

# Driving Transformation

*2011 Technology, Services, & Innovation  
Annual Performance Report*





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# Enabling Free Media in Libya



In October 2011, for the first time, Benghazi residents were able to hear Radio Sawa’s unique mix of six hours of daily news and popular Arabic and Western music on their FM dials.

Operating on 88.1 MHz, the TSI commissioned FM transmitter quickly became the most popular radio destination in the liberated city.

TSI has procured, commissioned, and shipped an additional transmitter scheduled to come on-air in Libya’s capital city, Tripoli, during the first quarter of 2012.

# Our Customer's Perspective

*"During FY11, TSI provided invaluable support to the Martis in IT, engineering, telecom and day-to-day operations. Through our Psiphon nodes, IAC helped provide the Cuban people access to Internet content, support for our e-mail blasts and text messaging to Cuba have been instrumental in this effort. TSI also manages the routers at our sites, administers our email system and deals with our FISMA security issues.*

*TSI Engineering is assisting OCB in exploring additional ways to deliver Radio Marti programming, including possible MW facilities in Mexico and Haiti. The conversion of our satellite link to MPLS, yielded considerable cost savings to OCB.*

*TSI's Telecom successfully transitioned services to the Networx contract, and on a day-to-day basis the NCC was particularly helpful, as the contact point for resolving all Cohen Building issues. The Greenville Station provides excellent service, reliably delivering Radio Marti to Cuba via shortwave."*

**Carlos Garcia-Perez**  
Director, Office of Cuba Broadcasting

*"TSI brings great value to RFE/RL and USIB in general. The support we receive is of the highest professional caliber. The combination of technical expertise, practical wisdom and solid business sense helps make RFE/RL a better organization.*

*We warmly welcome TSI's partnership and collaboration."*

**Steve Korn**  
CEO, RFE/RL

*"Voice of America benefited greatly from the TSI changes in 2011. There's a new sense of problem solving, evidenced by a creative solution to overcome jamming by the Ethiopian government. The cost-effective VOA24 satellite audio channel accompanied by photos and text has proved popular in serving VOA audiences throughout Africa.*

*Changes to workflow and establishment of service level agreements delivered tangible results and changed attitudes within VOA about what TSI's IT department can do.*

*As TSI adapts to the seismic changes in the way content is delivered and positions itself as a leader in that area, I become more confident that VOA's future is extremely bright."*

**Steve Redisch**  
VOA Executive Editor

*"MBN relies heavily on TSI to provide transmission and connectivity for our 24/7 news and programming operations. Despite the complexity of our transmission scheme, TSI does an admirable job of keeping connectivity and transmission systems highly available and running well.*

*Over the past year, communications have definitely improved as TSI quickly notified us of any anomalies and provided excellent assistance during our maintenance windows.*

*The effort surrounding the FM installation in Benghazi, Libya was outstanding and enabled Radio Sawa to quickly become the favorite source of news and information for Benghazi citizens as the situation unfolded throughout their country.*

*We sincerely appreciate the effort and level of service TSI routinely provides MBN."*

**Brian Conniff**  
CEO, MBN

*"RFE/RL enjoyed excellent cooperation from TSI in FY11. Working with IBB Engineering (former name) over a number of years, one can't help but notice that the level and quality of support for our content distribution has significantly increased. It is much welcomed.*

*We regard TSI as a valued partner not only with respect to quick identification and resolution of technical problems and issues but also in optimizing communications and seeking to align our respective strategic objectives in a professional, collegial and completely transparent manner."*

**Julia Ragona**  
V. P., Content, Distribution & Marketing, RFE/RL

*"Fiscal Year 2011 proved to be a watershed year for the TSI organization. The amount of progress achieved with our infrastructure and reliability was matched with a superb amount of business acumen and budgetary parsimony.*

*In a short period of time, TSI has transformed the Agency's technology base and brought us firmly into the 21<sup>st</sup> century."*

**Maryjean Buehler**  
CFO, BBG



# Driving Transformation in FY 2011

Welcome to the first edition of Technology, Services, & Innovation's (TSI) Annual Performance Report.

In this publication, we'll discuss TSI's operations in FY 2011 and how we kept the BBG networks running and growing.

This past year, we continued to support the 24/7 activities of the BBG networks, operating our global content distribution systems, running and substantially upgrading our IT infrastructure, and operating the historic Cohen Building.

