# Practitioners Board

ANNUAL REPORT

September 2019

Submitted by Terry Coatta [co-chair 2016-2018, chair 2018-19]

# Summary

The Practitioners Board has been operating since June 2005. The board itself meets via teleconference as needed and we had 2 face-to-face meetings this year. The board was actively engaged in several projects, primarily via the activities of its various committees. The board has excellent staff support.

## 2018/2019 Board Membership

**Chair**: Terry J. Coatta  
  
**Members at Large**:  
Eve A. Andersson (PDC—Professional Development Committee)  
Jessica Bell (DSP—Distinguished Speakers Committee)  
Adam Cole (Case Studies)  
Andrew Conklin (ACM Local)  
Scott Hanselman  
Stephen Ibaraki (Past Chair)  
Juan Miguel DeJoya  
Peiyun (Sabrina) Hsueh

Rashmi Mohan  
Larisa Sawyer  
Harald Storrle  
Theo E. Schlossnagle  
Sophie Watson  
 **ACM**Wayne Graves (IS Director)  
Scott Delman (Director of Publications)  
Pat Ryan (COO)  
Bruce Shriver (Senior Marketing Manager)  
Yan Timanovsky (Education & PD Manager)

# Overview

The Practitioners Board operates primarily through several committees that address specific needs and programs. The achievements of the board are primarily the achievements of these committees and these are reported on in detail in the remained of this report. The primary focus of the board as a whole is the initiation of new projects and coordination, both of the activities of the committees, but also with other units within the ACM itself. In addition to this, the board plays a significant role in the acquisition of volunteers to work within the committees.

The active sub-committees of the board over the past year were:

* Case Study Committee (CSC)
* Distinguished Speakers Committee (DSC)
* Professional Development Committee (PDC)

In addition to these active committees, the ACM Local program has been very active (and is included below in the list of sub-reports), and there is an active effort underway to explore the production of podcasts. Finally, we expect to create a task force that will result in the transformation of ACM Local into a full committee of the board.

# ACM Local

## Overview

This program does not have a volunteer committee currently. The program has been developed and sustained with volunteer, contractor, and staff support.

Our purpose is to:

• Help nearby members connect and network,

• Prototype streamlined activities at the grassroots level, and

• Increase brand cohesion, affinity, and simplicity for new participants.

There currently is no formal committee guiding the activities of ACM Local, however, multiple organizing volunteers will join a 30-minute ACM organizers’ conference call to share in a virtual round table every quarter.

Summary

In the past year, we were in a much different position than prior years. We had more questions from existing organizers than ever before, and we have larger numbers to work with to find insights. We also began to experience organizing volunteer retention challenges that impacted our event/rsvp count.

|  |  |  |  |
| --- | --- | --- | --- |
| July ‘15 - June ‘16 | July ‘16 - June ‘17 | July ‘17 - June ‘18 | July ‘18 - June ‘19 |
| 3,696 peers | 5,221 peers | 14,842 peers | 17,415 peers |
| 2,078 rsvps | 2,150 rsvps | 8,303 rsvps | 5,391 rsvps |
| 54 events | 62 events | 108 events | 93 events |
| 38 organizers | 47 organizers | 56 organizers | 54 organizers |
| 9 meetups | 10 meetups | 14 meetups | 15 meetups |

We have two routines going. One I would describe as “operating” and the other as “activating”.

“Operating” involves supporting existing organizers at their level of organizing experience, and the stage that their meetup group is in. A meetup may be larger, smaller, long standing, just beginning, highly active, active, or inactive. The goal with operations was to be helpful at anytime a question comes in, within the context of confirming events and running quality events that topically related to the forefront of computing. If an organizer had a referral for a new organizer, we would set up a call and talk to the prospective organizer. If an organizer was blocked from planning a meeting, based on any number of factors, we would jump in to temporarily help.

“Activating” involves prospecting, creative discussion, pitching, and seeing the effort through to completion. This approach also involves getting to individual motivations of a single volunteer organizer and their technical interests, and mapping it to how the meetup group and the organizer would benefit. An example of creative proposals are what we attempted to do in forming a long standing partnership with Papers We Love. Also, we launched a brand new ACM San Francisco meetup group to focus on routine meetings in the city as a compliment to all the meetings in South Bay by the SF Bay ACM Chapter. We had a goal to launch our first international meetup group, which we did in Rio de Janeiro.

