(3D) Body Processing
Industry Connections Activity Initiation Document (ICAID)

Version: 4.0, 22 October 2021

<mark>IC15-004-04 Approved by the IESS SMDC 13 December 2021</mark>

Instructions

- Instructions on how to fill out this form are shown in red. It is recommended to leave the instructions in the final document and simply add the requested information where indicated.
- Shaded Text indicates a placeholder that should be replaced with information specific to this ICAID, and the shading removed.
- Completed forms, in Word format, or any questions should be sent to the IEEE Standards Association (IEEE SA) Industry Connections Committee (ICCom) Administrator at the following address: industryconnections@ieee.org.
- The version number above, along with the date, may be used by the submitter to distinguish successive updates of this document. A separate, unique Industry Connections (IC) Activity Number will be assigned when the document is submitted to the ICCom Administrator.

1. Contact

Provide the name and contact information of the primary contact person for this IC activity. Affiliation is any entity that provides the person financial or other substantive support, for which the person may feel an obligation. If necessary, a second/alternate contact person's information may also be provided.

Name: Carol McDonald
Email Address: cemd2@comcast.net/carol@gneissconcept.com
Employer: Gneiss Concept
Affiliation: Gneiss Concept

Name: Alfredo Ballester
Email Address: alfredo.ballester@ibv.org
Employer: IBV
Affiliation: IBV

IEEE collects personal data on this form, which is made publicly available, to allow communication by materially interested parties and with Activity Oversight Committee and Activity officers who are responsible for IEEE work items.

2. Participation and Voting Model

Specify whether this activity will be entity-based (participants are entities, which may have multiple representatives, one-entity-one-vote), or individual-based (participants represent themselves, one-person-one-vote).

Individual Based

3. Purpose

3.1 Motivation and Goal
Briefly explain the context and motivation for starting this IC activity, and the overall purpose or goal to be accomplished.

Describe the motivation and goal.

- To enable a seamless and secure pipeline of deliberate sensing, capturing, digitizing, sharing and immersion of data-based, body model and bodywear experiences…anywhere, anytime (ie, data-sumer), to create an ecosystem;
- Key elements may include … confidentiality, integrity, availability, flexibility to digitize human for any solution, static, dynamic,
- This exploration will include:
  - Identify gaps in existing nascent standards and recommended practices as 3D body processing spreads beyond first adopters;
  - Identify need and propose PARs for new standards and best practices for 3D body processing and adjacent technologies (like 2D augmented reality, Web3D, Motion Capture, Apparel, Footwear and Wearables);Identify special requirements for, footwear anddefinitions of Fit (Apparel)

Previous 3DBP IC Topics now being covered in P3141 3D Body Processing standard

A number of technical issues discussed previously in this IC Activity have matured sufficiently such that further work on those items have transitioned into the the P3141 working group. The following issues will no longer be a focus of this IC Activity as it progresses into new areas to be considered for future standardization opportunities:

- Communications/Security/Privacy
- Metadata,
- Quality,
- File Formats,
- Use Cases as pertains to Retail and Health/ Fitness,
- Types of 3D processing Technologies,
- Mega Technologies

3.2 Related Work
Provide a brief comparison of this activity to existing, related efforts or standards of which you are aware (industry associations, consortia, standardization activities, etc.).

Describe the related work.

- There are a variety of standards efforts around 2D augmented reality that include 2D human modeling but none other than P3141 that we know of for 3D body characterization, modeling and processing;
- Analysis of industry standards including ISO and other organizational standards related to clothing, scanning, including but not exclusive to: ISO 8559- 1:2017, ISO 7250-1:2017, ISO 20685-1:2010, ISO/DIS 20685-1, ISO 20685-2:2015, ISO18825-1&2:2016, ASTM D5219-15, ISAK, NATO-STANAG 2177, and NATO-STANAG 2339, IEEE 700x, IEEE 802,

- Previous 3DBP IC work has been transferred to P3141 3D Body Processing standard covering Communications/Security/Privacy, Metadata, Quality, File Formats, Use Cases, Types of 3D processing Technologies and Mega Technologies

3.3 Previously Published Material
Provide a list of any known previously published material intended for inclusion in the proposed deliverables of this activity.

List the previously published material, if any.

