


# **Ideas and Efforts to Realize the Digital SI**

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**For you. For us.  
For growth.**

# Fluke and the Digital SI

- Attended BIPM Workshop on The International System of Units (SI) in FAIR Digital Data
  - Attended DCC Conference
  - Active participation in NCSLI 141 Committee (Metrology Information Infrastructure)
  - Meetings with NIST
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# Standardization of Metrology Practices

- Process of Corporate Calibration Certificate Standardization and Improvements began in December 2011
- Calibration Certificate Standardization determined to be biggest win for customers
  - Metrology's "product" is the certificate of calibration

[Link to Fluke Standardized certificate of calibration](#)

# Bottom of Page 1 data



Approved Signatory

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- QR Code
- Calibration Label
- Authorizing Signature
- Address
- Page number and number of pages
- Rev date of template

# QR Code

- QR Code currently contains:
  - Fluke Laboratory Code where work was performed
  - Calibration Certificate Number
  - Date of Calibration
  - Serial number of Device Under Test (DUT)
- The goal was not to have too much information in order to make the QR code too dense
  - Able to make a photocopy of a photocopy of a photocopy and the QR code must still be readable
- We have discovered incidents where the QR code has identified improper alteration of the original calibration certificate (e.g. photoshopping to change the calibration date)
- We are open to other ideas about information to place in the QR code

# Other Information at the bottom of page 1

- Calibration Label – Fluke uses special paper that includes a calibration label that can be peeled off of the certificate and placed on the DUT if the customer wants
- Authorizing signature – Can be hand signed or electronically signed
  - Electronic signatures common for high-volume or highly automated processes

# Fluke's newest Experiment

- Calibrations performed at Fluke Park Laboratories can receive an XML version of the calibration certificate information upon request
  - Primary Standards Laboratory Calibrations
  - Newly manufactured
    - Electrical Calibrators
    - Pressure Controllers/EDWT
    - Drywell Calibrators
    - Liquid Temperature Baths
  - Products serviced at Fluke Park Laboratories

# Fluke XML Data Format

- `<?xml version="1.0" encoding="utf-8"?>`
- `<certificateXml xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">`
- `<laboratoryInfo>`
- `<name>Fluke Park Laboratory</name>`
- `<location>Everett, WA</location>`
- `<accreditationNumber>105016-0</accreditationNumber>`
- `<accreditationBody>NVLAP</accreditationBody>`
- `</laboratoryInfo>`
- `<calibrationSummary>`
- `<certificateNumber>F8857004</certificateNumber>`
- `<calStatus>5522</calStatus>`
- `<procedure>FPC4504.2008 Rev 20190128</procedure>`
- `<dateCalibration>22 Dec 2021</dateCalibration>`
- `<dateDue />`
- `<dateIssued>23 Dec 2021</dateIssued>`
- `<temperature>20.0 to 26.0 °C</temperature>`
- `<humidity>20 to 70 %RH</humidity>`
- `<pressure>95 to 103 kPa</pressure>`
- `<accredited>Accredited</accredited>`
- `<comment />`
- [Link to XML Data Format](#)



# Future Ideas

- Fluke will store all Calibration Certs in an XML format
- Format can be easily translated to Digital Calibration Certificate (DCC) Format once a standard is developed
- Customers that want a traditional certificate will be able to obtain one through a simple tool that converts data back to a format resembling today's calibration certs for print/pdf
- Every calibration data set produced by Fluke for the product will be available through a customer portal, starting with the manufacturing calibration data

# Conclusion

- This is a beginning step, not an end
    - Continued improvements are anticipated
    - Interested in customer feedback
    - Will be participating in standards development
  - Continuing towards goal of being the gold standard for industrial certificates of calibration
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