The TESS and {TESS+} Business Case

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In June 2020, the IASMN "recognized the cost savings and improved efficiencies realized by the TESS project, and the potential for further cost savings and efficiencies for the {TESS+} as an institutionalized longer-term service, as presented in the TESS/{TESS+} business case"

1. Background.

The interagency standards for UN Security Communications Systems (SCS) were initially established in the late 1990s by UNSECOORD and an informal interagency technical working group, consisting of UNHCR, UNICEF, UNDPKO (now DOS/OICT) and WFP.

In May 2003, UNSECOORD and the IASMN endorsed a document standardizing radio callsigns and VHF/HF radio selective calls. These initial standards were further expanded with proper security communications connectivity standards for each UN security phase, included in the Minimum Operational Security Standards (MOSS). MOSS also identified the standards for the support infrastructure, and appointed WFP as the lead entity for UN security telecommunications support and guidance.

For a number of reasons, from 2005 to 2018, the UN system no longer had a single entity formally mandated to provide standards, guidance and support for common security communications systems (SCS). Instead, individual AFPs (agencies, funds and programs) and NGOs relied on older standards or developed their own, without a clear common UN strategic approach nor the direct involvement of the UNSMS stakeholders, being the actual business clients.

Testimony: The reality of UN Security Communications Systems anno 2018:
"Through my work, I visited many high risk field operations. Frankly, by 2017, I was appalled to see the amount of radio equipment installed in vehicles, offices, and dispersed through our operations, which were almost never used, giving a false sense of security. Back in the 1990's, those were tools critical for our operations and staff security, but this was the 21st century... I was convinced, as a UN system, together with our NGO partners, we could do better. So we pushed to start the TESS project, as I knew this could make our operations more efficient and cost effective, and ultimately, safer. Two years into the TESS project, I am happy with the progress TESS has made. But this is only the beginning. We can do more and better, together. (Enrica Porcari, Director WFP Technology Division, Chair ETC)

Consequently, the UNSMS was gradually faced with outdated or incompatible technologies, dispersed systems used as their existing Security Communications Systems (SCS). Overall, the UNSMS in most countries had cost-ineffective UN security communications services which were no longer fit-for-purpose which, at core, posed a risk to the safety and security of UN and NGO personnel.

Example: The use of mobile phone systems as a Security Communications Systems tool:
Up July 2018, a combination of radio and satellite communications tools were officially still the sole official UN security communications systems in most countries. This was based on a communiqué from UNDSS in 2005, which did not allow the use of mobile phones as a security communications tool. However, since 2005, the public mobile phone networks had spread into the deeper field, became more reliable with cheaper subscriptions. De-facto, by 2018, in most countries, mobile phones had taken over as the primary security communications tool for many years already, but this was not standardized nor formally recognized. Until TESS came around...

In May 2018, the TESS project was established, on request of the IASMN (Interagency Security Management Network) and the ETC (Emergency Telecommunications Cluster), to collaboratively develop updated SCS standards and solutions, for connectivity (hardware) and applications (software) using both current and up-coming technologies. TESS was also requested to contribute to

updated security guidance and procedures supporting the SCS, in close collaboration with the business clients (IASMN, ETC, UNDSS).

As the TESS project evolved, ample opportunities were identified to not only make the field security communications more effective, but also to significantly optimize investment and operating costs, even by using currently deployed technologies, through onsite or remote assessment and support missions.

Testimony:
"During the April IASMN Steering Group, Bill Miller (Director UNDSS DRO) expressed support for the project, including the need for on-site TESS assessments and support mission, noting it has given the UNSMS a chance to re-evaluate how it communicates and benefited the entire system. He noted that the options proposed by TESS missions were tailored to each country." (Bill Anthony Miller, Director Regional Operations, UNDSS New York)

TESS was created as a two-year project using a collaborative approach with stakeholders from the UN system working closely with NGOs and the public/private/academic sector. As the project progressed and efficiencies and cost savings were realized, it became obvious that a continued availability of the services provided by the project would be required.

By June 2020, {TESS+}, a common and permanent service, endorsed by the IASMN and the ETC, built on the same foundations of TESS, will replace the TESS project ensuring a continuous adoption, standardization and support of new security communications technologies, translated into proper security procedures and guidance.

This document presents the business case behind the TESS project, and {TESS+} as its institutionalized service. This business case was requested by the IASMN Steering Group (April/May 2020), for submission to the 32nd session of the IASMN (June 2020).

