

UNIC-CASS Design-to-Tapeout Meetup #4 (Sep. 18, 2024)

Mock tapeout deliverables

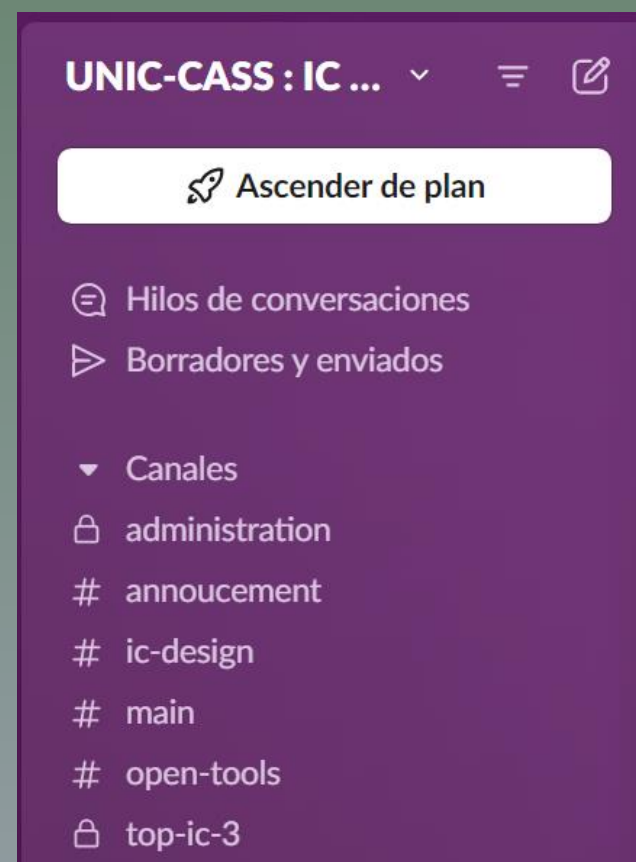
Presented by: D-to-T mentoring team



Design-to-Tapeout Mentoring

Communication and organization

- ▶ Bi-weekly mentoring sessions
- ▶ Slack Channel
- ▶ UNIC-CASS website



UNIC-CASS Slack channel:
<https://unic-cass.slack.com/>

A screenshot of the UNIC-CASS website. The page title is 'Universalization of IC Design from CASS (UNIC-CASS)'. The main heading is 'Universalization of IC Design from CASS (UNIC-CASS)'. Below the heading is a paragraph describing the program: 'The Universalization of IC Design from CASS (UNIC-CASS) program is a structured end-to-end Integrated Circuit (IC) design-to-test experiential learning. The program aims to improve the know-how and accessibility to IC Design technologies for enthusiasts and design communities worldwide in low-to-middle-income and/or low-opportunity countries. This program is of strategic cooperation with the Solid-State Circuits Society serving geographical-complementing locations.' Below this is a link to 'UNIC-CASS Mentoring Session Recordings & Presentations'. Further down, there is another paragraph: 'The IEEE Circuits and Systems Society (CASS) invites you to participate in the Universalization of IC Design from CASS (UNIC-CASS) program, a structured end-to-end Integrated Circuit (IC) design-to-test experiential learning. The program aims to improve the know-how and accessibility to IC Design technologies for enthusiasts and design communities worldwide in low-to-middle-income and/or low-opportunity countries. This program is of strategic cooperation with the Solid-State Circuits Society serving geographical-complementing locations.' Below this is another paragraph: 'There are no restrictions to designing your ideal chip on design complexity or type (digital, analog/RF, or mixed-signal). Based on the quality of their submitted chip design proposals, selected participants will get the opportunity to learn from carefully curated materials on the CASS MiLe platform, hands-on design mentoring by experts in the field, submit designs to CASS-sponsored fabrication runs via Efabless chipIgnite program and test your fabricated chip at selected testing facilities.' At the bottom, there is a section titled 'UNIC-CASS Materials & Tools' with four buttons: 'GitHub', 'UNIC-CASS Slack Channel', 'CASS Microlearning', and 'UNIC-CASS Training Materials (GitHub)'. Below these is a larger button for 'UNIC-CASS Mentoring Session Recordings & Presentations'.