We supported the continued growth of BBG transmissions including several emergency deployments of assets to address unfolding world events, humanitarian crises, and late-breaking news.

In addition, we embarked on a systematic and multi-faceted remediation plan to address substantial infrastructure deficiencies accumulated over decades of continuous operation.

In FY 2012, we will continue to aggressively push forward a pragmatic agenda designed to drive the transformation of the BBG from a legacy broadcasting environment to a modern, agile, and multi-platform global media enterprise.

Internally, we will maintain a tight focus on operational excellence by constantly improving processes and procedures, enhancing our project management skills, increasing our organizational agility, and placing special attention on workforce performance management as we strive to make TSI a great place to work for each and every one of its employees.

A very special thanks to all the TSI employees who strived to make a difference in FY 2011. I thank you for your support, enthusiasm, and dedication to the BBG mission and look forward to many more outstanding and rewarding outcomes during FY 2012.



A handwritten signature in black ink, appearing to read 'Andre Mendes'.

**André V. Mendes**

CIO/CTO , BBG

Director, Technology, Services & Innovation, IBB



## Our Mission

To deliver the critical content distribution and information processing solutions that keep the Broadcasting Board of Governors running and growing.

## Our Vision

Become one of the Broadcasting Board of Governor's core competitive advantages by delivering outstanding business value culled from the industry's best technological solutions and leveraged by the most effective Federal workforce.

# Our Operations

## Our Customers

- 3,628 BBG employees
- 5 Broadcast Networks
- 59 language services
- 53 bureaus, production centers, & overseas offices
- Global audiences in excess of 165 million people

## Our Transmission Network

- Over \$1 Billion in Physical Assets
- 84 Transmitting sites with 182 transmitters
- 14 geo-stationary satellites
- 1,400+ affiliate stations
- Circumnavigating Fiber Circuits
- Rapidly expanding global MPLS network
- 1 Continuity of Operations Facility (COOP)

## Our Team:

- Contractors: 27
- Engineering Staff: 69 (56 at HQ, 13 in Greenville)
- IT Staff: 68
- Foreign Service Nationals: 258
- Foreign Service Officers: 19
- Resources Staff: 16

## Our IT Assets

- 200+ Enterprise Servers
- Over 1 petabyte of online storage
- Multiple Broadband Internet Connections
- Enterprise Class networking equipment
- Over 2,500 workstations
- Hundreds of mobile devices
- Largest DaletPlus installation in the world

