Experience of real-time endoscopic tele-conference by software based full HD video conference system (Tomms Factory) of KSGE

Ho-Soon Choi, Hanglak Lee, Joonsoo Hahm, Oh Young Lee, Myunggyu Choi

Global Network Education Committee of KSGE, Hanyang University Medical Center, Seoul, Korea
**Global Network Education Committee (GNEC)**

<table>
<thead>
<tr>
<th>No.</th>
<th>Position</th>
<th>Name</th>
<th>Affiliation</th>
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<tr>
<td>9</td>
<td>Director of the Membership Committee</td>
<td>Ho Gak Kim</td>
<td>Catholic University of Daegu School of Medicine, Daegu Catholic University Medical Center</td>
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<tr>
<td>10</td>
<td>Director of the Informatics Committee</td>
<td>Sam Ryong Lee</td>
<td>Inje University College of Medicine</td>
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<tr>
<td>11</td>
<td>Director of the Insurance Committee</td>
<td>Young Ho Kim</td>
<td>Samsung Medical Center</td>
</tr>
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<td>12</td>
<td>Director of the Disinfection Management Committee</td>
<td>Young Seok Cho</td>
<td>The Catholic University of Korea Seoul St. Mary's Hospital</td>
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<td>13</td>
<td>Director of the Public Affairs Committee</td>
<td>Jong Ho Moon</td>
<td>Soochunhyang University Bucheon Hospital</td>
</tr>
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<td>14</td>
<td>Director of the Ethics and Quality Management Committee</td>
<td>Jeong Seop Moon</td>
<td>Inje University College of Medicine</td>
</tr>
<tr>
<td>15</td>
<td>Director of the Global Network Education Committee</td>
<td>Ho Soon Choi</td>
<td>Yonsei University Medical Center</td>
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<td>16</td>
<td>Vice Secretary General</td>
<td>Hyun Soo Kim</td>
<td>Chonnam National University Hospital</td>
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<td>17</td>
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<td>Se Joon Lee</td>
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</tr>
<tr>
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<td>Jae Myung Park</td>
<td>The Catholic University of Korea Seoul St. Mary's Hospital</td>
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<tr>
<td>19</td>
<td>Auditor</td>
<td>Jin-Oh Kim</td>
<td>Soochunhyang University Hospital</td>
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<td>20</td>
<td>Auditor</td>
<td>Yong Chan Lee</td>
<td>Yonsei University College of Medicine</td>
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</table>
- Research group -

1. Technology of Endoscope
2. Stent
3. ESD
4. EUS
5. Capsule endoscopy and Enteroscopy
6. NOTES
KOREN 기반 의료분야 연구기관 (직,간접포함)

고려대(병원)
국립암센터
서울대의대(연간)
서울아산병원
순천향내병원
연세의료원(신촌)
한양대 [병원]
삼성의료원
한양대 구리병원
서울성모병원
건국대병원

분당서울대병원
 아주대(의대)

충북대(의대)

전북대 병원
전남대병원(광주)
제주대(의대)

제주대(의대)

2010년 12월 기준

International Digestive Endoscopy Network 2015
Major achievements of telemedicine activities of KSGE

1. Many new connection sites
   ✓ 18 university hospital
   ✓ Guri Hanyang University Hospital
   ✓ Catholic University of Daegu

2. Collaboration with new societies
   ✓ KSGE, KPBS, SGI
   ✓ EUS research group of KSGE

3. Endoscopic activities
   ✓ Endoscopic teleconferences
   ✓ Live demonstration (real time)
   ✓ Academic meeting for education
### Endoscopic teleconferences activities