One additional project effort that isn’t exciting but is key to the lifecycle of volunteer management, is the end. We had a meetup group in Houston that had no existing operations. The group had a very interesting start with Hadley Wickham as its first speaker, but did not settle into an operations capacity. It required a lot of activation time, so we temporarily closed the group until a new opportunity presents itself, and rerouted resources to other cities where that had more tangible benefit to time invested.

## Plans

## Our 1st project effort is to launch a Task Force to explore how a new committee can mentor a larger and better-connected network of ACM Local Organizer volunteers.

## Our 2nd project is to plan our first 1st ACM Local meetup event with a streaming device right to the official ACM YouTube Channel. The objective is not to scale this out, but to experiment with a single event, and then re-evaluate our next steps, if any.

## Our 3rd project is to collect data from the meetup.com API and begin to build a global map of insights across cities and countries. We want to uncover the top computing topics in local tech communities, the top speakers, and the top organizers orchestrating events.

Our 4th project is embedded into the projects above. We want to encourage people from the bottom up, to take on volunteer leader roles as a new committee forms. This fits within the context of the broader diversity and inclusion initiative at ACM.org. There is more diversity inherent in the university affiliated student member segment than the professional member segment. We want to establish routine activator outreach to University chapter officers in an effort to keep them engaged in ACM Local after graduation.

# Case Studies

## Overview

Motivation: For years, practitioner members of the association have been calling for the ACM — with its gold-standard reputation for integrity and intellectual rigor — to mount a case study program focused on the practice of software development. Practitioners make up more than 50% of ACM’s 72,000+ Professional-grade members (as of June 2019).

Target Audience: ACM case studies are being developed specifically for those people who, within their organizations, are most responsible — and accountable — for software development … regardless of whether the organization in question is a Fortune 500 enterprise, a smaller enterprise, an app shop, or a consulting operation.

Case Study Approach: As with any business case study, we look not only to expose what was done but also at how something was achieved. In the main, we aim to accomplish this by staging conversations between engineers — led by recognized domain experts who focus on drilling down into what it was that made the core challenges at the heart of the effort worth undertaking in the first place, the aspects of those challenges that proved to be especially daunting, the tradeoffs that were hard to make, and the reasoning that ultimately led people to choose one particular path over the alternatives. Wherever possible, the implications of those decisions are also considered, both with respect to the outcomes that were actually achieved and the opportunities that were potentially lost.

Editorial Package: To complement each case study, we also seek to acquire articles from leading experts in that particular domain by which we hope to further illuminate some of the key issues introduced by the case study.

Committee Membership (July 2019)

* Mark Compton
* Adam Cole (President, HealthChain)
* Terry Coatta (CTO, Marine Learning Systems)
* Chris McCubbin (Senior Applied Data Scientist, Amazon)
* Lucas Panjer (Senior Director of Engineering, Tasktop Technologies)
* Robin Raskin (Founder, Living in Digital Times)
* Atty Mashatan (Director, Cybersecurity Research Lab, Ryerson University)
* Jessie Frazelle (Industry Consultant)

## Case Studies

|  |  |  |
| --- | --- | --- |
| Case Study | Principals | Status |
| Published | | |
| CodeFlow: Improving the Code Review Process at Microsoft | Jacek Czerwonka, Michaela Greiler, Christian Bird, Lucas Panjer, and Terry Coatta | Queue Nov. 2018 |
| Access Controls and Health Care Records: Who Owns the Data? | David Evans, Richard McDonald, and Terry Coatta | Queue March 2019 |
| DAML: The Contract Language of Distributed Ledgers | Shaul Kfir (Digital Asset), Camille Fournier (Two Sigma) and Adam Cole (HealthChain) | Queue May 2019 |
| In Progress | | |
| Debugging Concurrent Systems | Robert O’Callahan (Pernosco), Kyle Huey (Pernosco), Devon O’Dell (Google) and Terry Coatta (Marine Learning Systems) | Editing In progress |
| Launching an Open Source Project | Reynold Xin (Databricks/Spark), Wes McKinney (pandas project), Alan Gates (Cloudera/Hadoop) and Chris McCubbin | Preparing for interview |
| Creating a New Time-Series Database | Theo Schlossnagle (Circonus), Justin Sheehy (Akamai), and Chris McCubbin (AWS) | Preparing for interview |

## Candidate Case Studies

#### Quantum-resistant PKI

Commercial quantum computing capabilities may not become available for another decade or more, but the need to start implementing quantum-resistant defenses is already apparent. One promising angle for us to follow here might be to concentrate on efforts already underway to transition to quantum-resistant roots of trust. This could focus on work that’s already been done to create hardware security modules as well as work that’s currently underway with these modules to prepare for deployments in the field.

