track of who went to what course when becomes hopeless. This information is essential not only to ensure everyone is eventually trained in what they need, but also as a basis for refresher and retraining efforts. It can also be helpful in grievance or arbitration cases in which performance because of an alleged lack of knowledge or training is an issue.

Spend time shortly after bid award briefing the contractor on training procedures and clarifications of the spec requirements. Do not assume that the contractor read the spec the way it was intended. Press the contractor to have a full-time person responsible for training and to have it be someone who knows what effective training requires. Most suppliers and builders will try to use a tech rep who knows the equipment but not necessarily how to instruct groups on its use. If the spec was tight enough in this area, suggest they consider subcontracting the training. But be careful. The subcontractor may know how to teach but may not be sufficiently familiar with the equipment. If the training is subcontracted, make it clear to the prime contractor that it is the prime contractor who is responsible for reaching training objectives.

Work out an early understanding with the prime contractor as to its responsibility for the quality control of subcontractors. Dealing with many different suppliers or contractors is undesirable—deal only with the primary contractor. Establish that the requirements in the spec apply equally to the subcontractors, but be aware that they will be much harder to enforce.

Make a decision early as to whether the contractor will teach everyone, or focus on the LRT system's operations and maintenance instructors who in turn will do the bulk of the training. The latter approach allows company policies and procedures that the vendor is unfamiliar with to be incorporated in the training. It also fosters good student/instructor relationships that are essential in later follow-up and begins development lesson plans, handouts, and so on that will be used when the contractor is gone.

One essential to quality training is the use of a pilot session for each course after vendor's training plan, objectives, and course content (lesson plans, slides, transparencies, training aids, etc.) have been approved. Conduct one session for evaluation. Select the attendees carefully. They should be from a variety of departments and organizational levels (dependent upon the course in question) and discerning enough to give detailed, critical comments, not just on course content but on course conduct. Each pilot will help ensure that safety is being sufficiently stressed.

Schedule the pilot session with a sufficient gap (1 to 2 weeks) between it and the first production course to allow time to gather comments, meet with the vendor and pass on necessary changes, and still give the vendor realistic time to incorporate and rehearse the changes. Follow up to ensure pilot session attendees get any new or updated information.

By the way, as part of the pre-presentation checkout of what is to be taught, review actual handouts, slides, and transparencies for readability, size, content, spelling, grammar, and so on. Many suppliers will try to cut corners by extracting pages from tech manuals for handouts or slides without modifying them. These are rarely acceptable. Also, make sure (in line with the spec requirement) that all material is specifically relevant to the actual system in question, not to what the vendor previously provided to another property, which may or may not have the same equipment. Much credibility is gained when employees see their logo and system in the materials.

Once the changes resulting from the pilot session are incorporated, do not relax. Continue spot monitoring of successive courses, utilize and review written course comment sheets for all attendees, and talk one-on-one with some participants from each session. Be alert to problems and give feedback to the trainers or vendors. If problems are not corrected, do not hesitate to link further equipment deliveries and payments to corrective action. Such action will quickly get the vendor's attention.

If in-house trainers will conduct the bulk of training after they are instructed, have the vendor's lesson plans customized to include the LRT system's procedures, format, and so on. That takes some time and requires the help of an individual adept at both training program design and the system's operating plan and procedures.

It is very important that trainers remain in the loop during system acquisition and construction. They should routinely
attend project meetings and updates, be part of factory visitation and inspection teams, receive change orders and meeting minutes, and so forth.

Schedule training as close as possible to actual commencement of the operation involved. There is a sliding scale; the more people to be trained, the earlier training must start; but conversely, the more material to be presented the more the earliest trained people will forget. Some formal or informal refresher training may be needed at the last minute before operation commences. The better the original training adhered to the three-stage instructional model of presentation (tell and show), application (have student practice), and evaluation (test by oral, written, and practical means), the longer the retention curve will be.

As employees begin using what they learned, do systematic follow-up. This will not only ensure they are not reinforcing their learning the wrong way, but also help pinpoint problems in the equipment or procedures. Establish a feedback loop to get this information to the engineers and designers quickly so it can be acted on.

Trainers are excellent candidates for carrying out acceptance and in-service tests. Once the manufacturer and system staff have accepted a piece of equipment, let the trainers put it through its paces with a checklist of items of most concern to the operator and passengers. They will catch some surprising things before the equipment goes in service. They will also be more effective if they make a plant visit during construction.

If a pilot car is put in test service (which I strongly recommend), ensure that operators are specially selected and are accompanied by instructors. The instructors will not only spot problems, but they can also conduct passenger surveys and act as public relations agents. The instructors will become operational experts and representatives for the operations department.

Wherever possible, before start-up and as part of the training experience, conduct simulated operations. The key is to make the simulations as realistic as possible. Running empty trains randomly up and down the line proves very little. Doing it on a schedule, with required stops, door cycling, and so on, not only tests the operator, but exercises the equipment, proves the validity of the schedule, and flushes out kinks in car components, fare collection system, signal systems, procedures, operator knowledge, and so on. This is an excellent way to minimize opening week problems and ensure system safety.

Remember that simulated service should not be limited to on-the-line operation, but should run through car washers, conducting inspections, sanding, and so forth. A true test of whether the system is ready would be a 2-day full simulation exercise before opening in which bugs are introduced into the system to test reaction time. These bugs can be real or simulated and can range from accidents to equipment failure to improper troubleshooting that spirals into more problems. Again, such a simulation not only minimizes service interruptions, but also ensures the highest reasonable level of safety. Remember, nothing is learned when the system is running well; learning occurs only when it isn't. Do not wait for the first learning experience to be with fare paying passengers.

