# VIS Restructuring Report

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# Committee Charge

The VEC sub-committee was charged with exploring how the IEEE VIS conference could be restructured to promote the continued health and growth of the community.

These slides are a summary of our findings. We considered many options, big and small ideas, long- and short-term strategies.

These findings are being reported to the VEC. We recommend an incremental process of sharing and refining this proposal, first with Steering Committees, then VIS Organizing Committees, and eventually the VIS community at large.

# Our Process

We met approximately monthly from Oct 2016 to Sep 2017 for video conference calls, with individual work between the meetings.

We collected information about many other events (Appendix: The Design Space of Conferences - Summary of Community Practices & Cultures)

In parallel, we aimed at developing a sensible proposal for close integration of the three main conferences. We started with the mindset of finding a coherent and intellectually defensible approach first, deferring political considerations of viability to later. When even that first goal proved to be difficult, we took a step back and asked what problems we need to address.

Once we identified the problems we came up with possible solutions, which eventually led to the recommendations in this report.

# Executive Summary

# Strengths

- The structure of three separate conferences (V-I-S: VAST, InfoVis, SciVis) tightly interlocked with the TVCG journal has fostered the development of our technical field
- The structure of multiple smaller symposia and workshops affiliated with VIS has allowed for innovation
- Splitting off into a separate venue has allowed evolution of different intellectual criteria for judging quality and rigor
- Splitting off also allowed evolution of different governance models
- These existing venues have passionate advocates who care deeply about, and contribute prolifically to them

# Problems

- Difficult to explain/defend intellectual boundaries between V-I-S. May seem fragmented and confusing to outsiders we hope will join us. May allow insiders to submit to venue with (perceived) easier route to acceptance
- Path for starting and growing new long-term initiatives (workshops, symposia, conferences) is unclear, causing frustration
- Current structure and (sometimes informal) processes may unintentionally favor established groups or areas
- The field is changing, and what is hot will always be a moving target. If we stay inflexible, we're in danger of missing emerging trends and stagnating
- Low acceptance rates from competitive paper review process excludes many possible participants: industry, practitioners, beginning students
- Application-oriented work sometimes has difficulty finding a home

# Positions

- Grow or stagnate. Avoid the latter.
- Turf wars are bad. Avoid zero-sum mentality: A and B, not A or B!
- Don’t force any merges, existing events to keep existing structure/governance
- Let people vote with their feet, see where they flow with submit/attend patterns
- Overlap is good: multiple events where papers could fit is feature, not bug
  - CHI area chairs model encourages 2-3 places for any paper
- Parallelism can drive growth: New events often bring new energy and people
- Create clear growth paths to channel this energy into success not frustration
- Document process for level playing field, so insider knowledge not privileged
- Encourage experimentation and community growth
- Partitioning can create/support communities: definitions of quality evolve locally
- Don’t drive away new members of the community by being too ossified
- Don’t alienate old members of the community by killing their babies

# Recommendations

- Make room for emerging communities that bring in new energy and ideas
- Do not merge existing events into monolith
  - Allow for organic and gradual growth or shrinkage
- Add more parallelism
  - Add many parallel tracks for workshops and symposia on Sunday/Monday.
  - Add some parallel tracks for Tue-Fri, promote some events to “main table”
- Spell out gateways to growth (or shrinkage) with simple, explicit criteria, measuring success in terms of attendance, submissions, & quality.
- Add representation for more events on the VEC
  - Add formal and informal lines of communication from more of VIS constituency
- Create or expand features of the program to encourage researchers and practitioners from industry

# Current VIS Structure

# Current VIS Structure - Main Conferences

- 3 main conferences: Infovis, SciVis, VAST
- Online reviewing, 2-tier system with PC members and external reviewers
- PC chairs assign 2 PC members (one primary) to each submission
- 2-round review cycle: 4 weeks for initial reviews, 1 week online discussion with the goal of consensus, conditional acceptance. 2nd round recommendation made by primary. PC chairs make final decisions
- VIS has developed a strong set of excellent reviewers, though we see the same problems in potential inconsistency and miscommunication that many other fields experience (c.f. “NIPS Experiment”)

