2017 was a pivotal year for QuEST Forum – the merger with Telecommunications Industry Association (TIA), significant advancements in TL 9000 enabling quality management of cloud, SDN/NFV and 5G-based services, advancement of the WCX offering to better measure customer experience, and the expanding deployment of the Sustainability Assessor tool across the industry. And this quick summary just scratches the surface! 2018 will bring great opportunity to leverage the benefits of the TIA merger as we become a powerhouse of quality management across a very dynamic industry. It’s going to be an exciting year for us!

The 2017 merger with TIA started as an idea in 2015 as part of the Strategic Relationships Workstream of QuEST Forum’s 2020 Vision. This idea quickly came to fruition thanks largely to the high energy of our actively engaged board, membership and QuEST Forum staff. All collaborated to understand the merger’s risks and opportunities, conduct the essential due diligence and ensure frequent and transparent communications. What became a possibility in June quickly culminated in a membership affirmation vote in September and official merged operations on 1 November.

While the merger was top-of-mind for QuEST Forum in 2017, significant progress also continued in many other areas, including those started in 2016.

Given the major shifts in the ICT industry in areas such as cloud, SDN/NFV and 5G, operators told us that TL 9000’s evolution had to be more agile and relevant. In response, the TL 9000 Measurements Handbook R5.5 was released with improvements in software measurements and added new product categories in the areas of virtual routers and ethernet switches and NFV infrastructure. Accepting the agility challenge, a new “Point Release” process was developed and successfully trialed for the first time with the Requirements Handbook 6.1. This release enhanced the wording of software requirements to be more development methodology independent, while promoting the use of methods such as Agile and DevOps.

QuEST Forum also moved forward with a sponsored trial study of QuEST WCX (Wireless Customer Experience) with the collaboration of Metrinomics and P3. WCX provides a subjective quality benchmark that allows operators to improve the customer experience and pinpoint areas to reduce costly customer churn. In the countries studied, $72 billion USD is at risk due to dissatisfied wireless customers, with pricing, network issues, account set-up and management as the primary causes of customer churn.
QuEST Forum also continued strides in deploying the Sustainability Assessor tool now used by 290 companies. One simple enhancement was made to allow any company using the tool to easily apply for the QuEST Forum Sustainability Award with one click. Ultimately, six winners were recognized in various categories. Significant achievements were also made in building on QuEST Forum’s vast experience in benchmarking and reporting. The QuESTMark Benchmarking as a Service platform was launched, allowing member companies to propose benchmark studies. At the same time and in partnership with AnalyticsWise, a PDR insights portal and Mobile Apps were developed to provide QuEST Forum members with easier access and better visibility to TL 9000 Benchmark Industry Statistics such as industry average and best-in-class.

Now – back to future with the exciting TIA merger. A new book is being written about improving ICT quality. We are part of an association powerhouse of over 500 members, with a products and services portfolio that includes QuEST Forum's offering and amplified with technology standards used around the globe and a unique marketing and broadcast platform. Together, we will execute TIA’s vision to be the destination trade association of choice for ICT connectivity, forming communities of interest, and following the “TIA Way” of process discipline to bring about positive change to our industry – and also to benefit our membership.

Thank you for all your contributions in this historic year. And thank you to the many that have helped QuEST Forum since it first began in 1998.

Sincerely,

Deepti Arora
NOKIA
2017 Chair

Todd Miller
CenturyLink
2017 Vice Chair
QuEST Forum’s Vision 2020

During our Leadership Summit in January 2015, we launched a strategic plan that came to be known as QuEST Forum 2020 Vision. The intent was to define the future state for QuEST Forum we all aspired to create over the next three to four years.

Some Of The Drivers Of This Change Are

We used a process we call “STP”: define the Situation we are in, the Target environment we wish to create and from that develop the Plan to get there.

- 2015, we worked to envision that future state, created and resourced five streams of our approach.
- 2016, our focus was to define the future state and made significant progress on all streams.
- 2017, was our year to execute against the well thought out and resourced plans.

The five streams

1) Vision (for the overall plan)
2) Collaboration, with other organizations and associations
3) Emerging technologies (SDN/NFV, etc.)
4) TL 9000 modernization, compliance with ISO 9001:2015
5) Service provider engagement

This effort was approached the way all things are done at QuEST Forum, with significant member engagement. All strategy pillars had an executive board sponsor leading and guiding the way throughout the last three years. This model of deep board and member volunteer involvement has been a cornerstone of QuEST Forum from the very beginning and once again served us very well. This approach is so powerful and drives our high levels of member engagement and frankly is unique to QuEST Forum.

All five streams made huge progress on execution in 2017:

Stream 1 Overall strategy and vision, coordination between the other streams -
- Provided strategic direction and support for all streams
- Led board subcommittees to focus on specific deliverables
- Drove significant progress on value-added products and services
Stream 2 Collaboration -
- Pursued the opportunity to merge our great Association with TIA (Telecommunication Industry Association), headquartered in Arlington, Virginia
- Performed diligence and governance throughout the year
- Attained a unanimous board vote and significantly positive membership vote to complete the merger!

Stream 3 Emerging technologies -
- Participated in Multi-SDO (Standards development Organizations) effort around SDN/NFV working with TM Forum, NIST, ETSI and others
- Started to define unique measures for Virtualized environments

Stream 4 TL 9000 Evolution and Development -
- Developed a more agile update process for TL 9000 based on point releases
- Continued to evolve the TL 9000 Roadmap towards emerging areas

Stream 5 Service Provider Engagement -
- Continued to work closely with our service provider members
- Held a very successful 2nd Service Providers and Suppliers Summit, 19-20 September in Dallas

Business development

QF Value added products and services, went from 0-70% of sales in 2017!
QuEST Sustainability Assessor

- Full commercial launch 1 May 2017
- Extremely successful with > 300 companies registering and using the QuEST Assessor

Recognized 6 companies with our third annual Global Sustainability Awards, this year based on the results from the successful QuEST Assessor!

