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# Java Economy in India: A Conservative Estimate

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# Java

- Invented by Sun Microsystems in 1995
  - Portable, secure, platform independent, based on its open standards
  - One of the fastest growing programming environments in the world
  - Worldwide community of over five million Java developers
  - Over 50% of Indian IT workforce comprises Java developers
  - Has provided essential thrust to the Indian IT momentum
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# Contribution of Java

- Indian IT Sector
  - Embedded Software
  - Opportunity Costs
  - Other Costs
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# Indian IT Sector

- Constituent Sectors → **Hardware, Software, Services**
- Software sales comprise enterprise packages like SAP with Java for front and back-end integration → **Not quantifiable**
- \$2.2 billion Java Application server market for J2EE servers - Websphere, Jboss and BEA Weblogic Server in 2004
- Scaled by 30% AGR and % Indian Java developers

Worldwide Java Application Server Market, 2004	\$ 2.2 billion
Worldwide Java Application Server Market, 2006	\$ 3.72 billion = $2.2 * 1.3^2$
Total number of Java developer, India	.3 million
Java Developers, worldwide	4.5 million
<b>Indian Java Application Server Market</b>	<b>\$ 0.25 billion</b>

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# Indian IT Sector

- IT Services comprise hardware, software and training services
  - Hardware & hardware services not considered
  - Software service revenue scaled down by Java percentage of software developers ~ 50%
  - Similar scaling for training services
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# Indian IT Sector

- IT sector revenues from Java

Category	Revenues (Billion USD)	Java related revenues
Hardware	7.14	-
Software	1.78	.25
Services		
Hardware Services	1.16	-
Software Services	19.6	9.8
Training Services	.33	.165
BPO Services	7.21	NA
<b>Total</b>	<b>37.3</b>	<b>10.22</b>

*All figures from Indian IT Top View 2005-06*

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# Embedded Java

- Java-based software applications on mobile phones, electronic components and control systems
  - Major constituents → Mobile gaming, ringtone and smartcards
  - Mobile gaming a high potential area in India due to open standards and OS neutrality
  - Emergence of specialized game development studios like Paradox and Bangalore-based Dhruva Interactive
  - India developing as an outsourcing hub for global wireless mobile gaming market
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# Embedded Java

- \$100 million Indian mobile game-development industry with 100% AGR
- 20% domestic demand to become 30% (\$ 150 million) by 2010

Year	Market Size (\$ million)	Growth Rate	Local Demand (\$ million)
2004	5.6	69%	—
2005	18.1	81.9%	—
2006	100	80%	20 (=20%)
2010	340	—	150(=30%)

- 80 million handsets in India
- 20% of revenues of Indian music industry ( =Rs 140 crore) from mobile music

# Embedded Java

<b>Estimating by number of handsets</b>	
Number of Java Enabled handsets worldwide, 2004	350 million
Java enabled mobile ringtone market worldwide. 2004 <sup>7</sup>	3.5 billion
Total number of handsets in India, 2006	83 million
Percent of Java-enabled handsets sold in India, Nov 2005	40%
Total Number of Java enabled handsets in India	33.2 million ( = .4* 83
Java enabled mobile ringtone market in India, 2006	332 million (=3.5/350*33.2)
<b>Estimating by the mobile gaming market</b>	
Java enabled mobile gaming market worldwide, 2004	3 billion
Java enabled mobile ringtone market worldwide. 2004 <sup>10</sup>	3.5 billion
Java enabled mobile gaming market in India, 2006	100 million
Java enabled mobile ringtone market in India, 2006	116 million (=3.5/350*100)

Java revenues from the mobile ringtone market

# Embedded Java

- Indian Smart Card industry at \$47.5 million in 2004 (Frost & Sullivan) with AGR of 50%
- Projected at \$62.4 million for 2006

Revenues in 2004	\$47.5 million
Growth Rate	48.4%
Revenues in 2006	\$ 104.6 million (=47.5 *1.484 <sup>2</sup> )
Percent of Java Smart Cards	60%
Estimated Java Smart Card market,2006	\$ 62.4 million

- Launch of the national ID card project for issuing over 600 million ID cards to spur growth rate
- Population, rising employment levels and the entry of MNCs in India to also contribute

