



# 14<sup>th</sup> International Conference on **MODULARITY**

March 16-19, Fort Collins, Colorado, USA

**15**



Computer Science Building, Colorado State University

## **Sponsor:**

Aspect-Oriented Software Association (AOSA)

## **Host:**

Department of Computer Science, Colorado State University



**SIGPLAN**

## **Directions to the conference venue**

The Lory Student Center (LSC) is the venue for the technical sessions, coffee breaks, lunches, and reception. If you are staying at the Hilton, walk about 0.6 miles (11 minutes) along the blue dashed line on the map provided on page 2. If you are staying at the Best Western University Inn, walk about 0.5 miles (10 minutes) along the red dashed line.

The Hilton will provide a shuttle for their guests to reach the conference venue and back. Guests will be picked up from the Hilton at 8:00 AM and 8:30 AM on March 16, 17, 18, and 19, as well as at 5:45 PM on March 17 for the reception. Guests will be picked up from the Transit Center at LSC at 5:15 PM on March 16, 17, and 19, as well as 1:45 PM on March 18.

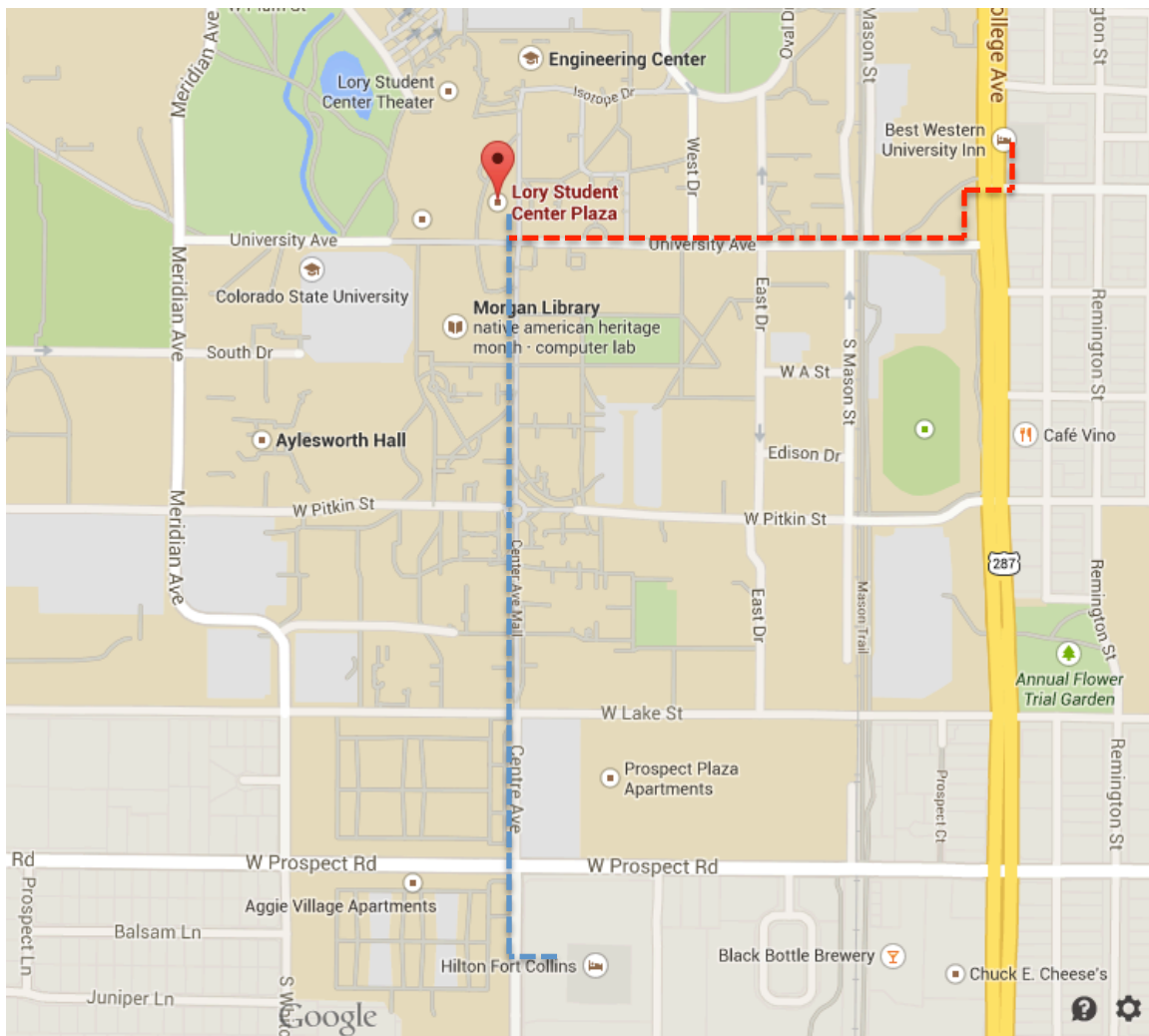
If you are driving, you can park in the parking lot marked in grey, left of the Morgan Library. Paid parking is available at spots categorized as "Pay to park". A limited number of parking permits valid

