



Agenda

- Welcome & Introduction
- Approval of the agenda
- Highlights of the ICC 2021 meeting
- Approval of the meeting minutes
- Background about TI TC
- Report on activities
- Report on standards activities
- Project presentations
- Planning activities for 2022
- Any other business

Participation in the TI TC Online Meeting

- ▶ Please, fill out the following form to indicate your participation at the meeting (link will be provided in the chat box)

<https://forms.gle/ERCPyntR26LgDcGC6>

- ▶ This is extremely important to track your participation in our meetings

How to Join the TI TC?

- ▶ We hold two meetings every year:
 - At ICC and Globecom
 - <https://ti.committees.comsoc.org/>
- ▶ Become a member by joining our mailing list:
 - <https://ti.committees.comsoc.org/ mailing-list/>
- ▶ You are an active member if you have attended two or more of the prior five regularly scheduled TC meetings
- ▶ You are a voting member if you are an active member or have substantially contributed to the TI Technical Committee activities

Highlights of the ICC 2021 Meeting

- ▶ Meeting was online and chaired by Meryem Simsek
- ▶ Discussed items:
 - Discussion on new activities
 - Report on conference and publication activities
 - Planned activities for 2021 – 2022, e.g., start of additional special interest groups and online webinars
 - Four project presentations of Tactile Internet
 - Dr. Holland presented updates on TI standards
- ▶ Motion to approve the meeting minutes:

<https://ti.committees.comsoc.org/meetings/>

Brief History of the TI TC

- ▶ Started as a technical sub-committee in June 2015 with
 - Meryem Simsek, Latif Ladid, and Mischa Dohler as officers
- ▶ Summer 2018 evaluated to a TC with
 - Meryem Simsek, Falko Dressler, Oliver Holland as officers
- ▶ Initiated an IEEE standardization working group on the Tactile Internet, IEEE P1918.1
- ▶ Organized various workshops, tutorials, special sections, tracks in flagship conferences as well as various special issues in IEEE journals
- ▶ Highly active and engaged members with very interactive meetings including guest speakers

Tactile Internet Definition

- ▶ Standardized definition:

"A network or network of networks for remotely accessing, perceiving, manipulating or controlling real or virtual objects or processes in perceived real time by humans or machines."

Tactile Internet TC Charter

- ▶ The objectives of the TI technical committee are to facilitate the worldwide harmonization of **research, standardization** and **best practices** for deployment user scenarios of the global **TI ecosystem**, to design the built-in security and privacy and to explore ways the tactile technology can be realized in different segments such as in engineering, automobile, transport and logistics, health service, and public. The TI technical committee will target the understanding of the tactile **requirements**, defining **system specifications** to meet these requirements, and developing **breakthrough technology** to the identified challenges of the tactile internet.

TI is Gaining Momentum with 6G, XR/MR and the Metaverse



RINGS

Merging digital/physical/virtual worlds



https://www.ngmn.org/wp-content/uploads/NGMN-6G-Drivers-and-Vision-V1.0_final.pdf



Priority Programme “Resilience in Connected Worlds – Mastering Failures, Overload, Attacks, and the Unexpected (Resilient Worlds)” (SPP 2378)

Many keynotes from major drivers and companies

Mixed reality

Holograms

Internet of Senses

Immersive Experiences

HCI

...



General Overview of TC Activities

- ▶ Conferences
 - Sponsorship of symposia – nominations for symposium co-chairs
 - Endorsement of conferences
 - Sponsorship of workshops, special sessions, tutorials
- ▶ Nominations
 - Distinguished lectures
 - IEEE Senior/Fellow membership status
- ▶ Awards
 - Annually two awards: service award and technical contribution award
- ▶ Student competition
- ▶ Standardization activities
- ▶ Webinars
- ▶ Publications, e.g. Special issues, books
- ▶ Newsletter
- ▶ Collaborations with other TC/societies

