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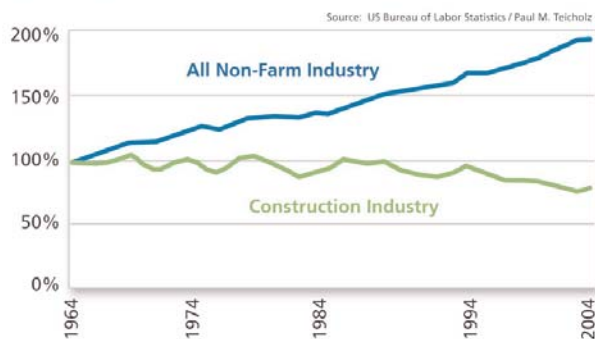
ARTICLE & WHITEPAPER SERIES

Improving Productivity and Profit Performance in Construction & Field Services:

The Value of Mobile Handheld Computing Solutions

Construction and field-service oriented firms – like many other industries – are subject to increasing pressures to decrease costs and to operate at lower profit margins as a result of challenging economic conditions, declining construction productivity, competition, and unnoticed (buffered) process inefficiencies.

Labor Productivity Index



Competing now and into the future means that firms must find ways to lower costs while maintaining quality, safety and service levels.

The most commonly used cost-saving tactics, however, are designed to manage contracts and control outcomes by reporting on schedules and budgets. Not only do such reports usually arrive after the fact, they are not designed to improve productive performance or reduce the cost of information technology.

To achieve desired increases in productivity and operational efficiency, management must first gain visibility into the performance of construction or field-service "production" processes so they can "see" where improvements can be made without negatively affecting quality or safety.

Traditionally, systemic field inefficiencies go unnoticed because of organizational practices and long-standing field habits. Further, the usual performance indicators do not inform management of these inefficiencies due to buffers embedded in traditional schedule and budget estimates.

According to Hans E. Picard ScD, who has applied systematic statistical value analysis on hundreds of field construction projects over more than 20 years, "managing the efficiency of the construction work process can significantly raise productivity."

Improving Management of the Work Process

Improving the work process – gaining maximum value from resources and efficiently, effectively, and safely converting them into a project that satisfies the customer – requires:

- Gaining visibility into the primary components of the work processes, which include labor, materials, equipment, tools, inventory, fulfillment and production reporting.
- Better communication capabilities that provide data access/capture at the point of use and that offers a means to enhance the timeliness and accuracy of data transferred to/from the enterprise data system.

Both requirements are readily met by mobile handheld computing solutions, which additionally provide the benefit of eliminating redundant data entry and "islands of information."

Across both areas, integrated mobile handheld computing (MHC) solutions deliver quantitative and qualitative benefits that lower the cost of production, increase employee productivity in the field, and provide management with the visibility necessary for making improvements in the work process.

Quantitative Benefits of Using MHC Solutions

The benefits that can be calculated include:

Increased Efficiency - Field personnel can complete and record the same tasks in less time than it takes to fill out and turn in a paper record of the task.

Elimination of Redundant Data Entry - Teams can replace paper records and eliminate data re-entry (typing) with a system that synchronizes once-entered data with enterprise systems (this alone saved Roof USA about 60 hours/week).

Higher Data Accuracy - Leverage instant data validation to catch mistakes upon entry – before they reach the enterprise and consume resources to fix.

Completeness of Data - Impose rules to ensure that all required data is entered and validated out in the field, thus eliminating phone calls and duplicate efforts. Transaction time stamps are also automatically captured.

Time Entry Savings - Increase foremen productivity by 1-2 hours/week via more efficient labor tracking.

Phantom Payroll - Hold people accountable and pay for actual time worked. One study shows that the average construction worker is overpaid by 49 minutes per day, equivalent to 204 hrs. per person annually.

Equipment Maintenance - Better manage and track equipment repair and maintenance tasks – reducing the annual equipment repair budgets by around five percent.

Equipment Tracking - Tracking equipment more timely and accurately enhances equipment utilization, saving a value approximately equal to 1% of equipment value every year.

Qualitative Benefits of Using MHC Solutions

Job Costing Accuracy - By tracking labor as it happens, actual labor costs for each task will be significantly more accurate. This leads to more accurate customer invoices, better labor forecasts, and better project management.

Improved Labor Utilization - Faster, more accurate labor information allows for better utilization decision-making and continuous improvements. As the single most controllable expense, labor improvements of 2% to 3% are significant.