for the entire duration of the conference will be available at the registration table each day. These permits can be used for parking at any of the 'A' parking spots in the same parking lot.


The MAX Rapid Transit Service goes north-south along South Mason Street and Mason Trail. The station closest to the Hilton is the one just north of Mason Trail and Prospect Road. The next stop north is the one on Mason and University Avenue, which is close to the Lory Student Center. The MAX service can be used to go further north to the old town area, where you can find a number of restaurants and shops. The last stop for the MAX is a couple of blocks from the CSU Energy Institute, Powerhouse campus.

Rides have been arranged for attendees who expressed interest in going on a tour of the Powerhouse campus of the Colorado State University Energy Institute on Tuesday, March 17. Vehicles will load at 8 AM in the parking lot west of the Morgan Library, and leave at 8:10 AM for the tour site. The tour begins at 8:30 AM. We will leave the tour site around 9:45 AM to get back to campus in time for the coffee break.

The banquet will be held offsite at the Sylvan Dale Ranch, 2939 N Co Rd 31D, Loveland, CO 80538. A bus will pick up attendees from the Best Western University Inn and the Hilton, and take them to the ranch. Attendees will be brought back to the same hotels after the banquet.

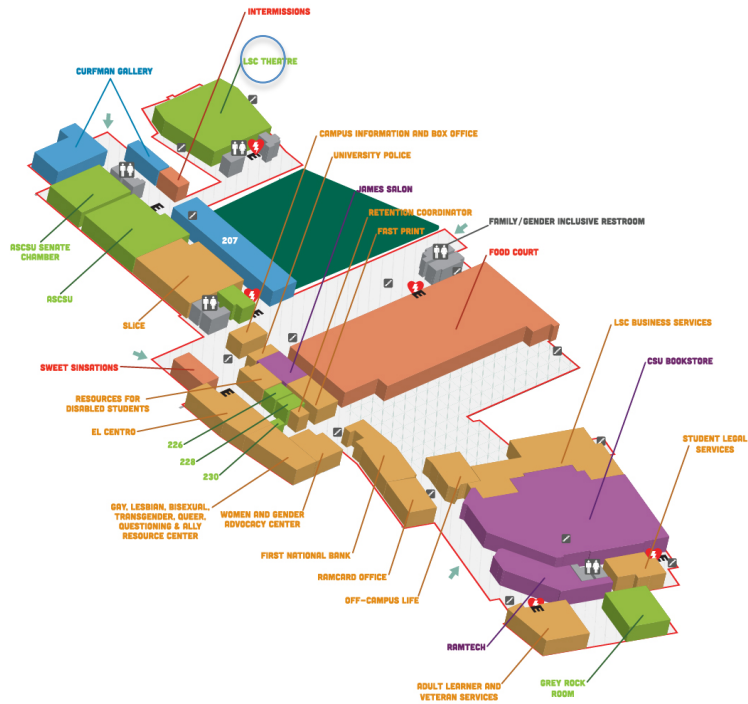


## Lory Student Center Maps

Rooms relevant to the conference are denoted with the symbol .

