

Joint Simulation Subcommittee

ACP80(1)

Sponsor Committees:

ACP50: Traffic Flow Theory and Characteristics

ACP80: Traffic Simulation

January 5, 2021 | 12:00 – 1:30p EST

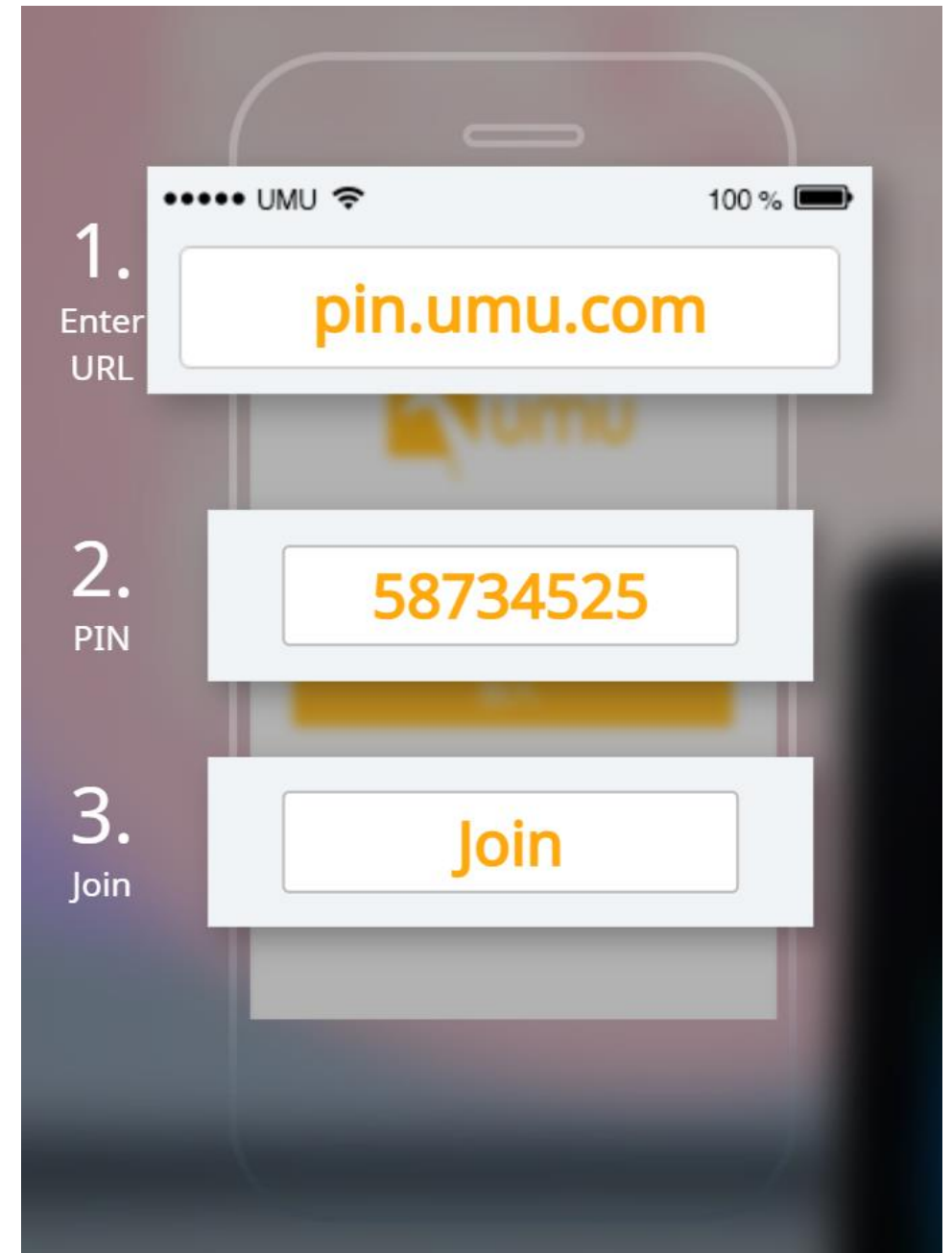
Online | Zoom Platform



2021 TRB Annual Meeting

Agenda

- A. Welcome and Introductions – *Chris Melson*
- B. History of “Old” SimSub AHB45(1) – *George List, Mohammed Hadi*
- C. Introduction of “New” SimSub – *John Shaw, Chris Melson, ALL*
 - Discuss: (1) proposed role and activities and (2) propose liaison list and structure
- D. Open Discussion (Time Permitting) – *ALL*
 - Discuss topics identified in RSVP survey
 - Liaisons voluntarily provide updates
- E. Wrap Up – *Chris Melson*