Recordings and presentations: <https://ieeecas.org/unic-cass-mentoring-session-recordings-presentations>

UNIC-CASS educational material



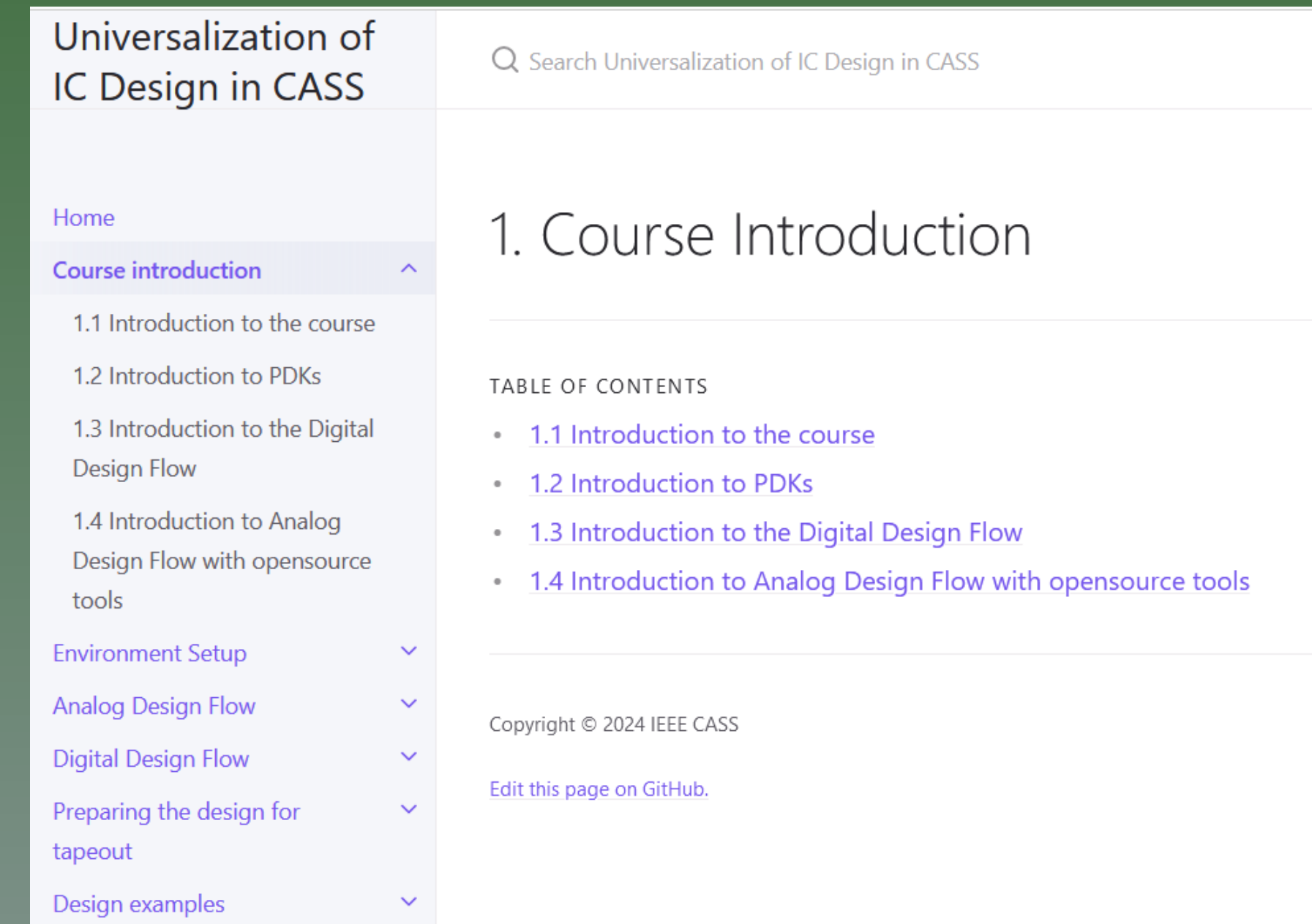
Universalization of IC Design from CASS (UNIC-CASS)

