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Information and Communications Technology Subcommittee

PFA/ICTS

FOR DEBATE AND GUIDANCE

FIRST ITEM ON THE AGENDA

Information technology investment study

Overview

Issues covered

This paper presents the findings of an information technology (IT) investment study evaluating how the ILO's IT delivery capacity is aligned with the outcomes identified in the Knowledge and Information Technology Strategies endorsed by the Governing Body in November 2009. The study has developed a response to identified gaps in IT infrastructure by presenting four different scenarios to describe the future of IT within the ILO.

Policy implications

None.

Financial implications

The financial implications of the findings of the study are significant (see paras. 20–24). Funding appropriate levels of connectivity for the regions requires that an additional US\$4 million per biennium is allocated to regional communications budgets. The costs of each of the infrastructure scenarios are calculated over a five-year implementation period.

Action required

Paragraph 27.

References to other Governing Body documents and ILO instruments

GB.306/PFA/12/3, GB.306/PFA/ICTS/1.

Introduction

1. At its 306th Session (November 2009), the Governing Body adopted results-based strategies on Knowledge and on Information Technology (IT).¹ These strategies are inextricably linked and their implementation calls for a transformation of the way that the ILO manages knowledge and information.
2. The IT Strategy identified the need for substantial additional investment in IT infrastructure over the period of the Strategic Policy Framework 2010–15 to deliver on the outcomes of the Knowledge and IT Strategies. As provided for in the IT Strategy, the Office commissioned “a study to identify the priority areas where the IT infrastructure needs to be transformed, and to assess the level of investment required to achieve this transformation”.² Following a public procurement process, this study was undertaken by independent external consultants³ from May to September 2010.
3. The terms of reference for the study were as follows:
 - (i) to assess the current state of the ILO’s IT infrastructure;
 - (ii) to identify the IT requirements of the Office by engaging with its stakeholders;
 - (iii) to identify the gaps between the requirements and the current capacity;
 - (iv) to recommend solutions with estimated costs; and
 - (v) to recommend a strategy that balances in-house implementation and support with external hosting for the major centralized services.
4. The scope of the study covered only the IT infrastructure as this underpins the delivery of all IT products and services. For the purposes of this study, IT infrastructure included acquisition and maintenance of hardware, software licences, operating systems, global connectivity costs, power and cooling systems, networks, storage, Data Centre hosting and disaster recovery. Systems to meet the knowledge and information needs of the ILO demand that these infrastructure elements are of high quality and availability to support appropriate service-level delivery.
5. The IT investment study addressed the following five areas:
 - the current state of the ILO’s IT infrastructure, with risk assessment and priority action areas;
 - consideration of the ILO’s IT strategic commitments versus actual delivery capability;
 - a gap analysis;

¹ GB.306/PFA/12/3 and GB.306/PFA/ICTS/1.

² GB.306/PFA/ICTS/1, para. 32.

³ PricewaterhouseCoopers.

- an analysis of ILO’s “digital divide” challenge; and
- future options: four scenarios.

6. A summary of the main findings under each of these areas is presented below.

Current state of the ILO’s IT infrastructure, with risk assessment and priority action areas

7. The current state assessment evaluated a number of infrastructure components and concluded that connectivity,⁴ the Data Centre, storage and Internet/Intranet hosting were priority areas for investment. This assessment is summarized in table 1:

Table 1. The ILO’s IT infrastructure: Current state (September 2010)

Area of the IT infrastructure assessed	Current state (risk)	Impact	Urgency to address	Priority for action
Data Centre	High	High	High	1
HQ internal network (local area network)	Low	Low	Low	5
Global connectivity (wide area network)	High	High	High	1
Server systems	Moderate	Medium	Medium	3
Storage	High	High	High	1
Workstations and printers	Moderate	Medium	Medium	3
Field offices’ infrastructure	Moderate	Medium	Low	4
Internet and Intranet hosting	High	High	Medium	2
File and print services	Moderate	Medium	Medium	3
Email and calendar	Moderate	Medium	Medium	3
Identity management	Moderate	Medium	Medium	3

IT strategic commitments versus actual delivery capability

8. An assessment of the level of IT maturity in the ILO shows that the IT strategic planning process behind the results-based Knowledge and IT Strategies is sound. However, the review identified a disconnect between the ILO’s strategic intent and the low maturity of its IT delivery capabilities. This is largely due to the decentralized structure of IT which has resulted in fragmented processes and technology deployments, and the consequent misalignment of IT staffing and required skills.

⁴ “Connectivity” refers to the ability of users to access electronically data/information that they need. The greater the geographical distance between where the data/information is stored and where it is accessed by the user, the higher the quality of the Internet connections that are needed for the information to be successfully transmitted to the user.

