

S. ISAAC, R. NAVON. **Combining automatically and manually collected data for project monitoring and control.** *Gerontechnology* 2012;11(2):325; doi:10.4017/gt.2012.11.02.202.00

Purpose In an extended research program, started about two decades ago, a number of models have been developed for monitoring and controlling construction¹. These include models for the control of materials², earthmoving equipment^{3,4}, guardrail installation⁵ and labor^{6,7}. All these models convert data on the actual project performance that is obtained through Automated Data Collection (ADC) technologies, into information that can be compared with the project plan⁸. Tests that were conducted with these models indicate that the use of ADC can substantially improve project control, but that in the areas that were studied manually obtained data is required as well, due to the limitations of existing ADC technologies, and due to the complexity and unpredictability of human actions. The proposed paper will discuss how manually and automatically collected data can be combined for project monitoring and control. **Method** In addition to ADC, manual data is currently required to support project monitoring – i.e., the identification of deviations from the planned performance that will likely lead to significant problems in the project. For example, tests show that in order to obtain information on the actual duration of activities, a manual recording of their completion time is required in addition to the automated tracking of workers. This can be facilitated through the use of data taken from a computerized daily site report⁹. These data are transformed by a progress monitoring model into information regarding the actual progress, and then transferred to scheduling software. Project control involves taking the measures necessary to correct or minimize significant deviations. However, it is often difficult to automatically identify the actual impact these measures might have on the project. To facilitate project control, a graph-based model that can be used to identify the project elements affected by proposed measures, is expanded to include data that is manually added by users. This data includes tacit knowledge regarding existing buffers in the project, and decisions by project team members on the way in which measures will be implemented. **Results & Discussion** Different methods can be used for the integration of data from manual and automated sources. A model that uses the daily site report for project monitoring was implemented in a computerized prototype and tested in a construction project. Another model, that combines a graph-based representation of the project with manual data from project team members for project control, was tested in simulations with experts. The results of these tests were positive, and demonstrated the usefulness of the proposed approach.

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