



INSTITUTE FOR DEFENSE ANALYSES

NSD-4923

Creating Foundational Foreign Language, Regional, and Cultural  
Proficiency in General Purpose Forces

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July 2013

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**IDA**

## **Creating Foundational Foreign Language, Regional, and Cultural Proficiency (LRC) in General Purpose Forces (GPF)**

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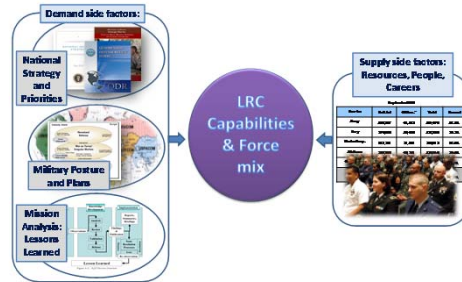
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### **IDA | Task Objective**

- IDA will conduct research and analysis on building a bench of foundational foreign language and cultural skills in the GPF.
- The study will examine:
  - How to size, establish, and manage a bench of officers and enlisted personnel with a range of foundational language proficiency and regional expertise
  - [the] appropriate numbers of personnel needed, broken out by proficiency levels, based on an assessment of current and emerging requirements, to include a hedge for unanticipated requirements

## IDA | Study Framework: Analysis of Alternatives

- Demand side:  
Alternative measures of the demand for LRC skills
- Supply side:  
Alternative methods of meeting the demands at least-cost



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## IDA | Training Weeks Required by Language

Category	Language	Training Weeks			
		Basic (from 0 to 2L/R/S)	Intermediate (from 2L/R/S to 2+L/R/S)	Advanced (from 2+L/R/S to 3L/R/S)	Refresher (up a half level)
I	French, Italian, Portuguese, Spanish	26	18	18	6
II	German, Indonesian	35	26	26	9
III	Hebrew, Hindi, Persian Dari, Persian Farsi, Punjabi, Russian, Serbian/Croatian, Tagalog, Thai, Turkish, Urdu, Uzbek	48	36	36	12
IV	Modern Standard Arabic, Arabic (Egyptian), Arabic (Iraqi), Arabic (Levantine), Chinese (Mandarin), Japanese, Korean, Pashto	64	47	47	16

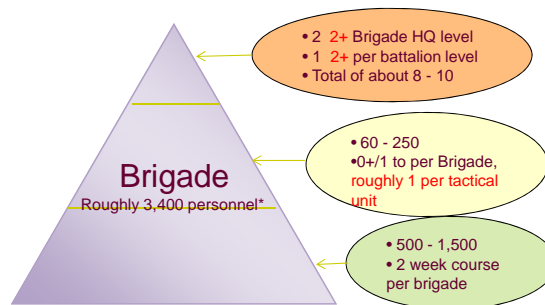
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## IDA | Demand-Side Observations

- There is no DOD-wide management process that captures the total LRC demands associated with ongoing operations
  - Lessons learned collection is Service specific
  - Feedback mechanisms are generally of an ad hoc nature
- Based on language training detachment location and throughput, access to LRC training by the Reserve Components is undetermined
- Outside of the Afghanistan-Pakistan (AFPAK) Hands program, there is no plan for sustainment of LRC skills
- Commanders provided a mixed message: LRC is valuable, but they do not want to make the resource intensive investment in language

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## IDA | Alternative Measures of Demand—Stated Preference

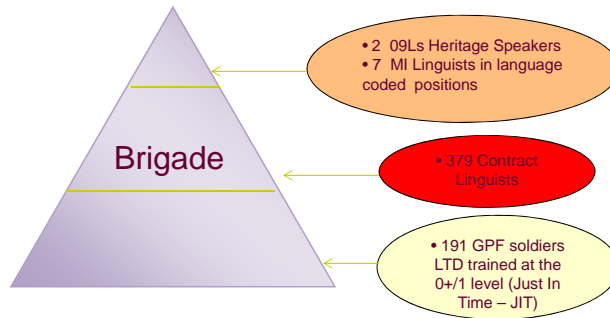


Everyone receives **cultural** training as part of core training with differentiated expertise based on leadership position

*\*The extent to which commanders assumed that they would receive contract linguists once in an operational theater is undetermined*

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## IDA | Alternative Measures of Demand—Revealed Preference



For a brigade of 3,448 personnel, this is a current operational demand:  
*388 with higher level language capabilities; 191 with 0+/1*