Visit us at: https://www.questassessor.net

QuEST WCX

Developed an industry unique approach to Wireless Customer Experience (WCX) bringing subjective and objective feedback in a way never done before

- Launched a six-country customer satisfaction survey and published the results
- Working with our member partners (P3 and Metrinomics) on a full WCX pilot early in 2018

See the full report at: http://questwcx.com
QuESTMark (Benchmarking as a Service)

- Along with UTD (The University of Texas at Dallas), we developed a new custom anonymous benchmarking platform
- Currently testing with internal benchmarking studies
- Commercially available Q1 2018

For more information contact us at: baas@questforum.org

Team recognition: Outstanding performance was commended

Legends Award: Jack Pompeo

Fellows Awards: Mark Barnes, Ben Jernigan, Alan Rutterford

CEO Awards: 32 recipients were acknowledged for outstanding performance

340 Club: 29 companies achieved 340 or more participation points

Sustainability Awards: winners in all six categories

Business as usual

- Held three regional conferences (Shenzhen China, Nice France and Dallas Texas) and two Conclaves (in India). All three conferences more than covered their costs.

Once again, we received outstanding results on our attendee satisfaction surveys:

Average survey result:

<table>
<thead>
<tr>
<th>Category</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Satisfaction</td>
<td>4.63</td>
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<tr>
<td>Likelihood to Recommend</td>
<td>4.66</td>
</tr>
<tr>
<td>Attend Future Conference</td>
<td>4.70</td>
</tr>
</tbody>
</table>

(out of a possible 5)

- Conducted our annual Member Value Survey – improved results in all overall measures
Financial performance

- Final financial performance great results with less than 1% variance from the budget!
- New services made a significant contribution
- TL 9000 registrations continued to be strong

Summary

The QuEST Forum team made a pledge to execute against our strategy in 2017. The results you see are such a great example of what an association can accomplish with:

- A small but mighty team of dedicated staff,
- An army of passionate volunteers,
- An engaged and involved Board of Directors, and
- A clear vision and strategy.

I personally can’t say enough about the effort, drive, leadership and passion the QuEST Forum family brought to the table in 2017. This is a historic moment for a vital association, founded 20 years ago, by some forward-thinking visionaries with the intent to drive Quality into our great industry.

The measures of QuEST Forum’s success are too many to list. I am amazed at how the principles, processes and structure the founders put in place have stood the test of time and really ensured integrity of the initial vision. ICT has benefited a great deal from the value brought to the table through QuEST Forum and its army of committed professionals.

While we look forward to our merger with TIA, I firmly believe we have chosen the right partner, at the right time, to multiply our impact and influence in all of ICT. I see an exciting future for the QuEST Forum Community as we collectively build the “Destination trade association where members come to get things done” for ICT. Come join us for the ride!

Yours Truly,

Fraser Pajak
AMERICAS

The Americas Region seeks to advance QuEST Forum’s strategic objectives, services and products in the United States, Canada, Central America, South America and the Caribbean. We continually promote participation in QuEST Forum Work Groups and Strategic Initiatives.

2017 Accomplishments

- Conducted Service Providers and Suppliers Summit in Plano, Texas, 18-20 September
- Provided a forum for members to stay abreast of QuEST Forum workgroup activities and strategic initiatives
- Strengthened new member participation in targeted work groups and sub-teams
- Focused on growing membership in the Caribbean and South America by leveraging member relationships

2018 Initiatives

- Partner with TIA QuEST Forum Community to plan speaker content for TIA “Network of the Future” conference in Plano, Texas in June
- Provide forum for QuEST Forum members in Americas to stay abreast of work group activities, strategic initiatives and TIA QuEST Forum Academy (QFA) training opportunities
- Strengthen new member participation in targeted work groups and sub-teams
- Incorporate Member Value Survey data into improvements for increased regional value

EMEA

The Europe, Middle East, Africa (EMEA) Region team delivers distinctive value by connecting the TL 9000 implementation and QuEST Forum value proposition to its business environments.

2017 Accomplishments

- Consolidated effort from key KPI team members from across the globe and multiple ICT organizations
  - Continued development of End-user Experience Application Quality (AQ)-KPI Measurement Framework
  - Refined KPI measurements for Web Browsing
  - Coordinated efforts of the KPI team and QuEST Forum Operations to establish the Web Browsing KPI sandbox as a pilot project on the latest benchmarking platform
- Conducted EMEA Regional Conference in conjunction with TM Forum in Nice, France from 17-19 May

2018 Initiatives

- Leverage current initiatives to build and strengthen relationships with strategic partners across the EMEA region and the broader ICT industry
- Develop support for the addition of the proposed Measurements Framework in an upcoming point release of the TL 9000 Measurements Handbook
- Introduce Managed Services Customer Experience KPIs into TL 9000
  - Finalize development of the Web Browsing KPI measurements through execution of the benchmark study
  - Advance development of the Video KPI measurements for Application Quality
  - Amend TL 9000 Measurement Handbook product categories based on benchmarking results
- Develop additional Managed Services KPI measurements for Application Quality
- Hold a Conclave/Conference in 2018
APAC
QuEST Forum’s Asia-Pacific Region continues to support rapid regional growth with operational hubs in Greater China, India and Japan, as well as participation in Korea and other countries in the Association of Southeast Asian Nations.

CHINA
2017 Accomplishments
• Conducted successful APAC Service Providers & Suppliers Summit in Shenzhen in April in partnership with SZAQ
• Finished translation of TL 9000 Requirements Handbook (R6) and Measurements Handbook (R5.5) into Mandarin
• Hosted Membership Recruitment meetings to promote QuEST Forum and TL 9000
• Hosted training on the QuEST Sustainability Assessor Tool Mandarin version

2018 Initiatives
• Conduct APAC Service Providers & Suppliers Summit in Shenzhen in May in partnership with SZAQ
• Publish TL 9000 requirements Handbook (R6) and Measurements Handbook (R5.5) in Mandarin
• Market TL 9000 in Mandarin
• Host Membership Recruitment meetings to promote TIA QuEST Forum Community and TL 9000
• Host TIA Executives in Shenzhen and market benefits of TIA and QuEST Forum merger