#### Google Duplex

The technology underlying the chatbot assistant recently unveiled by Google is Google Duplex, which melds years of research in natural language understanding, deep learning and text-to-speech. The sweet spot for us might involve looking at the machine-learning challenge here as it’s been applied to interpreting and understanding natural language inquiries — which is to say the complex, ambiguous, syntactically incorrect, slang-ridden, unnecessarily verbose, context-sensitive babble that makes up human speech.

#### Neural Machine Translation

Use of neural machine translation in the development of Google Translate.

A few months ago, Ben Fried (Google’s CIO) told Mark he’d also be willing to make a connection for us with Macduff Hughes (the Engineering Director at Google who leads the Google Translate development team). Macduff apparently also was the person chiefly responsible for inventing neural machine translation. Should Macduff ever agree to work with us, Erik Meijer (the head of infrastructure at Facebook) has already said he’ll be happy to serve as our interviewer since he has a deep and abiding interest in essentially any and all uses of neural net technology.

#### React Native

Ken Wheeler, a highly regarded frontend developer who’s a principal at Formidable Labs, says that as part of an extended engagement with Walmart, he completely “re-platformed” their operations for React Native. What’s come of that and the challenges Ken encountered along the way ought to make for an interesting story. We will almost certainly need to obtain Walmart’s blessings to publish anything about these efforts, making this potentially a long-lead item.

#### Continuous Performance Monitoring (Mobile Web)

Lara Hogan, Engineering Manager for Etsy has been suggested to us a thought leader of Mobile Web performance optimization at scale.

## Adjustments

Case Study throughput has improved, yet there is still room for improvement.

* Increasing the number of case studies we put into the top of the funnel.
  + Challenge: there is a significant amount of chaperoning and coordination required for each case study in the funnel.
  + Opportunity: more case studies that make it through to publication.
* Increasing the size of the committee.
  + Challenge: committee members must have a strong network they can call on along with the personality to be comfortable calling on favors. Most proposals don’t see the light of day; as such committee members must be willing to participate and propose ideas that in all probability will be shot down.
  + Opportunity: broaden our network of candidate case studies
* Mark Compton is a critical individual (in engineering terms, a single point of failure)
  + Challenge: augmenting Mark with another similarly qualified individual is a tall order. Requires support of both ACM (financial implications) and Mark.
  + Opportunity: mitigate the risk, enhance throughput, succession planning

# Distinguished Speakers Program (DSP)

## Overview

Our committee members span several countries and bring expanded diversity over prior years. We have improved in domains of expertise, gender perspective, program representation in geographical hotspots, and practitioner input. The entire committee has transitioned to all new faces since March of 2017, including 4 confirmed in the past year, with a byproduct being a younger peer group.

## Purpose

To bring distinguished speakers from academia, industry, and government to give presentations to ACM chapters, members, and the greater tech community in a variety of venues and formats.

## Activity

We hold conference calls for 40 minutes about 6 times a year. We have typically held them on Friday mornings at 11am Eastern Time.

