# 1. [ADVANCED WORK PACKAGING ‘DIGITAL THREADS’ TO ENABLE SUPPLY CHAIN VISIBILITY ON CAPITAL PROJECTS (FR-TC-03)](https://www.construction-institute.org/advanced-work-packaging-digital-threads-to-enable-supply-chain-visibility-on-capital-projects)

**Report Summary:** This research describes a systematic approach to communicate and visualize advanced work packaging (AWP) ‘digital threads’ that are provided to stakeholders across a capital project supply chain. The seven digital threads with supply chain applications are project schedule, procurement, site materials, structural detailing, steel fabrication, pipe detailing, and pipe fabrication. The research team developed the following products:

* A digital thread map associated with supply chain applications.
* The Material Responsibility Matrix (MRM) (an Excel-based tool and user manual) to facilitate information sharing across the supply chain.

These products enable companies to increase supply chain visibility and incorporate stakeholders for effective supply chain decision-making. The MRM tool and its user manual encourage and facilitate information sharing across a capital project supply chain and promote the use of the AWP ‘digital threads’ concept to better visualize supply chain elements.

**Key Takeaways:**

## (1) Advanced work packaging (AWP) is a structured process that aligns engineering, procurement, and construction (EPC) activities into work packages and uses digital threads (DTs) to improve supply chain visibility ([FR-TC-03](https://www.construction-institute.org/advanced-work-packaging-digital-threads-to-enable-supply-chain-visibility-on-capital-projects), p. 15, Table 7, Figure 3).

## (Project Phase: Prefeasibility through Construction)

* DT020 Project Schedule: Capture core information that is related to schedule management for a capital project.
* DT150 Procurement: Capture core information that is related to project procurement visibility.
* DT270 Site Materials: Capture core information that is related to site materials management for a capital project.
* DT170 Structural Detailing: Capture core information that is necessary to finalize the planning of the steel structures to be changed or constructed.
* DT180 Steel Fabrication: Capture core information that is necessary to track the steel fabrication of structural piece marks.
* DT190 Pipe Detailing: Capture core information that is related to pipe detailing work.
* DT200 Pipe Fabrication: Capture core information that is necessary to track the fabrication of pipe spools.

## (2) The Materials Responsibility Matrix (MRM) is a structured tool that assigns accountability for procurement, tracking, and handling across a project’s supply chain.

## (Project Phase: Prefeasibility through Construction)

The MRM is used to:

* Increase alignment among stakeholders who are connected to the supply chain.
* Enhance the visibility of supply chain information through the implementation of digital threads.
* Improve data sharing among stakeholders across the supply chain.
* Clearly define project stakeholder responsibilities for materials.

## (3) Leverage the Digital Threads List in TC-03 Appendix A ([FR-TC-03](https://www.construction-institute.org/advanced-work-packaging-digital-threads-to-enable-supply-chain-visibility-on-capital-projects), p. 23).

## (Project Phase: Prefeasibility through Construction)

* Each section in Appendix A begins with a table that provides the fields for that digital thread.
* A second table provides remarks concerning the digital thread overview, associated work processes, and team roles.
* The remaining tables in the section provide the variable categories for each digital thread field and sample entries.