INDIA
2017 Accomplishments
• 22 March Sriram, Co-Chair, India Hub presented his views on “Business Agility for Telcos in Digital World” in the QuEST Forum Services Providers and Suppliers Summit.
• 3 April visited NOKIA factory in Chennai
• 4 April India Hub Conclave at TCS campus in Chennai
  – Approximately 40 in attendance
  – Sankaran “Ram” Ramanathan, QuEST Forum Chair on challenges of new technology
  – Rebecca McVeigh introduced QuEST Forum Leadership Team
  – Fraser Pajak on QuEST Forum update and 2020 Vision initiatives
  – Ashok Dandekar on TL 9000 Roadmap
  – Ashraf (TCS) on “IoT Now – Managed IoT Services for Telcos”
  – Dr. Rajaraman (Kritilabs) on “Status of IoT Industry and opportunities for Standardization”
  – R. Venkatakrishnan (Wipro) on “CMMI and TL 9000”

Accomplishments continued on next page

2018 Initiatives
• Ensure TL 9000 requirements and measurements are relevant for the future. Main focus areas are software, SDN/NFV and Agile
• Work groups will be formed focusing on three areas: Software, Agile and SDN/NFV
• Understand the current requirements and measurements in TL 9000 and validate whether they are sufficient for SDN/NFV and Agile area
• Identify any new requirements and measurements needed to be added in TL 9000
• Motivate companies to internalize QuEST Sustainability Assessor Tool
• Have meetings with the members and explain about the Sustainability initiatives
• Schedule one Conclave with focused sessions
• Understand and spread new concepts of TIA in India
INDIA
2017 Accomplishments (continued)

– Ken Koffman on “QuEST Forum Sustainability and WCX Initiatives”
– Best Practices Sharing:
  ◦ Amit (NOKIA) on “Power of Standardization”
  ◦ Ankit Jain (Tejas Networks) on “Smart City”
  ◦ Bijaya Jena (TCS) “Order to Activate – Process Standardization & Uberization”
  ◦ Panel (Fraser, Ken, Deepak Mittal - TCS) on “What are likely disruptive forces presenting opportunities”

• 5 April Mumbai
  – Met with Reliance Jio (Sameer Mehta and Santosh Bijur)
  – Interested in WCX, IoT, Sustainability and Membership

• 6 April New Delhi
  – Met with TRAI Principal Advisor Sunil Bajpayi and Advisor Asit Kadayam

Interested in WCX
– Attended FICCI India Internet Conference
– Talk by TRAI chief
– Met with Sarika Gulyani, Additional Director of IT & Telecom at FICCI

Interested in Sustainability
Award program for India

• 20 September
  – Wipro has been conferred with international sustainability award coordinated by QuEST Forum International
  – Venkatakrishnan Ramaswamy, Group Head, Mission Quality-Wipro received the award during the Executive Board Dinner at the Service Providers and Suppliers Summit in Plano, Texas

• 20 September
  – Sriram Srinivasaraghavan, TCS has been appointed as Co chair, India Hub along with Raju Wadalkar

JAPAN
2017 Accomplishments

• Completed Japanese translation of TL 9000 Measurement Handbook R5.5
• Held two successful TL 9000 seminars in July and November
• Held five regular and one special face-to-face hub meetings
• Supported APAC Regional Conference
• Followed up the translation of Alerts and QuEST Forum Newsletters
• Submitted the comments and requests as Japan hub on merger with TIA prior to member voting process
• Supported two new TL 9000 registrations in Japan

2018 Initiatives

• Hold two TL 9000 seminars
• Hold five face-to-face hub meetings
• Support APAC Regional Conference
• Engage additional Service Providers and Suppliers
• Follow up the translation of TL 9000 point releases, Alerts and the submission of QuEST Forum Newsletters
• Start communication with TIA members in Japan
• Support new TL 9000 registrations in Japan
The charter of the Oversight Work Group (OSWG) is to ensure the integrity of the TL 9000 certification program and the effectiveness of QuEST Forum operations, communications, and member services.

**2017 Accomplishments**

- Accreditation Body/Certification Body (AB/CB) – Clarified TIEA requirement for 'active participation' in the Qualification and Experience Requirements for TL 9000 Certification Body Auditors. Updated Code of Practice (COP) to clarify various requirements that can be viewed in the COP’s Document Change History Section. Added the measurement auditing time requirement to be documented, and aligned finding definitions with ISO/IEC 17021-1. Clarified pre-audit information requirements, updated COP checklists, and developed an extensive library of optional auditor aid checklists (e.g. software-agile, test engineering). Updated and organized the Auditors’ webpage and supported Strategic Relations in compliance documentation review.
- Training updates - Completed Sanctioned Training refresh including TL 9000 R6 E-Learning, TL 9000 Instructor led R5.5 measurements and three-day auditing courses and TL 9000 Fundamentals course. Development of CB Auditor Mandatory.
- TL 9000 Requirements and Measurements Training E-learning course and associated exam with 700 pooled questions have been completed and are in testing.
- Strategic Initiatives – QuEST Forum reps actively participated in several national and international standards organizations (e.g. ISO TC 176, IAF, CASCO). These efforts were instrumental in approval of an IAF database of accredited certified organizations (similar to QuEST Forum’s), IAF’s decision to require ISO9K audits to be to the new standards after 15 March 2018 and QuEST Forum’s IGQ Co-Chair (Sheronda Jeffries) becoming US TAG ISO/TC 176 interim Vice Chair.
- Business As Usual - Updated all QuEST Forum process documents and set up methods to ensure these stay up-to-date. Recognized outstanding leadership contributions from individuals and organizations, including three new Lifetime Fellows, 19 CEO awards, and 25 “340 Club” companies. Maintained QuESTForum.org and TL9000.org in coordination with QuEST Forum staff. Continued to manage Bylaws, Member Value and TL 9000 surveys, Jumpstart, Peer Guides, UTD scorecard, Alerts (7 in 2017), translations, and individual TL 9000 certification.