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Sponsor Committees

AHB45:	TRAFFIC FLOW THEORY
AHB40:	HIGHWAY CAPACITY AND QUALITY OF SERVICE
AHB20:	FREEWAY OPERATIONS
AHB25:	TRAFFIC SIGNAL SYSTEMS
ADB30:	TRANSPORTATION NETWORK MODELING
AHB55:	WORK ZONE TRAFFIC CONTROL
ADC20:	TRANSPORTATION AND AIR QUALITY
AHB35:	MANAGED LANES

SimSub – A Brief History

SimSub Meeting / TRB Annual Meeting
January 5, 2021

George List, NC State

Impetus – 2002 - 2003

- 2002

- Workshop at TRB (Nate Gartner, chair) - maybe the first
 - Review of previous workshops - Pitu Mirchandani (e.g., Sedona, Tucson)
 - Reports about simulation within TFT (Hani Mahamasanni), HCQS (George List), Freeway Ops (Adolf May), and Signal Systems (Rick Denney)
 - ITE Task Force (Charlie Wallace)

- 2003

- Workshop at TRB (George List, chair)
- Discussions about SimSub in Sitges, Spain (June 2003)
- SimSub Prospectus, as A3A11(1) , from TFT

- 2004

Formation - 2004

- Workshop, chaired by Nate Garnter
 - Jointly sponsored by TFT and HCQS
 - Heavily focused on NGSIM
- "Joint Sub-Committee on Traffic Simulation Models"
 - Discussions about forming SimSub (January 2004)
 - Chairs: Nate Gartner (TFT) and Rick Dowling (HCQS)
 - Monday evening (*as usual*)
- Prospectus for SimSub (Summer 2004)
 - As technology advances, traffic simulation is playing an increasing role as a problem solving tool for transportation system analysis. The interest in simulation cuts across the boundaries of several TRB committees. There is a need to coordinate the efforts of these committees to avoid duplication and conflict
 - Sponsor: TFT (A3A11)
 - Co-Sponsor: HCQS (A3A10)
 - Co-Chairs: Nate Gartner and Rick Dowling

First Official Year - 2005

- Workshop
- Subcommittee Meeting at TRB
 - Ken Courage became chair
 - New Number AHB45(1)
 - Sponsor: Traffic Flow Theory (AHB45)
 - Co-Sponsor: Highway Capacity and Quality of Service (AHB40)
 - Rob Bertini offered to host the subcommittee's website (Secretary, TFT)
- First midyear meeting at Sedona, Sept 2005
- Task Groups
 - Annual workshop (John Halkias, James Colyer)
 - Newsletter (Ken Courage)
 - Liaison and Outreach (Alex Scabardonis)
 - Research Needs and Resources (Mohammed Hadi, Daiheng Ni)
 - Simulation Outcome Summaries (Do Nam, Henry Liu)
- New Co-Sponsors
 - Freeway Operations (AHB20)
 - Traffic Signal Systems (AHB25)

2006-2010

- Chair – Ken Courage
- NGSIM became a major focus and parallel activity
- Activities
 - Annual workshop
 - Subcommittee meeting
 - Midyear meeting in Charlotte (2007)
 - Newsletter (2006 et seq.)
 - Mesoscopic Modeling task group (2006, Yi-Chang Chiu)
 - VCV task group (2009, Ray Benekohal)
- Awards
 - Lifetime Achievement
 - Ed Lieberman (2007)
 - Panos Michalopoulos (2009)
 - Best Paper
 - Jung-Beom Lee and Kaan Ozbay (2009)

2010-2018

- Chair - George List, Secretary – Mike Hunter
- Activities
 - Workshop
 - Subcommittee meeting
 - Newsletter (Ken Courage, then David Hale, 2012)*
 - Task group meetings (especially VCV)
 - New Task Group
 - Agent-Based Modeling & Simulation (Monty Abbas)
 - Website Hosts (Rob Bertini, Alex Stevanovic, 2011)
 - Midyear meetings (2011, 2012, 2014a, 2014b)
 - TSSM focus (from 2012 midyear meeting onward)
 - SimCap Partnering (2011)
 - Task Committee for TSSM
- New Co-Sponsors (2011)
 - Transportation Network Modeling (ADB30)
 - Work Zone Traffic Control (AHB55)
 - Transportation and Air Quality (ADC20)

