

**SUMMARY OF
IGES/PDES
ORGANIZATION
TECHNICAL
COMMITTEE MEETING
BUFFALO, NEW YORK
JULY 16-21, 1989**

**Gaylen R. Rinaudot
IGES/PDES Coordinator**

**U.S. DEPARTMENT OF COMMERCE
National Institute of Standards
and Technology
Center for Manufacturing Engineering
Factory Automation Systems Division
Gaithersburg, MD 20899**

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**U.S. DEPARTMENT OF COMMERCE
Robert A. Mosbacher, Secretary
NATIONAL INSTITUTE OF STANDARDS
AND TECHNOLOGY
Raymond G. Kammer, Acting Director**

NIST

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October 1989



**U.S. DEPARTMENT OF COMMERCE
Robert A. Mosbacher, Secretary
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INITIAL GRAPHICS EXCHANGE SPECIFICATION
PRODUCT DATA EXCHANGE SPECIFICATION

SUMMARY OF THE GENERAL ASSEMBLY

Buffalo, New York
16 - 21 July 1989

This document contains a summary of the IGES/PDES Organization General Assembly meeting and summaries of the IGES/PDES Organization technical committee meetings that were held in Buffalo, New York, on July 16 - 21, 1989. Brad Smith welcomed the membership to Buffalo, New York. Attendance list for the meeting is attached as Appendix A.

This was the first occasion NIST's offices of Special Activities and Comptroller assumed the administrative and financial responsibilities for our quarterly meeting. Any comments, or suggestions, regarding any aspect of this meeting should be directed to me at NIST, Building 220, Room A-150, Gaithersburg, MD 20899. We are looking for ways to make these meetings more effective and input from you is the best way to accomplish this. All comments will be put together and presented to the Special Activities Office in hopes of continual improvement. I want to thank the Special Activities Office for their teamwork.

This was also a first for a speaker at our banquet. We would like to thank Jim Snyder, Martin Marietta Energy Systems, Knoxville, TN, for speaking to us. I believe his presentation, "Continuing Improvement, A Status Report From The Steering Committee," (copies of vugraphs attached as Appendix B) updated our General Assembly on Steering Committee plans. We apologize to Jim for the visual aid difficulty.

Handouts at this meeting included: RFCs 437D, 449, 450, 451, and 452.

Two Resolutions of Appreciation were passed by the General Assembly and are attached as Appendix C.

Appendix D through T give summary information of individual technical committee meetings. These reports are submitted for inclusion in this package by the appropriate chairman, or designee, of that particular committee. Any questions concerning these reports should be directed to the appropriate committee chairman. If no summary is given, please contact the relevant committee chairman for update on that committee.

Prepared by:
Gaylen R. Rinaudot

APPENDICES:

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IGES/PDES Attendance - Buffalo, NY 7/89

10-03-1989 AT 13:28

LNAME	FNAME	COMPANY	PHONE
Advani	Gu	IBM	213 312-5967
Altemueller	Jeff L	McDonnell Douglas Corporation	314 234-5272
Anderson	Bill D.	Battelle	803 760-3346
Anderson	Dennis E.	NIDDESC	206 476-5963
Baker	Len	U.S. Air Force	513 255-2413
Beazley	William	CALS Report	713 690-7644
Bentrup	Bill	Gerber Systems Tech. Inc.	203 282-1478 x5213
Benzinger	Michael A.	McDonnell Douglas	314 233-7001
Bernstein	Joe	Boeing Computer Services	206 342-5404
Bloom	Buzz	Prime Computer, Inc.	617 275-1800 x4376
Bomkamp	Michael	S.D.R.C.	513 576-2400
Borad	Jim	IBM	213 312-2807
Bracken	Constance L.	Electronic Data Systems	313 265-4906
Bradford	James R.	Allied Signal Aerospace	816 997-5148
Brainin	Jack	David Taylor Research Center	202 227-1432
Bretzke	Charles	US Army/AMC	703 274-5676
Brooks	Richard	McDonnell Douglas Corp.	714 896-5111
Brown	Don	Naval Ordnance Station	502 364-5631
Bsharah	Frederick	Rockwell International NIAA	213 647-6915
Burkett	William C.	Lockheed Hermautical Systems Co.	818 847-6013
Burns III	Bernard J.	Naval Surface Warfare Center	202 394-4310
Cain	William D.	DOE/Martin Marietta	615 574-3235
Caldwell	D. M.	General Dynamics	817 737-1931
Calkins	Bruce	SEACOSD	707 646-2579
Calvin	Donald U.	JJH, Inc.	703 920-3435
Casey	Eva W.	Schlumberger Tech.	508 671-9965
Cassell	Byron	Tandem Computers, Inc.	301 975-3818
Chaffee	Steve	Auto-trol Technology	303 252-2858
Chan	Stephen	National Research Council of Canada	613 943-0460
Chen	Jang-Ping	Univ of Mass	413 545-3676
Childs	James	James J. Childs Assoc., Inc.	703 549-4592
Chmielewski	Irvin	AIAG/EDS	313 358-3570
Christensen	Noel	DOE/Allied Signal, Inc.	816 997-3984
Cleveland	Fred	Manuf & Consulting Services, Inc.	714 951-8858
Collins	Michael F.	Control Data Corporation	612 642-8041
Coryell	Anne Louise	Allied Signal Automotive	313 362-8481
Counts	Gary L.	McDonnell Aircraft Corporation	314 872-6729
Craig, Jr.	Palmer H.	USAF WR-ALC	912 926-3236
Crusey	Jesse L.	NIST	301 975-3566
Danielson	Pamela R.	General Dynamics	817 737-1949
Danner	William F.	NIST	301 975-5855
Day	Anthony James	Sikorsky Aircraft UTC	203 386-5320
Deeds	Lisa	Navy David Taylor Research Center	301 227-1355
Dellinger	David Leigh	Boeing Military Airplanes	316 526-3928
Dickerson	Donna	Pratt and Whitney	407 796-2661
Dunn	Mark	United Tech Res Ctr	203 727-7461
Durnin	Marc W.	LASC-GA	404 933-1223
Eggers	Joseph	McDonnell Douglas	314 234-5613
Erman	Ken	CADKEY, Inc.	203 647-9235

IGES/PDES Attendance - Buffalo, NY 7/89

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LNAME	FNAME	COMPANY	PHONE
Everitt	Peter R.	Grumman Data Systems	803 760-3265
Fallon	Kristine	Computer Technology Management Inc.	312 454-9100 x8520
Farmwald	Jeff	Naval Avionics Center	317 353-7552
Farrell	Jill	Lawrence Livermore Nat'l	415 423-6348
Felt	Jim	Boeing Computer Services	316 526-9549
Fletchers	Rob L.	Grumman Data Systems	803 760-3331
Floyd	Bill	General Dynamics	817 777-8887
Foreman	William	McDonnell Douglas	314 872-5689
Fowler	James	NIST	301 975-3544
Fox	Mike	GKN Technology Ltd.	UK 902 334 361
Francis	Ray M. (Mike)	NWC -- (Rm. 1600) -- JAN88	619 939-1334
Frazier	Charlie	NASSCO	619 544-3619
Freund	Kevin	General Dynamics - DSD Fort Worth	817 737-1417
Furlani	Cita	NIST	301 975-3543
Gartner	Eran	Digital Equipment Co.	
Gerardi	Michael	Bath Iron Works	207 443-3311 x3430
Gilbert	Chip	Martin Marietta	305 356-2428
Gilbert	Mitchell	Grumman Aircraft Systems	516 346-9699
Gilman	Charles R.	US Air Force	513 255-7371
Gischner	Burton	General Dynamics - Electric Boat	203 446-3948
Goldstein	Barbara	McDonnell Douglas	314 234-1158
Goodman	Shirley	Naval Ordnance Sta	502 364-5579
Gordon	James	McDonnell Douglas	314 233-8556
Goult	R.J.	Cranfield Institute of Technology	0234 750111 x3138
Green	Ronald	Boeing Military Airplane Co	316 526-2986
Grout	John S.	Martin Marietta	512 338-3516
Gurga	Eugene F.	J. I. Case	312 789-7853
Gygi	Michael	McDonnell Douglas	714 952-6250
Halford	Joseph D.	E.I. DuPont DeNemours & Co.	302 366-2795
Harrison	Randy J.	Sandia National Labs	505 846-5844
Harrod Jr	Dennette A.	Prime Computer Inc.	617 275-1800 x5172
Heatley	Lynn	Boeing Commercial Airplanes	206 234-0878
Herbert	Charles T.	Boeing Georgia, Inc.	912 781-3108
Horie	Yoshiaki	Nissan Motor Co.	
Hulse	Kayla	Boeing Computer Services	316 526-6415
Hunten	Keith	General Dynamics Corporation	817 777-2147
Hurlburt	David J.	General Motors Tech Ctr	313 947-0499
Hutchins	Joe	McDonnell Douglas	314 925-7335
Isenberg	Madeleine R.	Northrop Corporation	213 332-8868/4657
Izraelezitz	Gabe	CADKEY, Inc.	203 647-0220
Johnson	Clarence	NIST	301 975-3562
Johnson	Jim	General Dynamics	714 868-6833
Johnson	Stanley	NASA/Johnson Space Center	713 483-4692
Jurrens	Kevin	Allied-Signal Aerospace	816 997-5372
Kang	Tzong-Shyan	Univ of Mass	413 549-3676
Karns	Larry	Arthur Little, Inc.	803 760-3278
Kassel	Ben	David Taylor Research Ctr	301 227-1355
Kelly	J.C.	DOE Sandia National Labs	505 846-1835
Kiggans	Robert	South Carolina Research Authority	803 760-3342

