

M³

Mobility Management Model

The Problem



Inter-American Development Bank



Mobility

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Position Profile

Position No.:	00001647
Position:	Social Development Spec
Incumbent:	Ganev,Iveta
Org Unit:	COF/CPN
Grade:	Career Stream NA
Category:	Voluntary(Vol10)
Group:	Hardship
Release Status:	On Start
Position Release On:	1/31/2004 6:01:40 PM
Officer:	PATRICIA MONICA VARELA

Rank	Name	Grade	Status	Comments
1	Biehl,Maria Loreto	05		
1	Nieves,Isabel	04		
3	Catterton,Ana C.	04		
5	Godinez,Armando M.	05		
6	Duarte,Jesus	04		

PROBLEM: Position selected by multiple participants with similar preferences

Basic data

Postings with Candidates

Position	Title	Selections
00000229	Co-Financing Spec	1
00000249	Technical Cooperation Spec	1
00000322	Sr Operational Spec	2
00000417	Technical Cooperation Spec	2
00000426	Health Spec	1
00000530	Sr Education Spec	1
00000607	Project Economist	1
00000633	Social Development Spec	2
00000704	TC Financial Transactions Off	1
00000752	Sr Agricultural Spec	1
00000780	Sr Projects Spec	5
00000814	HQ Finance & Accounting Spec	1
00000831	Sr Finance & Accounting Spec	3
00000833	Pr Financial Spec	1
00000836	Sr Social Development Spec	3
00000861	Sr Education Spec	1
00000863	Sr Social Development Spec	5

Position_number	Class	Emplid	Full_name
00000780	Mand1a	032151	Miranda,Carlos A.
00000780	Mand1a	050971	Peres,Antonio Marcio D.
00000780	Mand1a	105167	Jennings,Christopher John
00000780	Mand1a	105682	Saenz-Samper,Maria Victoria
00000780	Mand1a	106481	Machado,Kleber B.

Total selections: **121**
unique users: **35**
unique positions: **68**

Data as of Feb 12, 2004

A simple case

Participants

Preference

Position

Miranda, Carlos A.

2

Peres, Antonio Marcio D.

1

1

Berger, Marguerite S.

4

Jennings, Christopher John

1

Duarte, Jesús

2

Saenz-Samper, Ma. Victoria

1

3

2

Machado, Kebler B.

5

0780

0863

2233

Criteria needed for selection

staff years of service divided by staff preference

Position No	Group	Emplid	Name	Years of Serv	Weight Factor	Preference
00000863	Mand1c	032151	Miranda,Carlos A.	29.4	29.40	1
00000780	Mand1a	032151	Miranda,Carlos A.	29.4	14.70	2
00000780	Mand1a	050971	Peres,Antonio Marcio D.	23.4	11.70	2
00002233	Mand1e	070557	Berger,Marguerite S.	13.3	3.33	4
00000780	Mand1a	105167	Jennings,Christopher John	8.1	8.10	1
00000863	Mand1c	105530	Duarte,Jesus	6.3	3.15	2
00000780	Mand1a	105682	Saenz-Samper,Maria Victoria	5.6	5.60	1
00002233	Mand1e	105682	Saenz-Samper,Maria Victoria	5.6	2.80	2
00000863	Mand1c	105682	Saenz-Samper,Maria Victoria	5.6	1.87	3
00000780	Mand1a	106481	Machado,Kleber B.	2.1	0.42	5

A solution

Participants

Preference

Position

Miranda, Carlos A.

Peres, Antonio Marcio D.