* Became Annual Report and sometimes, Midyear Report

2010-2018 (2)

- Lifetime Achievement Awards
 - Clyde Lee (2010)
- Best Paper Awards
 - Wilco Burghout, Haris Koutsopoulos, and Ingmar Andreasson (2010)
 - Vincenzo Punzo and Jordi Casas (2013)
 - Shannon Warchol, R. Thomas Chase, Christopher Cunningham (2017)
 - Prakash, Seshadri, Antoniou, Pereira, and Ben-Akiva (2018)
- Best Model Development Award
 - Daniel Jian Sun and Lily Elefteriadou (2010)

An Example Year – 2014

- Annual Meeting, at TRB, typically Monday evening
- Annual TRB Workshop
 - Workshop 172 at 2014 TRB Annual Meeting: Simulation - Looking Back and Looking Ahead
 - Top experts provided discussion papers on the history, current status, and future of traffic simulation.
 - The audience provided input for a forward-looking discussion about future trends and research needs.
Workshop Host: Robert Bertini, Chair, Traffic Flow Theory Committee (AHB45)
- Mid-year Meetings: typically in conjunction with TFT and HCQS
 - June 2014 in Lexington, KY in conjunction with HCQS
 - August 2014 in Portland, OR in conjunction with TFT
- Task Groups: activity all-year round, reports at annual and mid-year meetings
- Webinars: joint with ITE SimCap
- Website: general information about SimSub and its activities
 - <https://sites.google.com/site/trbcommitteeahb45/>
- Newsletter: twice per year
 - July 2014 [SimSub Newsletter New!](#)
 - January 2014 [SimSub Newsletter](#)
- Awards
 - SimSub Best Paper Award
 - Traffic Simulation Pioneer Award
- Transportation System Simulation Manual (upcoming)



2018-2020

- Chair – Mohammed Hadi
- Activities
 - Workshop
 - Subcommittee meeting
 - Website (Taylor Li)
 - Annual Report (David Hale)
- Lifetime Achievement Awards
 - John Halkias (2018)
 - Alex Scabardonis (2018)
 - Jaume Barcelo (2019)
 - Ken Courage (2020)

Crosscut Summaries

- Sponsoring and Co-Sponsoring Committees
 - AHB45: Traffic Flow Theory & Characteristics (sponsor)
 - ADB30: Transportation Network Modeling
 - AHB20: Freeway Operations
 - AHB25: Traffic Signal Systems
 - AHB40: Highway Capacity and Quality of Service
 - AHB55: Work Zone Traffic Control
 - ADC20: Transportation and Air Quality
 - AHB35: Managed Lanes Committee
- Chairs
 - 2003-2005 Nate Gartner / Rick Dowling
 - 2005-2010 Ken Courage
 - 2010-2018 George List
 - 2018-2021 Mohammed Hadi
 - 2021-present Chris Melson/John Shaw

Crosscut Summaries (2)

- Task Groups (as of January 2020)
 - Annual Workshop - John Halkias and Jim Sturrock
 - Liaison and Outreach - Taylor Li, David Hale
 - Research Needs and Resources - Mohammed Hadi
 - Verification, Calibration, and Validation - Rahim Benekohal
 - Mesoscopic Models - Yi Chang Chiu
 - Safety Modeling and Simulation - David Petrucci
 - Agent
- Newsletter / Annual Report Editors
 - Ken Courage (2005-2011)
 - David Hale (2011-present)
- Website hosts
 - Robert Bertini
 - Aleksandar Stevanovic
 - Taylor Li

Crosscut Summaries (3)

- Awards Committee Chairs
 - Tom Rioux
 - Ed Lieberman
 - Tomer Toledo
 - Kaan Ozbay
- Lifetime Achievement Awards
 - 2007: Edward Lieberman (this was the first)
 - 2009: Panos Michalopoulos
 - 2010: Clyde Lee
 - 2018: John Halkias
 - 2018: Alex Scabardonis
 - 2019: Jaume Barcelo
 - 2020: Ken Courage

Crosscut Summaries (4)