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# Embedded Java

Mobile Gaming Market	\$ 100 million
Mobile ring tone market	\$ 116 million
Estimated Java Smart Card market , 2006	\$ 62.4 million
<b>Total</b>	<b>\$ 278.4 million</b>

Total revenues of the Indian Embedded Java industry from major focus areas

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# Opportunity Costs

- Open Java
  - Reduced risk of vendor lock-in
  - Low migration costs

Total Number of Developers in India,2003	0.6 million
% of Java Developers in Indian IT pool <sup>13</sup>	50%
Java Developers in India,2003	0.3million (=50% of 0.6mn)
Growth rate of Indian IT Sector	30%
Total Number of Java Developers in India, 2006	.66 million (.3* 1.33)
Cost of .Net License	\$1111 (approximately)
<b>Total Savings</b>	<b>\$ .73 billion</b>

- Increased Efficiencies
  - Indian E-commerce market up to **\$ 1 bn in 2006**
  - Java ensures secure, real-time transactions, dynamic content generation etc.

# Other Factors

- Increased Employment
  - Growth rate of Indian IT developers estimated at **30 % per annum**
  - India to have over 3.2 million IT employees by 2012 (NASSCOM and McKinsey) generating \$119 billion in revenues
  - Half of 1.28 million 2006 IT pool (**=.65 million**) to be Java programmers
- Better Compensation
  - Annual salary growth of IT employees is 17.9% which is 28% higher than the national average

Java Developers in India, 2006	.66 million
Average salary (3-6 lakh)	\$10000 (4.5 lakh app.)
Total salaries	\$6.6 billion

*Total Salaries of Java Developers in India*

# Other Factors

- Taxes to government

<b>Tax component</b>	<b>% Levied</b>	<b>Taxed Amount</b>	<b>Tax (million)</b>
Packaged Software	8% (Excise duty)	\$250 million	\$20 million
Company revenues	35.7% (Corporate tax-domestic company)	\$9965 million	\$3557 million
Individual Income	30% (assuming annual salary above 2.5 lakh)	\$6.6 billion	\$1980 million
<b>Total</b>			<b>\$ 5557 million</b>

*Tax contribution from Java related activities*

# Consolidation

- Only partial quantification
  - Lack of data
  - Lack of reliable assessment parameters
  - No precedent
- Size of Java Economy is \$11.48 bn

Java-based revenues from the IT Sector	\$ 10.47 bn
Embedded Java Revenues	\$ 0.28 bn
Opportunity Costs – open source benefits	\$ 0.73 bn
<b>Size of Indian Java Economy,2006</b>	<b>\$ 11.48 bn</b>

# Alternative Estimation

- Back-of-the-envelope calculation
- Size of the Java economy in this way comes out to be **\$14.65 billion**
- The GDP of India for the year 2006 is \$ 695bn and the **Java economy is over 2.1 %** of this

Size of the global Java Economy,2005	\$ 100 bn
Total Number of Java Developers worldwide,2005 <sup>18</sup>	4.5 mn
Total Number of Developers in India,2003	0.6 mn
% of Java Developers in Indian IT pool	50%
Java Developers in India,2003	0.3mn (=50% of 0.6mn)
Growth rate of Indian IT Sector	30%
Java Developers in India, 2005	0.507mn(=0.3*1.3*1.3)
Size of Indian Java Economy,2005	\$11.27bn(=\$100bn/4.5mn*0.507mn)
<b>Size of Indian Java Economy,2006</b>	<b>\$14.651bn(=\$11.27bn*1.3)</b>
GDP of India, March 2006	\$ 695 bn
<b>Java Economy as a % of Indian GDP</b>	<b>2.1%</b>

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# Conclusion

- Difference in the consolidated and estimated figure
    - Lack of quantifiability of opportunity costs
    - IT and the embedded Java revenues are only partially considered
    - Secondary effects and related IT Spending not accounted (110%)
  - Lower bound estimate of Java economy in the range of 1.6% – 2.1 % (\$11.5 billion - \$14.6 billion) of the Indian GDP
  - Indian Java economy is 10%-15% of the world's Java economy
  - The growth rate of Java in India is higher than its global growth
  - Java's economic impact on India to increase in future as the Indian Java Economy comes of age.
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Thank You

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