



Grassroots Innovations for fertilizing our imagination:

Towards a shared and cared economy

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Indian Institute of Management

Ahmedabad and Honey Bee Network



Towards Our common frugal future:

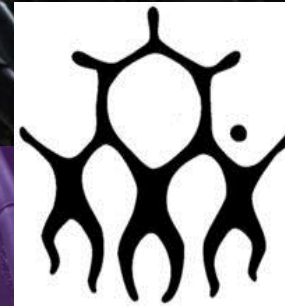
inclusive innovation eco-system



Honey Bee Network

founded in 1987-1988

A nameless, faceless innovator or traditional knowledge holder comes into contact with the Network and gets an identity, voice, visibility and viability of its sustainable vision .

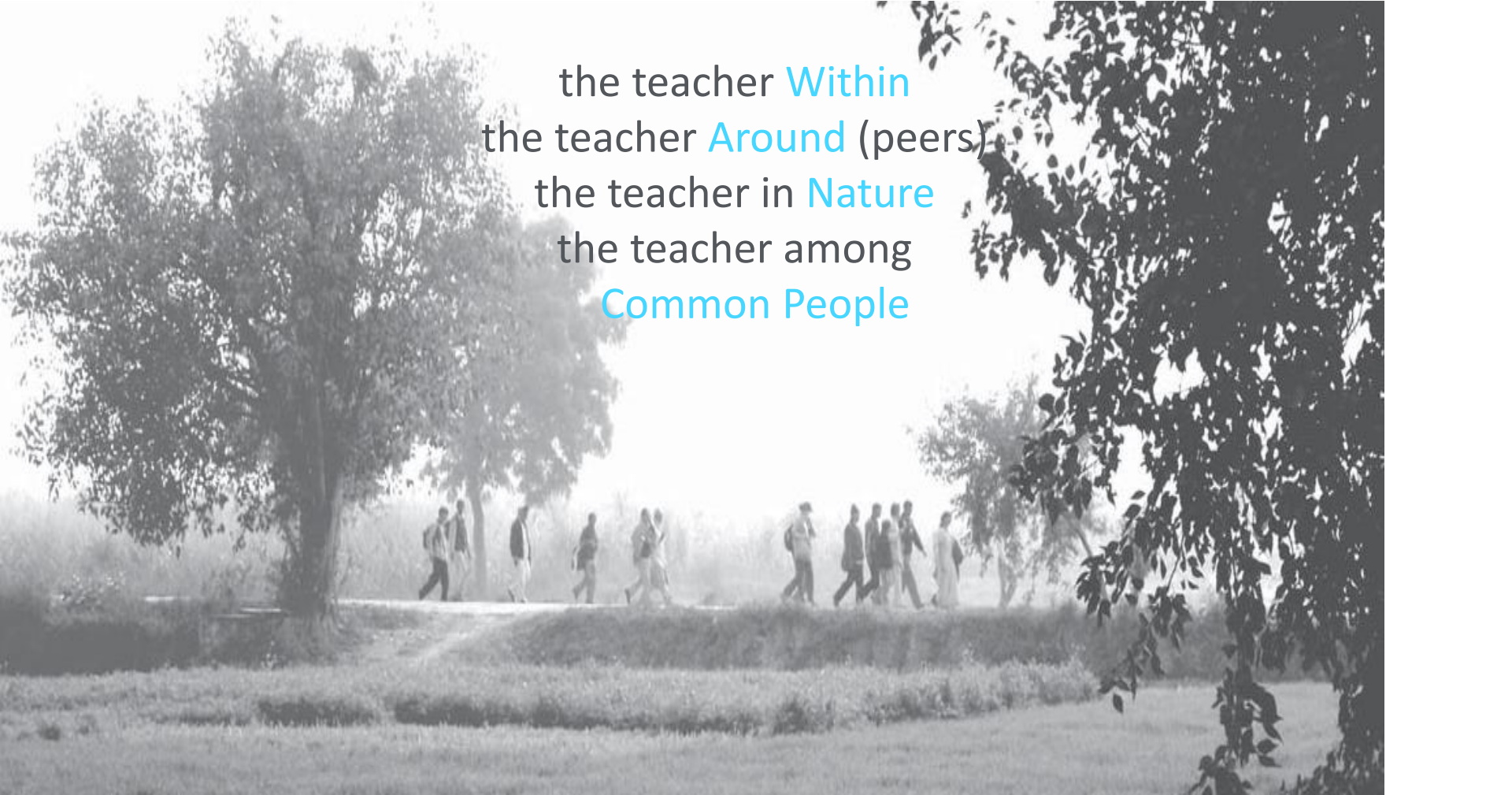


Towards blending natural, social, ethical and intellectual capital



Sowing the seeds of
samevdana

Towards **empathetic**
innovations



the teacher **Within**
the teacher **Around** (peers)
the teacher in **Nature**
the teacher among
Common People

Shodhyatra every summer, every winter



Initiatives for inclusion

- Ignite-annual awards at IIMA earlier by Dr Kalam, renamed now as Dr APJ Abdul Kalam Ignite award by the President of India, Nov 30, 2015 at IIMA
- Informal sector – Biennial grassroots innovation Presidential awards at Rashtrapati Bhavan as part of Festival of Innovation (FOIN)
- Technology/engg Students: GYTI (Gandhian Young technology awards), Dr AKN Reddy Hari Om Ashram awards, BIRAC-SRISTI biotechnology awards
- Inventors of India –individual professional, Medical & biotech innovation for social applications,
- Institutional innovations, public service innovations

FOIN

Festival of Innovation(FOIN) at Rashtrapati
Bhavan

March 12-18, 2016


Presidential Initiatives

- Innovation, writer, artist scholar in residence
- FOIN
- Inspired Teachers in Residence
- Best University and Best scientist and innovation award
- National Innovation Club in each NITs, central Univ and other institutions
- Exhibition of Innovation during Presidential visit to various central universities, NITs, IISERs etc.,

National Innovation Clubs



- **Search:** Celebrating the decade of innovation by scouting and mapping the creativity and innovations in the hinterland
- **Spread:** Disseminating/Cross-pollinating innovations across spaces, social segments and sectors
- **Celebrate:** Recognising achievers in different social spheres, inviting them to our institutions, having weekly lunch with achievers,
- **Sense or Benchmark:** Identifying the roots of *persistent problems* and the *mindsets* that trigger their *continued tolerance in society* to solve problems

A natural rock archway in a desert landscape under a clear blue sky. The arch is made of dark, layered rock and frames a view of the sky. The surrounding terrain is rocky and sparsely vegetated with small green shrubs. The sun is visible in the upper right corner, creating a lens flare effect.

Key technological and insitutional challenges for improving productivity And improving quality of life:

- a) Almost all innovations whether in small farm machinery or for small farmers or artisans lack open feedback control system,**
- b) most civil supply chains are not designed to reinvent themselves if users are not reached**
- c) Almost all mobile phones have no add-ons to either sense water or food quality, or purify it by UV LED or any other nano tech injections, even diagnostics,**

d) children seem to prefer sensor based innovations indicating their impatience with inertia and love for interactivity and autopoeisis

e) Partnership between formal sector and informal sector will redefine potential of both



- 
- A natural rock arch in a desert landscape under a clear blue sky. The arch is made of reddish-brown sandstone and is surrounded by rocky terrain with sparse green vegetation. The sun is visible in the upper right corner, creating a lens flare effect.
- f) **Heuristics underlying Grassroots innovations can help in humanizing technology and service design process even in corporate and government sector**
 - g) **Connecting Corporations, civil service and communities empowers each other, imputes empathy & leverages mutual learning**
 - h) **service design through samvedana as a driver triggers community creativity and fertilizes social imagination**
 - i) **meeting small, scattered and sticky unmet social needs is vital for inclusive development, let scale not be enemy of sustainability**

A photograph of a forest with tall pine trees and a mountain in the background. The trees are green and the sky is blue with some clouds. The text is overlaid on the right side of the image.