# Current VIS Structure - Main Papers

- Very close relationship between IEEE TVCG and conferences
- Most conference papers are included in proceedings published as a special issue of TVCG, AR < 25%
  - Conference-only papers as special case to fit more; contentious, perceived slight to authors
- PC chairs make final decisions, with oversight from TVCG
- Previously published regular TVCG papers are eligible for presentation in at VIS (since 2011, integrated sessions since 2014)
  - invitation/selection process now better documented, some confusion existed
- Previously published IEEE CG&A (Computer Graphics and Applications magazine) eligible for presentation (since 2015, separate sessions)

# Current VIS Structure - Main Content

- Joint committee structure for:
  - Posters
  - Panels
  - Tutorials
  - Workshops
  - PhD Colloquium
  - VIP (Vis In Practice, formerly Industry Outreach)
  - Supporters, Publicity, Meetups, Fast-forwards/Video
- Special cases
  - Community
  - VisKids
  - Arts Program (exhibit, papers, sometimes panel)
  - Student Volunteers
  - Contests, Challenges

# Current VIS Structure - Associated Events

- Preapproved symposia/workshops/events, important to many VIS attendees
  - LDAV: 2011-17
  - VDS: 2015-17
  - VizSec: 2005, 07, 09, 12-17
  - VAST Challenge: 2012-17
  - BELIV: 2012, 14, 16
  - BioVis: 2011-13, 16
  - VISAP (Arts): 2011-17
  - VIP Workshop: 2016-17
  - VAHC 2010-12, 15, 17
  - SoftVis 2010
  - (InfoVis 1995-2005, VAST 2006-2010)
- Different publications paths
  - Most via IEEE DL
  - Some past alternate paths now discouraged by IEEE (ACM, Bioinformatics, Leonardo)

# Associated Events - Origins and Rationales

- Origins
  - Started elsewhere, later relocated to VIS (eg VizSec)
  - Started as standard workshop (eg VAHC)
  - Started by general chair, eventually preapproved (eg Arts)
  - Extended from other event (eg VAST Challenge Workshop)
  - Split off from main, immediately preapproved (eg InfoVis, VAST, LDAV, VDS)
- Rationales
  - Build up community of its own
  - Bridge between domains
  - Establish forum for concerns underserved within main
  - Does not preclude similar activity within main (mostly)

# Integrating the Main Conferences

# Integration

We started to consider close integration of the three main conferences as that seemed to be an obvious goal that would address some of the issues we face

Integration of the papers program means collapsing the program committees and topic areas of VAST, InfoVis, and SciVis into one large PC

Integration could also mean merging the steering and organizing committees of the three events, although we did not discuss that option

One way to think about integration is to look at EuroVis as a successful model, although at a smaller scale (150-200) and without some of the complexities of VIS

# Topic Taxonomy

Our discussion of merging the topics of our main conferences was inspired by the recent KeyVis paper by Isenberg et al. (KeyVis website)

As mentioned in the paper, a careful analysis of keywords “can eventually lead to a comprehensive taxonomy of visualization research”

In our discussion of a topic taxonomy we started to distinguish between Paper Types, Data Types, Domains, Methods, and Evaluation Approaches

Difficult to find partition strategy that preserved existing strengths, provided sufficient flexibility for future, and scaled to 500+ papers

In parallel were looking at other communities (see Appendix) to understand how they organize and manage topic areas and PCs

# Lessons from Other Communities

Some successful events, notably CHI, CVPR, and NIPS, cover a large number of topics with a hierarchical PC, where area chairs are in charge of different topics

Dividing a field into topics is a dynamic problem, since any such division will have to change based on newly emerging trends

Some events (e.g., CVPR and NIPS) use a data-driven approach to adapt the topics based on submissions with additional tweaks by the PC chairs

Other communities (e.g., CHI) use purposefully ‘fuzzy’ and overlapping topics so that each paper could fit into multiple areas

In either case, area chairs are ‘mini papers chairs’ and wield a lot of power

# Lessons from Other Communities

Area chairs may have different acceptance standards. Because they change annually it is difficult to get consistency across the PC (c.f., “NIPS experiment”)

It is not easy to determine which area chair should review a paper, especially if the topics are overlapping and ‘fuzzy’ (e.g., CHI)

The decision process in a hierarchical PC is less transparent to an outsider compared to a regular PC, where the process is more explicit

Talking with experts familiar with these events, and based on our own experience, we found they have some of the same problems we were trying to address

Which led us to ask: What are the pertinent questions we need to address?