## Keeping BBG Running and Growing in FY 2011

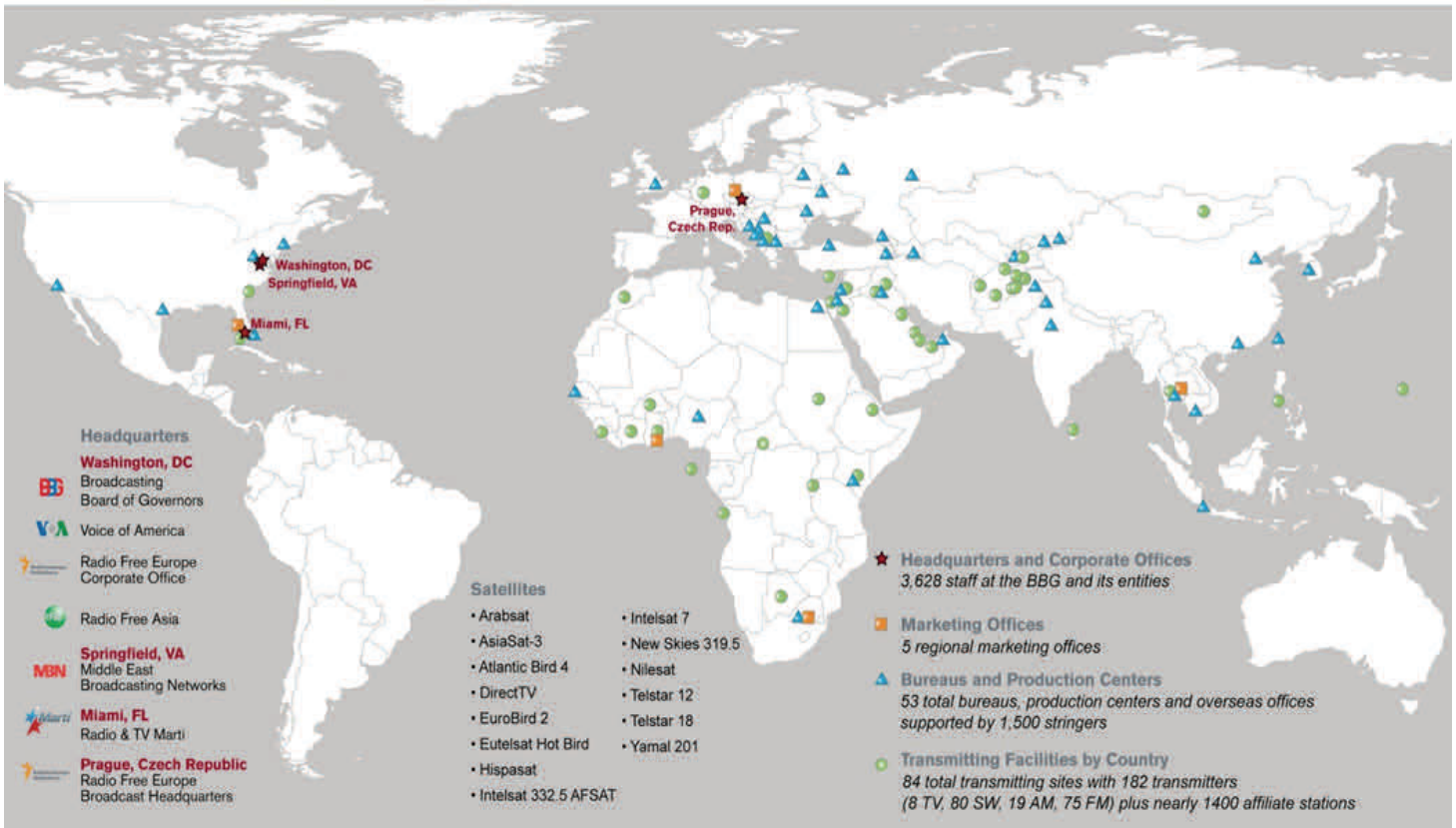
Our primary mission is to distribute the content created by the BBG's networks to their intended audiences in the most cost-effective and efficient manner possible.

In that regard, TSI delivered significant improvement in two of the key metrics for the agency, Radio Signal Strength and Satellite Effectiveness, while keeping the network consumable expense stable from the prior year despite inflationary pressures and aging transmission equipment. In addition, in FY 2011, TSI delivered network and Information Technology systems availability statistics that far exceeded its target goals:

- Transmitting station availability exceeded 99.75% despite drastic reductions in Maintenance & Repair budgets, initiation of remote control for overnight shifts in Tinian and Saipan, and the retirement (without replacement) of five Foreign Service Officers.
- Internal IT systems were available 99.84% of the time (January to December) despite a very large amount of remediation activities that presented substantial opportunity for disruption.

In 2011, TSI converted the majority of our shortwave transmitters to a new modulation scheme (AMC), delivering savings of approximately \$1.5M in power consumption, successfully migrated hundreds of workstations to Windows 7 and Office 2010, decommissioned over 100 obsolete servers, became current with all operating system and application patching, removed a long standing Persistent Advanced Threat (PAT) which had been in our networks since January of 2009, and deployed new virtual server and virtual storage environments. Together, these projects helped propel the BBG from a trailing position in the Federal IT arena to one of the leading agencies in the deployment of modern Information Technology systems.

From a personnel standpoint, we are gratified that the Federal Employee Viewpoint Survey yielded such dramatic improvements in most ratings, but we are keenly aware of the need to further progress in that arena. This will be clearly reflected in our 2013-2014 TSI Strategic Plan to be unveiled in the first quarter of 2012. Additional information on the ratings improvements may be found on page 6.