General Overview of TC Activities

- ▶ Call for Globecom 2023 symposium chair positions (deadline Nov. 30th)
 - Email sent with required information for nomination
 - Please, reach out to the TC officers to be nominated
- ▶ Nominations for distinguished lectures (January 2022 – December 2023) submitted in September
- ▶ No endorsement request made for IEEE Fellowship
- ▶ Awards:
 - Nominations for awards received by the awards sub-committee (deadline Nov. 19th, 2021)
 - Election, approval and announcement will follow soon
- ▶ Student competition
 - Moayad Aloqaily, Qatar University Doha, Qatar

Tactile Internet TC Newsletter

- ▶ First newsletter is under preparation
 - Guodong Zhao (Guodong.Zhao@glasgow.ac.uk) appointed as lead editor
 - Call for contributions is ongoing (**deadline Nov. 25th, 2021**)
 - Opportunity to:
 - disseminate your achievements within the TI community
 - Engage with the TI community
 - Share your upcoming events, openings etc. Within a global team
 - Please, submit your content!
 - To be published in December 2021

Conference Activities

- ▶ Tactile Internet track within SAC Symposium at IEEE Globecom 2018, 2019, 2020 and IEEE ICC 2020
- ▶ Sponsoring other symposia at ICC and Globecom, since 2020
 - Globecom 2022: Next-Generation Networking & Internet + IoT & Sensor Networks
 - ICC 2022: Next-Generation Networks + IoT & Sensor Networks
- ▶ Nominations for Symposium co-chairs at ICC and Globecom
 - Nominations have been made until ICC 2023
 - Ongoing call for nominations for Globecom 2023 – Please, reach out to us if you want to be nominated!
- ▶ Endorsement of conferences for ComSoc technical co-sponsorship
 - Conference should be relevant to TC committee scope and activities, have at least two TC members involved in the TCP, and have a good reputation within the community
 - Endorsement of, e.g., COMSNETS 2021, ICT 2021, ICCCN2022
 - Please reach out to us if you are involved in a conference and want the TC's technical co-sponsorship

Tutorials and Workshop Activities

▶ Tutorials:

- Computing in Communication Networks – From Theory to Applications - IEEE ComSoc Training Course [online]
- Computing in Communication Networks: The Road Ahead - Tutorial at VTC2021-Fall [online]
- Goal-Oriented Communication for Networked Intelligent Systems – Tutorial at IEEE SPAWC 2021

▶ Workshops:

- 6G-life: Digital transformation and sovereignty of future communication networks; Virtual Workshop on B5G and 6G, Yonsei University, Sydney
- CeTI: Tactile Internet with Human-In-The-Loop – Workshop on Robotics in Industry 4.0; Université Paris Saclay, France [online]
- Globecom 2021 Workshop on Intelligent Communications for Decentralized Energy Management

Special Session Activities

▶ Special Sessions:

- IEEE SPAWC 2021 Special session on Information Freshness in Real-Time Communication Networks
- International Symposium on Wireless Communication Systems (ISWCS) 2021 - Special Session on Age of Information
- International Symposium on Wireless Communication Systems (ISWCS) 2021 - Special Session on URLLC & Industrial Networking
- IEEE 5G World Forum 2021: Systems Optimization for 5G and Beyond – Topical Session
- IEEE 5G world Forum 2021: The Path to 6G – Industry Forum and Panel
- IEEE 5G world Forum 2021: The Internet is Broken: We need the Grid (Internet Evolution) – Industry Forum and Panel
- IEEE CCNC 2021, several workshops and sessions

Publication Activities

▶ Special issues:

- IEEE Internet of Things Journal “Age of Information and Data Semantics for Sensing, Communication and Control Co-Design in IoT”, Published Oct. 2021.
- Frontiers in Communications and Networks, Special Issue on “Age of Information”, open, **deadline Spring 2022.**
- IEEE Communications Standards Magazine „Autonomous Networks: Opportunities, Challenges, and Applications“, **deadline December 1st, 2021**
- IEEE Network „Zero Touch Networks: Opportunities, Challenges, and Potential Applications“, **deadline January 15th, 2022**