- White paper #1: IEEE Industry connections, 3D Body Model Processing Initiative, An Introduction
- IEEE Industry connections, Personalized Digital Last (a Women's Example) – The Tool Required to Enable Mass Customization
- IEEE Industry connections, Landmarks and Measurement Standards Comparison in 3D Body-Modeling
- IEEE 3DBP IC: Communication, Security and Privacy
- File Format Recommendations for 3D Body Model Processing
- Measurement of Fabric Properties for Virtual Simulation
- Comprehensive Review of Foot Measurements Terminology in Use
- Functional Anatomy, Terms and Common Foot Conditions
- Summary and Recommended Actions for Communications, Security, Privacy and Trust (CSPT)
- Presentations – CES 2017, 3D Body Tech 2016, 3D Body Tech 2017, 3D Body Tech 2018, 3D Body Tech 2019, 3D Body Tech 2020
- Presentation – Virtual Human Requirements for the Retail Use Case - AHFE 2020
- Presentation - Comparative Analysis of Anthropometric Methods: Past Present and Future – 3D Body Tech 2020
- Presentation – 3D Body Processing Interoperablility, State of Art and Remaining Outstanding Issues – 3D Body Tech 2021
- Presentation – Landmarking for 3D Body Scanning, moving manual practices into a digital realm – 3D Body Tech 2021

3.4 Potential Markets Served
Indicate the main beneficiaries of this work, and what the potential impact might be.

Describe the potential markets.

- There are several potential markets where standards related to 3D body processing will add value:
  - Consumers in
    - Fashion
    - Retail
    - Health/wellness
    - Athletics
    - Etc.
  - Suppliers at various layers

- User-facing/product offering Supplier
- Platform Suppliers
- Application Software Suppliers
- Operating System Suppliers
- Application Processor Suppliers
- Etc.

3.5 How will the activity benefit the IEEE, society, or humanity?

The IEEE benefits from this activity as it develops a new community of technologists that is cross-disciplinary and relevant to many IEEE areas of interest, including standards, yet focused on an application area that has not been explicitly addressed to date in other areas of the IEEE. IEEE benefits by attracting new membership, providing leadership in a discipline area, and being at the forefront of new standards that enable digital transformation in areas such as body scanning, retail/apparel experience, health/wellness and other consumer facing applications.

4. Estimated Timeframe
Indicate approximately how long you expect this activity to operate to achieve its proposed results (e.g., time to completion of all deliverables).

Expected Completion Date: 12/2023

IC activities are chartered for two years at a time. Activities are eligible for extension upon request and review by ICCom and the responsible committee of the IEEE SA Board of Governors. Should an extension be required, please notify the ICCom Administrator prior to the two-year mark.

5. Proposed Deliverables
Outline the anticipated deliverables and output from this IC activity, such as documents (e.g., white papers, reports), proposals for standards, conferences and workshops, databases, computer code, etc., and indicate the expected timeframe for each.

Specify the deliverables for this IC activity, please be specific.

Deliverables for this activity include:
- Sub-group reports on Footwear and 3D Body Processing
- Sub- group reports on Fit and 3D Body Processing
- White papers - Standard reviews, Industry questionnaires (Use of 3D Technologies in Retail)
- White papers in process: Comparative Analysis of Anthropometric Methods: Past Present and Future; Landmarking – moving Manual practices to Digital realm; Footwear Last Definitions; Proposed Foot Measurements; and AI and Parametric Modeling for Footwear
- Documents outlining agreed upon industry requirements for standards
- Proposal for standard(s) (e.g. P3141) on 3D body processing;
- Liaisons/Collaborations with ISO, Web 3D, 3DRC
- Mktg collateral (ie, CES press release, Logos/Poster, Grand Challenges)
- Quarterly Meetings/Workshops (in person still impacted by travel restrictions);
- IEEE webpage providing an information portal for this new technology community, as well as

outward facing information of interest

5.1 Open Source Software Development

Indicate whether this IC Activity will develop or incorporate open source software in the deliverables. All contributions of open source software for use in Industry Connections activities shall be accompanied by an approved IEEE Contributor License Agreement (CLA) appropriate for the open source license under which the Work Product will be made available. CLAs, once accepted, are irrevocable. Industry Connections Activities shall comply with the IEEE SA open source policies and procedures and use the IEEE SA open source platform for development of open source software. Information on IEEE SA Open can be found at https://saopen.ieee.org/.

Will the activity develop or incorporate open source software (either normatively or informatively) in the deliverables?: No

6. Funding Requirements

Outline any contracted services or other expenses that are currently anticipated, beyond the basic support services provided to all IC activities. Indicate how those funds are expected to be obtained (e.g., through participant fees, sponsorships, government or other grants, etc.). Activities needing substantial funding may require additional reviews and approvals beyond ICCom.

Specify funding requirements and sources, if any.

No additional funding requests are anticipated for services beyond the standard services provided for IC programs. Activity members will provide any needed support for hosted meetings, marketing activities that exceed basic IC support.

Examples include:

- Quarterly F2F activity meetings (time/locations TBD) – activity members will be solicited to host/sponsor any in person meetings at their company facilities or other industry events (depending on travel restrictions)

- Marketing support beyond that provided by IEEE-SA – activity members will coordinate with IEEE for any additional marketing initiatives in support of the IC activity – examples envisioned include:
  - Consumer Electronic Show marketing package (press release, media event, demo, keynote, etc.)
  - Others industry channels (ie, 3D Body Tech, PI Apparel, keynote, etc.)
  - Workshops

7. Management and Procedures

7.1 Activity Oversight Committee

Indicate whether an IEEE Standards Committee or Standards Development Working Group has agreed to oversee this activity and its procedures.