IGES/PDES Attendance - Buffalo, NY 7/89

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LNAME	FNAME	COMPANY	PHONE
Kingston	Phil D.	Newport News Shipbuilding	804 688-0212
Kloetzli	John	J.J.H/NIDDESC	301 984-6006
Kobs	Robert P.	General Dynamics	817 763-2574
Kramer	Thomas	NIST	301 975-3518
Krishnaswami	Ravi	Electronic Data Systems	313 265-7093
Kullik	Tom	McDonnell Douglas	314 947-2972
Larsen	Larry	Boeing	206 931-6442
Lawes	Greg	United Eng & Constructors	215 422-4191
Lawler	Bruce D	ICAD	617 868-2800
Lee	Kaiman	NAVFAC	415 877-7369
Leedy	Thomas	NIST	301 975-2410
Linsner	Jim	Boeing Computer Services	316 526-9548
Little	Maureen	Naval Civil Engineering Laboratory	805 982-5543
Luce	Mark	Texas Instruments	214 956-6400
Lum	Matthew	The Boeing Co	206 931-3567
Makoski	Tom	International TechneGroup Inc.	513 576-3900
Martin	Bryan	Lockheed Aeronautical Systems Company	818 847-2830
Martin	Douglas J.	NASSCO/NIDDESC	619 544-8845
Martino	Linda	IBM Corp.	213 312-5974
Marz	Steven D.	Intergraph	205 772-7641
Mauthe	Richard E.	Boeing Computer Service	206 657-6735
McDonald	Louis	Aerospace Corp.	213 336-5828
McKay	Alison	Leeds University	Leeds 332231
McKee	Larry	IBM	703 367-1298
Meagher	Robert J.	Eastman Kodak	716 726-4512
Mindel	Carolyn F.	S D R C	513 576-2400
Mitchell	Mary J.	NIST	301 975-3538
Molligan	Danny	E.I. DuPont	302 999-5791
Morack	Nellie	CDI Transportation Group	313 578-6320
Morales	Phil	McDonnell Douglas	314 947-7688
Morea	Greg	General Dynamics Corporation	203 446-7608
Morris	Delbert A.	Martin Marietta Astronaut	303 971-9137
Morris	Katherine	NIST	
Moshirvaziri	Sorour	IBM Corp.	213 312-5951
Murphy	James	NAVSEA/NIDDESC	202 692-7660
Murphy	Jim	Tektronics, Inc.	503 627-2266
Mylavarapu	Rao S.	Electronic Data Systems	313 265-7476
Nakayama	Shinichi	Nissan R & D	313 451-1500
Nell	James G.	Westinghouse Electric Corp.	301 993-5856
Nguyen	Hakim	CADKEY, Inc.	203 647-0220
Nickerson	Deborah	NIST	301 975-1301/3552
Nieva	Augusto	Digital Equipment Corp.	508 250-3124
Nnaji	Bartholomew	Univ of Mass	413 545-2852
Nolan	Michael F.	Rosetta Technologies	714 675-5813
O'Connell	Larry	DOE Sandia National Labs	505 844-1061
Ohstrom	Christina	IVF	+46 31-838600
Overbeek	Mike D	International Techne Group	313 357-8404
Owens	Paul (Bob)	Martin Marietta	303 977-1213
Palmer	Mark	NIST	301 975-5858

IGES/PDES Attendance - Buffalo, NY 7/89

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LNAME	FNAME	COMPANY	PHONE
Parker	Lawrence O.	GM-Hughes Electronics	213 513-5074
Parks	Curtis H.	NIST	301 975-3517
Parks	Robert E.	DOE Sandia National Labs	505 844-8674
Paul	Greg A.	General Dynamics	817 777-5041
Pearson	Mark	CADDETC University of Leeds	+44 532-439596
Peltzman	Alan	Peltzman Associates	301 757-6104
Perlotto	Kim	Pratt & Whitney	203 565-4254
Pollak	Gary W.	Society of Automotive Engineers	412 776-4841 x398
Price	David M.	IBM & PDES Inc.	914 433-4402
Primm	Richard	McDonnell Douglas	314 233-6757
Prince	Anthony	Intergraph	205 464-8644
Purdon	James C.	Schlumberger CAD/CAM	313 995-6000
Raikar	Ajay	ALCOA	412 337-2947
Ray	Steve	NIST	301 975-3524
Reed	Kent	NIST	301 975-5852
Reid	E. A.	Caterpillar Inc.	309 578-8919
Remington	David O.	Naval Surface Warfare Cntr.	202 394-4310
Rinaudot	Gaylen R.	NIST	301 975-3564
Rodenberger	C. Mark	General Dynamics - Fort Worth Division	817 763-2570
Rodriquez	Jorge E.	Rodriquez Systems, Inc.	617 270-0627
Rogosch	Dennis K.	Air Force ASD/YFL	
Ross	Kathleen M.	WSAF WRDC	513 255-7371
Roth	Gloria R.	Electronic Data Systems	313 265-4991
Rourke	Patrick W.	Newport News Shipbuilding	804 380-2664
Rumble	John R.	NIST	301 975-2203
Rygiel	Walter J.	Ford Motor Company	313 845-3775
Sack	Charles	United Technologies Research Center	203 727-7170
Sadler	David R.	Naval Sea Combat Sys. Eng.	804 444-9358
Scanlon, Sr.	Stephen L.	Naval Avionics Ctr	317 351-4608
Schachtner	Steven R.	Martin Marietta	407 356-7263
Scheets	William	Caterpillar, Inc.	309 578-3209
Schenck	Douglas	McDonnell Douglas	314 234-5258
Schuldt	Ronald	Martin Marietta	303 971-9581
Schwander	Christopher	E.I. DuPont deNemours & Co.	302 366-2227
Scott	Gladys	Newport News Shipbuilding	804 380-7901
Shaw	Nigel K.	CAD-CAM Data Exchange	1 44 532 332146
Sheldon	Steve	General Dynamics Corp	619 573-3601
Shih	Chia Hui	SDRC	619 792-3907
Shimabukuro	Terry	Naval Ocean Systems Ctr.	619 553-3267
Sieker	Francis-Fritz	Hewlett-Packard	303 229-4089
Simpson	Frank	CADKEY Inc.	203 647-0220
Sinha	Sanjay	Ford Motor Company	313 337-3198
Skeels	Jack A.	Northrop Corporation	213 332-2461
Skidmore	Lindsay	Naval Weapons Support Center	812 854-1285
Smith	Bradford	NIST	301 975-3558
Snyder	Glenn	Intergraph Corporation	205 772-7781
Stern	James	Northrop Corp	213 332-5960
Steven	Ray R.	NIST	301 975-3524
Stinson	Jack A.	PDES	803 792-3219

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LNAME	FNAME	COMPANY	PHONE
Stoscup	John C.	CAD/PRO	315 845-2592
Strub	Michael C.	GM/EDS	313 265-4893
Subbarao	Potru	General Motors Tech Center	313 947-0500
Sweeney-Easte	Errol	PACCAR Inc.	206 251-7305
Tamura	Randall	IBM Corporation	213 447-4300
Tilghman	Donald R.	Naval Aviation Depot	919 466-7289
Trapp	George	University of W. Virginia	304 293-3607
Turcotte	Bill	IGES Data Analysis Corp	312 449-3430
Tyler	Joan	NIST	301 975-6545
Van Wie	Charles H.		314 276-1320
Walkinshaw	Steven	US Dept. of Transportation	617 494-2024
Warthen	Barbara	Prime/Calma	619 587-3000
Watts	Steven L.	Int'l TechneGroup Inc.	513 576-3900
Whelan	Tracy	CADAM Inc.	818 841-9470 x 5156
Williams	Anne	McDonnell Douglas	314 234-5759
Willis	Robert	National Computer Graphics Assoc.	703 698-9600
Wilson	Peter	Rensselaer Polytechnic InstJAN88	518 276-2968
Winfrey	Richard C.	Digital Equipment Co.	603 881-2807
Wong	Vivian	McDonnell Douglas	714 952-6250
Wood	Jay	General Dynamics	619 547-8696
Woodall	Alison	CADDETC - Leeds University	+44 532 334455
Wooley	Dan	Newport News Shipbuilding	804 380-7901
Wright	Glen	Naval Sea Combat Command	804 444-9358
Yang	Sheree	Ford Aerospace & Communications Co	714 720-6259
Yang	Yuhwei	D. Appleton Co.	817 354-8181
Yeh	Shuchieh	University of Mass	413 545-3676
Zimmerman	John	Allied-Signal Aerospace Co.	816 997-2932
Ziolko	Glen A.	LTV Aerospace & Defense	214 266-4627

CONTINUING IMPROVEMENT

A Status Report From The Steering Committee

IGES/PDES Organization (IPO)
Buffalo, New York
July 18, 1989

Jim Snyder
Martin Marietta Energy Systems

IPO Steering Committee

Status

I. Steering Committee

Definition
Responsibilities

II. Continuing Improvement Activity

Organization
Issues

III. Plans

IV. Summary

Steering Committee Defined

The Steering Committee represents the industrial, governmental, and academic sectors supplying the resources to develop the IGES and the PDES.

Consensus of the Steering Committee drives the formulation of goals, policies and procedures for the IGES/PDES Organization.

2.0 THE STEERING COMMITTEE

The Steering Committee establishes goals and strategies for the IGES/PDES Organization and provides policies and procedures for its activities. It is expected that the members of this committee will be managers responsible for determining policy and committing resources within their organizations.

The Steering Committee is responsible for:

- Developing and approving policies, objectives, milestones and strategies that govern the IGES/PDES Organization.
- Developing the organizational structure, the committee responsibilities and the procedures or bylaws that govern the operation of the IGES/PDES Organization.
- Initiating and approving standards projects.
- Approving the plans and schedules that govern the activities of the IGES/PDES Organization, including the plans and schedules of approved projects.
- Establishing the need to convoke any extraordinary meetings of the IGES/PDES Organization.
- Monitoring project status.

Continuing Improvement

IGES/PDES Organization (IPO)

OBJECTIVES:

- Minimize Disturbance to Organization and Related Activities
- Reestablish Organizational Goals and Strategies
- Clarify Roles and Responsibilities
- Structure IPO Enterprise to optimize application of Volunteers' contributions
- Document and Administer Business Practices for the Organization

Martin Marietta Energy Systems

J. Snyder

ISSUES

A Partial List

RELATIONSHIP OF IPO/STEP/PDES/ISO

- CALS references PDES, not STEP
- No ANSI standard planned for PDES
- Clarify roles, responsibilities, relationships

BUDGET

- Documentation of requirements
- Commitment of source(s)

MANAGEMENT/TASK PLANNING

- Should reflect Goals/Strategies/Resources
- Needed for all levels of the organization
- Reporting/Accountability required

CONFIGURATION MANAGEMENT (CM)

- IGES
- PDES
- STEP
- Synchronization of CM for STEP/PDES

TESTING

- IGES
- PDES
- Resources

AWARENESS, EDUCATION, TRAINING

- PDES technical briefing
- PDES management briefing
- Public workshops

Martin Marietta Energy Systems

J. Snyder

PLANS

- Revised procedures active 9/89
- Incoming chairperson and officers installed 12/89
- Revised Policy and Procedure Manual published 1/90
- Continue Examination of IPO Structure and procedures Continuing
- Broaden Communication channels to General Assembly and others Continuing

SUMMARY

- You have done an excellent job!!!
- Now it is our turn.
- We welcome your counsel and cooperation.

