

Innovations in Indian IT industry

Interactive Session delivered by

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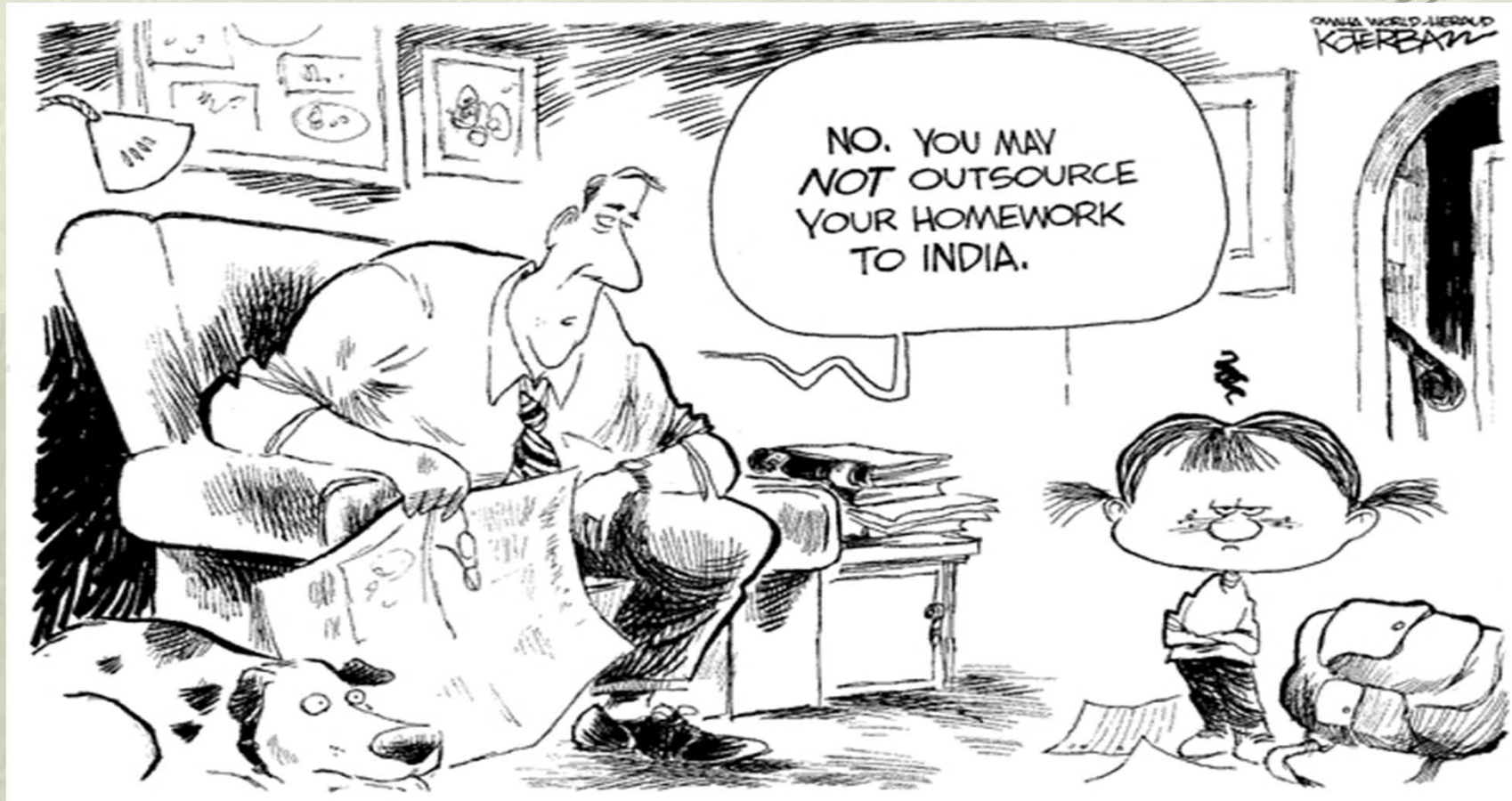
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Source: cartoon by Jeff Koterba in Omaha World Herald March 5 2004

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Trespassers will
be recruited !