This business case approach is aggregating:

1. ***The benefits of TESS by means of actual figures for the two-year project phase, and***
2. ***Estimated and potential benefits of {TESS+}, as an institutionalized service.***

In both cases (TESS and {TESS+}), benefits are divided into actual cost savings and efficiencies, for the UN system globally. Any direct cost savings, actual or potential, are compared with the TESS/{TESS+} operational costs.

As standard in the TESS and upcoming {TESS+} modus operandi, this business case was developed collaboratively, in four weeks, with practical input from our stakeholders, including members of the IASMN, ETC, TESS Interagency Steering Group and the IASMN TAG.

We would like to acknowledge the input from:

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Jalal Shah, WFP, Global ETC Coordinator
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The TESS Core Project Team

2. Definitions

2.1 Definition of terms used:

(Capital) Asset	a piece of equipment, owned and required by the organization in order to deliver its mandate.
Investment costs	one-time cost attributed to acquiring assets.
Asset value	is equivalent to the acquisition cost of the asset
Operational costs	recurring costs related to the operation of an asset or service, e.g. subscription fee for a satphone or mobile phone, or salary for SOC Assistants.

2.2 Financial indicators (defined within the context of this document):

Savings on investment	one-time saving that can be realized by choosing to acquire one, more cost effective, solution over another.
Operational costs savings	recurring cost savings that can be realized by choosing a more cost-effective solution over another.
Payback (time)	the time it will take for cost savings from an investment to pay back that investment.
Assets value reduction	the reduced total value of the deployed assets, when all these assets (over their operational lifetime) are replaced with a more cost-effective solution or through more efficient procurement process. It is calculated by multiplying the cost savings per unit with the quantity of assets deployed currently.

3. Summary: TESS/TESS+ cost saving and efficiencies

	TESS - Actuals[1]	{TESS+} - Projections
Asset value reduction		**USD 41.1 M**
Cost savings on investments (annual)	**USD 1.76 M**	**USD 6.2 M**
Operations cost savings (annual)	**USD 95 K**	**USD 8.2 M**
Project cost (annual)	**USD 922 K[2]** **(Operational cost of TESS)**	**USD 1.52 M** **(Operational cost of {TESS+})**
Efficiencies	Fit-for-purpose global standards adapted for local solutions, using existing technologies. Partial transfer of SCS cost, risk and complexity by adopting third party infrastructures and services Common testing of existing and new technologies. Global SCS standards, field guidance and technical field support Translating technologies into proper security guidance.	Institutionalized single global focal point for SCS support and guidance Opportunities to establish common UN service contracts for key services, ie Satphones and mobile phones. Optimize field operations through e.g. consolidated SOC services. Continuously tested and updated SCS standards and training across the globe.

[1] Figures have been summed up, and divided over the two-year duration of the TESS project.
[2] Total actual cost for the TESS project over two years (USD 1.85 M) is divided equally over two years for the sake of simplicity. In reality, less was spent the first 6 months during the project start-up, while the operational costs increased as the rate of activities increased.

4. TESS project (2018 to 2020) – Actual

The following demonstrates the actual cost of and benefits resulting from the TESS project during its two-year active period. Apart from the direct cost benefits and efficiencies, one of the key achievements of the TESS project is that it has created a solid foundation for further efficiencies and cost saving in the future.

USD 1.76 M	USD 95 K	USD 922 K
		
Cost savings on investments (annual)	Operations cost savings (annual)	Cost of running TESS (annual)

4.1 Direct cost savings

The main direct cost savings were realized by three key TESS initiated actions:
(1) A UNDSS USG communiqué (July 2018), formally recognized mobile phone systems could be used as an SCS tool, and consequently reduced the over-reliance on VHF radio networks as the primary SCS;
(2) Redefining, optimizing and largely simplifying the VHF radio SCS standards, to be based on improved legacy analogue standards rather than forcing UNSMS in multiple countries to migrate to digital VHF standards.
(3) A UNDSS USG communiqué (April 2019) publishing the new VHF standards.

Concretely: since publication of the new VHF standards, not a single analogue VHF network was migrated to digital VHF. Since the start of the TESS project, all planned migrations to digital VHF were stopped, with only two exceptions, where the procurement process was initiated before the new standards were published: Kinshasa (DRC) and Togo.

This represents a significant cost saving for the UNSMS, as migrating analogue to digital radio infrastructures is costly and complex. Even more importantly, individual AFPs have realized considerable cost savings from "not having to purchase" new digital VHF user equipment (handhelds, mobile radios), as the new analogue VHF standards also supported all older legacy user equipment.