**2018 Initiatives**

- Continue to manage Strategic Relationships (IAF, ISO CASCO STAR, ISO/TC 176) and participate in global meetings to ensure ICT members needs are championed.
- Manage production of TL 9000 revisions.
- Launch CB mandatory E-learning training to improve CB auditor effectiveness.
- Define and execute a strategy for refreshing and maintaining sanctioned training courses (instructor led and on-line) in coordination with the TL 9000 Roadmap.
- Create and publish optional resources to support auditor effectiveness, such as question lists to encourage appropriate depth when auditing technical processes.
- Offer webinars to support auditor effectiveness and the use of resources and revised documents.
- Update the FAQs on TL9000.org and maintain both TL9000.org and QuESTForum.org.
- Update QuEST Forum documents as required to support internal and external changes.
- Continue ongoing operations, communications, and member services activities such as surveys, translations, alerts, Jumpstart, bylaws review, UTD scorecard, peer guides, etc.
- Incorporate the “TIA Way” into processes.
The Global Business Excellence (GBE) Work Group facilitates the evolution of the QuEST Forum regions and hubs and establishes QuEST Forum as the recognized global industry leader for business excellence and best practices information.

2017 Accomplishments
- Supported Service Providers and Suppliers Summit planning with staff and regional leadership
- Facilitated executive visits to China, India and the Middle East
- Supported various strategic initiative project teams and global aspects of working committee activities
- Promoted communications between QuEST Forum working committees and regional hubs
- Supported creation of the TL 9000 Marketing & Communications (MARCOM) team
- Successfully introduced TL 9000 Advocate program in EMEA and India Hub leveraging an SME as liaison to the region to improve communication

2018 Initiatives
- Support TIA QuEST Forum Community strategic initiatives
- Facilitate the effective maintenance, growth and operational maturity of the regions and hubs
- Facilitate and support working committee and regional hub strategic initiative activities
- Promote effective regional participation in TIA QuEST Forum Community Leadership Council, Executive Board, and working committees to achieve TIA QuEST Forum Community strategic goals, initiatives and objectives
- Facilitate and support world-class regional conferences and related executive visits
- Facilitate and support regional conclaves in India and the Middle East
- Work with TIA QuEST Forum Community staff, working committees and strategic initiative teams to address regional needs
- Facilitate engagements with government organizations, regulatory bodies and industry organizations
- Facilitate Hub engagement in work groups, and represent the regions at face-to-face meetings as necessary
- Facilitate ongoing effort to execute China Strategy and further enable the success of the TIA QuEST Forum Community Shenzhen NGO
- Facilitate regional training and TL 9000 implementation support efforts
- Facilitate Supply Chain Management training
- Conduct regular conference calls with each region as necessary
- Promote Best Practice and Business Excellence sharing and benchmarking
The Integrated Global Quality (IGQ) Work Group works to harmonize global industry quality system requirements and measurements, ensuring that TL 9000 handbooks keep pace with changes in products, solutions, technology, services and supply chain.

2017 Accomplishments

- Published first TL 9000 Handbook Point Releases, in support of the TL 9000 Roadmap:
  - TL 9000 Measurements Handbook R5.5 which included a revised Section 7.1, a revised Section 8.1, a new Section 9.3 (IRR), and an associated R5.5 version of the Product and Service Category Tables
  - TL 9000 Requirements Handbook 6.1 to make the TL 9000 design requirements more clearly applicable to any software development methodology, including Agile and DevOps. No new requirements were added, and none were deleted. Only the following sections were modified:
    - Revised Section 8.3 Design and development of products and services
    - 10 requirements were modified to make them methodology agnostic
    - Revised Section 8.6 Release of products and services
    - One requirement was modified to make it methodology agnostic
- Established the TL 9000 Advocate role for the EMEA region and India Hub to coordinate with regional leadership to bring forward regional proposals
- Continued to support the TL 9000 Roadmap and QuEST Forum’s 2020 strategic goals to meet evolving ICT industry needs
- Continued to drive the IGQ charter through sub-team, regional, and strategic initiative support
- Continued to coordinate with TL 9000 Advocates and regional leadership to bring forward regional proposals
- Continue to study the New Measurements Framework initiative
- Release the revised Security Resources Guide and update other guidance documents as required

2018 Initiatives

- Continue to support the TL 9000 Roadmap to meet evolving ICT industry needs
- Develop new measurements with input from IGQ sub-teams, along with TIA QuEST Forum Community regional teams and Strategic Initiatives, for possible Measurements Handbook updates in support of the TL 9000 Roadmap
- Continue to drive the IGQ charter through sub-team, regional, and strategic initiative support
- Continue to coordinate with TL 9000 Advocates and regional leadership to bring forward regional proposals
- Continue to study the New Measurements Framework initiative
- Release the revised Security Resources Guide and update other guidance documents as required
The purpose of the Network Service Provider Reliability Council (NSPRC) working committee is to ensure reliable and cost-effective communications service for all end-users by identifying service performance and product quality concerns that can be addressed within the TL 9000 standard. The NSPRC working committee provides a forum for active voluntary participation in the resolution of common reliability and/or public safety problems identified in the operation and maintenance of equipment within the communications service provider network.

### 2017 Accomplishments

- Changed the format of future NSPRC Meetings to have more focus on Action Items, Supplier Attributable Large Duration Outage Events and how Supplier’s New Technology will improve Network reliability
- Identified nine and cleared 14 technical issues with eight major suppliers that improved network reliability
- Continue with four internal NSPRC Meetings to review Supplier Reliability issues prior to our NSPRC Meetings
- Instituted dedicated internal NSPRC Service Provider “Face-to-Face” Meetings to review operations and technical support issues

### 2018 Initiatives

- Continue to increase the focus on IP in both membership and vendor issues
- Continue to seek new member companies and representatives
- Improve supplier partnerships
- Continue to identify and work with suppliers on technical issues to improve network reliability
- Bring in wireless representation
BUSINESS DEVELOPMENT

Strategic Sustainability Initiative

Many people think of Sustainability as improving energy efficiency and/or emphasizing Corporate Social Responsibility (CSR). And, those are important aspects of Sustainability, but Sustainability encompasses far more. Sustainability (with a capital “S”) deals with investigating and implementing a wide variety of initiatives that will assure your company is successful long into the future. TIA QuEST Forum Community believes Sustainability needs to be a critical aspect of any organization’s strategic plan. We have put in place a community to discuss and highlight best practices, supporting our member companies in defining and implementing business benefiting sustainability plans.