IGES/PDES Committee
In Session, Buffalo, NY
July 18, 1989

Whereas, we have recently noted the absence of one of the three founders of what is now the IGES/PDES Organization; and

whereas, no one else seemed to have as much grasp of the total technical content of the specification; and

whereas, we miss his forceful leadership, his knack for finding consensus where there seemed to be none, and his innovative ways to motivate the organization to act; and

whereas, he had provided a new meaning for the acronym IGES, namely "It's a Green Everyday Suit";

Be it resolved, that the IGES/PDES Organization sends an expression of best wishes and a standing invitation to rejoin us at the earliest opportunity to Phil Kennicott.

IGES/PDES Committee
In Session, Buffalo, NY
July 18, 1989

Whereas, we have recently learned that one of our most respected committee chairmen expects to be no longer provided the means with which to participate regularly at our quarterly meetings; and

whereas, we will miss his long standing passionate pursuit of what he felt was right; and

whereas, we regret the loss of his technical contributions in the field of geometry; and

whereas, we will also miss his organization of extracurricular activities in the realm of SCUBA diving, wine tasting, and whale watching; and

whereas, we may be unable to replace his exemplary leadership, (based [no doubt] on his affiliation with a corporation widely noted for conservative dress) in the field of sartorial correctness at IGES functions;

Be it resolved, that the IGES/PDES organization send an expression of best wishes and a standing invitation to rejoin us at the earliest opportunity to Ed Clapp.

Prime
✓ *Computervision Division*

From: Dennette Harrod, IGES Project Manager *DAA*
To: Members, IGES/PDES Edit Committee
Date: August 10, 1989
Subj: Minutes of RFC Review Committee Meeting - Buffalo, Jul'89

The IGES RFC Review Committee met on Sunday, 16-Jul-89 and on Thursday, 20-Jul-89, during the IGES/PDES quarterly meeting in Buffalo, NY.

All of the Technical Committee Chairs who had RFC/COs in the 7th Round Ballot were mailed copies of the RFC/COs and any written comments from the ballot. Larry O'Connell (ELECTRICAL) reported that the text of C0359A in the ballot was incorrect; the correct text will be included in the 9th Round Ballot.

Kent Reed (EDITOR) delivered 4 copies of a draft version of IGES Version 5.0. These copies were distributed to members of the IGES Version 5 Editing Committee for review and comment. Kent also delivered two lists for review and action by TCs. The first is a list of entities for which there are no Glossary entries. The second is a list of entities for which there are no Table 3 (DE Field Requirements) entities.

Several RFCs which had been assigned numbers by the Change Control Officer during the week before the meeting were assigned to custodian TCs for action. Additional RFCs were generated by TCs and assigned numbers during the week. The attached RFC Review Forms contain the current status of each.

Bob Parks (DRAFTING) incorrectly reported 386 as approved for ECO assignment; it will be amended and re-balloted as 386A.

The following RFCs were withdrawn:

328A SURFACE RENDERING
338 CURVE CLASSIFICATION
409 CSG CYLINDER WITH CANTED ENDS
410 CSG IRREGULAR SOLID
411 CSG TRUNCATED PYRAMID
422 FLOW ASSOCIATIVITY BACKPOINTERS
434 ELECTRICAL UPGRADE A
435 ELECTRICAL UPGRADE B

The following RFCs were cancelled:

260 DIMENSION DEFINITION SPACE
331 SYMBOL SIZES

403 LEVELS VISIBLE ASSOCIATIVITY

The following RFCs were approved for inclusion in ballot 5.9:

344B NETWORK DATA
386A CURVE DIMENSION ENTITY
395A CONNECTIVITY DEFAULT POINTERS
408A TOPOLOGY ADDITIONS
437E KANJI GENERAL NOTE
441 DIMENSION/GEOMETRIC TOLERANCE
451 MACRO TO APPENDIX
452 NEW EXTERNAL REFERENCE FORM
454 PLACEMENT OF DRAFTING SYMBOLS

The following RFC/COs were assigned ECO numbers:

E527 (389) FEM TABULAR DATA
E528 (390) FEM UNITS
E529 (335) BINARY TO APPENDIX
E530 (370C) PREDEFINED LINE FONT PATTERNS
E531 (414A) 8-BIT-ASCII
E532 (432A) USER/IMPLEMENTOR DEFINED
E533 (436) VIEW CLIPPING PLANES
E534 (377B) HIGHLIGHT & PICK PROPERTIES

There were concerns expressed about the perception of the RRC as being autocratic. The meeting times are published in the agendas and the minutes are published with the full minutes of each IGES/PDES meeting. Any member of the organization is welcome to attend as an observer.

The schedule for publication of IGES Version 5.0 is on target. The only thing which could delay publication is the failure of the B-Rep Solids RFC to complete the ballot cycle.

In the absence of Ed Clapp, Ray Goult will serve as acting Chair of the Curves and Surfaces Committee.

Prime

Computervision Division

From: Dennette Harrod, IGES Project Manager *DA*
To: IGES/PDES Edit Committee
IGES/PDES Technical Planning Committee
IGES/PDES Steering Committee
Date: August 11, 1989
Subj: Status of IGES Version 5.0 ECOs

The following Edit Change Orders (ECOs) have been approved by the IGES RFC Review Committee (RRC) as of the Buffalo meeting for inclusion in IGES Version 5.0.

The "Y/N" code answers the question, "Does this entity belong in the Unimplemented Entities/Features Appendix?" A "Y" means that it will be in the "gray pages." This is RRC's consensus based on input from the Implementors Committee and discussions at the RRC meeting in Buffalo.

The next column is for tracking; an "S" means that the final version of the ECO has been approved by the custodian Technical Committee (TC) and ^{as} signed its Chair, and an "A" means that the IGES Editor has approved it and I have also signed it, indicating that it is officially approved by the RFC Review Committee for inclusion in Version 5.0 of the Specification.

The column at the far right indicates the custodian TC whose Chair is responsible for signing the ECO.

E500 (RFC 361A)	N	A	FILE BLANK LINES	(I)
E501 (RFC 375)	N	A	PIECEWISE-COPIOUS PARAMETRIZATION	(C)
E502 (RFC 387B)	N	A	NULL POINTERS	(E)
E503 (RFC 394)	Y	A	PROCESS PLANT ATTRIBUTES	(A)
E504 (RFC 358)	N	A	LINE FONT 0	(I)
E505 (RFC 373A)	Y	A	CSG DISJOINT COMPONENTS	(S)
E506 (RFC 380)	Y	A	EXTENDED VIEWS VISIBLE	(D)
E507 (RFC 283C)	Y	___	PERSPECTIVE VIEW	(D)
E508 (RFC 340A)	N	A	REDUNDANT EXTERNAL REFERENCE	(I)

E509 (RFC 369A)	Y	___	PATTERN HATCH ENTITY	(A)
E510 (RFC 374)	N	A	COMPOSITE COPIOUS REFERENCE	(C)
E511 (RFC 379D)	Y	A	BOUNDED SURFACE	(C)
E512 (RFC 381/382)	Y	A	LINEAR DIMENSION EXTENSIONS	(D)
E513 (RFC 383)	N	A	GENERAL SYMBOL LEADER	(D)
E514 (RFC 384)	N	A	GENERAL SYMBOL USER FORM	(D)
E515 (RFC 388)	Y	A	FEM ELEMENT ADDITION	(F)
E516 (RFC 392)	N	A	PLANE/SINGLE PARENT	(C)
E517 (RFC 398)	N	A	COMPRESSED ASCII REVISION	(I)
E518 (RFC 399)	N	A	TERMINATE REVISION	(I)
E519 (RFC 404)	N	A	MATRIX ORDER	(C)
E520 (RFC 413)	Y	A	POINT DIMENSION EXTENSION	(D)
E521 (RFC 418)	N	A	VIEWS VISIBLE ENTITY COUNTS	(I)
E522 (RFC 419A)	N	A	B-SPLINE WEIGHTS	(C)
E523 (RFC 425)	Y	A	SPICE PARAMETERS	(E)
E524 (RFC 428)	N	A	COMPOSITE CURVE RESTRICTIONS	(C)
E525 (RFC 429)	N	A	SIMPLE CLOSED AREA	(C)
E526 (RFC 430)	N	A	106/63 CLARIFICATION	(C)
E527 (RFC 389)	Y	S	FEM TABULAR DATA	(F)
E528 (RFC 390)	Y	S	FEM UNITS	(F)
E529 (RFC 335)	N	S	BINARY TO APPENDIX	(R)
E530 (RFC 370C)	Y	___	PREDEFINED LINE FONT PATTERNS	(A)
E531 (RFC 414A)	N	S	8-BIT ASCII	(I)
E532 (RFC 432A)	N	S	USER/IMPLEMENTOR DEFINED	(I)
E533 (RFC 436)	N	S	VIEW CLIPPING PLANES	(I)
E534 (RFC 377B)	Y	___	HIGHLIGHT AND PICK PROPERTIES	(D)

**IGES/PDES AVM (APPLICATION VALIDATION METHODOLOGY) COMMITTEE
SUMMARY MINUTES**

Buffalo, NY / July 1989

Submitted by: Mark Palmer, Chairman

The AVM Committee met on July 18, 1989 and continued to work on the development of application protocols (APs) for IGES and PDES/STEP. The committee worked on the following topics:

1. AVM and USA TAG ballot comments on the ISO TC184/SC4 DP #10303

The AVM comments on the DP ballot were distributed and discussed in conjunction with the USA TAG ballot response. All of the AVM comments were incorporated into the TAG ballot, and many of the committee's recommendations were adopted by ISO TC184/SC4/WG1 during the Frankfurt meeting.

2. Coordination with ISO TC184/SC4/WG1/SG4

The Editing Committee of ISO TC184/SC4 sent all of the application protocol and conformance testing issues from the DP #10303 ballot to SG4. Unfortunately, these comments have not been delivered to the AVM Committee.

ACTION ITEM: The concerned chairmen will resolve this situation before the October 1989 joint meeting with ISO TC184/SC4/WG1.

3. Reports on specific IGES APs currently being developed.

Brief reports were given on two preliminary IGES APs, Engineering Drawings and Piping Systems. Work sessions for these two projects were held on July 19 and July 20, respectively.

4. Status report from PDES Inc. Testing and Validation Team

Mitch Gilbert gave a status report on the PDES Inc. Testing and Validation Team, with specific emphasis on their current work on CDIMs (Context-Driven Integrated Model). The development of a CDIMs starts with defining the data requirements of selected activities. These requirements are then mapped to the entity pool (i.e., IPIM) of the Draft Proposal (DP) #10303 as a means of evaluating the DP's capabilities.