Autopoeisis

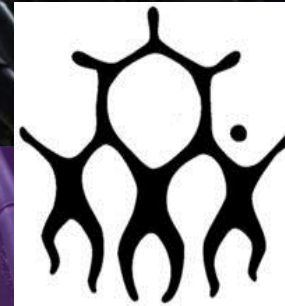
Model of Frugal Innovation

***Self correcting, self design, self
managed processes of empathetic
innovations***

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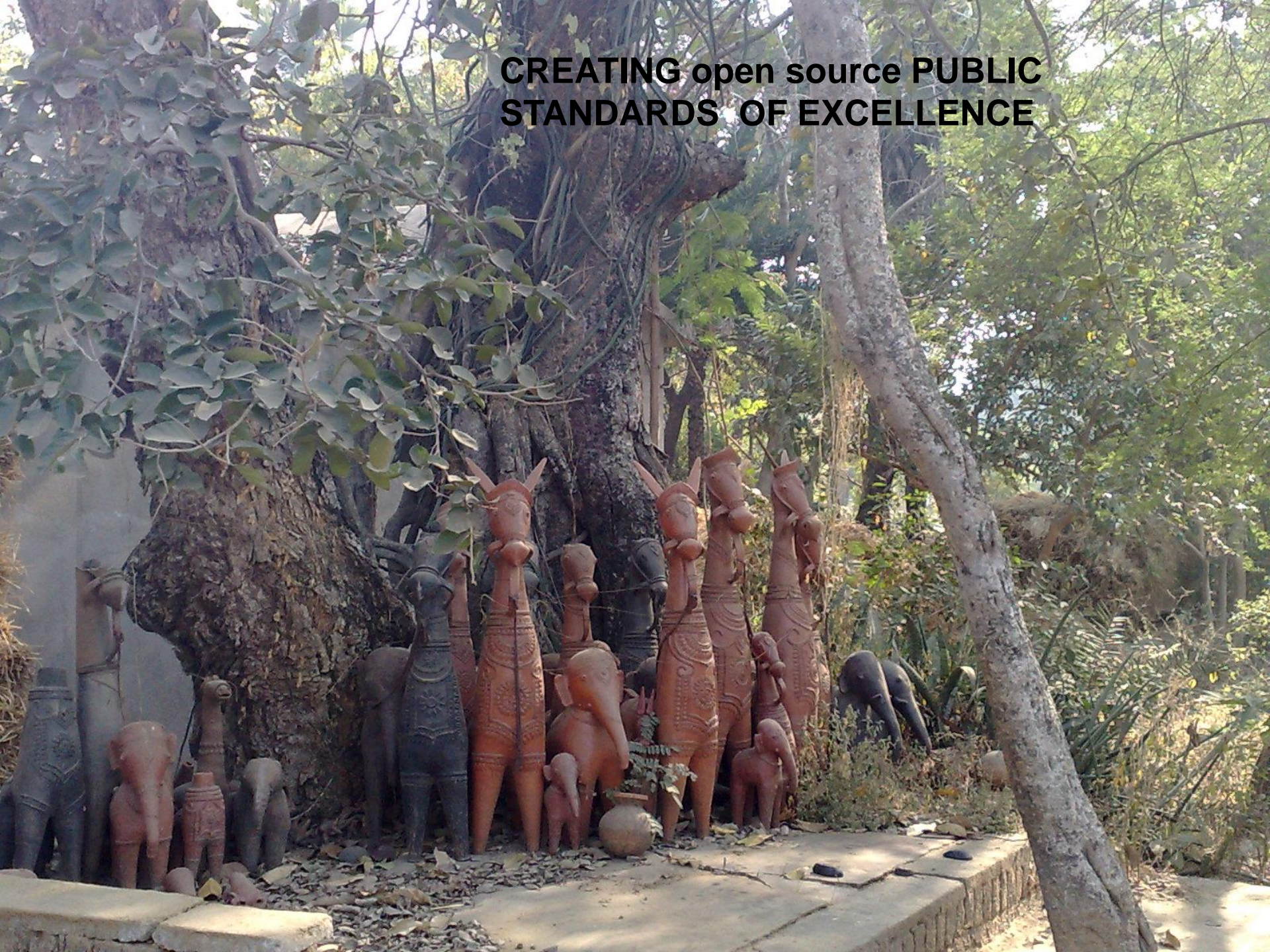


Meghalaya

Technology is like
words,
institutions are
like **grammar**
and culture is like
thesaurus

**Three pillars of
sustainability**

**CREATING open source PUBLIC
STANDARDS OF EXCELLENCE**



Why does **inertia** persist in certain areas so deeply?

Why are we so oblivious of wicked problems or **persistent unmet social needs**?

Multiple destinies of a cobbler



Kuchh bhi to nahin badla

kabul



mongolia



china



How long? just about 200 years

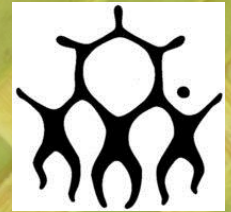


Try to forget the pain of back bending centuries of paddy transplanting



Source:
https://picasaweb.google.com/lh/view?pq=paddy+transplanting+image&hl=fr&sugexp=gsis.i18n%3Dtrue&cp=31&gs_id=n&xhr=t&q=paddy+transplanting+image+india&nord=1&gs_sm&gs_upl&bav=on.2,or.r_gc.r_pw.&biw=1360&bih=624&ion=1&um=1&ie=UTF-8&sa=N&tab=wq#5225312498863276162

Dimensions of Inclusion

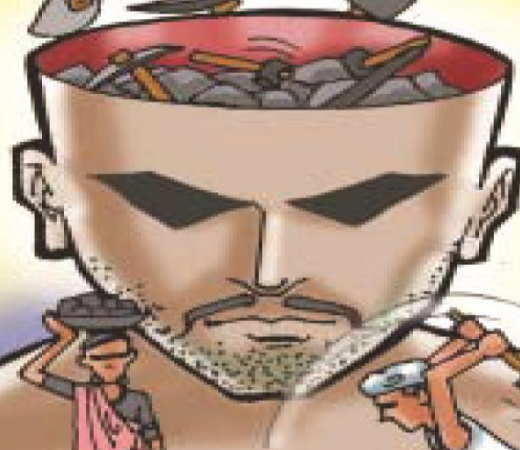


- Spaces
- Sectors
- Seasons: stable to fluctuating
- Social segments
- Skills and knowledge