The TIA QuEST Forum Community Strategic Sustainability Team, with more than 40 companies representing over $400B in total annual revenues, meets regularly throughout the year and enhances the QuEST Sustainability Assessor through a program of assessor training, guest speakers and best practices sharing. The team shares best practices and members assist one another in a non-competitive atmosphere focused on elevating the Sustainability practices of the industry. Competitive advantages in the marketplace are achieved by those that use effective sustainability programs to reduce their costs and use of resources, as well as implement strategic investments in technology/innovation eco designs, and supply chain management.

If you would like to join the Strategic Sustainability Initiative or just attend one of our meetings, please send an email to SI@questforum.org. More information on the sustainability initiative is available at www.questforum.org/sustainability.

QuEST Sustainability Assessor Tool (SAT)

2017 brought forth expanded use of the QuEST Sustainability Assessor. More than 50 member companies and 240 non-member companies utilized the assessor since our formal launch in June. This included use of the tool in supply chains by companies such as AT&T and Huawei.

The SAT is an innovative tool for any company wanting to embark on or optimize their progress in CSR and sustainability. It is a rapid, easy-to-use web interface that helps any company determine their current maturity level in 10 high-level sustainability measurements (see the model diagram). Tangible guidance is provided that will most efficiently and cost effectively enable a company to progress and grow their CSR and sustainability program across the 10 measurements. The end result is that users of the SAT are provided with a concise, easy-to-understand and actionable view of their organization’s sustainable business practices.

Information on the QuEST Sustainability Assessor Tool can be found at: https://www.questassessor.net/. Organizations can register at https://www.questassessor.net/registration-2/.

Sustainability Panel at the Americas Service Providers and Suppliers Summit

The sustainability panel, held on 19 September, provided the following insightful topics:

• AT&T: “AT&T Supply Chain Sustainability – Engaging Suppliers for Improved and Sustainable Performance”

• Superior Essex International: “Where We Are and Where We’re Going: Trials and Tribulations within a Sustainable Supply Chain”

• Ciena: “Freeing the Value Through Circularity”

See the agenda at: http://questforumsps.com/agenda/
Third Annual Global QuEST Forum Sustainability Awards

The third annual sustainability awards were announced on 20 September Americas Service Providers & Suppliers Summit. For the first time, output from the SAT was used as the basis for determining the award winners. The 2017 Sustainability Awards featured competitive submissions within each of the six SAT pathways.

Congratulations to each of our 2017 winners!

- **NOKIA** – Network Equipment category
- **Wipro** – Software category
- **Fujitsu** – Corporate category
- **MasTec Network Solutions** – Field Services category
- **The Beck Group** – Consumer Electronics category
- **CRH plc** – Hardware category

Read the news release at: www.questforum.org/quest-forum-announces-third-annual-global-sustainability-awards-winners. Organizations completing the SAT assessment can submit their results for consideration of our 2018 awards. Good luck to all!

2017 Accomplishments

- The QuEST Sustainability Assessor was used by 290 companies
- The Third Annual Sustainability Awards honored six leading companies
- The 2017 Summit included a successful sustainability panel
- The team met regularly throughout the year sharing best practices

2018 Objectives

- Advance the QuEST Sustainability Assessor with the full TIA membership
- Implement value-added enhancements to the SAT based on feedback from users
- Share best practices throughout the industry
- Dialog and align with industry standards organizations
- Accelerate quantified metrics, benchmarking, scoring and award levels
- Develop and implement more training and webinars
- Market, promote and recognize sustainability successes
- Encourage more companies to join
Wireless Customer Experience (WCX) Initiative:

Decisions to invest in new concepts and approaches are always difficult. Everyone would like to see a proof of concept before they choose to move forward. QuEST WCX faced these challenges in 2017. While there was universal agreement that our unique approach added value beyond other solutions in every discussion with network operators and regulators, we struggled to get a commitment for the first pilot. As a result, we decided to propose an interim step that would highlight the need to better understand user perspectives and how operators could influence them.

Research has taught us that only 7-10 factors will influence 80% of user behavior. So, we launched a project to identify what those issues are for ICT mobile smartphone and tablet users. Once collected, we would define these elements as the ICT industry’s Subjective Quality Standard. And by establishing a benchmark result, we would have a baseline on which to judge improvement. We solicited sponsorship for an extensive survey to be performed in the Americas. For each country surveyed, we would collect a statistically significant and representative sample of wireless users (3G and later). We assured that the following demographics were appropriately sampled for each country: Sex, age, and population distribution (Metro/suburban/rural). By doing so, we had confidence that the results of the sample would be consistent with the broader population.

Thanks to support from Huawei, NOKIA, and ADTRAN, Inc., the survey was performed for the following countries: Argentina, Brazil, Columbia, Mexico, Peru, and the United States. The results were both interesting and insightful. While there were definitely country specific differences (ex. ARPU, which mobile applications are most used in the country), there were many commonalities. These commonalities allowed us to identify the seven components that influenced greater than 80% of overall user behavior. They defined QuEST Forum’s Subjective Quality Standard (shown below with general categories in parentheses). Focusing on optimizing user opinion on these factors will be the most efficient way to build customer loyalty and reduce churn.

- Network always available (Network)
- 4G/LTE share (Network)
- Transfer speed (Social media)
- Upload speed (Social media)
- Connection stability (Browsing)
- Initial account setup (Support)
- Online account management (Support)

Beyond identifying the subjective quality standard components, we were able to benchmark results for each component and overall subjective satisfaction by country. These results are published in a series of reports on the QuEST WCX website (https://questmcx.wordpress.com/country-reports/). In addition to the data published, we collected similar benchmark results for each operator within each country. Our information, together with generally available information on mobile users within those countries, was used to project the amount of annual spend that is at risk of churn to each operator. Our findings show that for the 18 operators in the six countries combined, there is over $72B USD at risk of churn each year! Our reports also show what is at risk for each operator. None have less than $350M USD at risk of leaving them each year. By utilizing a one-year WCX project, we conservatively project that we will be able to reduce the amount at risk by 10%. This would deliver 100x ROI for utilizing WCX.