The relationships between CDIMs and APs were discussed. The two activities are complementary but not identical.

Goal of an AP: to ensure consistent and deterministic data exchange between a sender and a receiver within the context of a specific application.

Goal of CDIMs: Incrementally validate the DP schema for product data applicable to all phases of the life cycle and applicable to an evolving set of types of products.

CDIMs are valuable precursors to standardized APs.

The committee also discussed the apparent emphasis on internal data integration before external data exchange as a priority of PDES Inc. member companies.

5. Development of Application Protocols

The committee discussed the importance of emphasizing the distinction between validating a proposed application protocol and testing an implementation for conformance to an application protocol. More work is required on the steps and criteria for both.

Alison Woodall presented a summary of the document "An example application protocol for CSG, with commentary and issues" (co-authored with Jon Owen). The paper, draft material for a WGI document, develops parts of an example AP in order to identify issues which require resolution. These issues will be discussed in more detail at the next joint meeting with WGI (October 1989).

With the concept of APs adopted for PDES/STEP, the ramifications of this decision were examined. Some of the key issues discussed were:

- the contents of a STEP AP
- the exact mechanism for defining APs
- the impact of APs on the integration requirements of the entity pool
- criteria for adding to the conceptual core / resource pool
- the design of APs to permit the nesting of APs
- parametric schema definition
- the plan for developing APs (APs must not be considered in isolation)

6. Review of "Application Protocols: A Primer"

The new version of the AP Primer (7/11/89) was reviewed, and the committee discussed voting the document to draft status. Some committee members felt that the document needed more work and promised to submit their comments to the chairman. The committee did not vote the document to draft status.

7. Current RFCs

The committee reviewed the 7th round ballot comments on RFC 385, Application Protocol Identifier added to the Global Section. A new version of the RFC, with the ballot comments resolved, will be submitted for the 9th round ballot (to be distributed 9/15/89).

**Minutes of IGES/PDES AEC meeting
July 16-21, 1989
Buffalo, NY**

The IGES/PDES AEC committee met Tuesday and Wednesday.

Tuesday morning

The meeting began with a discussion and agreement of an agenda for the remainder of the week. This was followed by a review of the outstanding action items. Salient points were:

- J. Turner will act as an informal clearinghouse for the German 2DBS and the Australian drafting model.
- The committee discussed the ill-defined notions of "model integration" and "application protocol."
- There is still a need for a good "NIAM Readers Guide." Two or three seem to be floating around. It would be good to have one we all agree on and can reference.
- There is a need for model owners to provide a one page introduction to be included in an AEC introductory package.

B. Warthen discussed the last TAG meeting – how the 700-800 DP1 comments were sorted, resolved. M. Girardi noted that he got a good feel for the status of other committees and stated that AEC was in pretty good shape.

B. Danner joined us and gave a brief introduction to his interpretation of application protocols. This approach to integration was developed by M. Palmer, is still being developed, and needs to be resolved at the STEP level, perhaps in a new SG7, Modeling Methodologies. The five parts of an AP:

- AP scope and requirements statement. Needs to be met by AP. Perhaps stating the testing, demonstration requirements.
- Application Reference Model (ARM). Free of implementation entities.
- Application Interpretive Model (AIM). Based on IGES or PDES or another entity pool.
- Usage guide, as presented in M. Palmer's AP document.
- Test suite. Model mapped to physical file level and tested by exercising all concepts.

Tuesday afternoon

P. Rourke presented the revised "Model review and approval procedures for AEC" document. The document, with changes, was accepted by the PDES committee and will be formally introduced and voted on during the joint meeting in Albuquerque.

Section 5 of the NIDDESC proposal for a general distribution system (formerly Outfitting) model was discussed. There was a moderate discussion and no resolution on the need for reference models to communicate design rules and force product model conformance.

Wednesday morning

J. Turner raised concerns that the proposed NIDDESC distribution system model was somewhat ship-specific, that it needed to be reduced in scope by eliminating the references to specific distribution systems – electrical, HVAC, and piping. It was noted that NIDDESC would be working towards that end but that its tight agenda wouldn't allow for this to be done before Albuquerque.

M. Mitchell and B. Danner led a discussion of the PDES Inc. concept of CDEMs and continued the discussion of application protocols.

J. Zimmerman joined the discussion, related it to the LEP effort, and renewed our faith in the need for general topology, general network, distribution network, general distribution system, and specific distribution system models. John was reminded by K. Reed that the AEC committee had this orderly vision and desire as long ago as July, 1985 (Madison meeting).

John also presented APs as standardized but possibly application, industry, company, and country specific; and that the standard may eventually be completely discipline independent.

Wednesday afternoon

B. Gischner led a discussion of IGES issues:

- RFC 370. The two "Additional line font patterns" negative votes were resolved. Both it and RFC 369 have now passed the voting procedure and should be included in Version 5.
- RFCs 409-411. These have been superseded by P. Harrow's set of parametric pip/duct entities. These are to be reviewed and discussed in Albuquerque.
- RFC 422 was withdrawn. It is no longer needed to support the 3D piping model.
- RFC 344, Directed Network Data, will be resubmitted in the new "document ready" format.

The committee discussed a strategy for removing the Attribute Table entities from the gray pages. K. Lee will insure that RFCs 369 and 370 will have the proper (whatever that is) support to go directly to the white pages. B Gischner and others showed support for not removing entities and sections from the white pages (Macros and IGES compressed format).

Ron Schuldt gave a brief description of his proposed IPIM classification scheme and gave a more detailed presentation to those who were interested.

*Submitted by
Jim Turner*

HIGHLIGHTS - PDES DRAFTING
Buffalo, NY, July 17-21, 1989
Robert E. Parks
July 27, 1989

Bob Parks gave a summary of the STEP 1.0 Draft Proposal (DP10303) ballot results, with regard to the Drafting Model. The Drafting Model was disapproved by the voting members of ISO TC184/SC4, as was all of DP10303. Comments, returned with the ballots, were categorized and handed to the technical committees in Frankfurt. Drafting received 124 comments in all. All comments must be resolved prior to a second DP.

Mike Fox summarized the activities of the SG2-Drafting meetings held in Karlsruhe and Frankfurt, West Germany. Activities in Karlsruhe concentrated on a DIN proposal for the classification of STEP Drafting entities. This classification of entities may be equated to the subsetting of entities necessary for various exchange protocols. Discussion pertaining to the classification/subsets and protocols was continued in Frankfurt. Ballot comments were assessed so that time and resources might be estimated for a second DP. WG1 established a date of October 1990 for a completed Drafting Model.

Also discussed at this meeting was the relationship of the PDES Drafting Committee and SG2-Drafting. The current drafting model is a part of DP10303 (an ISO document) representing the first Draft Proposal (DP) for STEP 1.0. The PDES Drafting Committee has been identified as the custodian of the model. The Committee should review any and all proposals, such as those by DIN, and form a consensus viewpoint. The PDES Drafting Committee may also submit proposals of their own; consistent with completion of a second DP.

The Drafting Committee began reviewing comments. Three comments were identified as having multiple issues/concerns. These were returned to the SC4 Editing Committee for separation. The original comments will be resolved into individual comments, each with its own ISO reference number. The review will continue between now and the first meeting of a special modeling group, in an effort to better classify comments for resolution.

Members of the IGES/PDES Drafting Committee met with the Engineering Drawing Application Protocol (EDAP) group for IGES. This effort has been led by Mark Palmer of NIST. Where four levels of protocol had previously been identified by the EDAP group, two are now identified with two levels of refinement for each. The distinction was made based on the two types of CAD system drawings now being created; level 1 - "explicit" 2D drawings (no projective views), and level 2 - "referencing" 3D drawings (with projective views). The distinction between the 'A' and 'B' refinements is added functionality, such as associative dimensions. Work will be done on a revised reference model and the implementation models (one for each level of protocol) between now and the Albuquerque meeting in October.

ALBUQUERQUE MEETING:

The meeting in Albuquerque will be an IGES/PDES/STEP combined meeting. It will be conducted, most likely, as an ISO TC184/SC4/WG1 meeting would be. Those wishing to attend the PDES Drafting sessions should attend sessions identified as SG2-Drafting.

HIGHLIGHTS - IGES DRAFTING
Buffalo, NY, July 16-21, 1989
Robert E. Parks
July 25, 1989

The San Antonio minutes were approved as written.

Anne Louise Coryell volunteered to take notes. Thank you Anne Louise!

RFC's/Co's DISCUSSED:

- 260 - "Dimension Definition Space" - Cancelled. No copy of this RFC could be located.
- 328A - "Surface Rendering" - Withdrawn. Negative comments could not be resolved without a complete rewrite, to include much extended capabilities. Lacking a sponsor, the RFC was withdrawn.
- 331 - "Symbol Sizes" - Cancelled. It was determined by the committee that the gist of this CO had been incorporated in IGES 4.0 (page 185, item 1).
- 376 - "Grid Property" - Open. Comments resolutions and committee recommendations are to be incorporated for review in Albuquerque.
- 377B - "DE Field 9 Extension" - Recommended for ECO. Comments resulting from ballot round 5.6 were resolve to the committee's satisfaction. See full summary report specifics with regard to comment resolution. RFC is to be rewritten in ECO form for the next meeting of the RRC.
- 378B - "New Drawing Entity Form" - Open. The author will be asked to incorporate the changes, resulting from comments, for further review in Albuquerque.
- 386B - "Curve Dimension Entity" - Open. Due to technical changes, with regard to comments, the CO will be cancelled and a revision of the RFC reballoted.
- 403 - "Levels Visible Assoc." - Cancelled. No response to a request for additional information has been received. There was no new sponsor.
- 405B - "Improved (New) General Note" - Open. This RFC was discussed at length. There were numerous comments. Adhoc and Implementor's sessions will be held in Albuquerque. For details of discussion see full committee report.
- 421A - "Deprecate Dimension Geometry Associativity" - Open. Discussion on this RFC was reopened. A status report of adhoc group considerations was given. A new proposal is expected in Albuquerque.
- 437E - "Kanji" - Approved (recommended for ballot). With minor editorial changes, as a result of adhoc group discussion, this RFC will be included in the next ballot round (5.9)..
- 438 - "General Symbol w/o Text" - Open. Discussed at length. A rewrite of this RFC is expected for review in Albuquerque.
- 441 - "Dimension/ Geometric Tolerance Associativity" - Approved (recommended for ballot). After a review and short discussion the RFC was recommended for ballot.
- 447 - "Entity 230, Form 1" - Open. Discussed at length. A rewrite is to be reviewed in Albuquerque.
- 454 - "Placement of Drafting Symbols" - Approved (recommended for ballot). This RFC was introduced to add clarity (a figure) to the wording of the 212 entity (page 185, item 1).