# Pertinent Questions

- Does the current structure of the conference inhibit its growth?
- How can we ensure that new communities feel welcome to join? Is our process transparent and consistent from year to year?
- How can associated events grow and gain more visibility and support?
- What makes an event more successful? Is there a ‘ladder’ to success?
- Could successful symposia become conferences? Could they become tracks that run parallel to the main events? What do symposia organizers see as the best path?

# Engaging and Capturing Emerging Communities

# Goals

- Fostering organic growth of associated events is crucial to the future of VIS.

- Experience shows that growth usually comes from engaging and capturing emerging communities through workshops and symposia.

- Our primary goal is to promote the growth of the field by adding more diversity and capturing emerging trends and communities

# Recommendations

Need gateways to higher levels of support for events through four bottlenecks:

A) to recurring
B) to pre-approved
C) to main days (Tue-Fri)
D) to seat on the VEC

Document every step of this process and make it clear to event organizers when, how, and by whom the decisions are being made

Set transparent criteria for automatic promotion/movement:

attendance numbers
submission numbers
quality via acceptance rate (AR)

# To Recurring Workshops

- Problems
  - Significant unmet demand for workshop slots, both one-off and recurring
  - Difficult to find best balance of old and new
  - Successful workshops not renewed in order to make room for new ones
  - Unclear criteria for accept/decline, perception of capriciousness

- Recommendations
  - Goal: Allow all (reasonable) workshop proposals to be automatically accepted
  - Mechanism: Add several more tracks for workshops and symposia on Sunday / Monday
    - If necessary, consider future spillover into Saturday afternoon
  - Goal: Change criteria from guess about future to observation about past
  - Mechanism: If workshop does not have enough attendance or submissions then closely reviewed by workshop chairs the following year
  - Goal: Encourage mini-symposia model (see slide 33)

# To Pre-approved Sun/Mon

- Problems
  - Pre-approval process undocumented and thus mainly used by insiders
  - Workshops of commensurate quality/success may have different paths
  - Workshops that could grow are not given the chance to do so

- Recommendations
  - Goal: If a workshop has high attendance and good quality it should be pre-approved to support growth the following year.
  - Mechanism: Set transparent criteria (attendance, submissions/AR) for automatic promotion
  - Mechanism: Document and publicize pre-approval path

- Features
  - Example: VIP Workshop pre-approved by GC in 2017 as avenue for application-oriented work

# To Main Days Tue-Fri

- Problems
  - No growth path for event to main days (Tue-Fri). Only happened twice: InfoVis and VAST!
  - Chicken and egg problem: achieving quality levels for journal status hard when peripheral
  - Current four tracks starting to overflow (unmet demand for panels, increases in papers)
- Recommendations
  - Decouple Tue-Fri from inclusion in TVCG
  - Add more tracks during the Tue-Fri week for additional events & growth of current tracks
    - Add 5th track immediately (2018)
- Features
  - Events keep their organization (PCs, Steering) intact no matter where they are scheduled in the week. Add, not merge; don’t sweat the overlap.
  - Applying for specific IEEE status (e.g., conference) or to publish in journals (e.g., TVCG) is up to the events and largely depends on size and quality
  - Fundraising expectations do not change, and are spelled out already
    - Was workshop vs symposium, now is barebones vs deluxe

# Add Representation on the VEC

- Problem
  - Long-running & successful events have insufficient voice in VIS governance
  - Frustration may cause some to break away soon

- Recommendation
  - Long-running & successful symposia get a seat on the VEC to become part of the VIS decision process
  - Decisions are based on event attendance, submission numbers, quality (AR)
  - Cap on VEC size should be 15-20 to avoid unwieldy discussions
  - Move some VEC seats from appointments by VGTC Chair to associated events representatives

