Scaling the Uptake of Agricultural Innovations: The role of sustainable extension and advisory services

Scaling Agricultural Technologies
Global Learning Evidence Exchange
4 December 2013
Addis Ababa, Ethiopia

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Major Themes Covered

- Framing 'scale' in the uptake of agricultural technologies
- Important concepts of technology diffusion and uptake
- Application of extension principles in practice

Key Questions

- How do we *define* scale when thinking about the adoption of agricultural technologies and practices?
- How do we *design* for the potential of scaling the up-take of agricultural innovations?
- How do we *sustain* the momentum of scaling behavior change once it is initiated?

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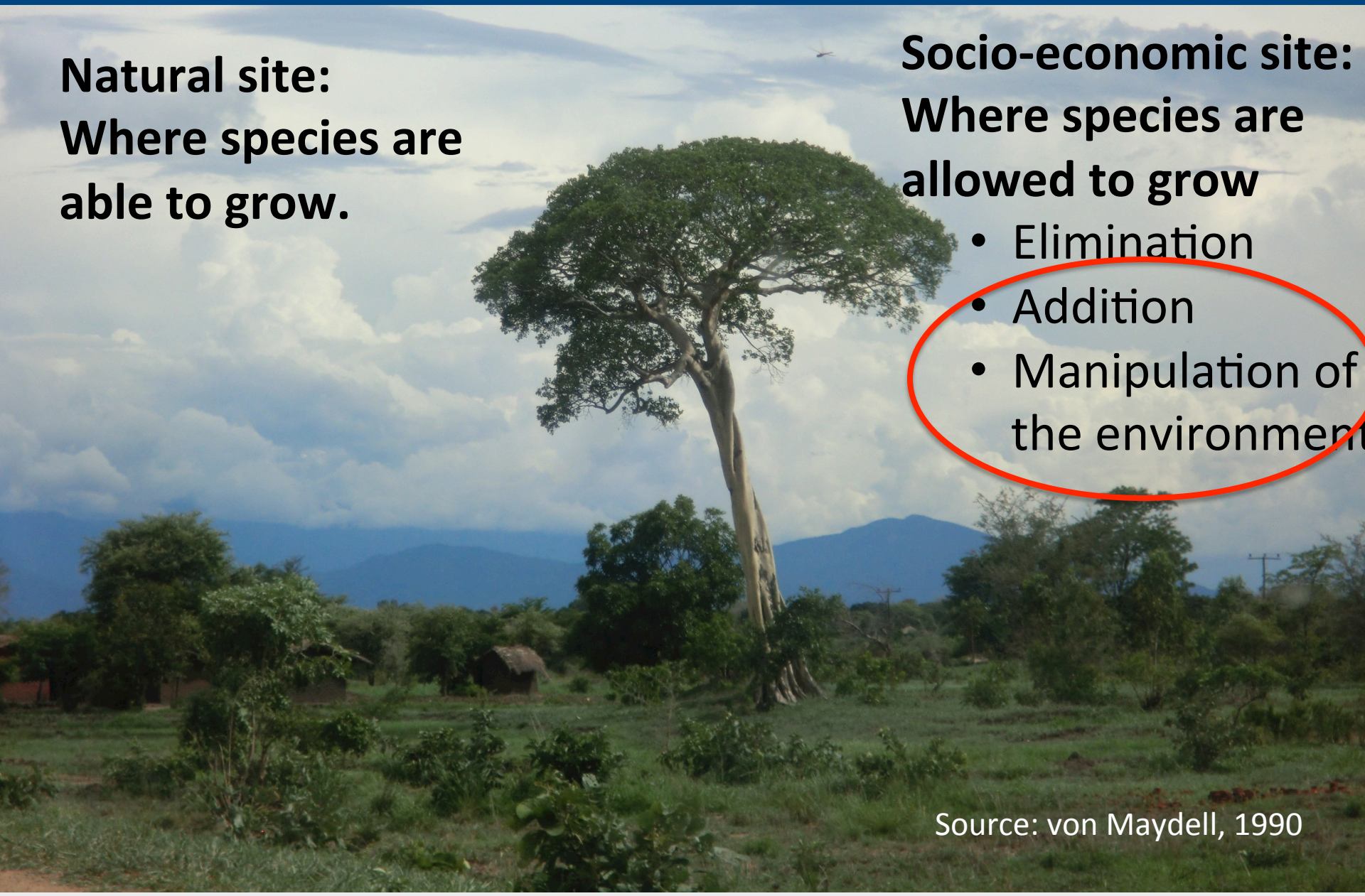
Place-based Nature of Agriculture



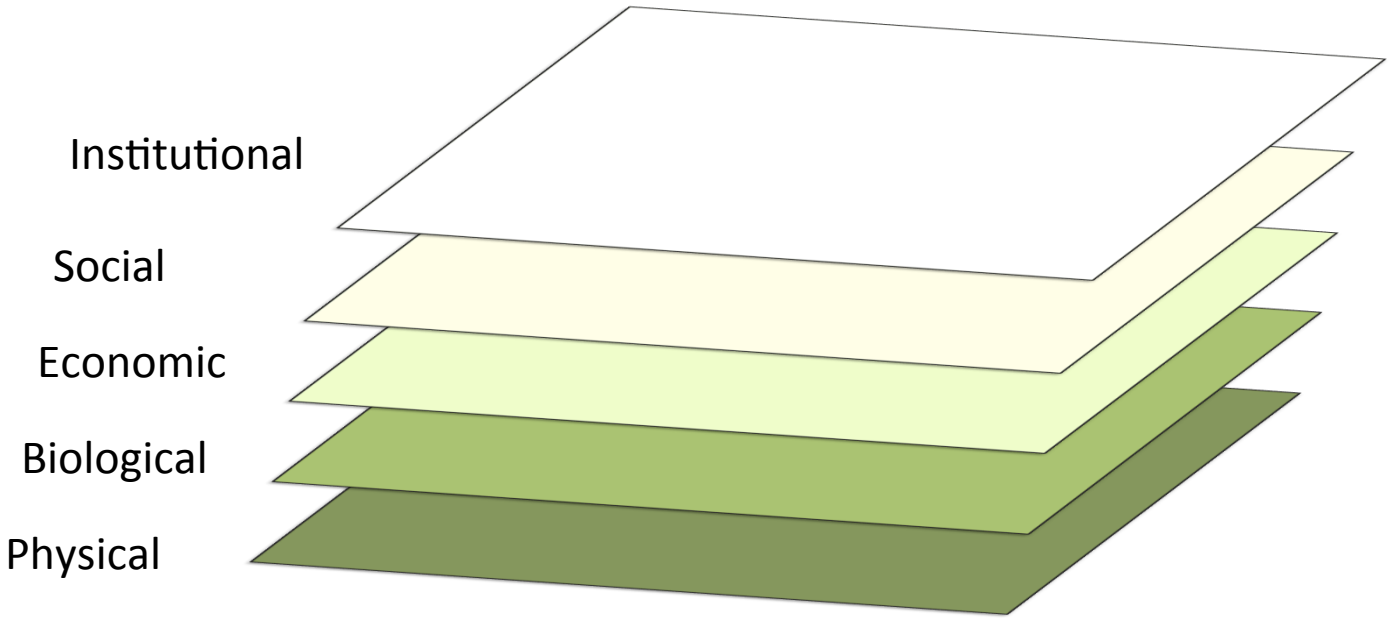
Natural site:
Where species are able to grow.