- Best Paper Awards
 - 2009: Jung-Beom Lee and Kaan Ozbay
 - 2010: Wilco Burghout, Haris Koutsopoulos, and Ingmar Andreasson
 - 2013: Vincenzo Punzo and Jordi Casas
 - 2017: Shannon Warchol, R. Thomas Chase, Christopher Cunningham
 - 2018: Prakash, Seshadri, Antoniou, Pereira, and Ben-Akiva
- Best Model Development Award
 - 2010 - Daniel Jian Sun and Lily Elefteriadou

Reflection on Purpose

- *Provide* a forum for presentation, discussion and dissemination of information on traffic simulation models.
- *Recommend* parent committee actions on:
 - Capabilities of existing models
 - “Best practices” and guidelines of model application
 - Development of improved models
 - Calibration and validation issues
- *Maintain* liaison with other TRB committees and FHWA
- *Promote* basic research on simulation models
- *Identify* data needs (demand, etc.)

Questions / Thanks

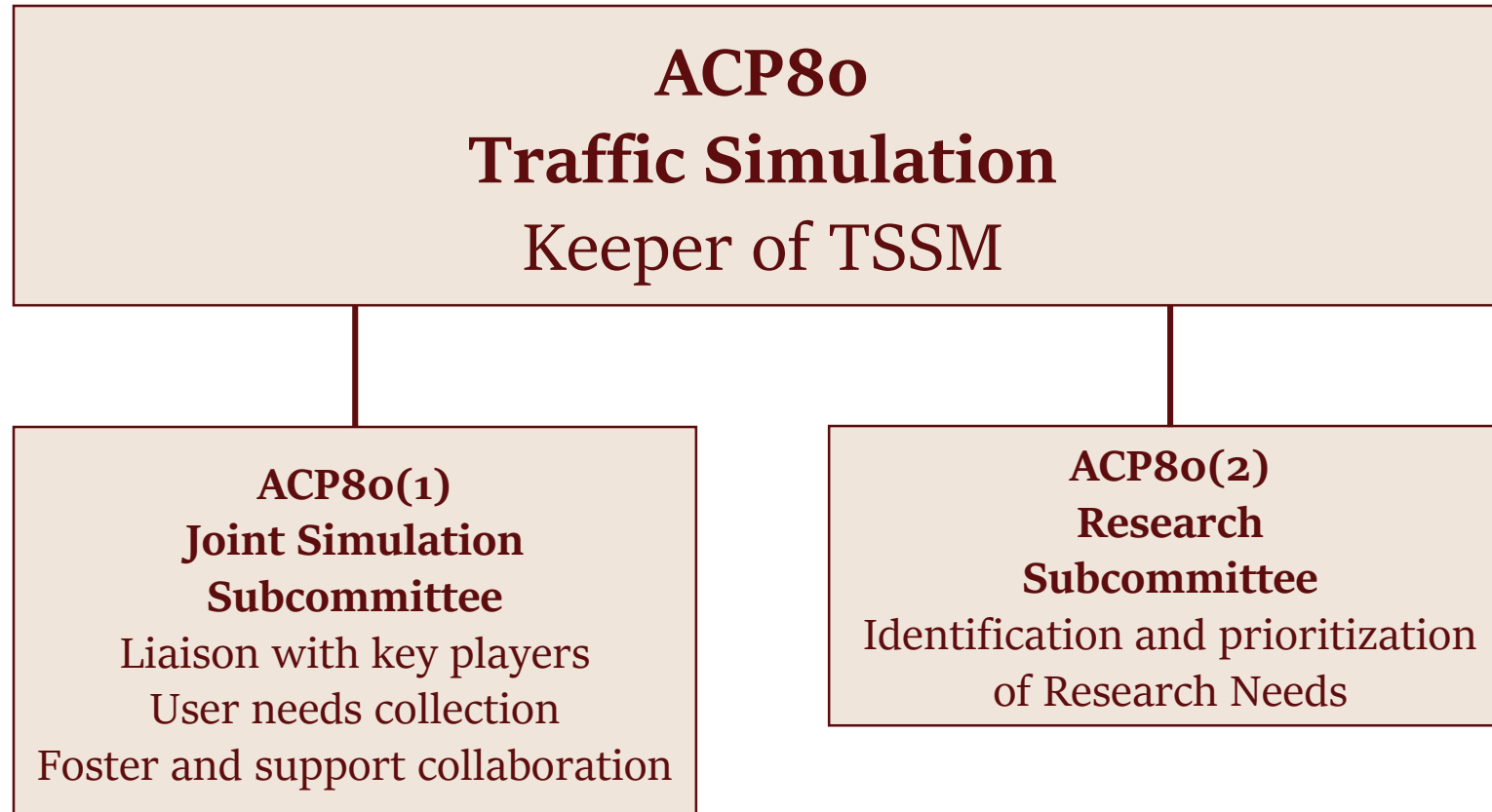
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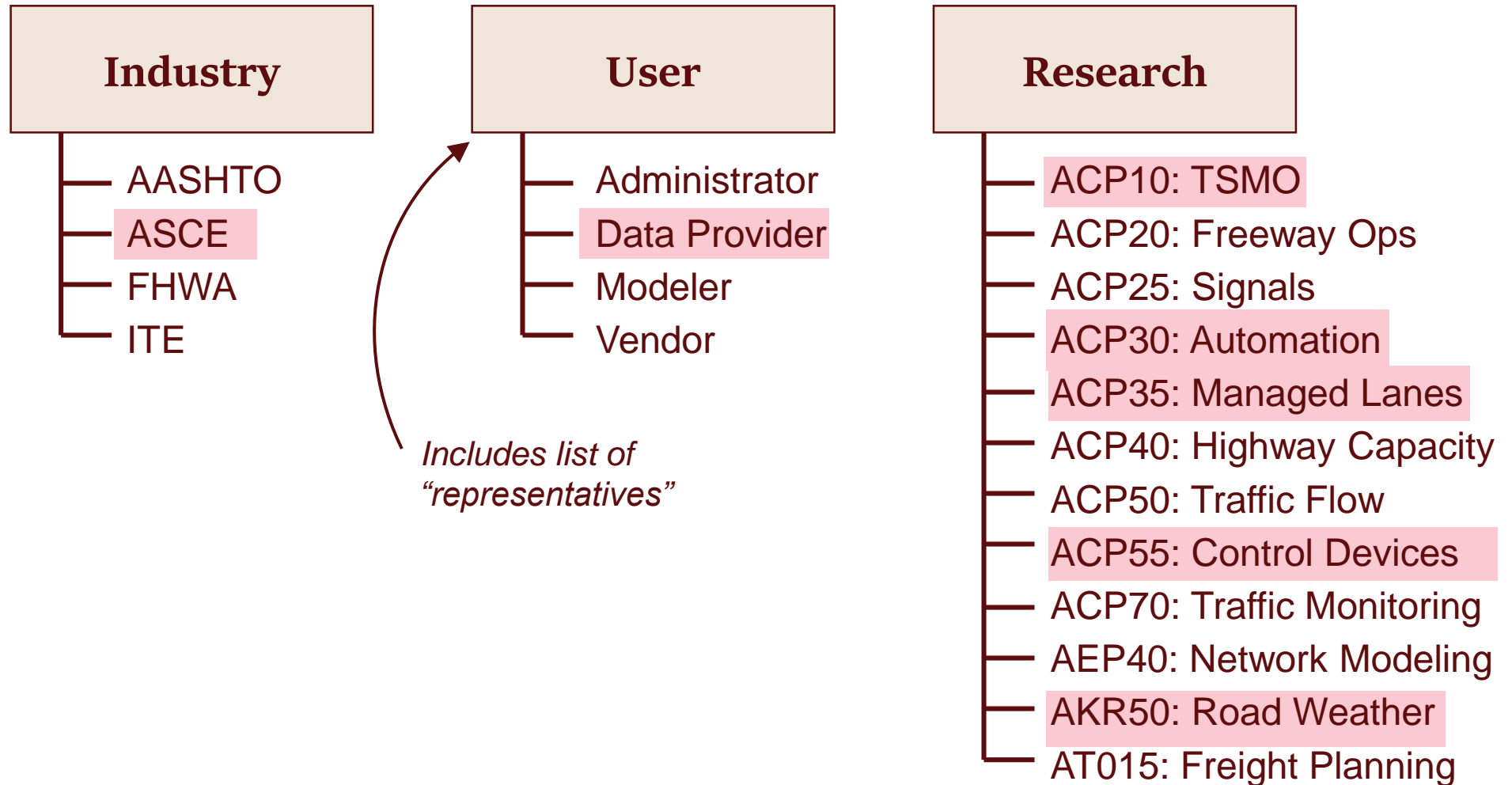