Testimony:
"Before TESS, WFP annually spent USD 2.7 million on procuring new VHF/UHF radios (2017 figure). Since TESS started, and the SCS reliance on VHF/UHF was rationalized and reduced, immediately our annual expenditure went down: In 2018, TESS' first year, we spent USD 2.1 million on VHF/UHF radios, and in 2019, this was further reduced to USD 1.6 million. Cumulatively, this represented 1.7 million of savings over two years. This means only this saving, for only one agency, for only one SCS tool, could almost have paid for the entire TESS project for two years. I can only imagine what the cost saving was for the entire UN system. Beyond the cost savings, through rationalizing the use of VHF/UHF radios as SCS tools and officializing the use of mobile phones as security comms tools, also increased the efficiency of the SCS. Cost savings and increased efficiency, what more could we ask for?" (Erwan Rumen - Chief Operations and Policy Security Division, WFP)

Prior to the start of TESS, many countries had developed plans to migrate to a digital VHF network. In a number of countries this pending migration was already in an advanced stage: often the SMT or OMT had already approved the migration, or tenders were already issued and in some countries the budget was already allocated or approved.

In the first six months of the TESS project, the countries in the list below where targeted to review the need to migrate to digital VHF systems (or in the case of Nepal, to reduce the pending upgrade of the existing digital VHF network). In all cases, the planned migration was stopped, on the advice of TESS, through onsite assessments (with the exception of Somalia where the support was given remotely).

The Mauretania case:
Early 2018, the UNSMS had decided to upgrade its VHF radio network in three locations to digital technology at an investment cost of almost USD 474K. A TESS assessment proved that the use of mobile phone services combined with the existing analogue VHF network would provide a robust SCS, meeting their requirements. Cancelling the migration to digital led to a one time saving of USD 474K and an annual savings of USD 22K related to the licensing cost of the proposed digital VHF system. The savings do NOT include the additional cost of upgrading all legacy user equipment for all AFPs.

The table below lists only those countries where TESS actively engaged to halt ***imminent*** digital VHF upgrades. This list does not include all other countries with less advance upgrade plans, all of which were 'automatically' stopped once the new UN standards for VHF systems were published.

The figures represent the value of planned digital VHF infrastructure upgrade and/or user equipment.

Country	Savings on capital investment	Savings operational cost (annually)
Mauritania	474,000	22,000
Guinea-Bissau	420,000	33,600
Senegal	300,000	
Bangladesh	1,000,000	20,000
Nepal	206,000	20,000
Malawi	100,000	20,000
CAR	350,000	20,000
Somalia	680,000	14,573
Grand Total	**3,530,000**	**94,573**

Testimony:
"While there are still tasks currently being completed, in two operations (CAR and Burkina Faso), our staff acknowledge the efforts and added value from TESS to resolve the problems of security communications which impacted them negatively in the past: I had personally participated in the CAR situation where UNHCR was asked to contribute a sum of 400,000 USD for the implementation of a digital network. This dossier was, at the time (before the TESS mission), escalated up to the levels of UNHCR HQ (ICT services and security). But today, we are satisfied this problem is well under way of being resolved. "(Elias Ntawuruhunga, UNHCR Regional ICT Officer Dakar)

4.2 Efficiencies and non-quantifiable savings

Here is a non-exhaustive list of the main efficiencies realized through TESS.

4.2.1 Fit-for-purpose approach

Testimony:
"During TESS' mission in Benin, the team made the diagnosis of our VHF and HF telecommunications network. At the end of this mission, recommendations were made to us to optimize our communication set-up, which were implemented and our communication improved." (Patrick Nelson Udeh, SA, UNDSS Benin)

Breaking with legacy main reliance on radio systems for SCS and adopting a fit-for-purpose approach has allowed mobile phone services to be formally adopted as a key component of the SCS. This formed the foundation for a more cost efficient and effective standard for SCS solutions.

4.2.2 Partial transfer of SCS cost, risk and complexity by adopting third party infrastructures and services.

Shifting from UN installed/supported proprietary SCS systems onto third party services, such as mobile phone networks and satphones, has led to less complex infrastructures to be managed and supported by the UN system. This reduced the need for (or reliance on) the required highly specialized expertise of the technical support teams in each country. This specialized expertise needs a skill set which we would have had to largely rebuild, if we had continued to solely rely on our own radio networks for SCS systems.