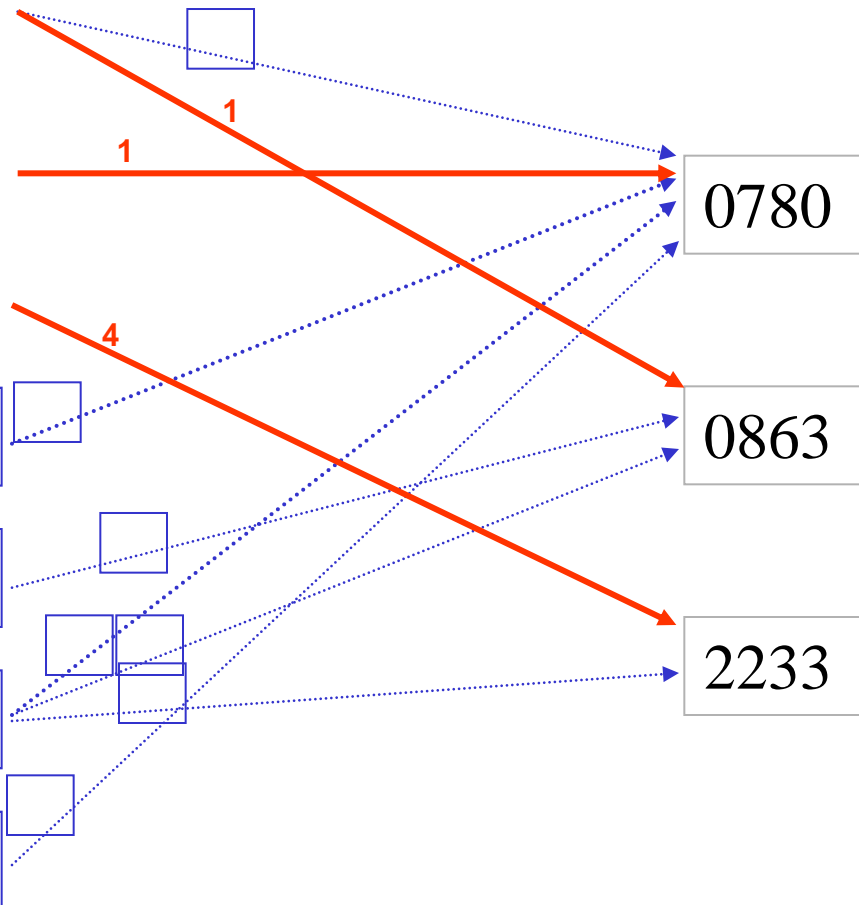
Berger, Marguerite S.

Jennings, Christopher John

Duarte, Jesús

Saenz-Samper, Ma. Victoria

Machado, Kebler B



M³ Model (Linear Programming)

- Assignment of participant (i) to position (j) through a **compounded factor** ($W_{i,j}$) that takes into account the following criteria:
 - staff years in position
 - selected preference (rank)
 - group classification (mandatory or voluntary)
 - job family affinity
- The **objective** is to assign Participants to Positions (one staff per position) at the maximum aggregated level of “satisfaction” (weighted preference)

*a given staff, in a given position
(with corresponding preference)*

$$X_{i, j} \begin{cases} 0 & \text{If the } i^{\text{th}} \text{ Participant is NOT assigned to the } j^{\text{th}} \text{ Position} \\ 1 & \text{If the } i^{\text{th}} \text{ Participant is assigned to the } j^{\text{th}} \text{ Position} \end{cases}$$

Where:

$i = 1, \dots, \text{NSP}$ (Number of Participants)

$j = 1, \dots, \text{NCH}$ (Number of Choices)

optimize overall staff level of satisfaction

$$\textit{Maximize} = \sum_{i=1}^{NSP} \sum_{j=1}^{NCH} W_{i,j} * X_{i,j}$$

Where:

$W_{i,j} = \textit{Compounded_Factor}$

Compounded Factor: *an example*

1

POSITION NBR	EMPLID	RANK	YRSPOS	YRSPOS/RANK
00000863	032151	1	9.01026	9.0102000
00000780	032151	2	9.01026	4.5051000
00001542	032151	3	9.01026	3.0034000
00000836	032151	4	9.01026	2.2525500
00002070	032151	5	9.01026	1.8020400
00000331	032151	9	9.01026	0.0090102
00000861	105530	1	6.24229	6.2422000
00000863	105530	2	6.24229	3.1211000
00002318	105530	3	6.24229	2.0807333
00000633	105530	4	6.24229	1.5605500
00002810	105530	5	6.24229	1.2484400
00001647	105530	6	6.24229	1.0403666
00002263	105530	9	6.24229	0.0062422

2

GROUP	GROUP WEIGHT
Mand1a	1.0000
Mand1c	0.9000
Mand1d	0.9000
Mand1e	0.9000
Mand1f	0.9000
Mand2	0.9000
Vol1	0.8000
Vol10	0.8000
Vol2	0.7000
Vol3	0.6500
Vol6	0.8000
Vol7	0.7000
Vol9	0.6500
Vol8	0.5000

3

POSITION NBR	EMPLID	GROUP	RANK	YRSPOS/RANK	YRSPOS/RANK*W1*W2
00000863	032151	Mand1a	1	9.0102000	9.010200000000
00000780	032151	Mand1a	2	4.5051000	2.252550000000
00001542	032151	Mand1a	3	3.0034000	3.003400000000
00000836	032151	Mand1a	4	2.2525500	2.252550000000
00002070	032151	Mand1a	5	1.8020400	1.802040000000
00000331	032151	Mand1a	9	0.0090102	0.009010200000
00000861	105530	Mand1c	1	6.2422000	5.617980000000
00000863	105530	Mand1c	2	3.1211000	2.808990000000
00002318	105530	Mand1c	3	2.0807333	1.872659970000
00000633	105530	Mand1c	4	1.5605500	1.404495000000
00002810	105530	Mand1c	5	1.2484400	1.123596000000
00001647	105530	Mand1c	6	1.0403666	0.936329940000
00002263	105530	Mand1c	9	0.0062422	0.005617980000