Socio-economic site:
Where species are allowed to grow

- Elimination
- Addition
- Manipulation of the environment

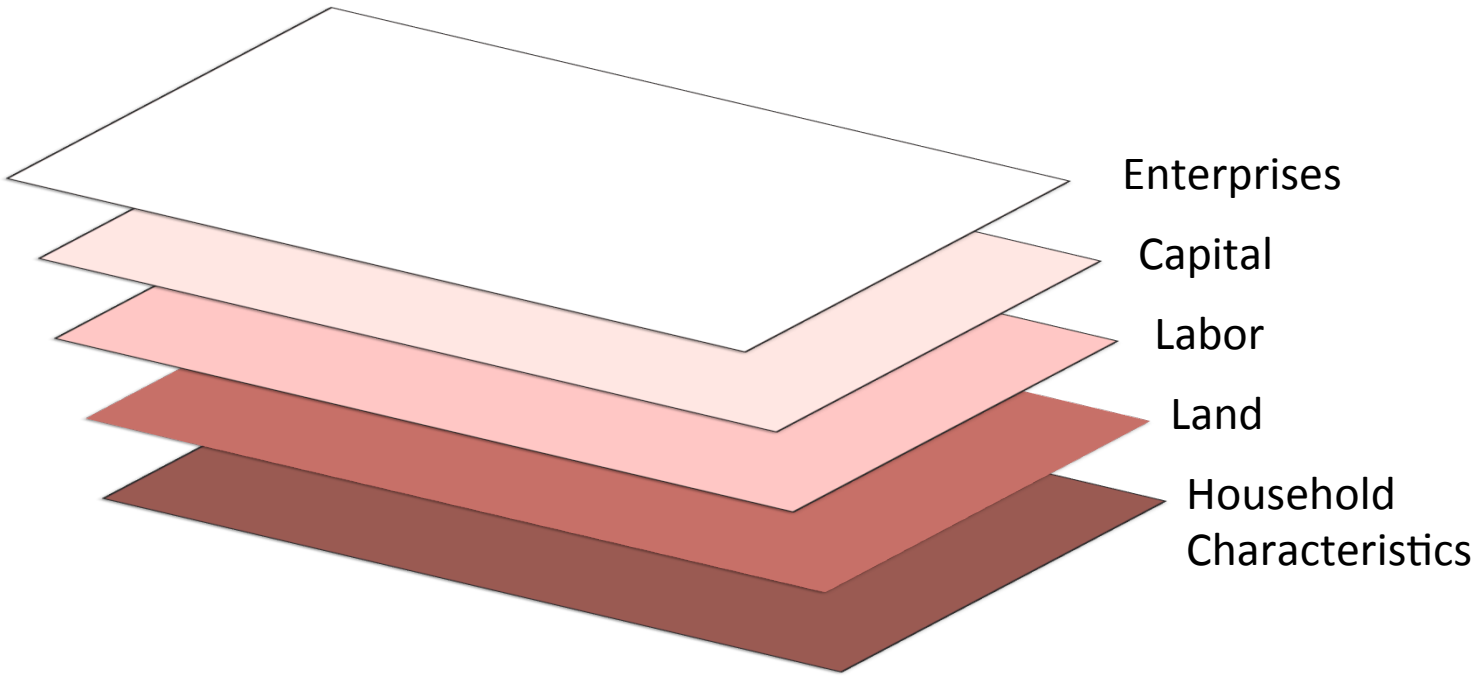
Source: von Maydell, 1990

The Farming Environment



Source: adapted from Shaner et al., 1982

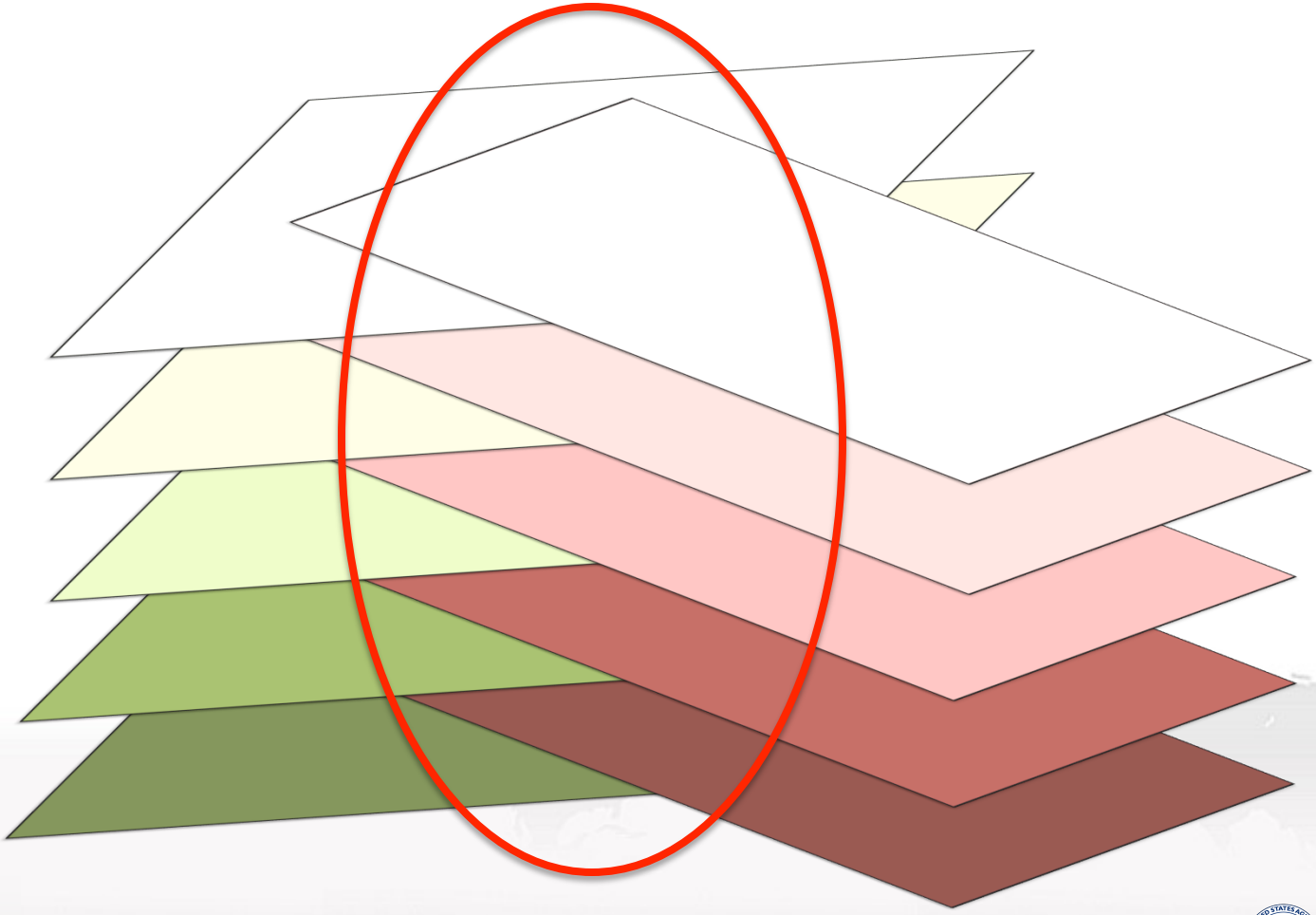
Farming System Characteristics



Source: adapted from Shaner et al., 1982

Adoption Domain

"recommendation domain"



