

IT Enabled Strategic Framework for Agriculture – the KISSAN-Kerala Approach

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IITM-K emphasis on IT for Social Sector, Science & Technology

IT: The Technology

Computers,
Networks, Systems,
Devices, Systems
Software ...

IT for Social Sector

Education, Agriculture,
Health, Water
Resources, Trade,
Environment,
E-Governance,...

ITES, SW Services

BPOs, Business
Solutions
Transcription,
Call Centers, ERP

IT in S&T, R&D

Datawarehouses,
Computational
Sciences, Knowledge
Management, CAD,
CAM, Entrepreneurship



Systems in Indian Agriculture

Systems broadly grouped as follows.

1. **Government Systems:** Central and State Depts. Of Agriculture, Directorates, State extension services, Krishi Bhavans, Farm Info. Bureaus, NIC's Agmarknet, Agrisnet, public distribution systems, ...
2. **ICAR System:** Research Labs, Field stations, Krishi Vigyan Kendras, ATICs, Various Info. And Tech. Transfer services, programs, projects.
3. **Industry & Market Systems:** The traders, markets, Mandis, organized industry like ITC, FCI, agri-processing/value addition industries, retails, farm inputs (seeds, saplings, chemicals, nutrients, etc.) industries and sellers, ...
4. **International systems** - FAO, Trade agreements, Kyoto, ...

Systems in Indian Agriculture

5. Industry & Market Systems: The traders, markets, Mandis, organized industry like ITC, FCI, agri-processing/value addition industries, retails, farm inputs (seeds, saplings, chemicals, nutrients, etc.) industries and sellers, ...
 6. Agricultural Universities: in the States with state-wide research centers, associated programs.
 7. Commodity Boards and Exchanges: for Grains, Pulses, Oilseeds, Coffee, Tea, Rubber, etc.
 8. Agricultural financing: NABARD, ILFS, Banks, Govt. schemes ... poor micro-credit facilities, Local moneylenders dominate.
 9. Related Systems: Land Use, Water & Irrigation, Meteorology, Remote Sensing, ...
- Yet there is the looming major agrarian crisis ?

M.S. Swaminathan's Observations

1. Between 1970 & 2000 - the Green Revolution, complacency from late 1990s.
2. After 2000? Stagnation or declining growth rate in agricultural productivity, and even worse - losing Agrarian Prosperity in spite of steep rise in global agricultural commodity prices.
3. **“characterised by policy fatigue, resulting in technology extension and production fatigues.”**
4. No visible strategy against global trade, IPR and unfair competition.
 - ➔ **Inadequate organized support systems yet for small, subsistence and marginal farmers.**
 - ➔ **In places farming getting abandoned, farm land sold for real estate to feed urban growth.**

The Problem & need for strategy?

“If agricultural production does not remain above the population growth rate and if the public distribution system is starved of grain, there is every likelihood of our going back to the pre-Independence situation of recurrent famines. The grain mountains have disappeared and we are today in the era of diminishing grain reserves, escalating prices, and persistence of widespread under-nutrition.” - MSS

→ **Where is the vision, strategy?** Is there an IT enabled framework that helps drive a national Strategy for Agrarian Prosperity to sustain an *'Evergreen Revolution'*?

The Recommendations

“Needed, a new deal: Progress in agriculture must be measured principally by the growth rate in the net income of farmers.” MSS

1. Conservation of prime farmland for agriculture and soil health care
2. Water harvesting, management and conjunctive use of surface, rain, ground and treated effluent water and safeguarding water quality;
3. Credit and insurance reform;
4. Low-risk and environmentally friendly Green Technologies (such as integrated pest and nutrient management) and the provision of the needed inputs at the right time and place and at affordable cost;
5. Assured and remunerative marketing.

→ How do we implement the above in the field?