POSITION NBR	EMPLID	GROUP	RANK	YRSPOS/RANK	YRSPOS/RANK*W1
00000863	032151	Mand1a	1	9.0102000	9.010200000000
00000780	032151	Mand1a	2	4.5051000	4.505100000000
00001542	032151	Mand1a	3	3.0034000	3.003400000000
00000836	032151	Mand1a	4	2.2525500	2.252550000000
00002070	032151	Mand1a	5	1.8020400	1.802040000000
00000331	032151	Mand1a	9	0.0090102	0.009010200000
00000861	105530	Mand1c	1	6.2422000	5.617980000000
00000863	105530	Mand1c	2	3.1211000	2.808990000000
00002318	105530	Mand1c	3	2.0807333	1.872659970000
00000633	105530	Mand1c	4	1.5605500	1.404495000000
00002810	105530	Mand1c	5	1.2484400	1.123596000000
00001647	105530	Mand1c	6	1.0403666	0.936329940000
00002263	105530	Mand1c	9	0.0062422	0.005617980000

Same job family : times 1.0

Different job family: times 0.5

allocate one staff to each position in the pool

$$\sum_{j=1}^{NCH+1} X_{i,j} = 1 \forall i \quad \text{One choice per participant}$$

$$\sum_{i=1}^{NSP} X_{i,j} \leq 1 \forall j \quad \text{One participant per position}$$

* Staff's original position is added automatically as his/hers last preference

Model results



HRD Mobility Management Application

Human Resources Department

Positions (In's)	DETAILS OF MY POSITION/VACANCY					
Total Positions Included						
Participants (Out's)	Position Number	00000863				
Department Participants	Incumbent Name and Affinity	Traverso, Maria Teresa				
HRD Options	Incumbent Stream	Social Dev				
Change Department	Position Title	Sr Social Development Spec				
Summary by Department	Affinity	I				
Checking Candidates	Department	RE1				
Bank-Wide Options	Organizational Unit	RE1/SO1				
In's Bankwide	Employee Number	105700				
Out's Bankwide	Comments	Click here to view the Comments				
Summary Bankwide	Grade Type	Career Stream				
	Grade From - Grade To	NA to				
	MODEL RECOMMENDED CANDIDATE					
	Click on Position Number to view the Model Recommendation assignment					
	Position	Full Name	Position Title	Stream	Unit	Aff Cat CV
	0331	Miranda, Carlos A.	Pr Social Development Spec	Social Dev	RE2/SO2	I Man *
	COMPLETE LIST OF APPLICANTS TO THIS POSITION					
	Click on Position Number to view the Model Candidate Recommendation assignment					
	Rk	Pos #	Full Name	Position Title	Unit	Aff Cat CV CI CG
	1	1306	Rivera, Sonia M.	Policy & Programming Spec	DPP/SPO	I Man * * *
	1	0331	Miranda, Carlos A.	Pr Social Development Spec	RE2/SO2	I Man * * *
	1	0633	Harbitz, Mia Elisabeth	Social Development Spec	RE2/SO2	I Man * * *
	1	2318	Fox, Catherine J.	Sr Social Development Spec	RE2/SO2	I Man * * *
	1	1367	Cordovez, Carlos	Sr Modernization of State Spec	SDS/SGC	I Man * * *
	2	9003	Korn, Joel B.	Sr Country Coordinator	SRE/PFA	I Man * * *
	2	2263	Duarte, Jesus	Education Spec	RE3/SO3	I Man * * *
	2	0982	Saenz-Samper, Maria Victoria	Microenterprise Spec	SDS/MSM	I Man * * *
	2	2282	Thompson, Jennelle	Social Development Spec	RE2/SO2	I Man * * *
	2	1733	Florez Timoran, Hugo	Social Development Spec	COF/CBO	I Vol * * *
	3	1585	Mac Arthur, Ian William	Social Development Spec	COF/CCO	I Vol * * *
	3	2143	Godinez, Armando M.	Education Spec	COF/CBO	I Man * * *

Model highlights

- Use of individual preferences to optimize overall satisfaction
- Use of years in position, group classification (mandatory or voluntary), and job family affinity to weight staff preferences
- All participants allocated to unique positions
- Allows managers' trade-off analysis between alternative participants