

Kick-off Meeting

*Lowering the adoption barriers for
Formal Verification of ASIC and
FPGA designs in the Space sector*

ESA Contract No. 000144681/24/NL/GLC/ov

Hipólito Guzmán-Miranda
Department of Electronic Engineering
Universidad de Sevilla
Sevilla, Spain

Date: 4 June 2024

Outline

- Welcome
- The story so far...
- Development organization
- Project status
- Questions on our part
- Next actions
- Any other business

Welcome!

- I am very happy to begin this project :)
- We had the meeting “*On the potential of Formal Verification for ASIC and FPGA designs in the Space sector*” on the 4th of July 2023: exactly 11 months ago
- 11 months after identifying we had something interesting that could be submitted to OSIP we:
 - Submitted the idea
 - Got it accepted
 - Prepared the proposal
 - Got it accepted
 - Solved some administrative issues
 - Signed the contract
 - Organized the kick-off

The story so far...

- **31 May 2023:** First contact with Alberto Urbón (ESA), related to an FT-Unshades inquiry started by Silvia Moranti (ESA)
- **1 June 2023:** Online meeting with Alberto Urbón. Finally FT-Unshades was not used in the project he was involved, but also verification was discussed
- **2 June 2023:** we decided by email that Hipólito would explore the possibilities offered by the Questa formal tools and we would meet in a month
- **4 July 2023:** online meeting with Alberto Urbón and David Merodio (ESA): *“On the potential of Formal Verification for ASIC and FPGA designs in the Space sector”*. It was decided that the idea of developing a formal verification for VHDL designs/IP cores had merit and could be submitted to OSIP

The story so far... (II)

- **21 Sep 2023:** Idea submitted to European Space Agency's Open Space Innovation Platform (OSIP)
- **20 Oct 2023:** Idea selected for evaluation
- **6 Nov 2023:** Idea selected for implementation, invited to submit a project proposal
- **23 Jan 2024:** Project proposal submitted
- **16 Feb 2024:** Project proposal favorably evaluated: we were invited to a contract negotiation meeting
- **27 Feb 2024:** Negotiation meeting
- **25 Apr 2024:** AICIA's SME status confirmed by ESA
- **8-10 May 2024:** MoMs of negotiation meeting signed by both parties (AICIA-ESA)
- **17-22 May 2024:** Contract signed by both parties
- **1 June 2024:** Project kick-off (administrative)
- **4 June 2024 (today!):** Project kick-off (technical)

Development organization

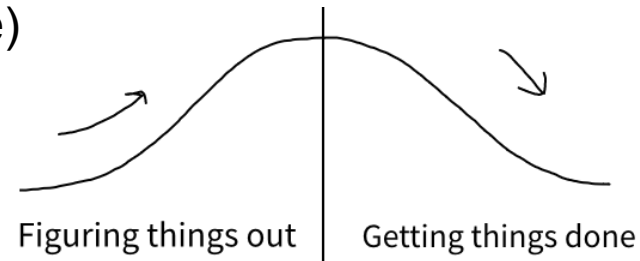
- Gitlab instance at <https://git.woden.us.es>
- Technical Officers from ESA are encouraged to make an account and will be given access to the project
- Tasks added to the issue tracker and organized in gitlab milestones

Project status

- New university machine for license server requested and configured
 - The old one was going reach its end of life in the middle of the project
- Purchase order for Questa Formal tools for the first year signed by us and acknowledged by Siemens
 - Software available now on the Siemens Support Center
 - But no licenses available for generation or download
 - Sent an email to the relevant Siemens employee and opened a support case, hopefully we get some answers soon
- Had a meeting with the Master's student that got 10/10 on my subject about digital design and verification, and he is interested
 - We can extend the time he is working with us by giving him first a grant for three months (see later on the updated Gantt Chart)

