
UNIC-CASS Design-to-Tapeout Mentoring

Universalization in IC Design by CASS (UNIC-CASS) Meet-up #1 (Aug 23, 2023)

Welcome to :

**CASS Volunteers
IC Professionals
Students
Mentors**



Aug 23rd 2023, 09:00am EDT (UTC-4)

Moderator: Sergio Bampi



Meet-up #1 Agenda

9.00-9.15: Welcome & UNIC-CASS Overview (Sergio Bampi)

Overview of today's agenda (S. Bampi & Jorge Marin , Team leads)

9:15-9:45: "Efabless 'Caravel': Making Open Source Chips Possible"

by R. Timothy Edwards - Tim (Efabless & Open Circuits Design)

9.45-9:55 Q&A and Suggestions by all mentors

9.55-10:10 Useful Links and Resources for Student teams (Jorge Marin, UNIC-CASS Mentoring lead)

10:10-10:20 Q&A

10:20 - 10:25 : Adjourn

Foreword from CASS President Manuel Delgado-Restituto UNIC-CASS Sponsor in IEEE CASS BoG : Jose de la Rosa

- UNIC-CASS is an educational initiative in IC design supported by **CASS** and **Volunteers**
- Free and open-source software as a revolutionary and engaging movement
- Open-source and Open PDKs : bring IC design within the reach of thousands of students, startups, and professionals
- Support to IC prototyping , fabrication and IC testing
- CASS has vested interest in supporting these activities and community building for democratizing (and **universalizing**) IC Design for Students, enthusiasts and design communities worldwide
- Intended to complement the IEEE SCS initiative – Program PICO

UNIC-CASS Program Overview



Universalization in IC Design by CASS (UNIC-CASS)

For more information, visit: <https://ieee-cas.org/universalization-ic-design-cass-unic-cass>

What is the UNIC-CASS?

A structured end-to-end Integrated Circuit (IC) design-to-test experiential learning program. strategic cooperation with the SSCS serving geographical-complementing locations.

How it works?

- 1. Learn:** Jumpstart your journey from carefully curated materials on CASS MiLe platform
- 2. Design:** Hands-on design mentoring by experts in the field,
- 3. Fabricate:** Submit designs to CASS-sponsored fabrication runs via Efabless chipignite program
- 4. Test:** “Bringup” your fabricated chip at selected testing facilities.

Aim:

To improve the know-how and accessibility to IC Design technologies for enthusiasts and design communities worldwide

Benefits:

1. Learn by experience from IC to chip test/bring-up.
2. Discover using open-source EDA tools and Open PDKs.
3. Enhance students' professional careers

Material available in GitHub (github.com/unic-cass), slack channel (<https://unic-cass.slack.com/>), CASS Microlearning (<https://ml.ieee-cas.org>)

UNIC-CASS Milestones - 2023

| Date | Activity |
|-------------------------------|--|
| June 22 nd | First Call for Participation |
| July 28 th | Deadline for Students Proposal submission |
| Aug 17 th | WW UNIC-CASS Webinar (world-wide) – Stream from CASS Resource Center |
| Aug 18 th | Announcement : 27 Design teams Selected |
| Aug 23 rd – Oct 30 | -Design-to-Tapeout Mentoring sessions -Learn from specially curated educational materials |
| Nov 6, 2023 | Efabless Deadline for Clean & Top-level layout submission |
| April 2024 | Start Chip test/bring-up |

UNIC-CASS thanks to:

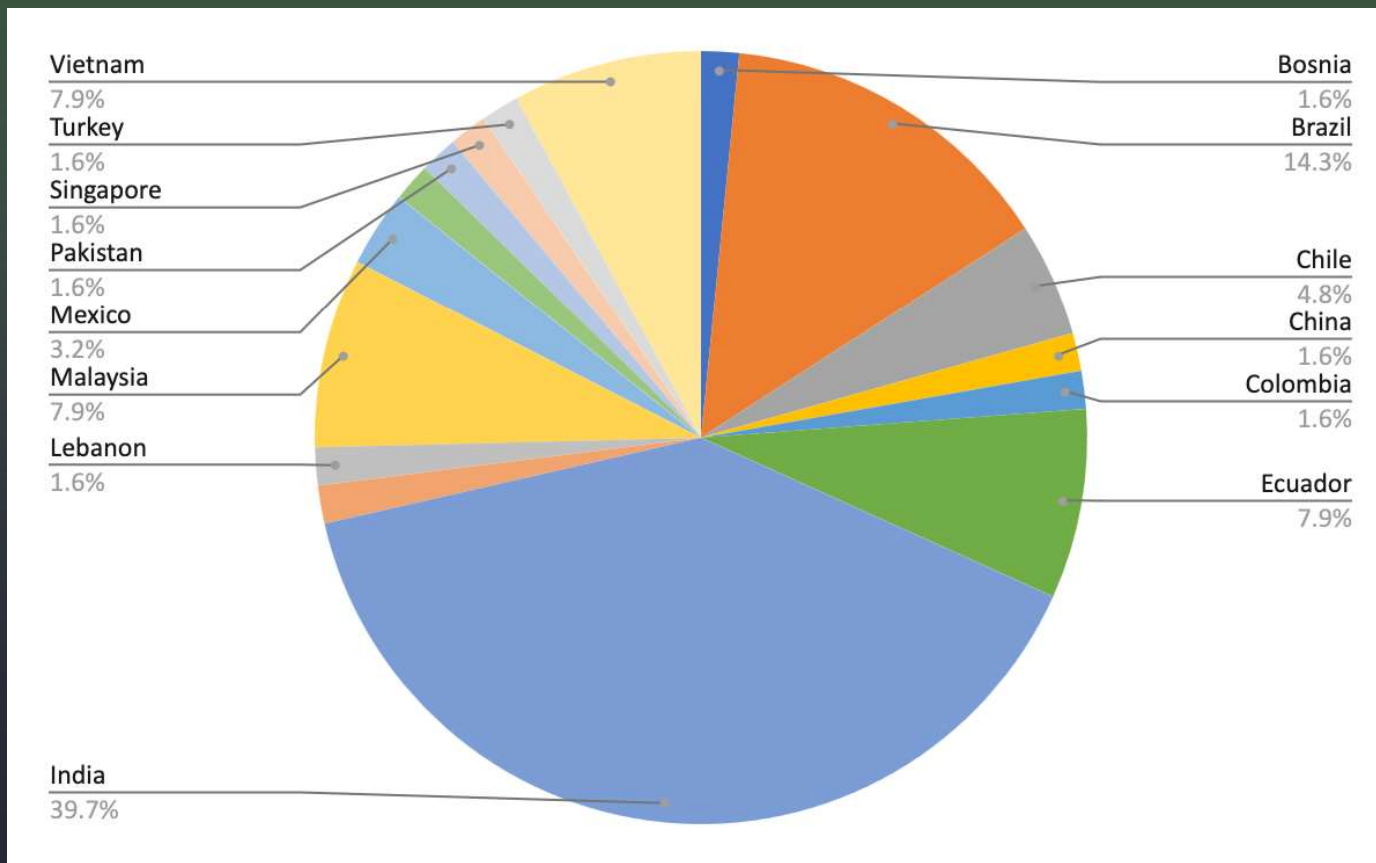
Molly Brackin at Conference Catalysts for
her support

2023 UNIC-CASS Design Proposals submitted



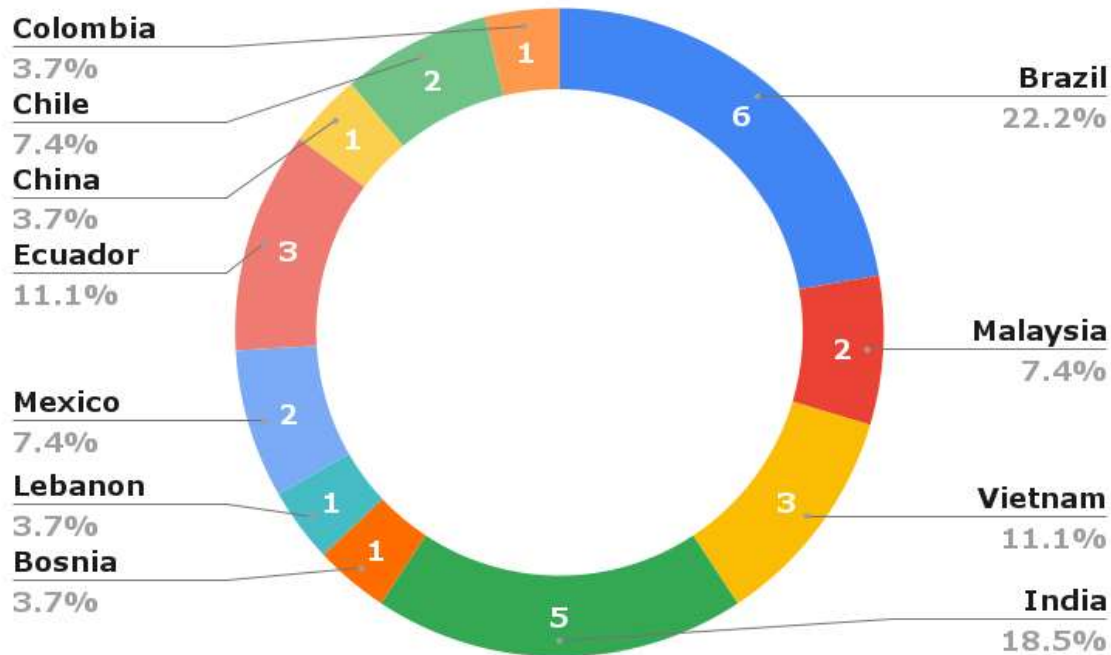
2023 UNIC-CASS submissions

68 Team Proposals 16 Countries



2023 UNIC-CASS Selected Design Teams @Start line : 27 Teams 11 Countries

Accepted Projects - per Country



Latin America: 14

Far East: 11

Region 8 : 2

Whos' who in UNIC-CASS

Project Sponsor: Jose De La Rosa (University Sevilla, Spain)