9 followers <https://ieee-cas.org/universalization-i...>

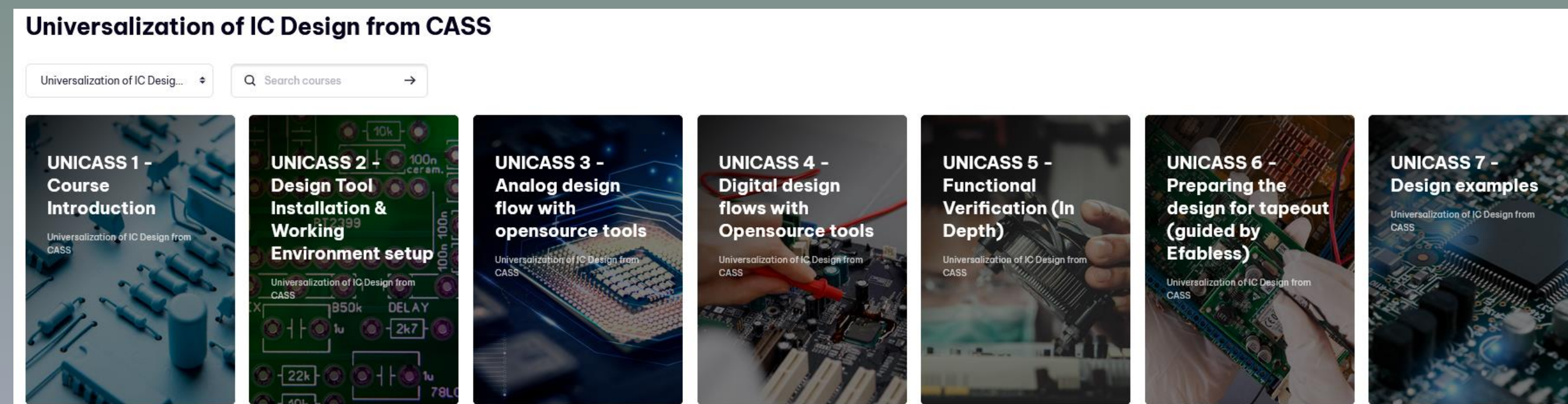
Source: <https://github.com/unic-cass/unic-cass.github.io>

- New videos made by volunteers following the lecture notes
- Lecture notes in Markdown format
 - ⇒ You can contribute by updating them
- New document theme using Just-the-docs Jekyll theme
- Latest materials in Github
- Materials in CASS-MiLe will be updated into v2.0 soon
- Add instructions for Klayout in analog design flow

- Layout
- DRC
- LVS



Website: <https://unic-cass.github.io>



CASS-MiLe: <https://ml.ieee-cas.org>

Design-to-Tapeout Mentoring Team 2024



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UTFSM (Chile)**



**Sergio Bampi
UFRGS (Brasil)**

Main Design-to-tapeout milestones

- ▶ **First design review (mock tapeout)**
 - Purpose: Prepare the teams in advance for the final tape-out phase
 - Date: Last week of September
- ▶ **Second design review (first DRC/LVS clean design delivery)**
 - Purpose: Verify feasibility of designs and top integration
 - Date: Second week of October
- ▶ **UNIC-CASS tapeout**
 - Purpose: final delivery of top designs
 - Date: November 8th

Design-to-Tapeout Mentoring

Weekly mentoring sessions 1

Activities	Date/ Deadline	Purpose/ comments	Your Deliverables (provide info/links on your GitHub)	We will provide/handle
1st Meet-up	Aug 12, 1pm-2pm UTC	Kick-off meeting	N/A	N/A
Weekly meet-ups	21/8,28/8,4/9, 18/9 1pm-2pm UTC	Mentoring and Design groups to present progress. Short presentations on topics such as Caravel/Caravan, best practices, pitfalls to avoid.	N/A	Slides and videos will be posted on the UNI-CASS website
1st Design submission [Mock tape-out]	Sep 25	Prepare the teams in advance for the final tape-out phase	Passing pre-check report	1. Detailed instructions for pre-check 2. Example files
1st Design Review & Feedback	Oct 2	Provide feedback and advice for the next stages	N/A	Feedback on the pre-check work
Weekly meet-ups	16/10, 30/10, 5/11 1pm-2pm UTC	Focused mentoring + preparation for final tape-out + evaluate status of potential drop-outs	N/A	Slides and videos will be posted on the UNI-CASS website

Design-to-Tapeout Mentoring

Weekly mentoring sessions 2

Activities	Date/ Deadline	Purpose/ comments	Your Deliverables (provide info/links on your GitHub)	We will provide/handle
2nd Design submission		Verify feasibility of designs and top integration Oct 16	Detailed circuit description (pinout, area and functionality) + DRC/LVS reports on Efabless platform	Check reports to confirm all blocks are LVS and DRC clean.
2nd Design Review & Feedback from mentors		Provide feedback and advice for the final stages Oct 23	N/A	Feedback on the individual designs + advice for top merge
Efabless pre-check + tapeout		Complete tape-out work on Efabless platform Nov 8	Deliver COMPLETE Caravel/Caravan drop-ins to Efabless final check	Provide assistance to tape-out leaders within the teams
Tape-out		See: Nov 11 https://efabless.com/chipignite	N/A	List of winner teams included in this tapeout List of unfinished designs to candidate for 2025 UNIC-CASS program
Chip delivery date		See: Apr 11 https://efabless.com/chipignite	N/A	Chip shipping and testing logistics