As seen above, one of the major subjective areas impacting user behavior is related to network issues. This is where the need for QuEST WCX becomes most apparent. Network quality, as measured by objective data or KPIs, is not equal with quality as perceived by end users. Frequently, the distance between the two is surprisingly high. QuEST WCX (a partnership with 2 of our members – Metrinomics and P3) connects the dots between the subjective and objective; a significant innovation that will benefit all stakeholders (Service Providers, Consumers, and Regulators). QuEST WCX measures subjective and objective data at the same time, for the identical service (ex. streaming, chatting, surfing, gaming), relating the two together. The objective information is captured continuously and passively via an app installed on the wireless device. It’s amazing how much effort is being expended to collect and analyze...
data that is not having a significant impact on user experience, and as a result, business success. QuEST WCX helps project participants focus on the “vital few” areas that will have the greatest impact. And as this set of drivers is comparable among consumers across all countries, using QuEST Forum’s benchmarking platforms, they can be used as a reference between countries and nations, as well as between national service providers.

2017 Accomplishments

- Creation of the QuEST WCX concept between P3, Metrinomics, and QuEST Forum
- QuEST WCX presentations delivered at the APAC Regional Conference, EMEA Regional Conference and the Americas Service Providers and Suppliers Summit, obtaining member feedback to refine the offering
- Conducted Subjective Quality Surveys in the Americas – 6 countries
- Created Subjective Quality Standard and published first benchmark results for the six countries surveyed
- Published churn rates for 18 operators in the Americas, specifically identifying amount of dollars at risk
- Established marketing approach for proof of concept pilots that includes three target audiences: Service Providers, Regulators, and Managed Service Providers
- Presented WCX overviews to potential pilot sponsors of each of the three target audiences. Latin America has been a particular regional focus. Pilot proposals have been generated and are awaiting customer acceptance
- Carriers and equipment suppliers have shown interest in QuEST WCX. The ‘delta intelligence’, to understand where objective performance and customer experience are poorly synced will deliver OPEX savings when their resources are used more efficiently and efforts are reduced where it has less effect
- CAPEX can be diverted from expensive probes and spent in more effective ways to generate value in their business

2018 Initiatives

- 2018 will see the first QuEST WCX pilots and additional worldwide benchmark results in Subjective Quality of carrier services
- TIA QuEST Forum Community, in cooperation with QuEST WCX, will continue tracking changes in the basic drivers of subjective quality because changes in the network business not only come with technologies, but also with a learning and adapting smartphone user community, across the world
- QuEST WCX presentations will continue at all regional TIA conferences, keeping members and potential customers up-to-date with all learnings from our pilot findings and introducing the products to the broader TIA audience
PDR STRATEGIC INITIATIVE

The Performance Data Reports (PDR) Strategic Initiative is tasked with improving member satisfaction and confidence with TL 9000 performance data and performance data reports.

PDR

2017 Accomplishments

- QuEST Forum/AnalyticsWise Partnership to Improve PDR value and ease of use:
  - New PDR Insights portal created to improve access, reporting and analysis capabilities for PDRs including a web-based portal, and iOS/Android Apps for smartphone and tablet access
  - Sliver (free to QuEST Forum members Community), Gold (fee based and allows companies to overlay their own performance) and platinum levels (beyond TL 9000 measures, consulting, predictive analytics) available

- Industry Reports – Created first industry report video in place of traditional written reports. The 13th report in a series showed how Edge Router return rates improved from 2014 to 2016. Long-Term Return Rate was reduced by 63% resulting in $127M/year cost avoidance

- Data Anomaly Investigations Continued - Suspicious Perfect BIC results for Critical and Major Problem reports in the 1.2.8 – Service and Network Controller product category. Some companies resubmitted data based on QuEST Forum inquiries

- Clarification of Problem Report Counting Rules – Published Alert 17-005A regarding misinterpretation of problem report counting rules where some incidents were not counted, even after a customer requested an investigation of the incident and results are already being seen

- Product Category Approval Process continues – Steady flow of requests (217 since inception, 103 for 2017) continues and SMEs have made numerous recommendations to ensure the proper product category is selected

2018 Initiatives

- Continued roll-out and improvement of the PDR Insights Portal to membership
- PDR Accuracy/Value Improvement
- Proactive/Reactive Anomaly & PC Verification
- Develop diagnostic tool to identify anomalies for further investigation
- Continue new product category Review/Approval for new/expanded registrations
- Continue Advisors & Floor review and update as required
- Define “similar” product categories for PCs with < 3 participants
- Target potential registrants to expand market segment coverage in emerging product categories
- Investigate tools to help users extract and report PDR data for internal use
- Continue publishing Industry Reports and presentation/publishing to other industry forums
- PDR usage improvement
- Update white papers as required
- Increased emphasis on making the TL 9000 community aware of the many improvements made to improve PDR accuracy, completeness and usage
- Incorporate PDRs in the TIA environment
The Network Function Virtualization (NFV) Strategic Initiative assesses the needs and quality requirements of organizations developing, offering and implementing NFV services. The team examines the possible impact on the TL 9000 standard and collaborates with other Standards Development Organizations (SDOs) to ensure a comprehensive approach in addressing NFV challenges across the ICT industry.

