Guidance on 100 Word Commentaries for Outputs in REF

Each output should be accompanied by a commentary of up to 100 words that provides useful information on its significance and impact (within academia or beyond).

The feedback from previous panel members is that the commentaries are important in enabling them to form a clear picture of the context and significance of an output, which will often be outside their area of expertise. The commentaries should avoid the use of technical jargon that is specific to a particular CS community, bearing in mind that the 100 words are probably most important to sub-panel members who are not from that community.

The specific wording in the REF documentation is:

"*[The panel considers] that the nature of [the discipline] is such that the significance of an output may not be evident within the output itself. They therefore invite factual information to be provided (maximum 100 words) that could include, for example, additional evidence about how an output has gained recognition, led to further developments, or has been applied. They would welcome the inclusion of relevant and verifiable information for all outputs, wherever available.*

HEIs are instructed to ensure that such evidence is succinct, verifiable, and externally referenced where appropriate. Where claims are made relating to the industrial significance of the output, the name and contact details of a senior industrialist must be given to allow verification of claims. Information provided should not comprise a synopsis of the output or a volunteered opinion as to the quality of the output, and information provided that is of this nature will be disregarded. It is expected that, in most cases, sufficient information will be provided in significantly fewer words than the 100 word limit.".

With a view to encouraging consistency and reducing the later cost of changing these, the proposal here is that 100 word commentaries should, in the following order:

1. Provide an annotation of the form *<code>*, where *code* is taken from the ACM Computing Classification System. This information has been requested by the panel. The classification is available at: http://www.ref.ac.uk/media/ref/content/subguide/datarequirementspage1/UoA11%20list%20of%20research%20specialisms.docx
2. Outline the context for the work *in a single sentence.*
3. From the second sentence, make the case that the paper is significant. The proposal is that the second sentence should start with "*This is significant because*", or something similar, so that the focus on the significance of the case is established early on. We consider that a case can be made for significance on the basis that:
   o the problem solved is an important one, so any solution to that problem is significant;
   o the approach taken to the solution of the problem is particularly appropriate, and that properties of that solution make the output significant; and/or
   o the output describes an approach that has been built on or applied in some way that demonstrates its significance; where this applies, please provide concrete evidence of impact (inside or outside academia) where this is not inherent in the paper, for example if the result has been built on, applied or widely adopted.

Statements of numbers of citations are not allowed by REF, although panels will have access to citation information from SCOPUS. A few examples of statements are included below.

Missier, P., Paton, N.W., Belhajjame, K. "Fine-grained and efficient lineage querying of collection-based workflow provenance." 299-310. *Proc. 13th International Conference on Extending Database Technology (EDBT),* ACM, 2010.

<15> Workflow provenance captures information about an execution of a workflow, and queries over provenance data are widely used to clarify how the results of a workflow were obtained. This paper is significant because previous work on querying workflow provenance traversed the provenance data, whereas this approach only traverses the (much smaller) workflow definition, making relatively few and simple queries into the provenance data itself; an empirical evaluation reveals significant performance benefits. Included in public releases of the widely used Taverna workflow system.

Paton, Norman W, Jorge Buenabad Chávez, Mengsong Chen, Vijayshankar Raman, Garret Swart, Inderpal Narang, Daniel M Yellin, and Alvaro A A Fernandes. "Autonomic query parallelization using non-dedicated computers: an evaluation of adaptivity options." *VLDB J.* 18, no. 1 (2009) 119-140. doi:10.1007/s00778-007-0090-x.

<15> The paper experimentally compares published load balancing techniques for parallel database query processing, identifies weaknesses in those techniques, and proposes a new method that addresses these weaknesses. This is significant because previously adaptive query load balancing techniques had only been compared with non-adaptive techniques and not with each other, and because the systematic evaluation in the paper provided new insights, for example by finding cases where adaptations reduced performance.

Belhajjame, K., Embury, S.M., Paton, N.W., Stevens, R. and Goble, C.A., "Automatic annotation of Web services based on workflow definitions." ACM Transactions on the Web 2, no. 2 (2008).

<16> Techniques that support or automate the annotation of web services are important because such annotations are useful for service discovery and composition, but are tricky and time consuming to author manually. This paper is significant in supporting automatic derivation of dependable annotations, showing for the first time how workflow provenance can be used to propagate annotations between services. The empirical evaluation shows how the approach identified previously unidentified errors with manual annotations of e-Science services.

Holmes, A.P.; Waterton, J.C.; Maciewicz, R.A.; Hutchinson, C.E.; Moots, R.J.; Nash, A.F.P.; Taylor, C.J., "Anatomically corresponded regional analysis of cartilage in asymptomatic and osteoarthritic knees by statistical shape modelling of the bone." *IEEE Transactions on Medical Imaging,* 29(8): 1541-1559 (2010).

<28> Establishing anatomical correspondence between structures visualised in medical images, over a population of individuals, is an essential step in analysing the effects of disease and/or therapy. This work is significant, because it shows that correspondence obtained automatically by optimising a minimum description length criterion is anatomically meaningful, and can be used in clinical trials to improve the statistical significance of image-based biomarkers. In collaboration with spin-out imorphics, the method has subsequently been used extensively in clinical trials and surgical planning applications by major pharmaceutical and orthopaedic companies across a range of disease/therapeutic areas.