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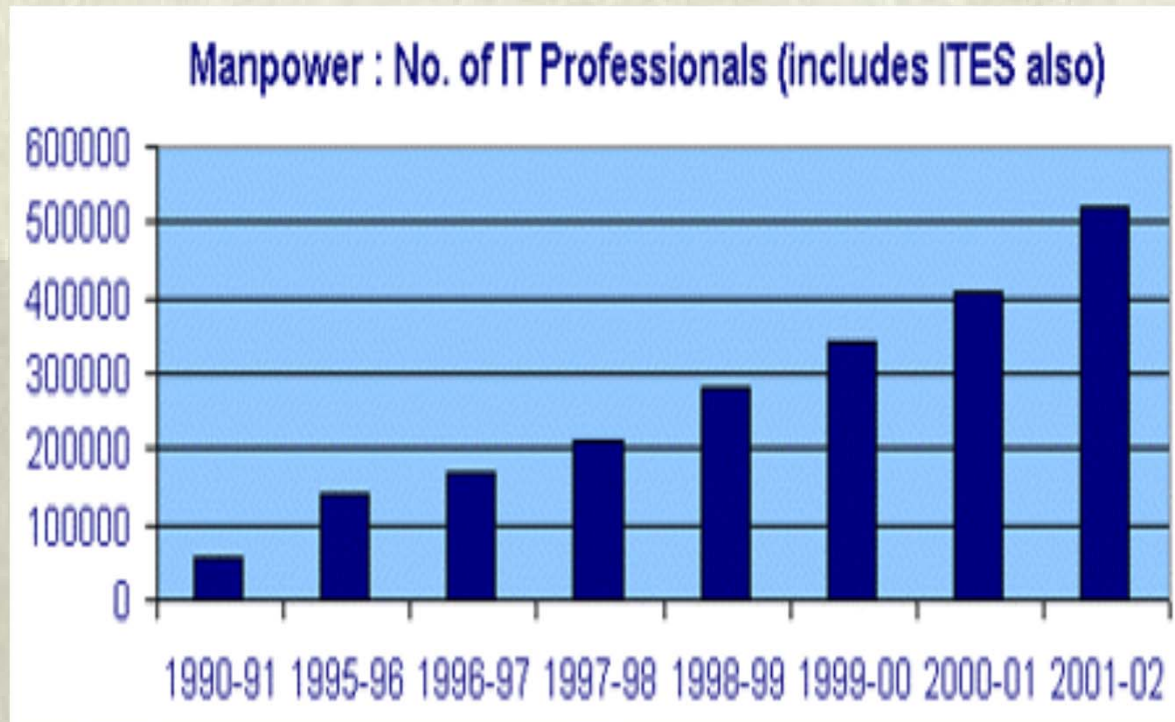
Indian IT Software and Services Industry



2003-04	21.6
2004-05	28.4
2005-06	37.4
2006-07	47.8

Annual growth of 30 % over a decade

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2003-04	830,000
2004-05	1,060,000
2005-06	1,293,000
2006-07	1,630,000

2008 estimate of 2.0 million professionals

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Infosys Growth

	1999	2000	2001	2002	2003	2004	2005	2006	2007
No. of Employees					15,356	25,255	36,750	52,715	72,241
Revenues m USD	121	203	414	545	754	1063	1592	2152	3090
Net income m USD	17	61	131	164	195	270	419	555	850

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**The significant problems we face
can not be solved at the same level
of thinking we were at when we
created them .**

Albert Einstein

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- ❖ Value Enabler role to Value Enhancer role
- ❖ The Economics of Offshoring
- ❖ Quality Ladder : ISO 9000, Six Sigma, CMM L5, Malcolm Balridge Framework
- ❖ Investment in world class facilities
- ❖ Y2K, Software Factory
- ❖ continuous skill building in Staff
- ❖ SCM, Campus Connect
- ❖ Domestic : Indian Railways, Bhoomi, eChoupal, EVM

Genesis of the Indian software industry : a Lesson in Globalization

Historic Prelude...

Early 1970s

Tata Registry formed earlier to provide shareholder services, grows to Tata Computing Centre and then evolves into Tata Consultancy Services.

Provides services to companies outside the Tata group.

Is hungry for growth.

Mid 1970s

Senses the widening gap between the government and IBM . Creates a structure and platform for Burroughs Corporation to enter India.

Enters into an agreement to provide services to Burroughs Customers in India.

Develops considerable competency in Burroughs platform of System software, Languages and Applications.

