



Transition to Online Tests: Strategies and Results

online



tests

en ligne



Baltimore - June 23, 2003



◆ Symposium chair : François Chiocchio, PhD.

◆ Presenters

- Suzanne Lalonde, Personnel Psychology Centre
- Reid Klion, PhD, Performance Assessment Network, Inc.
- Bastian Kruideneir, PhD, Personnel Psychology Centre
- François Chiocchio, PhD, Personnel Psychology Centre



The symposium's programme

- 1. Challenges to Online Test Implementation**
- 2. Enabling Internet-Based Selection Testing**
- 3. Transition from Paper-and-Pencil to Online Formats: Equivalence Studies and New Development Initiatives**
- 4. The Impact of Online Tests on the Testing Process, HR Consultants and Candidates**



1. Challenges to Online Test Implementation

Suzanne Lalonde, Director, Information and Business Technology

Nathalie Gagnon, Technical Advisor, Online Tests

Diane Thibault, Chief of Operations, Test Services



Outline

- ◆ Challenges
- ◆ Resistance
- ◆ Pitfalls
- ◆ Solutions
- ◆ Lessons learned



Challenges

- ◆ Support and funding
- ◆ Complex and lengthy RFP and contract negotiations
- ◆ Data security
- ◆ Government of Canada, not a single entity
- ◆ Various high stakes testing scenarios
- ◆ Canada has two official languages



Support and funding

- ◆ IT specialists
- ◆ Senior management
- ◆ Operating budgets insufficient to cover this type of initiative



Complex and lengthy RFP and contract negotiations

- ◆ RFP requires clearly defined and detailed specifications
- ◆ NAFTA
- ◆ RFPs are posted only when they are deemed challenge-proof



Data security

- ◆ Industrial Security Policy
 - Personnel security clearances
 - Facilities security clearances
 - Data security
- ◆ US Department of Defense reciprocal agreement - different standards
- ◆ September 11



Government of Canada, not a single entity (from the point of view of testing)

- ◆ Approximately 140 departments and agencies
- ◆ Large territory
- ◆ 200,000 + employees in and outside Canada
- ◆ 2000 HR officers
- ◆ 500 HR managers and senior managers
- ◆ Different organisational cultures
- ◆ Different staffing processes
- ◆ Different legislative contexts
- ◆ Not all stakeholders need to interact with the Personnel Psychology Centre for their testing needs
 - legal reasons
 - cost-recovery context
 - depends on the test they need



Various high stakes testing scenarios... somewhat outside of our control

- ◆ Large groups / Small groups / One at a time
- ◆ T&D labs in government facilities
- ◆ Computer labs outside government facilities (e.g. universities)
- ◆ Embassies, missions and micro-missions
- ◆ High speed / Modem connections
- ◆ Desk top / Lap top computers



Two official languages

- ◆ In addition to having bilingual psychometrically sound parallel versions of tests, this implies that all screens in the candidate's and administrator's environments be available in French and English.



Resistance

- ◆ External
 - SWOT analysis
- ◆ Internal
 - Phases of preoccupation



SWOT analysis

◆ Strengths

- Excellent proven system
- Government-on-line initiatives
- Departmental pressure for faster turnaround

◆ Weaknesses

- Not technically inclined
- Not clear what they are buying

◆ Opportunities

- Highly-decentralized departments
- Departments with large volumes

◆ Threats

- Lack of web-enabled proctored environments



Phases of change...

and how to avoid resistance

Preoccupation

Goal of phase

What we did to reach goal

Phase 1. No preoccupation

◆ Destabilise

◆ Provide information and
arouse curiosity and interest

Phase 2. Preoccupied with job
security

◆ Reassure

◆ Provide details on transition
period / Discuss new work

Phase 3. Preoccupied with
seriousness of change

◆ Clarify choices

◆ Explain why change is
essential

Phase 4. Preoccupied with the
nature of change

◆ Inform

◆ Involve in mapping of old
and new processes

Phase 5. Preoccupied with
required support for change

◆ Reassure and
support

◆ Coaching and training

Phase 6. Preoccupied with
collaboration with others

◆ Share

◆ Multi-disciplinary team

Phase 7. Preoccupied with
effective continuous change

◆ Value

◆ Recognise super-users /
experts



Pitfalls

◆ Inertia

- no progress because too many new processes, new processes are too complex or too many stakeholders are involved

◆ Resistance

- no progress because people don't agree on how to progress

◆ Misspecification

- the system works... but not for what it is supposed to do

◆ Misuse

- incorrect use by users

◆ Nonuse

- system stays idle...

(McAfee, 2003)



Solutions

- ◆ Choice of the right supplier
- ◆ Reengineered business model
- ◆ Internal and External Communication Strategy
- ◆ Start small - go slow



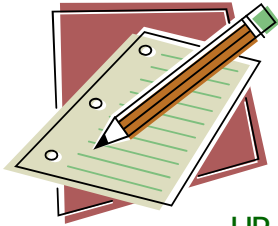
The right supplier for us

- ◆ We chose a supplier that:
 - based its technology on knowledge and expertise of psychometric principles, personnel assessment, testing, etc.
 - understood our professional concerns and values
 - offered a private label
- ◆ ... rather than a supplier focussed primarily on technology.

