



**software framework for runtime-Adaptive and secure
deep Learning On Heterogeneous Architectures**

Project Number 780788

Project Acronym ALOHA

D3.3	First release of the automated tool for application partitioning and mapping		
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Brief description:

The purpose of this deliverable is to release a first version of the automated tool for application partitioning and mapping. It contains standalone implementation of the single utilities, to be used as a reference for integration, use-case refinement and demonstrator preparation.



D3.3 First release of the automated tool for application partitioning and mapping**Deliverable Author(s):**

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Deliverable Revision History:

Reviewer Beneficiary	Issue Date	Version	Comments
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D3.3 First release of the automated tool for application partitioning and mapping

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Table of Contents

1	Executive Summary	6
1.1	Acronyms and abbreviations	6
2	Demonstrator overview	7

Figures

Figure 1: Overview of the ALOHA toolflow. The components related with the automation of the system-level design process, optimizing the partitioning and the mapping of the algorithm configuration on the target processing platform, are represented as dark and light blue boxes..... 7

Tables

Table 1: WP3 tools 7

1 Executive Summary

This document is aimed to be related to Deliverable D3.3 due at M12. This demonstrator consists in a set of tools, in a first usable standalone version, ready to be integrated in the overall ALOHA toolflow. During the development activities and for release purpose the code implementing the tools has been stored and shared using the <https://gitlab.com/aloha.eu> repository. The repository has been made accessible for project partners and for reviewers. To obtain access to the repository, please fill in the form available at <https://www.aloha-h2020.eu/project/get-involved>

1.1 Acronyms and abbreviations

Acronym	Meaning
AOW	Architecture Optimization Workbench
DL	Deep Learning
M	Month
WP	Work Package

2 Demonstrator overview

Within WP3, four main toolflow components have been prepared to be used within the ALOHA toolflow: System-level DSE engine, Sesame tool, Post-training parsimonious inference module and AOW tool, as shown in the highlighted blocks of Figure 1.

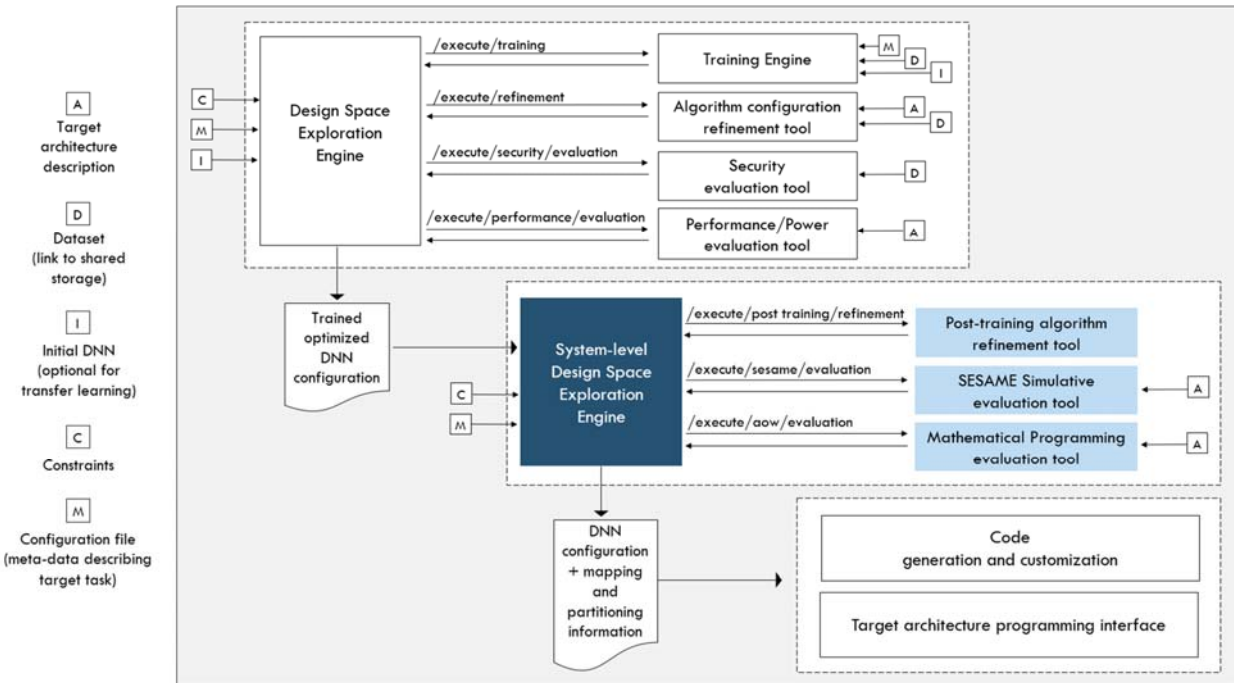


Figure 1: Overview of the ALOHA toolflow. The components related with the automation of the system-level design process, optimizing the partitioning and the mapping of the algorithm configuration on the target processing platform, are represented as dark and light blue boxes.

System-level DSE and Sesame are very tightly coupled and are released in a single project in the repository. Post-training parsimonious inference has been released as a stand-alone tool, capable of being invoked by means of the APIs defined within WP1, while AOW has been prepared to be integrated but is still not available on the repo, being strictly dependent, at the stage, on a set of third-party libraries not available to the overall consortium. The release plan for AOW will be refined in the coming months.

Here follows a list of the related projects inside the repository. A description of the main features of each block has been provided on Deliverable D3.1 at M9.

Table 1: WP3 tools

Tool description	Related task in DoA	Link to Gitlab project of tool components	Main contributors
System-level DSE + Sesame	T3.1/T3.4	https://gitlab.com/aloha.eu/dse_engine	UvA/UL/UniCA
AOW	T3.3	https://gitlab.com/aloha.eu/training_engine	IBM
Post-training parsimonious inference	T3.2	https://gitlab.com/aloha.eu/rpi_engine https://gitlab.com/aloha.eu/nemo	IL

The tools are capable of producing graphical output and to communicate with each other using ALOHA's

D3.3 First release of the automated tool for application partitioning and mapping

API definitions.

A video showing a working example of a Sesame-assisted system-level DSE case is available at <https://ibm.ent.box.com/s/5ahkqr3q87eczs13y3h2sglsygnj6m02>

A video showing a working example of an algorithm adaptation for post-training parsimonious inference is available at <https://ibm.ent.box.com/s/4qu6ava8kqnzmdls85l4c2vrt8qtq962>