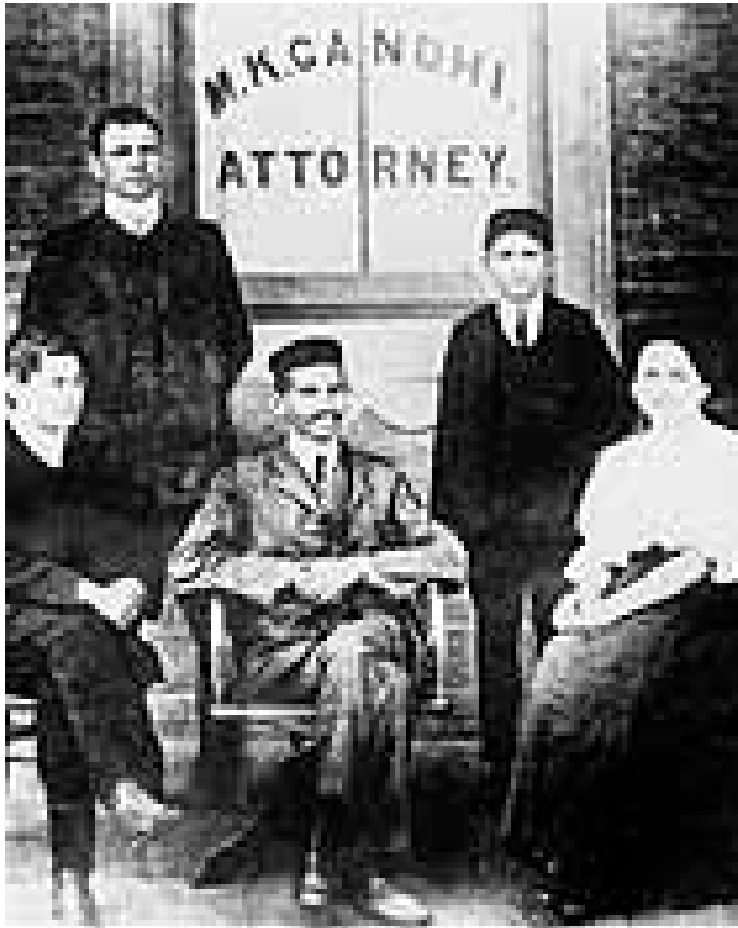


India's Internet

What it is and what it could be?

Ajit Balakrishnan
ajitB@Rediffmail.com



How would you
have
interpreted
this?

1917

Mohandas Gandhi, unknown in India, recently returned from South Africa, answers a call for help from peasants in Champaran, Bihar.

7 months later he is a national leader.



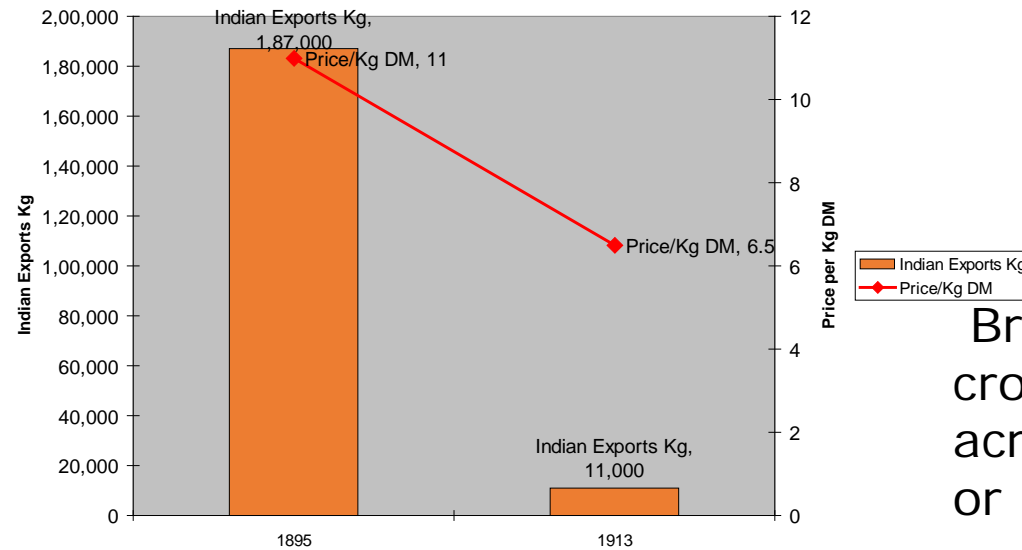
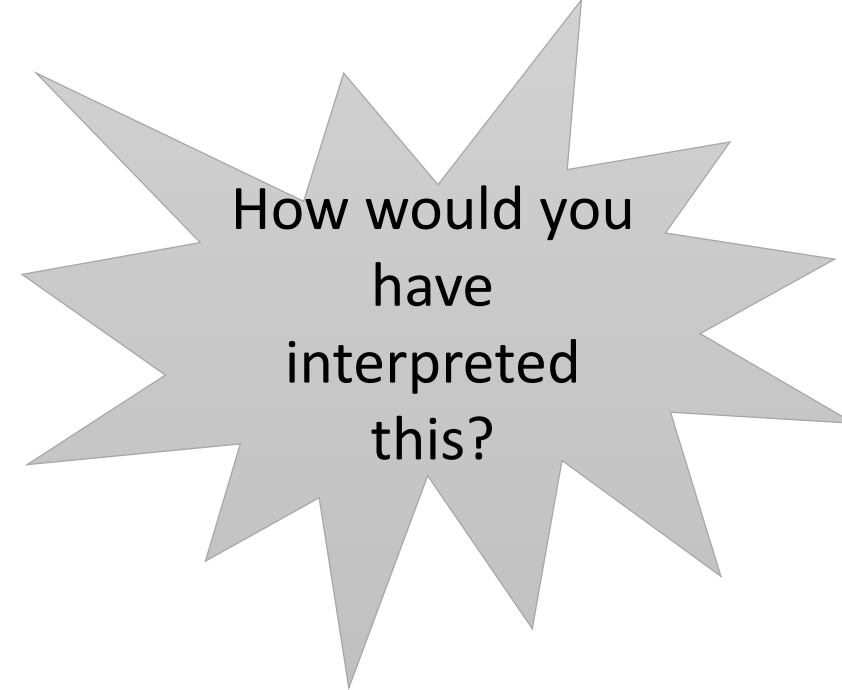
1825 Indigo monochrome roller-print on linen