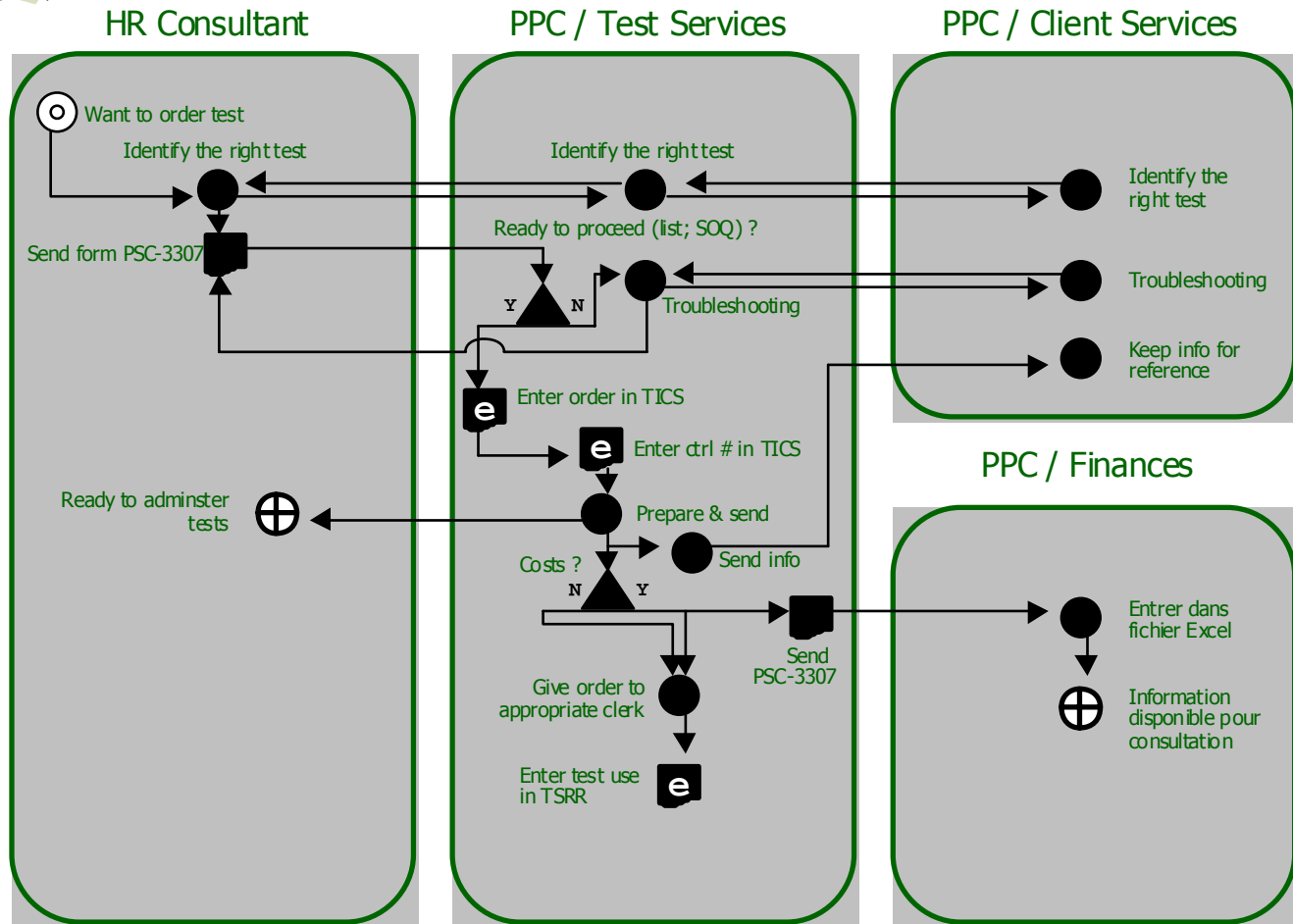


Reengineering

- ◆ Work flow, such as ordering, administering, scoring and communicating results, were reengineered, as opposed to simply replicated from the paper and pencil process.
- ◆ Mapping out paper & pencil and online processes revealed
 - that new actors were now involved and
 - “old” actors needed new information and training
 - e.g. Test consultants still filter requests, but differently



Process A-2.0 / Order Tests

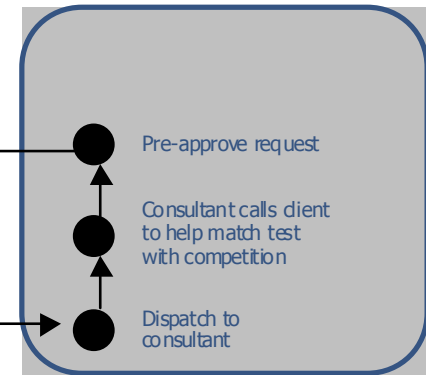
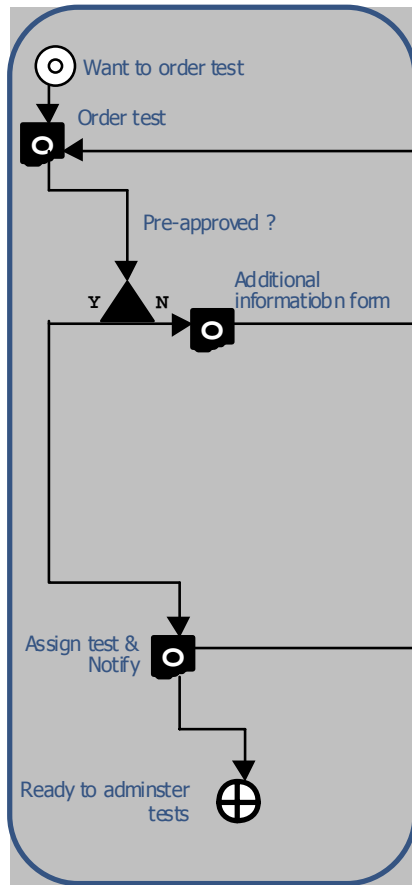