### 2017 Accomplishments

- New NFV Related Product Categories added to TL 9000 Measurements Handbook 5.5 Product Category Table (July 2017):
  - NFV Orchestrator (PC 4.2.1.2) and Virtual Network Function Manager (VNFM) (PC 4.2.2.2)
  - Virtualized Products – Core and Edge Routers (PCs 1.2.9.1.2 & 1.2.9.2.2) and Ethernet Switch (PC 1.2.4.2)
- Proposed new normalization units for virtual products – Virtual CPUs (vCPUs) were proposed for TL 9000 problem report and outage measures. VNF instances were also proposed. Pros/Cons of both were compared and recommended for future trials.
- Developed a proposal for a new NFV measurement – After detailed review of ESTI NFV Service Quality Measures, and Verizon/Tech Mahindra’s 2016 Whitepaper, the team developed a proposed VNF Failure Frequency (VFF) measure. Simply put, the VFF is calculated as the number of VNF failures per normalization unit (e.g. VNF Instances or vCPU) per year. Discussions and review are underway.
- First Joint QuEST Forum/TIA F2F Committee meeting held with a focus on NFV – A major outcome of the meeting was agreement to launch the “NFV Infrastructure Classification” Team which kicked off with a F2F meeting in December.
- NFV Strategic Initiative Presentations and Workshops – Presented QuEST Forum NFV Initiative status at joint QuEST/TMForum meeting in Nice, France.

### 2018 Initiatives:

- Continue to evolve the TL 9000 Handbooks to address NFV
- Continue workshops, conference participation, and consider publications to highlight NFV and increase service provider engagement.
- Continue efforts on “virtual” normalization units (VNF Instances, vCPUs) and the new VFF measure.
  - Address the challenge of defining and capturing failure events to calculate VFF.
  - Benchmark/trial the VFF measurement.
  - Consider documenting VFF as a specification that can be included in NFV products, and be included in the TL 9000 Measurement Supplemental Library.
- Follow through on “NFVI Classification” Team. Proposed deliverables include requirements specifications on proposed NFVI classes, next level architecture description beyond ETSI description, testing/certification methods for each define class.
Cost of Poor Quality

Cost of Poor Quality (CoPQ) Benchmarking Initiative was launched in 2015. Deepti Arora, QuEST Forum Chair Emeritus, is the Executive Board sponsor. After a survey of QuEST Forum membership, five measures were identified for benchmarking. They are: software defects; penalties; customer reported defects; hardware repairs; scrap. All these measures are well-defined. The sand-box process is tested and sandbox data collection is set up by the University of Texas at Dallas (UTD). Data collection process is on-going.

Hardware repair and scrap measures have five companies participating. Our goal is to have ten companies participate in each metric benchmarking.

Small Business Initiative

- The Small Business initiative (SBI) is to serve as a global forum for small businesses to mature, grow and innovate as an integral part of the ICT industry supply chain.

The mission of SBI is to collaboratively develop and share solutions, best practices and insight for small business issues by leveraging QuEST Forum Subject Matter Experts (SMEs) and the framework of the TL 9000 quality management system.

Wireless Handsets

This strategic initiative standardizes the measurements used to monitor wireless device performance including handsets, tablets, wearables and accessories. By creating standard definitions for performance terms such as dead on arrival (DOA), buyer’s remorse exchange (BRE), warranty defect rate (WDR), bounce rate (BON) and no trouble found (NTF), this initiative lays the foundation for reliable industrywide benchmarking and quality improvements.

2017 Accomplishments

- Completed evaluation for the next areas of focus to be tablets, wearables and accessories
- Continued the wireless handset benchmark study for DOA, WDR and BRE and launched NTF and BON studies with participating organizations submitting 12 months of data to the University of Texas at Dallas TL 9000 benchmark data repository

2018 Objectives

- Analyze wireless handset benchmark results, make adjustments to measurements if needed and determine next steps
- Expand benchmark study to include smart devices
- Evaluate market-specific IoT benchmark study to address Healthcare, Utilities, Smart Cities, Smart Cars, etc.
The Roadmap Initiative was undertaken in 2016 to capture, communicate, and accelerate deployment of solutions for problems identified in the ICT industry. One objective was to allow for more frequent, targeted changes to the TL 9000 handbooks in between major revisions. The other objective is to plan for major projects to be undertaken by the QuEST Forum Community to benefit the industry overall. The team seeks input from major service providers, mega-suppliers, and other industry sources.

**2017 Accomplishments**

- Introduced and socialized the concept of roadmaps in all regions via face-to-face meetings, conferences, work group meetings, and biweekly team conference calls
- Published the TL 9000 Release Roadmap and the QuEST Forum Product Roadmap, and maintained quarterly updates. This allows two opportunities for each handbook to be updated each year ("point releases")
- Continued participation from major service providers, TL 9000 certified companies, and industry experts
- Established input path to roadmaps via “Contact Us” on QuESTForum.org and TL9000.org
- Established Marketing and Communications Roadmap focus group to increase TL 9000 certification world-wide
- Provided content suggestions per roadmap to IGQ for Measurements Handbook R5.5 and Requirements Handbook R6.1

**2018 Objectives**

- Coordinate with industry leaders in all regions to collect input for future releases of handbooks and future QuEST Forum Community projects per the roadmap. See http://www.questforum.org/tl-9000-roadmap/
- Expand roadmap to include new technology driven by the introduction of Network Function Virtualization (NFV)
- Engage with the Network Service Provider Reliability Council (NSPRC) for items under development for the roadmap
- Launch a new working group to develop a standardized software supplier scorecard
- Engage with the Network Service Provider Reliability Council (NSPRC) for items under development for the roadmap
- Launch a new working group to develop a standardized software supplier scorecard
Benchmarking as a Service (BaaS)

QuEST Forum’s Benchmarking as a Service platform, QuESTMark, was formally launched in 2017. The QuESTMark platform provides a collaborative environment to establish meaningful performance comparison measures, assign relative performance, and examine best practices across the industry. It is based on internationally agreed upon protocols for participating organizations to establish, manage, and participate in performance comparison benchmarking studies.

This new service uses the same world-class-security as the TL 9000 Registration Management System (RMS). That affords us the ability to extend to each QuESTMark customer piece-of-mind that their data is never compromised and remains confidential throughout the entire process. Our platform also offers users anonymous summary outputs as provided today for TL 9000. At the desired period of data collection (to be defined by the user), we can provide most recent performance averages, as well as sustained Best-in-Class, Worst-in-Class and participant means. As noted, participants can have confidence that their proprietary information is not visible to others, yet they can all see current anonymous performance as well as the competitive trends.

Three different services have been defined, with varying degrees of support for each. These services can be used by QuEST Forum Community members and non-members, with discounts provided for members. And the platform has flexibility for benchmarking a comprehensive set of measures – from single and multi-variable calculations to complex survey summaries.

