



OFFICERS

PRESIDENT, 2017-18

Matthew Goldman
Ericsson

PAST PRESIDENT, 2017-18

Robert P. Seidel
CBS Television Networks

EXECUTIVE VICE PRESIDENT, 2017-18

Patrick Griffiths
Dolby Laboratories

STANDARDS VICE PRESIDENT, 2016-17

Alan Lamshead
Retired

FINANCE VICE PRESIDENT, 2016-17

Paul Stechly
Applied Electronics Ltd.

EDUCATION VICE PRESIDENT, 2017-18

Richard Welsh
Sundog Media Toolkit

MEMBERSHIP VICE PRESIDENT, 2016-17

William C. Miller
Miltag Media Technology, LLC

SECRETARY/TREASURER, 2017-18

Peter Wharton
BroadStream Solutions, Inc.

EXECUTIVE DIRECTOR

Barbara H. Lange
SMPTe Headquarters

DIRECTORS

STANDARDS DIRECTORS

Bob Edge
Bob Edge TV Consulting

Paul Treleven
IABM

Dave Schnuelle
Dolby Laboratories

EDUCATION DIRECTORS

Sara Kudrle
Grass Valley, a Belden Company

Hans Hoffmann
EBU

Sean Lancaster
Southampton Solent University

MEMBERSHIP DIRECTORS

Karl Kuhn
Tektronix, Inc.

Peter Weitzel
Weitzel.tv

Bruce Follmer
Retired

GOVERNORS

GOVERNOR-AT-LARGE

Leon Silverman, 2017
The Walt Disney Studios

ASIA/PACIFIC REGION

John Maizels, 2016-17
Entropy Enterprises

Masayuki Sugawara, 2017-18
NEC Corporation

CANADIAN REGION

François Vaillant, 2017-18
CBC/Radio-Canada

Paul Briscoe, 2017
Televisory Consulting

CENTRAL REGION

Brian Claypool, 2017-18
Barco, N.V.

EASTERN REGION

John A. Luff, 2016-17
HD Consulting

George Hoover, 2017-18
NEP Group

HOLLYWOOD REGION

Patricia Keighley, 2016-17
IMAX Corporation

Andrew G. Setos, 2017-18
Blackstar Engineering

Christopher Fetner, 2017-18
Netflix

INTERNATIONAL REGION

Siegfried Foessel, 2016-17
Fraunhofer IIS

François Abbe, 2017-18
Quest Media

NEW YORK REGION

Douglas I. Sheer, 2017-18
DIS Consulting Corp.

John Ferder, 2016-17
CBS, Inc.

SOUTHERN REGION

Dan Burnett, 2016-17
Ericsson

Michael Koetter, 2017-18
Turner Broadcasting

U.K. REGION

Bruce Devlin, 2016-17
Consultant

WESTERN REGION

Gary Mandle, 2017-18
Sony Electronics Inc.

Mark Narveson, 2016-17
Artegis Law Group, LLP

SECTION CHAIRS

ATLANTA

Jack Linder
Jack Linder Consulting

AUSTRALIA

Paul Broderick
Telstra

CENTRAL TEXAS

Dan Burnett (Governor)

CHICAGO

Brian Claypool (Governor)

DALLAS/FORT WORTH

Dan Burnett (Governor)

DETROIT

Louis Johnson IV
Auxecutive/Arrington-Johnson, LLC

FLORIDA

Ken Botelho
Principle Engineering Consultant

GERMANY

Siegfried Foessel (Governor)
Fraunhofer IIS

HOLLYWOOD

Jim DeFilippis
TMS Consulting

HONG KONG

Terence Wong
Hong Kong Design Institute

INDIA

Ujwal Nirgudkar
FilmLab India

ITALY

Alfredo Bartelletti
BLT Italia srl

MONTREAL/QUEBEC

Daniel Guevin
Radio Canada

NASHVILLE

Michael Koetter (Governor)

NEW ENGLAND

Brian Claypool, 2017-18
The Camera Co., Inc.

NEW YORK

Jeff Cohen
TVU Networks

NORDIC

François Abbe (Governor)

OHIO

John R. Owen
Q Communications, LLC

PACIFIC/NORTHWEST

Mark Siegel
Advanced Broadcast

PHILADELPHIA

Dover Mundt
Canon USA, Inc.

PITTSBURGH

Ed Fraticelli
PMI

POLAND

Kamil Rutkowski
Di Factory

ROCHESTER

Ricardo R. Figueroa
Rochester Institute of Technology

ROCKY MOUNTAIN

Tom Craig
Rocky Mountain PBS

RUSSIA

Oleg Berezin
Nevafilm Co.

SACRAMENTO

Bob Hudelson
AJA Video Systems

SAN FRANCISCO

Keith Ian Graham
Graham Associates

TORONTO

Leigh Whitcomb
Imagine Communications

UNITED KINGDOM

Simon Gauntlett
Dolby

WASHINGTON, D.C.

Tom Hackett
Communications Engineering, Inc.