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Essential Nature of Scale in Agriculture

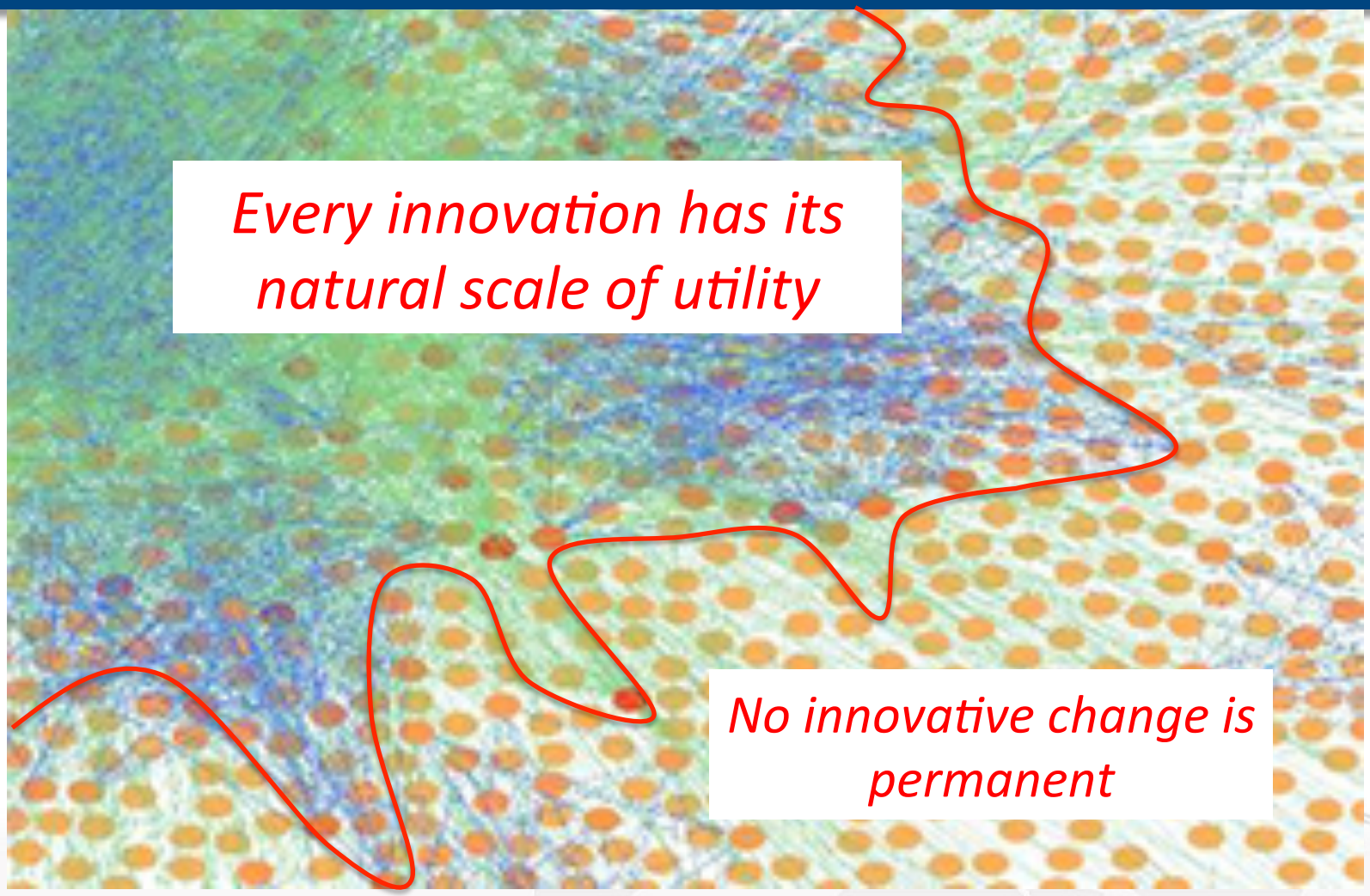

Image Source: http://www1.eere.energy.gov/solar/sunshot/seeds_sandia.html