Gap analysis

9. The link between strategic IT-enabled ILO initiatives (e.g. Integrated Resource Information System (IRIS), Electronic Document Management System (EDMS), Standards, Statistics and other databases, Internet/Intranet) and the required supporting IT infrastructure was analysed. The gap analysis confirms that connectivity, the Data Centre and storage are the key infrastructure bottlenecks. Data Centre and storage issues are linked to the need for better risk management. Connectivity, on the other hand, is a prerequisite for enabling the Office to better create, disseminate and manage the knowledge assets that serve the ILO's constituents.

Risk management

10. Risk management considerations included elimination of obsolete hardware and software, and recoverability in the case of a disaster.
11. The study found that the replacement of obsolete hardware and software is not planned, budgeted or undertaken in a consistent manner, thereby exposing the Office to risks of potential data loss through newly discovered security gaps, breakdown of equipment and lack of compatibility with newer technologies.
12. The management of availability, capacity and security of IT assets need considerable rethinking both strategically and more pragmatically in terms of disaster recovery.
13. A methodology was used to calculate the cost of not mitigating high-risk infrastructure deficiencies identified in the study. Two examples of the potential costs of lost staff productivity due to infrastructure unavailability are presented in table 2.

Table 2. Potential productivity costs of infrastructure unavailability: Two scenarios

Scenario	Time to fully re-establish operations	Lost staff productivity	Cost of lost productivity (US\$ million)
Loss of network file and print at headquarters	10–12 working days	50 per cent of headquarters staff	4.61
Loss of headquarters Data Centre	6 months	Month 1–2: 80 per cent headquarters, 10 per cent field.	36.3
		Month 2–3: 15 per cent headquarters	2.8
		Month 3–6: 5 per cent headquarters	1.8

The ILO's "digital divide" challenge

14. The findings of the study in relation to the ILO's global connectivity are of particular importance given the significant ongoing additional costs which would be required to bridge the identified gap. When mapped against worldwide connectivity statistics provided by the International Telecommunication Union, ILO connectivity broadly reflects the existing "global digital divide" – a north–south divide in general terms. This affects the ILO's ability to deploy centralized systems (e.g. the EDMS, IRIS, Intranet access, video-streaming and video-conferencing) and to share knowledge and information stored in centralized databases at headquarters with ILO officials and constituents in Africa, Asia and Latin America. The largest demand for ILO services is in countries/regions where connectivity is less available and therefore expensive.

15. The study also found that centrally developed IT and media services (e.g. ILO TV, video-streaming, IRIS, EDMS, Intranet broadcasts of the Governing Body and International Labour Conference, etc.) do not sufficiently take into account connectivity constraints for users in the regions during the design phase. In some cases, central knowledge and information is simply not available to ILO staff outside headquarters.
16. The study concluded that investing in better connectivity is fundamental to moving forward with the overall strategic goals of the ILO. Of the infrastructure gaps identified in this study, connectivity is the single issue that has the greatest impact on the value that the ILO derives from IT. However, just providing increased bandwidth will not solve all the issues. The way that the ILO's IT systems are developed and deployed needs to be rethought taking into account the constraints imposed by inadequate and expensive connectivity.

Structure of the ILO's IT expenditure

17. The study estimated IT expenditures in the ILO in 2008–09 at US\$66 million, which represents 5.6 per cent of operational expenditure. This is lower than the public sector benchmark of 6.5 per cent. The ILO's IT expenditure is heavily focused on staff (57 per cent compared to the 38 per cent benchmark). A substantial proportion of this cost (60 per cent of staff costs) is incurred outside the Information Technology and Communications Bureau in decentralized IT staff resources in other headquarters units. Expenditure on telecommunications and connectivity is estimated at 3 per cent, significantly lower than the industry benchmark of 7–10 per cent.
18. The study also found that there is no clear identification of a practical and sustainable cost structure for the ILO's expenditure on IT. IT spending is spread across disparate projects and departments acting in isolation. This has resulted in a proliferation of localized system deployments funded by one-time investments. There is little consideration of the ongoing infrastructure expenses that should have been allocated to provide longer term support for these systems. Such poor governance consequently creates unforeseen demands on centralized IT services and budgetary resources.
19. Some steps are already under way to address these IT governance issues, including the introduction of centralized purchasing of PC hardware and software in the Programme and Budget proposals for 2012–13.

Future options

20. Several options were outlined for each of the infrastructure elements evaluated, and the costs of implementing these options were estimated. Using criteria such as strategic fit, cost-effectiveness, continuity and sustainability, an analysis was undertaken which led to four potential scenarios for addressing the IT infrastructure bottlenecks. These are summarized below:
 - **Status quo:** Under this scenario, the changes foreseen are minimal upgrades to the electrical infrastructure of the headquarters Data Centre, and changes in storage due to growing data needs. Appropriate underpinning infrastructure would not be available and global connectivity would remain inadequate. The likelihood and cost of a disaster are substantial for this scenario. It would require an estimated additional **\$2.45 million** (+/-15 per cent). This excludes the \$1 million per year (\$5 million over the five-year period) that is currently being spent on connectivity.