## Evolving to serve our audience's shifting preferences

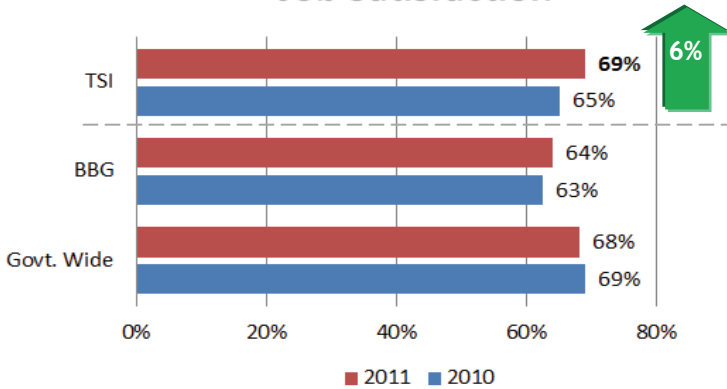
With Direct-to-Home (DTH) satellite audiences quickly growing in East Asia, dish penetration in China has now been estimated at 11% of households. In July 2011, TSI introduced a new set of services to both VOA and RFA that targets **China** and **Tibet** and combines a crystal clear, CD quality, digital radio signal with a low bandwidth video slate. Not only can that video signal display additional text or pictures related to the covered story, but it can also contain additional informational banners that can display web addresses for proxy servers enabling circumvention of Internet censorship. These services are carried on Telstar 18, the most popular Direct-to-Home (DTH) satellite in those two countries. Examples are shown below:



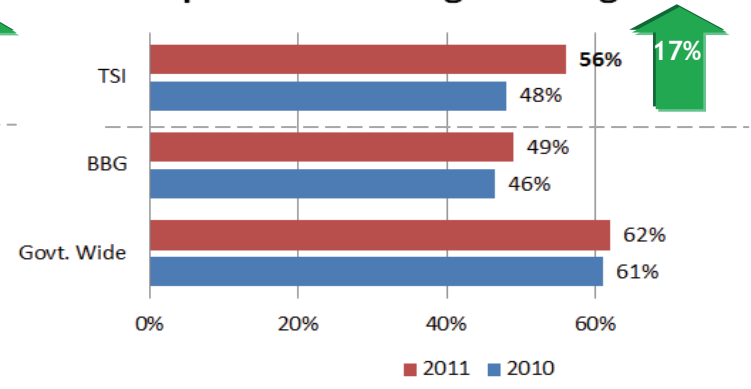
# TSI Key Performance Metrics: People and Systems

## Federal Employee Viewpoint Survey Results

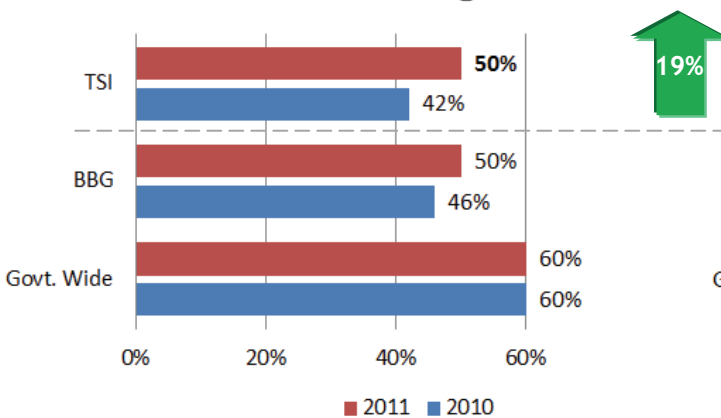
### Job Satisfaction



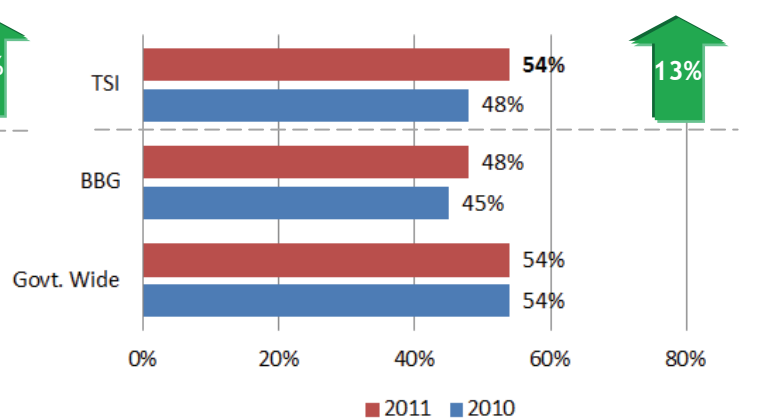
### Leadership and Knowledge Management



### Talent Management



### Results-Oriented Performance Culture



## Transmission Metrics

Key Performance Metric	Definition	FY	FY	FY	FY
		2008	2009	2010	2011
Radio Signal Strength Index	Based on a 5-point scale, this network level indicator applies to cross-border short wave and medium wave radio signals, and measures whether programs can be heard by target audiences.	2.65	2.74	2.80	2.92
Satellite Effective Index	Assesses whether the BBG satellite delivery is keeping pace with global media developments.	9.8	10.4	10.4	10.9
Transmission Network Consumable Expense	The cost of power and parts (in millions) to operate the global IBB transmitter network	\$34	\$34	\$35	\$35