How would you
have
interpreted
this?

“Champaran...used to be full of
Indigo plantations until...1917.

The Champaran tenant
was bound by law to plant
three out of every twenty parts
of his land with indigo for the
landlord...the *tinkathia*
system..”

“My Experiments with Truth” (1925)



British planters held share-croppers to the $\frac{3}{20}$ th of every acre minimum indigo acreage or pay



A.D. 1856 N° 1984.

Dyeing Fabrics.

LETTERS PATENT to William Henry Perkin, of King David Fort, in the Parish of Saint George in the East, in the County of Middlesex, Chemist, for the Invention of "PRODUCING A NEW COLORING MATTER FOR DYEING WITH A LILAC OR PURPLE COLOR STUFFS OF SILK, COTTON, WOOL, OR OTHER MATERIALS."

Scaled the 20th February 1857, and dated the 26th August 1856.

PROVISIONAL SPECIFICATION left by the said William Henry Perkin at the Office of the Commissioners of Patents, with his Petition, on the 26th August 1856.

I, WILLIAM HENRY PERKIN, do hereby declare the nature of the said Invention for "PRODUCING A NEW COLORING MATTER FOR DYEING WITH A LILAC OR PURPLE COLOR STUFFS OF SILK, COTTON, WOOL, OR OTHER MATERIALS," to be as follows:—

Equivalent proportions of sulphate of aniline and bichromate of potassa are to be dissolved in separate portions of hot water, and, when dissolved, they are to be mixed and stirred, which causes a black precipitate to form. After this mixture has stood for a few hours it is to be thrown on a filter, and the precipitate to be well washed with water, to free it from sulphate of potassa, and then dried. When dry it is to be boiled in coal-tar naphtha, to extract a brown

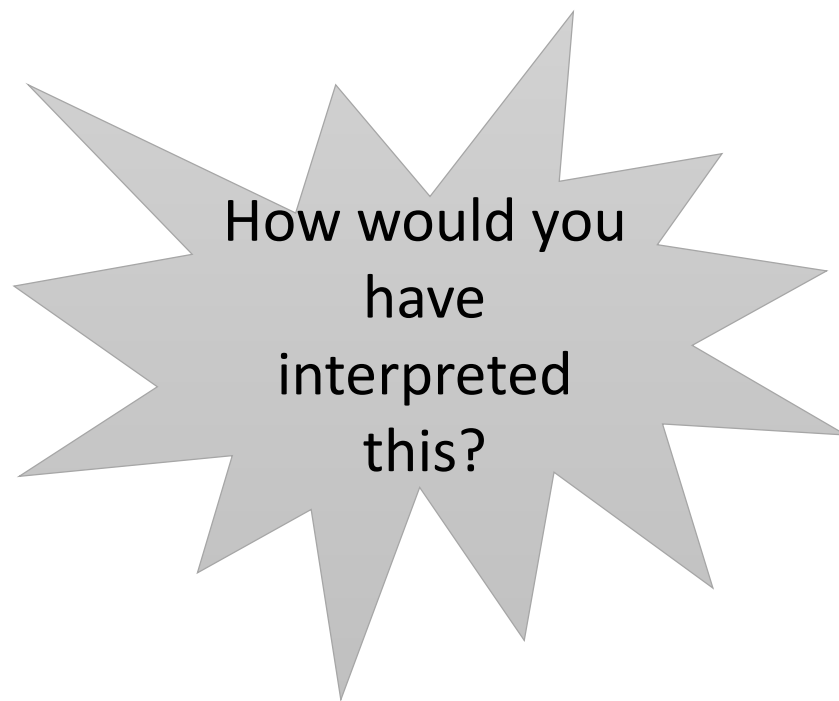
Perkins' Patent

How would you
have
interpreted
this?