- **Partial risk reduction:** This scenario focuses on the minimum investment needed to address the most significant risks to data. It addresses the most serious infrastructure risks signalled in the IT Security Audit conducted in 2009, including a minimal upgrade to the headquarters Data Centre and replication of all network resident data to an off-site disaster recovery location. This scenario does not address global connectivity problems or dependency on obsolete technologies. It would require an estimated additional **\$4.4 million** (+/-15 per cent). This excludes the \$1 million per year (\$5 million over the five-year period) that is currently being spent on connectivity.
 - **Improvement:** This scenario is focused on risk management and cost containment whilst making certain minimum improvements. It includes rebuilding the headquarters Data Centre according to industry standards; replicating all data to a disaster recovery site; rationalizing and consolidating hardware; upgrading and planning for the growth of backup needs; upgrading connectivity for the regions; overhauling the Internet/Intranet infrastructure; moving from the obsolete Netware server platform to Windows servers; and moving from the obsolete GroupWise email system to Microsoft Exchange. The implementation of this scenario would require an estimated additional **\$17.75 million** (+/-15 per cent) of which \$10 million would be allocated for enhanced connectivity. This excludes the \$1 million per year (\$5 million over the five-year period) that is currently being spent on connectivity.
 - **Transformation:** This scenario would optimize the value of IT to the ILO. It would however require a higher level of initial investment and would need to be proactively driven and managed. It includes outsourcing the headquarters Data Centre facility and including a “high availability” hosting arrangement; replicating data to a disaster recovery site; rationalizing and consolidating hardware; upgrading and planning for the growth of backup needs; upgrading connectivity for the regions; overhauling the Internet/Intranet infrastructure; moving from the obsolete Netware server platform to Windows servers; moving from the obsolete GroupWise email system to “Email as a service”; and consolidating identity management. The implementation of this scenario would require an estimated additional **\$20.7 million** (+/-15 per cent) of which \$10 million would be allocated for enhanced connectivity. This excludes the \$1 million per year (\$5 million over the five-year period) that is currently being spent on connectivity.
21. Fifty per cent of the additional estimated funding requirements in the third and fourth scenarios above relate to improving global connectivity. Currently, approximately \$1 million per year is paid by the Office for connectivity and this is not providing sufficient capacity. In order for the regions to participate equally in the realization of the knowledge and IT strategic outcomes, an increase of **\$2 million** per year is required. This would take global connectivity spending to \$3 million per year.
 22. While enhanced connectivity is clearly costly, it is also essential in order that appropriate knowledge, information and support are available to the regions to enable effective delivery of the ILO’s substantive programmes. Almost all these costs consist of monthly communications line rental fees in the field offices. The increased amount would be largely allocated to the regional budgets, and would need to continue beyond the current five-year strategic period as the amount of information being distributed around the Office will continue to grow.
 23. The estimated costs for the infrastructure investment scenarios outlined above include one-off investments and running costs over a five-year period. The study concludes that it may be possible to fund a portion of this increased expenditure by reorganizing the way IT

resources and staff are managed, and by engaging in a determined effort to rationalize the applications landscape across the Office.

24. The distribution of infrastructure-related expenditure over a five-year period for the four scenarios is provided in the table below. This excludes the costs of meeting global connectivity needs as these have been discussed separately in paragraph 21 above.

Table 3. Timeline and additional costs per scenario excluding global connectivity enhancements (US\$ millions)

Scenario	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Status quo	0.8	0.35	0.35	0.45	0.45	2.45
Risk reduction	1.4	0.85	0.55	0.75	0.80	4.35
Improvement	1.8	2.10	0.50	0.60	2.75	7.75
Transformation	1.8	3.35	1.80	1.80	1.95	10.70

Steps already taken

25. The Office is addressing a number of the most critical infrastructure risks that were identified by the IT Security Audit conducted in 2009. A redundant storage array will be implemented at an external hosting site and data replicated off-site by the end of 2010. This mitigates the risk of losing large amounts of data in the event of total loss of the headquarters Data Centre. In parallel, the email system has been reviewed to enhance availability of the service without incurring significant additional infrastructure costs.
26. A public procurement exercise for a new back-up infrastructure has recently concluded. In response to audit recommendations, space has been allocated outside the headquarters Data Centre for its installation. The old electrical and network cabling within the Data Centre will be replaced and a new redundant uninterrupted power supply will be implemented by the first half of 2011.
27. The Subcommittee is invited to consider the findings of the study and advise the Programme, Financial and Administrative Committee on how to address the IT infrastructure gaps identified by the study within the framework of the discussions of the Programme and Budget proposals for 2012–13 and other investment decisions that may be taken by the Governing Body.

Geneva, 25 October 2010

Submitted for debate and guidance