# Features

- Decouple decisions to allow fine-grained choices
  - Timing of Sun/Mon vs Tue-Fri
  - Proceedings in TVCG journal (decision external to VIS/VEC)
  - Representation on VEC
  - Benefit: Our destiny more under our control, not in external hands

- Eliminate artificial scarcity
  - Mindset of “avoid excess parallelism” isn’t serving us well, arguably obsolete
  - More tracks solves problems for both existing and new
  - Space does have cost but often we’re already paying it (smaller rooms unused Tue-Fri)
  - Increased space cost offset by increased attendance
  - More space viable since we’ve already moved to conference center over hotels

# Frequently Heard Statements (FHS)

# FHS (Frequently Heard Statements)

- S: We should just merge, EuroVis is an existence proof that separate conferences are unnecessary
- A: We do not recommend merging V-I-S into single PC, like EuroVis, despite the expectations of many and even some original leanings
    - Their scale is smaller: we have more than double the papers, a single small set of papers chairs can’t deal with 450-500 papers without creating some kind of hierarchical substructure
    - Their path was different: we would be dissolving existing things into each other, that’s very different from growing from narrow towards broad

# FHS (Frequently Heard Statements)

- S: There’s no intellectually valid boundary between V vs I vs S so there should be no structural boundary requiring decisions about where to submit
- A: People decide where to submit all the time in a big ecosystem of non-disjoint venues, where some are more distinct than others
    - People decide if it’s a match through many criteria: looking at past accepted papers, who’s on the PC, perceived prestige, past connections with venue, ...
    - Few papers are suitable for exactly and only one venue, overlap is the common case

# FHS (Frequently Heard Statements)

- S: The current walls between V-I-S are historical accidents that hinder us. Our goal should be to remove these artificial barriers and merge as soon as it's politically viable.
- A: Walls can protect
  - Developing new standards of quality that differ from the current status quo may be impossible without them. Even as conferences mature, they can still benefit from distinctness to evolve into different directions
  - Assimilation favors the earlier groups, that's also a historical accident. Instead of the melting pot metaphor, consider the symphony: each instrument sounds on its own, in harmony but not in unison or in imitation of others (Horace Kallen, 1959)
  - We want mechanisms to nurture the next big thing that's not yet as mature as V-I-S!
- A: These walls have unlocked doors
  - People are free to participate in any or many of these, can vote with their feet about which community standards are the best fit for their work on a paper by paper basis

# Appendix:
# The Design Space of Conferences - Summary of Community Practices & Cultures

# Goals

We reviewed conferences and events of similar size or focus to VIS in other communities, with the goal of understanding their culture, growth trajectories, practices that work, and potential problems to avoid.

The review consisted of collecting our own experiences and informal interviews with senior leaders from these adjacent communities.

We also collected comments about the review process, though it’s a side topic.

This is a summary of our findings.

# Outline

- One bullet summary of the event
- Overall impression (vibrant vs. stagnant, growing vs. shrinking, etc)
- Basic demographics: # Attendees, # Attendees for papers, # Exhibitors (2016)
- # Submissions / # Accepted papers (2016)
- Summary of organization / review process
- Overview of areas / tracks (How many? How picked? Do they change?)
- Associated events? How many? How picked? At start / end vs. interleaved?
- Plus and minuses
- Noteworthy potentially relevant features

# NIPS (Neural Information Processing Systems)

- A flagship meeting in machine learning
- Vibrant and growing, mainly due to interest in deep learning
- Possibly an extremal point in rapid growth and self-analysis, https://arxiv.org/abs/1708.09794
- 8000 attendees (up from 6,200 in one year), sold out to capacity
- Receives about 2,400 submissions, accepts only about 100 as full papers, but many posters
- Multilayered structure: executive board, larger advisory board, PC chairs, area chairs, PC members, external reviewers
- Areas are defined by submissions, partly data-driven by keyword analysis of last year's submissions, also tweaked by organizers mainly PC chairs but approved by executive committee
- Complex review coordination, where individual PC chairs have teleconferences with groups of area chairs (2-4) to calibrate scores, takes a lot of time
- Almost unlimited number of workshops (25 in 2016, 50 in 2017) in last two days (Fri/Sat after main week)
- 9 tutorials on Monday (2017), all half-day, in parallel with papers
- 3 co-located symposia on Thu afternoon
- Papers Mon through Thu morning