1856

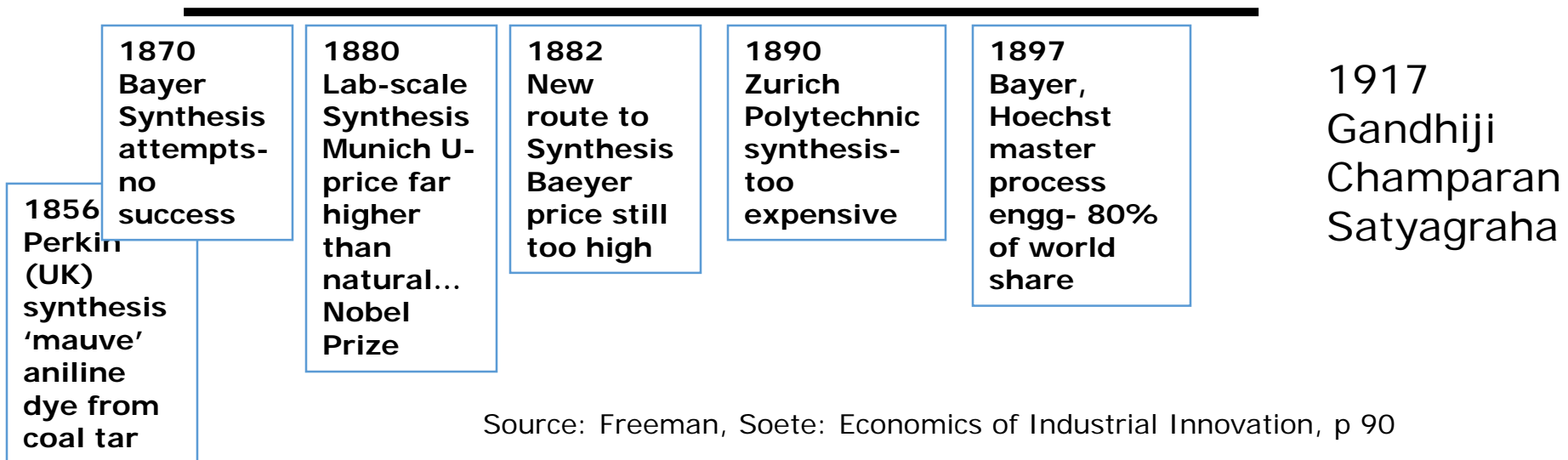
18-year old William Perkin, encouraged by his German professor von Hoffman, trying to synthesize quinine from coal tar got a purple-coloured solution, which proved to be an effective dye for textiles.

The synthetic chemical industry was born.



1895
Indian Exports: 187,000
Price /kg DM 11
Area: 650,000 acres

1913
Indian Exports: 11,000
Price /kg DM 6.50
Area: (1906)115,000 acres



...but we took the wrong lessons?



How would you
have
interpreted
this?

" The *tinkathia* system...in existence for about a century was thus abolished... the superstition that the stain of indigo could never be washed out was exploded."

- "My Experiments with Truth"

...the German trajectory after the Indigo synthesis



IG Farben

AGFA (Actien-Gesellschaft für Anilin-Fabrikation), Berlin ; BASF (Badische Anilin und Soda Fabrik), Ludwigshafen ; Bayer, Leverkusen ; Farbwerke Hoechst (now Sanofi-Aventis), Höchst

Note- 'aniline' in the names-
'anil' from Arabic 'Neel' for blue

1930's

- New! Red azo dye that kills streptococci bacteria in mice
- Active ingredient, Sulfanilamide creates the pharmaceutical industry
- Institutions: patent system, process engineering, chemistry teaching...

