

Frugal innovation : can be high-tech

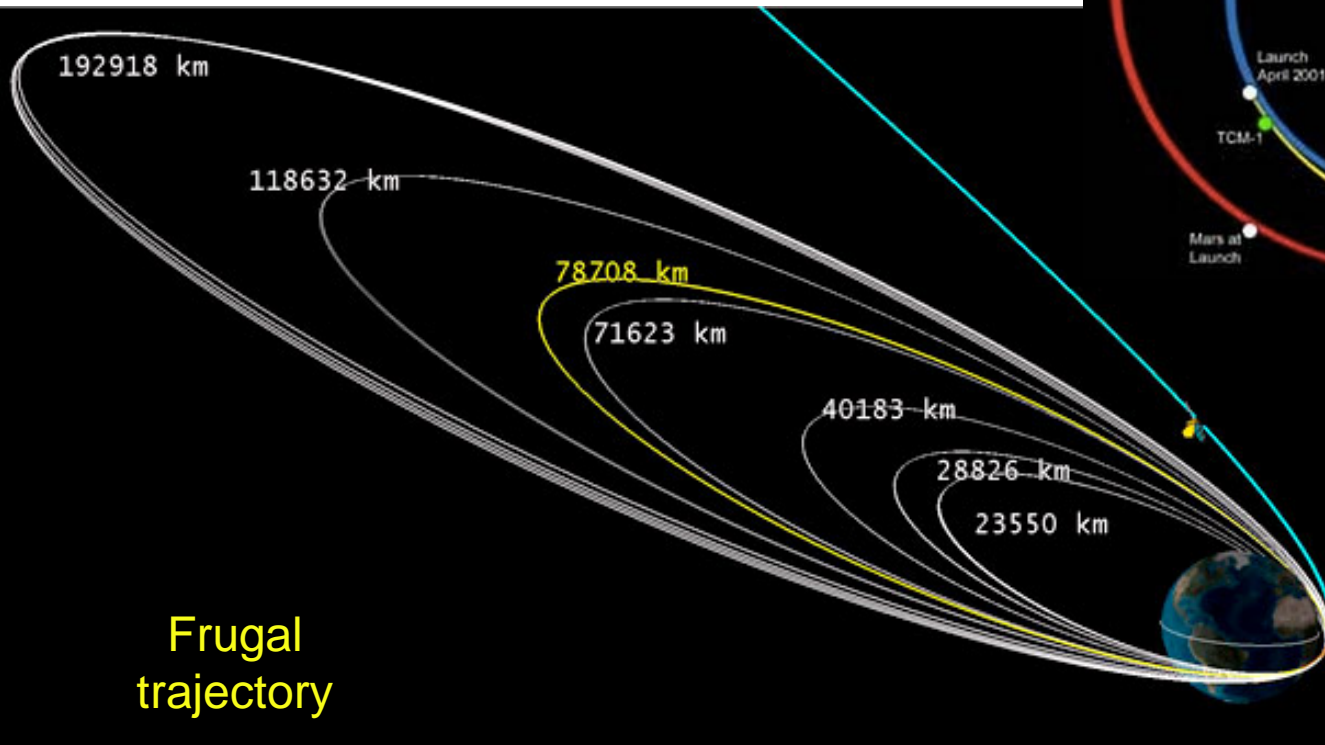
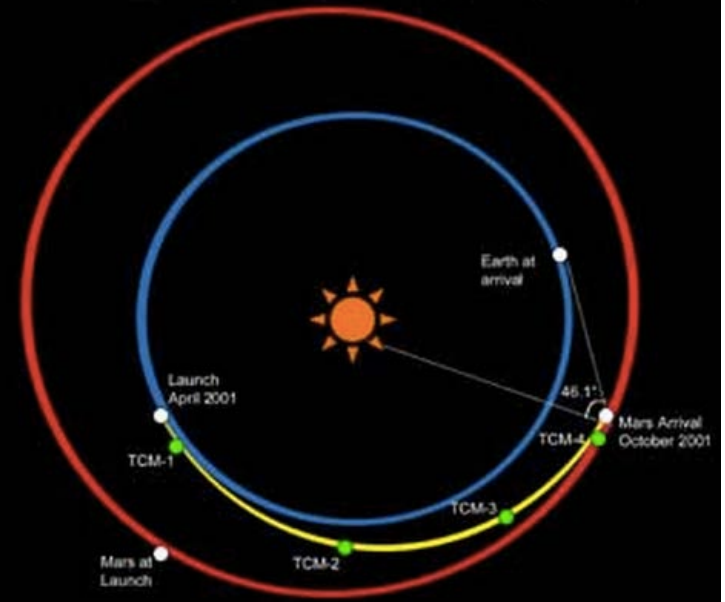
Mars mission

NASA space shuttle \$ 1.5 B

Gravity was made for \$ 100 m

Indian space mission \$ 75 m

2001 Odyssey Interplanetary Trajectory



Change the conversation, change the goal

Research

- Peer reviews
- World records
- Publications
- Build own equipment, save money
- Research money available
- No timeline to market
- What market !

