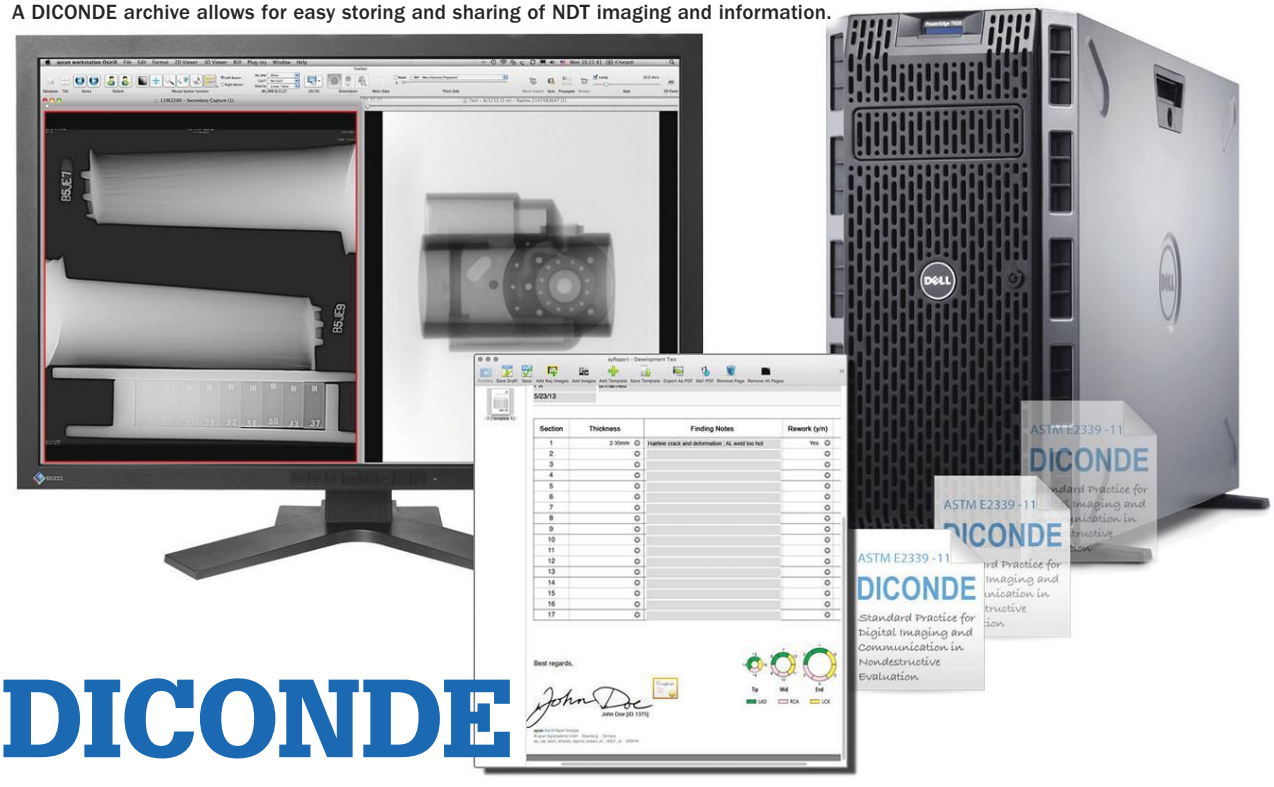
A DICONDE archive allows for easy storing and sharing of NDT imaging and information.



DICONDE in Digital NDT Taking Hold

WITH THE CONTINUED DEMAND FOR MORE SPEED, SECURITY, AND COST REDUCTIONS, WE EXPECT DICONDE IN DIGITAL NDT TO CONTINUE MAKING SIGNIFICANT PROGRESS

BY PETER BRUNNENGRÄBER AND ANDY FERRO

A major milestone in Digital NDT was reached this February— the American Society for Testing and Materials (ASTM) E07.11 subcommittee published the new ASTM standard E3147-18 on DICONDE Interoperability. This new standard should help further establish DICONDE in Digital NDT environments and increase the benefits of its use.

THE EVOLUTION TO DIGITAL NDT

Established in 1993, DICONDE (Digital Imaging and Communication for Non-Destructive Evaluation) is an imaging and archiving technology standard that defines all image attributes and elements in a universal format. DICONDE was based on DICOM (Digital Imaging and Communications in Medicine), a proven imaging and archiving standard in the medical industry. In 2004, the ASTM E07.11 subcommittee made DICONDE the standard (E2339-11) for NDT (Non-Destructive Testing) with the goal of standardizing an open format for the effective interpretation and preservation of results. Since then, the industry and early adopters have been looking at and have found many other ways they could benefit from this digital imaging format, including enhanced detail from the dynamic brightness and contrast in radiographs; more resilient search, by use of indexed archiving systems; and cross-vendor compatibility. However, initial compatibility between systems was very poor and DICONDE based systems were not able to properly share data. To ensure the various systems that need this data can effectively use it, NDT system purchasers and providers needed a standardized test that could validate that their solutions were interoperable with the systems from other vendors. To facilitate that verification and validation, ASTM published the ASTM standard E3147-18 on DICONDE Interoperability.