ALBUQUERQUE AGENDA:

All open RFC's and CO's will be discussed on Tuesday morning in Albuquerque.

NOTE: Those interested in the discussions with regard to RFC405C, "New/ Improved General Note", should attend a special adhoc session Monday evening from 7-9 and the Implementors sessions Wednesday.

Highlights of the Electrical Application Committee meetings in Buffalo, NY

Special events related to harmonization:

- * A Birds of a Feather Session (on Harmonization of VHDL, EDIF, IPC, and IGES) was held at the ACM/IEEE Design Automation Conference. The session was moderated by the chairman of the EAC last June 27th. The participants offered suggestions to help get the proper people working together. The suggestions included circulation of common benchmarks in each format; a newsletter; joint users' groups; and co-located meetings. Request the moderator's notes.
- * Model Ratification by other Standards Groups to be Sought. The committee passed a resolution to send the portion (also known as FEO-4) of the Electrical Functional model included in DP30103 to each of the four standards bodies for review and comment. The groups will be urged to adopt the proposed model and show how it reflects constructs describing connectivity among hierarchically structured circuit implementations in their own format. They will also be invited to delegate an expert to present their findings to the EAC. Ways for each group to further assist the EAC in development of the full EE information model will be explored.

IGES meetings of the EAC:

- * EAC Application Protocols need work. Given a conceptual information model, the Application Protocol defines which information elements are needed by the application and how they are to be encoded into the exchange file. It describes the way the IGES entities should be used or interpreted and outlines test methods. The intent is to minimize the possible ambiguities in the file to be processed in support of the intended application.
- * Tom Makoski withdrew RFC 434 and 435. A package of smaller RFC's covering the same intent (for enhanced manufacture of PWA's) was presented for consideration by the committee. That package will be circulated throughout the IGES/PDES membership for comment after the changes requested by the EAC have been incorporated.
- * The EAC approved the Guide to IGES Electrical Entities for unlimited distribution (by NIST.)

PDES meetings of the EAC:

- * A brief walk-through of the seven entity FEO 4 portion of the Cal Poly EFTL model was conducted to show the newcomers how to read an IDEFLX model.

- * A modeling team at SCRA is enhancing the EAC models. The next meeting of the Cal Poly Task Team III will be August 21-25. Rob Fletcher conducted a walk-through of the team's latest version of the model. The changes have been driven by the need for the RAMP project to demonstrate the ability to "stuff" a particular Printed Wiring Board with components. The robotic cell will be provided with the bare PWB, the components, and the PWA description in the form of a PDES physical file. The EAC had some reservations about the proposed extensions of the functional model. A distinction may be needed between the circuit node defined by Kirchoff's laws and a "connectivity vertex" having spatial position. The RAMP task will require modeling the effects of temperature, but the EAC was reluctant to add it to the model without considering (an open ended) list of other sources of variation. However, the committee agreed to accept the model described by Rob Fletcher as a working document of the committee. Please ask Rob to send you a copy of the model if you plan to come to the Albuquerque meeting.
- * The full set of comments against clause 4.19 (the Electrical Models) were not available to the EAC in Buffalo. The committee considered the subset known as Electrical Issues consisting of comments documented in the Cal Poly reports. EAC members volunteered to propose responses to some of the comments for the next meeting.
- * Ron Schuldt presented his thoughts on the use of a taxonomy in describing what is meant by product data to audiences outside the IGES/PDES technical organization.
- * A Phased Approach to Incorporating Other EE Formats was presented by Steve Grout, our newly appointed liaison with IEEE/DASS. His white paper outlined a way to treat VHDL (or EDIF or IPC) product descriptions initially as blocks of ASCII text in PDES. An intermediate phase incorporating hypertext (or SGML) markers could add some clues to the text content. The final phase would enable the descriptions to behave like hypertext as well as being fully incorporated into the PDES model.

Thanks to Tom Leedy and Steve Grout from whose notes these highlights were put together.

LATE DEVELOPMENTS:

TC184/WG1

An ISO / electrical subgroup convened in Frankfurt last June. They looked at the comments against the electrical models and concurred with a recommendation to remove clause 4.19 from the Draft Proposal. Try Frans Meys or Peter Fergus for more information.

Respectfully Submitted,

Larry O'Connell

Larry O'Connell, chairman

Form Features Committee
 Minutes of July 18-19, 1984 Meeting
 Buffalo, New York

The Form Features Committee met as part of the IGES/PDES Quarterly Technical Meeting. Item numbers in the following minutes correspond to those in the attached agenda.

July 18, morning

1. David Price of IBM was appointed recording secretary for the meeting.
2. An attendance checkoff/signup sheet was circulated.
3. The attached agenda was reviewed. There were no additions or changes.
4. There was discussion of the problem that the registration fee for IGES/PDES meetings is burdensome for academic contributors. David Price volunteered to phrase a motion for presentation to the General Assembly.
5. Lynn Heatley of Boeing reported on activity relative to the 'Roadmap' document, dated 17 March, 1989. This document reflects needs identified in two Committee work sessions, West Palm Beach in October, 1988 and Charleston in February, 1989.
 - o The Integration Committee has created a task team to look into aspects of the paper having to do with implementation architecture.
 - o John Zimmerman, Joan Tyler, and others are pursuing EXPRESS extensions (and other possible tools). A paper has been produced on the subject.
6. The Chair reported on interaction with the Geometric Modeling Program (GMP) of Computer Integrated Manufacturing-International (CAM-I). Jeane Ford attended a GMP meeting. Her report is given below under July 19.

The Chair was given for review a copy of a draft CAM-I report which surveys 'features technology.' A number of problems were found in the report's summary of PDES' form features work. This was pointed out to CAM-I.

7. The chair reported that he had just received copies of ISO ballot 'comments' relating to the FFIM. At first glance, the seventy-four comments do not seem to challenge the current direction of the Committee. Almost all comments seem to be (i) readily answerable, (ii) concerned with detail rather than approach, or (iii) satisfiable by the model modifications currently underway.

The Chair will study the comments and initiate action on them.

July 18, afternoon

The afternoon meeting was devoted to presentation and discussion of the revised FFIM, which is currently in undistributed working status. The session was joint with the Manufacturing Committee. In addition, representatives of several other committees attended.

8. The Chair presented the planning model for the revised FFIM. The three central concepts are FORM FEATURE, FORM FEATURE REP(resentation), and APPLICATION FEATURE. The latter is any 'feature' created for an 'application information model'. The relations between the three:

- o A FORM FEATURE REP represents a FORM FEATURE.
- o An APPLICATION FEATURE's shape is that of a SHAPE ASPECT, of which FORM FEATURE is a category/subtype.

The bulk of the FFIM will consist of multiple levels of categorization of FORM FEATURE and FORM FEATURE REP.

The major change from the previous FFIM is separation of the concepts of FORM FEATURE and FORM FEATURE REP. This is compatible with the integration approach adopted in the Shape Representation Interface model.

9. Glen Ziolk, LTV and PDES Inc., presented work on the FORM FEATURE categorization tree. Four initial categories have been worked -- depressions, passages, protrusions, and transitions. The first three of these are subcategorized by cross-section (rectangular, circular, n-gon, and general).

A key goal in this sector of the model is avoidance of application flavor. The entities here should be generic shape concepts without overt implications of product type, process, etc.

10. The Chair presented work to date on the FORM FEATURE REP categorization tree. The discriminator in this tree is the form of the representations. The following categories are currently being addressed: enumerative, volumetric, topological graph, edge blend, corner blend, replicate, pattern, and pattern member. Volumetric representations subcategorize into profile sweep, ruling-defined, CSG tree node, and delta volume.

It is presently planned that the University of Massachusetts will take responsibility for the enumerative and topological graph classes. Bart Nnaji of UMass presented concepts to be applied in this work.

13. There was discussion of the use of FORM FEATURE tree entities by application models. It was decided to establish a joint Manufacturing/Form Features subcommittee to pursue the topic.
- 14.

July 19

4. The following motion was presented by David Price and unanimously approved.

That there be provided a process by which academic contributors can be included in the quarterly IGES/PDES meetings without requiring a registration fee. A certification by a committee chair with an endorsement by a program manager would be required for fee-less registration. Meal and banquet fees, if desired, would not be waived. To be eligible for waiver of registration fee, the contributors cannot be funded by another organization.

(The motion was communicated to General Assembly on July 20. It met with a favorable reaction. It is anticipated that the NIST arrangers of quarterly meetings will institute a policy similar to that suggested or a more generous one.

14. There was discussion of the joint subcommittee of the Manufacturing and Form Features committees. It was suggested that the subcommittee proceed along a narrow front, working with a small number of application features in order to uncover problems and establish methodologies.
16. The Chair noted that the FFIM currently being developed has several to-be-provided-in-future sections. In particular, a submodel to support gears, splines, and similar features is desirable. Material has been contributed by Don Morgan, General Electric, and Kim Perlotto, Pratt & Whitney. Someone to produce IDEF1X models is needed.

There were no volunteers to pursue this matter. The Chair will try to recruit someone.

6. Jeane Ford reported on her attendance of the CAM-I GMP meeting. Via contract to Jami Shah, Arizona State U., the GMP is producing a form features requirements document and a survey of form feature work. Jeane noted that the GMP is looking for information exchange with CAM-I.
11. The chair commented on constraining the relation between FORM FEATURE and FORM FEATURE REP; i.e., constraining the permissible representation forms of the entities in the FORM FEATURE tree. The intent is to include with each leaf of that tree a business rule enumerating the approved representation forms for that feature type.
12. The Chair and Glen Ziolk related thoughts on FORM FEATURE COMPONENTS. The general objective is to make 'portions' of features 'referenceable' even if the feature's representation is unitary (doesn't list components).

The Chair's thought was to have a single entity, FORM FEATURE COMPONENT, which would have the compound alternate key [feature key, component code]. Thus the bottom of a rectangular depression, for

example, could be made referenceable by having an instance of FORM FEATURE COMPONENT whose alternate key value was, say, [depression key, 'bottom'].

Peter Everitt of Grumman suggested that a topological or geometric 'realization' of the component be optional. Then, to continue the example above, an instance of FACE might be included with the FORM FEATURE COMPONENT instance for the bottom of the rectangular depression. This effectively gives the model builder a choice of leaving the component implicit or expliciting it.

