



## *European Aeronautics Science Network*

### **ANNA**

The use of Artificial Neural Networks to reduce material qualification cost within Aerospace industry

### **Abstract**

Within the aerospace industry material qualification and qualification of processes is a very time and resource consuming topic. Therefore the reduction of time and cost for qualification procedures of materials and processes used for aerospace applications is an important objective.

An approach based on artificial neural networks (ANN) is proposed to be used for the data processing of experimental test data of any mechanical test. These ANNs are modelling techniques that are especially useful to address problems where correlations are not clearly formulated. Today there is a large amount of knowledge relating the constituents and process parameters of a vast amount of metals to almost all the damage tolerance parameters. All these data could be analyzed using an artificial neural network (ANN) based model.

The training data could consist of material data determined with different alloys (mainly aluminium) and under various testing parameters. Finally, the prediction of material values through artificial neural network shall be checked concerning degree of accuracy and reliability. The practical benefits of the model will be extended to any other alloys or welded components.

**FOR INFORMATION, PLEASE CONTACT Dr. M. PAPADOPOULOS :**  
**[m\\_papado@mech.upatras.gr](mailto:m_papado@mech.upatras.gr)**