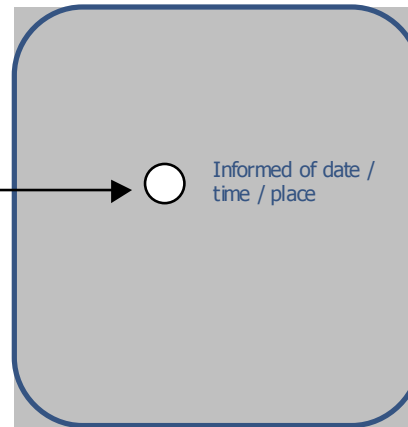
Process B-2.0 / Order Tests

HR Consultant

PPC / Client Services



Candidate





Communication strategy during implementation

◆ Messages (4)

- Better, Faster, Cheaper, Safer

◆ Target audiences (3)

- Users, Decision makers, Candidates

◆ Strategic objectives (4)

- Build awareness of online tests
- Foster comprehension of its benefits
- Convince people to use online tests
- Foster repeat usage



Start small - go slow

- ◆ Start with **limited** number of instruments
- ◆ **Strategically** choose a **limited** number of organizations and users
- ◆ Gain knowledge as you go (**listen to users**)
- ◆ Build user friendly information bank as you go (**inform new users**)
- ◆ Build on word of mouth and **attraction** rather than only on promotion)



Lessons learned

- ◆ Deal with roadblocks one at a time
- ◆ Biggest roadblocks are internal
- ◆ Do not get discouraged - there is a solution to every problem
- ◆ Dare to dream and remember: it can happen...it will happen





2. Enabling Internet-Based Selection Testing

Reid E. Klion

Performance Assessment Network, Inc.



Creating Web-Based Assessment Tools

- ◆ Process
- ◆ Content
- ◆ System Integration



Process Goals

- ◆ Robust Operation Across Multiple Sites, Platforms, and Hardware Configurations
- ◆ Deliver Bilingual *Timed* Test Content Reliably and *Securely*



Cross-Site Functionality

- ◆ Differing Operating Systems
- ◆ Differing Browser Versions
- ◆ Hardware Implementation Can Vary Greatly From Site to Site
- ◆ Connectivity Issues
- ◆ **Goal:** Assume Conservative “Standard” Common Platform



Timed Content Delivery Challenges

- ◆ Timing is Complex Due to Intermittent Connectivity
- ◆ Speed of Connectivity Varies Both Within and Across Sites
 - Web server speed
 - ISP issues
 - Local network issues



PC-Based (CD-ROM) Approach

- ◆ Content is Local
- ◆ Bandwidth Less Important
.... but
- ◆ Each Machine Must Be Installed
- ◆ Multiple Site Set-up Difficult
- ◆ Complex if Many Instruments Used
- ◆ Updating and Errata Difficult to Manage



Active Server Page

- ◆ Pages Refreshed
- ◆ Ability to Time Page Presentation
- ◆ Latency Between Screens
- ◆ Cannot Time Entire Test Session
- ◆ Difficulty Managing Testing Sessions
- ◆ Fine (or Better) for Many Non-Timed Assessments



Java Applet

- ◆ Program Downloaded via SSL-encrypted Internet Connection to Local PC
- ◆ Administered Locally on PC
- ◆ Answers Saved Temporarily on Local PC
- ◆ Accurate and Automatic Timing
- ◆ Internet Data Upload with Immediate Scoring
- ◆ Need to Have Java “Plug-in”
- ◆ Firewall/Security Coordination



Common Concerns

◆ Timing Accuracy

- Limited by PC/Windows
- Control of Entire Testing Session

◆ Response Collection Accuracy

- No hanging “chads”
- Response enforcement (if desired)



User Interface

- ◆ Simplicity
- ◆ Create French Test Interface
- ◆ Replace Bubble Sheets with Radio Button Technology
- ◆ Standard Mouse Point/Click Functionality

☐ A. ☐ B. ☐ C. ☒ D. ☐ E.

- ◆ Instruct... but Not to Excess



Content

- ◆ Content Often Used Across E-Testing and Paper/Pencil Modalities
- ◆ Gradual Move Toward Tests Developed and Normed Specifically for Internet Delivery
- ◆ Tests Comprised of Text and Mathematics Usually Straightforward
- ◆ Speeded and “Modality-Specific” Tests More Problematic



Re-Versioning Original

◆ Standard Questions Typically Straightforward

Example X.

Add

13

12

A 14

B 16

C 25

D 59

N none of these



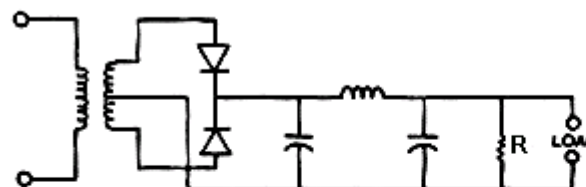
Add

13

12

- ☐ A. 14
- ☐ B. 16
- ☒ C. 25
- ☐ D. 59
- ☐ N. none of these

48. In the circuit shown below, the main function of the R component is to



- ☐ A. filter output voltage and current.
- ☐ B. discharge the capacitors when turned off.
- ☐ C. balance the load.
- ☐ D. reduce the load on the rectifier.