Understand Organizational Weakness

- We have plenty of organizations: ICAR Agri Research, Agri Universities, Extension Systems, Farm Info Bureaus, Weather forecast, Commodity Boards, FAO organizations, Trading, Export Development Authorities, Processing & Packaging industries,
- We have rules, regulations, programs ...
- **BUT unable to address effectively and adequately how we support farmers, educate everyone in the different areas and levels of agrarian prosperity chain.**
- **WHY? Incapacity to relate the work/task we do to seeing that it indeed has the intended impact.**
- ➔ ***How do we align technology, systems and processes to ensure that we bridge the above gulf?***

Evergreen Revolution needs different Socioeconomic basis

1. Land of the farmer is also the productive renewable resource of the community. Hence agrarian prosperity of the farmer is also the prosperity of the community.
 2. Agrarian Prosperity should replace 'food-security' as the goal.
 3. Agriculture is strategic - tradeoffs between food security, fuel, biomass related industry, development, environment, global trade scenario - all require understanding complex issues.
 4. At no stage of a crop life cycle, farm community or the farm should be without support - in technology, care, financing, opportunities in market and value addition.
 5. Effective coordination between farmers and associated Panchayath level community is essential.
- Create employment through value addition industries.

Unorganized Agricultural Sector & Agricultural Trade

- Organized agricultural commodities sector - grains, tea, coffee, pulses, oil seeds, coconut, rubber, ... → supported by commodity boards, exchanges, investment by industry, credit system and government systems.
- Unorganized sector like nontraditional perishables, vegetables, horticulture, herbs, medicinal plants, such others: Inadequate organized support or institutional systems for trade, credit, etc.
- Small farms, homestead farms and subsistence/poor farmers mostly in the unorganized sector.
- ➔ They are *vulnerable to middlemen & moneylenders* in the trade and too feeble by themselves to influence market.
- ➔ Besides better support for market returns, they also need better support for farm & knowledge inputs.
- ➔ Great scope for organization and value additions here.

Weakness in Conventional Market Systems

- Perishables come seasonally bunched forcing prices to fall due to glut in the market.
- Farmer transporting the produce to the market incurring transport costs is vulnerable to middleman as it is expensive to delay the sale of the produce.
- Farmers need immediate money to payback loans and for personal income.
- ➔ **SO USE ICT SYSTEMS TO HELP FARMERS SELL PRODUCE EVEN BEFORE IT IS LIFTED FROM THE FARMS.**
- ➔ **ROLE OF ICT: (I) EFFICIENT AGGREGATION OF RELEVANT INFORMATION; (II) TO BRIDGE THE GULF BETWEEN AVAILABILITY OF INFORMATION AND THE ABILITY TO USE THE SAME.**
- ➔ **We aim at RIGHT INFORMATION at RIGHT TIME to the RIGHT PERSONS in their RIGHT PLACES and in the RIGHT CONTEXT - *the 5 RIGHTS!***

Weakness in Organizational Support

We have plenty of organizations:

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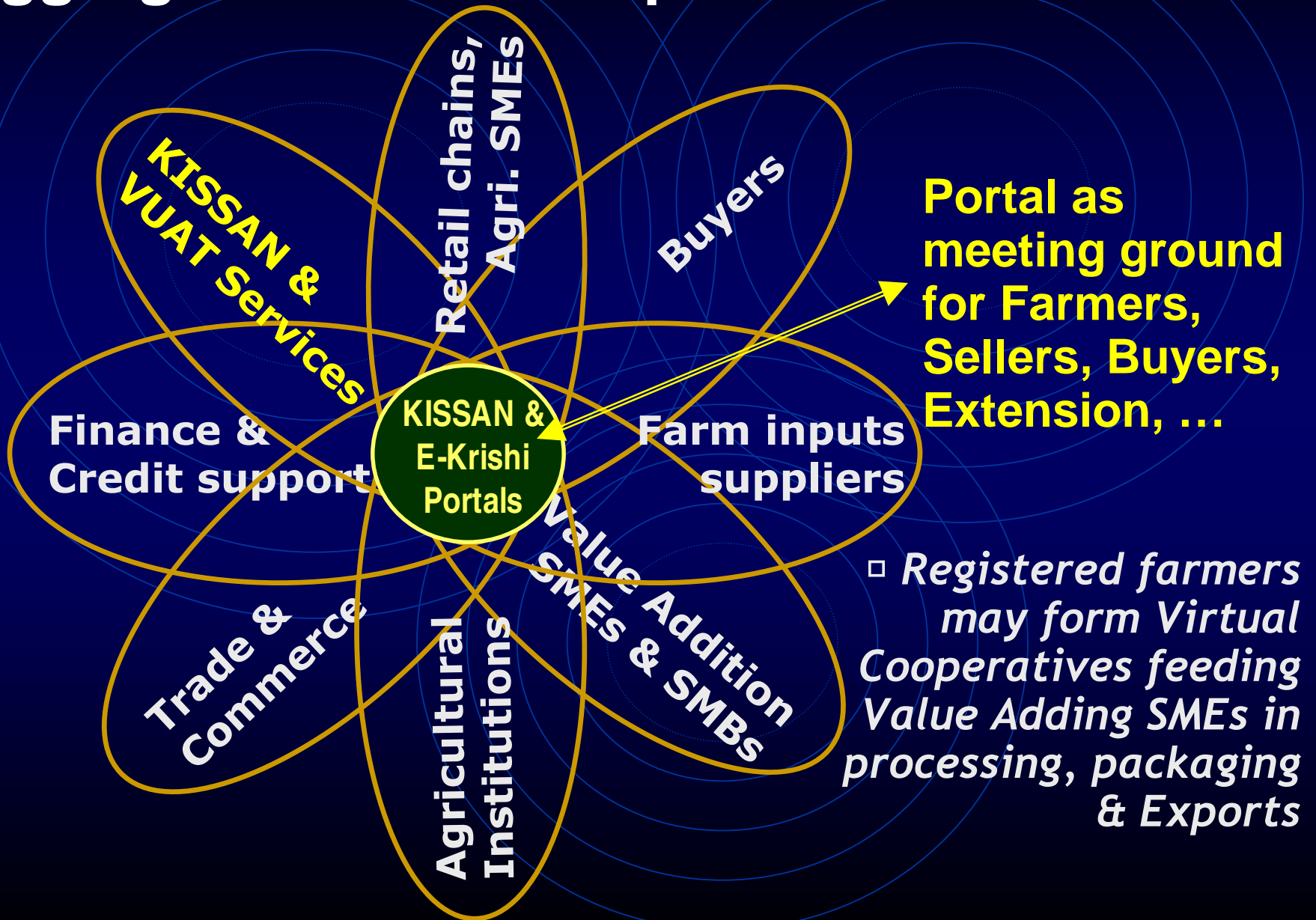
We have rules, regulations, programs ...

BUT unable *to address effectively and adequately* how we support farmers, educate everyone in the different areas and levels of the agrarian prosperity chain.

WHY?

- Incapacity to relate the work/task we do to seeing that it indeed has the intended impact.
- How do we align technology, systems and processes to ensure that we bridge the above gulf?

E-Krishi: Multi-organizational Information Aggregation and K-Empowerment of Farmers



About E-Krishi & Services Delivery System

- E-Krishi (www.e-krishi.org) funded by UNDP, monitored by NISG, executed & serviced jointly by the IITM-K, KISSAN & VUAT projects of the Dept. of Agriculture, Kerala Agricultural University, & Kerala State IT Mission (KSITM).
- Pilot implementation in Malappuram District using Akshaya Centres (Akshaya - an initiative of the KSITM).
- Farmers and others access E-Krishi Portal & its services through the Akshaya Kiosks (about 400 spread out across the district) and through a '1661' Call Centre at IITM-K.
- Farmers also get support of KISSAN, VUAT (Virtual University for Agricultural Trade), Krishideepam TV serial.
- Serviced by core team of Agricultural Graduates, Agr. Officers IT specialists, supported by a statewide network of scientists, professionals from diverse organizations.
- ➔ *Services guided by Knowledge Management principles at different levels.*

Towards Virtual Producers Cooperatives

Produce
Related Experts
Group

Producers,
Buyers &
Value Adders

**Produce Specific
Farmers Community
Portal**

Education,
Training, Market
Intelligence,

Information inputs,
news, events, PoP,
Schemes, Programs
related to the
produce

Knowledge Services
Management

- Each type of produce to have the above Portal supported virtual community interaction area.
- A homestead farmer may be a member of multiple such communities.