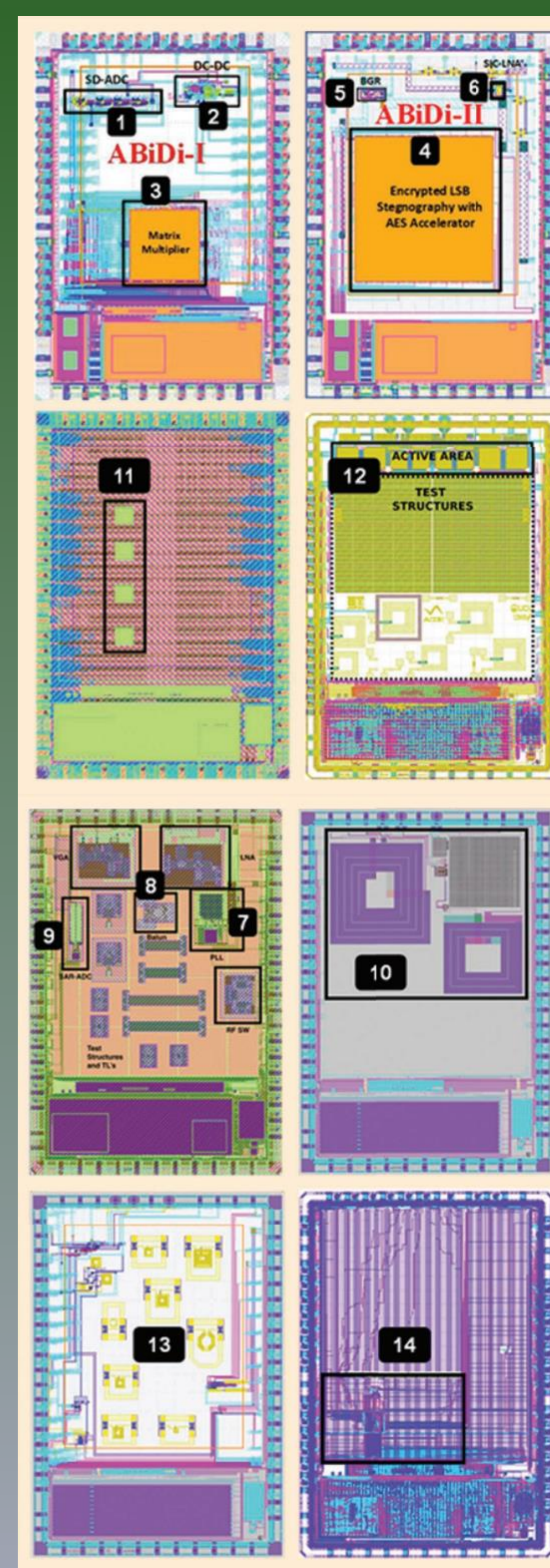
Additional remarks I

▶ Firm deadlines!

- November 11 is the hard tapeout date provided by Efabless
- Please plan according to the proposed activities: design submission and reviews (see schedule)
- Define a “minimum viable product” as soon as possible, e.g.:
 - A working design based on open source IP for analog
 - Working Verilog code with the main functionality for digital
 - For inspiration: Open source designs – public projects in the efabless platform: <https://platform.efabless.com/projects/public>
 - Also, join the OSS slack channel: <https://join.skywater.tools>

Additional remarks II

- ▶ **UNIC-CASS uses multi-block caravels**
 - Area and pin count are limited for each project
 - Exact numbers will be adjusted as we see progress
 - Minimize merge work as much as possible



Additional remarks III

- ▶ **Finalizing the design is not the finishing line!**
 - Efabless pre-checks
 - Tapeout checks
 - Based on previous experience, some issues can arise at these steps
 - Allocate extra time to understand and execute this
 - Mock tapeout!

Current actions by design teams

- ▶ **Finish your mock tapeout by September 25**
- ▶ **Complete the mock tapeout form for your team**
 - General info about design and status
 - Git link, Efabless repo, link to output report
 - **The form link will be sent later today**



CAS

IEEE CIRCUITS AND SYSTEMS SOCIETY

For more information and to join CASS, visit:

IEEE-CAS.ORG