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# TECHNOLOGY/INNOVATION

TECHNOLOGY AND INNOVATION NEWS
FROM THE NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION

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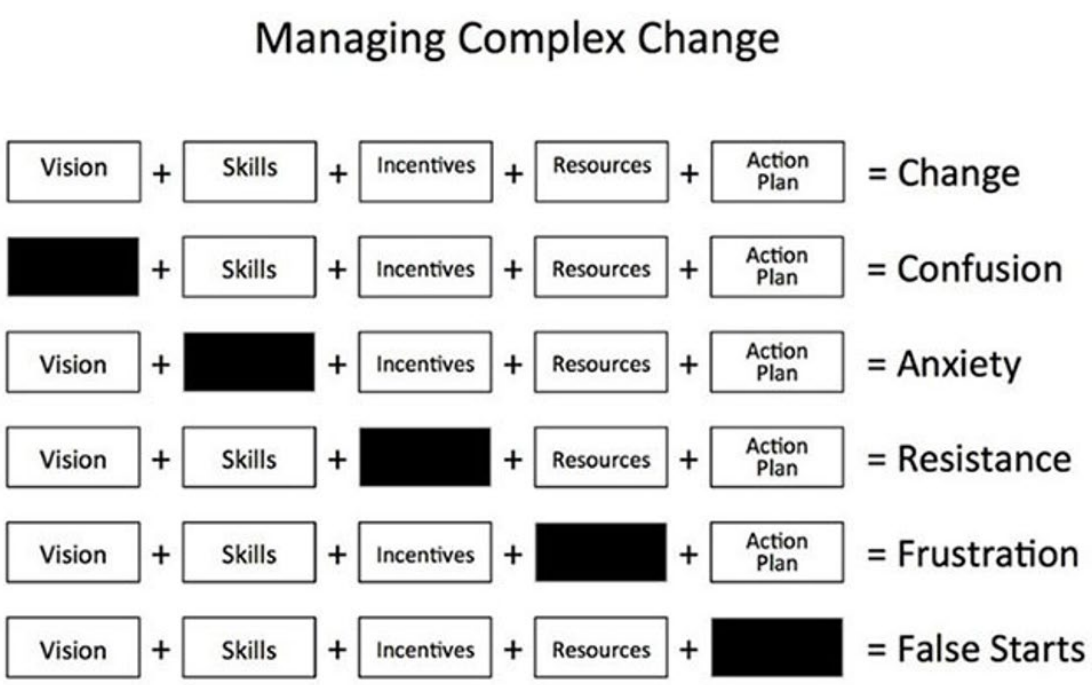
## Making Digital Layout Solutions Work for You

Getting people to adopt new technologies is always a challenge, and the formula to lead a successful implementation process can be riddled with hurdles. The Managing Complex Change chart below often helps identify potential gaps that might foil attempts to improve processes.




Over the years, digital layout solutions like robotic total stations can be a helpful component to managing those improvements. These tools can reduce error and omissions; and when it comes to laying out decks and underground components, the result can be 5x faster than traditional layout methods using string and tape measures. These productivity savings have well been documented by publications many times over the years. Still, there is often opposition to adopting these tools, usually due to the preconception that the tools are too expensive and complicated, and that the cost is unjustified due to too few layout points.

| | Traditional Layout | Conventional Total Station | Robotic Total Station |
|---|---|---|---|
| # of Workers on a Layout Crew | 2 | 2 | 1 |
| # of Layout Crews/Project | 1 | 1 | 1 |
| Hours Worked/Week | 40 | 40 | 40 |
| Hourly Cost/Person | $75 | $75 | $75 |
| # of Layout Points/Day | 75 | 150 | 300 |
| Total Cost Per Point | $16 | $8 | $2 |

*This chart is available at https://www.buildingpointsoutheast.com/robotic-total-station-vs-traditional-layout.*

But this technology has changed a lot in the past two-three years, and it is time to take another look. There are new solutions that are easier to use, cost less and have a quick ROI on even small tenant improvement projects.

### Trimble Spectra QML800: X Marks the spot

The Spectra QML800 starts out at retail price of around $10,500. The system is composed of two lasers controlled by an Android tablet. Once all the points are uploaded on the tablet, the user simply selects any point and the lasers rotate to create, within a few seconds, a bright visible X where this point is located. The point from any map can be entered easily using CAD or CSV file formats. The system can pay for itself in one to three jobs. The Spectrum QML800 can layout up to 112 points per hour - that's 896 points in an eight-hour shift. Factor these numbers into the same ROI calculations as the chart above and the cost becomes $0.67 per point for a one-person operation.


### Second Generation RTS (Robotic Total Station) Devices

Robotic total stations were originally designed for surveyors where clear line of sight is less of a problem than accuracy over long distances. However, over the period of a decade RTS's were adapted for construction, and then more specifically for the trade contractors. The challenge for construction projects has always been getting a clear line of sight around columns and other obstructions, forcing operators to frequently reposition the units to establish new control points. Today there are new tools to help boost productivity, like the Trimble RPT600 and Topcon LN100 that specifically address these more common use cases. In addition to building a tool that addresses workflows, these tools are easier to use and cost significantly less than traditional RTS units you may have priced in the past.


Trimble RPT600


Topcon LN100

While new technologies like the Spectra QML800, Trimble RPT600 and Topcon LN100 are great solutions when working on decks and overhead slabs, most contractors will still find that a traditional robotic station with accuracy over longer distances works better for laying out underground.

If you have additional questions or would like to learn more about any of the technologies covered, feel free to contact the NECA Innovation team. We are here to help our contractors.

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Trimble RPT600 Learn More | Overview Video
Topcon LN100 | Learn More
Spectra QML800 | Overview Video

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