Project status

- Already-known tasks added to the gitlab project
 - Organized in gitlab milestones (see next slide)
- ‘Work is like a hill’ (37 signals)
 - Figuring things out -> making things happen
 - Expect more tasks/issues to be added to the work packages as the work to do becomes more defined
 - Particularly on **WP.2** (Formal methodology implementation) and **WP.4** (Creation of repository with examples), which need more advances in the project to be divided in clearer tasks/subtasks
- Finished first task
 - **T.0.1:** Prepare Kick-off meeting
 - Prepared slides for the meeting
 - Added tasks to the issue tracker
 - Created issue templates for MoMs and Progress reports
 - Updated README.md with short description of the project



Open 8

Closed 0

All 8

Filter by milestone name

Name, ascending ▾

New milestone

WP.0: Project management and control

Jun 1, 2024–Nov 30, 2025

Open

eda / fvm

33 Issues · 0 Merge requests 3% complete

**WP.1: Formal methodology definition**

Jun 1, 2024–Aug 31, 2024

Open

eda / fvm

16 Issues · 0 Merge requests 0% complete

**WP.2: Formal methodology implementation**

Sep 1, 2024–Nov 30, 2024

Upcoming

eda / fvm

0 Issues · 0 Merge requests 0% complete

**WP.3: Build & test framework creation.**

Jun 1, 2024–Nov 30, 2024

Open

eda / fvm

11 Issues · 0 Merge requests 0% complete

**WP.4: Creation of repository with examples**

Dec 1, 2024–Feb 28, 2025

Upcoming

eda / fvm

0 Issues · 0 Merge requests 0% complete

**WP.5: Demonstration over two IP cores**

Mar 1, 2025–Aug 31, 2025

Upcoming

eda / fvm

5 Issues · 0 Merge requests 0% complete

**WP.6: Validation and consolidation of the proposed approach**

Dec 1, 2024–Nov 30, 2025

Upcoming

eda / fvm

7 Issues · 0 Merge requests 0% complete

**WP7: Dissemination of project results**

Feb 1, 2025–Nov 30, 2025

Upcoming

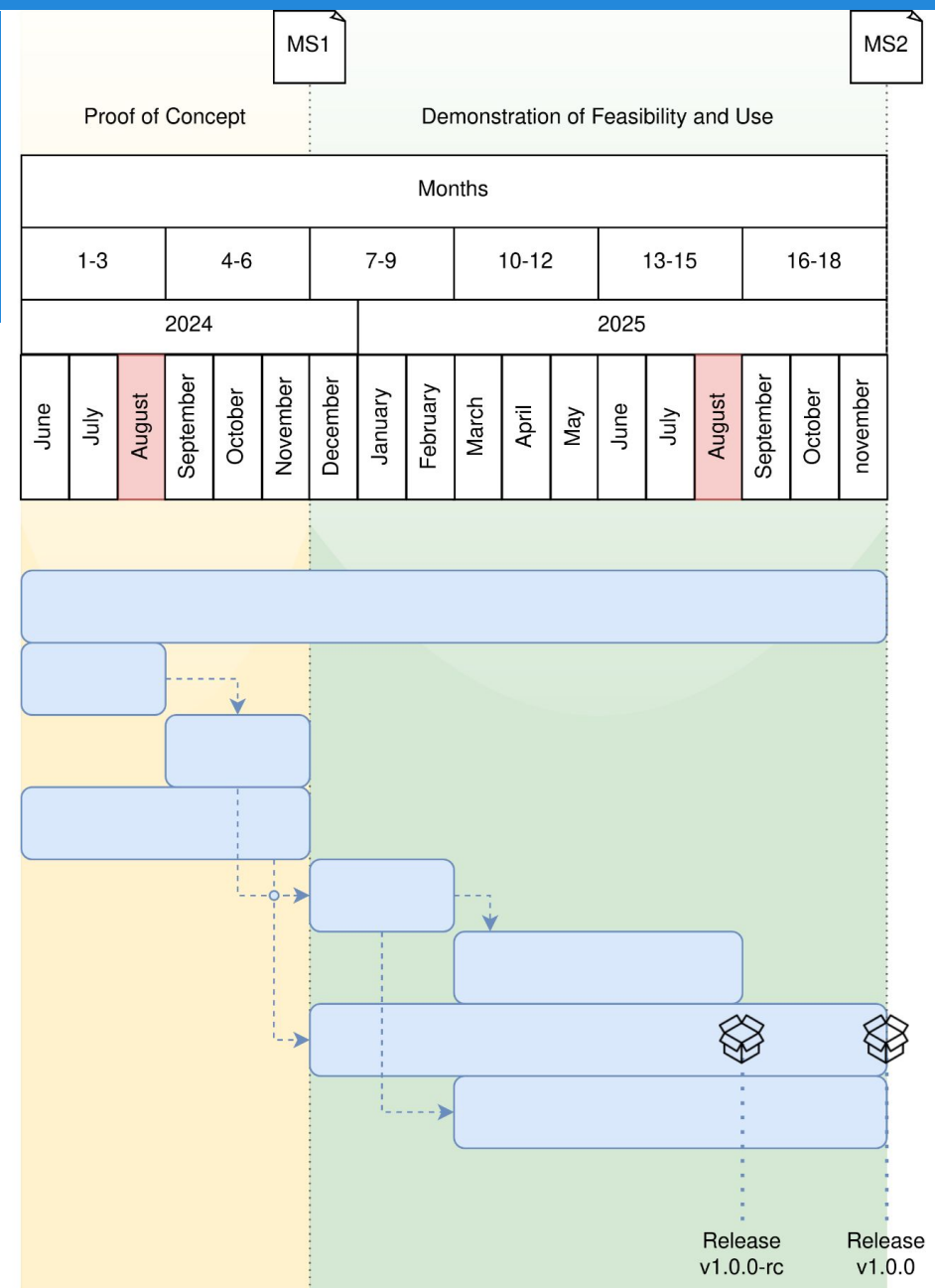
eda / fvm

12 Issues · 0 Merge requests 0% complete