### 200 LEVEL

Play	
200	CURFMAN GALLERY
207	SUNKEN LOUNGE
Shop	
241	JAMES SALON
279	CSU BOOKSTORE
280	RAMTECH
Eat	
203	INTERMISSIONS
222	SWEET SINGATIONS
282	FOOD COURT
Gather	
TH201	LSC THEATRE
204	ASCUS SENATE CHAMBER
206	ASCUS
212	MEETING ROOM
224	MEETING ROOM
228	MEETING ROOM
230	STUDY ROOM
290	GRAY ROCK ROOM
Services	
210	STUDENT LEADERSHIP, INVOLVEMENT & COMMUNITY ENGAGEMENT (SLICE)
240	CAMPUS INFORMATION AND BOX OFFICE
242	UNIVERSITY POLICE
222	RESOURCES FOR DISABLED STUDENTS
244	FAST PRINT
228	EL CENTRO
231	RETENTION COORDINATOR
232	DAY, LESBIAN, BISEXUAL, TRANSGENDER, QUEER, QUESTIONING & ALLY RESOURCE CENTER
234	WOMEN AND GENDER ADVOCACY CENTER
271	FIRST NATIONAL BANK
271	RAMCARD OFFICE
274	OFF-CAMPUS LIFE
276	LSC BUSINESS SERVICES
294	STUDENT LEGAL SERVICES
298	ADULT LEARNER AND VETERAN SERVICES



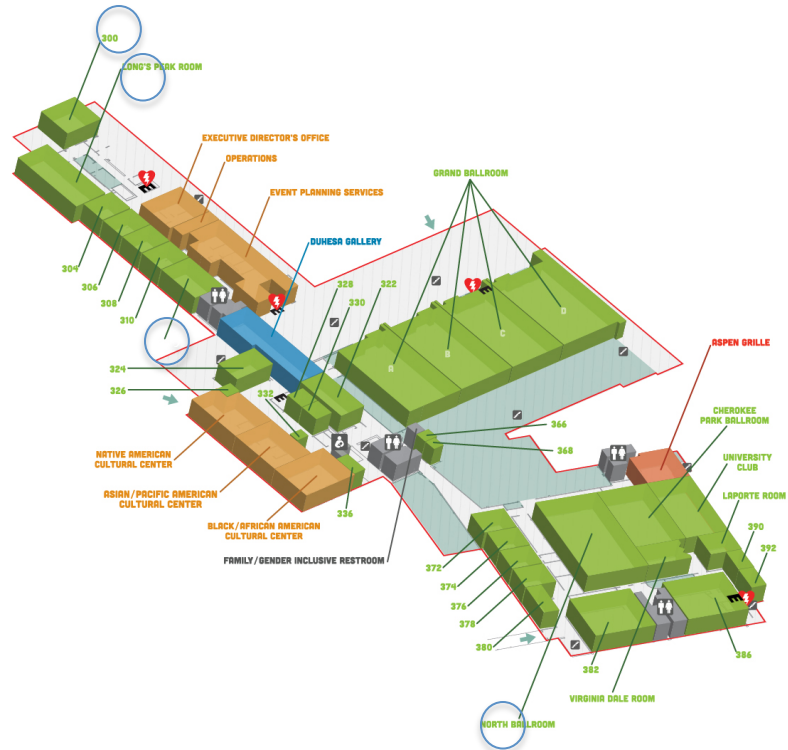
LoryStudentCenter

Restrooms	
AED Location	
Elevator	
Lactation Room	
Building Entrance	

Colorado State University

### 300 LEVEL

Play	
320	DUNES GALLERY
Eat	
388E	ASPEN GRILLE
Services	
303	EXECUTIVE DIRECTOR'S OFFICES
309	OPERATIONS
316	EVENT PLANNING SERVICES
327	NATIVE AMERICAN CULTURAL CENTER
333	ASIAN/PACIFIC AMERICAN CULTURAL CENTER
335	BLACK/AFRICAN AMERICAN CULTURAL CENTER
Gather	
300	MEETING ROOM
302	LONG'S PEAK ROOM
304	MEETING ROOM
306	MEETING ROOM
308	MEETING ROOM
310	MEETING ROOM
312	MEETING ROOM
322	MEETING ROOM
324	MEETING ROOM
326, 332, 336	STUDY ROOMS
328	MEETING ROOM
330	MEETING ROOM
337	LACTATION ROOM
360B-D	GRAND BALLROOM
364, 368	REFLECTOR ROOMS
372	MEETING ROOM
374	MEETING ROOM
376	MEETING ROOM
378	MEETING ROOM
380	MEETING ROOM
382	MEETING ROOM
384	NORTH BALLROOM
386	MEETING ROOM
388A	VIRGINIA DALE ROOM
388B	LAPORTE ROOM
388C	UNIVERSITY CLUB
388D	CHEROKEE PARK BALLROOM