Inclusive Innovation



**Do Poor have Hands,
Legs & Mouth
but no Head?**



A Voice of Creative Grassroots Innovators and Traditional Knowledge Holders



Few Variations of Bullet Santi / Handio





One of the kiln he uses today



Bicycle Hoe: China-India

Lao Yang, Shan dong province



Zhang Xingming, Shaanxi Province

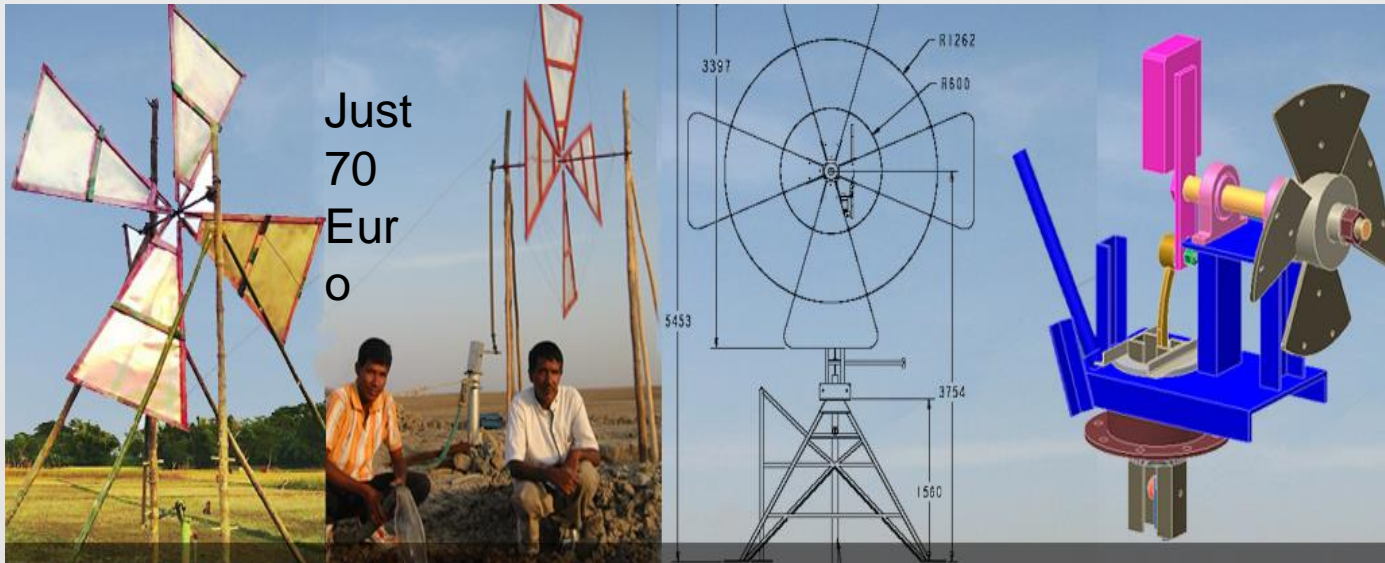


**Wang Fuhe
Miyun County, Beijing**



Gopal Malhari Bhise, Ahmednagar, Maharashtra





New heuristics: maximizing output per unit of time and smoothening the flow are not always sustainable Innovation by Mehtar Husain and Mushtaq Ahmed from Assam to

- 1) Artefactual - as a replication of solution level
- 2) Analogic - metaphor to inspire
- 3) Heuristic - as a model or principle
- 4) Gestalt - configurational level

Gupta, 2012, Own compilation



Learning platforms
from concrete to abstract

Dynamics of social need assessment

assurance of supply

low

High

low

Unfelt, apathy,

Assisted
Articulation of
need gap

Capacity to
provide
locally

Innovation, self-
design,
entrepreneurial
articulation

Engagement for
demand driven
delivery and co
creation

High

Taxonomy of innovative solutions

assurance

low

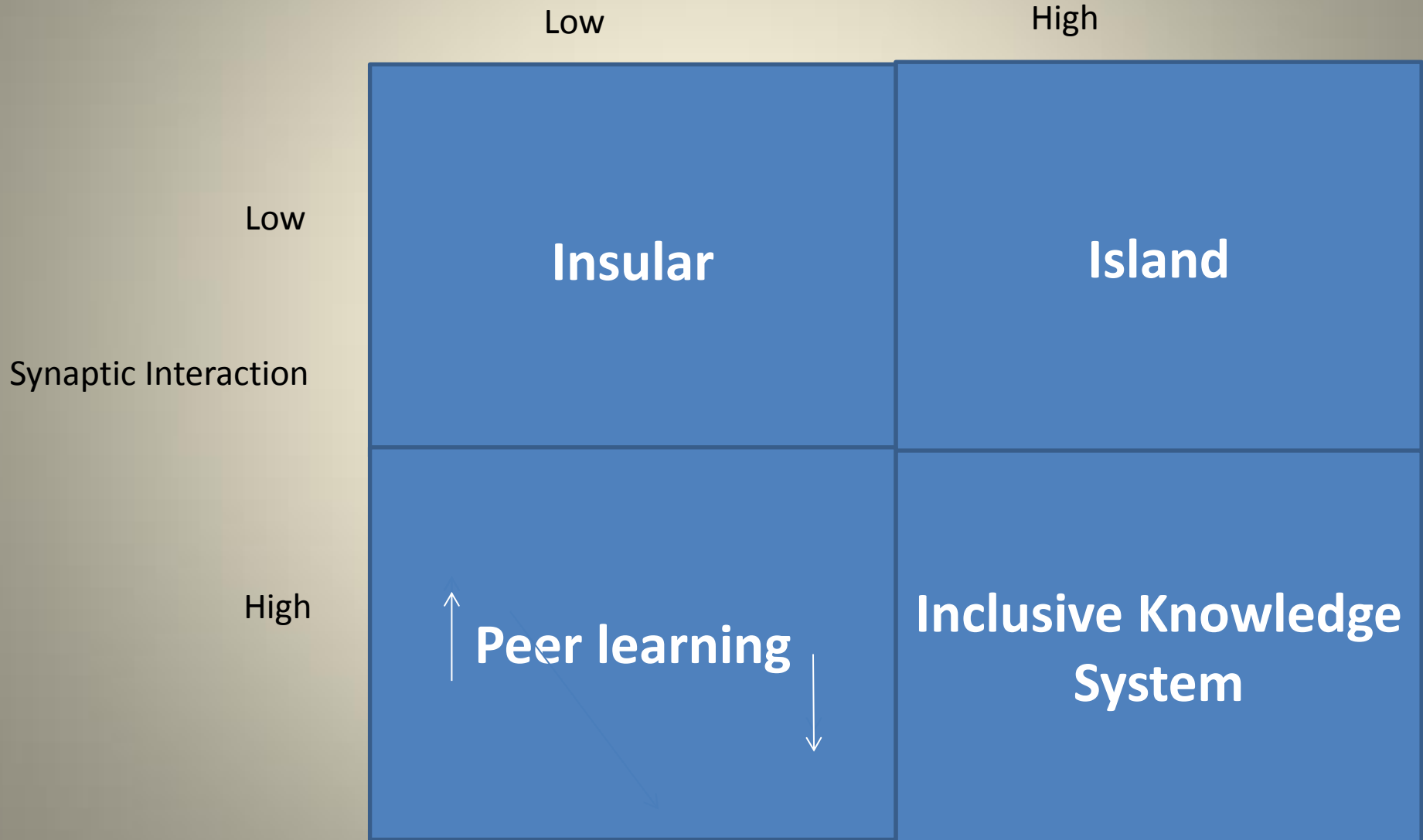
high

low
Capacity

high

bridging the Need gap	need enhancement
need elimination	need transformation

Knowledge asymmetry in the Network



Connecting civil service and communities



Information/Knowledge/Wisdom
Open Innovation Playground

Inside out

High

Low

*Large heart, big mind,
Dil bada dimaag bada*

Outside in

High

Low

High	DBDB	Sponge
Low	Pollinator	ostrich

A young child with dark skin and hair is looking through the vertical bars of a metal cage. Above the child, the head of a black dog is visible, looking down. The scene is set outdoors with lush green foliage in the background. The text "Learning from a curious child" is overlaid in white with a blue outline.

Learning from a curious child

Posture correcting chair/Sensor

Kulsoom Rizvi, 5, Muzaffarnagar , UP & Tarun Anand, 10, Hardoi, & UP Sunvi Agarwal,
10, Gurgaon, Haryana



If a person is sitting on the chair in a wrong posture, an alarm will start ringing and not stop until the person corrects the posture. Else, a camera in computer device or TV screen will sense posture and cover the display with a message, "sit properly before u can work"



Modified walker with adjustable legs

Shalini Kumari
Bihar

Shalini's grandfather uses a walker to assist him while he walks. But she noticed that he could only use the walker comfortably while walking on a level surface. Shalini came up with the idea of the modified walker with adjustable legs. She has also thought of including a folding seat so that the user can rest for a while when required and fitted a horn and a light to it as well. NIF licensed this technology to a company recently



Empathetic innovations: learning from children



NIF engaged a design firm to develop a prototype



Frugal Innovation: Shalini Kumari, Class 8, Patna, Bihar, Licensed to a company, Avira Tech