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Contents</th>
<th>Venue</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003.2.12</td>
<td>Endoscopy conference in IT WEEK event</td>
<td>Conference, Slide, video</td>
<td>Kyushu University, Hanyang University</td>
</tr>
<tr>
<td>2004.1.29</td>
<td>The 17th APAN Meetings in Honolulu, (APAN Hawaii)</td>
<td>Conference, Slide</td>
<td>Hawaii U, HUH, KUH, NCC in Tokyo</td>
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<tr>
<td>2004.2.24</td>
<td>ERCP Teleconference</td>
<td>Conference, video</td>
<td>HUH, KUH</td>
</tr>
<tr>
<td>2004.09.15</td>
<td>Korea-Japan Teleconference on small bowel endoscopy</td>
<td>Slide, video</td>
<td>HUH, KUH</td>
</tr>
<tr>
<td>2008.5</td>
<td>Teleconfernce between universities in Korea</td>
<td>Slide, video</td>
<td>HUH, CNNUH, SCHUH, AUH, Jeju UH</td>
</tr>
<tr>
<td>2008.5.2-2009 (x 5)</td>
<td>1st IEE international teaching project with Stanford Univ.</td>
<td>slide</td>
<td>Stanford, USA, Tokyo, Fukuoka, JP HUH</td>
</tr>
<tr>
<td>2008.4.17-2010 (x10)</td>
<td><em>JK7</em> Endoscopic Teleconference</td>
<td>Slide, video</td>
<td>KUH, Kyoto Second Red Cross, Hospital (Japan), HUH(Korea), National Taiwan University (Taiwan)</td>
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</table>
## Academic meetings

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Contents</th>
<th>Venue</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004.11.11</td>
<td>The Introduction of Hanyang medical college using HD</td>
<td>Slide, movie</td>
<td>Kyushu University Hanyang University</td>
</tr>
<tr>
<td>2010.2.28</td>
<td>Training course of gastroenterology center(2/28)</td>
<td>Conference, Slide, video</td>
<td>Guri HUH Hanyang University</td>
</tr>
<tr>
<td>2010.8.10</td>
<td>30(^{th}) APAN Meeting</td>
<td>Conference, Slide</td>
<td>Hanoi_vt, KUH_jp, HUH_kr</td>
</tr>
</tbody>
</table>
# Live demonstration (real time)

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Content</th>
<th>Venue</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006-2007</td>
<td>live endoscopy</td>
<td>Live (satellite)</td>
<td>Grand Hiton Hotel</td>
</tr>
<tr>
<td></td>
<td>ESD Live Demonstration 2008 in KSGE (4 stations)</td>
<td>Live (satellite + tele)</td>
<td>HUMC, NCC, Kyoto 2\textsuperscript{nd} redcross hospital, Iwata USM</td>
</tr>
<tr>
<td>2009.3.24</td>
<td>ESD Live Demonstration 2009 in KSGE (5 stations)</td>
<td>Live (Tele)</td>
<td>HYMC, SCHU, CBNUH, CNUH, and Kyoto 2\textsuperscript{nd} redcross hospital</td>
</tr>
<tr>
<td>2010.2.6</td>
<td>ERCP Live 2010 in KPBS (8 stations)</td>
<td>Live (Tele)</td>
<td>8 different hospitals through Qatro</td>
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<tr>
<td>2011.3.27</td>
<td>EGD &amp; CGS (8 stations)</td>
<td>Live (Tele)</td>
<td>8 different hospitals through Qatro</td>
</tr>
<tr>
<td>2012.3.25</td>
<td>Basic and advanced EGD &amp; CFS (4 stations)</td>
<td>Live (Tele)</td>
<td>HYMC, AMC, KUH, DCUH</td>
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<tr>
<td>2013.3.24</td>
<td>UGI &amp; LGI cases (4 stations)</td>
<td>Live (Tele)</td>
<td>SGCU(2), KUH(2), AMC, AUH</td>
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<tr>
<td>2014.3.30</td>
<td>UGI &amp; LGI cases (5 stations)</td>
<td>Live (Tele)</td>
<td>KUH, AMC(2), CNU, SNUBH</td>
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<tr>
<td>6.01</td>
<td>advanced UGI cases</td>
<td>Live (Tele)</td>
<td>SCHU, KUH, YUH, HYMC, AMC(2)</td>
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</tbody>
</table>
Core technology of TF

Customer Values

Resource Saver System Technologies

Core Competence

Customer Value

Enhancing Efficiency (High efficiency Green IT)

- Maximizing network value & Enhancing network economy
- High quality multimedia broadcasting
- Supporting large-scale service

Multicasting Tunneling

- High profitability by less overhead
- Efficient network management
- Service reliability & performance
- Supporting large-scale service

Server Grid

Video Images Processing Technique

- Less CPU usage
- Maximizing network value & Enhancing network economy
- More users on fixed bandwidth
- Supporting large-scale service

Enhancing User Experience (TPS crossing the limitation)

TPS

- Richest User Experience
- Development of various 5G
- Supporting "Smart" (Mobile, Tablet)
- Integration with Legacy & ability to replace existing MCU

Triple Play Service
Comparing to unicasting which requires network increment for service expansion, Haeden Bridge’s TOMMS FACTORY with unique two way IP multicasting tunneling technology saves network bandwidth, and therefore operating cost and overhead while providing two-way, high quality multimedia broadcasting services along with real time visual communication at large scale over costly WAN.