LoryStudentCenter

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Colorado State University

## Program at a Glance

	Monday	Tuesday		Wednesday			Thursday	
	16 March	17 March		18 March			19 March	
	FOAL (Theater 1 <sup>st</sup> floor)	MDS (Theater 1 <sup>st</sup> floor)	SRC (Theater 2 <sup>nd</sup> floor)	Modularity			Modularity	
8:00-8:30	Registration (Theater Foyer)							
8:30-9:00	Welcome	Tour of CSU Energy Institute		Opening announcements (Theater)			Opening announcements (Theater)	
9:00-9:30	Keynote: John Boyland			Keynote: Peter D. Mosses (Theater)			Keynote: Don Batory (Theater)	
9:30-10:00								
10:00-10:30	Coffee break	Coffee break (foyer) SRC poster (2 <sup>nd</sup> floor)		Coffee break (foyer) poster (2 <sup>nd</sup> floor)			Coffee break (foyer) poster (2 <sup>nd</sup> floor)	
10:30-11:00	Research Track: Inward	Keynote: Siddharth Suryanarayanan		Research Track: Language Design Papers LSC 300	Research Track: Software Engineering Papers LSC 312	SRC Presentations Theater	Research Track: Formal Methods 1 (Theater)	Demo session (LSC 300)
11:00-11:30							Keynote: Robert Hirschfield	
11:30-12:00	Brainstorming							
12:00-12:30								
12:30-1:00	Lunch (North Ballroom)							
1:00-1:30								
1:30-2:00								
2:00-2:30	Research Track: Onward	Working groups start		Excursion to Sylvandale Ranch Pick up from - Best Western University Inn: 2:00 PM - Hilton: 2:15 PM			Keynote: Joanne M. Atlee (Theater)	
2:30-3:00								
3:00-3:30	Coffee break (foyer)	Coffee break (foyer) SRC poster (2 <sup>nd</sup> floor)		Grab-and-go snacks, assorted sodas on arrival			Coffee break (foyer)	
3:30-4:00	Keynote: Yu David Liu	Working groups continue					Research Track: Formal Methods 2 (Theater)	Position Papers (LSC 300)
4:00-4:30							Discussion	
4:30-5:00								
5:00-5:30				Activities: Horse drawn wagon rides, guided hikes, pool table, game room, horseshoe throwing.				
5:30-6:00								
6:00-6:30								
6:30-7:00		Conference Reception Longs Peak Dining	Banquet at Sylvandale Ranch Awards					
7:00-7:30								
7:30-8:00								
8:00-8:30	Steering Committee dinner meeting (Café Vino)	Steering Committee dinner meeting (Laporte Room)						
8:30-9:00								

## Program details: Monday, March 16

FOAL'15 will be held in the Lory Student Center Theater.

8:00-8:30	Registration <i>Location: Theater foyer</i>
8:30-9:00	Welcome to FOAL'15 Session chair: Gary T. Leavens
9:00-10:00	Keynote: John Boyland, University of Wisconsin–Milwaukee: Modular Reasoning about Aliasing using Permissions Session chair: Henrique Rebêlo
10:00-10:30	Coffee break <i>Location: Theater foyer</i>
10:30-11:30	Research Track: Inward (30 minutes each paper) Session chair: Hidehiko Masuhara  Enforcing Information Hiding in Interface Specifications: A Client-Aware Checking Approach (Henrique Rebêlo; Gary T. Leavens)  Essential Retroactive Weaving (Robin Salkeld; Ronald Garcia)
11:30-12:30	Keynote: Robert Hirschfeld, Hasso-Plattner-Institute: Recent Developments in Context-oriented Programming Session chair: David H. Lorenz
12:30-2:00	Lunch <i>Location: North Ballroom</i>
2:00-3:00	Research Track: Onward (30 minutes each paper) Session chair: Henrique Rebêlo  Towards Separation of Concerns in Flow-Based Programming (Bahram Zarrin; Hubert Baumeister)  Towards Modular Instrumentation of Interpreters in JavaScript (Florent Marchand de Kerchove; Jacques Noyé; Mario Südholt)
3:00-3:30	Coffee break <i>Location: Theater foyer</i>
3:30-4:30	Keynote: Yu David Liu, SUNY at Binghamton: Modular Performance Reasoning of Data-Intensive Programs Session chair: Hidehiko Masuhara
4:30-5:00	Discussion Session chair: Gary T. Leavens

## Program details: Tuesday, March 17

The morning tour conducted by the MDS'15 organizers will be held at the Energy Institute of Colorado State University. Technical sessions for MDS'15 will be held in the Lory Student Center (LSC) Theater.