Projects Worldwide

► Projects and other activities:

- Worldwide new TI centers/research groups are opening, e.g., Canada, Germany, UK, Abu-Dhabi, Lebanon, and the USA
- **CeTI Summer School**, Smart Textiles & Wearables, Sept 2021 – Planned for Sept 2022 as well!
- “Semantics-Empowered Communication for Networked Intelligent Systems”, Swedish Research Council (VR) , (2022-2025)
- “Information Handling in Industrial IoT”, ELLIIT, (2021-2025)
- ADAMO (Adaptive Fluid dynamics for Motorbikes)
- 5G-enabled Remote Robotics Control
- Resilience in Connected Worlds

Engagement/Collaboration with other TC/Societies

- ▶ Engagement with other TCs, e.g., IoT, Ad Hoc & Sensor Networks, Information Infrastructure & Networking, Network Intelligence (ETI)
 - Online meetings on a new joint SIG on “IoT and the Tactile Internet” with the IoT-AHSN TC
- ▶ Engagement with IEEE ComSoc SCV chapter
 - Joint webinars and other activities
- ▶ Engagement with IEEE Computer Society SCV chapter
 - Joint webinars (e.g., NFIC – next frontiers in computing) and other activities
- ▶ Collaboration with IEEE Robotics and Automation Society Telerobotics TC
 - Standardization
 - Joint Special Issues, e.g., IEEE Transactions on Human-Machine Systems
 - Joint Workshops and/or webinars
 - Joint SIG?
- ▶ Discussion with other TCs from other IEEE societies ongoing
- ▶ Organization of online webinars in collaboration with the IEEE ComSoc SCV and IEEE Computer Society SCV chapters

Report on Awards

- ▶ As a part of the TI activities, *Service Award* and *Technical Contribution Award* are established
- ▶ Current awards subcommittee:
 - Sharief Oteafy, DePaul University
 - Falko Dressler, TU Berlin
 - Neeraj Kumar, Thapar Institute of Engineering and Technology India
 - Frank Fitzek, TU Dresden
 - Stefano Giordano, Universita di Pisa
- ▶ Election of awardees ongoing, awardees will be announced after TAC VP approval
- ▶ Awardees of 2021 to be announced soon after approval

SIG Activities

▶ SIG: IoT in the Tactile Internet

- Together with the IoT, Ad Hoc & Sensor Networks TC a cross-TC SIG has been formed on ""
- The SIG activities will be coordinated by Dr. Sharief Oteafy (soteafy@depaul.edu) from DePaul University and Dr. Nikolaos Pappas (nikolaos.pappas@liu.se) from Linköping University
- An online kick-off meeting on June 23rd, 2021 with an invited talk on “Cyber-Physical-Social Systems (CPSS) in the 6G Era: From Tactile Internet to Internet of No Things” by Martin Maier
- Please, reach out to Sharief Oteafy and/or Nikolaos Pappas in case of interest

▶ Other SIGs currently under discussion

- Please, reach out to us in case you are interested to lead a SIG activity

Webinar Series

- ▶ Started a webinar series with experts from diverse backgrounds
 - Shu-Chen Li, Psychophysical and Neurocognitive mechanisms of Multisensory Perception across the Lifespan: Implications for TI Technologies, Technical University Dresden, June 7th, 2021
 - Stefanie Speidel, AI-assisted Surgery, National Center for Tumor Diseases, June 25th, 2021
 - Harold Dumur, Spatial Computing and Gaming, OVA.ai, November 17th, 2021
 - Stefano Giordano, Tactile Internet experiences on active fluid dynamics, Universita di Pisa, **January 24th, 2022**
 - Ugo Boggi, Remote Surgery with Da Vinci Robots, Universita di Pisa, tbd
 - Charles Goin-Valleran, Mixed Reality and Spatial Reasoning , University of Sherbrooke, September 2021
- ▶ Other webinars to be launched in collaboration with the IEEE ComSoc SCV and IEEE Computer Society SCV chapters
 - Stay tuned for updates!