Full Screen View

Test de démonstration CFP on CFP Tests en ligne - Microsoft Internet Explorer

☐ Marquer

Test de démonstration CFP - Question 1/6 00:04:33

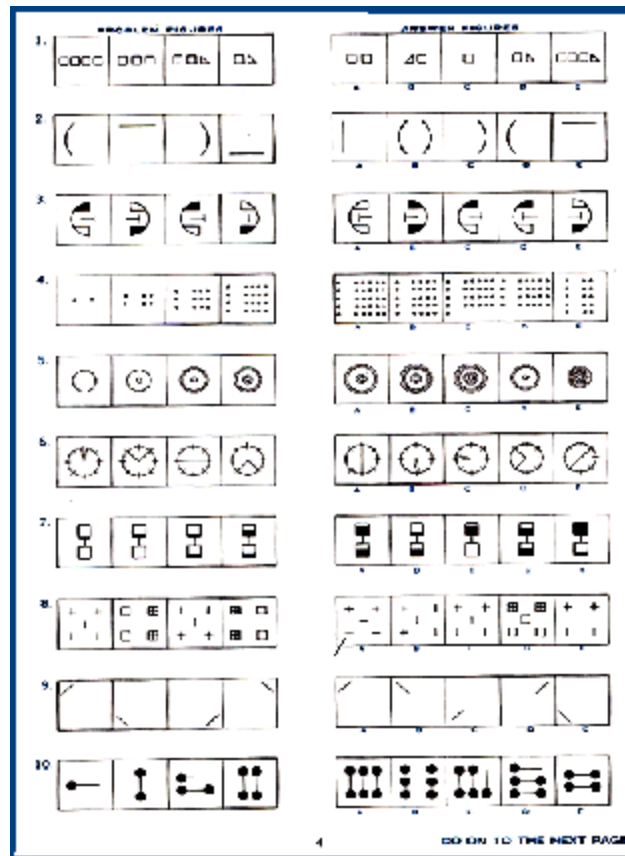
1. Choisissez la paire de mots qui **fait le plus directement référence à un concept commun plus général.**

- ☐ 1. AVOCAT - PROCÈS
- ☐ 2. PROCÈS - AUTOMOBILE
- ☐ 3. GARAGE - MECHANIC
- ☐ 4. MÉCANICIEN - AVOCAT
- ☒ 5. AUTOMOBILE - GARAGE

<< Précédente Suivante >>

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A Contrast....





Web-Based Version

PROBLEM FIGURES

□□□□	□□□	□□△	□△
------	-----	-----	----

ANSWER FIGURES

□□	△□	□	□△	□□□△
A	B	C	D	E

☐ A. ☐ B. ☐ C. ☐ D. ☐ E.



Scoring and Reporting

- ◆ Security Primary Concern
 - Protected Test Content
 - Proprietary Scoring Key
 - Confidentiality of Individual Results
- ◆ Offline Scoring Server
- ◆ Password-Protected Results Only Available to Test Administrator



Security: Technical Issues

- ◆ Applet Download Encrypted
- ◆ Temporary Answer File Encrypted
- ◆ Uploaded Data Encrypted
- ◆ Offline Scoring Server
- ◆ Password Access to Results
- ◆ Data Transferred *via* https



Security: Behavioral Issues

- ◆ Consider What is Different From and Similar to Paper/Pencil Approaches
- ◆ Look to Behavior First, Not Technology
- ◆ Proctored Testing is Still Proctored Testing



Consider Systemic Context

- ◆ Stand-Alone Assessment
- ◆ Data Integration
- ◆ Assessment System Development
- ◆ Web-Services as Multi-Step/Multi-Vendor Process Integrator



Stand-Alone Assessment

- ◆ Traditional Model
- ◆ Not Automatically Integrated
- ◆ “Report-in-the-folder”
- ◆ Useful For:
 - Small Scale Projects
 - Development Tools and Programs
 - 360° Feedback Instruments



Data Integration

- ◆ Automatically Export Data to Other Systems
 - Applicant Tracking Systems (ATS/HRMS)
 - Learning Management Systems
 - Legacy Systems
- ◆ Major Driver is .xml
- ◆ Huge Savings Due to Synergy and Lack of Duplicated Effort



Assessment System Development

- ◆ Develop Custom System to Meet Client Business Requirements
- ◆ Assess Needs
- ◆ Maintain Awareness of “Real World” Constraints





Public Service Commission of Canada Online Testing - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media Print View Source

Address https://www.etestingnetwork.com/canada/admin_fr.asp?bhjs=1&bhs=1024&bsh=768&bshi=1004&bshfver=5&bhdr=1&bhje=1&bhcold=16&bhl=-1&bht=-1 Go Links

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Quoi de neuf	Au sujet de la CFP	Publications	Bureaux de la CFP	Page d'accueil de la CFP

Veuillez entrer votre ID d'administrateur et votre mot de passe.

Ouverture d'une session d'administrateur

ID de l'administrateur:

Mot de passe:

Si vous avez oublié votre mot de passe, [cliquez ici](#) pour en recevoir un autre par courriel.

Internet




Public Service Commission of Canada Online Testing - Microsoft Internet Explorer

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Nouvelles

État actuel

Catalogue
des produits

Pour commander

Renseignements
sur l'inscription

Changement de
mot de passe

Fin de session

Reid Klion, bienvenue à PSC Online.

Internet



Address https://www.etestingnetwork.com/canada/admin_fr.asp?bhjs=1&bhsw=1024&bhsh=768&bhswi=1004&bhshi=623&bhflver=5&bhdir=1&bhje=1&bhcold=16&bhrl=-1&bhq=-1 Go Links >>

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Nouvelles

État actuel

Catalogue de produits

Pour commander

Renseignements sur l'inscription

Changement de mot de passe

Fin de session

États actuels des tests

Cliquez sur le nom du test pour voir d'autres informations sur ce test.