With the UN moving, to a large degree, from managing its own infrastructure to managing the services of the third-party providers (mobile phone networks and satellite systems), the SCSs have not only become more resilient but also more sustainable, better fit-for-purpose, and cheaper.

4.2.3 Common testing of new and existing technologies

Testimony:
"TESS completed a through test of the Iridium PTT technology, based on the results of these tests, I was able to confidently recommend the Icom-SAT100 PPT handset as the standard Iridium PTT handset for Save the Children. We have started to deploy to our first country and our aim is to replace most HF Radios with PTT by 2025" (Mark Hawkins, Global Humanitarian Technology Manager, Save the Children International)

Having a central entity like TESS coordinate and consolidate the testing, simplification and standardization of existing and new technologies on behalf of the UNSMS and NGOs, not only saves cost but also represents a significant improved efficiency.

Rather than each organization doing their technical tests individually, TESS has been able to combine the technical expertise from the different AFPs and NGOs, and the business clients (ETC, IASMN, UNDSS) into common technical working groups. Each working group focuses on one specific technical area such as VHF radio systems, Vehicle Tracking Systems, mobile satellite systems or even the newest technologies, which are not yet commercially available.

Consolidating the testing of technologies into common efforts, also gives us more momentum and gravitas to engage directly with the private sector (manufacturers, suppliers, services providers). As the past two years have shown, the private sector has also been more willing to actively engage in all

technical tests, through common UN/NGO test projects, rather than engaging with individual AFPs or NGOs. Systematic and thorough testing of their technologies or products has also proven to be crucial for manufacturers or suppliers to adopt their systems or devices for the use of SCS systems, and in some cases has even led to improved products and services.

Testimony:
"UNDP approached TESS for a common project to test the suitability of the Iridium PTT network [as an SCS tool]. Working with UNDP Haiti, regional security and ICT teams, the projects' output assisted UNDP, and the UNSMS in general, in optimizing its security communications. The TESS team proves to be a valuable partner, bringing in key private sector partners, and providing technical expertise and project guidance." (Luc Vandamme , Director Security Office, UNDP)

Reviewing new technologies and establishing their suitability as a SCS tool is one of the core purposes of TESS. Once more, partnering up with the private sector, we are not only consolidating the testing, but in many cases, the TESS stakeholders are also involved in the development and prototyping of the latest technologies, ensuring they are fit-for-purpose for their use as an SCS tool.

The Iridium Push-To-Talk (PTT) case:
Iridium PTT is a relative new satellite-based technology using a VHF radio-like user service (PTT- "Press To Talk") Until 2018, several UN organizations and NGOs had tested this technology and many started to use these devices in different operation. However, few of the tests were done systematically using a solid test protocol. Consequently, it was not clear if the apparent issues with Iridium PTT, were due to a systematic network problem, issues with single devices, or if all of it was due to user-problems. In short, when mid 2018, TESS did a survey of over 20 operations using the Iridium PTT technology, evidence was mainly anecdotal often quoted as " it didn't work very well".

In 2019 UNDP approached TESS requesting support to perform a full test of the Iridium PTT service, in collaboration with their Central America and Haiti teams. TESS brought in three private sector partners (representing the service provider, the network operator and the device manufacturers), its network of UN and NGO practitioners, and its own technical team. Collaborative, the test team developed a structured test project, with tests done in several geographical locations. The project team was able to iteratively provide feedback on issues observed to the private sector partners, which in turn, allowed them to fine-tune the service or devices in near real time. The outcome was not only a clear recommendation on the applicability and usability of Iridium PTT as an SCS tool, but also improved network service and user devices for everyone, AND provided actionable recommendations to the UNDP teams.

4.2.4 Global SCS standards, field guidance and technical field support

From 2005 until the start of the TESS project, there was no global, mandated support and guidance service for common security communications. This was exacerbated by the fact that, over the past decade most AFPs and NGOs had gradually lost their knowledge, expertise and specialized staff all of which is crucial to support increasingly complex SCS technologies and infrastructures.

Early in the start of the TESS project, the IASMN, UNDSS and the NGO community insisted TESS, beyond its initial purpose of re-standardizing the SCS systems, also provided hands-on support to field operations.

Since its inception, TESS has fielded over 60 assessment and technical support missions prioritizing operations facing issues with their SCS systems and higher-risk countries; provided remote assessments and support in 20+ countries; and provided support to a dozen countries with detailed technical guidance, often facilitating the resolution of issues with the SCS amongst AFPs, NGOs and hands-on support or guidance for UNDSS Security Advisors or local ICT teams.