## Key Focus Areas

The 2010-2012 BBG Technology Strategic Plan established strategic objectives for both Information Technology and Engineering Operations. In FY 2011, our team worked in four key focus areas:

### 1. Platform Consolidation

Selecting a set of platform standards for the entire organization and systematically migrating systems and applications from other platforms into these standard environments, TSI has very quickly consolidated its operating basis, simplified systems integration, and developed deeper staff technical knowledge:

- Made obsolete 100+ servers
- Consolidated and migrated dozens of databases
- Retired unsupported operating systems and A/V Switches
- Converged to industry standard DVB-S2 and MPEG-4
- Deployed uniform Monitoring and Control system (Crystal)

### 2. Platform Virtualization

Leveraging server, storage, and networking virtualization, the BBG has substantially increased capital investment performance. Virtualization has become the highest priority in the Federal IT space and a government-wide virtualization process is underway. BBG is now one of the leading agencies in this arena:

- Deployed redundant server virtualization platform
- Virtualized dozens of servers
- Deployed redundant storage virtualization platform
- Migrating to virtualized storage pools (ongoing)

### 3. Systems Co-location

Co-locating systems in high availability data centers specifically designed with multiple redundancy layers, the BBG can effectively leverage much higher expected levels of infrastructure reliability than it is likely to achieve with its own dedicated investment. RFE/RL's Prague building exhibits these desirable characteristics:

- Currently evaluating Prague redundant IT setup (1st Quarter, 2012)
- Currently evaluating Prague Disaster Recovery (1st Quarter, 2012)

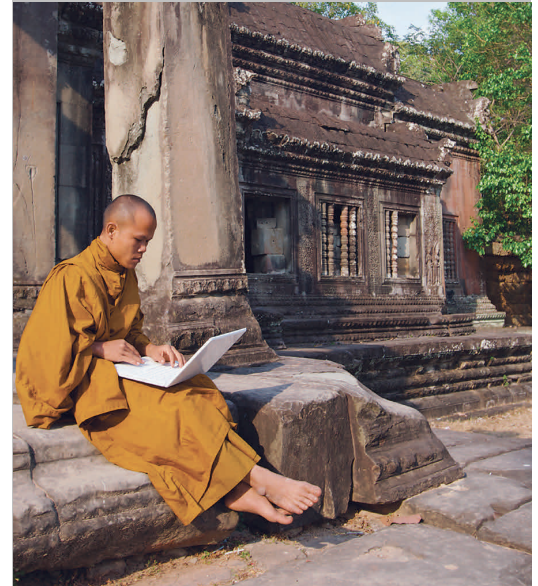
### 4. Computing in the Cloud

By leveraging cloud computing BBG can better leverage its staff with higher level tasks unique to the BBG that pertain directly to the accomplishment of its primary mission:

- Migrated from legacy email platform to Office 365 (completed 12/11)
- Migrating FTP systems to cloud providers (Completion 4/12)
- Migrating CMS systems to RFE/RL's Pangaea system (Completion 9/12)
- Leveraging MPLS networking to replace satellite links (ongoing)

# 2011

## PERFORMANCE



“FY 2011 was a banner year for TSI. Their accomplishments paved the way for superior performance, true enterprise level reliability, innovative functionality and outstanding stewardship of taxpayer’s funds in FY 2012 and beyond.”

Richard M. Lobo

Director  
International Broadcasting  
Bureau

# Reduce Organizational Risk



We must ensure seamless operation of the entire BBG Technology infrastructure in the face of cyber-security, accidental disruption, natural disasters, and other internal and external threats to ongoing business continuity.



## Strategic Objective – Reduce Risk

In FY 2011, the entire TSI organization undertook a focused effort to identify areas of organizational risk and to develop and deploy the appropriate remediation plans.

