MEASUREMENT UNCERTAINTY TEASER VIDEO

MATHMET ACTIVITY : MU TRAINING

14th March 2024

MU training activity - Impact Workshop

CONTEXT

- Measurement Uncertainty evaluation and the GUM are perceived as standard for the metrology community and well established in a wide range of disciplines in the metrology community
- A large number of courses on MU (NMI and academic) already exist, as well as software that allow to suitably train practitioners

However:

- Outside NMI, calibration and testing laboratories, and accreditation bodies, MU is less or even not known
- Engineers, technicians and scientists in Industry and Academia sometimes use the word « uncertainty » with different technical meanings but are not aware of « measurement uncertainty » and do not see the benefit of it

AIM OF THE VIDEO

- To disseminate the topic of measurement uncertainty towards a wider audience, to provide a first hint of what it is and why it is useful
- As a consequence, to encourage interested audience to go further:
  - Training courses
  - Networks and scientific bodies
  - Scientific documentation (e.g. GUM)

Audience :
- Engineers, technicians, scientists outside NMIs and calibration labs, not already familiar with MU
- Decision makers in Industry, Institutions, trade and umbrella organisations who need to become aware of the existence of MU
- May also help those who are already familiar with the topic to justify the importance of their work towards their customers or management
- MU teachers may use the video as an introduction to or advertisement of their basic course

VIDEO FEATURES

- Topic: Measurement uncertainty
- Approximately 3 minutes long, no more!
- Format: mix of videos, images and motion design
- **The design, visual aspect and rhythm of the video are as important as the message since the video target unfamiliar people**. They should not be bored by a technical topic new to them
- Collaborative activity LNE, CEM, IMS SAS, IPQ, METAS, NPL, NSAI, SMD, PTB, UKN, IMBiH
- The teaser video will be developed by a dedicated company using motion design, video excerpts and images
- No mathematical content
- English language
- Subtitles in the different languages of the partners included in a banner at the bottom

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SEQUENCE 1 : INTRODUCTION

Aim	Duration	Message	Look	Design tool	Illustration
Introduction of the topic, should shock the audience to raise interest	30s	Everyone involved in a measurement is concerned by MU since no measurement is perfect Not worrying about measurement uncertainties means risking bad decisions	blurred object/situation that becomes clearer as details are added	Succession of videos and images, possible motion design for the second part	Michael Jordan makes all his shots on target whereas a "classical" player doesn't succeed A customer is unable to fit his oven into the space provided in his kitchen because the dimensions taken into account are too approximate

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SEQUENCE 2 : MU EXAMPLES

Aim	Duration	Message	Overall look	Design tool	Illustration
Use a number of real-life examples (3) to show that MU is universal, so that everyone can relate to it	80s	MU is an universal concept which a large variety of applications Without MU, risk of false decision MU is a quality tool to assess the confidence in a measurement These is a unified framework: the GUM	Design of the examples in their context Illustration that a measurement result is not a single value but a interval that is compared to other or to a threshold	Full motion design	pH measurement of ocean as an indicator of the global warming (Environment) Doping control and risk of false decision (Health) Building energy performance (Industry)

SEQUENCE 3 : DECISION MAKING

Aim	Duration	Message	Overall look	Design tool	Illustration
To identify that everyone is concerned throw-out the data process Sequence that specifically targets the industrial community	30s	The Risk of wrong decision comes from a lack of information, knowledge illustration showing that everyone involved in the value chain is concerned and the cost induced	Design of the examples in their context. Illustration of the different tasks along a product's manufacturing and test chain	Full motion design	Re-use of the doping control or the energy building examples Industrial production line from design to control quality and testing authority

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SEQUENCE 4 : CONCLUSION

Aim	Duration	Message	Overall look	Design tools	Illustration
To summarize the message and to guide towards training in NMIs	20s	To produce good quality data and products, one should be skilled and therefore trained in MU evaluation.	Illustration of a classroom and an expected measurement result Generic acknowledgment/ disclaimer slides in the end	Possibly a mix of images and videos	Training courses images/videos A measurement result is a value and a standard deviation, and/or a distribution

DEVELOPMENT PLAN - 2024

- Written scenario first developed by LNE (Data science, communication and training teams)

- Written scenario finalized and validated by the different partners

- Development of the video first draft by the video design company

- Final version of the English version following feedback from partners

- Videos with foreign subtitles with translation ensured by the partners

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