Updated Gantt Chart

WP.0: Project management and control
WP.1: Formal methodology definition
WP.2: Formal methodology implementation
WP.3: Build & test framework creation
WP.4: Creation of repository with examples
WP.5: Demonstration over two IP cores
WP.6: Validation and consolidation of the proposed approach
WP.7: Dissemination of project results



August = vacation months

Junior Engineer

AICIA grant (3 months)

Training contract (9 months)

Questions on our part

Some questions on our part: (answers added in blue)

- For the bar-chart: is it ok if we generate it from the gitlab milestones?
 - See image two slides ago -> it is ok, we can make the capture and include it in the process reports, slides, etc
- How to update project activity in activities.esa.int?
 - I suppose we should receive a user/pass? -> the activity in activities.esa.int should be created within a month, and we should receive the credentials with which to update it
- 'Final presentation recording' is mentioned in section 2.4 (Meetings) of the contract but it doesn't appear in the mandatory final deliverables table
 - Is that deliverable mandatory or optional? -> is mandatory, since it seems to be part of the Final Presentation, which is mandatory
- Should we send final (ESA-approved) versions of MoMs to tecdms@esa.int? -> yes
- Just to confirm: since we don't expect to have any +5000 EUR items in the project, we understand that we don't need to maintain Appendix 2 Inventory / fixed asset record
 - Is that correct? -> yes, no need to maintain it in that case

Next actions

- AICIA-US: Work on the project
 - WP.0: Project management and control
 - WP.1: Formal methodology definition
 - WP.3: Build & test framework creation
- AICIA: Request the Advance Payment
- Next progress meeting: in two or three months
 - September 2024? -> Agreed on 11th Sept 2024, at 10:30. Hipólito will send a calendar event

Any other business?