### Information Technology:

- Over a three-day weekend, TSI's IT department implemented a security remediation plan to eradicate a Persistent Advanced Threat (PAT) that, beginning in early 2009, infected multiple servers and workstations in the BBG infrastructure. The team successfully re-deployed all the assets and identified systems, processes, and procedures to prevent future incursions.
- During 2011, TSI also deployed the latest version of the Internet filtering WebSense technology to protect the network from known malware infections while simultaneously restricting access to inappropriate web content (e.g., gambling/hate speech).
- New enterprise class firewalls were deployed, and all inbound and outbound traffic rules were examined and corrected as necessary to further secure the integrity of the network.
- Substantially more complex password rules were implemented to further enhance computer security at the user level.
- The Agency completed and submitted its first Federal Information Security Management Act (FISMA) assessment.

### Engineering:

- The mission critical Frequency Database was migrated from legacy hardware and software no longer supported by vendors onto fully redundant database clusters, ensuring high availability of one of the fundamental network asset managing tools.
- The Network Control Center's (NCC) mission critical, aging, and no longer vendor supported, audio and video switch was replaced with a fully redundant state-of-the-art system.
- A system-wide electrical breaker maintenance and relay calibration to strengthen the transmission infrastructure.
- A massive de-wiring project removed over one metric ton of obsolete cabling in the NCC.
- The antenna towers at the transmitting station in Tinian (Northern Marianas) were re-painted to prevent corrosion.
- The chain link fence was replaced around the station in Bangkok.
- Physical security upgrades were installed at the station in Sri Lanka.

## Strategic Objective – Lower Costs

To identify cost savings, TSI carefully examined all of its operations. A total of \$4.18 million in savings were realized in FY 2011 with \$2.65 million set to recur annually. In addition, TSI secured \$17.4 million in additional funds for its activities. Key data are as follows:

### FY 2011 Savings: \$1.53 Million

- Satellite optimization and new contracts saved \$1.4M.
- New fiber at the transmitting station in Germany saved \$100,000.
- New NTIA Spectrum License Fees saved \$30,000.

### Recurring Annual Savings: \$2.65 Million

- Implementing new transmitter modulation scheme (AMC) saved \$1.5 million in power costs and is expected to lower future equipment, inventory, and shipping costs.
- Replacing the OCB satellite link with an MPLS circuit saved \$400,000 annually.
- The new GSA overtime utilities contract saved \$500,000 annually.
- A new digital support contract saved \$250,000 annually.
- Switching to latest encoding and transmission protocols (DVB-S2 and MPEG-4) provided 30% bandwidth savings, enabling more transmissions without additional cost.
- Broadcasting swaps saved thousands in lease fees.
- New LED lights saved 90% on usage and 80% on heat load.

### New Revenue: \$17.40 Million

- The Internet Anti-Censorship (IAC) division received a \$1.5M transfer from the Department of State and, thanks to the dedicated efforts of the Board of Governors and in recognition of TSI's demonstrated expertise and performance in the Internet Anti-Censorship arena, a new appropriation of \$10M from Congress.
- After 22 years in the process, the Erching property was sold for \$5.9M (about the twice amount expected.)

# Lower Operating Costs



In an era of declining budgets, we must continually work together to identify new and innovative ways to consistently deliver on our charter while having access to fewer and fewer resources. We must relentlessly examine our cost structure and ruthlessly weed out ineffective assets, systems, and workflows.