This extensive field support as a win-win for all parties concerned: Not only were we able to provide hands-on and actionable recommendations and practical support, but it also allowed the TESS project to gain an in-depth overview of the issues faced in the field. The latter, in its turn allowed TESS to provide more pragmatic and fit-for-purpose standardization recommendations.

Testimony:
"Myself, the DO/SMT and relevant Working Groups were very happy with TESS support…TESS carried out assessment at regional level and additionally send technical support for two weeks… training my Security Operations Centre Associates and supporting, leaving software and code plugs… he is constantly calling us to find out further support required and progress made on to do activities since his mission." (Mopeli C. Nthejane, Field Security Associate UNDSS, Lesotho)

The case of the digital (radio) divide:
When, some years ago, manufacturers introduced new digital VHF radio technologies (and announced the analogue radios would be phased out), the UN system didn't have an centralized and mandated entity to review and recommend a common strategy for the way forward. Consequently, different digital and analogue VHF technologies were deployed as SCS solutions, often in parallel. Apart from the additional cost of supporting parallel complex SCS systems for the AFPs, the technologies were not interoperable, resulting in fragmented and inefficient SCS systems.
With the new VHF standards, we have not only simplified the basic and standard VHF infrastructures, but were also able to design and test different solutions to bridge the existing parallel VHF/UHF radio systems in the field, making the SCS systems more fit-for-purpose, protecting past investments.

4.2.5 Translating technologies into proper security guidance.

While the initial priority for TESS was to standardize on the connectivity (hardware) and applications (software) used in SCS systems, both only represented technology solutions. Implementing only technology solutions in an operation is useless unless if these are properly integrated into the field security operations through appropriate, official and globally standardized security guidance and procedures, as a key tool for both UNDSS field security personnel and the AFPs security personnel.

In the past six months, TESS has actively engaged in the IASMN Working Group on Guidance and Procedures for Security Communications Systems. Not only is TESS chairing this working group, co-chaired by UNDSS, but has also injected significant staffing resources to help drafting the new chapter on SCS for the Security Management Operations Manual (SMOM), and drafted all SMOM annexes which include all Standard Operating Procedures (SOPs), standard templates and TORs for the key entities supporting the field SCS systems.

In full collaboration with this Working Group's membership, this will be the first time ever, the UNSMS has a global and all-comprehensive SCS guidance document. It will also be the first time ever, that all SOPs and detailed guidance documents are consolidated, standardized and formally

approved. This by itself, will have a significant impact on the UNSMS' implementation, support and management of the field SCS.

5. {TESS+} (2020 and on…) - Projections

Transitioning TESS as a two years catch-up project into {TESS+}, a permanent and institutionalized service and with a clear mandate, will amplify and continue to implement the cost savings and SCS efficiency improvements TESS has worked on.

{TESS+} will continue on the foundations of TESS: providing field support and guidance, further standardizing existing and new technologies, and supporting the translation of technologies into proper security guidance and procedures.

More importantly, {TESS+} will be able to properly implement and support the streamlining of improved field SCS systems, using the existing and new technologies tested by TESS.

While TESS already proved actual cost savings and improved efficiencies, the real potential of these benefits will become obvious and amplified through their implementation in {TESS+}. TESS has identified the issues, re-standardized, and tested improved SCS systems. {TESS+} will allow us to fully implement these at field level, simplifying SCS systems, with major projected cost savings:

USD 41.1 M	USD 6.2 M	USD 8.2 M	USD 1.52 M
			
Asset value reduction	Cost savings on investments (annual)	Operations cost savings (annual)	Running cost for TESS+ (annual investment)

5.1 Direct cost savings

The potential cost savings (estimated) and efficiencies that can be realized in the future are presented in more details below.

5.1.1 Phase out HF radio in favor of mobile satphones

Back in the 1990's, HF radio was the only affordable way to communicate with voice over long distances between vehicles and offices, both for operational communications as well as for security communications.

Over the years, its use has diminished, as other cheaper and simpler ways to communicate over long distance became available, mostly in the form of mobile phones and satphones.

Over the past years, the TESS field missions revealed that while the use of HF radio is still mentioned in most SRMs as a SCS tool, in practice, TESS has only seen a handful of operations where the HF radio network is properly designed, implemented, supported and used.

Nevertheless, the amount of HF radio devices, which are deployed and continuously procured globally is significant and represents a continued investment, even though it is seldomly used and no longer fit-for-purpose as an SCS tool.