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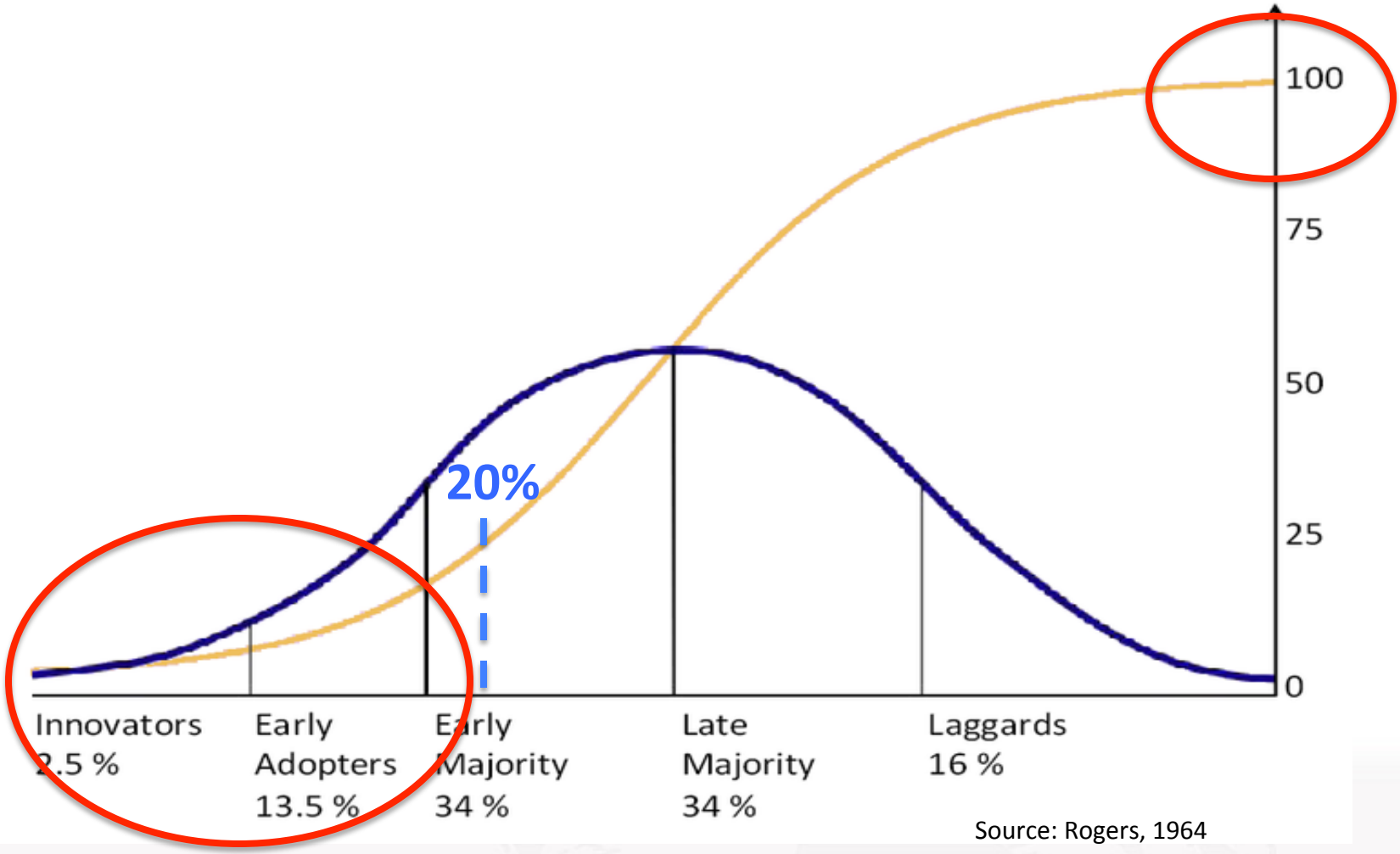
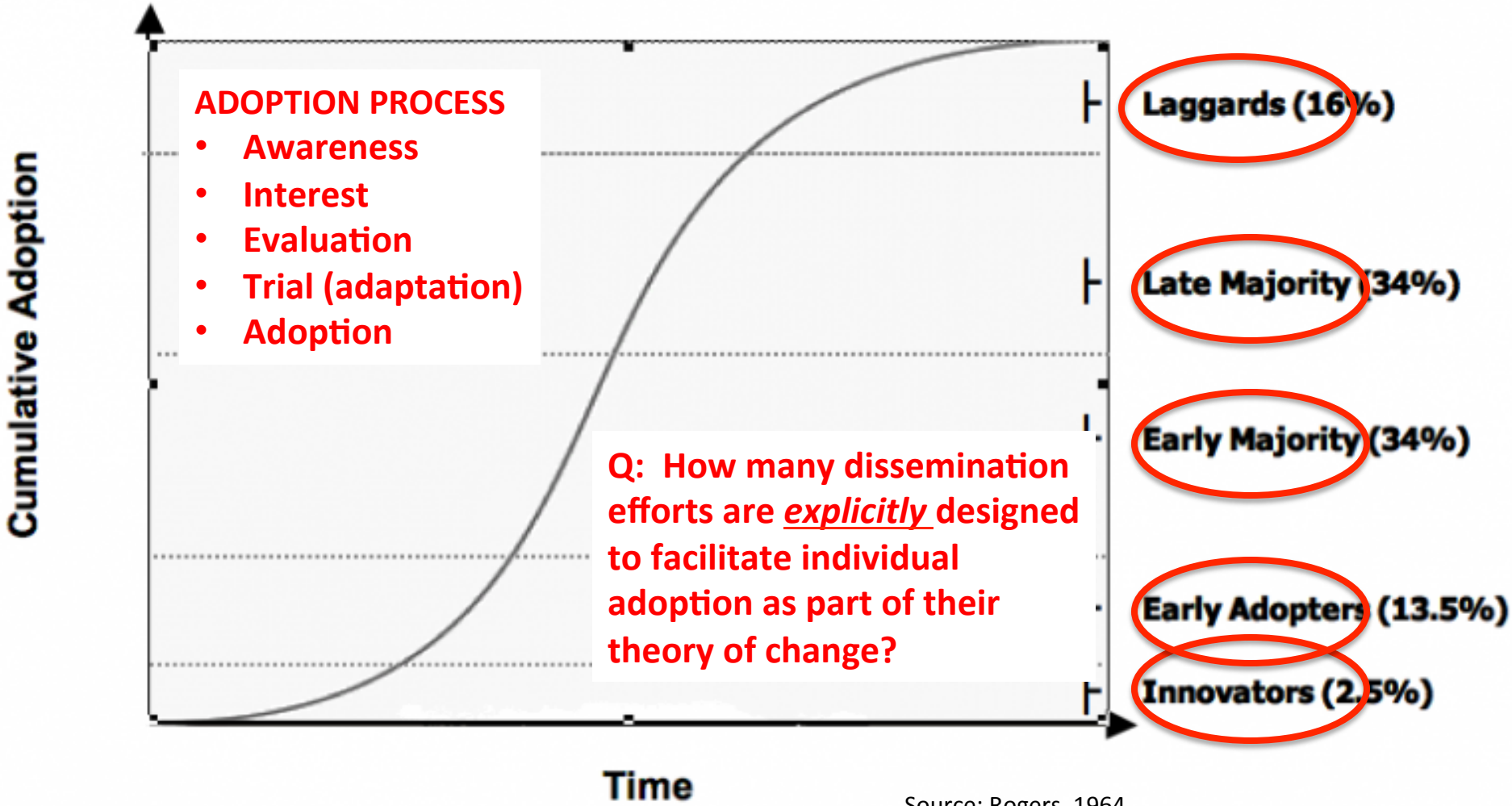
The Diffusion of Innovations