Glen Ziolkko briefed the committee on the 'form feature primitive' concept being used in PDES Inc.'s development of the FORM FEATURE categorization tree. Each leaf of the tree is constrained by an enumeration of the types and quantities of primitives it may have. For example, a rectangular depression has two to four 'sides', eight to twelve 'edges', one 'opening', etc. These primitives are, to a large extent, a feature's 'components' of interest. The PDES Inc. team anticipates that each leaf entity of the FORM FEATURE tree will have lists of primitives as attributes.

There was animated discussion on whether the 'primitive' attributes should be optional. The argument appeared to depend on one's view of information modeling -- should one model 'natural truth' or informational requirements? From the 'natural truth' viewpoint, a rectangular depression must have a bottom 'component'. But there will not always be a requirement for information about the bottom. If PDES were genuinely a three-schema architecture, this debate might be resolved by modeling 'natural truth' in the conceptual schema and letting implementations decide whether to make certain information optional. It is not clear how to resolve this issue.

17. It was suggested that two possibilities be considered for the FORM FEATURE tree. (i) At each categorization node, have an 'OTHER' category, so that the categorizations are complete. This would provide a 'home' for constraining business rules. (ii) Refine the categorizations based on cross-section. RECTANGULAR DEPRESSION, for example, might be further categorized into four-walled, three-walled, two-walled, and 'other' (not one of the common cases). The potential advantages are that the schema 'declares' the shape more precisely and that constraints can be more precise.

Prepared by Mark Dunn, Chair

from notes by David Price

PDES Form Features Committee Meeting

Buffalo NY

July 18-19, 1989

AGENDA

AM, Tuesday, July 18: Various quick matters (Items not completed by lunch will be deferred until completion of scheduled PM activities.)

1. Appointment of recording secretary -- Chair
2. Attendance record -- Chair
3. Discussion/revision of agenda -- Chair
4. Motion regarding academic contributors to PDES -- Chair
5. Action on/status of 'Roadmap' document -- L. Heatley, J. Tyler, and/or M. Whiteman
6. Interaction w/ CAM-I Geometric Modeling Program -- J. Ford, Chair
7. ISO ballot status -- Chair

PM, Tuesday, July 18: Presentation and discussion of emerging revised FFIM (Meeting is joint w/ Manufacturing Committee. Other committees have been invited to send representatives.)

8. Planning model -- Chair
9. FORM FEATURE categorization tree -- PDES Inc.
10. FORM FEATURE REP categorization tree -- Chair, U. of Mass.
11. Constraining the relation between FORM FEATURE and FORM FEATURE REP -- Chair
12. Handling of FORM FEATURE ELEMENTS -- Chair, PDES Inc.
13. Use of FFIM, a 'resource model', by 'application models' -- Chair
14. Responsibility for 'application features' -- Chair

Wednesday, July 18

15. Any items carried over from Tuesday AM agenda
16. Phantom to reality? -- Chair
 - TEETH REP
 - PROCEDURAL FF REP
 - STANDARD FF REP
 - SOLID SWEEP
17. Discussion of material presented Tuesday PM. Raise and address issues. Plan work and resources.

Minutes of Meeting
IGES Implementors' Committee
July 19, 1989 - Buffalo, NY

The IGES Implementors' Committee met on Wednesday morning July 19, 1989. The meeting began with reports from two ADHOC committees. Eva Casey's committee on dimension associativity has produced a draft for a new property to replace the current IGES capability. This draft is available and you are encouraged to review it. CADAM and Autotrol are testing the intercharacter spacing property and it will most likely be approved for the white pages of version 5.

The implementors committee is responsible for deciding which CO's are placed in the white pages or in the gray pages of the specification. The formal procedure is still being worked out, however, we reviewed four CO's:

CO 504 (RFC 358) Line font zero	- White pages
CO 513 (RFC 383) General Symbol	- White pages
CO 514 (RFC 384) General Symbol	- White pages
CO 520 (RFC 413) Point dimension	- Gray pages

The committee reviewed the comments from the most recent ballot and evaluated some new and old RFC's. The following action was taken:

RFC 185 Binary Constants	- Tabled *
RFC 186 Binary EOR Comments	- Tabled *
RFC 256 Time Stamp	- Open (Clarification)
RFC 414A 8-bit ASCII	- Moved to CO
RFC 431 Null Strings	- Returned to author
RFC 432A Implementor Defined	- Moved to CO **
RFC 436 View clipping planes	- Moved to CO
RFC 449 User Defined Property	- Open
RFC 451 Macro to appendix	- Ballot
RFC 452 External reference	- Ballot
RFC 385 Application sub	- Rejected

* These RFC's are tabled pending the result of the RFC to move the binary file representation to the appendix.

** Add glossary Item for Implementor defined.

There was quite a stir within the organization relating to the letters submitted by Dennette Harrod and JC Kelly relating to the various subsets. There have also been considerable misuses and misquotations concerning the content of these letters. This topic was discussed and it is important to note that the position of the implementors is to develop the best possible translator. Special subsets will require special translators which requires special software, time, money and

resources. This software may be provided by the vendor or by a third party that is a marketing/management decision.

Submitted by

William Turcotte II - Chairman
IGES Data Analysis
(312) 449-3430

Minutes of Meeting

Interoperability (ITM) Committee
Buffalo, New York
19 July 1989

Constance Bracken, EDS
Diane Caldwell, General Dynamics
Palmer Craig, US Air Force
Jill Farrell, LLNL
Jim Linsner, Boeing Computer Service
Nellie Morack, CDI Transportation Group
Rao Mylavarapu, EDS
Christina Ohstrom, IVF
Mark Pearson, CADDETC-University of Leeds
George Trapp, CERC-West Virginia University

The ITM Committee held its first meeting on Wednesday. The agenda centered on the committee goals, objectives and work items. To initiate the discussion, the meeting began with Mark Pearson presenting an overview of the CADDETC 'Q-Project' background and testing methodology and Connie Bracken presenting a brief synopsis of how General Motors has achieved results with IGES in the production environment. (Attachment 1 and 2.)

The committee members discussed and approved the charter (Attachment 3) with the emphasis of the committee to focus on 'user' concerns and 'end-to-end' and 'round-trip' testing. Specific work items include:

1. update the test methodology
2. document case studies
3. provide short user guides on specific topics
4. provide a list and brief description of available software tools.

The committee encourages the discussion of data exchange experiences from its attendees. Case studies will be documented, user guides developed, and issue reports submitted, where appropriate, to the Implementor, Recommended Practices, and technical committees.

IGES/PDES
 Manufacturing Technology Committee Minutes
 17-19 July 1989, Buffalo, NY
 Submitted by: G. A. Paul

IGES ACTIVITIES

The comments from the Edit Committee against the Numerical Control Application Subset were distributed to the Manufacturing Technology Committee (MTC). The chairman also distributed suggested resolutions against the comments. Personnel were asked to review the suggested resolutions and to feedback comments to the chairman. It was reported to the MTC that the Edit Committee and the RFC Review Committee believe that resolution of NC Subset issues need to be put aside and resources expended on development of an NC Application Protocol. Nevertheless, MTC personnel want to complete the NC Subset aspect so that MIL-D-28000 can be corrected/improved. The committee believes that when the subset is correct, then the development of the NC Protocol would be appropriate.

PDES ACTIVITIES

The week started with a walkthrough of the Process Plan Model and review of the interim work by committee members. Chuck Sack proposed modifications to the interim work and addition of an entity into the model, these changes were incorporated into the model. Next, issues against the model were brought up by committee personnel and, where possible, resolved. Unresolved issues will be incorporated into the issues log of the model.

The MTC met jointly with the Form Features Committee on Wednesday afternoon to discuss some of the requirements that the Process Plan Application Model has for the Form Feature Resource Model. The MTC committee identified the areas of Form Feature (FF) interrelationship (e.g. interfeature relationships), in-process FF shape requirements, and the ability to identify specific geometric information through a FF as some of the most important Process Plan Model requirements. Potru Subbarao, of General Motors, presented material that highlights the need for many of these requirements. A joint MTC - FF subcommittee will develop specific examples and apply them to the Form Feature Model to see if the Form Feature Model can satisfy the requirements.

General

Jim Bradford, from Allied Signal, presented the "Inspection Information Model" to the MTC. The presentation consisted of a general overview of the model and the scope of the model. This model has been put forward for PDES Version 2.0, but has not been accepted or rejected by the Steering Committee for inclusion in PDES Version 2.0.

Action Items - Committee and/or Chairmen action items:

- 1) Committee to feedback comments to the chairman on suggested solutions to Edit Committee comments on NC Subset,
- 2) Chairman to update the Process Plan Model, develop EXPRESS, and add an example to the Model for Albuquerque.

To: MPDC Committee Members
 From: Peter R. Everitt
 Subject: Minutes from Buffalo
 Date: July 28, 1989

Attendees:	Lynn Heatley	Greg Paul	Poteur Subbarao
	Alison McKay	Bruce Lawler	Rick Mautak
	-Mark Rodenberger	William Cain	Jim Bradford
	Mike Strub	Larry Larsen	Charles Bretzke

The MPDC Meeting was held on Thursday July 20, 1989. The major work was performed on reviewing the draft proposal comments. There were a total of 33 comments submitted. The committee reviewed each comment to determine whether the comment was editorial or technical in nature. It was felt that the majority of the comments could be easily answered. Attached is a summary of the comments.

The next item on the agenda was a discussion on the Product_Item_Version_Functional_Definition entity. After a review of the entity it was decided that the documentation of the entity and examples of its use were inadequate. The committee agreed that providing better definition of the entity and providing examples were high priorities.

The final item presented was a discussion of the Surface Texture Model. The Surface Texture Model has been a working model since West Palm Beach and some action was requested. Also, a Surface_Information Model was presented by M. Schmitt for the University of Karlsruhe (RPK) West Germany. It was agreed to review the model and to integrate the two models and present a single Surface Model at Albuquerque, NM. We also agreed to request Mr. Schmitt to be in attendance at that meeting.

The meeting was adjourned at 3:15.

Action Items:

- Document Draft Comments and Define Other Committees which are affected by comments.
- Prepare Examples of PSCM populated Model at Albuquerque and expand definition of all entities.
- Integrate Surface Texture Model and Surface_Information Model for presentation at Albuquerque.

Attachments:

- Summary of Draft Proposal Comments.
- Surface Information Model

Albuquerque meeting will be two days. One day will be for walk thru of examples of PSCM and the other will be for Comments to Draft Proposal and Surface_Information_Model.