TESS has laid the foundations for an approach to gradually phase out the use of HF radio, and replacing it with cheaper and easier to use satphone technologies, which will be presented for the IASMN's endorsement in the coming months.

The potential cost saving by replacing HF radios with more cost effective and user friendly satphones in all new field vehicles is divided in two: (1) an annual savings in capital investments due to less expensive acquisition cost; and (2) a reduction in value of deployed assets.

USD 28.7 M	USD 4.8 M
	
Asset value reduction	Cost savings on investments (annual)

Replacing HF radio as a SCS with mobile satellite phones will lower the capital cost (Capex) considerably. This will, to some degree, be offset by the operational expenses (Opex) incurred, over the operational lifetime of the device, by the satphone versus the HF radio. However, in the context of the SCS, the satphone is mainly used as a backup means of communications and should, as such, will be used less use than the primary SCS.

For the capex (capital expenditure or investment value), the difference is USD 2,570 per vehicle and USD 2,250 per SOC, in favor of the satphone. We collected vehicle data statistics from WFP, UNHCR, UNICEF, IOM, WHO and UNDP. Total number of new vehicles these six agencies annually deploy to the field is currently 1,861 out of a total fleet of 11,009 (vehicles with communications installed).

In addition, there are over 202 common UN SOCs that would no longer need HF radios. Grand total, this has the potential to provide a maximum annual investment cost saving of **USD 4.8 M.**

It also provides a potential decrease in assets value deployed in vehicles and SOCs. Asset value reduction is calculated according to this formula: "(Cost saving per vehicle * Total number of vehicles with comms deployed) + (Cost savings per SOC * Total number of SOCs)".

With actual numbers this comes to (USD 2,570 * 11,009)+(USD 2,250 * 202) = USD 28,746,580, or rounded, to **USD 28.7 M**, (USD 40.6 M when equipped with HF radio to USD 11.8 M when equipped with satphones).

Example: the WFP business case for replacing HF radio with satphones:
WFP has a global light vehicle fleet of about 2,750 vehicles of which 90% are equipped with communications for use in the field. Every year about 20%, or 425 of these are replaced, including communications equipment, with new ones. Deploying satphones rather than HF radio in these vehicles, WFP has a potential to save annually USD 1.1 M on Capex and reduce value of assets deployed with an estimated USD 7.1 M.

5.1.2 Optimized VHF/UHF radio networks

By retaining the analogue VHF/UHF radios technology as the UN standard, we can continue to use the VHF/UHF radio devices currently in use. In addition, for newly procured mobile and handheld radios, the selection of compatible devices on the market is much larger, allowing us to choose more cost-effective models than those currently used.

USD 12.4 M	USD 1.4 M
	
Asset value reduction	Cost savings on investments (annual)

Depending on which models are currently used and the new selected, the cost savings per device is up to USD 234 per new mobile radio and USD 338 per new handheld radio. Globally, across the AFPs, this represents a significant cost saving potential:

Vehicles: Based on data from WFP, UNHCR, UNICEF and WHO, the ratio of vehicles being equipped with VHF/UHF radios is on average 64%. Procuring the most cost effective mobile VHF radio models represents a potential annual cost saving of **USD 424 K** for six agencies (Data from WFP, UNHCR, UNICEF and WHO, transposing this data to include UNDP and IOM). It is assumed that the operational life of the mobile VHF radio is aligned with the vehicle, i.e. 5 years.
The potential asset value reduction is calculated as "Cost savings per vehicle * Quantity of vehicles deployed".
In actual numbers: 234 * 11,009=2,576,106. Rounded up, this is equivalent to a potential decrease in asset value up to about **USD 2.6 M**

Handhelds: Based on data from WFP and UNHCR, we calculated there are currently about 29,000 VHF/UHF radio handhelds in the field at this moment, for all AFPs. Assuming a 10 years operational lifespan for a handheld VHF radio, by procuring the more cost effective models, an annual investment saving of up to **USD 982 K** is possible.
Potential asset value reduction is calculated as "Cost savings per handset * Quantity of handhelds deployed" and, in actual numbers: USD 338 * 29,058 = USD 9,821,604. Rounded up, this is equivalent to a potential decrease in asset value of approximately **USD 9.8 M.**

5.1.3 Remote SOC

TESS tested a way to flexibly connect a centralized SOC to remote repeater networks spread across field offices. Consolidating field SOCs currently supporting local VHF networks into one (or potentially a few) centralized Remote SOCs can reduce operational costs considerably. At the same time, this can also improve the quality of service and safety of the SOC assistants (see further below in chapter 5.2.