SRC poster presentations will occur during coffee breaks on the 2<sup>nd</sup> floor of the LSC Theater.

8:00-8:10	Pick of from parking lot for people who communicated their interest to go on the sustainability facility tour.
8:00-8:30	Registration <i>Location: Theater foyer</i>
8:30-10:00	MDS workshop tour to the sustainable facilities at Colorado State University, Energy Institute
10:00-10:30	Coffee break in the <i>Theater foyer</i> SRC poster presentations on <i>2<sup>nd</sup> floor of Theater</i>
10:30-11:30	Keynote: Siddharth Suryanarayanan, Colorado State University
11:30-12:00	Q&A
12:00-12:30	Brainstorming on how MDE and Modularity can support sustainability
12:30-2:00	Lunch <i>Location: North Ballroom</i>
2:00-3:00	Working groups start
3:00-3:30	Coffee break in the <i>Theater foyer</i> SRC poster presentations on <i>2<sup>nd</sup> floor of Theater</i>
3:30-4:30	Working groups continue
4:30-5:00	Working groups briefing and discussion
6:00-7:30	Reception <i>Location: Longs Peak Dining</i>

## List of SRC Posters

- A Language Workbench for Creating Production-Ready Extensions to AspectJ (Arik Hadas)
- Uncovering the Practice of Feature Scattering (Leonardo Passos)
- Towards Separation of Concerns in Scientific Workflows (Bahram Zarrin)
- Towards Language Interfaces for DSLs Integration (Thomas Degueule)

## Program details: Wednesday, March 18

8:00-8:30	<b>Registration</b> <i>Location: Theater foyer</i>		
8:30-9:00	<b>Opening announcements</b> <i>Location: Theater</i>		
9:00-10:00	<b>Keynote: Peter D. Mosses</b> A Component-Based Approach to Semantics <i>Location: Theater</i>		
10:00-10:30	<b>Coffee break</b> ( <i>Theater foyer</i> ) <b>Poster presentations</b> ( <i>Theater 2<sup>nd</sup> floor</i> )		
10:30-12:30	<b>Research track:</b> <b>Language design papers</b> <i>Location: LSC 300</i> Session chair: Walter Cazzola (30 minutes each paper)  <i>Dynamically Composing Languages in a Modular Way: Supporting C Extensions for Dynamic Languages</i> (Matthias Grimmer; Chris Seaton; Thomas Würthinger; Hanspeter)  <i>Generalized Layer Activation Mechanism Through Contexts and Subscribers</i> (Tetsuo Kamina; Tomoyuki Aotani; Hidehiko Masuhara)  <i>Structured Synchronous Reactive Programming with Céu</i> (Francisco Sant'Anna; Roberto Ierusalimschy; Noemi Rodriguez)	<b>Research Track:</b> <b>Software Engineering Papers</b> <i>Location: LSC 312</i> Session chair: Hridesh Rajan (30 minutes each paper)  <i>AspectMatlab++: Annotations, Types and Aspects for Scientists</i> (Andrew Bodzay; Laurie Hendren)  <i>JavaRAG: a Java Library for Reference Attribute Grammars</i> (Niklas Fors; Gustav Cedersjö; Görel Hedin)  <i>Architecture-Sensitive Heuristics for Prioritizing Critical Code Anomalies</i> (Everton Guimaraes; Alessandro Garcia; Yuanfang Cai)  <i>Feature Scattering in the Large: A Longitudinal Study of Linux Kernel Device Drivers</i> (Leonardo Passos; Jesús Padilla; Thorsten Berger; Sven Apel; Krzysztof Czarnecki; Marco Valente)	<b>SRC presentations</b>  <i>Location: Theater</i> Session chair: Jeff Gray (25 minutes each presentation)  A Language Workbench for Creating Production-Ready Extensions to AspectJ, Arik Hadas  Uncovering the Practice of Feature Scattering, Leonardo Passos  Towards Separation of Concerns in Scientific Workflows, Bahram Zarrin  Towards Language Interfaces for DSLs Integration, Thomas Degueule
12:30-2:00	<b>Lunch</b> <i>Location: North Ballroom</i>		
2:00-3:00	Excursion to Sylvandale Ranch. <b>Pick up</b> from Best Western (2:00 PM) and Hilton (2:15 PM)		
3:00-6:30	Activities at Sylvandale Ranch		
6:30-8:45	<b>Banquet and Awards</b> at Sylvandale Ranch		
8:45-9:00	Bus loads at 8:45 PM to return to hotels.		