[Rechercher des tests](#)

Numéro	Test	Nombre commandés	Affectés	Actifs	Terminés	Expirés
	Online Tests Assessment Questionnaire	0	10	0	0	2
	Questionnaire de rétroaction 360°-Niveau sous-ministre adjoint	0	6	0	0	0
	Questionnaire d'évaluation des tests en ligne	0	1	0	0	1
	Test de démonstration CFP	10	6	0	1	1
	Graduate Recruitment-Written Communication Proficiency Battery	0	7	0	14	13
	PSC Demonstration Test	0	5	0	1	2
316A1E	Graduate Recruitment Test	0	4	0	7	11
316A1F	Examen de recrutement de diplômés	0	5	0	1	2
323A1E	Foreign Service Situational Judgement Test	0	7	0	13	12
323A1F	Examen de jugement situationnel pour le service extérieur	0	2	0	1	4
351B1E	Written Communication Proficiency Test	0	1	0	7	14
353A1F	Examen de compétence en communication écrite	0	6	0	2	4
630D1E	Évaluation de langue seconde: Compréhension de l'écrit (anglais)	0	0	0	2	4
630D1F	Second Language Evaluation: Reading (French)	0	0	0	1	2
650D1E	Évaluation de langue seconde: Expression écrite (anglais)	0	5	0	0	7
650D1F	Second Language Evaluation: Writing (French)	0	1	0	1	3
901A1E	360° Feedback Questionnaire - ADM	0	3	0	0	1

Internet



Public Service Commission of Canada Online Testing - Microsoft Internet Explorer

File Edit View Favorites Tools Help

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Address https://www.etestingnetwork.com/canada/admin_fr.asp?bhjs=1&bhs=1024&bhs=768&bhs=1004&bhs=623&bhs=5&bhs=1&bhs=1&bhs=16&bhs=1&bhs=1 Go Links

Public Service Commission of Canada Commission de la fonction publique du Canada

English	Contactez-nous	Aide	Recherche	Site du Canada
Quoi de neuf	Au sujet de la CFP	Publications	Bureaux de la CFP	Page d'accueil de la CFP

CFP

Nouvelles

État actuel

Catalogue des produits

Pour commander

Renseignements sur l'inscription

Changement de mot de passe

Fin de session

Cher @TesterName,

Je désire vous informer des détails concernant une séance de passation de test à laquelle vous devez vous présenter. Le test que vous devrez prendre est le Test de démonstration CFP. Votre ID de Candidat est le @TesterID.

Date : ()

Lieu : ()

Heure : ()

Pour permettre à quelqu'un d'effectuer un test à partir de cet ordinateur sans quitter l'environnement de l'administrateur de tests, cliquez sur l'icône pour lancer la session de test dans une nouvelle fenêtre du navigateur. **REMARQUE** : vous devez enregistrer les modifications que vous avez effectuées ci-dessous, et ce, en cliquant sur **Soumettre** avant de cliquer sur l'icône pour lancer le test.

Notifier	L'ID de candidat	Prénom	IDP	Nom de famille	Adresse électronique
<input type="checkbox"/>	T9904740	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

* Ministère demandeur:

* Numéro de concours:

* Motif du test:

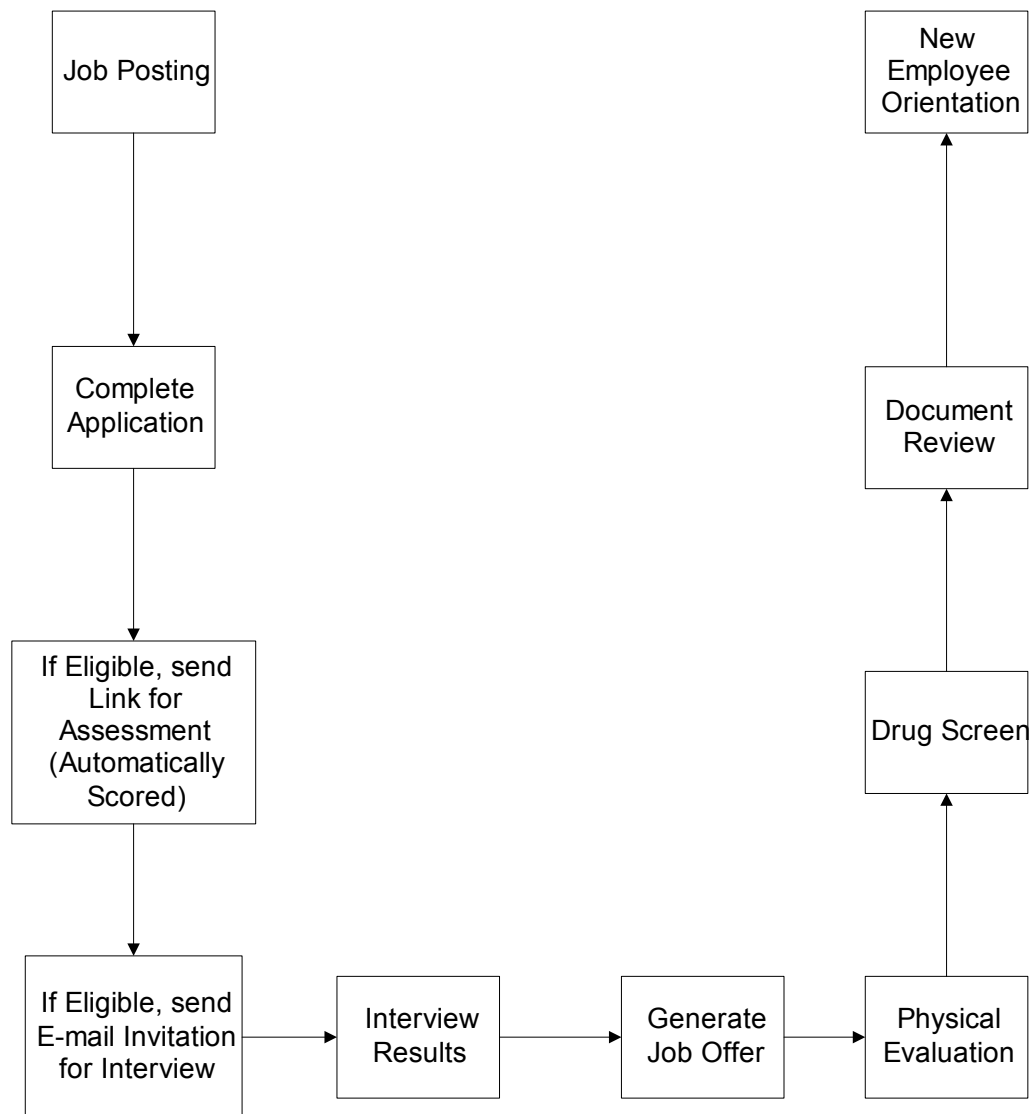
* Classification visée:

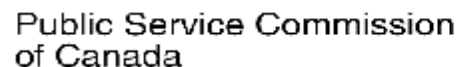
Done Internet



Online System as Integrator

- ◆ Web Services Model
- ◆ Integrate Across Content Providers
- ◆ Provide “Back Office” For Multiple Vendors
- ◆ Integrate Data
- ◆ Provide Continual Monitoring of Process





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3. Transition from Paper-and-Pencil to Online Formats: Equivalence Studies and New Development Initiatives

Patrick McCoy, Penny Faulkner, Bastian Kruidenier
Research and Development, Personnel Psychology Centre
Douglas Pelchat, Consultant



Equivalence Studies

◆ Background

- Generally, findings of equivalence for paper-and-pencil and computer-based versions of multiple-choice tests
- Greater degree of equivalence for power than for speeded tests
- Some findings that reading long passages can take more time in computer administration



Four Tests

◆ Multiple-choice:

- Cognitive Ability: verbal, numerical, reasoning
- Written Communication Proficiency: recognizing errors, determining best word or summary for short reading passages
- Second Language Reading: read & answer questions about short passages
- Second Language Writing (SLW): recognize errors, determine best word, translation



Design

- ◆ Between-subjects
- ◆ Random assignment to groups (paper vs computer administration)
- ◆ Variables considered:
 - Mean scores
 - Timing (time taken to work through tests)
 - Internal consistency reliabilities
- ◆ Candidate perceptions



Results: Cognitive Ability

(55 items, 90 minutes)

◆ Paper-and-pencil

◆ N: 36

◆ Mn: 24.4

◆ SD: 7.3

◆ T30: 25

◆ T90: 53

◆ " : .82

◆ Computer-based

◆ N: 32

◆ Mn: 24.9

◆ SD: 6.9

◆ T30: 24

◆ T90: 54

◆ " : .82



Results: Written Communication

(50 items, 100 minutes)

◆ Paper-and-pencil

◆ N: 36

◆ Mn: 29.6

◆ SD: 7.2

◆ T30: 20

◆ T100: 50

◆ " : .83

◆ Computer-based

◆ N: 32

◆ Mn: 29.9

◆ SD: 8.6

◆ T30: 21

◆ T100: 50

◆ " : .86



Results: Second Language Reading

(65 items, 90 minutes)

◆ ENGLISH

◆	Paper	Computer
◆ N:	50	52
◆ Mn:	50.9	48.9
◆ SD:	9.6	12.4
◆ T30:	29	28
◆ T90:	63	64
◆ " :	.92	.90

◆ FRENCH

◆	Paper	Computer
◆	68	51
◆	45.6	47.8
◆	9.8	11.1
◆	28	28
◆	63	64
◆	.87	.92



Results: Second Language Writing

(55 items, 60 minutes)

◆ ENGLISH

◆	Paper	Computer
◆ N:	50	52
◆ Mn:	42.7	41.1
◆ SD:	8.7	10.5
◆ T20:	40	42
◆ T60:	55	55
◆ "	: .90	.94

◆ FRENCH

◆	Paper	Computer
◆	68	51
◆	35.6	34.4
◆	11.0	12.3
◆	36	35
◆	55	55
◆	.93	.94



Results: Perceptions of Paper and Computer Versions

- ◆ Clarity of instructions
- ◆ Adequacy of time limit
- ◆ Face validity

→ Similar ratings across paper and computer versions



Results: Perceptions of Quality of Computer Versions

- ◆ Clarity of screen
- ◆ Ease of navigation
- ◆ Ease of returning to previously completed items

➡ All three qualities rated positively



Conclusions

- ◆ Similar candidate performance across Paper and Computer versions of tests
- ◆ Similar perceptions of test adequacy



Field Study Survey: Perceptions of computer testing experience

- ◆ Sample: 107 employees applying to positions in 5 federal organizations
 - 53% were women
 - Average age: 36 years (22 to 58)
- ◆ Survey administered right after test and before results known



Field Study: Results

- ◆ Computer and testing environment
 - Clarity of instructions
 - Clarity of screen
 - Ease of navigation
 - Ease of returning to previously-completed items
- Mean ratings all positive



