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This document reviews the streamlined life cycle assessment (LCA) approach of the PAIA tool that NetApp uses to estimate the environmental impacts of its products. Please note that management of the PAIA tool recently transferred to MIT from Quantis, and the language included below might change.

NetApp will begin to post specific product carbon footprint data sheets to its website in Fall 2022.

What is PAIA?

Product Attribute to Impact Algorithm (PAIA) is an easy-to-use web-based platform that delivers the environmental footprint of Information & Communication Technology (ICT) products. PAIA is also a consortium of ICT peers, engaged in the use and improvement of PAIA tools and discussion of other topics related to sustainability in the ICT sector. NetApp joined the PAIA consortium in December 2021. The goal of PAIA is to help ICT companies perform quantitative and consistent environmental evaluations of their products.

Intended Uses and Limitations of the PAIA Model

The following details about the intended uses and limitations of the PAIA model are taken directly from the membership agreement, signed by NetApp in December 2021.

PAIA is intended to be used according to the following guidelines:

1. PAIA is first and foremost a streamlined LCA methodology. The current application of the Method, the PAIA Tools, can provide a reasonable estimate of the range of carbon impact of a product class.
2. The PAIA Tools can provide the user with an estimate of the uncertainty of the results.
3. The PAIA Method can be used to identify the major drivers of impact, known as hotspots, within the materials acquisition, manufacturing, and use of a generic product. Because the triage is applied from a cradle-to-grave perspective, the Tools should only be used for cradle-to-grave assessments.
4. The PAIA Method can be used to relate attributes of a product, such as the screen size of a television, to its environmental impact.
5. The Method and Tools can be used by OEMs to complete “what if” scenarios on their products, such as exploring the impact of changes to materials or processes on the product’s global warming impact. It could be used within the design phase as a decision-support tool.
6. The Results of the Method and Tools could be used to inform OEMs on areas in which to target additional data collection within the supply chain.
7. The results from the hotspot/what if analyses could be used to initiate conversations related to sustainability with suppliers or to innovate new processes/materials uses.
8. PAIA meets IEC TR 62921 requirements.

The following are limitations to the PAIA Methodology and Tools:

1. PAIA Results should be represented as the results of a streamlined LCA. PAIA may not be compliant with the primary data requirements of some LCA standards depending on the definitions and interpretations of those requirements.
2. At this time, the Tools are not designed to differentiate between products at the SKU level. The Tools can offer a high-level estimate of impact along with the associated uncertainty of the results for product classes, but not for specific products.
3. In the case of a major shift in technology or improvement in manufacturing, the PAIA Tools may need to be reconfigured (as would any study based on extant data).
4. As is typically found in any LCA, Data within the Tools are of varying quality (age, source, sample size, etc.).
5. PAIA Results are not intended to be applied to cradle-to-gate or component-level assessments, as the triage was applied at the cradle-to-grave level and the level of detail in each Tool was implemented accordingly.
6. PAIA Results are liable to change over time as the Methodology is improved and Data are updated.
7. The PAIA Tools were not developed to support comparisons. Indeed, comparisons of LCA Results generally, particularly those developed separately, are fraught with challenges. As such, **we do not recommend that PAIA Results be used comparatively**. Please refer to the Intended Uses document, available in the Guidance section of the PAIA website, for additional information regarding this point.

Communication of PAIA Results

For transparency about the uncertainty introduced through the streamlined calculations, consortium members must include a statement about the uncertainty of PAIA Results in any publication or communication including those results, using one of the two options listed below:

Option 1: Single Value

Numerical results from the PAIA Tools should be primarily reported as a 95th percentile number with a subsequent explanation or an accessible footnote which notes:

- “All estimates of environmental impact and/or carbon footprint are uncertain.”
- The mean estimate
- The standard deviation of the estimate

For example, a carbon footprint could be stated as: “An industry-average notebook with a 12-inch screen used in the EU has an estimated impact of no more than 780 kg CO₂e † (where the “†” is a pointer to a footnote) over the course of its life cycle.” An example footnote text is “†All estimates of carbon footprint are uncertain. [Reporting organization] reports the 95th percentile of the carbon footprint estimate to reflect that uncertainty. For this product, that estimate has a mean of 700 kg of CO₂-e and standard deviation of 50 kg of CO₂-e. Other organizations might report this value as 700 +/- 50 kg of CO₂-e.”

Option 2: Range of Values

It is also acceptable to report the numerical results from the PAIA Tools in terms of a range. To be consistent with single value reporting, it is recommended that MEMBER report the range as the 5th to 95th percentile of the results with a subsequent explanation or an accessible footnote that covers the same points as above.

For example, a carbon footprint could be stated as: “An industry-average notebook with a 12-inch screen used in the EU has an estimated impact of between 620 and 780 kg CO₂-e † (where the “†” is a pointer to a footnote) in the course of its life cycle.” An example footnote text is “†All estimates of carbon footprint are uncertain. [Reporting organization] reports the 5th and 95th percentile of the carbon footprint estimate to reflect that uncertainty. For this product, that estimate has a mean of 700 kg of CO₂-e and standard deviation of 50 kg of CO₂-e. Other organizations might report this value as 700 +/- 50 kg of CO₂-e.”

References:

PAIA Membership Agreement

<https://paia-tool.com>

<https://msl.mit.edu/projects/paia/main.html>