Leverages this skill base to partner with Burroughs to provide services to Burroughs Customers abroad

Late 1970s

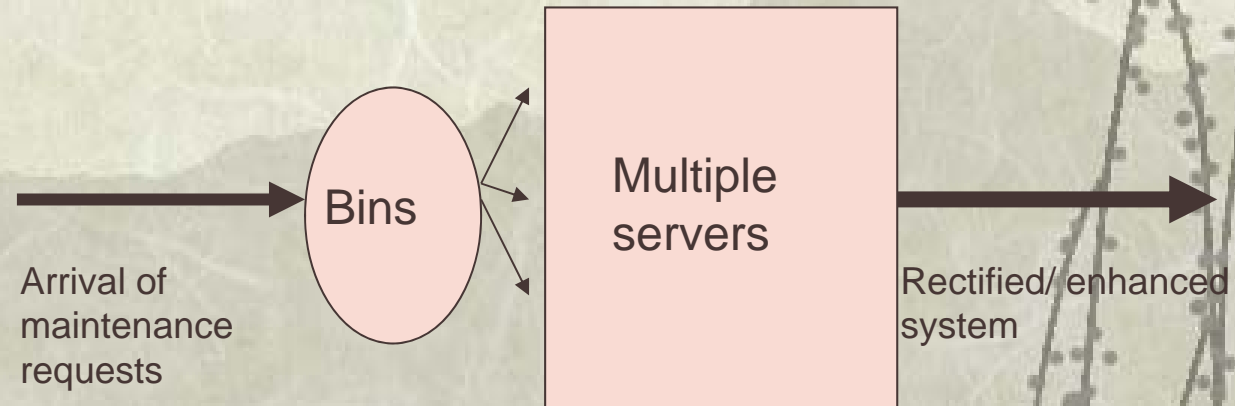
Burroughs Corporation sees the opportunity and seeks to form a joint venture with the Tatas to form a new company called Tata Burroughs Limited.

Many other Indian companies follow suit and enter into similar partnership with Digital Corporation, Wang etc.

TCS decides to widen its skill base to IBM, Tandem and other platforms. Positions itself as vendor neutral and capable of cross platform work.

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Application Software Maintenance

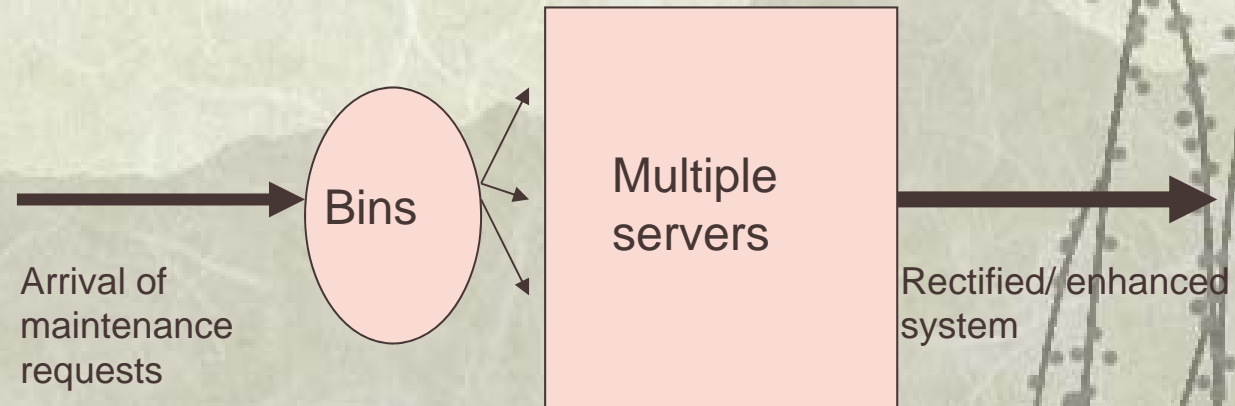


Server productivity can be improved by

- Building multiple skills in each server
- Keeping the documentation current
- Creating a shared knowledge data base for system based learning
- Creating standard procedures for error analysis, impact analysis, rectification and testing

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Application Software Maintenance