Field Study: Results

- ◆ Impact of computer testing experience
 - 50% of participants had no experience
 - No differences in perceptions, no impact on test scores
- ◆ Age and computer-testing experience
 - Older candidates had less experience
 - No impact on test scores
- ◆ Impact of level of computer skills
 - No differences in perceptions, no impact on test scores



Field Study: Results

- ◆ Perceptions of men and women
 - Women more positive about layout and appearance of questions on screen
- ◆ Perceived fairness toward designated groups
 - Visible minorities: 72% very positive
 - Persons with disabilities: 43% very positive
 - Aboriginal peoples: 63% very positive
 - Women: 74% very positive



Plans for Equivalence Studies

◆ ENGLISH reading retest data

◆ medium: paper to e-test

◆ sample 18 18

◆ means 45.8 47.7

◆ SLE retest norms paper to paper

◆ sample 7070 7070

◆ means 44.21 48.24

◆ (obtaining 12 retest paper to e-cases/mnth. Plan for equivalence paper Dec. 2003 with adequate sample. Will compare % change controlling for time interval).



New Developments

◆ Already in the works:

- Generic 360 ° Feedback Questionnaire
 - 5 levels of management, 2 languages
- Rating system for Assessment Center simulation exercises

◆ Soon-to-be:

- Situational judgement test
- Multiple-choice in-basket
 - New tests developed for on-line administration



4. The Impact of Online Tests on the Testing Process, HR Consultants and Candidates

François Chiocchio, Project Leader, *Online Tests en ligne*

Suzanne Lalonde, Director, Information and Business Technology

Diane Thibault, Chief of Operations, Test Services



Time to hire

- ◆ Public Service Commission recent surveys* reveal that
 - Average time to hire is 21 weeks
 - Managers complain that *the staffing process is too long and protracted and too “rules bound” resulting in: increased workload for managers and a potential loss of good candidates who become discouraged*
 - 2000/2001 IPMA/NASPE Benchmarking Report** reveal that
 - 56.07% of managers report that it takes between 1 and 7 calendar days to **begin** the testing process, the rest reports it takes from 8 to over 60 calendar days
 - 58.63% of managers report that it takes between 1 and 7 calendar days to **complete** the testing process, the rest reports it takes from 8 to over 60 calendar days

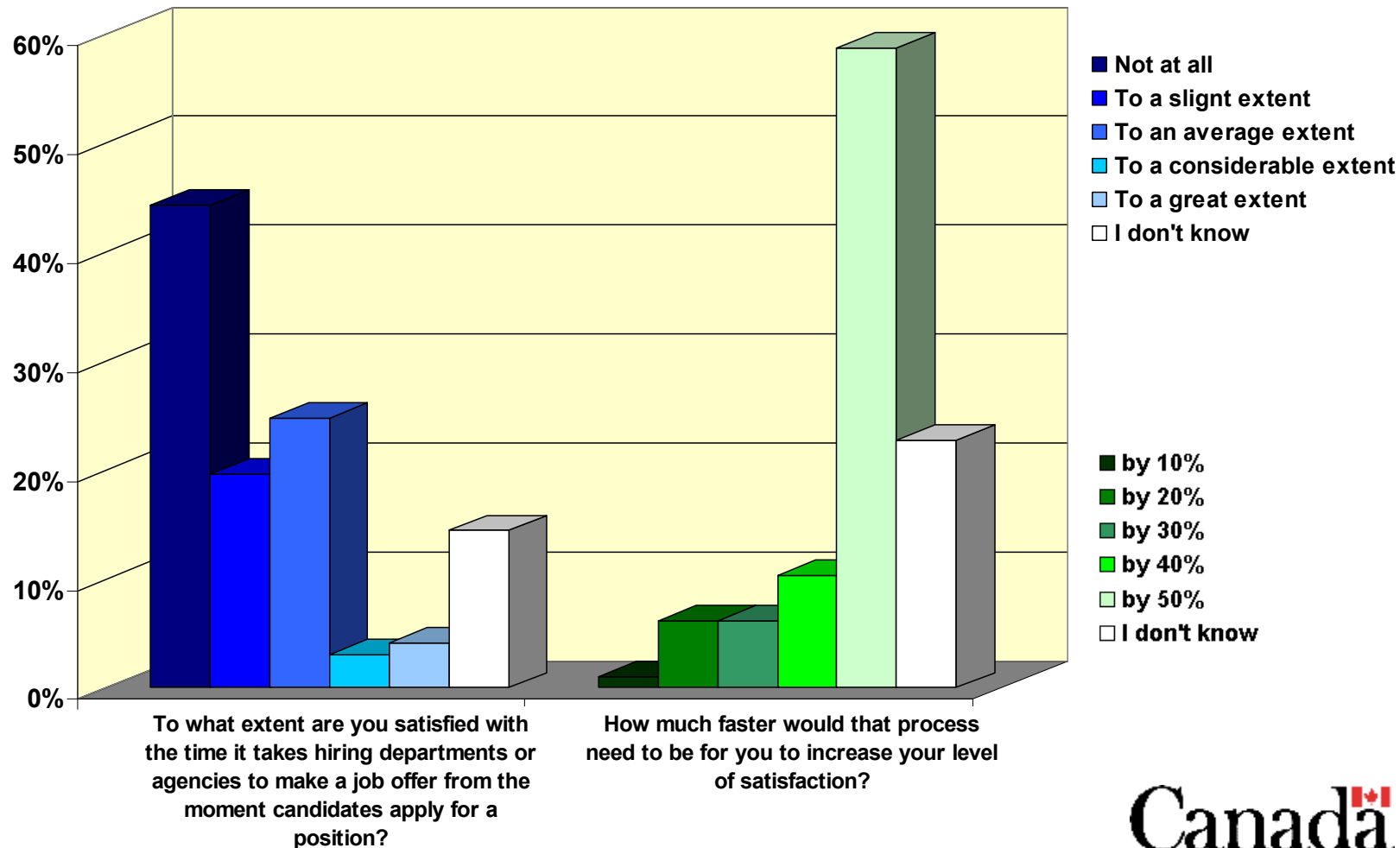
* PSC, fall 2001

** Recruitment Strategies, Series 1, 2001



Our own survey shows....