Up to USD 8.2 M	USD 987 K	Average 15 months
		
Operations cost savings (annual)	Investment/funding (one time globally)	Payback time (months)

Testimony:
"The implementation of the Remote SOC standards in Sudan would result in savings of USD 500k per year for WFP only…" (Erwan Rumen - Chief Operations and Policy, Security Division, WFP)

Actual savings will depend on the level of consolidation and the current structure so, for this business case, three scenarios are assumed to show the potential benefit that can be realized:

1. Full consolidation – all field SOCs are closed and monitoring handled by ONE central Remote SOC
2. Office hours only – field SOCs operate office hours only; during after-hours, the Remote SOC monitors all field locations
3. Half effort - close down SOCs that are operating 12/7 (and 12/5) and convert 24/7 SOCs to 12/7 or 12/5; Remote SOC monitors full time those field sites where SOC were closed down and after hours for those that were converted to 12/7 (or 12/5).

To ensure capacity to monitor all the field operations, staffing for the central Remote SOC will depend on number of field sites it supports. The minimum is a team of five SOC Assistants for a 24/7 service, when supporting one field site, up to 12 SOC assistants would be needed when supporting 14 or more field sites for a 24/7 service.

The cost savings presented are based on the actual situation in 16 countries with multiple physical field SOCs in operation at this moment.

Annual potential operational cost savings in the 16 countries, for the above defined scenarios, will range between **USD 3.9 M** and **USD 8.2 M** per year.

Deploying the RSOC solution will cost, on average, **USD 62 K** per country, equivalent to a one-time investment of **USD 987 K** to deploy to the aforementioned 16 countries. Cost to operate the RSOC solution is already incorporated into the potential cost savings listed above.

Payback time on investment in on average **15 months** and varies between 1 and 36 months depending on scenario and current SOC structure in the countries.

As a note of caution: in many operations, the SOC assistants support the operations of the local VHF radio network but might also have other duties related to security, administration, operations or other communications networks. This will have to be taken into account, when converting or consolidating local SOCs into Remote SOCs.

The business case for Remote SOCs in Sudan:
The UN has deployed a comprehensive network of common UN SOCs, in 13 locations. The SOCs are operational 24/7 and are staffed by a total of 71 SOC Assistants. The main UN common SOC is located in the capital Khartoum and is staffed by 6 SOC Assistants. The annual staffing cost (salary, benefits and danger pay) to operate this current setup of 13 field SOCs is USD 2.5M. By consolidating the network of physical SOCs, the operation in Sudan can realise annual operational costs savings. Using the three mentioned scenarios the potential annual cost savings that can be realized are:
- USD 2.1M (consolidate all field SOCs into one central Remote SOC in Khartoum)
- USD 1.3M (convert all field SOCs to operate during daytime hours only)
- USD 1.0M (close all daytime field SOCs and convert 24/7 field SOCs to 12/7 operation)

5.2 Efficiencies and non-quantifiable savings

5.2.1 Service quality increase through to consolidation of SOCs

By consolidating field SOCs and linking remote radio networks to a Remote SOC, it will be possible to provide a more professional and uniform level of service to the UNSMS. This is achieved through more effective training and management of the service at the central location.

In addition to very clear cost saving potential for this solution, it has a large potential to improve service quality. It is a fact that in many field locations the SOC assistants do not have a dedicated security supervisor or security reporting line. Therefore, the field SOCs often do not get the attention and guidance it requires and as such, the service quality can suffer.

If, on the other hand, all security areas are monitored by a common UN Remote SOC, a dedicated security manager/reporting line can be appointed and staff can be fully trained to ensure their knowledge is up to date.

5.2.2 One global focal point for technical support and guidance to the UNSMS

Testimony:
"The experts of TESS are hand-on people who understand the field-telecom needs and speak the language of our technical guys on the ground. Their assessment was thorough, yet quick and clear, well presented and written up and helped us to get on track in our technical and organisational transition from multiple Radio Rooms to one SOC for the country. And they remained reachable for us along the way. Knowledge sharing at its best by smart and experienced colleagues." (Marco Smoliner, Security Advisor, UNDSS Tanzania)

With TESS having the necessary expertise and capacity, the UNSMS now has one point of contact that can support and provide consistent guidance on all aspects of the SCS.