What the Internet is

increases societal productivity



Spinning Jenny



Continuous Flow Plant



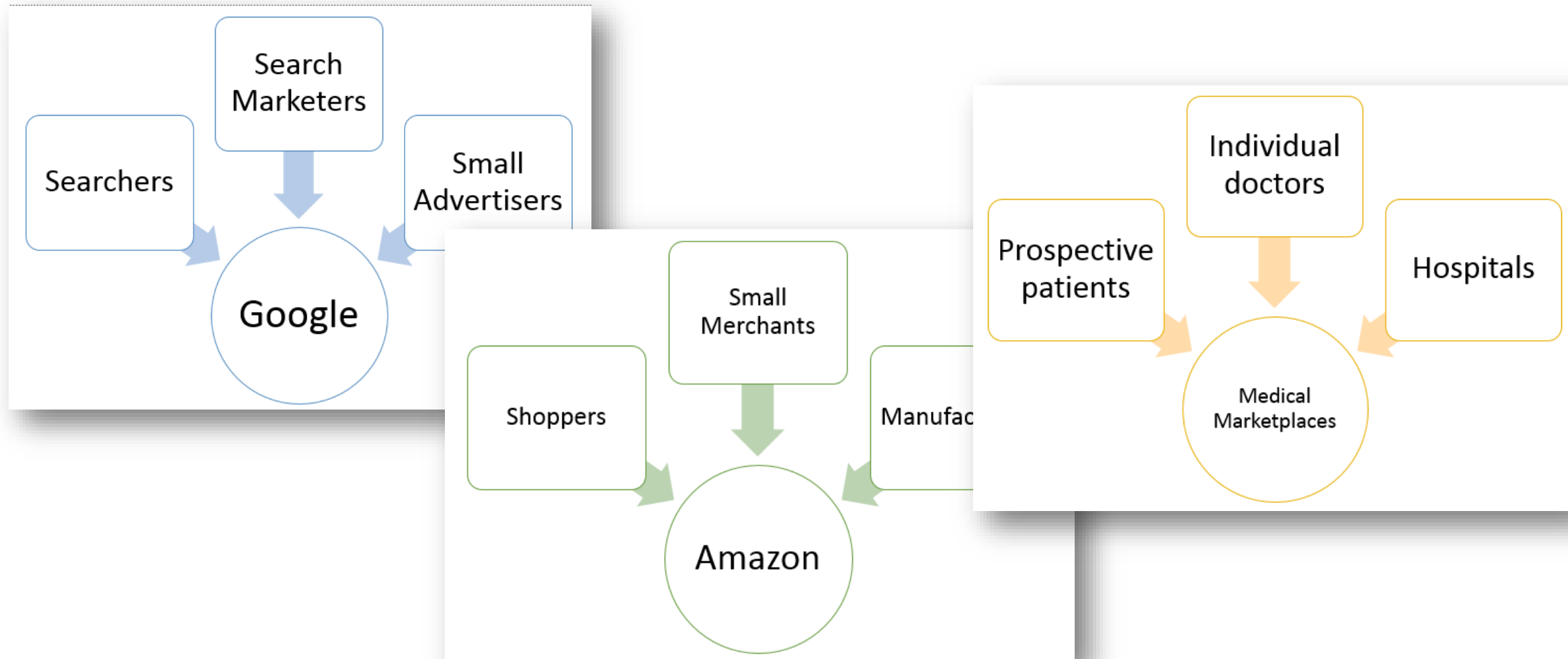
Moving Assembly Line



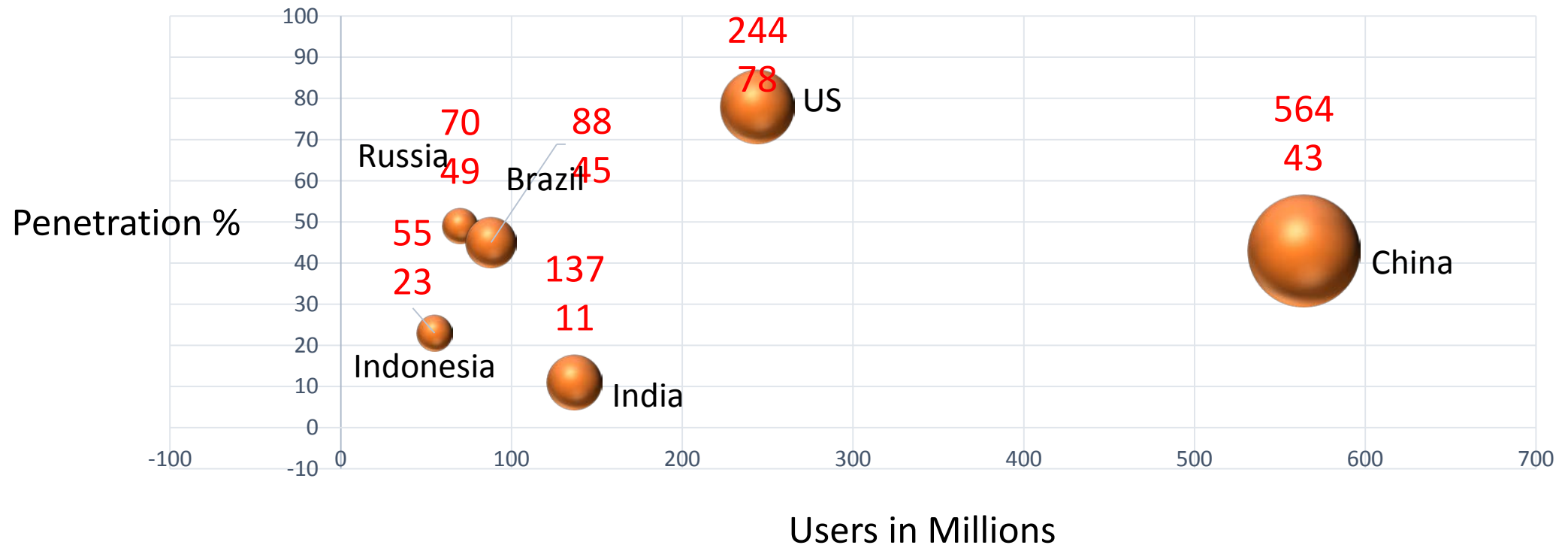
Information Intermediary

Two-sided markets

US exports of digital service in 2011; \$356 bn



The puzzle of India's internet penetration