# Increase Systems' Reliability

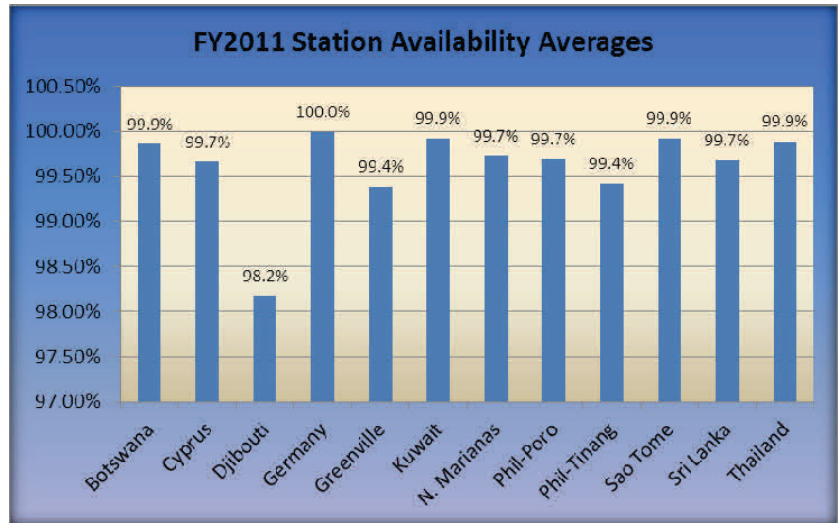


Our global scope of operations requires a very high level of availability and an increasingly interconnected, sophisticated global infrastructure. In 2011, we substantially outperformed all of our availability targets.

In the journey from being a poorly managed IT setup to becoming a leading edge computing environment, TSI's IT Directorate took some major strides in FY 2011. Doing so, it laid the groundwork for additional substantial progress in the coming year.

## Strategic Objective – Increase Reliability

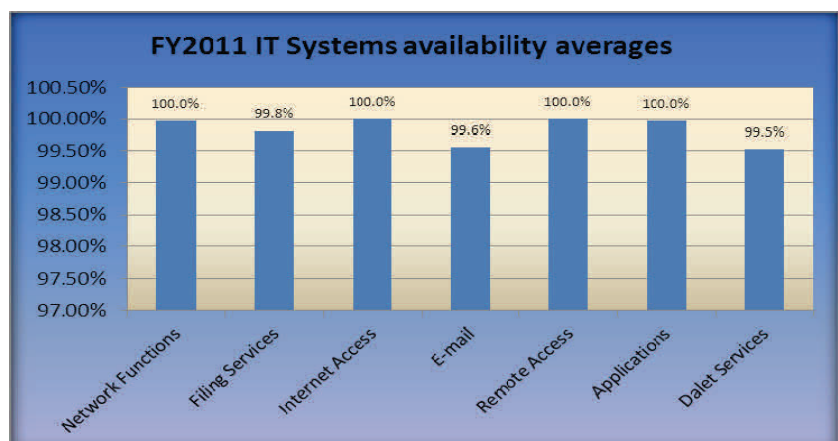
The transmission stations ended the fiscal year with an average availability of 99.7%. A remarkable feat, especially when considering the challenges with the electrical power supply in Djibouti and the deferred Maintenance and Repair (M&R) budget.



To improve reliability, TSI's IT Directorate undertook a massive effort to remediate years of flawed operations:

- Thousands of connections were properly re-cabled.
- Standardized server base configurations were fully deployed.
- Dozens of databases were migrated and consolidated from single servers to highly redundant clusters.
- E-mail system was upgraded for headquarters and stations.
- Real-time monitoring of the entire Active Directory setup (user authentication) was introduced.
- Windows 7 was deployed to over 550 users.

In FY 2011 (Jan.-Sept.) IT availability exceeded 99.8%. While this appears to be a record, no records exist from prior years.



## Strategic Objective – Increase Agility

Working collaboratively with all of the Broadcast Networks, TSI led a task force examining the feasibility of using RFE/RL's Pangaea Content Management System (CMS) as a common tool for the entire Agency.

With a clear opportunity for cost savings and easier sharing of web-related digital assets, and upon completion of the responsible due diligence, the system was adopted by the majority of the BBG networks. Content migration is already under way and this entirely self-funded project is scheduled for completion in September 2012.

In collaboration with the Department of State, the local Embassy and Ambassador Wohlers, TSI installed a new FM transmitter in **Bangui, Central African Republic** on Embassy grounds.

Enhancing coverage into **Iran**, TSI added 12 broadcast hours for Radio Farda on a leased medium wave facility in the UAE.

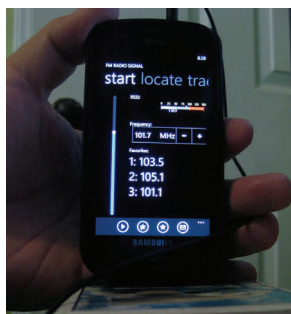
Improving penetration into **Zimbabwe**, TSI and VOA launched a new DTH 24/7 satellite stream, VOA Southern Africa, in July 2011. This new stream is carried on Intelsat 10 and features the very popular Zimbabwe Service Studio 7 programming.