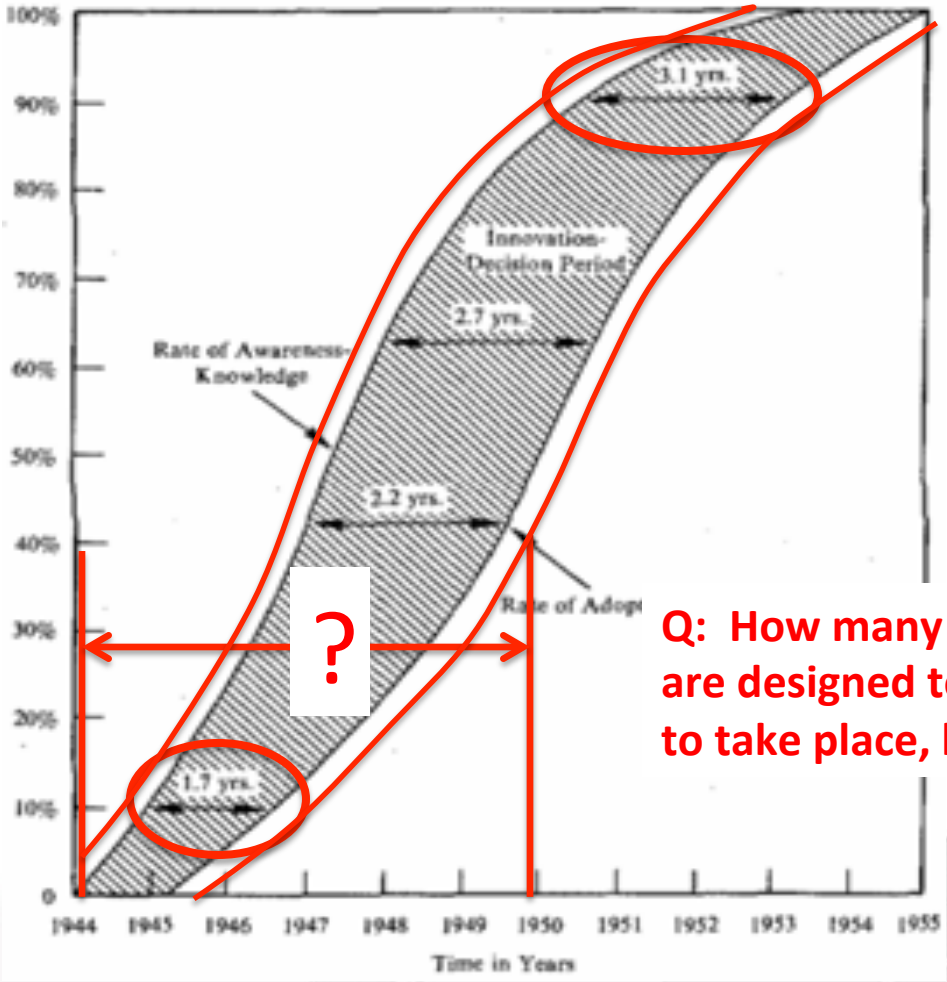
Source: Rogers, 1964

Process of Adoption



Source: Rogers, 1964

The Time Dimension



Q: How many interventions are designed to allow adoption to take place, let alone takeoff?

Source: Rogers, 1995

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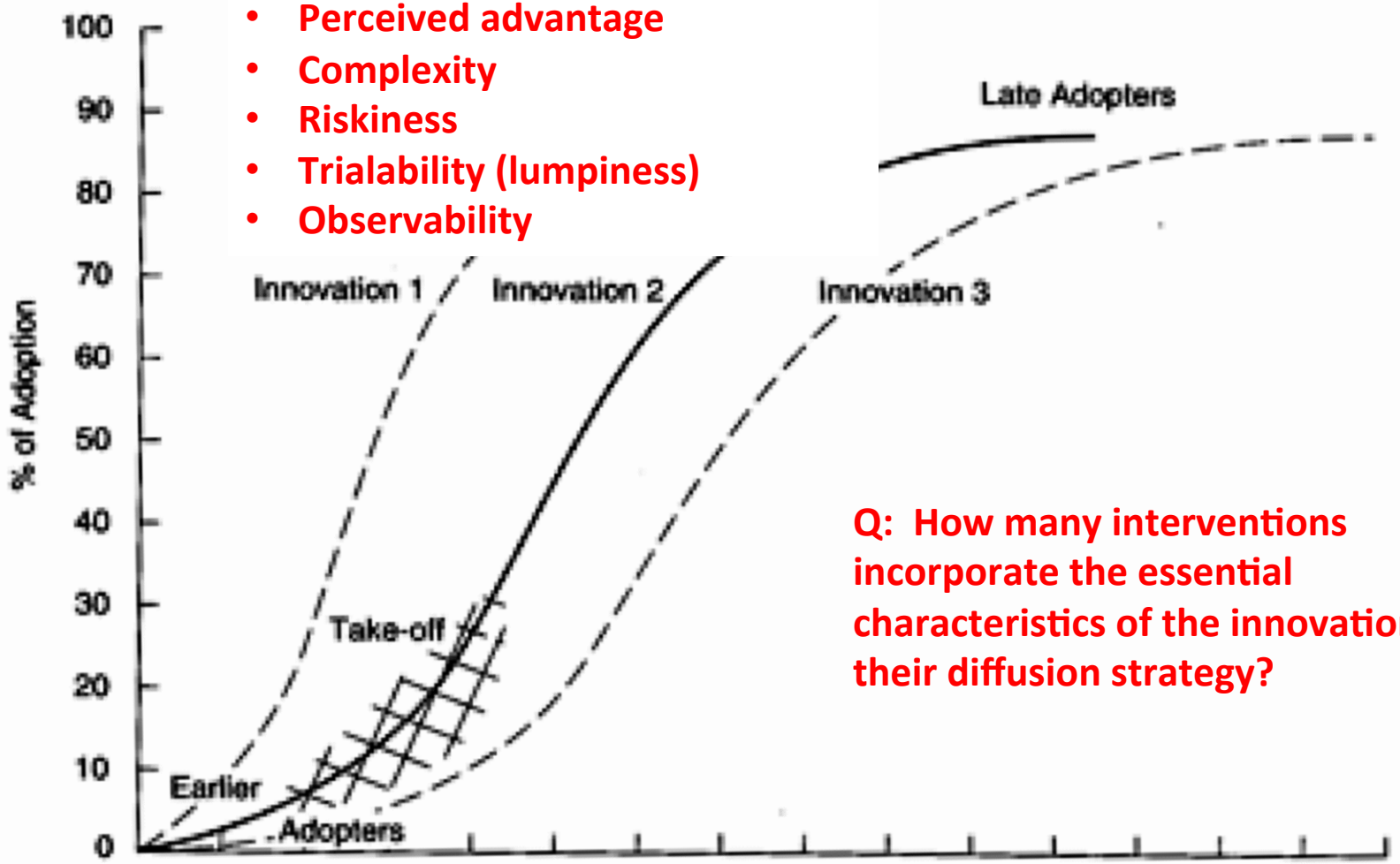
Process of Diffusion

INNOVATION CHARACTERISTICS

- **Perceived advantage**
- **Complexity**
- **Riskiness**
- **Trialability (lumpiness)**
- **Observability**



Q: How many interventions incorporate the essential characteristics of the innovation into their diffusion strategy?