India internet penetration < Russia, Brazil, Indonesia

Source: Mary Meeker, Kleiner Perkins, 29th May 2013

Why internet penetration is so low

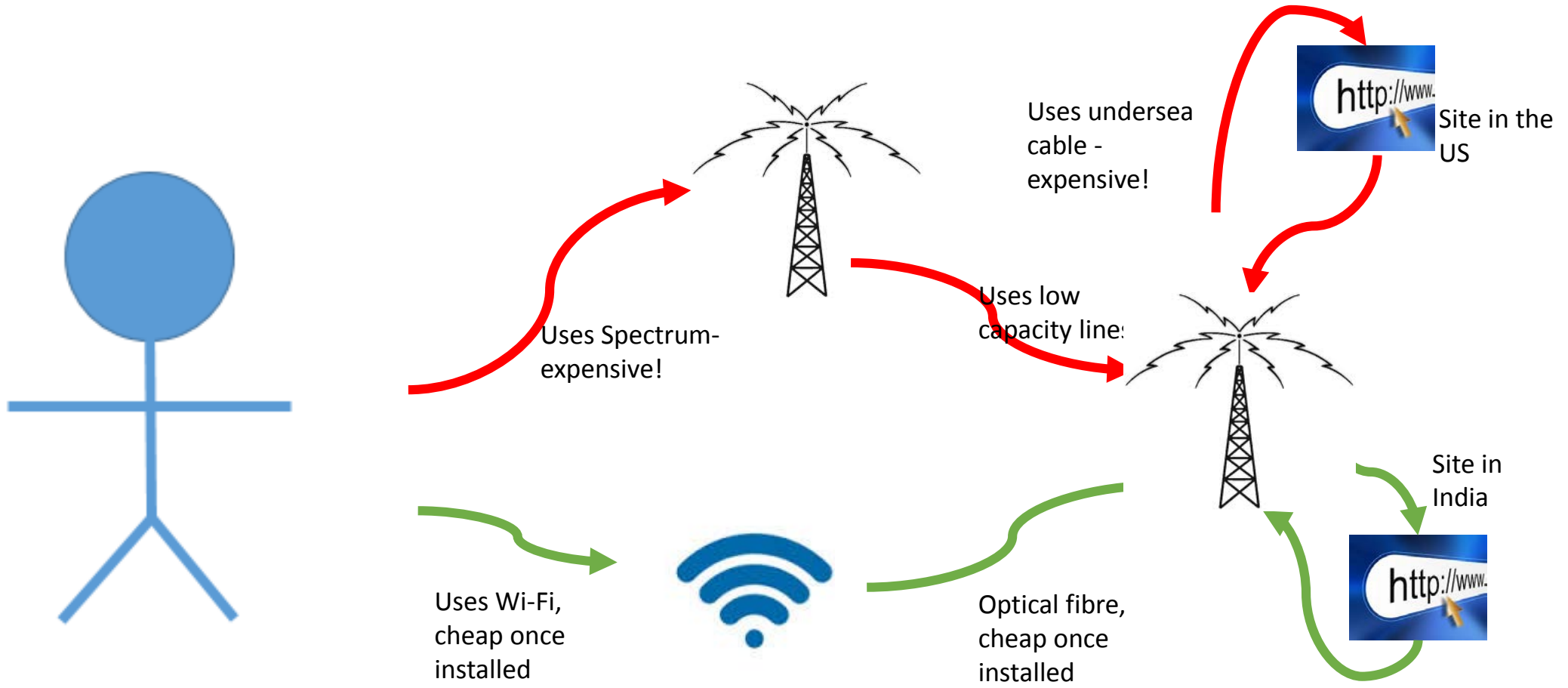
most Indians cannot afford it



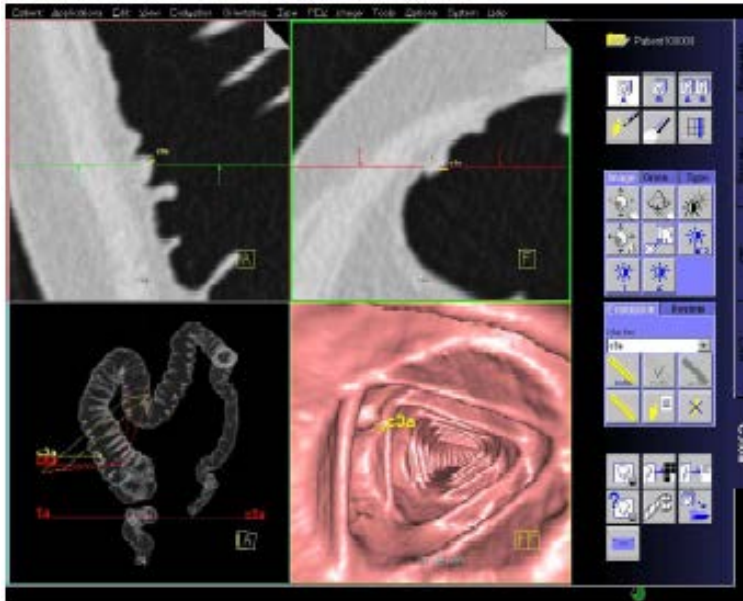
Target broadband price : Rs 100 pm unlimited use
"Broadband" = >4 Mbps download speed, >1 Mbps upload speed