TSI continued a phased implementation of a digital video system for VOA. This system manages the entire news production workflow and allows journalists to operate in a fully digital mode from video production to on air presentation. The DaletPlus Video ingest, production, and playback system was implemented for all live VOA programming and includes an automated archiving system that supports the VOA Library Management Services.

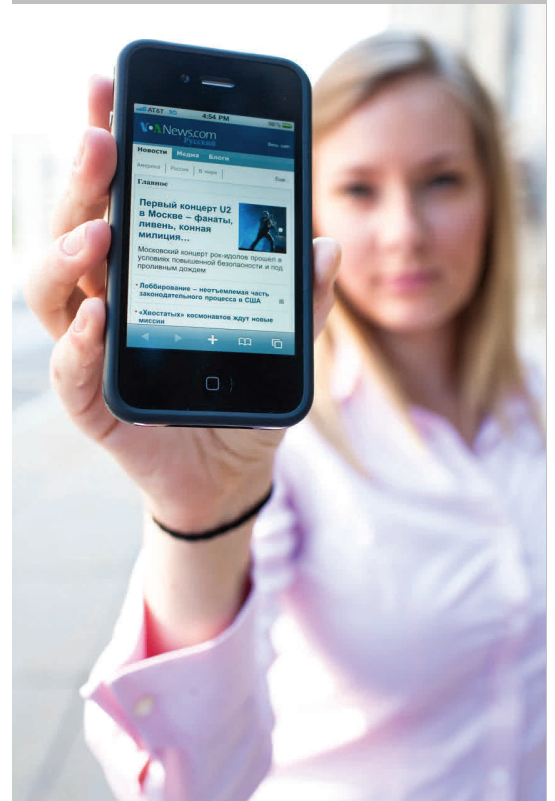
TSI also initiated two virtualization projects to consolidate and simplify server and storage configurations. Over 100 servers and three storage systems have been removed from production as a result of these projects.

TSI's IAC team deployed and adapted tools to facilitate uncensored web access in **Burma, China, Cuba, Ethiopia, Iran, Kazakhstan, Kyrgyzstan, Uzbekistan, and Vietnam.**

TSI's Engineering & Transmission Directorate recently developed a customized smart phone application that discreetly captures, analyzes, and transmits reception data for various radio signals, enabling monitoring of signal reception and signal quality in restricted environments.



# Increase Operating Agility



As global media landscapes continue to evolve and the geo-political situation shows no evidence of stabilizing, TSI must constantly identify new and innovative ways to meet the growing and shifting content consumption habits of the BBG's strategic target audiences.

## Continuing the Transformation in 2012

The progress made during FY 2011 helped set the stage for rapid advancement in the near future. The foundation laid will reap benefits for years to come, but we cannot rest upon these successes. We must continue to find new and innovative ways to achieve the BBG mission as we seek to connect and engage our global audiences.

### Focusing on Our Team

TSI employees are the cornerstones of our success. Technology is only one aspect of TSI. To provide high-quality IT and engineering products and services, we must rely on the talents and resourcefulness of our employees.

We want our employees to continuously increase their skills, knowledge, and job satisfaction. We want to provide diversity and career opportunities. We want to establish acceptable workloads and flexibility. We want to encourage everyone to work as a team and rise to meet the challenging demands of the future, and we will continue to strive to make our organization the best place to work, learn, and contribute to such an admirable cause.

We will introduce a skill gap analysis process to protect corporate memory. We will identify areas for training and skill enhancement. We will reinvigorate the performance standards to identify performance gaps and superb performance. We will establish remediation and training plans as needed, and we will properly reward truly superior achievement.

We want to continually make TSI an ever greater place to work and to set the standard for workforce performance management within the entire Agency.

### Planning for the Future

To meet the demands of the future, we must focus on identifying the opportunities and challenges we currently face. The 2010-2012 Strategic Plan has allowed TSI to make considerable structural change for the benefit of the Agency, and in 2012, we will refocus our strategic planning on the identification and communication of our vision for the technological future of the Agency, while continuing to execute against our current plan.

Let's get to work!

# 2012

## Our Plan



“By September 2012 we will be operating at much higher levels of performance than today’s radically improved norms. We will become a true strategic partner to all of the BBG broadcast brands; we will have again substantially improved our global content handling and distribution capability and we will be one of the most advanced and innovative IT environments in the U.S. Government”

André V. Mendes  
CIO/CTO  
BBG

# Notes



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