This Demand Construct is Used for Supply Computations

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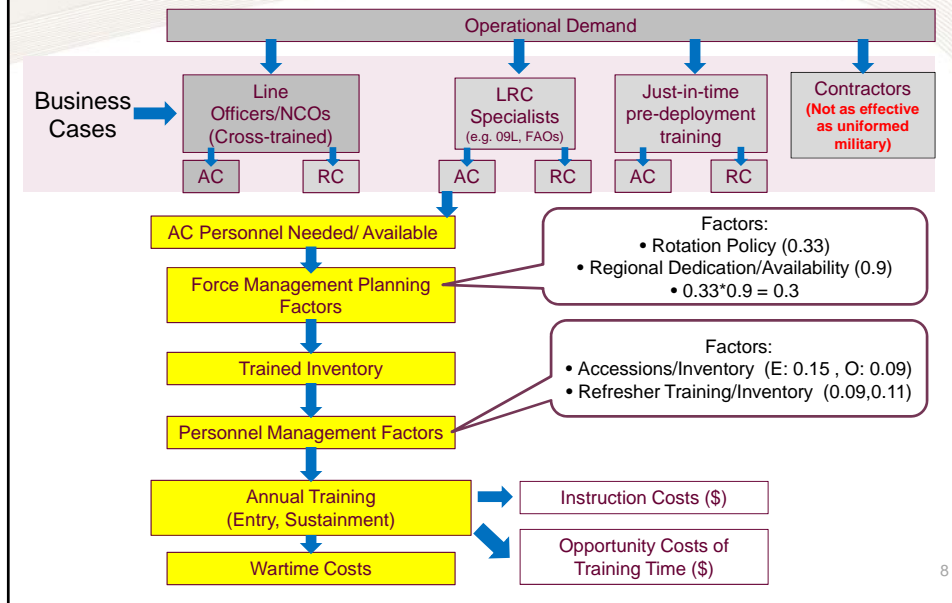
## IDA | Supply-Side Overview

- Methods of meeting the demand for language capability
  - Active or Reserve Cross-Trained
  - Active or Reserve Dedicated Specialists
  - Just-in-Time Cross-Trained
  - Contract Interpreters
- Develop a framework for costing each business model at the level of one language-speaker
  - Cost of training
  - Cost of time lost to training
  - Cost of accounting for turnover
- Find the least-cost model for each language-speaker at a given language level in a given language
- Aggregate to find the optimal mix and least cost method of meeting a theatre demand
- Develop a “global demand” to illustrate the potential costs of incorporating sufficient language capability in the GPF to meet all threats

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## IDA Costing Framework



## IDA Total Expected Annualized Costs Per Enlisted

These annualized costs represent the price of training enough LRC enabled service members so that one language specialist can be deployed for the entire length of the conflict

		Costs (\$000s)			
		0+ to 1+	2-2+	>2+	
Category IV Language	Rotating	<b>Active Cross-Trained</b>	45.3	168.7	611.6
		<b>Active Dedicated</b>	225.1	316.4	614.0
		<b>Reserve Cross-Trained</b>	125.5	480.2	1,959.0
		<b>Reserve Dedicated</b>	108.1	268.0	653.6
		<b>JIT Active</b>	2.2	N/A	N/A
		<b>JIT Reserve</b>	1.9	N/A	N/A
p <sub>deployed</sub> = 4%	Not Rotating	<b>Active Dedicated</b>	75.2	105.6	204.8
		<b>Reserve Dedicated</b>	19.4	46.1	110.4

## IDA | Generating Global Demand



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## IDA | Total Requirement Minimized Cost (Notional IDA Languages)

Assumes that dedicated language specialists are not bound by a rotational cycle

Notional Scenario	Language	Utilization Probability	0+ to 1+		2 and Above		Total Cost (\$M)
			Method (AC/RC)	\$M	Method (AC/RC)	\$M	
Small Baseline Cost	Spanish	18%	ACT/RD	3.8	RD	13.5	17.4
	French	18%	ACT/RD	3.8	RD	13.5	17.4
	Portuguese	18%	ACT/RD	3.8	RD	13.5	17.4
	Indonesian	18%	E: RD O: ACT/RD	4.3	RD	15.6	20.0
	Russian	18%	E: RD O: ACT/RD	4.8	RD	18.8	23.6
	Japanese	18%	RD	5.4	RD	22.8	28.2
	Korean	21%	RD	5.7	RD	23.4	29.1
	Chinese	21%	RD	5.7	RD	23.4	29.1
	Farsi	22%	E: RD O: ACT/RD	5.2	RD	19.6	24.9
	Urdu	22%	E: RD O: ACT/RD	5.2	RD	19.6	24.9
Arabic	22%	RD	5.8	RD	23.6	29.5	
Medium Additional Cost	Korean	4%	JIT	2.6	RD	123.8	126.5
	Chinese	4%	JIT	2.6	RD	123.8	126.5
Large Additional Cost	Farsi	5%	JIT	6.1	RD	218.4	224.5
	Urdu	5%	JIT	6.1	RD	218.4	224.5
	Arabic	5%	JIT	8.1	RD	271.9	279.9
Total Cost				79.0	1163.6	1,243.4	