# SIGGRAPH

- The top venue for computer graphics and interactive techniques
- Prestigious but stagnant or shrinking, diverse set of communities and venues
- About 3,500 attendees for papers track, 14,000 attendees, 150 exhibitors
- 467 submissions, 119 papers accepted (25%) + 43 TOG papers
- Many good papers get rejected
- PC with about 60 members, similar to VIS, in-person committee meeting
- Areas defined beforehand, similar to VIS
- Handful of associated events before the main conference
- In-person meeting to assign papers to reviewers increases quality of reviewing
- Rebuttal period adds complexity and work, but can be helpful for some authors
- Some communities ‘have left the building’ (e.g., Vis and HCI). Periodic ineffective efforts to attract them back

# CVPR

- One of two top venues in computer vision
- Vibrant and growing community
- About 1600 attendees, 70 exhibitors
- 2145 submissions, 643 accepted (29%), 83 oral presentations (3.9%), 123 short (spotlight) presentations, rest posters
- 72 area chairs, over 1100 reviewers
- Use Toronto Paper Matching System while accounting for author provided suggestions to assign area chairs (ACs)
- ACs then assign 3 reviewers per paper
- Unlimited number of workshops (29) and tutorials (22)

# SIGCOMM

- Communications and computer networks
- Attendance about 750 in 2016; 25% from industry
- About 300 submissions. PC has about  50 members with 2 PC chairs
- Almost all reviews written by PC members.
- Initial round: 3 reviews, keep top 50%
- Second round: 3 more reviews, keep top 50%
- Decision meeting is face to face with “PC-heavy” (many PC members); some PC members may be recruited for “PC-light”

- Authors perceive that the process is reasonably fair and appreciate the extensive feedback.
- SIGCOMM created a separate measurement conference to keep the work within the community.
- OC is making  a focused effort to increase industrial participation through a separate track:
  www.sigcomm.org/content/2016-annual-report

# CHI

- Example of a large, healthy conference with many sub-communities, still growing
- Attendance ~3000, growing steadily
- About 2000 papers and notes submitted, about 22% accepted (see here)
- Sub-committees have area chairs to cope with quantity and diversity of submissions
- Flexible topic areas, purposefully ‘fuzzy’ and overlapping so that each paper could fit into multiple areas

- In-person PC meeting does not work smoothly and some say leads to more noise than necessary
- Rebuttals are problematic and some say more work than they are worth
- 45 workshops accepted out of 101 proposals in 2016

# VLDB

- Represents an extremal point in lock-in between a conference and a journal.
- Attendance around 750
- Owned by an independent foundation, though closely associated with ACM SIGMOD and SIGKDD
- All research submissions are reviewed as VLDB Journal papers with a tight timeline (6-8 weeks), journal-style revisions, online publication upon acceptance. Rejected papers cannot be resubmitted for one year.
- Every accepted paper is given a presentation slot at the conference.
- Every paper is also presented as a poster
- Research acceptance around 17-20%
- Industrial, posters, etc. around 30-50%
- The size of the meeting is increasing and organizers also believe the quality of submissions is improving without decreasing the acceptance rate.
- See http://www.vldb.org/pvldb/ and http://www.vldb.org/pvldb/papers/p40-jagadish.pdf

# Supercomputing

- Represents an extremal point in size and variety of technical scope within our survey
- 10,000 attendees, trade show with 300 vendors. Only a small fraction of attendees attend technical sessions.
- Broad technical agenda, ranging from physical hardware and low-level architecture, to operating systems, networks, and applications and visualization.
- Conference has a track structure and reviews (double blind) similar to VIS, but tracks can change from year to year
- About 40 workshops and related events
- Meeting is very large, so there isn’t much stress around who/what can fit
- “State-of-the-Practice” track introduced in 2016