Source: Rogers, 1963

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The Varied Nature of Extension Services

- Extension is human capital enhancing education and training, usually delivered in non-formal settings for adult learners
- Includes a wide variety of activities:
  - extending technologies and methods (T&V)
  - answering farmer questions (Advisory Services)
  - non-formal education/learning (Farmer Field Schools)
  - Organization of groups and then into associations and then businesses (facilitation extension)
- Extension services necessarily involve face-to-face or personal communication with farmers

Multiple Pathways of Getting to Scale

(modified from Birner and Anderson, 2007 and others)

Delivery Organization	Source of Financing				
	Public Sector	Private Sector Farmers	Private Sector Companies	NGOs	FBOs
Public Sector	Public sector extension	FFS provided by public sector	Private companies contract PS	NGOs contract PS	FBOs contract PS
Private Sector: Companies	Contracting	Fee For Service	Input linked ext., outgrowers	NGOs hire Private	FBOs contract Private
Private Sector: Individual Providers	Contracts, coupons	FFS, Private Service Providers		NGO hires agents	
Third Sector: NGOs	Govt contracts	Farmers pay fees		NGO hires agents, free	
Third Sector: Farmer-Based Organizations	Public support, subsidies for extension	FBO hires agents, FFS		NGO pays agents employed by FBO	Agents hired by FBO providing service to members

Value of Extension

- Birkhauser, Evenson, & Feder report a range of rates of return, most between 13% to 80%
- Alston et al. estimate a median rate of return on extension of 62.9% (focus: staple crops extension)
- Keynan, Olin and Dinar studied farmer payments of bonuses designed to increase quality and responsiveness of extension
  - All the 17 farmer groups paid the bonuses and continued with the program the following year

➢ High rates of return signal under investment

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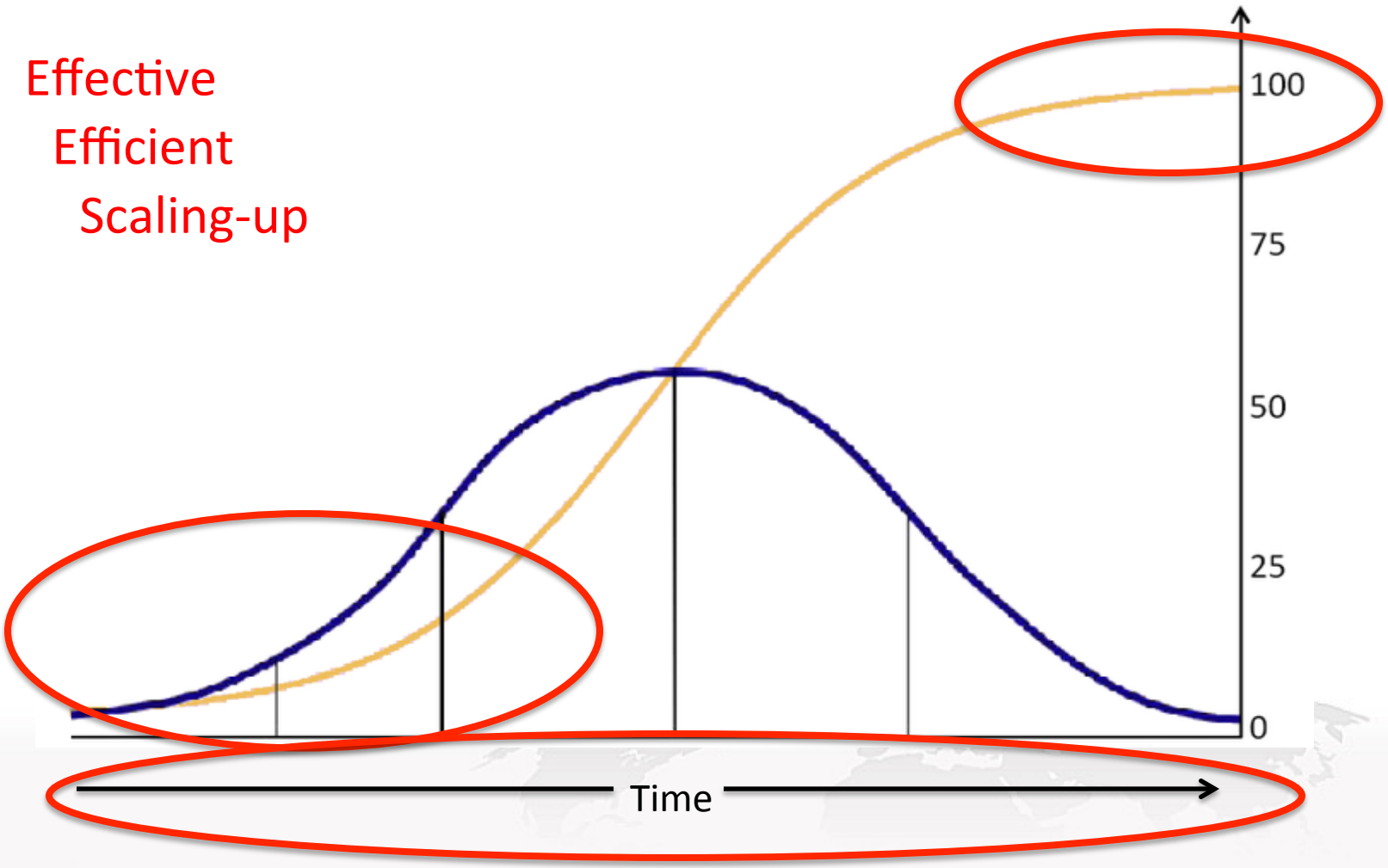
Learning Process Approach to Scaling



Source: Korten, 1980

Scaling the Update of Innovations through Sustainable Agricultural Extension

- Using what we know about human behavior to support behavior change;
- Using what we know about the diffusion of innovations to design interventions that reach their appropriate scale;
- Sustaining efforts long enough to allow 'scaling' to happen;
- Working at scale, to achieve impacts of scale;
- Engaging processes and relationships with potential to continually deliver new information, new options, new possibilities.

Not one or another…it's all, and.

Applying what we already know is itself an innovation

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This presentation was given by:

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on behalf of the Modernizing Extension and Advisory Services (MEAS) Project