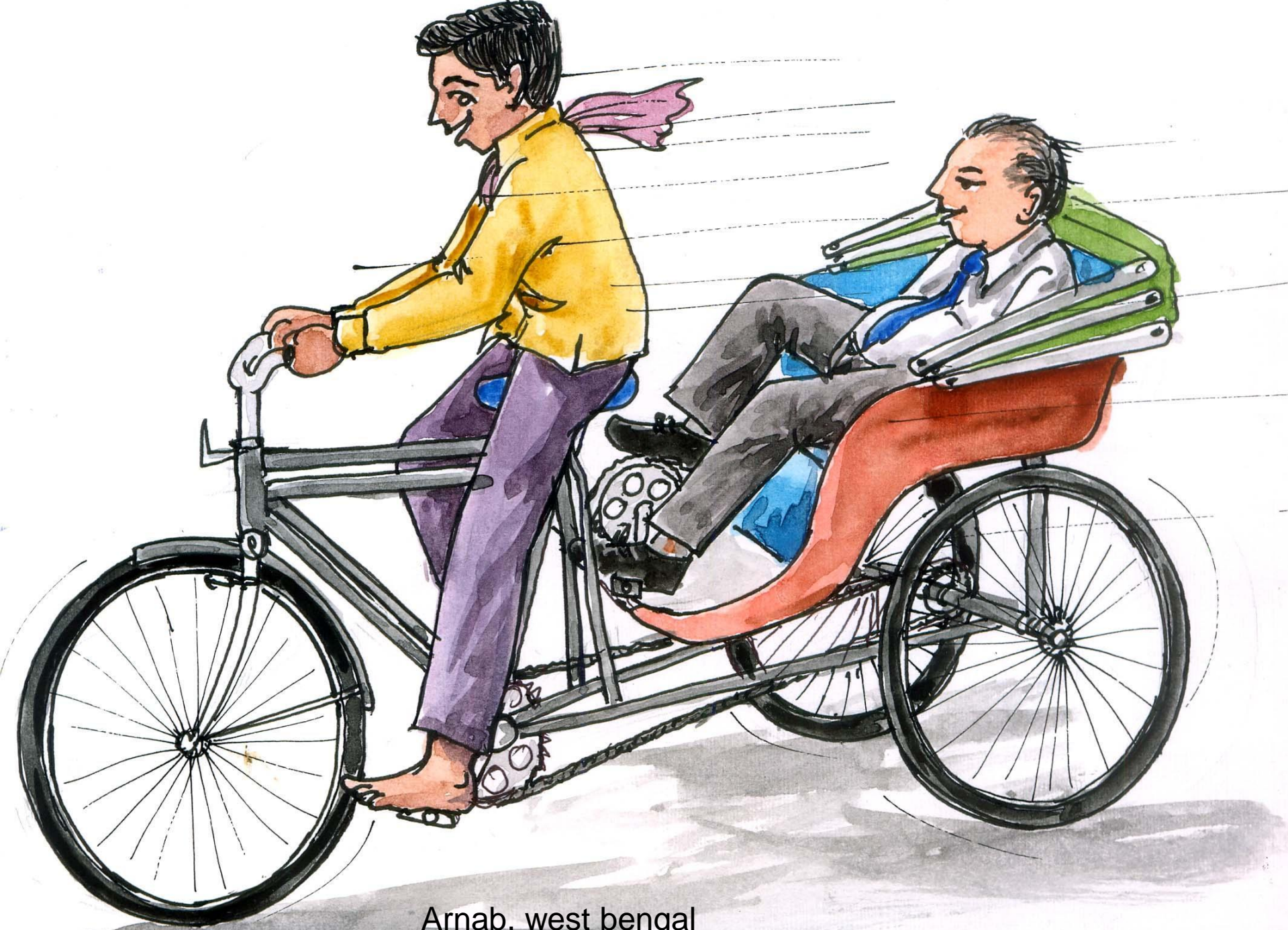


Low cost Braille printer

Santosh Singh & Khushwant Rai, 12, Jalandhar, Punjab

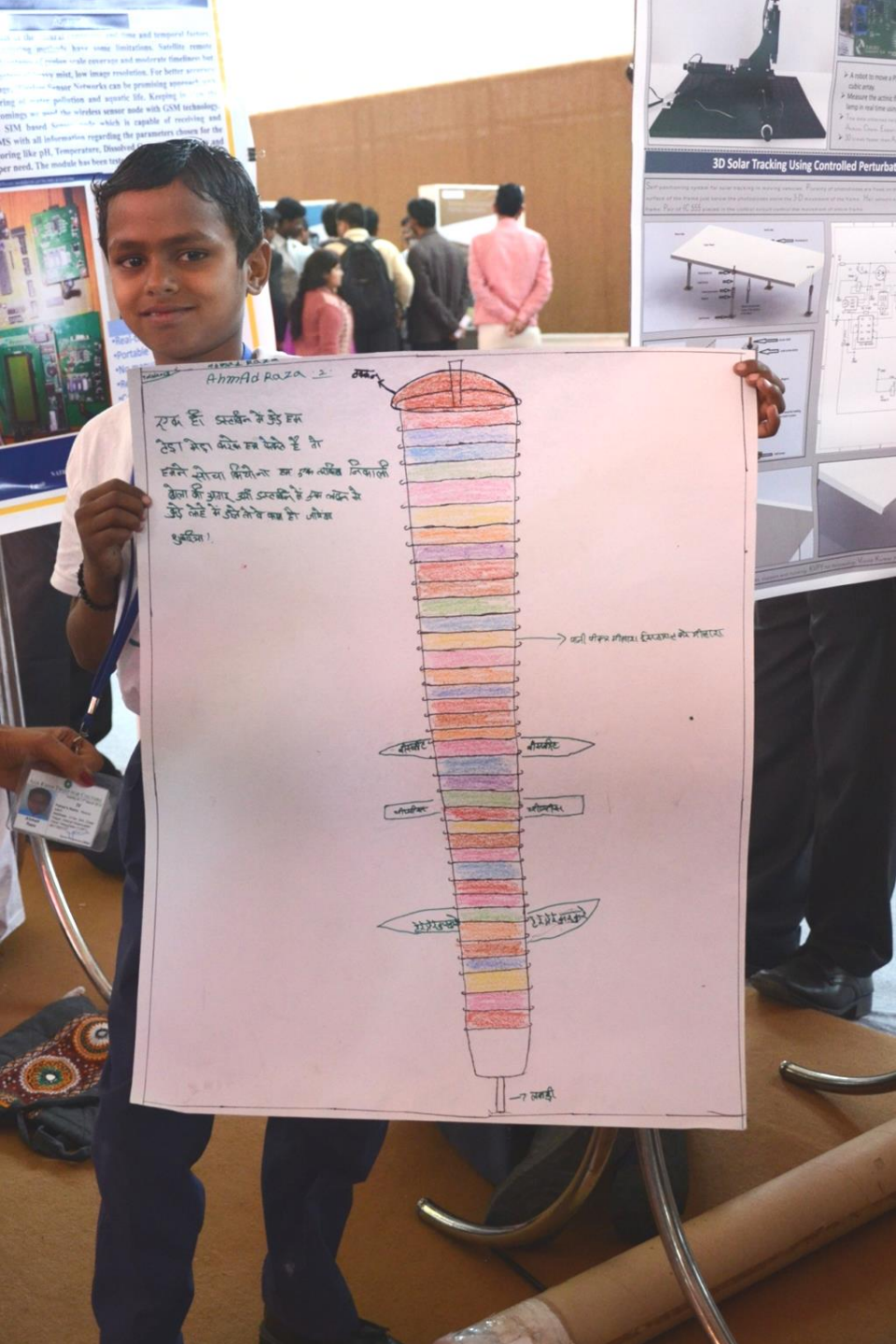


Braille printer exists in the market but at a price range that an ordinary man cannot afford. For this they have extended the functionalities of dot matrix printer with some modification to make economical printer which cost around Rs 10000/- against the market price of about a lakh.