STUDENT CHAPTERS BY SECTION

AUSTRALIA

Charles Sturt University
Wagga Wagga, NSW,
Australia

Sydney Student Section
Sydney, Australia

DALLAS

Baylor University
Waco, TX

CHICAGO

Purdue University
West Lafayette, IN

FLORIDA

Full Sail University
Winterpark, FL

HOLLYWOOD

Los Angeles City College
Los Angeles, CA

Marymount
Rancho Palos Verdes, CA

Pasadena City College
Pasadena, CA

Media Arts Collaborative
Charter School
Albuquerque, NM

USC University of Southern
California
Los Angeles, CA

HONG KONG

Hong Kong Design Institute
(HKDI)

Hong Kong

Hong Kong Institute of
Vocational Education (IVE)
New Territories, Hong Kong

NEW ENGLAND

Stonehill College
Easton, MA

Fitchburg State University
Fitchburg, MA

NEW JERSEY

Rowan University
Glassboro, NJ

Stevens Institute of Technology
Hoboken, NJ

William Patterson University
Wayne, NJ

NEW YORK

Borough of Manhattan
Community College
New York, NY

Bronx Community College
Bronx, NY

New York City College
of Technology
Brooklyn, NY

Kingsborough Community College
Brooklyn, NY

PHILADELPHIA

Millersville University
Millersville, PA

ROCHESTER

Rochester Institute
of Technology
Rochester, NY

UNITED KINGDOM

Birmingham City University
Birmingham, U.K.

Ravensbourne
London, U.K.

Southampton Solent University
Southampton, Hampshire, U.K.

University of Salford
Manchester, U.K.

University of Surrey
Guildford, U.K.

WASHINGTON, DC

George Mason University
Fairfax, VA

Loyola University
Baltimore, MD

Loyola University
Baltimore, MD

Loyola University
Baltimore, MD

BOARD OF EDITORS

Glen Pensinger, *Chairman*

Grant Allan

Ioan Allen

Bobby Andishmand

Harvey Arnold

David Bancroft

Al Barton

John Belton

Steve Bilow

V. Michael Bove

Wayne Bretl

John Brooks

Angela Bünger

Patrick Candry

Dominic Case

Curtis Chan

Philip Cianci

Andres C. Colpa

Greg Coppa

Don Craig

Michael DeValue

Michael A. Dolan

Thomas Edwards

John Emmett

Lincoln L. Endelman

John Ferder

Nuno Fonseca

John Footen

Norbert Gerfelder

Brad Gilmer

Paul R. Goldberg

Keith Graham

Eric Gsell

Scott Hamilton

John Hartwell

Hans Hoffmann

Randall Hoffner

Tomlinson Holman

Fred Huffman

Kim Iannone

Kees Schouhamer Immink

Stephen Jensen

Al Kovalick

Sara Kudrle

W. J. Kumeling

Vicki Lau

Michael Liebman

Peter Ludé

John Luff

Ian MacSpadden

Andrew H. Maltz

Tets Maniwa

Richard Marcus

Donald C. McCroskey

William C. Miller

Natalie Morningstar

Neil Neubert

James E. O'Neal

Pirkko Oittinen

Karl Paulsen

Felix Poulin

Charles Poynton

Pete Putman

Ed Reuss

Adam Schadle

Mark Schubert

Edgar A. Schuller

Gavin Schutz

Thomas A. Scott

Neil Shaw

Wes Simpson

Akash Singh

Michael Smith

James Snyder

Kevin Stec

Steve Storozum

Stephen A. Stough

Peter D. Symes

Paul Thurston

Aleksandar Todorovic

Upasna Vishnoi

Reinhard E. Wagnerr

Evans Wetmore

Jerry Whitaker

Jim Wilkinson

William Y. Zou

SMPTe Motion Imaging Journal (ISSN: 1545-0279) published 9 times per year by the Society of Motion Picture and Television Engineers, Inc., 3 Barker Ave., White Plains, NY 10601. Periodicals postage paid at White Plains, NY, and at additional mailing office. Copyright © 2017 by the Society of Motion Picture and Television Engineers, Inc. No part of this issue may be reproduced without written permission of the publisher. Statements and opinions expressed in articles or editorials in the *SMPTe Motion Imaging Journal* are expressions of contributors and do not necessarily represent the policies or opinions of the Society. A complete list of *SMPTe* membership types and benefits is available at www.smpte.org. Advertisements appearing in this publication are the sole responsibility of the advertiser. Subscription rates: *SMPTe* Members, \$35 USD, included in membership dues; straight subscription: \$500 (shipping included); Single copy, \$30.00, plus shipping. *SMPTe* owns the copyrights to all published material, unless otherwise stated. *SMPTe Motion Imaging Journal* is registered with Canada Post: CPM # 41003019. POSTMASTER: Send change of address to *SMPTe Motion Imaging Journal*, 3 Barker Ave., White Plains, NY 10601. All rights reserved.
PRINTED IN THE USA