**SIMSUB OF
THE FUTURE**

Anticipated Role



Liaison Structure



Agenda

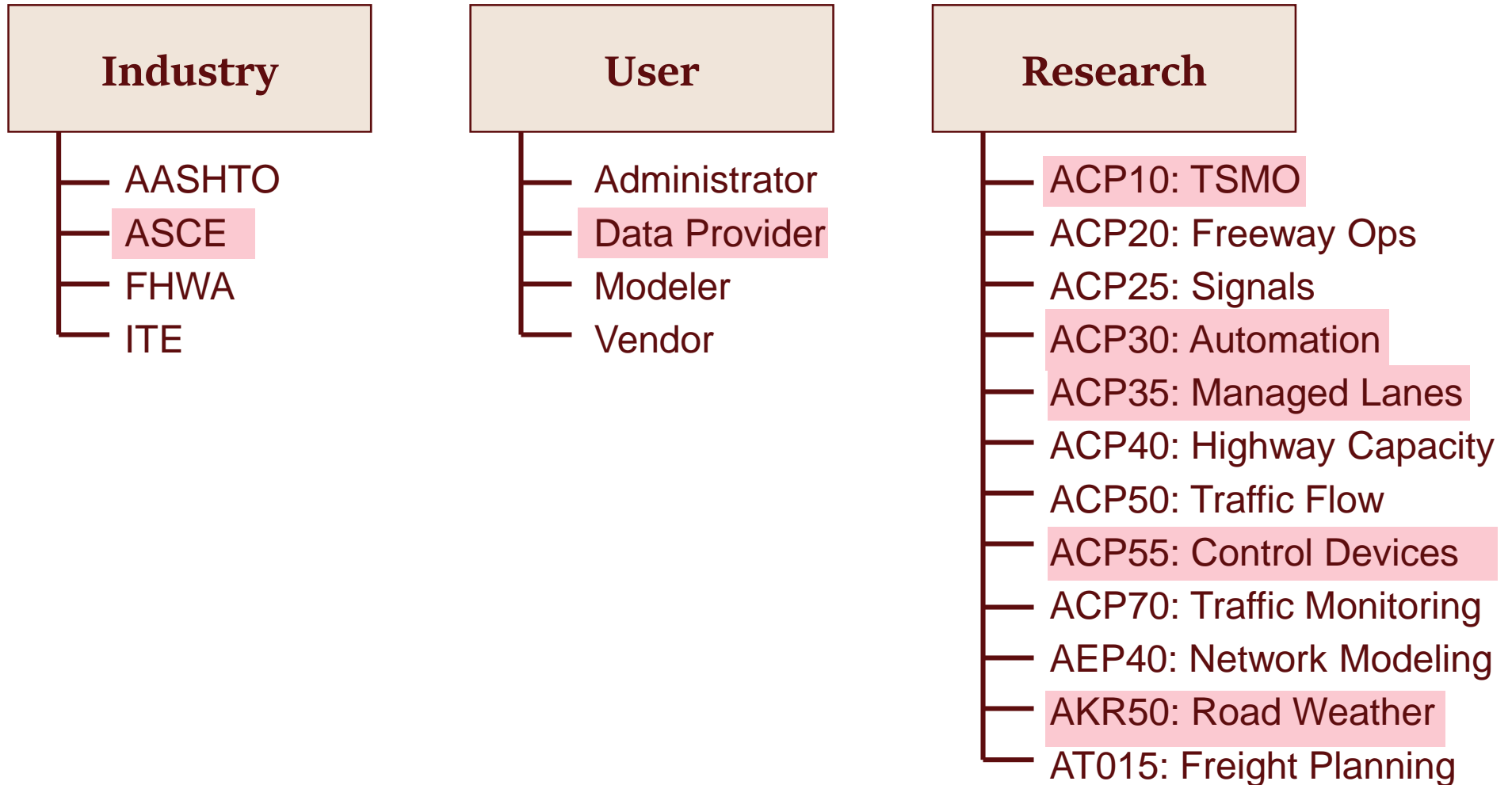
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Topics from Survey

- Role of SimSub
 - What can be defined as “simulation”?
 - Expanding collaboration across Operations Section and Safety and Operations Group
- User Needs
 - Calibration (data set sharing, limited data, customized criteria, acceleration profiles)
 - Application/best practices/success stories of implementing latest FHWA TAT Vol. 3 update
 - Assessing quality of simulation studies
 - Use of simulated performance measures to augment safety-related analysis
 - CAV modeling

Liaison Updates



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