LL-5: Hands-On Measuring Tool Training: Developing a Program for Local Craftsmen, Technologists and Professionals
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Abstract:
In this Learning Lab, the discussion and hands-on activities will focus on methods, variables and perspectives as they relate to developing, deploying and facilitating a training event. These events are targeted to expanding measurement tool skills to vocational craftsmen, test mechanics, fabricators and quality/inspection technologists. The intention is to create core elements within our NCSLI community which industry partners can easily access to enhance and elevate measurement skills at the shop, floor and lab level by providing cost effective and flexible events which can be deployed to a local audience.

Many training programs include only a lecture/discussion format that might include some written examination to demonstrate competency. In this plan, the Purdue Polytechnic Columbus together with industry partners will develop hands-on activities utilizing metrology tools with targeted measurement artifacts, which may include 3-D printed items or machined metal items, to facilitate learning and provide opportunities to demonstrate competency.

Participants are asked to make basic dimensional measurements with a variety of tools not only to demonstrate competence but also to identify advantages/disadvantages of various tools used to execute the same measurement. As an example, measurements using analog micrometers will require participants to identify the minimum micrometer reading, the sleeve/barrel reading and the thimble reading. Spreadsheets and forms requiring participants to record and subsequently add those reading is provided.

Learning Objectives:
1. Provide an overview of the multi layered learning partnership hoping to be deployed in 2019 going forward.
2. Demonstrate key elements of what various events should be covered and include as hand-on activities.
3. Develop structured activities and criteria for awarding competency badges in dimensional measurement.
4. Recommend that multiple badges may be stacked to earn an NCSLI certification publicized regularly in NCSLI literature (Metrologist or NCSLI Measure publications).
5. Provide an easy to replicate structure for developing further content to meet local needs of industry and targeted audiences in other measurement domains, e.g. temperature, pressure, electrical etc.

**Bonus:**
- Discuss and document potential regional needs and potential trainers with attendees.
- Explore what other measurement domains are of interest.
- Demonstrate hands-on activities, spreadsheets, etc. for feedback
- Discuss whether training should include digital gauges or only analog gauges.
- Obtain general feedback on approach and viability of concepts

**Instructor Curriculum Vitae (CV):**

Dr. Joe Fuehne is the Director and Associate Professor of Mechanical Engineering Technology at the Purdue Polytechnic Institute in Columbus. He earned a BS degree in Aeronautical/Astronautical Engineering from the University of Illinois and MS and PhD degrees in Mechanical Engineering from Texas A&M University. He is a registered Professional Engineer in both Texas and Indiana. He has industrial experience in the aerospace, oil, and automotive industries and has been at Purdue since 2002.

Steven Stahley graduated from the University of Cincinnati with a BS in Physics in 1981 and has been active in the field of metrology ever since. He has worked in various industries including the DoD as a Metrologist at the Naval Avionics Center, Indianapolis Indiana, in Electronic Test and Measurement industry as the Senior Metrologist for the electronics company Wavtek, and at Cummins where he held several positions including Quality Manager, Manager of Corporate Metrology and Director of Measurement Excellence. In 2000 Steve left Cummins and started his own company, SRS Technical Services, where he provided consulting services in the areas of Metrology, Quality Systems and Laboratory Accreditation. Some of his major clients included the United States Agency for International Development (USAID), where he led a project to evaluate the Kirgizstan’s application to the World Trade Organization and any potential Technical Barriers to Trade and National Testing Services (NTS) where he started a Laboratory Accreditation service. In 2003 Steve rejoined Cummins as the leader of Central Measurement Services team where he and his team globally support Cummins plants in the areas of metrology, gage calibration and laboratory quality systems. Today Steve’s organization focuses on four technical area, Metrology Engineering, Measurement & Test Equipment Calibration, Laboratory Management and measurement operations which includes management of the Corporate Measurement Centers in Indiana, EARD and CTC India. Steve’s team also supports Cummins technical centers in quality systems development. He has a technical background in electrical, physical and dimensional metrology and quality systems experience in manufacturing quality and laboratory accreditation. Steve is involved with several professional organizations including NCSL International where he served as the 2003 President, National Cooperation for Laboratory Accreditation (NACLA) were he serviced on the board of directors, and Automotive Industry Action Group (AIAG) where he served as one of the authors of the AIAG MSA Handbook.