Note: Active Cross-Trained (ACT), Reserve Cross-Trained (RCT), Active Dedicated (AD), Reserve Dedicated (RD), Just-In-Time Training (JIT), Not Applicable (N/A), Enlisted (E), Officer (O)

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## **IDA** | Total Requirement Cost Summary

<b>Assumptions</b>	<b>Cost</b>	
	Small Contingency Only	All Contingencies
IDA current practice requirements Specialists not bound by rotation	210 M	1.2 B
IDA current practice requirements Specialists bound by rotation	932 M	5.4 B

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## **IDA** | Back Up Slides

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## **IDA | Supply Example Analysis**

- The following slides apply the costing methodology to find the least cost method for achieving an availability of one speaker at a given level of proficiency. The costs include:
  - Annualized peacetime costs
  - Expected annualized wartime costs
    1. The costs of reserves include mobilization costs incurred only in wartime
    2. The costs of contractors are incurred only when needed, i.e., during a contingency
- To assign values to these costs an assumption must be made about the rate at which the contractors/reservists will be employed
  - This rate is essentially the probability of the occurrence of a contingency in any year
- The “true” value of such a probability ( $p$ ) is not known
- For now, an arbitrary value of 4% is used
- Probabilities derived from historical data will be presented in the global demand illustration

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## **IDA | Supply Example Analysis**

- The following example uses a Category IV language and assume LRC specialists in this language will be deployed 1 of every 25 years ( $p=4\%$ )
- Results demonstrate that costs are greatly affected by:
  - Personnel turnover
  - The availability factor
- Two availability cases are considered:
  1. Dedicated language specialists follow the standard rotation cycle (e.g., ARFORGEN)
  2. Dedicated language specialists are always available
    - (Cross-trained personnel always rotate)

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## IDA | Total Expected Annualized Costs Per Officer

		Costs (\$000s)			
		0+ to 1+	2-2+	>2+	
Category IV Language	Rotating	<b>Active Cross-Trained</b>	35.9	128.8	386.0
		<b>Active Dedicated</b>	297.5	385.2	698.5
		<b>Reserve Cross-Trained</b>	110.9	428.7	1,745.9
		<b>Reserve Dedicated</b>	131.4	310.6	745.3
		<b>JIT Active</b>	2.5	N/A	N/A
	<b>JIT Reserve</b>	2.2	N/A	N/A	
	Not Rotating	<b>Active Cross-Trained</b>	35.9	128.8	386.0
		<b>Active Dedicated</b>	99.3	128.5	232.9
		<b>Reserve Cross-Trained</b>	110.9	428.7	1,745.9
		<b>Reserve Dedicated</b>	23.8	53.7	126.2
<b>JIT Active</b>		2.5	N/A	N/A	
	<b>JIT Reserve</b>	2.2	N/A	N/A	

$P_{\text{deployed}} = 4\%$

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## IDA | Generating Global Demand

- Eleven languages are used:
  - Marine Corps focus languages: Spanish, French, Portuguese, Russian, Korean, Chinese, Farsi, Urdu and Arabic
  - Indonesian and Japanese are added
- All countries are classified into one of the eleven languages
- Historical data on troops stationed overseas is used to estimate the “probabilities” of contingencies of given sizes occurring in any language zone
- These probabilities are related to contingencies sized similarly to those in the cross-cutting study (groups A, B and C)
- It is assumed that the small size contingency can occur in any language region
- The regions in which the large size contingencies can occur are restricted

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## **IDA** | Generating Global Demand for Linguists

- Two sources are used to obtain the number of speakers required for each contingency:
  - Cross-cutting study findings
  - IDA findings of current practice
- IDA Demand:
  - For each contingency group (A, B and C), the study
    - counted the number of units of each type employed
    - multiplied by the number of speakers per unit type identified in the research
- Cross-cutting Demand:
  - Use the numbers of speakers per group reported in the study
- The focus was restricted to the Army

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## **IDA** | Generating Global Demand Costs

- Per-speaker costs are aggregated to get a per-mission cost for the three contingency sizes
- The costs are generated by finding the least-cost method to meet each demand
- The following tables:
  - Assume that group C language needs cannot be met with contractors (rapid deployments required)
  - Display the incremental cost of meeting the group A and B costs with uniformed personnel vice contractors
    - **Contractors carry a greater risk than uniformed personnel and may be less effective**
- The least-cost method chosen is noted in each case
- Costs are for Army units only, and do not include other units involved in the contingency

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## IDA | Total Requirement Minimized Cost (Current Practice Estimates)