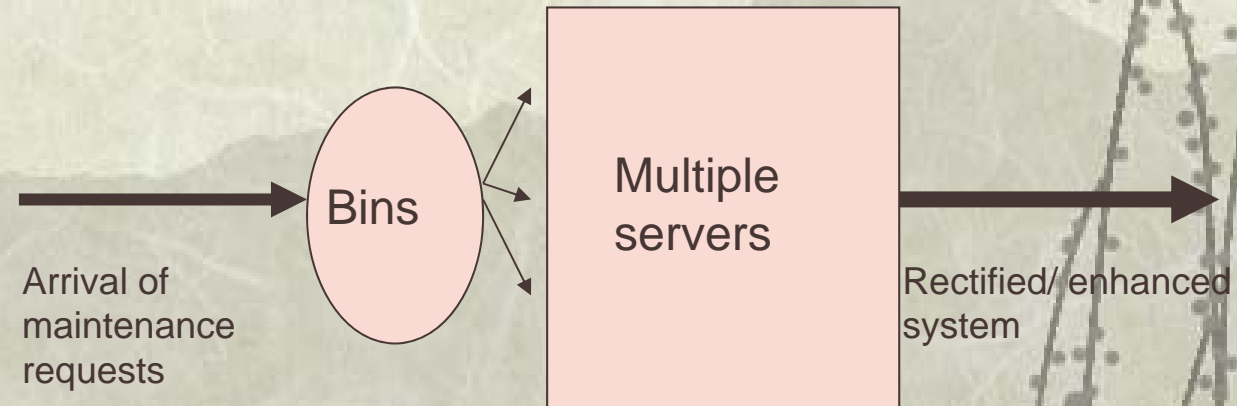


Server productivity can be improved by

- Use of domain experts as trainers and project resources
- Extensive use of metrics to measure and report productivity levels and service levels
- Restructuring the code periodically to improve its maintainability

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Application Software Maintenance

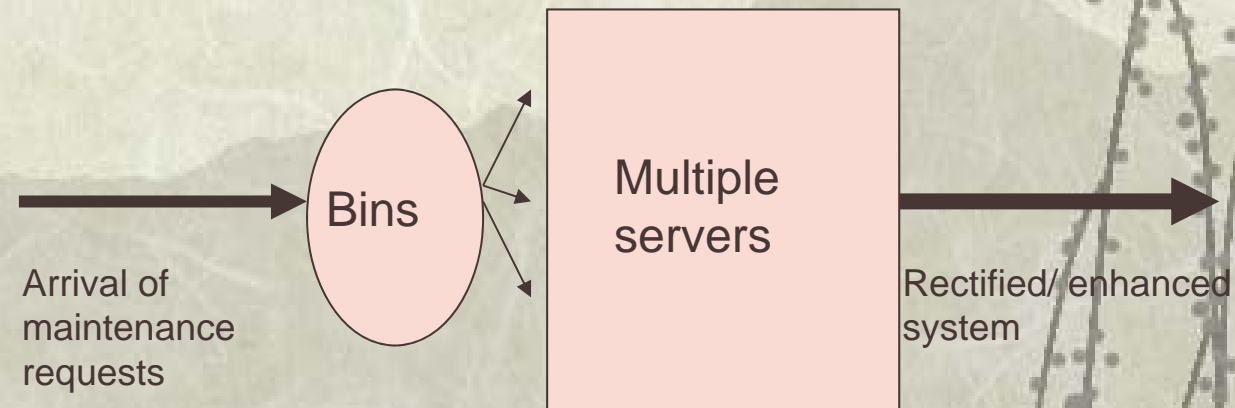


We sensed that a dramatic solution would be to keep reducing the arrival rate continuously.

A causal analysis of the arrival rate was carried out of previously executed projects. It revealed that (a) slow surfacing of hidden bugs over a period of time and (b) bugs injected during the maintenance process were the prime causes.

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Application Software Maintenance



It called for a radically different approach to testing the software.

In future , we proposed

- Regression testing to ensure that no other part of the system was affected due to this change
- Comprehensive testing of the system in the first quarter (as though customer was contractually obligated to deliver an error free system to us)

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Vendor Partnering Models

(a) Value Enablers :

They facilitate effective delivery of a firm's full and current capability to its customers. If they are not effective it is likely that the firm would under-perform.

(b) Value Enhancers :

They are Value Enablers as well as catalyst for enhancing the value set of the firm. The firm can increase its service offerings and reach out to new markets and customers because of this partnership.

TCS relationship with Burroughs commenced as a Value Enabler.

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Vendor Partnering Models

We can recognize these vendor partners in two broad categories, *example:*

(a) Value Enablers :

Travel, Transportation , Visa Services,
Security, Cafeteria, Facility Management, Real
Estate, Architects, Infrastructure Products and
Services etc

(b) Value Enhancers :

Hardware, Software, Network and related services
Vendors

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Vendor Partnering Models

- Burroughs entry into India was facilitated.
- TCS develops skill sets on Burroughs platforms.
- *(Value Enabler to Value Enhancer role)*
- Provides services to Indian customers. So does TBL
- TCS and TBL reach out to international customers.
- Multiplatform skill sets of TCS enable it to score over TBL
- *(Value Enhancer role with Client firms)*
- Tight coupling with a vendor has not helped TBL
- TCS goes public in 2004 .Becomes the largest IT firm.
- TBL (now Tata Infotech) merges with TCS.

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Relationship Growth...