## Committee Membership

|  |  |  |  |
| --- | --- | --- | --- |
| Member: | Appointment: | Research or  Practice? | Topic  Referee of: |
| Andrew Conklin  (outgoing Chair, DC) | 3/2017 | Practice | * Information Systems, Search, Information Retrieval, Database Systems, Data Mining, Data Science * Artificial Intelligence, Machine Learning, Computer Vision, Natural language processing |
| Gavin Doherty  (Ireland) | 5/2017 | Research | * Human Computer Interaction * Graphics, Computer Aided Design * Architecture, Embedded Systems and Electronics, Robotics |
| Valerie Woolard  (DC) | 6/2017 | Practice | * Society and the Computing Profession * Web, Mobile and Multimedia Technologies * Human Computer Interaction * Software Engineering and Programming |
| Todd Chapin  (Boston) | 6/2017 | Practice | * Human Computer Interaction * Web, Mobile, and Multimedia Technologies * Security and Privacy * Hardware, Power and Energy |
| Alexandre Renteria  (Brazil) | 9/2017 | Practice | * Artificial Intelligence, Machine Learning, Computer Vision, Natural language processing * Information Systems, Search, Information Retrieval, Database Systems, Data Mining, Data Science * Web, Mobile and Multimedia Technologies * Networks and Communications |
| Srinivas Padmanabhuni  (India) | 7/2018 | Research | * Computational theory, Algorithms, and Mathematics * Artificial Intelligence, Machine Learning, Computer Vision, Natural language processing * Security and Privacy * Networks and Communications |
| Faez Ahmed  (NYC) | 7/2018 | Research | * Architecture, Embedded Systems and Electronics, Robotics * Information Systems, Search, Information Retrieval, Database Systems, Data Mining, Data Science * Applied Computing * Hardware, Power and Energy |
| Jess Bell  (incoming Chair, Santa Cruz) | 7/2018 | Practice | * Society and the Computing Profession * Web, Mobile and Multimedia Technologies, * Graphics, Computer Aided Design |
| Upasna Madhok  (SF) | 12/2018 | Practice | * Artificial Intelligence, Machine Learning, Computer Vision, Natural language processing * Computational theory, Algorithms, and Mathematics * Applied Computing * Software Engineering and Programming |

## Operations

We had a stronger year in comparison to prior years. Although we have a lecture given in 41 countries, India was the clear hotspot with 47 lectures, followed by the US with 31, and the EU with 28. All others were single digits. Out of all the categories that organizer requests come from, “Chapters” and “University Group - non-chapter” increased. Additionally, our per-event cost went up marginally, but within a normal range compared to prior fiscal years. This increase is likely due to a major spike in tour requests. Below is a table comparing our last few fiscal years.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| FY | Lectures | RSVPs | Expenses | Avg Cost / Lecture | Avg RSVP / Lecture |
| 2019 | 150 | 33,398 | $109,949.00 | $732 | 222 |
| 2018 | 138 | 24,740 | $84,562.38 | $612 | 179 |
| 2017 | 93 | 22,631 | $74,777.00 | $803 | 243 |
| 2016 | 96 | 21,020 | $68,759.00 | $716 | 218 |
| 2015 | 79 | 11,110 | $45,007.18 | $569 | 140 |
| 2014 | 71 | 17,919 | $65,908.19 | $928 | 252 |
| 2013 | 100 | 17,330 | $78,945.40 | $789 | 173 |

## Projects

#1 - Completed - Data cleaning for lectures. It was impossible to determine the most popularly requested topics because of over-assignment on topic tags with lecture abstracts. This effort was to review and manually retag lectures so that future analysis would be clearer. We praise committee member Jessica Bell for taking this on.

#2 - Canceled - $5k budget for rebranding experimentation. This was for non-profit contractor expertise in stakeholder research, vision brainstorming, design & graphics expertise to produce visual deliverables as we experiment, learn, and rebrand the DSP. The goal was to have a program concept that appeals to thought leading practitioners from startup to enterprise. Unfortunately, this budget was approved but then retracted by the Practitioners Board before we could execute.

#3 - Completed - Timely informational updates before committee calls. This push was to shape up structured, timely, and highly relevant information to committee members before our scheduled conference call. The focus was on speakers approved to the DSP, lectures given recently, and hotspots of upcoming lectures around the globe, including those near committee members. This effort was aimed at increasing engagement with the committee and was effective for better conference calls. It did not solve for our desire to increase engagement over a sustained period of time with the committee. This effort was highly valued and appreciated as the conference call discussions with members improved.

#4 - Completed - Introducing new control concepts on Conferences. We went over budget with high lecture demand compared to the prior year, and we were advised to try out a conference request review process with volunteers on our committee. We instituted a conference review sub-committee of three people, in response to the urgency of handling all new requests at once, without necessarily having a proven automated process in place. This allowed us to try things out, make adjustments, brainstorm improvements, and execute on reviews at the same time. We have vetted our evaluation questions for volunteers to give a yay/nay, and it's ready to move into an automated process with our full committee, where each member reviews speaker nominees and lecture requests in their areas of technical topic interest and expertise.