THE LATEST MILESTONE— ASTM E3147-18 ON DICONDE INTEROPERABILITY

ASTM E3147-18 describes the recommended procedure for Non-Destructive Evaluation (NDE)/NDT system manufacturers and NDE/NDT system purchasers to assess the

system's level of compliance and conformance to the DICONDE standard. This publication may be viewed and downloaded by visiting www.astm.org and searching for "E3147-18." The standard provides a uniform methodology for validating the DICONDE compatibility between two vendor systems, as well as a uniform method for reporting the results of validation tests. This summary section of the standard is a good primer to DICONDE, introducing many of the concepts and terminology necessary for troubleshooting DICONDE systems. The practice section of the standard provides testing conditions that either purchasers could complete themselves or have vendors complete as part of a contract negotiation. The results have both a detailed section that covers the in-depth details of the DICONDE communications protocol, as well as a high-level executive summary table for purchasing and management.

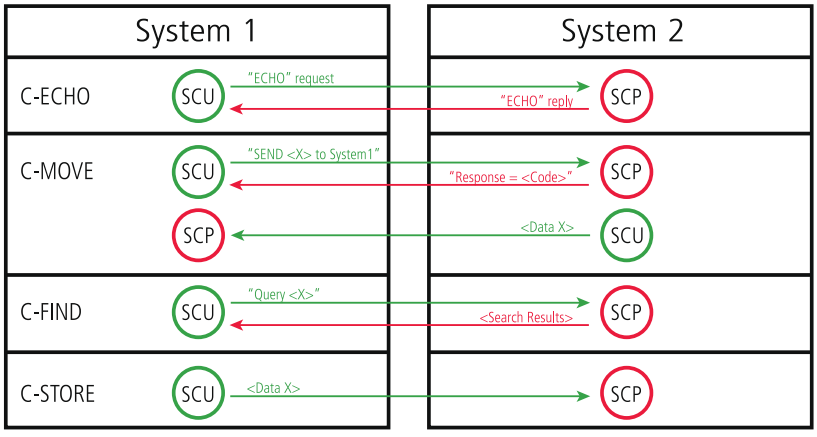


Figure 1. from E3147: A visual representation of the communication between two DICONDE systems.

CONNECT-A-THON

As a way to help advance interoperability, twice annually, ASTM also hosts a DICONDE interoperability "connect-a-thon" event that allows vendors to meet in one place to connect and test the core elements of their systems with other vendors' software. The same principals and testing outlined in E3147 are put to use in these events. Participating vendors have the opportunity to send their technical field staff to trial their products outside the lab environment and experience first-hand how other systems are handling their data. The testing is done in an open-forum format with mod-

eration, and results tallying managed by a subcommittee chairman. E3147 builds on the work of E2339, which has already made a significant positive impact in the industry. Bill Meade, senior engineer and Level III inspector from Boeing, states, "When the ASTM E2339 standard was published, DICONDE interoperability was, practically speaking, only an idea in concept, with few vendor files capable of opening on competitor's systems. The hard work of the Interoperability Working Group has turned this idea into reality, with the vast majority of systems now capable of easily sharing files."

A CALL TO ACTION

We're encouraging both users and vendors to participate in the DICONDE Interoperability Committee. The benefits for collaborating in the evolution of the DICONDE are tangible for customers and vendors alike. Participation provides experiences with the structure of DICONDE data, and how it can be used, plus the ability to shape future ideas and practices for storing and referencing data. The group is also looking to expand the use of DICONDE outside the general radiographic space, and encourages uptake for other inspection methods such as UT.

WHAT'S NEXT IN DIGITAL NDT

With the continued demand for more speed, security, and cost reductions, and with Digital NDT already in use by many industry leaders, such as Boeing, we expect DICONDE in Digital NDT to continue making significant progress. Already being explored by the ASTM E07.11 committee, and other DICONDE Digital NDT users, are improvements in "as displayed" referencing techniques that deliver future-proof uniformity to the display of historic radiographs, and the inclusion of other NDT techniques into a uniform, consistent, and cohesive format. With the publication ASTM E3147-18 on DICONDE Interoperability, we expect these and other major milestones on the path to industry wide adoption of DICONDE in Digital NDT to now be achieved with greater frequency. **NDT**

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