Purchase
Effectiveness

Quality
Assurance

Continuous
Cost
Reduction

Value
Enablers

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Relationship Growth...

Purchase
Effectiveness

Skills
Development

Service
Offerings

Joint Solutions
for the Market

Value
Enhancers

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The Economics of Offshoring

Known:

- Software Services industry is skilled manpower intensive.
- The set of tasks can be successfully partitioned as Client Facing versus Remote Execution (20 : : 80)
- When the remote execution is done offshore in India, it can result in a overall cost saving of 40 %

Unknown:

- The cost arbitrage translates into a 15% bench impacting the bottom-line by 3 % only.
- Hence a high level of bench can be maintained and leveraged to enhance staff skill sets & minimize lost sales.

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The Quality Ladder

- ❖ Since the early Nineties, the IT industry invests heavily in Quality Processes and Certification.
- ❖ ISO 9000, Six Sigma and CMM of SEI at Carnegie Mellon University become the buzz words. They help to assure high quality deliverables to international clients.
- ❖ By 2003, [27 out of 54 companies in the world with CMM Level 5 certification are in India]
- ❖ The cost arbitrage now transforms into a quality and productivity advantage for customers.
- ❖ Provides a platform for continuing cost advantage.

Strategic innovation in Business.

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Investment in world class facilities

- Infosys created the Electronic City campus from 1994 onwards.
- Investment in hardware, software, networks, work space, power and ambience to compete with the best in class.
- Facilities seen as Pockets of Excellence amidst potholed infrastructure.
- Coupled with the Quality focus, designed to impress customers.
- Other firms adopt the model.

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Y2K, Software Factory

- Y2K presented the golden moment to the Indian firms.
- Time and mission critical.
- Work amenable to modularization, automation and remote execution.
- Low levels of technology skills and investment.
- Rapid scaling up.
- Indian firms leveraged their investment in Quality to build large software factories for Y2K work.

Presented the opportunity to hone work design and project management skills.

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Continuous skill Building in Staff

- Cost advantage in skilled staff translated into a cost advantage in skill building as well.
- Bench Management became a Science.
- Multi-platform capability in staff enhanced deployability
- Business Domain training coupled with technology based sessions.
- Onsite opportunities meant higher level of income for staff.
- Higher billing rates.
- Positive impact on staff retention.

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SCM, Campus Connect

Recruitment & Training	<ul style="list-style-type: none">❖ Campus Connect❖ Four months of training, post graduation❖ Soft skills enhancement❖ Continuous skills up gradation❖ Domain Certification
Retention	<ul style="list-style-type: none">❖ Multi platform work opportunity❖ Multiple geography and domain❖ rapid role and career progression❖ competitive wages, stock options
Risk Management	<ul style="list-style-type: none">❖ onshore facilities❖ local talent engagement❖ distributed work management

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In summary...

- ✓ Quality thrust as the engine for growth
- ✓ Cost advantage leveraged through work breakdown initiatives.
- ✓ Continuous skill building as the ride vehicle.
- ✓ Graduating from Value Enabler to Value Enhancer role
- ✓ Work Design and Implementation Innovations rather than Product innovations.

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Challenges of the Subcontinent

- 600,000 villages many with poor infrastructure (roads, telephone, drinking water, electricity)
- High level of illiteracy ; in specific of woman
- Multiple languages
- Religious and cultural barriers

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Indian Railways

- ❖ Anywhere to anywhere, any class and any time booking.
- ❖ Elimination of gray market
- ❖ Leveraging economies of scale, enhancing resource productivity

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Bhoomi

- ❖ Pioneering use of internet in e Governance.
- ❖ Malpractices killer

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ITC
Corporation

*e- Choupal
Project*

- ❖ Commencement of initiative: 2000
- ❖ 6500Kiosks covering 38500 villages
- ❖ 4 million farmers receiving the benefit
- ❖ Kisan trained as the interface
- ❖ Market Price and Demand Info made available to farmers
- ❖ Decision based on choice

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Indian Elections

Electronic Voting Machines

- ❖ First successful application in 1989
- ❖ Now more than one million machines are used in 700,000 booths in 543 constituencies of the nation.
- ❖ EVMS are fast, accurate and tamper proof. Cost effective as well.
- ❖ Design innovation

Innovations in Indian IT industry

Challenges of the Subcontinent

- 600,000 villages many with poor infrastructure (roads, telephone, drinking water, electricity)
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They result in design and implementation challenges for application of technology.

Hence the Indian ingenuity is visible in application and not in basic technology.

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Thanks and Best Wishes

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