## Plans

### Projects

Planned - Review policies and improve Program User Experience. We want to continue our trend of removing frustrations and getting events planned more quickly and painlessly. We also want to be smarter about being more impactful with the budget we have. This could include pre-recorded video lectures with a live conference call Q&A. It could also include allowing more speaker requests if the organizing entity is willing to pick up all costs.

Planned - Codify and automate the topic referee review process. We have a new process for reviewing lecture requests from conferences that we want to roll out to all our committee members, who serve as topic referees. Although we are introducing new restrictions in the lecture requests, we have also leveraged this opportunity to get to know the organizing conference organizers better so that we support the best ones based on our values of reputation, impact, and diversity.

### Diversity

In the past year, we have worked in the direction of gender balance on the committee, with three women serving out of 9 total members, and one as our incoming Chair. This is an increase over prior years. We are also now reviewing conferences with an eye for diversity, which is starting to showcase to organizers that plan conferences, that we are interested in their decisions around this subject in our review process.

## Comments

In my 2.5-year timeframe as the Chair of the DSP Committee, I’ve been impressed and humbled in a number of ways while serving for this program. 1) I’ve been impressed by how hard staff works for us. They are professional, supportive, collaborative, and deliver on items they commit to doing. In our capacity, it's not always clear when we ask for something initially, if it is an unreasonable amount of effort, a reasonable amount of effort, a quick action item, or if we are simply asking for something that wouldn’t improve the program. Staff communication and experience has helped tremendously to negotiate practical outcomes for the betterment of the program. 2) Conversely, it is difficult getting data, deriving insights, and becoming more informed for strategy discussions, compared to my commercial experiences in my profession applying my computer/data science knowledge. If we want to look at data the same way as the year before, then we have a pre-existing process for that. If we want to enable volunteers and staff to have discussions that are conducive to learning from program system data, negotiating possible improvements, and evaluating those improvements after they are rolled out; access to existing system reports, but also raw, real-time, read only, program system data through a login would be a potential starting point for that possibility. 3) I’ve been humbled by how global ACM activities impact our program. This was not easy to see at first. India has an assertive and strong operation that I was not familiar with, and this year I began to understand how that operation has impacted our program numbers, increasingly over the past few years. Future committee members would become effective more quickly if data trends were provided about the global organization’s top initiatives and pre-existing operations, along with the ability to directly access program system data in real-time. I’ve learned a lot about the organization during this stretch, and I’m very optimistic for this program in the hands of our new Chair, Jessica Bell.

# Professional Development Committee (PDC)

## Summary

In FY2019, the PDC participated in bimonthly teleconferences. Due to an extended transition period with the Practitioners Board and its associated committees, there was no in-person meeting. (One is already scheduled in September 2019.) The PDC is responsible for a number of different areas of activity which will be reported on independently in the following sections.

## Committee Membership

* Eve Andersson, Google (Chair; appointed July 2016; reappointed 2018)
* Sue Black, Durham University
* Don Gotterbarn, East Tennessee State University; COPE, SIGCAS, ICCP
* Dominic Holt, SOLUTE
* Stephen Ibaraki, REDDS Venture Investment Partners
* Bradley Jensen, Accenture; ICCP
* Juan Miguel de Hoya, UN ITU; SIGGRAPH
* Srikantan Moorthy, Infosys
* Fernanda Viegas, Google
* Will Tracz, Lockheed Martin Fellow; SIGSOFT

## TechTalk Subcommittee (PDC-TT)

* Will Tracz (chair)
* Eve Andersson
* Stephen Ibaraki
* Yan Timanovsky (ACM HQ)

## TechTalks (formerly known as Learning Webinars)

The successful webinar series (rebranded as “ACM TechTalks” in spring 2019) continues to be the most exciting program from ACM Learning. Highlights included talks by giants of A.I., Machine Learning, and Deep Learning. Ian Goodfellow’s “Adversarial Machine Learning” broke all records with “Adversarial Machine Learning,” garnering 7549 registrants, 2637 live attendees, and a total of 4272 attendees (both live and on demand), as well as 8,244 views on YouTube. It was also very highly rated in our survey. Andrew Ng’s Q&A on breaking into A.I. and ML registered 7591 people, with 2306 joining live and a total of 4166 attending. With 82,389 views on YouTube (in 8 months, to date), it’s the second most popular video of all time in the ACM YouTube Channel.