Public policy issue- 5

Why internet access is so expensive in India

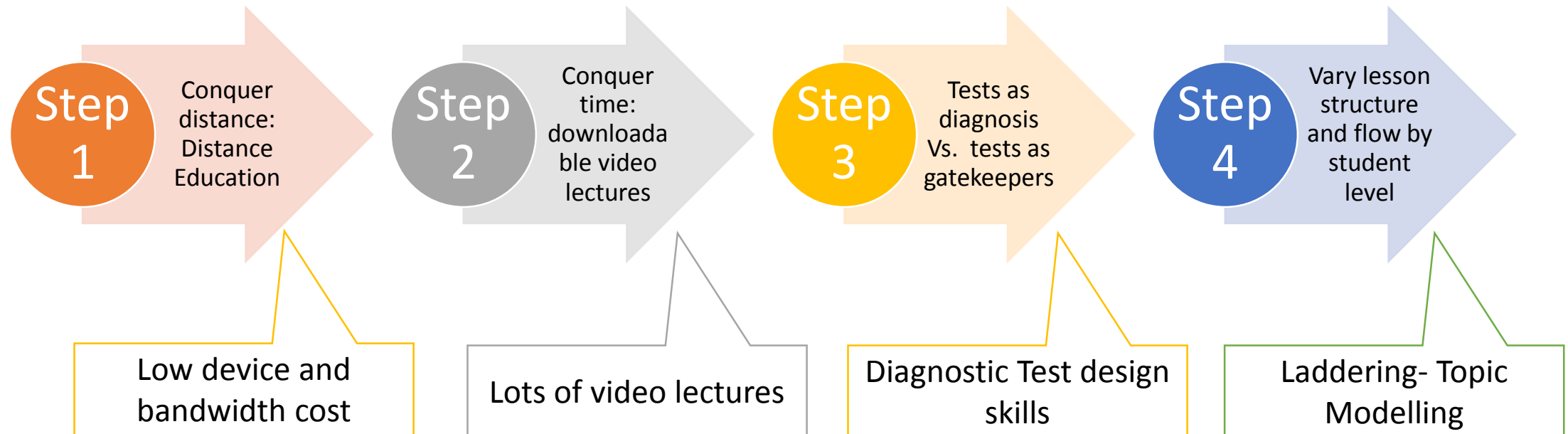


The internet promise in Health Care



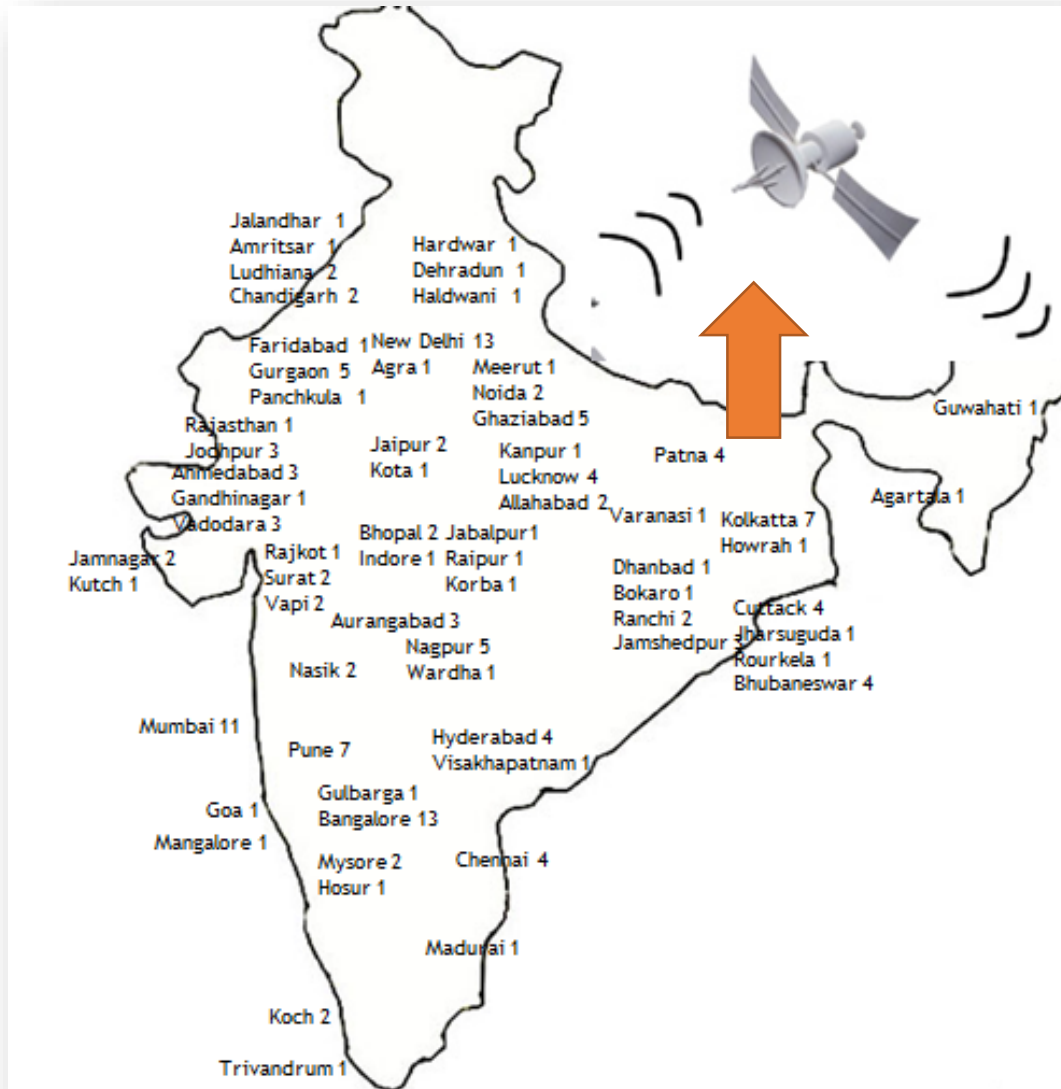
- Training radiologists to detect colonic polyp is a long process.
