

## THE 4C TECHNOLOGY IMPLEMENTATION PROCESS

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The technology implementation process is a means for providing a comprehensive assessment approach that involves four steps: Critique, Calibrate, Certify, and Connect. We'll call this the **4C Technology Implementation Process** (i.e., 4C TIP).



### Four C's of the Technology Implementation Process

**CRITIQUE:** At its core, to critique means “conducting a detailed analysis and assessment”. In terms of a technology assessment this means evaluating if the technology can perform as designed. Often this involves evaluating the technology relative to a specific industry standard, although in the absence of an industry standard technology providers must clearly understand needs of their industry to ensure their technology meets those needs.

**CALIBRATE:** Having completed the “critique” phase of the process, the technology must be calibrated, or optimized, to meet specific needs of industry. Often this is an iterative process, where the technology provider transforms their technology using the Technology Readiness Level (TRL) ladder<sup>1</sup> from *technology concept* (TRL 1) to *qualification testing* (TRL 5), with the eventual goal of proving the technology’s worthiness through *sustained operation in the field* (TRL 7). Ensuring the technology has been calibrated requires advanced engineering, often involving numerical modeling, full-scale testing, in situ monitoring, and material selection. It is essential that the calibration process vet any performance deficiencies before they are put into service. Failure in the field is not an option and a well-designed calibration phase will ensure this does not happen.

**CERTIFY:** Certifying a product is where the “trust, but verify” concept comes into play. As users of products, we all like to know that technologies are certified and it’s best when done by a third party. When third party organizations, such as ADV, certify a technology it means an unbiased organization has “signed off” that a technology either meets the requirements of a given standard, or that technology does the technology provider claims it can do.

**CONNECT:** Even though a technology might be completely-suited to meet the needs of a given market, a gap often exists in connecting technology provider with technology users (e.g., oil & gas operators). This connection is critical in terms of financial sustainability for the technology provider, but equally critical for the operator to ensure they are using the most up-to-date technology to maximize safety, reduce risk, and achieve maximum operational efficiencies.

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<sup>1</sup> For additional information, read *Seven Rungs of the Technology Readiness Level Ladder* on [www.advintegrity.com](http://www.advintegrity.com).