Until TESS was created the UN countries didn't have a centralized focal entity for technical guidance and support on security telecommunications. For some local teams this meant they had to work out the standards themselves, sometimes based on their internal standards, or approach service providers within the UN system, i.e. FITTEST or the ETC. The result was a fragmented implementation of SCSs.

With TESS having the necessary expertise and capacity the UNSMSs now has that one point of contact that can support and provide consistent guidance on all aspects of the SCS, and this needs to be a continued service provided by {TESS+}.

5.2.3 Continuously updated SCS standards

Having a permanent {TESS+} service will, in the future, avoid the need to have long catch-up exercises, which basically the TESS project was: Standards will be continuously updated and adopted through {TESS+}. Consequently, the UN system will always have the most cost effective and efficient solutions in operation.

Case in point is the status of the UN common security communications in the years leading up to the start of the TESS project: UN SCS standards had not been updated for over a decade and were often not fit-for-purpose, if not obsolete.

Without any global guidance through {TESS+}, local teams will revert back to uncoordinated solutions based on expertise or guidance from individual AFPs or local technical staff. Although TESS has, after two years, partially defined new standards, more efforts are required to finalize this through {TESS+}, and then to oversee the deployment.

5.2.4 Aggregated mobile phone contracts for the AFPs

The UN system in most countries is a large potential customer for the mobile phone operators and, as such, has a very good bargaining power in terms of negotiating better rates and services.

Unfortunately, in many countries AFPs and NGOs individually, or in small groups, approach the MNOs to negotiate service agreements. As a result, the full cost savings potential is not reached.

TESS has a global understanding of the mobile telephony market and how the different UN operations have approached the challenge of establishing efficient agreements with providers. Leveraging that knowledge, TESS (and subsequently {TESS+}) can assist local teams to establish better mobile phone services agreements for the common UN system, as is specified in the SMOM update, currently submitted for IASMN endorsement.

The global SCS standards also open the door for the UN to establish global agreements with providers of services and equipment manufacturers, for example for mobile satellite phone equipment and services. Again, driven by the high volume of users, the UN on a global level has a lot of bargaining power and can achieve better pricing than individual AFPs can do alone.

5.2.5 Cost savings and efficiencies resulting from common global standards

Common standards and simplified SCS solutions require less efforts to standardize on training and manuals both for the technical support staff and users, and avoid the need for re-training when moving between countries, operations and organizations.

5.2.6 Having common SOPs available for the UNSMSs

Efficiencies can be realized by ensuring the UNSMS is working under a common, and always up-to-date operational model, in terms of security communications, translated into a set of standard SOPs, template TORs for SOCs and SOC assistants, and related guidelines, as they are currently drafted for the new SMOM chapter on SCS guidelines (with its related annexes).

{TESS+} will continue to support the IASMN Working Group on Guidance and Procedures for SCS, expanding and updating the annexes.

This, by itself, is a major efficiency improvement, not only because this will make a comprehensive standardized set of SOPs and guidance documents, but this also means that each of the local security teams does not have to develop these SOPs from scratch themselves.

5.2.7 Radio bridging solutions

TESS designed and tested a cost effective technical solution to bridge legacy and digital VHF/UHF radio networks.

This eliminates the need for AFPs with incompatible user devices to acquire new hardware. Instead all users continue using their existing radios and the technical solution bridges the different technologies seamlessly at the backend.

Further, UN common SOCs do not need to install a dedicated base radio for each of the different radio systems (e.g. Analogue, DMR, dPMR and Tetra) anymore.

Apart from the potential cost savings from the above, this mitigates a significant security risk: Currently with different separate radio systems in operation, any message, also time sensitive security related information, has to be transmitted separately onto the different networks to reach all staff. Equally, currently, any security notification or alert from any staff, on one network will not be heard on the other isolated radio networks.

When bridged, all security broadcasts and communications will be heard on all networks, in real time, using the network bridge.

The Afghanistan case:
The UN system has deployed a complex VHF/UHF radio network consisting of three, non-interoperable, technologies: dPMR, DMR and Tetra. As per June 2020, the local ICT Working Group and the Security Cell, supported by TESS will be piloting the first deployment of TESS' bridging solution in such a complex radio environment. Already tested successfully in the lab, the solution will be deployed, and verified, in Kabul before being replicated to the field offices and other operations. At a cost of USD 6,000 per location, the bridging solution solution will safeguard the investment AFPs and mission have already made into different radio technologies while providing interoperability.