PRODUCT LIFE-CYCLE SUPPORT COMMITTEE
(FORMERLY: PRODUCT LOGISTICS DEFINITION COMMITTEE)
General Session Minutes
Buffalo, NY July 17-21, 1989

Participants:

RICK BSHARAH	ROCKWELL INTERNATIONAL
IRV CHMIELEWSKI	AUTO INDUSTRY ACTION GROUP
GARY L. COUNTS	MCDONNELL DOUGLAS
WILLIAM FOREMAN	MCDONNELL DOUGLAS
CHARLIE FRAZIER	NASSCO
BARBARA GOLDSTEIN	MCDONNELL DOUGLAS
SHIRLEY GOODMAN	NAV ORD STATION LOUISVILLE
JOSEPH HUTCHINS	MCDONNELL DOUGLAS
JIM JOHNSON	GENERAL DYNAMICS
PHIL KINGSTON	NEWPORT NEWS SHIPBLDING
TOM KULIK	MCDONNELL DOUGLAS
GREG LAUGHLIN	ROCKWELL INTERNATIONAL
PHILIP MORALES	MCDONNELL DOUGLAS
FRANK SIMPSON	CADKEY
CHARLIE VAN WIE	MCDONNELL DOUGLAS
STEVEN WALKINSHAW	US DEPT OF TRANSPORTATION
GERALD WEBSTER	MCDONNELL DOUGLAS

~~~~~

A very successful PRODUCT LIFE-CYCLE SUPPORT COMMITTEE meeting was held at the July IGES/PDES General Session in Buffalo, New York. Items accomplished during the four days that the committee met included:

- a) completion of the review and refinement of the committee's entity definitions;
- b) rework of the information model in the areas pertaining to Order Administration, Support Resources/Kits, and Tasks/ Activities;
- c) initial attributization of selected entities within the model;
- d) coordination with the Technical Publication and Manufacturing committees; and
- e) a round table discussion on product data classification.

In all, thirty-one entity definitions were enhanced as part of the model documentation process. Most of the enhancement occurred as a result of the MIL-STD-1388-2B data element integration effort. The complete set of model entity definitions is included as Attachment (1), with the modified entity definitions shown in **Bold Type**.

As an outgrowth of working on the entity definitions, a considerable amount of time was expended on validating and refining the existing model relationships. In the area of Order Administration, relationships between AUTHORIZATION, AS-RELEASED PIV, SCHEDULE, AS RELEASED PIV SCHEDULE, MODIFIED SCHEDULE,

RECOMMENDED DELIVERY and ENTERPRISE were modified. New entities added included PIV SERIAL EFFECTIVITY START, PIV SERIAL EFFECTIVITY END, and AUTHORIZED PIV TASK. Entities removed included SCHEDULE MODIFIER, PIV TASK SCHEDULE MODIFIER, PIV TASK SCHEDULE, PIV SERIAL EFFECTIVITY, SHIPMENT (became a type of TASK/ACTIVITY), and SHIPMENT ITEM.

New entities were also added within the support resource KIT categorization. Specifically, the entities of PRODUCTION KIT and ACQUISITION KIT were added.

In the TASK/ACTIVITY arena, the committee decided to integrate within the model concepts originally developed by the Manufacturing Committee's modeling of Process Plan activities. The committee felt they should be able to modify the Process Plan activities so that they would be applicable to any type of task. This integration effort lead to the addition of two category entities off of ACTIVITY SET MEMBER DEFINITION, namely ORDERED MEMBER and PREFERENCE MEMBER. Along the same lines, the category entities of REPETITIVE CONDITIONAL SET, CONDITIONAL SEQUENTIAL SET, and UNORDERED SET were added to the generic entity ACTIVITY SET; while REPETITIVE SEQUENTIAL SET and CONDITIONAL ENUMERATIVE SET were removed from its subtyping. The revised version of the model is enclosed as Attachment (2).

During the process of revising the model, several committee members raised questions about how to best represent the activity set to sub-set hierarchy. Since this was an area originally developed by the Manufacturing Committee, it was decided that the Life-cycle Support Committee should meet with the Manufacturing Committee before any modeling decisions/changes were made. Thus on Thursday morning our committee met with Greg Paul, Chairman of the Manufacturing Committee, and listened to his explanation of how the set definition relationships are modeled within the Process Plan model. No definitive solutions were reached at this meeting but both sides agreed to meet again and discuss the issues further. (Note: I will be at General Dynamics in late August on business for Rockwell International and plan to squeeze some time in to meet with Greg to discuss the modeling issues further. Plus, invitations will be made to Greg and all members of his committee to attend our next workshop or if that cannot be arranged to set up a joint meeting between the committees at the next General Session.)

Initially, the committee thought they would be meeting for one day in a joint session with the Technical Publications Committee. The Technical Publications Committee was using this General Session as the kick off for their PDES modeling effort. This effort came about because of needs expressed by our committee to Technical Publications for the modeling of technical documentation from the PDES perspective. For this reason, the committee had set aside time to meet jointly with Technical Publications. However, after their initial kick off meeting on Tuesday, Marc Durnin, their committee chairman, decided that meeting jointly would be premature during this General Session. Never-the-less, interaction was achieved on an informal basis because many of the Life-cycle Support Committee members attended one or both of the Tech Pubs meetings.

Ron Schuldts of Martin Marietta gave a presentation during the Tuesday General Assembly titled 'Product Data Classification - The Key to PDES Scope / Planning /

Integration'. During his presentation, he stated that he wished to meet individually with each committee to further explain his classification structure and get detailed comments. He met with our committee on Wednesday, and received several positive and constructive responses. In addition, many members expressed their desire to have other people within their own organizations review and comment on Ron's work. To support this effort, Attachment (3) contains a copy of Ron's General Assembly presentation charts as well as the complete Product Data Classification Structure breakdown. Comments on Ron's work should be sent directly to him, his phone number and address can be found in the committee's mailing list included as Attachment (4).

During the meeting, the committee decided to try to hold a three day workshop at the McDonnell Douglas facilities in St. Louis, MO. Tentative dates of September 13-15 were chosen for conducting the workshop. The primary purpose of the workshop will be to resolve all the issues that have been formally raised against the committee's information model. A complete set of issues logged against the model have been included as Attachment (5) to aid one in preparing for this workshop. A second item on the agenda will be to prepare the briefing that will be given at the Fall General Session on the scope, purpose, and content of the Product Life-cycle Support Committee modeling efforts. If you wish to attend, please RSVP no later than August 25 by using the form included as Attachment (6). (I urge all committee members to attend-especially new members, for this workshop, with its issue resolution format, can serve as an excellent forum for fostering a deep understanding of the model's content.)

\* \* \*

SOFTWARE ENGINEERING COMMITTEE MINUTES  
BUFFALO, NEW YORK  
JULY 16-21, 1989

1. The Software Engineering Committee met Wednesday, July 19. All agenda items were addressed.
2. The first draft of the IGES --> PDES Conversion Algorithms document was mailed out to committee members, to the IGES/PDES Chairman at NIST and to other requesting individuals in mid-June for review and comments.
3. The status of the conversion algorithms was discussed. since the PDES/STEP Draft Proposal was issued, it was determined that some of the algorithms (line and copious data forms 2,3,12,13) would need to be modified to be in compliance with the entity definitions. It was also decided that all of the algorithms would be altered to use the EXPRESS PROCEDURE construct instead of the MAP construct. One editorial change will be made.
4. The committee's issues log was reviewed and as a result, will be updated to reflect the current situation.
5. The committee's charter was reviewed and it was decided to leave it unchanged.
6. The request from the San Antonio meeting to look at the possibility of providing conversion algorithms to map from simple IGES geometric entities to PDES B-spline entity forms was discussed. It was decided that this was not worthwhile, as algorithms to perform this type of conversion already existed.
7. Ron Schuldt of Martin-Marietta spoke to the committee about his proposed product data taxonomy scheme. The committee agreed to review it and provide feedback on it, via the committee chairman, to Ron between now and the Albuquerque meeting.
8. The committee agreed to spend the remainder of the meeting time working on their respective assigned algorithms.

Respectfully submitted,

  
Joe Bernstein

Technical Publications Committee Minutes  
April 18-20, 1989  
Buffalo, NY

The Technical Publications committee met on July 18 and 20 during the Buffalo IGES/PDES working committee meetings. During these meetings we initiated work on developing an information model for publications for PDES/STEP to provide resources for application areas with publication requirements.

In an effort to determine the scope of our effort and the domain of publications, we discussed generic enterprise publications and began compiling a list of current publications. Several committee members will conduct some research of similar efforts. PDES committees are urged to submit known publication requirements to the committee chairman.

Joe Hutchins presented an initial effort at modeling a generic publication structure. He will incorporate the committee's comments on the model and formalize its structure in IDEF. The committee will refine and extend the model in Albuquerque.

In coordination with the Presentation committee, we will respond to an ANSI committee's request that we consider some of their work in the publications area. Several committee members will help in determining applicability of the cited materials and formulate a response.

Respectfully Submitted,



Marc W. Durnin  
Chairman



MINUTES OF MEETING  
TEST CASE DEVELOPMENT COMMITTEE  
BUFFALO, N.Y. 7/17/89

The committee was asked by the SAE to select 35 to 37 test cases from the Phase I suite of test cases. These test cases will be used by the Testing Laboratories for Beta testing the methodology of the National IGES Verification Testing Program. The selection was made and approved by the committee. All outstanding reviews for the test cases would be completed and returned to NIST by 4 Aug. 1989. The suite will be sent to the SAE by 11 Aug. 1989.

Minutes of the San Antonio meeting, MONDAY - APRIL 10 last sentence first paragraph, were corrected to read

"Mark Pearson..... San Antonio, provided the committee with a software tool (LUSTI) to assist in the development of Test Case Specifications. This tool was developed for the exclusive use of the TCD Committee and was donated by the CADDETC and the University of Leeds, of the United Kingdom. This tool will be reviewed by several committee members."

The Test Case Specification Sub-committee has evaluated LUSTI and has determined, with a few changes to the software, this tool would definitely be useful to the TCD Committee. In fact the committee agreed that if CADDETC makes the requested changes to LUSTI, the next suite of test cases would be developed using this tool.

TCD Committee would like to say "THANK YOU" to CADDETC and the University of Leeds for recognizing a need and taking the initiative to fill it.

The Verification Testing Methodology committee and the Implementors' committee responded the same week to requests that were made of them by TCD. This allowed the committee to continue document review and continue planning for the next suite of test cases to be developed.

A second review of the Test Case documentation was made during the week and several spirited discussions ensued leaving two open issues for the Albuquerque meeting. They must be resolved before test cases can be written.

A member of the committee reported on the use of a high level specification resulting from LUSTI. He attempted to develop a test case from this specification. Several omissions in the spec were identified and suggested changes stated. He felt a need for a low level spec menu which more accurately define for the test case developer the requirements of what is being tested.

Test Case Specification sub-committee determined that LUSTI could be used for low level specifications if a different menu for the software was supplied. They have developed a preliminary menu template which will be alpha tested by several members of the TCD committee before the next meeting. A copy of the template will be sent CADETTC for comment and possible inclusion into LUSTI.

I would like to thank each member of the TCD committee for a week of dedicated hard work. You accomplished much more than I felt was achievable. This word of thanks goes to the Verification Testing Methodology and Implementors' committees also for their expeditious response to our requests.

Respectfully Submitted,



Jesse L. Crusey Co-chairman

## Summary minutes of IGES/PDES Testing Project Buffalo July 17th-21st 1989

### Introduction

These notes give an overview of the general Testing Project activities, individual committee should supply detailed minutes of their meetings. The Testing Project Chairs met twice during the week of the Buffalo meeting. Sunday afternoon to establish work items and priorities for the week, and on Thursday to report progress and plan meetings and agendas for the Albuquerque meeting.