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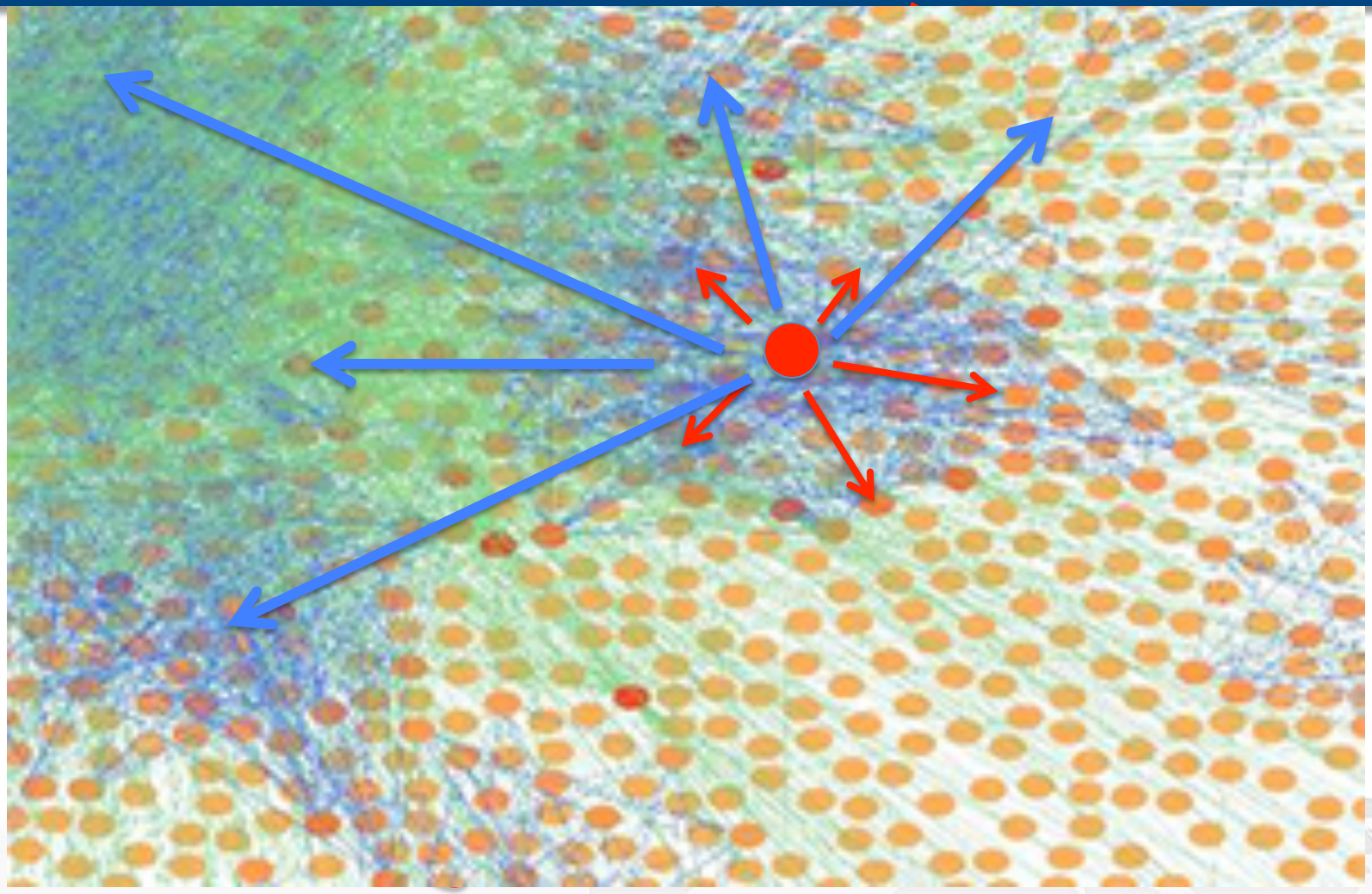

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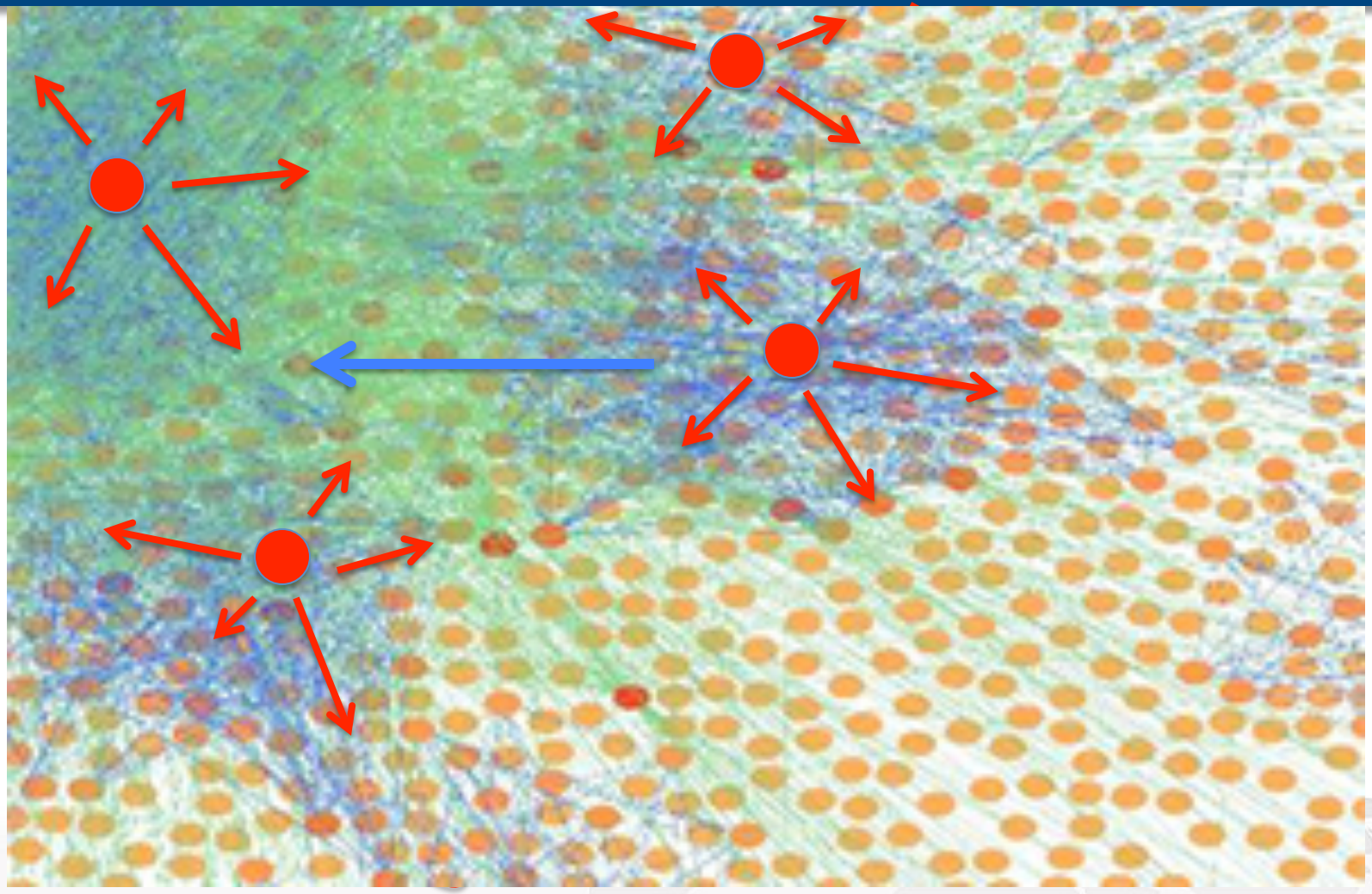