Several ACM award winners participated in the series. “Project Jupyter: From Computational Notebooks to Large Scale Data Science with Sensitive Data,” presented by 2017 ACM Software System Award winners Brian Granger and Carol Willing was very well reviewed, with 3211 registrants and 959 live attendees. 2018 Athena Lecturer Andrea Goldsmith gave an update of her lecture, “The Future of Wireless and What It Will Enable.” And 2019 Turing Laureate Yann LeCun’s “The Power and Limits of Deep Learning” drew more than 6542 registrants (3rd all time) and 2316 live attendees (2nd all time), and a total of 3,361 attendees.

R Programming/Data Science luminary Hadley Wickham delivered a talk on Functional Programming for Data Science Using R. The talk was very well attended and very highly rated, bringing attention to ACM among R/data science communities that are less familiar with our offerings.

We also strove toward and achieved better gender representation with our speakers, with 5 women out of a total 12 FY2019 speakers. Also notable was the roughly equal balance between men and women attending the talk “Building a Culture to Support Inclusive Design,” with Jen Devins of Google UX (average TechTalk attendance by women usually falls in the 10-15% range).

Topics in Machine Learning continued to dominate in terms of engagement. In addition to the aforementioned AI/ML talks, Applied Machine Learning in Health and Machine Learning in Production performed very well.

In addition to the “Flagship” ACM TechTalk series, Yan Timanovsky continues to prove limited marketing/promotional support to SIGSOFT’s webinar program, as well as minor support to SIGAI’s series. Both are healthy, drawing approximately 1,000 registrants and hundreds of viewers per webcast on average, though SIGAI has slowed down in recent months. Some support was also provided to help launch the ACM India Industry Webinar program, which is up and running now with Hemant Pande driving production.

## Learning Center

The ACM Learning Center continues to offer Safari (being rebranded as O’Reilly), Skillsoft, and Elsevier’s ScienceDirect platforms. O’Reilly’s full collection, which is a premium offering, continues to be available to all ACM Members. In addition to Books and Videos, daily Live Online Training classes are popular, and significant additions have been made by O’Reilly in Case Studies as well as Resource Centers (jumping off points around top topics in computing based on industry demand).

Stephen Ibaraki continues his series of podcasts with global practitioners in computing and IT. More than 120 podcasts/interviews/articles w/industry leaders (done by Stephen Ibaraki with no labor or financial impact to the ACM—funded by Stephen).

## Social Coder

As part of ACM’s commitment to “Computing for a Social Good,” partnership between ACM and Social Coder (and founder Ed Guiness) went into effect in spring 2016. This was a PDC project spearheaded by Dave O’Leary with assistance from Dominic Holt and Don Gotterbarn. Volunteers have been signing up for ACM membership steadily since June 2016. Currently, between 60 and 100 Social Coder volunteers sign up monthly. Demographics of these members skew younger and more international, though the percentage of women is not significantly different than the overall membership demographics of ACM.

## CompTIA

CompTIA partnership providing members with discount on training continues to have good uptake.

## Plans

**TechTalks**: Several talks are now scheduled in fall 2019. These include Adam Paszke, co-author of PyTorch (an extremely popular ML library), Carol Nicholson on Rust, Joe Konstan on Recommender Systems and ML, and Fernanda Viegas of Google on Data Visualization. (*Update*, at time of writing, the TechTalk with Turing winner David Patterson on Computer Architecture was extremely successful, with nearly 1,000 live attendees—a rare feat for late August; and a perfect rating in the survey—which has never occurred for a TechTalk this well attended. A Talk with Shwetak Patel, 2018 ACM Prize in Computing Laureate, on Mobile Computing in Health, was also very successful.)

**Tech Packs**: PDC members Juan Miguel de Hoya and Dominic Holt put together a proposal toward an updated version of “Tech Packs” with a goal of making them useful to practitioners, refreshable, and sustainable. Juan is currently working to finalize a demo of the ACM Spotlight on A.I. (working title) and working with Wayne Graves, Yan Timanovsky, and Scott Delman on ways of integrating ACM’s Digital Library “binder” functionality as a back end.

**New Partnerships**: Yan Timanovsky is exploring new partnerships to provide free or discounted access to e-learning assets for ACM Members. Current targets include Oxford University Press, MIT Press, and Pluralsight.