Has an IEEE Standards Committee or Standards Development Working Group agreed to oversee this activity?: No

If yes, indicate the IEEE committee's name and its chair's contact information.

IEEE Committee Name:
Chair's Name:
Chair's Email Address:

Additional IEEE committee information, if any. Please indicate if you are including a letter of support from the IEEE Committee that will oversee this activity.

IEEE collects personal data on this form, which is made publicly available, to allow communication by materially interested parties and with Activity Oversight Committee and Activity officers who are responsible for IEEE work items.

7.2 Activity Management
If no Activity Oversight Committee has been identified in 7.1 above, indicate how this activity will manage itself on a day-to-day basis (e.g., executive committee, officers, etc).

Briefly outline activity management structure.

The activity will be managed by an executive committee as defined in the activity's policies and procedures.

7.3 Procedures
Indicate what documented procedures will be used to guide the operations of this activity; either (a) modified baseline *Industry Connections Activity Policies and Procedures,* (b) Standards Committee policies and procedures accepted by the IEEE SA Standards

Board, or (c) Working Group policies and procedures accepted by the Working Group's Standards Committee. If option (a) is chosen, then ICCom review and approval of the P&P is required. If option (b) or (c) is chosen, then ICCom approval of the use of the P&P is required.

Specify the policies and procedures document to be used. Attach a copy of chosen policies and procedures.

Will use the baseline Industry Connections Activity Policies and Procedures.

8. Participants

8.1 Stakeholder Communities
Indicate the stakeholder communities (the types of companies or other entities, or the different groups of individuals) that are expected to be interested in this IC activity, and will be invited to participate.

Specify types of entities or groups of individuals.

See section 3.4

8.2 Expected Number of Participants
Indicate the approximate number of entities (if entity-based) or individuals (if individual-based) expected to be actively involved in this activity.

Number of entities or number of individuals.

We have approximately 130 individuals across the ecosystem currently involved (~34 very active), see section 8.3 for a detailed listing. Engagement with other groups to expand the participation.

8.3 Initial Participants
Provide a number of the entities or individuals that will be participating from the outset. It is recommended there be at least three initial participants for an entity-based activity, or five initial participants (each with a different affiliation) for an individual-based activity.

The following table provides a partial list of current participants. We are actively reaching out to companies and universities and expect more to join us, for example, outreach at the 3D Body Tech conferences yielded requests for information. Examples of entities that participants are affliciated with include:

- The University of Manchester, Riga Technical University, Institute de Biomecanica de Valencia (IBV), Cornell, Tu- Dresden, National Institute of Advance Industrial Science & Technology (AIST -JP), Sheffield Hallam University, North Carolina State University
- Size Stream,Avalution, Metail, Exact Flat, VyoO, Size Stream, 3DMC, Web 3D H-Anim, 3D Look
- Fashion Should Empower, Tech Med 3D, Volumental, Satra, Aetrex, Balodana, ELSE Corp, Silverdraft Supercomputing, Vital Mechanics, Savitude, Atom-Shoemaster, Roman's CAD, Prototech Solutions, Hohenstein, Target, OTL Footwear, True Fit, Gneiss Concept

Use the following table for an entity-based activity: (this table will no longer be used)

Entity	Primary Contact	Additional Representatives

Use the following table for an individual-based activity: (not a complete list)

Individual	Employer	Affiliation
Name		
Carol McDonald	Gneiss Concept	Gniess Concept
Alfredo Ballester	IBV	IBV
David Bruner	Side Stream	Side Stream
Gerald Ruderman	Zdoit	Zdoit
Julianne Harris	Target	Target
Fatma Baytar	Cornell	Cornell
Andrey Golub	ELSE Corp	ELSE Corp
Nick Clayton	Savitude	Savitude

Masaaki Mochimaru	National Institute of Advanced Industrial Science and Technology	same

8.4 Activity Supporter/Partner
Indicate whether an IEEE committee (including IEEE Societies and Technical Councils) has agreed to participate or support this activity. Support may include, but is not limited to, financial support, marketing support and other ways to help the Activity complete its deliverables.

Has an IEEE Committee agreed to support this activity?: Yes

If yes, indicate the IEEE committee's name and its chair's contact information.

IEEE Committee Name: IEEE Consumer Electronics Society Standards Committee (CES/SC)
Chair's Name: Yu Yuan
Chair's Email Address: y.yuan@ieee.org

Please indicate if you are including a letter of support from the IEEE Committee.