Education Team

1. Duy-Hieu Bui (Lead), Vietnam National University (Lead)
2. M. B. Ghaznavi-Ghouschi, Shahed University Iran
3. Dimitri Galayko, Sorbonne Université France
4. Noor Ain Kamsani, Universiti Putra Malaysia
5. Suhaidi Shafiee, Universiti Putra Malaysia
6. Mohd Amrallah Mustafa, Universiti Putra Malaysia
7. Lini Lee, Multimedia University Malaysia
8. Azrul Ghazali, Universiti Tenaga Nasional Malaysia
9. Haslina Jaafar, Universiti Putra Malaysia

Design-to-Tapeout Mentoring

1. Sergio Bampi (Lead), UFRGS Brazil
2. Rodrigo N. Wuerdig, UFRGS Brazil
3. Jorge Marin, UTFSM Chile
4. Fernando Silveira, Universidad de la República Uruguay
5. Pablo Petrashin, Universidad Católica de Córdoba Argentina
6. Victor Grimblatt, Synopsys Chile
7. Ricardo Reis, UFRGS Brazil
8. Sahil Shah, University of Maryland USA
9. Nicole McFarlane, University of Tennessee USA
10. Alope Das, Alten Calsoft Labs India
11. Miguel Corvacho, Intel USA

Chip Test/Bring-up

1. Yongfu Li (Lead), Shanghai Jiao Tong University, China
2. Rajesh Chandrasekhara, National University of Singapore
3. Qi Liang, Shanghai Jiao Tong University, China
4. Xiaochen Tang
5. Xinfei Guo, New Mexico State University USA

UNIC-CASS Design-to-Tapeout Meet up organizers

Sergio Bampi
Federal Univ. of Rio Grande do Sul, Brazil

Jorge Marin
Univ. Tecnica Federico Santa Maria, Chile



Design-to-Tapeout activities schedule I

| Activities | Date/ Deadline | Purpose | Your Deliverables (provide info/links on your GitHub) | |
|---|--|---|---|---|
| <u>WW Webinar</u> | Aug 17, 2023 | UNIC-CASS Introduction & WW Webinar | | |
| <u>Weekly meet-ups</u> | Aug 23, Aug 30, Sep 6, Sep 13, Sep 20 | Mentoring and Design groups to present progress. Invite short presentations on topics such as Caravel/Caravan, best practices, pitfalls to avoid. Invited talks. eFabless, Digital Flow, Analog Flow , Pitfalls on Schematics, Pitfalls on custom-layout. | | Kick-off with the selected Design Teams. |
| <u>1st Design submission</u> <u>[Mock tapeout]</u> | Sept 22 | | TBD | 1. Merge designs 2. Run local pre-checks |
| <u>1st Design Review &</u> <u>Feedback</u> | Sept 29 | | | Feedback on the “merge-run pre-check” |

Design-to-Tapeout activities schedule II

| Activities | Date/ Deadline | Purpose | Your Deliverables (provide info/links on your GitHub) | We will provide/handle |
|--|-------------------|--|--|--|
| <u>Weekly meet-ups</u> | Oct 4, Oct 11 | Guide to final submission and solve teams' issues. | A check-list of to-dos to the Design Teams. Evaluate status of potential "drop-outs". | |
| <u>2nd Design submission</u> | Oct18 | | TBD | Check all blocks are LVS, DRC clean. |
| <u>2nd Design Review & Feedback</u> | Oct 22 | | Maybe a 1-week extension for late bugs detected | Delivery by Design teams of their finished blocks in GDSII. |
| <u>eFabless pre-check</u> | Nov 3 | | Deliver 2 Caravelle drop-ins to e-Fabless to check | |
| <u>Tape-out</u> | Nov 6 | Finish line! | | List of "winner teams" included in this Tapeout. List of unfinished Designs to candidate for April, 2024 UNIC-CASS Call |

Design-to-Tapeout mentoring activities

Aug 23: Introduction to Efabless Caravel/Caravan harness

Aug 30: Introduction to the digital design flow

Sep 6: Introduction to the analog design flow

Sep 13: Best practices and pitfalls in digital design

Sep 20: Best practices and pitfalls in analog design

Back-up Slides

UNIC-CASS EDUCATION Team & Resources