<table>
<thead>
<tr>
<th></th>
<th>Bandwidth</th>
<th>Others</th>
<th>TOMMS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Server</strong></td>
<td>Upload</td>
<td>11Mbps</td>
<td>2Mbps</td>
</tr>
<tr>
<td></td>
<td>Download</td>
<td>1Mbps</td>
<td>1Mbps</td>
</tr>
<tr>
<td><strong>Client (Sender)</strong></td>
<td>Upload</td>
<td>1Mbps</td>
<td>1Mbps</td>
</tr>
<tr>
<td></td>
<td>Download</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Client (Receivers)</strong></td>
<td>Upload</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Download</td>
<td>1Mbps</td>
<td>1Mbps</td>
</tr>
</tbody>
</table>

Bandwidth comparison Table
DVTS vs TF backbone
TOMMS FACTORY's server grid structure provides the best efficient environment of group communication.

**Case Study**

**Global Service Deployment by DTS Decentralization**
- Project: ITU (International Telecommunications Union)'s first global web conference on Climate Changes & The power of ITC
- Deployed Product: TOMMS FACTORY Enterprise – Webinar Mode
- Network: Samsung SDS's global backbone and local ISPs
- Participation: 260 participants from 12 countries

**Advantages of allocating additional DTS**
- Easy to expand service scale
- Network load balancing
- Enhancing Failover
- Securing service stability/reliability

CMS: Connection Management Server
DTS: Data Transfer Server
Manual of TOMMS FACTORY

KOREN 홈페이지 (http://www.koren.kr) 에 접속 후
[영상회의 시스템 바로가기] 클릭하거나 주소로 직접 접속 http://vc.koren.kr
Main window of TF
Endoscopic tele-case conference by TF in KSGE

Network Configuration

<Conference room>

TF

<Conference room>

Computer

Internet

TF server

KOREN

Image and Sound

Webcam, mike, speaker

CNNUH, JNUH, DGCUH, JJUH

Remote venue place (IHUH)

Telemedicine System
1st endoscopic tele-case conference
2014/4/8 by TF in KSGE
2nd endoscopic tele-case conference
2014.6.10 by TF in KSGE

JJUH

SNUBH

CHAU

CBNUH

HYUMC

DGCUH
**Vidyo vs TOMMS FACTORY: live demonstration**

<table>
<thead>
<tr>
<th></th>
<th>Vidyo</th>
<th>Tomms Factory</th>
</tr>
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<tbody>
<tr>
<td>Quality of image</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td>Compatibility</td>
<td></td>
<td>O</td>
</tr>
<tr>
<td>Usability</td>
<td></td>
<td>O</td>
</tr>
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IDEN 2015
International Digestive Endoscopy Network
Insights of Advanced GI Endoscopy from World Leading Scholars

June 20 Sat - 21 Sun, 2015
Grand Hilton Seoul Hotel, Korea
www.iden.or.kr

Important Dates
- Abstract Submission: May 3, 2015
- Notification of Acceptance: May 11, 2015
- Pre-Registration: May 25, 2015

Major Programs
- 14th Korea-Japan Joint Symposium on Gastrointestinal Endoscopy
- Joint Sessions of KSGE - ESGE (European Society of Gastrointestinal Endoscopy)
- Live Demonstrations • Oral & Poster Presentations

Organized by
Korean Society of Gastrointestinal Endoscopy
Korean Gastrointestinal Endoscopy Research Foundation
Major Programs

Innovative Scientific Program

The Conference will deal with a variety of topics for gastrointestinal diseases for two days and will bring together physicians and researchers from all over the world.

ASGE/ESGE-KSGE Joint Session
Young Endoscopist Forum
Travel Grant for Participants

Sponsorship from Pharmaceutical Industries
Host City _Seoul

An eco city
blessed with outstandingly beautiful natural environment

A cultural city
with dignity, spiritually connected to the long standing history and tradition

A dynamic, high-tech, knowledge based city
lead by highly educated citizens, utilizing the world’s top class IT infrastructure is the vision of the “Design Seoul” initiative
See you in Seoul in 2015!