- A machine learning system used by non-experts has detection rates of 96%, reduced false positives by 66%
- Source: R Bharat Rao and others: Siemens, US

The internet promise in school education



The Internet promise of Business Education

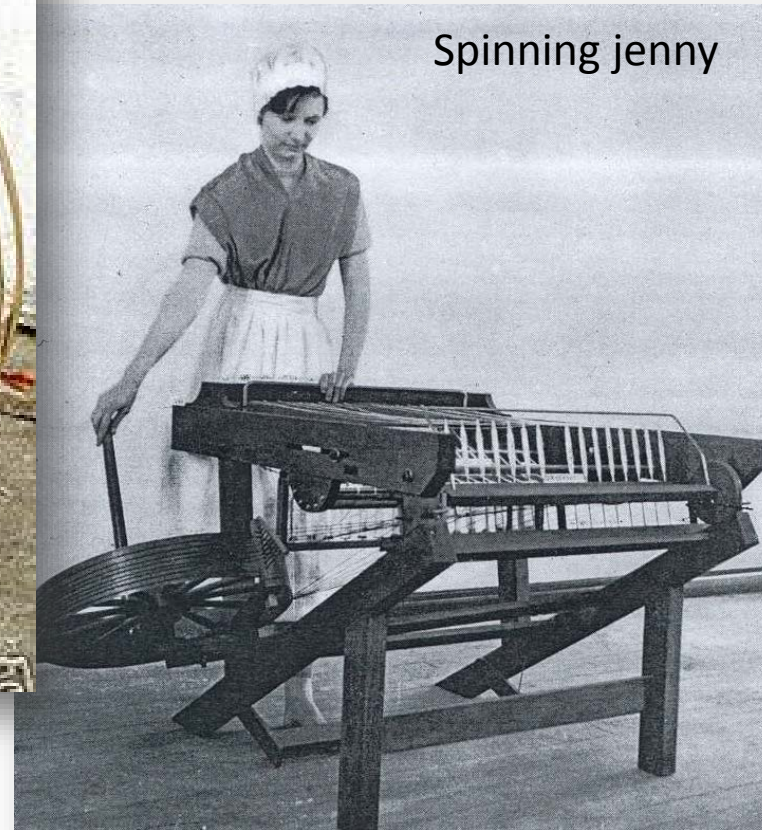
...dilemma at Indian Institute of Management Calcutta