### Restructured Testing Project

The main priority at the Project level was the implementation of the restructuring plan developed by the Testing Project Manager. This involved a clearer definition of committee charters, and the establishment of two new technical committees. In addition a "Testing Project Editorial Committee" would be used to improve the quality and consistency of documents generated by the Testing Project. All details of the proposed structure were approved by Technical Planning Committee.

**Interoperability Testing Methodology Committee** The first of the two new committees held an inaugural meeting at Buffalo, it was chaired by Connie Bracken of EDS in Troy, Michigan.

**Testing Methodologies Committee** This new committee met briefly to discuss scope, direction and work items. The Chairman will be Larry Lichten of California State University (Northridge), but he was unable to attend the Buffalo meeting. This committee will be addressing some of the conformance testing issues for IGES and STEP/PDES and consequently should establish some contact with ISO groups.

**User Information Committee** This committee is no longer classed as part of the Testing Project. The sections of the UIC charter relating to testing issues and dissemination of information about testing, will be adopted by various Testing committees.

**Testing Project Editorial Committee** The current documents of the Testing Project are undergoing substantial review and modification. The introductory document, 'An Overview of the IGES/PDES Testing Project' is being totally rewritten by the Testing Project chairmen. This should be finalised for the Albuquerque meeting.

**Submitted by :** Mark Pearson - Testing Project manager

IGES/PDES Organization  
Tolerance Committee  
Minutes  
19-20 July 1989, Buffalo NY

0. The Tolerance Committee convened meetings on the above dates with the objective of resolving a list of outstanding issues on the Tolerance Model. This objective was only met insofar as three issues shared with the Drafting Committee were resolved.
1. The chairman received a package of ballot comments on the STEP 1.0 Draft Proposal from Tony Day, the PDES Project Manager. These will be reviewed and resolutions will be developed as soon as possible for the next release of the DP.
2. The chairman met with the chairman of the Drafting Committee and resolved three issues which concerned the relationship between the Drafting Committee and Tolerance Committee. Of the three issues, two were on the same subject: Datum Labels (88.3, 89.8).
  - 2.1 Although the Tolerance Committee had decided that Datum Labels (a string in the Datum entity) was superfluous, human-oriented information and should be removed from the model, the Drafting Committee objected because they do make use of that label. After a discussion about generation of datum symbols for drawing and an assessment of where the label belongs, it was decided that the datum label can be removed from the Tolerance Model. The problem that may have been caused within the Drafting model was addressed by the inclusion of the label/string attribute in an association entity between the datum label display and the datum itself.

The major problem with this piece of data was the constancy between one drawing and the next; internal pointers and independently generated labels may not always be matched between systems. This would result in Datum A, for instance, referencing a plane in one model and a cylinder in another.
  - 2.2 The second issue (88.18) had to do with the relationship and "interaction" between a geometric model, tolerances and drafting. The issue was basically a thought-provoker rather than a real issue; it was intended to prompt some analysis of how these three types of information work together. Bob Parks, the originator of the issue, was satisfied that it was no longer an issue, so it will be documented and recorded as resolved.

- 3.0 Several members of the committee reviewed the ballots received from Tony Day and sorted them into four categories. The first category (47 ballots) were issue/problems which have already been addressed or may be address in a short period of time (3-6 months). The second category (8 ballots) were classified as medium term issues (6-12 months for resolution). The third category were problems which would require a long period of time for resolution (12 or more months). The final category (6 ballots) were indeterminate because the issue was unclear and in need of clarification.
- 4.0 None of the issues listed on the agenda for the Buffalo meeting were discussed other than those dealing with the Drafting Committee.
- 5.0 The chairman will prepare a response to all the ballots received on the model and formulate a plan for resolving those which require more than minor work. These items will constitute the committee agenda for the Albuquerque meeting. Additionally, those items not covered in Buffalo will be tacked on to the end of the agenda to form a long and growing committee agenda. This agenda will outline the committee work for the next several meetings.

Prepared by W.C. Burkett

## MINUTES Configuration Control Ad Hoc Committee

The committee met Tuesday afternoon, Wednesday, and Thursday and completed a series of procedures which were presented to the Edit Committee as a resolution. The resolution was approved, with some wording repair, and is attached as repaired. This resolution will provide a definition for the login authorizations and the database contents for the PDES repository system at NIST. The repository can then be used to provide electronic access to the work items and the files which will become the next version of the Draft Proposal.

With the resolution, the committee stated that the Issue Logs which are associated with model development, were to remain the means for each committee to control their internal technical work. Also stated was the notion that the resolution procedures would need to change as the technical work became additions or changes to a PDES database (under Dictionary development) and the DP is an output of that database.

The committee was tasked with completing a definition of activities and data related to configuration control, and further to work with the Integration Committee as needed to insure that integration processes are provided for. The definition work will be completed in the form of IDEF<sub>0</sub> and IDEF<sub>1X</sub> models. The committee will meet as part of the Editing Committee at the Albuquerque meeting. Attendees at this meeting were as follows:

| FULL TIME         | ADVISORY     |
|-------------------|--------------|
| Martha Boem       | Dick Joyce   |
| Byron Cassell*    | Larry Karns  |
| Tony Day          | Jim Nell     |
| Barbara Goldstein | Mike Nolen   |
| Curtis Parks*     | Nigel Shaw   |
| Gaylen Rinaudot   | Peter Wilson |
| Brad Smith        |              |

\*committee co-chair

### RESOLUTION OF CONFIGURATION CONTROL

7/20/89

1. The Tokyo DP will be divided into a set of documents by the Editing Committee as defined by the Frankfurt resolution.
2. This new set of electronic files will be entered into the Configuration Management System (CMS) at the National Institute of Standards and Technology (NIST) as the baseline DP components.
3. This baseline set of files will be immediately "checked out" by the Editing Committee for incorporation of the "editorial corrections" returned from the ballot.
4. The NIST shall then print (or output) a set of documents from the files returned by the Editing Committee.
5. A "comment database" will be created under the CMS. Initially it will consist of the ballot manager comments. Future comments will be added to this database as outlined below.

6. The technical comments from this "comment database" shall be made available to the technical committees in electronic or printed form. Each comment shall be uniquely identified by its ISO Reference Number.
7. Comments subsequent to the ballot may be submitted to the Editing Committee using the comment database. The Editing Committee will determine whether the added comment will be given an ISO reference number and added to the technical committee distribution.
8. The Editing Administrator shall determine committee assignment for each comment contained in the comment database; and, implicitly, the access authority for checkout / checkin of the stored DP components.
9. Each WG1 and IGES/PDES chair (or designee) will checkout each comment (in turn) that is assigned for resolution. Upon successful resolution of any number of comments, the chair (or designee) will checkout the appropriate DP components containing the comment-referenced portion, and enter the as-resolved information. The chair (or designee) will then checkin the component.
10. The checkout / checkin of any DP component shall be logged by the CMS such that all changes will be cross-referenced and tracked against the ISO reference number that caused the change to be made. The comment database will also be annotated with the resolution status. The Editing Administrator shall assess the need for further review of changes, should the change affect other committees.
11. The configuration management procedures will be implemented in such a way that, at any time, appropriate persons / committees may extract current and internally consistent report of the status of comments and DP components. A new version of the DP could be printed at any time.

|                                                                                                                                                                                                                                                                                                                                                                                                          |                                                     |                                        |                                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|----------------------------------------|-----------------------------------------------|
| U.S. DEPT. OF COMM.<br><b>BIBLIOGRAPHIC DATA SHEET</b><br><i>(See instructions)</i>                                                                                                                                                                                                                                                                                                                      | <b>1. PUBLICATION OR REPORT NO.</b><br>NIST 89-4176 | <b>2. Performing Organ. Report No.</b> | <b>3. Publication Date</b><br>OCTOBER 1989    |
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| <b>5. AUTHOR(S)</b><br>Gaylen R. Rinaudot                                                                                                                                                                                                                                                                                                                                                                |                                                     |                                        |                                               |
| <b>6. PERFORMING ORGANIZATION</b> <i>(If joint or other than NBS, see instructions)</i><br><br><b>NATIONAL BUREAU OF STANDARDS<br/>         U.S. DEPARTMENT OF COMMERCE<br/>         GAITHERSBURG, MD 20899</b>                                                                                                                                                                                          |                                                     | <b>7. Contract/Grant No.</b>           | <b>8. Type of Report &amp; Period Covered</b> |
| <b>9. SPONSORING ORGANIZATION NAME AND COMPLETE ADDRESS</b> <i>(Street, City, State, ZIP)</i>                                                                                                                                                                                                                                                                                                            |                                                     |                                        |                                               |
| <b>10. SUPPLEMENTARY NOTES</b><br><br><input type="checkbox"/> Document describes a computer program; SF-185, FIPS Software Summary, is attached.                                                                                                                                                                                                                                                        |                                                     |                                        |                                               |
| <b>11. ABSTRACT</b> <i>(A 200-word or less factual summary of most significant information. If document includes a significant bibliography or literature survey, mention it here)</i><br><br>This document is intended to provide summaries of technical committees who met during the IGES/PDES Organization quarterly meeting, July 16-21, 1989, in Buffalo, New York.                                |                                                     |                                        |                                               |
| <b>12. KEY WORDS</b> <i>(Six to twelve entries; alphabetical order; capitalize only proper names; and separate key words by semicolons)</i><br>Initial Graphics Exchange Specification (IGES), Product Data Exchange Specification (PDES)                                                                                                                                                                |                                                     |                                        |                                               |
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