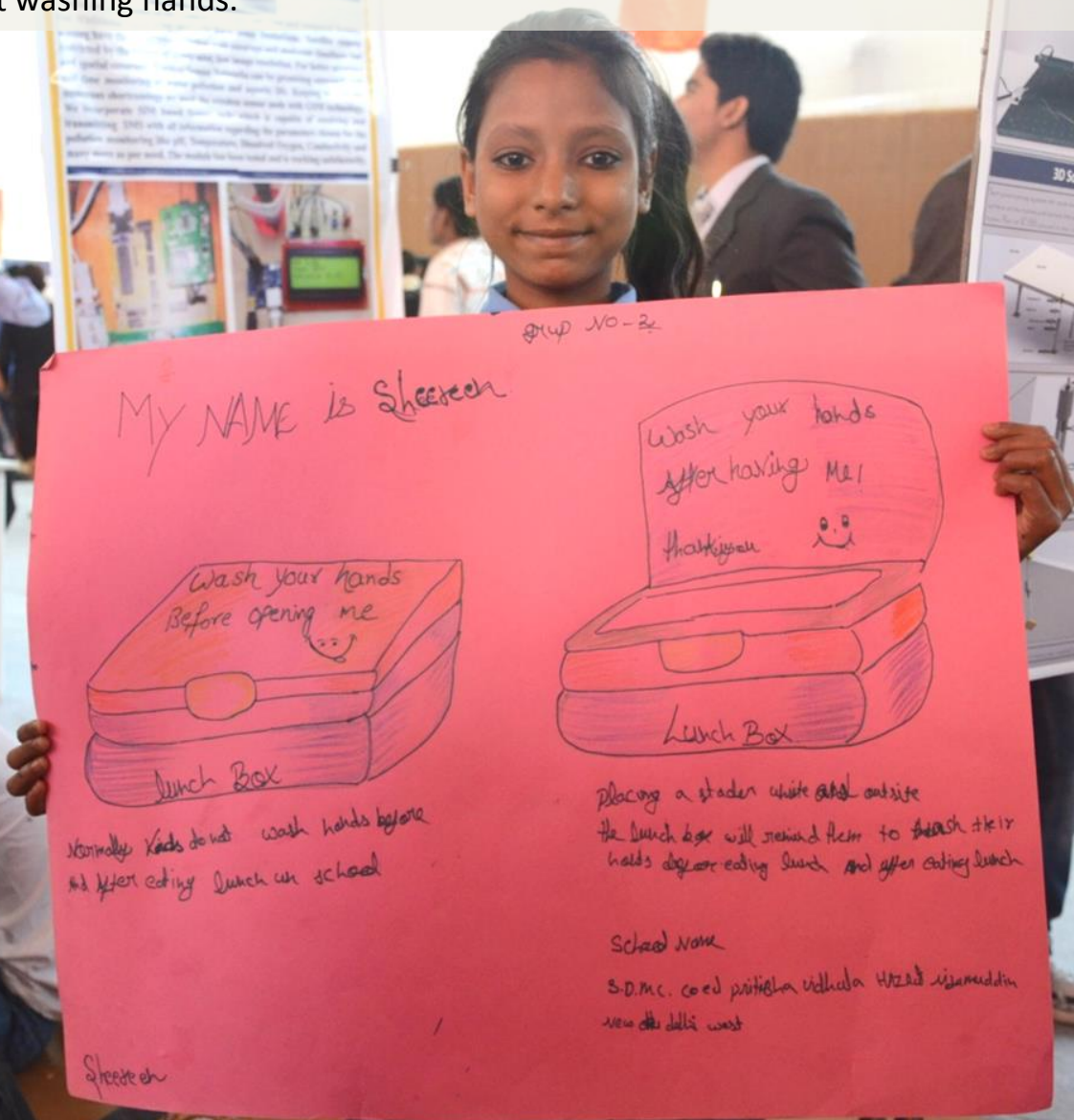


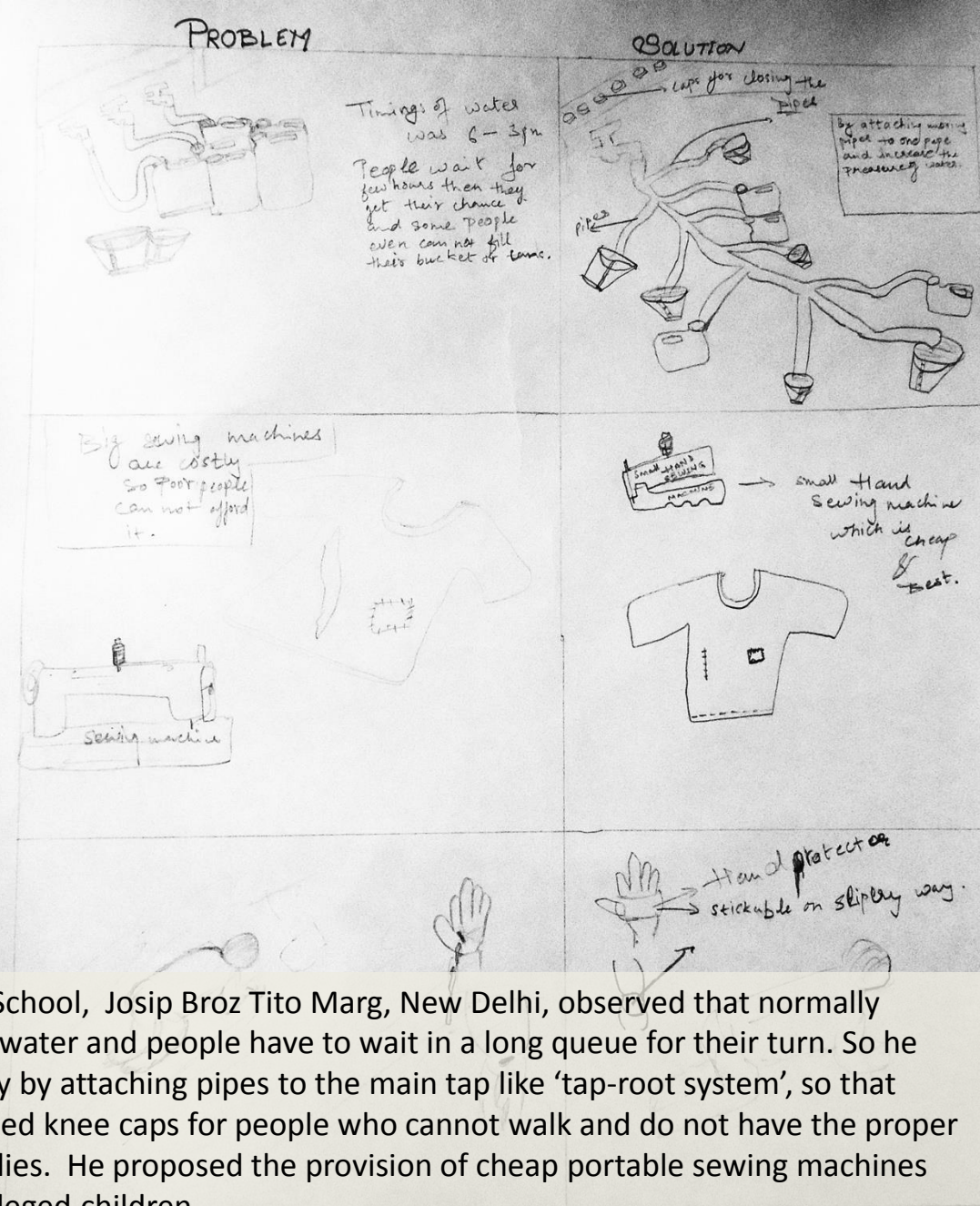
Arnab, west bengal

Ahmad Raza, an extremely cheerful class 4 student from SDMC Primary Pratibha Vidhyalaya, Nizamuddin West, Delhi came up with the idea of collecting disposable cups. A box normally holds 150 cups, Raza's idea can take up to 750 .



Sheeren Shekh , a class 5 student from SDMC Primary Pratibha Vidhyalaya, Nizamuddin West, Delhi also felt that the need of the of the hour was sanitation and cleanliness. She came up with a clever idea that stickers should be placed inside and outside the Lunch Box stating, "Wash your hands before and after eating", in that case nobody can complain that they forgot washing hands.