# KDD

- A flagship meeting in knowledge discovery
- Vibrant and growing, mainly due to interest in machine learning
- 2700 attendees (some years sold out to capacity)
- Received about 1115 submissions (784 research track, 331 applied data science track), acceptance rate full papers <10%, full papers and poster papers < 20%
- Multilayered structure: SIGKDD executive committee, PC chairs, PC members, external reviewers
- Each paper reviewed by at least 3 reviewers; discussion moderated by a meta-reviewer
- 8 full day workshops, 10 half day workshops, some happening for 15 years (on Sunday)
- 18 tutorials, 10 tutorials (on Saturday), 8 hands-on tutorials (parallel to the main conference track)
- 5 invited keynotes
- Applied Data Science Invited Talk Track (with separate committee) -> 12 invited industry talks
- Match-making event for start-ups and venture capital
- Papers Mon through Wednesday

# HICSS

- A multi-topic conference
- 50 year history with increasing attendance
- 968 attendees in 2017
- Accepted 644 papers
- Hierarchical track - minitrack structure
  - 10 Tracks - topics changing from year to year with some multi-year continuity
  - 131 Mini-Tracks - topics selected by track chairs
- Track chairs select and appoint mini-track chairs who are responsible for attracting submissions and organizing the reviewing process for their mini-track
- 11 symposia, 12 workshops, 10 tutorials (on Wednesday and Thursday)
- Doctoral colloquium, womens networking
- Papers selected with fast track to 11 different journals
- HICSS is the top IS conference in terms of citations (as recorded by Google Scholar).

# Geometric Modeling

- Focused on geometric modeling aspects in academia and industry.
- “The glory days are over”.
- Lessons learned:
  - Minisymposia were very successful
  - Focused topics …
  - 4 talks chosen and reviewed by the organizers of these mini-events.
- Organizers of the minisymposia are responsible of publishing the results in appropriate journals.
- The organizational structure of these conferences is no longer relevant. At that time there was no “H index”, no “publish or perish”...

# JSM - Joint Statistical Meetings

- Represents an extremal point in a meeting with focused entirely on talks, with no conference publications.
- By design, inclusive of a wide spectrum of academic and industrial statisticians. It’s meant to be a meeting where almost everyone in the field shows up.
- Attendance about 6800-7200, growing.
- Wide range of session formats: Keynote talks in large rooms, smaller invited sessions, numerous parallel sessions for contributed talks, late-breaking topics, panels, etc.
- Meeting arrangements are made by full-time organizers on staff.
- Strong support of professional training and continuing education to encourage participation from industry.

# STOC/FOCS/SODA/SoCG

- Conservative approach. Prestigious, tight community, some feel concern about lack of growth, inflexibility.
- Meetings are usually single track
- STOC accepted  103/422 = 24%
- FOCS accepted  85/307 = 28%
- SODA accepted 181/533 = 34%
- SoCG (Symposium on Comp Geom) left ACM in 2015 by a community vote.
- See here for raw data on theory conferences.

- Recent direction in STOC toward broadening the community by having a wider variety of plenary events, trying to broaden the workshops, turn the conference into a must-attend event for anyone in the field.
- Also trying to get papers from outside disciplines - not clear if the meeting is inviting a speaker, or a specific paper.
- Latent conflicts, reluctance to experiment
- “When a field starts deciding what’s not in it, that’s when it has problems.”

# International Symposium on Graph Drawing

- Tightly focused, stable, lacks outreach.
- Very collaborative PC structure: each submission has several assigned reviewers, PC members can also self-assign any sub.
- Accepts about 50% of submissions.
- Separate theory and practice tracks, posters.
- Accepted papers available before the conference in a section of arxiv
- Proceedings published in Springer LNCS
- Full versions of papers often published in a related online journal, JGAA.

- 3 day meeting, attendance about 100.
- Complex organizational structure: Steering Committee composed of  3 Founding Members, 2 Elected members, 2 Appointed Members, 5 Rotating Members and an Advisory Board (five appointments that never expire)
- PC chairs, PC members invited annually.
- Despite an early start (1995), practical graph visualization papers are often preferentially submitted to larger meetings.

# Acknowledgements

Disclaimer: this summary is interpretive, and not meant to represent the facts or opinions offered by the external experts we contacted.  The committee members take full responsibility for these descriptions. (Blame us, not them!)

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