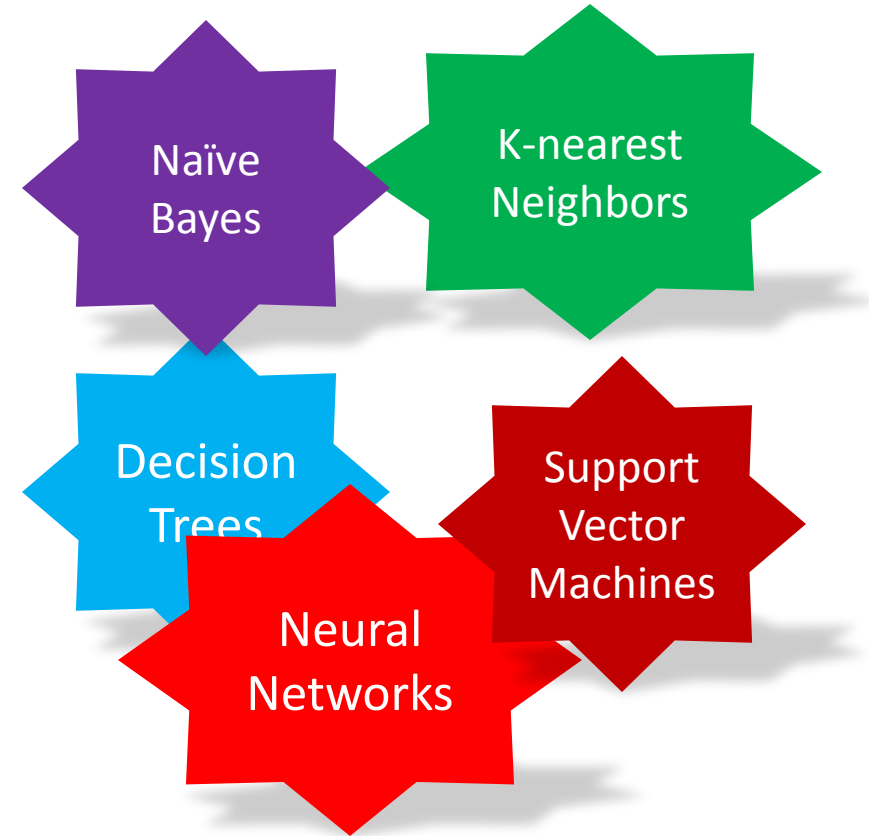
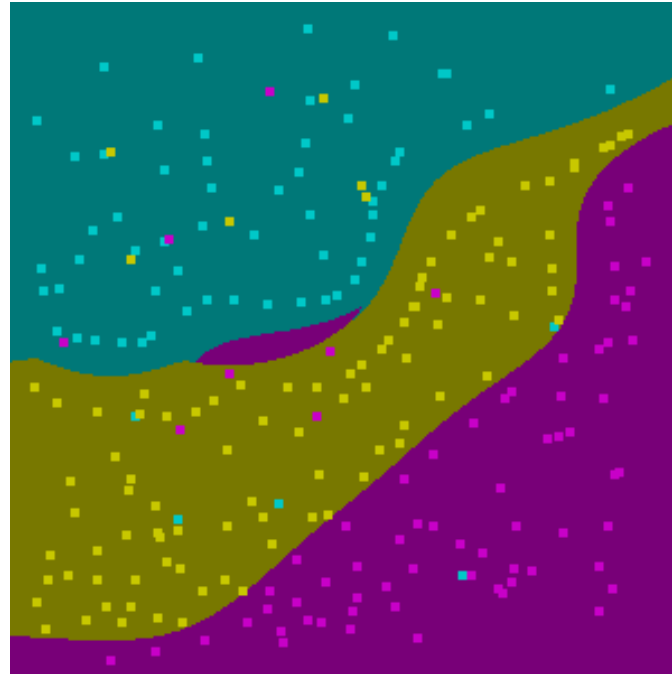
	Now	Can be
Teaching staff	Calcutta	All IIMs, Int'l located faculty
Students	70 cities, 170 centres, 4000 students	All IIMs, 3000 India Business Schools, International

Financial Times London world ranking 2013
Overall No 18, Finance No 1, Economics No 2

The Industrial revolution in 2 pics



Machine Learning- the Spinning Jenny of the modern era



...are we entering a new era, un-noticed?

“...most of its aristocracy, governing elite and intellectuals, Austen, Shelley, Keats, Wordsworth, Coleridge, Byron, and Burke, as well as Smith, Malthus, Ricardo...seemed unaware of their times as an era of transition towards a ‘modern’ world.”

- Thomis: *Responses to Industrialization*

...the Industrial Revolution largely went un-noticed-
Toynbee coined the phrase 100 years later

For more debates like this