Affan Siddiqui, a class 9 student from The Indian School, Josip Broz Tito Marg, New Delhi, observed that normally public water taps have only one opening to draw water and people have to wait in a long queue for their turn. So he suggested an innovative approach to water supply by attaching pipes to the main tap like 'tap-root system', so that everyone is able to receive water. He also suggested knee caps for people who cannot walk and do not have the proper equipment for walking and have to drag their bodies. He proposed the provision of cheap portable sewing machines to slum families for making clothes for underprivileged children.

Affan Siddiqui

A public innovation for public use



Innovation is
simple
yet so obscure
roots of inertia

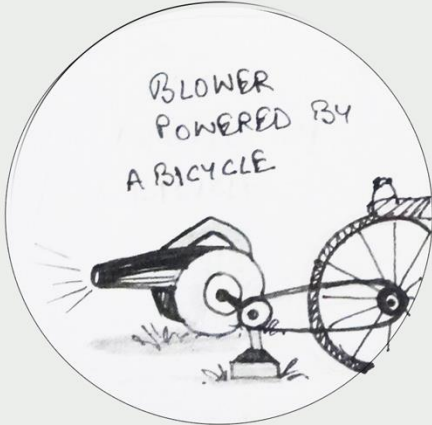


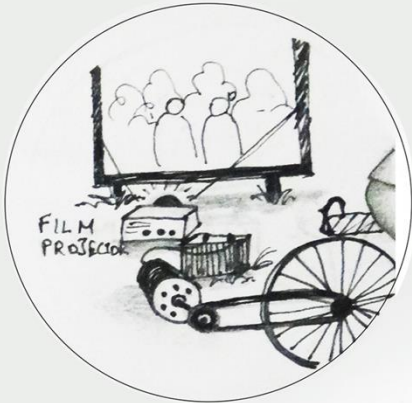
Untiring cycles

One of the most fascinating features of the idea competition was the perspective of the children. What we adults regard as normal, children look at with different and interesting perspectives. Once their curiosity is triggered there is no looking back. Hence, during the 'on the spot idea competition' the children came up with brilliant ideas especially considering cycles. Where we normally consider a cycle only as a tool for transportation, these children saw it as a livelihood and subsistence tool.

The ideas that came up were...

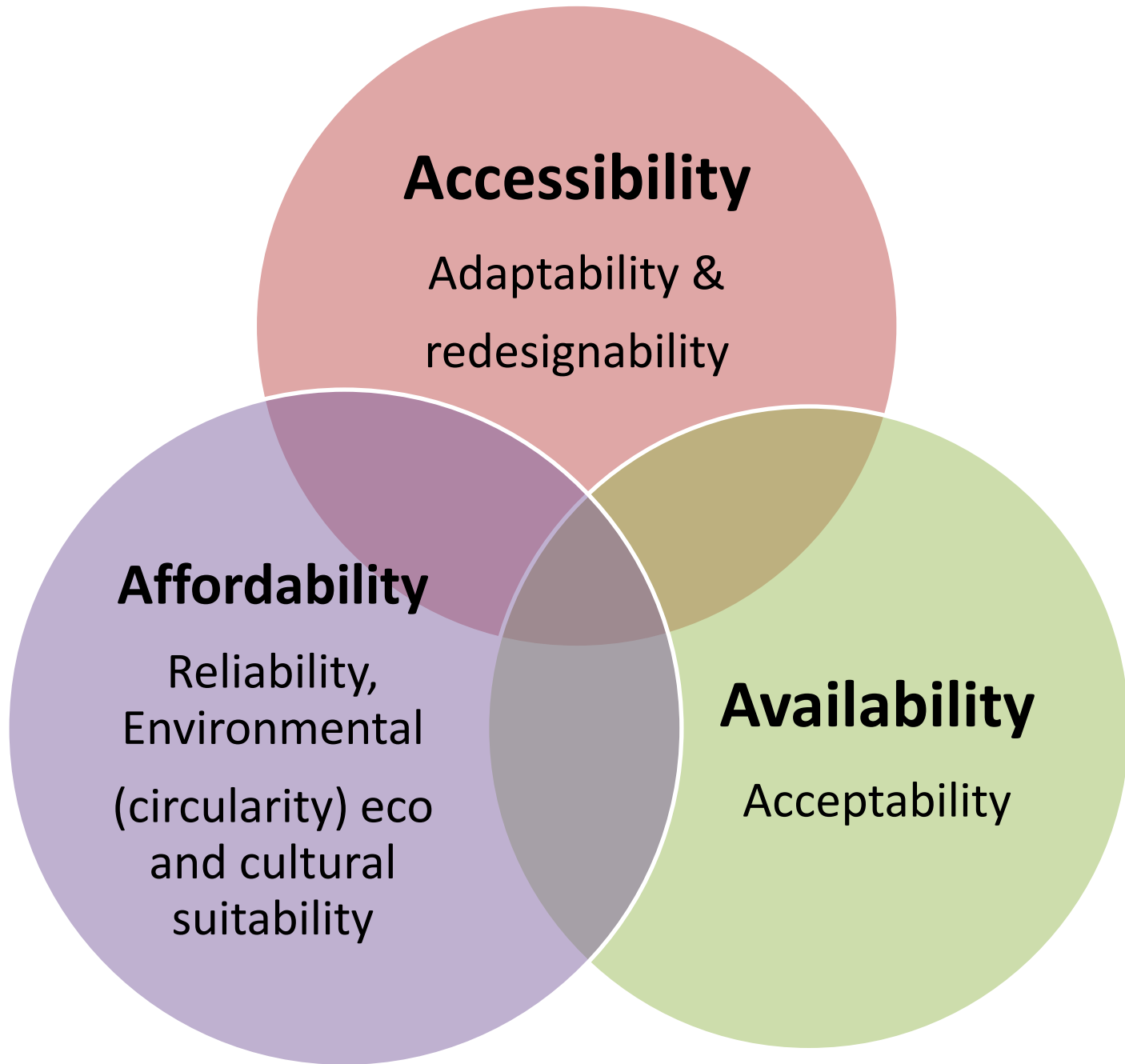
- Electricity generation from a cycle;
- Cycle can be used to power escalators and...
- Cycle can be used to extract sugar cane juice – Mohammad Rafiq
- Sweeper can be attached to a cycle – Tanu
- Blower can be attached to a cycle and...
- Cycle can be used to wind wires - Affan Siddiqui
- Cycle can be used to grind grains;
- Harvesting can be done by a cycle and...
- Cycle can be used for film projection - Ashu Chandra
- Cycle can be used as a plough - Kajal Verma
- Cycle can be used for cutting grass - Vivek Kumar
- Cycle can be used for thrashing paddy - Mayal Lepcha
- Cycle can be used to break-up soil clods in the field - Abu Sufiyan
- Cycle can be used to draw water from a well - Richa Kumari
- Trash picking machine can be attached to a cycle - Ahmad Raza





THE UNIT CAN BE
INSTALLED ON THE
CARRIAGE TO ALLOW
PORTABILITY

ELECTRICITY GENERATION
FROM A BICYCLE



techpedia

creativity, collaboration, compassion



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- a portal by SRISTI (sristi.org) pooling 200,000 engineering projects by 700k students from over 600 institutions
- engaging with youth to learn, share and co-create

www.techpedia.in



Bicycle Refrigerator For Rural Areas

Student/ Author : Sagar Chandrakant Gadkar, Amol Raghunath Kachare, Sanjay Shivaji Kachare, Suyog Hanmant Jadhav

Guided By : Prof. S. A. Khot

College : Padmabhushan Vasanttraodada Patil Institute of technology, Budhgaon, Sangli

It is a 50 lit capacity, refrigerator which is powered by a rear wheel of bicycle. To achieve the required rpm of compressor we provide a larger pulley of dia 20 inch on rear wheel shaft through which pulley we run the compressor and achieved the required output. Steady paddling of bicycle at 14 km/hr. for 30 minutes at an ambient temperature of 35 C, brings down the temperature in box to 8 C.