## List of Posters

- A Structure of A C# Framework ContextCS based on Context-Oriented Programming (Ikuta Tanigawa, Nobuhiko Ogura, Midori Sugaya, Harumi Watanabe and Kenji Hisazumi)
- Invariant Checking Driven Co-slicing of Metamodel and Model (Wuliang Sun, Benoit Combemale and Robert France)
- Composition Challenges for Sensor Data Visualization (Ivan Logre, Sebastien Mosser and Michel Riveill)
- Modeling Requirements for Model-driven Engineering of Large Software Solutions Needing a Modular Approach (Dan Matheson)
- First Class Domain Specific Aspect Languages (Arik Hadas and David Lorenz)



## Program details: Thursday, March 19

8:00-8:30	<b>Registration</b> <i>Location: Theater foyer</i>	
8:30-9:00	<b>Opening announcements</b> <i>Location: Theater</i>	
9:00-10:00	<b>Keynote: Don Batory</b> A Theory of Modularity for Automated Software Development <i>Location: Theater</i>	
10:00-10:30	<b>Coffee break (Theater foyer)</b> <b>Poster presentations (Theater 2<sup>nd</sup> floor)</b>	
10:30-11:30	<b>Research Track:</b> <b>Formal Methods Papers Session 1</b> Session chair: Gary T. Leavens <i>Location: Theater</i> (30 minutes each paper)  <i>Panini: A Concurrent Programming Model for Solving Pervasive and Oblivious Interference</i> (Mehdi Bagherzadeh; Hridesh Rajan)  <i>Dynamic Dispatch for Method Contracts through Abstract Predicates</i> (Wojciech Mostowski; Mattias Ulbrich)	<b>Demo Session:</b>  Session chair: Philippe Collet <i>Location: LSC 300</i> (20 minutes each demo)  Subjective, Multi-Dimensional Modularity with Korz (Harold Ossher, David Ungar and Doug Kimelman)  A Language Workbench for Implementing Your Favorite Extension to AspectJ (Arik Hadas and David Lorenz)  Feature Modelling and Traceability for Concern-Driven Software Development with TouchCO (Matthias Schöttle, Nishanth Thimmegowda, Omar Alam, Jörg Kienzle and Gunter Mussbacher)
11:30-12:30	<b>Panel</b> Title: Separation of Concerns: What Comes Next? Moderator: Somayeh Malakuti Panelist: Mehmet Aksit, Don Batory, Cristina Lopes, Harold Ossher <i>Location: Theater</i>	
12:30-2:00	<b>Lunch</b> <i>Location: North Ballroom</i>	
2:00-3:00	<b>Keynote: Joanne M. Atlee</b> Feature Modularity <i>Location: Theater</i>	
3:00-3:30	<b>Coffee break (Theater foyer)</b>	
3:30-4:30	<b>Research Track:</b> Formal Methods Papers Session 2 Session chair: Henrique Rebêlo <i>Location: Theater</i> (30 minutes each paper)  <i>Modular Reasoning in the Presence of Event Subtyping</i> (Mehdi Bagherzadeh; Robert Dyer; Rex D. Fernando; Hridesh Rajan; Jose Sanchez)  <i>A Programming Model and Framework for Comprehensive Dynamic Analysis on Android</i> (Haiyang Sun; Yudi Zheng; Lubomír Bulej; Alex Villazón; Zhengwei Qi; Petr Tůma; Walter Binder)	<b>Position Papers</b>  Session chair: Gary T. Leavens <i>Location: LSC 300</i> (15 minutes each paper)  <i>On Liberating Programs from the von Neumann Architecture via Event-based Modularization</i> (Somayeh Malakuti and Mehmet Aksit)  <i>Demanding First-Class Equality for Domain Specific Aspect Languages</i> (Arik Hadas and David Lorenz)  <i>Visualization Algorithms for Feature Models in Concern-Driven Software Development</i> (Nishanth Thimmegowda and Jörg Kienzle)  <i>Challenges on Software Unbundling: Growing and Letting Go</i> (João Bosco Ferreira Filho, Mathieu Acher and Olivier Barais)