Fig 6. - Satisfaction with cycle time





Requirements of ROI studies

(Phillips & Pulliam Phillips, 2002)

- ◆ Simple
- ◆ Economical
- ◆ Credible, proven process & methodology
- ◆ Theoretically sound
- ◆ Account for other factors
- ◆ Appropriate for a variety of programs (including IT)
- ◆ Flexible
- ◆ Applicable with soft and hard data
- ◆ Include all costs
- ◆ Use acceptable ROI formula



5 levels

- ◆ Level 1: Reaction - Satisfaction
- ◆ Level 2: Learning
- ◆ Level 3: Behaviors — Application and implementation
- ◆ Level 4: Results - Business impact
- ◆ Level 5: ROI

- $$\text{ROI (\%)} = (\text{Savings} - \text{Costs}) / \text{Costs} \times 100$$



The study

- ◆ Questionnaire to Candidates (N=107)
- ◆ Questionnaire to Test Administrators (N=14)
- ◆ Internal and External process mapping



Level 1: Candidates' Satisfaction

◆ Satisfied with Instructions

- Computer instructions, Test instructions, Sample questions

◆ Satisfied with Layout

- Questions, Legibility, Font size, Screen size

◆ Satisfied with Features

- Navigation, Revision



Level 1: Test Administrators' Satisfaction

- ◆ Overwhelming satisfaction with support
 - Information on the Web, Training, Customer support
- ◆ Overwhelming satisfaction with Test Administrator Environment
 - Order tests, Assign tests, Notify candidates, Manage results, Reliability of the environment
- ◆ Overwhelming satisfaction with Candidate Environment
 - Prepare computers, Instructions to candidates, Downloading of tests, Timer, Result delivery, Reliability of the environment



Level 2: Learning

- ◆ Learn about the system and its benefits
 - Web site hits
 - Candidates
 - Test Administrators
 - Presentations, kiosks
- ◆ Learn to use the system
 - System did not require a lot of training
 - System did not require a lot of troubleshooting



Level 3: Behaviors – Application and Implementation

- ◆ People who started to use the *Online tests en ligne* system did not want to go back to paper-and-pencil
 - Duration of Phase II: 23 weeks (aim was 8)
 - 404 tests events (aim was 200)
 - 9 organizations involved (aim was 5)
 - 50 Test Administrators trained (aim was 10)
 - Approximately 30 glitches,
 - All occurred at beginning of Phase II
 - 95% of them solved in less than 60 minutes



Level 4: Results – Business Impact

“External” Time

Table 1: Time and Cycle time of tasks*

Tasks	Paper-and-pencil (Survey)	Paper-and-pencil (SME)	Online (SME)
Order a test**	---	6.0 min	1.0 min
Receive a test from the PPC	3.7 days	3.7 days	0.0 min
Notify one candidate	2.9 min	2.9 min	1.0 min
Assign one test	6.9 min	0.5 min	0.5 min
Distribute one test booklet and answer sheet	3.2 min	0.5 min	5.0 min
Collect one test booklet and answer sheet	2.0 min	1.0 min	0.5 min
Verify and erase hand writing in one test booklet	8.5 min	8.5 min	0.0 min
Scan or hand correct one answer sheet***	4.2 min	4.2 min	0.0 min
Send one answer sheet for scoring	3.4 min	3.4 min	0.0 min
Get results back from PPC	3.4 days	3.4 days	2.0 min

Paper-and-pencil = 27 min

Online = 8 min

* The time of the testing session is not included because it is a constant

** Was omitted in the survey

*** Represents the average of both tasks



Level 4: Results – Business Impact

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Get results back from PPC	3.4 days	3.4 days	2.0 min

Paper-and-pencil = 9.1 days

Online = 2 days

1 day

1 day

* The time of the testing session is not included because it is a constant

** Was omitted in the survey

*** Represents the average of both tasks



“Internal” Time and Cost

◆ Paper-and-pencil

■ 6.2 minutes

◆ Online

■ 0.5 minutes

“Internal” Cycle-Time

◆ Paper-and-pencil

■ 2.0 days

◆ Online

■ 0.5 day



Level 5: ROI

- ◆ Two conditions need to be met for the *Online Tests en ligne* system to show ROI
 - Online costs \leq P&P costs
 - Internal
 - External
 - Online time to hire $<$ P&P time to hire



Conclusion: ROI ?

◆ External

■ Time (cost)

- from 27 to 8 minutes
= approx. 138% ROI

■ Cycle-time

- from 9.1 to 2.0 days =
approx. 255% ROI

◆ Internal

■ Time (cost)

- from 6.2 to 0.5 minutes per
test = approx. 1185% ROI

■ Cycle-time

- from 2.0 to 0.5 days per test
= approx. 200% ROI



To learn more...

◆ www.psc-cfp.gc.ca/ppc/ppc-cpp.htm

...and follow the “Online Tests” links