Frugality has to
manifest

in four dimensions

Form

Feature

Function &

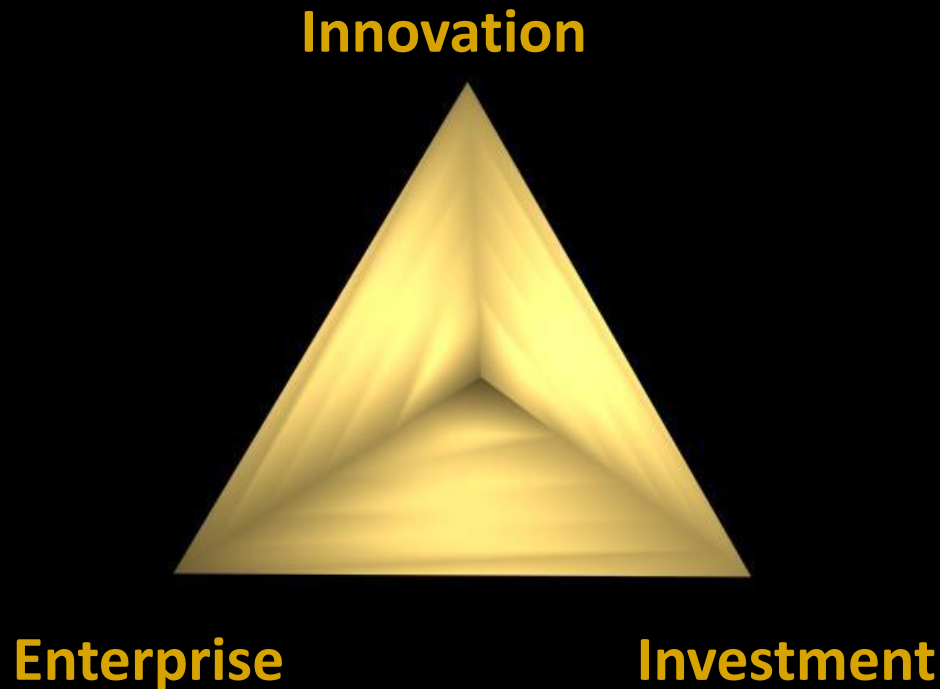
Fulcrum of environmental
sustainability

DHRUV: GANDHINAGAR,
A REFRIGERATOR WHICH GIVES MORE for
less,:lesser consumption of electricity, more
output in form of hot chamber and cold
chamber,

GOLDEN TRIANGLE for rewarding CREATIVITY

Leadership is to take note of *ex ante* and *ex post* transaction costs and deal with them upfront,

If not, these are transferred to the weaker partner



From Microfinance to Micro Venture Innovation Finance(gian, 1997, SIDBI at NIF, MVIF2003)

Micro finance is given for goods and services for which markets do exist

**some thing
needs to
change :)**

Micro venture finance is primarily for
innovative
activities for which demand is yet to be
created



How to reward: Portfolio of Incentives for Innovations

Forms of Incentives

Material

non material

Target

of individual

Incentives

collective

<p>material-individual</p> <p>lpr or non lpr based awards</p> <p>Awards</p> <p>R and d grants</p> <p>Endowments</p>	<p>non-material-individual</p> <p>Recognition</p> <p>Honour</p> <p>Memorial</p>
<p>material-collective</p> <p>Trust funds</p> <p>Venture and incubation funds</p> <p>Collective awards</p> <p>Support for Institution building</p> <p>Endowments</p>	<p>non-material-collective</p> <p>Policy changes</p> <p>Pedagogic changes</p>

Mind to Market

The Case of Herbavate



Herbvate Skin Ointment

It is based on the knowledge of seven innovators from six districts: Sabarkanth, Panchmahal, Dang, Mahsana, Patan and Bhavnagar of Gujarat. Herbavate exhibits remarkable properties against eczema and a variety of inflammatory and infectious skin conditions.

Communities:

The innovators of Herbavate: 1. Amratbhai Shankarbhai Rawal, Mehsana Gujarat. 2. Kunjubhai Kakadiyabhai Bhoya, Dang Gujarat 3. Pujabhai Dabhi, Sabarkantha, Gujarat 4. Karshanbhai Parmar, Sabarkantha Gujarat 5. Laxmanbhai Pagi, Panchmahal, Gujarat 6. Lilabhai Rawal, Patan Gujarat 7. Lakhabhai Becharbhai Khatana, Bhavnagar Gujarat



HERBAVATE



Herbal medicine for
patients suffering with
dermatitis and psoriasis



HBN- Incubator of Institutions

National level body supported by DST. Govt of India to scale up green grassroots innovations

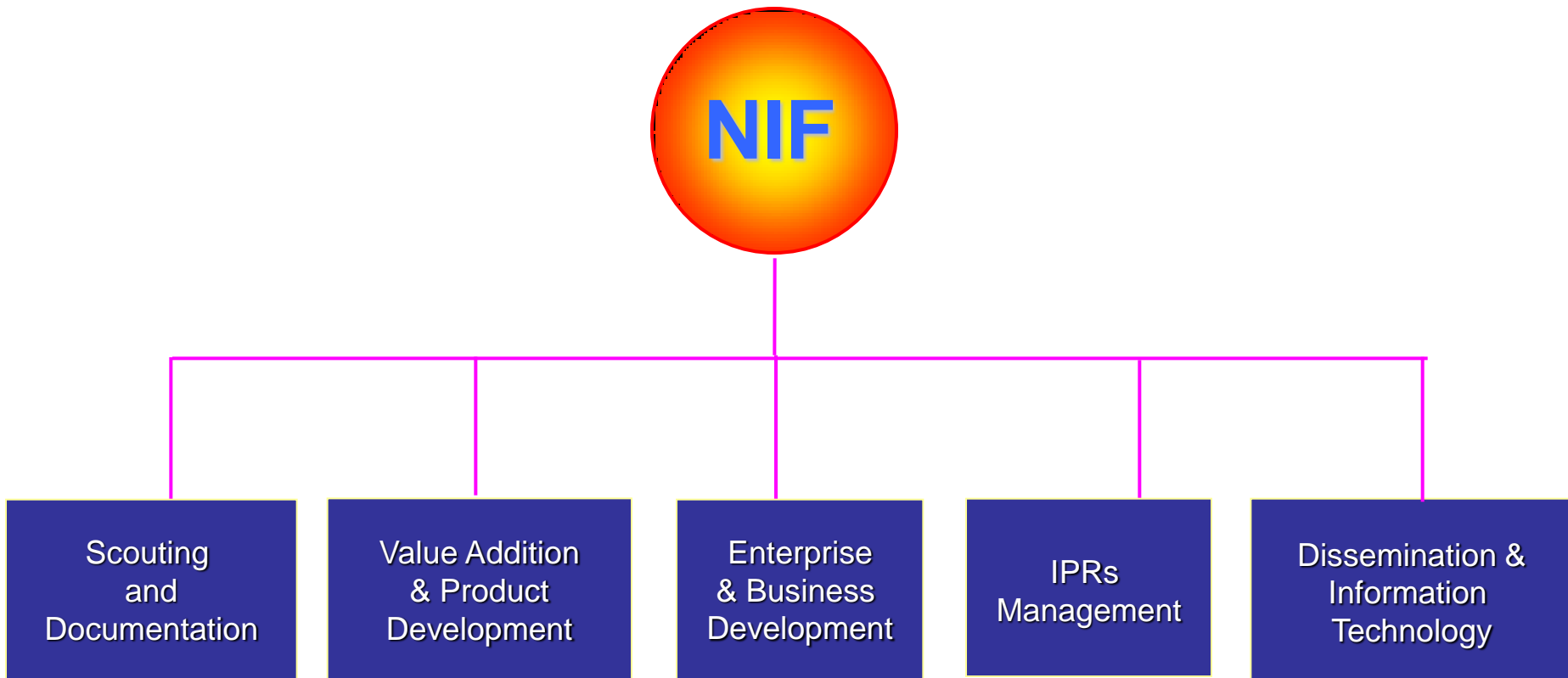
First formal steps, an NGO to support the HBN



Regional Technology Business Incubators to augment grassroots innovation through value addition & business development

Informal Network of like minded people and organizations. It has no physical address