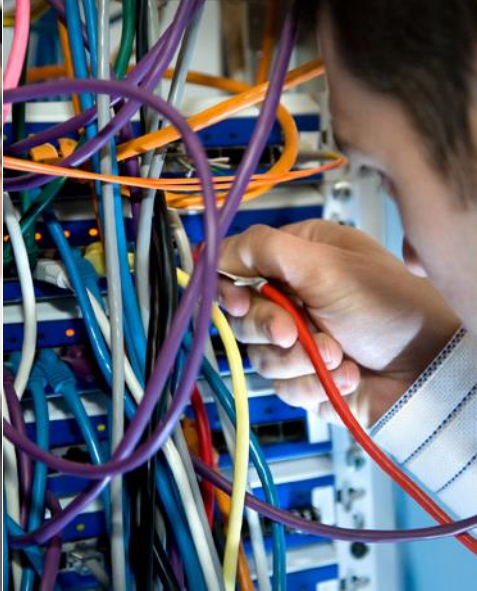
Report on other Activities since ICC`21

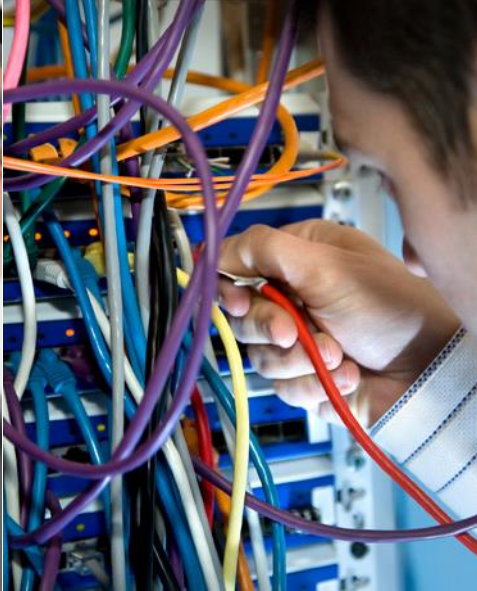
- ▶ The P&Ps have been updated and are under review for approval
- ▶ The website has been updated
 - A new tab on ,Best readings` has been added
 - List of various articles has been added
 - Hint to contact the officers for listing a related article
 - Meetings including slides and minutes are uploaded
 - Awards tab has been updated with the new awardees

Report on Standards Activities

▶ IEEE:

- Both groups meeting monthly to discuss updates; additional ad-hoc meetings are schedule upon need
- IEEE P1918.1 working group on the Tactile Internet continues activities. Close to finalizing the draft standard, as is the last item needed before completion towards balloting. There have been recent significant contributions to the use cases and architecture within IEEE P1918.1.
- IEEE P1918.1.1 Haptic Codecs group has completed definition of its zero-delay and delay-bounded kinaesthetic codecs.





Planning Activities for 2022

- ▶ Increase #membership and participation
- ▶ Increase #tutorials, special issues, distinguished lecturers
- ▶ Involve our members from various regions
- ▶ Open calls for participation to the TI TC activities will be continued
- ▶ Additional special interest groups to be launched
- ▶ Engagement with other TCs and societies
- ▶ Additional (inter-disciplinary) webinars will be organized
- ▶ Social media engagement

Summary of Call for Action/Inputs

- ▶ IEEE Globecom 2023 chair position nomination, due Nov. 30th, 2021
- ▶ Input for newsletter. Please, reach out to Guodong.Zhao@glasgow.ac.uk, due Nov. 25th, 2021
- ▶ Updates on activities, e.g., publications, webinars, workshops, tutorials, SIs, SSs, ...
- ▶ Engagement with your local chapters
- ▶ Call for invited talks for the webinar series!

Other Business

- ▶ Total number of subscribers to the mailing list
~210↑
- ▶ Website administration
- ▶ Publicity activities, e.g., social media
- ▶ Suggestions for improvements?
- ▶ Further ideas?