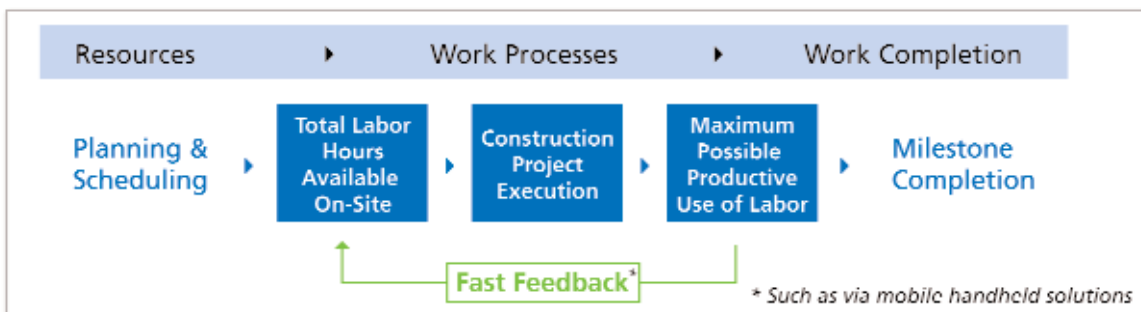
Streamlined Processes - Alleviating tedious and time-consuming processes like writing-in or key-punching paper forms enables more time to be spent on "production" tasks. This way, more work gets done by the same number of people.

Improved Field Decision-Making - Having access to enterprise and project data in the field allows crews to make better, more informed decisions more quickly...such as adjusting a crew for the next day or transferring equipment to another task.

Improved Management Visibility - Having access to enterprise and project data allows field crews to make better, more informed decisions more quickly, like adjusting a crew for the next day or transferring equipment to another project/task.

Employee Satisfaction - Less paperwork, red-tape, and improved data access results in higher employee satisfaction and lower attrition rates.

Improving Field Labor Utilization Requires Fast Feedback





You Can't Fix What You Don't Know is Broken

Without a) visibility into the task and project processes, b) reliable and timely data synchronization between the field and enterprise systems, and c) knowledge of the actual resource utilization practices that take place in the field, management can not effectively make changes that improve productivity, performance or profitability.

With timely insight in to accurate information, however, management can better control costs and margins by exerting productive control over field employees. Mobile handheld computing solutions provide a tremendous way to meet these objectives and increase profitability.

A majority of the ROI value from an MHC is typically (but not always) derived from improvements in labor productivity, equipment maintenance, and utilization of both labor and equipment.

Below are sample calculations, the sum of which begin to reveal the powerful ROI capabilities made possible by mobile computing solutions:

Labor ROI Calculations

Phantom Payroll

.25 hrs./day (1.25 hrs./week)
\$25 per hour
100 field employees
50 work weeks per year
= \$156,250 annual savings

Improved Labor Utilization

1% improvement in field labor utilization
Assume annual payroll of \$10 million
= \$100,000 annual savings

Back-Office Time-Entry Savings

30 hours per week (total)
\$20 per hour
52 weeks per year
= \$31,200 annual savings

Foreman Time-Entry Savings

.25 hrs./day
\$32 per hour
5 Foremen
50 work weeks per year
= \$2,000 annual savings

Equipment ROI Calculations

Equipment Maintenance

5% reduction in repair budget due to more accurate and efficient tracking of PM schedule
Assume annual repair budget of \$200,000
= \$10,000

Equipment Utilization

1% improvement in utilization via status information availability of owned and rented equipment
Assume equipment value of \$5 million
= \$50,000

Partial Annual Savings Summary

Phantom Payroll:	\$156,250
Productivity Increase:	100,000
B/O Data Entry:	31,200
Foremen Data Entry:	2,000
Equipment Maintenance:	10,000
Equipment Utilization:	50,000
	<hr/>
	\$349,450

These examples show evidence of the measurable business value delivered by mobile handheld computing solutions. **For a free copy of our more detailed ROI Worksheet, call 800-676-4427, x1662 or contact us: info@equential.com**

Sources:

Picard, H.E. 2004. Driving Down Construction Project Labor Cost
Teicholz, P.M. 2004. US Bureau of Labor Statistics (online).
Kaplan, R.S. and D.P. Norton 1996. The Balanced Scorecard. HBS Press

Note:

The savings shown in this document are provided as examples of the value that mobile handheld computing solutions can deliver. Actual results vary depending upon the functionality utilized, company buy-in to the technology, and several other factors.