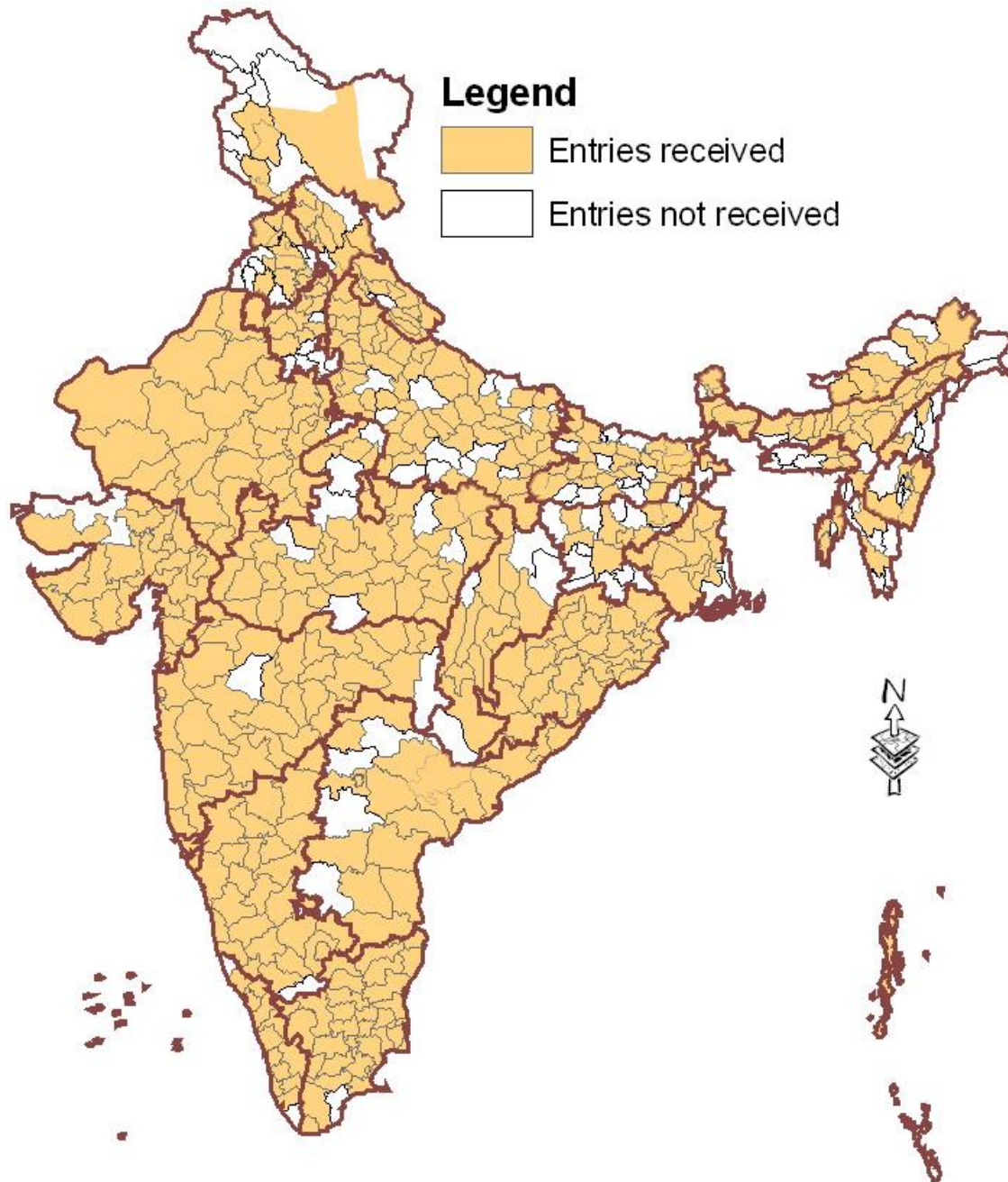
Functions



Current Status

- Scouted more than 200,000, ideas, innovations, traditional knowledge practices (Not all unique)
- 735 patents filed on behalf of innovators
- 550 projects supported for value addition
- 185 projects under Micro venture innovation fund
- Transferred 73 technologies to 85 licensees

Coverage of Districts by NIF (2000-2010) N= 545



g2G

grassroots to global

Global GIAN – Building a Global Value Chain for the Augmentation of Green Grassroots Innovations



Sales made internationally

1. Coconut tree climber- USA (Florida, Massachussets, California, Hawaii etc.) Australia, Maldives, Sri Lanka, Brazil, Mexico, West Indies
2. Pomegranate deseeder - Turkey, USA
3. Garlic peeling machine - Pakistan
4. Arecanut husker - Singapore
5. Milking machine - Phillipines, **Uganda, Ethiopia**
6. Resin grading machine - Peru
7. Cassava peeling machine - **Kenya**
8. Herbal growth promoters - Ghana



Product queries:		
Sl no.	Innovation/product	Countires
1	Coconut/palm tree climbing device	USA, United Kingdom, Vietnam, Australia, Sri Lanka, Mexico, Iran, West Indies
2	Entech oil expeller	USA, United Kingdom, Australia, Phillipines, Canada, Kenya, Colombia, S. Africa, Switzerland, Poland, Indonesia, Belgium
3	Garlic peeling machine	Slovenia, USA, Turkey, Peru, Singapore, Iran , Venezuela, Pakistan
4	Pomegranate deseeding machine	USA, Australia, Turkey, Venezuela, Hongkong, Israel, Netherlands, Thailand, UAE, Iran, United Kingdom
5	Cassava peeling machine	Congo, USA, Benin, Nigeria, Kenya, UAE, Uganda
6	Aaruni tilting cart	Uganda
7	Coconut defibring machine	China
8	Coconut dehusker	Mexico, New Zealand, USA, Philippines, Bangladesh
9	Lemon cutting machine	S. Africa
10	Milking machine	Bangladesh, Uganda, Ecuador
11	Palm leaf mat weaving machine	Fiji
12	Rain Gun (Chandraprabha)	Sudan
13	Tea making machine	Bangladesh,
14	Tile making machine	Bangladesh, Kenya, Rwanda, Ghana, Zambia
15	Trench digging machine	Pakistan
16	Zero head water turbine	Egypt
17	Arecanut dehusking machine	Chile

Emerging Models of Innovation

- a) Building upon what disadvantaged **people** **are** **rich** in: *inability to live with unsolved – overcoming inertia* **problems**
- b) **Empathetic** innovation: *samvedana se srijansheelta, kho kho model of innovation (innovation relay)*
- c) Going beyond **long tail, long nose** of innovation to **turbulent** innovation; autopoiesis model of self design

Emerging Models of Innovation

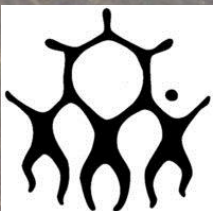
- d) **Inverted** model of innovations: children invent, engineers fabricate, and companies commercialize
- e) **Pooling of distributed** ideas for innovation and experimentation : uncommon from common
- f) distributed mind management: www.techpedia.sristi.org - transcending the limits of frugality
- g) **Moving blackboards**: learning from unexpected quarters

Minds on the margin are not marginal minds

shall we join hands in **learning from grassroots green innovators**

fortune really lies at the **Top** of the **innovation,**
ethical, and value pyramid

thus, poor people are not at the bottom of all pyramids



anil k gupta
National Innovation Foundation, SRISTI, honey bee network, IIMA
www.sristi.org/anilg
www.nifindia.org



The President of India honours grassroots innovators, launches National Innovation Clubs and hosts an innovation exhibition at the President's house; hosts Festival of Innovation (FOIN)




Initiative to Institutionalisation: Policy



The former President awards children innovators every year at the
IGNITE Award function by NIF at IIMA



Initiative to Institutionalisation



Creativity counts
Knowledge matters
Innovations transform

Incentives inspire

*(not just individual, but also collective, not just material,
but also non-material)*

Join the Honey Bee Network!
For rewarding indigenous creativity and innovation
www.techpedia.in, www.sristi.org, www.nif.org.in
anilgb@gmail.com