Progress and plans:

2017
- Developed beta system and supporting material
- Determined service levels and pricing
- Conducted initial use of new engine on several studies

2018
- Enhance system and fully deploy for use on all new studies
Launched in 2014, the QuEST Forum Academy (QFA) was designed to engage the Forum membership by providing educational opportunities of interest on emerging topics within the ICT space. Led by internationally-renowned experts, the QFA’s offerings deliver informative content consistent with the relevant needs of the industry in applicable areas ranging from quality management system standards and measurements evolution, to risk mitigation and environmental sustainability.

QFA offers an array of educational webinars aimed at deploying and improving quality management systems via the worldwide TL 9000 standard. In addition, the Academy concept aligns its content scope with the best practices introduced at QuEST Forum’s conferences. The Academy provides an educational venue supportive of management system standards and process improvement initiatives firmly focused on the needs of the ICT hardware, software and services supplier communities.

2017 Accomplishments

- Planned, scheduled, and delivered four webinars:

Two of these webinars were designed to engage dialogue between our ICT members and the standards bodies that oversee the publication of the requisite management systems standards (MSS) requirements [e.g., United States Technical Advisory Groups (US TAGs) Technical Committee (TC) 176, 207 and Project Committee 302 and the ANSI-ASQ National Accreditation Board (ANAB)]. All post-delivery surveys were scored at above 4-out-of-5 on all survey components.

2018 Initiatives

- Migrate towards a seamless integration of both QFA and TIA content promotion via a common delivery platform (BrightTALK™) that provides a distinctly-robust functionality over existing standard web conferencing applications
- Maintain the previously-established gains in attracting and retaining a technically-astute customer base, e.g., the Fiber Optic Tech Consortium (FOTC) by continuation of the present strategy of offering “BICSI” attendance credits
- Plan and execute continued Management Systems Standards (MSS) content offerings that integrate representatives of the standards organizations in promoting an expanded dialogue with the TIA/QFA user constituency
- Extend and promote these educational opportunities to the entire TIA/QuEST Forum member population

We are also looking for input for interesting and relevant topics. Download the Project Submittal Form and submit your ideas to QFAsubmital@questforum.org
### 2017 LEGENDS AWARD

The Legends Lifetime Achievement Award is QuEST Forum’s highest recognition award. Recipients are individuals with more than 20 years of strong commitment to quality service to customers of ICT and have made significant contributions to the success of QuEST Forum. Congratulations to this year’s honoree: Jack Pompeo

**Jack Pompeo** was Executive Director for the China Region of QuEST Forum. He was responsible for strategic initiatives in the APAC Region, including promoting TL 9000, supporting the APAC summit and recruiting new QuEST Forum members. Mr. Pompeo was the senior adviser to Huawei quality management. He is also a distinguished expert of Shenzhen Association for Quality and makes an outstanding contribution to the improvement of Shenzhen Quality. He is also a founding member of the world’s first QuEST Forum international collaboration, QuEST Forum Shenzhen. Before that, Mr. Pompeo was Vice President, Global Quality Chief at Huawei. In this role he was responsible for Huawei TL 9000 QMS registration, 3rd party audits, customer qualification audits and supplier quality audits, support customer satisfaction survey, corporate social responsibility (CSR), environment health & safety and cost of poor quality programs. Previously, Mr. Pompeo was VP Quality & Customer Satisfaction at Alcatel. He started his quality career with Nortel Networks in Canada and has been in the quality field for more than 30 years. He is a Fellow of the American Society for Quality (ASQ), past chairman of the ASQ Dallas Section, past chairman of the Quality Texas Foundation (State Baldrige Award), and a founding member and past Project Director of QuEST Forum. He has served as a Baldrige Award, Shingo Prize and Texas Quality Award Examiner.

Congratulations, Jack!

### 340 CLUB

Through generous sponsorships, investments in time and contributions to work groups, sub teams and regions, each members’ 2017 cumulative participation total meets or exceeds 340 points.

*Congratulations!* Thank you for your outstanding participation and commitment to QuEST Forum:

- ADTRAN, Inc.
- ARRIS Group, Inc.
- ARTEMIA Communications, Inc.
- AT&T Inc.
- Avion Networks, Inc.
- BIZPHYX, INC.
- Bywater Excel
- CenturyLink
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- Huawei Technologies Co., Ltd.
- Infinera Corporation
- Juniper Networks, Inc.
- KCI Telecommunications, LLC
- KGPCo
- New Lisbon Telephone Company
- NOKIA
- NQA (National Quality Assurance)
- PALCO Telecom Service, Inc.
- Sector Supply, LC
- Shenzhen Association for Quality (SAQ)
- TELUS Communications
- The DESARA Group, Inc.
- Universal Network Development Corp
- Verizon Communications Inc.
- Vertiv
2017 CEO AWARD

Recognizing outstanding in-year contributions to QuEST Forum.

Alan Rutterford, Bywater Excel
Andy Ray, Verizon
Andy Yang, Huawei
Ashok Dandekar, Fujitsu
Beckie White-Wilson, NOKIA
Ben Jernigan, NOKIA
Beth Ford, AT&T
Blake Younger, UTD
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Nancy Patterson, NOKIA
Nathan Sparks, AT&T
Sheronda Jeffries, Cisco Systems
Shiloh Coleman, Sector Supply, LLC
Stephanie XU, Shenzhen Association for Quality
Stephen Bernard, AT&T
Stephen Choy, Infinera
Trevor Frenzel, UTD
Vijay Srikanth, UTD
Vinny Arriagali, Cisco Systems

2017 QUEST FORUM FELLOWS

QuEST Forum Fellows are recognized for their more than ten years of outstanding contributions and dedication to QuEST Forum in the pursuit of ICT quality and performance excellence.

Congratulations!

Ben Jernigan
NOKIA

Mark Barnes
KGPCo

Alan Rutterford
Bywater Excel
### APAC

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Thank you to our 2017 Executive Board!

2018 TIA QuEST FORUM COMMUNITY MANAGEMENT TEAM

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