

## 2nd thoughts on international guidance for reporting measurement uncertainties

R. Collé



BEFORE PROPOSING ANY CHANGES TO GUM

HOW ABOUT WE BEGIN TO ACTUALLY USE GUM CORRECTLY

⇒ LET'S START TO DO WHAT **NEEDS TO BE DONE**  
&  
WHAT GUM **"RULES"** SAYS SHOULD BE DONE

Last "club" meeting (2007 ICRM)

Only 3/15 uncertainty budgets gave any meaningful details  
most component uncertainty entries convey "no information"

Many examples ...

Where is any evidence of replication!

told there are two pending issues

⇒ Get rid of A & B distinction

Why not – doesn't add anything

Will be evident what they are if give component details

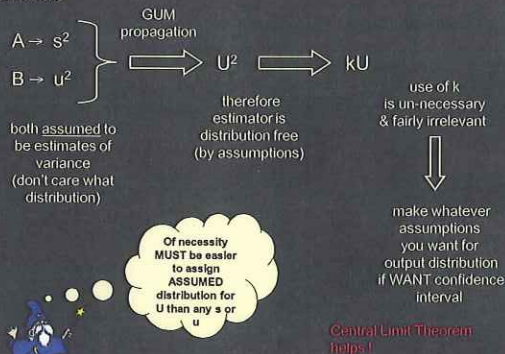
⇒ Assigning distributions to the components

Will add little (or nothing) to what needed or useful  
Will make uncertainty assessment job more complicated

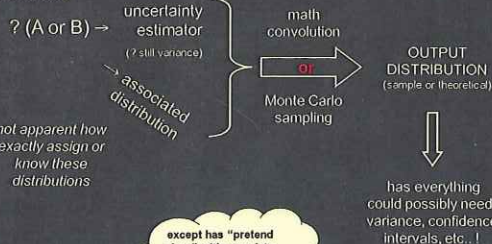
Will probably give result significance it really doesn't have

Do it internally (if you want) just don't ask me to do something that doesn't make sense and that I don't know how to do.

assessments



assessments



But why?

Do we really need it?

So... Why change? What benefit? What gain?

⇒ If you want to do it, fine... But don't make it a new mandatory "rule". I do lots of stuff internally – e.g.  $s = t \cdot s / \sqrt{2}$  if later I want  $kU$  that not underestimated

⇒ Perhaps of some value if have asymmetric distribution (like log normal) but we don't need a new "rule" for this

⇒ Let's not forget how unknown these uncertainty estimates are  
"deadline: 0.1%" means you don't know it to 50%

⇒ Stop rectangle stuff – doesn't make sense  
guess max or estimate variance  
 $0.5 \cdot 0.7 / 0.8$   
max limit? really poorly done

⇒ Who will do all this? ... When easy stuff not now done. Nontrivial math (convolutions or Monte Carlo sampling) will give impression that result has some importance it doesn't possess.

⇒ Uncertainty assessment is NOT process of just calculating something after expt is done. Usually iterative with expts. Will never (if well done) be blind application of rules and algorithms.

## Recommendation INC-1 (1980)

1.

*The uncertainty in the result of a measurement...**There is not always a simple correspondence...**Any detailed report of the uncertainty should consist of a complete list of the components, specifying for each the method used to obtain its numerical value**This does not mean just specify A or B.**Surely, reports for NMI calibrations, standards, primary standardizations, published metrology papers, SIR, measurement comparisons, etc., must detailed uncertainty reports*

5.

*If, for particular applications, it is necessary to multiply the combined uncertainty by a factor to obtain an overall uncertainty, the multiplying factor used must always be stated.**By implication, not necessary for other IMPORTANT applications, like nuclear data, measurement comparisons, etc.,**This was never meant to mean that you had to use a  $k$  coverage factor, much less an arbitrarily assumed one of  $k=2$ .*