If at all possible, conduct some limited runs with live passengers before start-up. If liability prevents the use of real passengers, use staff people to play the role.

Provide for thorough documentation of what is taught with detailed lesson plans and handouts, and incorporate a procedure for updating those previously trained with system changes and enhancements.

The selection of operating personnel has a major impact on training effectiveness. The better the selection, the easier the learning. Remember that those trained are a valuable source of feedback on equipment problems and flaws—encourage them and provide them with a mechanism to volunteer that feedback.

TRAINING DURING OPERATIONS

The temptation exists to downplay the importance of further training once the initial courses are all given, but that approach can be a serious mistake. First, a strategy has to be in place to disseminate information on modifications that invariably follow start-up. These modifications change the way equipment is operated and maintained and have a ripple effect on already published rules and procedures.

The challenge is to effect both the reinforcement of employees and supervisors and the distribution of documentation. For uncomplicated modifications, this might be done appropriately with just handouts. More complex changes may require informal explanation and handouts by instructors when employees report for work, or calling workers back to formal training and paying them.

Second, some employees may not have grasped their initial instruction, or their performance may not be up to standard. These people may require counseling by their supervisors, follow-up by an instructor, or one-on-one retraining. The last should usually start with on-the-job observation by the instructor and a review of the employee's record to pinpoint the exact problem, followed by customized retraining. This is especially important for postaccident training.

Third, extended absenteeism because of illness, injury, and so on, may warrant some level of retraining before the employee returns to work. Because of labor relations implications, this issue needs early input and resolution by medical staff, the labor relations department, and the union.

Fourth, make an early decision and commitment to mandated refresher training. One approach is to do it initially after 1 year of operation (to pass on the learning experiences) and biannually thereafter. This could take the form of 1 day training in core subjects that are to be repeated in every refresher program (such as emergency procedures, safety, customer relations, etc.) and other topics that change from program to program. These latter topics can address issues that have become high priority since the last program.

Remember that the presentation of training to experienced employees must be more challenging and less straight instruction, because these employees will tend to think they know it all. One approach is to use performance tests at the beginning of the day to get their attention and show what areas of weakness the instructor must focus on.

Fifth, special training programs may be needed at any time to focus on problems performance indicators have revealed. Just ensure that input on and commitment to the solutions to be taught are obtained before the training begins.

Finally, devise a system of follow-up tests and checks. Instructors and supervisors should regularly ride the system and
observe and report on operator performance. These rides should be both uniformed and undercover (plainclothes). The system should ensure every operator gets a certain number of rides per year, and that immediate rides are taken for operators involved in accidents or public complaints.

Tests and checks should be done through wayside observation and monitoring devices for signal adherence, railroad crossing procedures (if applicable), carrying of required equipment, and so on. These not only ensure safety and reinforce training but help highlight employees who need special help.

RAIL START-UPS FROM BUS-ONLY SYSTEMS

Starting a rail system where a bus operation already exists poses some unique training considerations that will most likely need to be addressed in the context of labor agreements. Two decisions that need to be made very early are whether train operators will come from the ranks of the bus operators or be hired from outside, and whether the light rail management and supervisors will come from the bus organization or from outside.

Each option has pros and cons, and no one can definitely say which is better. However, adequate attention to the issues will ensure that the chosen direction is the best one, not only for start-up but for long-term operation.

Taking train operators from bus drivers’ ranks has the following advantages if they are selected based on work performance and record first and seniority second—and not on seniority alone:

1. They will be proven, good-quality employees who, by their nature, will enhance the success of the operation.
2. This option provides growth opportunity and motivation to current employees, especially because train operation is generally viewed as more desirable than bus operation.
3. Recruiting costs and time are substantially reduced.
4. Union-related issues may be more easily resolved.
5. These employees already have a familiarity with company rules, personnel, procedures, and so on.

The cons are that some bus operators may not easily adapt to the more high-tech environment of light rail. Some pre-screening and performance tests before selection for training help ease this situation. Further, if seniority is the only selection guideline, the best people will not be chosen for the new positions.

On the other hand, selecting the management team from outside the bus company has advantages:

1. Supervising a rail system calls for different skills than for a bus system and a bus person will try to apply approaches from his/her bus experiences.
2. Drawing from the outside produces a broader pool of candidates from many sources (other systems, consultants, etc.) rather than from one—the bus company.
3. Outside people will tend to have had wider experience than those who have spent their careers in the bus company. This wider experience relates to everything from creativity and problem solving to knowledge of light rail techniques and practices elsewhere.

An aspect of outside hiring is the real need to establish a cohesive team of rail and bus managers very early to gain the benefits of an integrated transit service. Otherwise, an “us and them” attitude can quickly develop.

If bus managers are chosen for rail management, send them to several existing rail properties (not just one) for some in-depth training in car operation, maintenance, and system functioning. Also provide them with contacts at as many rail properties as possible and reference materials such as the proceedings reports from previous light rail conferences.

In seeking other properties to learn from, do not ignore the long-established systems. Although they may not have the glitz of the new systems, they generally run much more frequent headways and have to cope with a greater variety of service needs and interruptions. The people there will also have a long history of rail operations. Do not limit the field to the system that opened just before yours.

Finally, in setting up the training program, do not fall in the trap of mimicking bus operator training, which may not have been reviewed or overhauled for years. If anything, a fresh design for rail training should be a stimulus to review and update of the bus training program.

These training considerations are not all that must be looked at, but they will certainly ensure that a new LRT system gets off on the right track.