Change the conversation, change the goal

Investors

- Freedom to operate
- Patents
- First among equals
- Time to market
- \$ less critical than time
- Machine customisation
- Replication

Change the conversation, change the goal

Joe

- Does it resolve a pain
- Cost compared to current solutions
- New behaviour to be learned
- Servicing and maintenance
- Theft?

Frugal drugs

European approach

- \$ Billions > new molecules
- R&D for next blockbuster
- All new approvals needed
- Time-to-market – forever!

Indian approach

- Can we replicate
- Look at Generics
- New use opportunity

Jaipur Foot

In the West - \$ 5000 to 50K

- Cosmetic
- Knee replacement
Titanium joint \$10K

In India \$ 40

- Walk, work in the field, pedal a cycle
- Knee replacement - self-lubricating, oil filled nylon \$20



Mobile devices in rural India

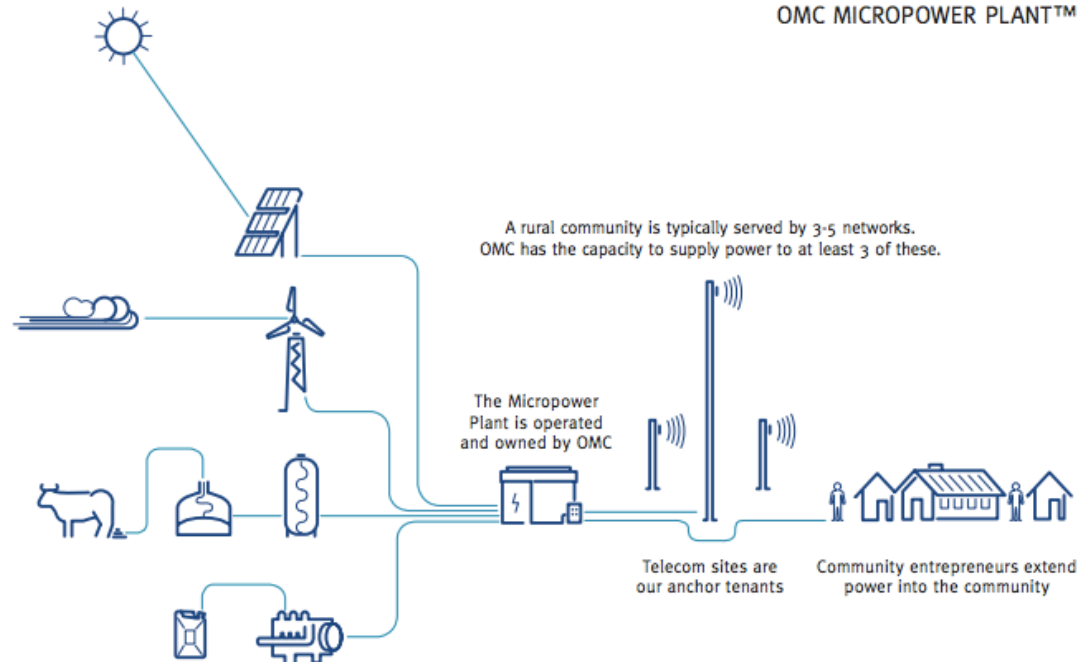
Pain

- No electricity in villages
- Charging from tractors

Opportunity



WEF Winner – OMC power



Tata Nano



Innovation from the ground up

Shampoo opportunity

In 1983

- 700 m people in villages in India
- Not provided shampoo
- Bottle too expensive



No market, or an incredible large one?

Shampoo opportunity



“Opportunity at the bottom of the pyramid”

Water in villages



- 200 million hours / week
- Women's duty, 3 hours per day

- Water purifier
- Mobile charger
- Safeguards from back injury

Frugal innovation in India

Key drivers:

- Less fundamental research
- Build to budget – money always tight
- Constant customer feedback – ensure fit and relevance
- The only determinant of success - customers
- A billion more people where he came from

Frugal Innovation in India : begin with the pain

Scenario in India:

- A normal taxi driver has university education
... but try to get your tap or window fixed !
- Skills are lacking, not aligned with industry requirements
- Industry can't find skilled people
... while people can't find jobs

Is there a gap?

Skill University : breathing frugal innovation

Frugal innovation in action:

- Align industry requirements with world-class skill training
- Micro-entrepreneurship – from employee to employer
- Empower them . . . and let them loose

Takeaway

For Tech entrepreneurs

- Know where the value is > NATO
- It's okay to take short cuts
- Tech maturity, then look for nails
- Bane of the comfort zone
- Start-ups : not considered privilege
- Tech founders : generation of entitlement
- Limited vision : $10 > 2 > 5$
- Early, often, cheap
- Remember the curse of the scientific mind – black or white
- Art of the possible

Finally

As Steve Jobs Said: “Stay hungry, stay foolish”