Assumes that dedicated language specialists are bound by a rotational cycle

Scenario	Language	Utilization Probability	0+ to 1+		2 and Above		Total Cost (\$M)
			Method (AC/RCT)	\$M	Method (AC/RCT)	\$M	
C Baseline Cost	Spanish	18%	ACT/RCT	7.0	E: ACT/RD O: ACT/RCT	40.4	47.4
	French	18%	ACT/RCT	7.0	E: ACT/RD O: ACT/RCT	40.4	47.4
	Portuguese	18%	ACT/RCT	7.0	E: ACT/RD O: ACT/RCT	40.4	47.4
	Indonesian	18%	ACT/RCT	9.6	ACT/RD	58.3	67.8
	Russian	18%	ACT/RCT	12.8	ACT/RD	75.0	87.7
	Japanese	18%	E: ACT/RD O: ACT/RCT	17.0	ACT/RD	96.8	113.7
	Korean	21%	E: ACT/RD O: ACT/RCT	17.1	ACT/RD	97.1	114.2
	Chinese	21%	E: ACT/RD O: ACT/RCT	17.1	ACT/RD	97.1	114.2
	Farsi	22%	ACT/RCT	13.3	ACT/RD	75.5	88.8
	Urdu	22%	ACT/RCT	13.3	ACT/RD	75.5	88.8
A Additional Cost	Korean	4%	JIT	2.6	ACT/RD	592.9	595.5
	Chinese	4%	JIT	2.6	ACT/RD	592.9	595.5
B Additional Cost	Farsi	5%	JIT	6.1	ACT/RD	990.3	996.4
	Urdu	5%	JIT	6.1	ACT/RD	990.3	996.4
	Arabic	5%	JIT	9.1	ACT/RD	1283.3	1291.4
<b>Total Cost</b>				<b>164.9</b>	<b>5,243.4</b>	<b>5,407.0</b>	

Note: Active Cross-Trained (ACT), Reserve Cross-Trained (RCT), Active Dedicated (AD), Reserve Dedicated (RD), Just-In-Time Training (JIT), Not Applicable (N/A), Enlisted (E), Officer (O)

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## IDA | Language Instruction Costing

1. The study uses data on the costs of instruction by the Defense Language Institute

DLI Budget = \$429M

2. The DLI budget is divided among three instruction activities

Resident instruction budget at DLIFLC = \$313.5M  
Non-resident budget = \$33M  
Other = \$82.5M

3. Training load (full time equivalent (FTE) students per year) is allocated between the activities

Resident instruction load at DLIFLC = 3,850  
Non-resident load = 450

4. The cost of a student-year (50 weeks) for each activity is determined by dividing annual budget by training load

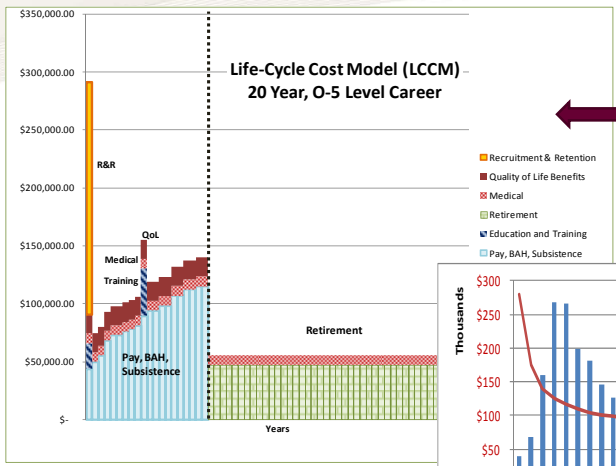
Cost at DLIFLC = \$313.5M/3850 = \$81.4k  
Non-resident Cost = \$33M/450 = \$73k

5. Costs per course are computed using weeks of instruction

For example: training to level 2 in Korean at DLIFLC = (48 weeks/50 weeks) x \$81.4k = \$78k

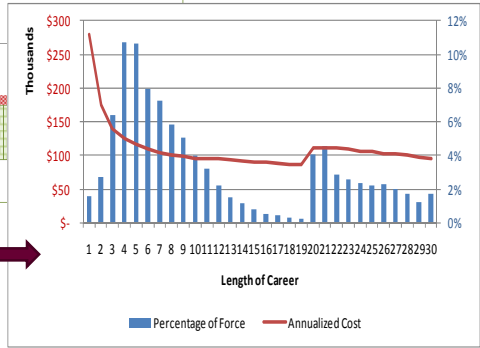
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# IDA Opportunity Cost of Time (LCCM)



Compute the present value (PV) cost of a given career length (20 years in this example)

Integrate over all careers to get average cost





**REPORT DOCUMENTATION PAGE**

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