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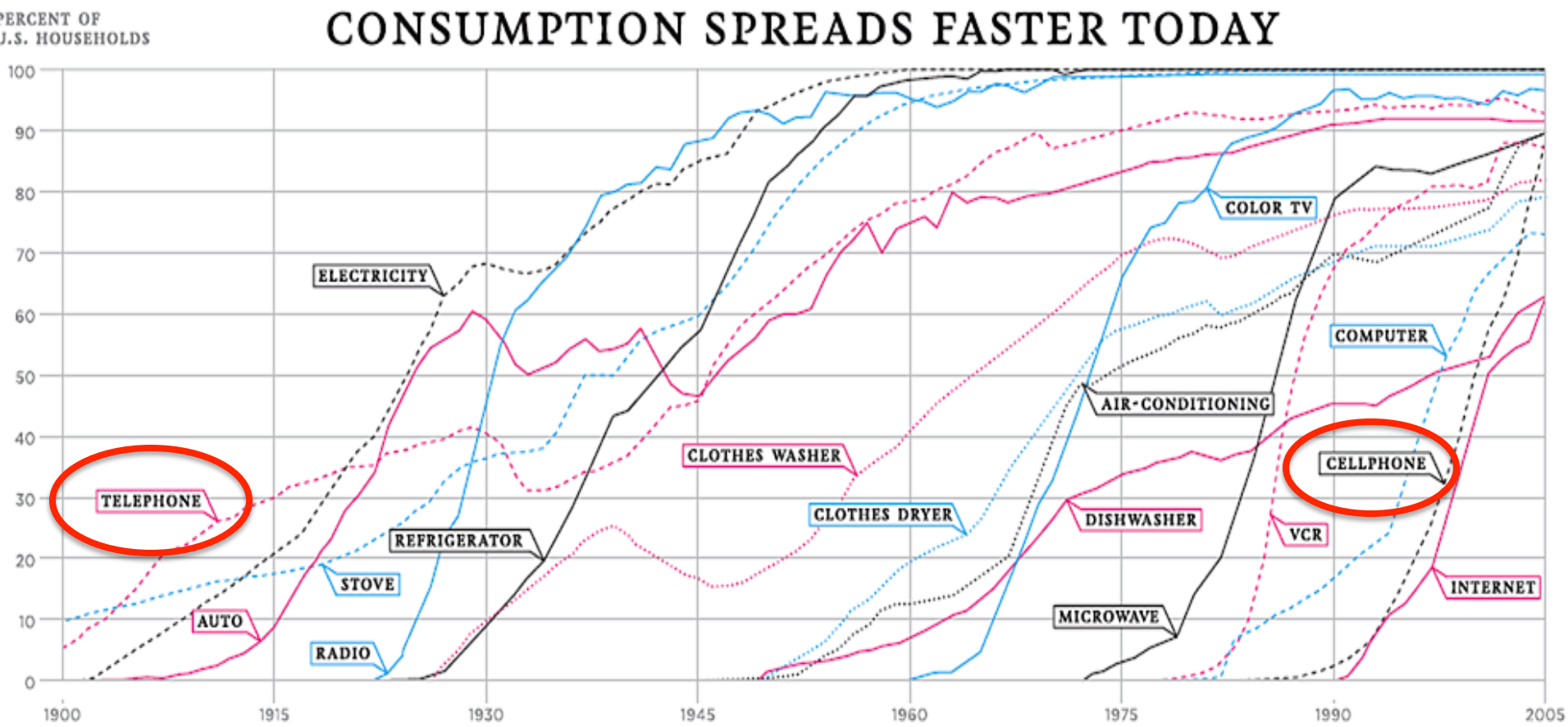
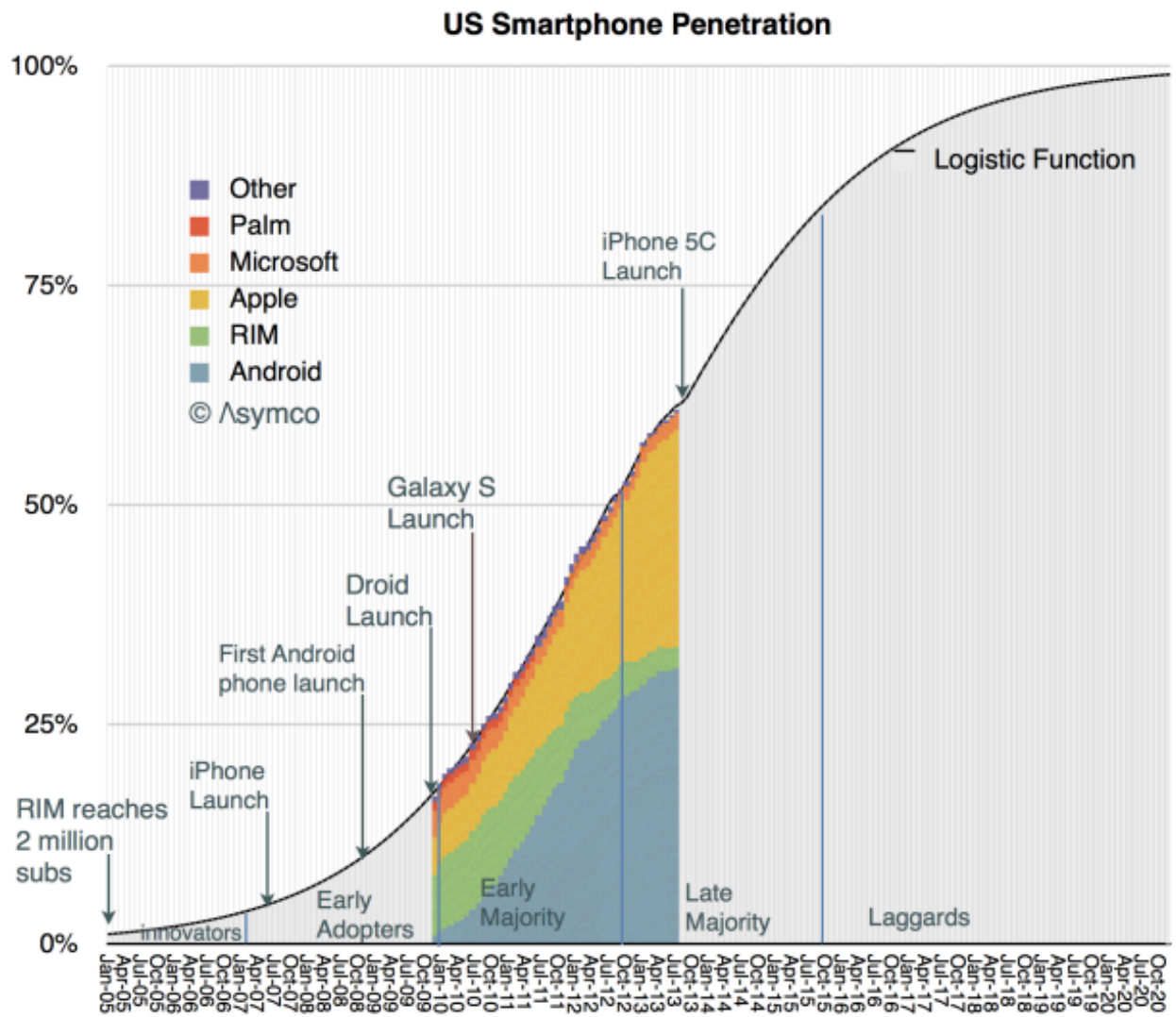
Individual Pathways



Source: Felton in Cox and Alm, 2008

Multiple Sources/Multiple Providers



Source: Dedire, 2013