Some Impact Related Observations

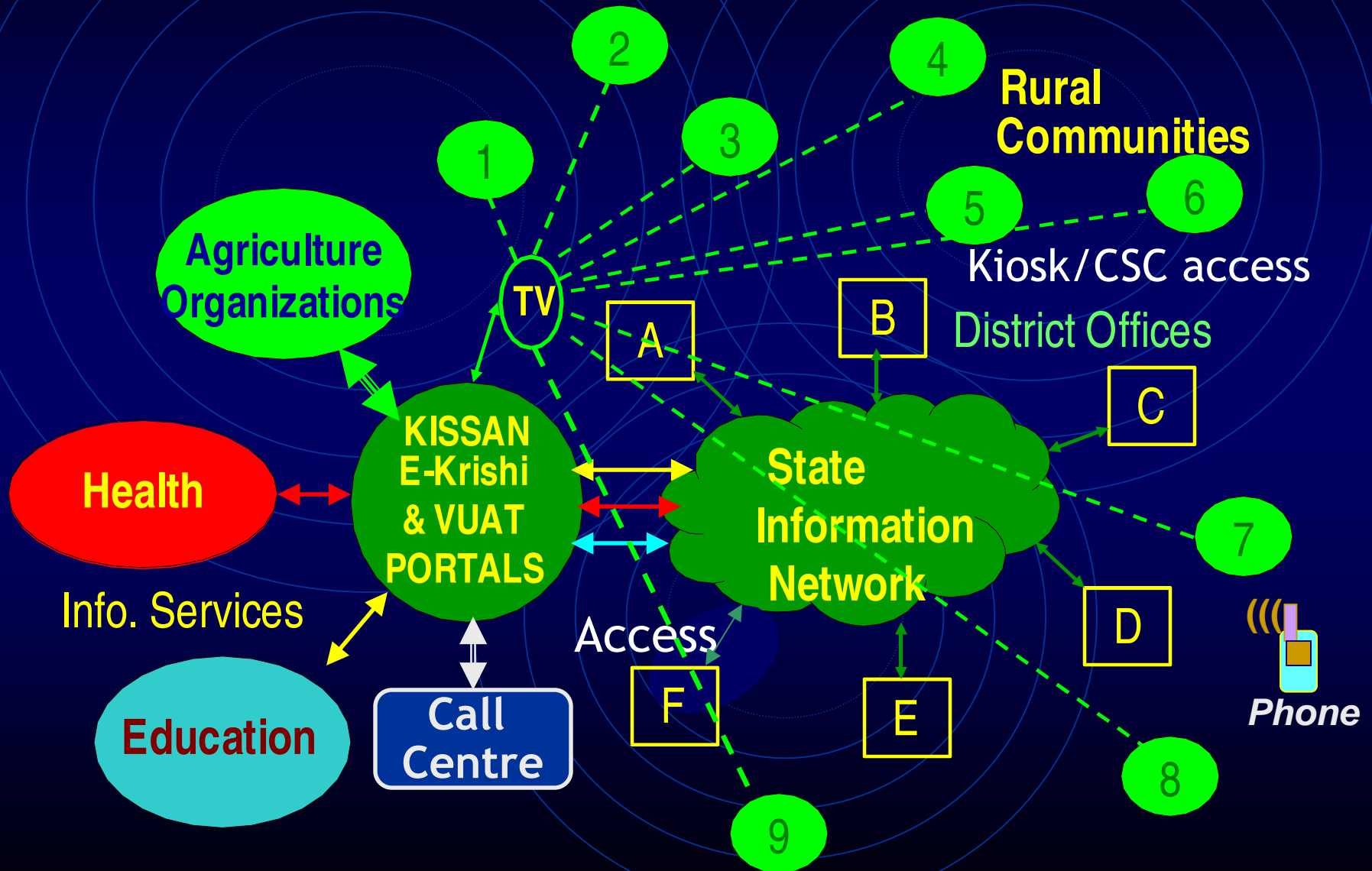
- Over 7000 farmers in Malappuram district registered.
 - Momentum of buyer - seller interactions picking up.
 - Word-of-mouth spread of E-Krishi utility.
 - Large volume buyers will benefit from placing orders for aggregated supplies from multiple farms.
 - Akshaya initiative has made all the farm families Internet savvy.
 - '1661' Call Centre services makes it easy for farmers to interact with experts.
 - **Government extension services get more teeth.**
 - **Integration with KISSAN & VUAT provides farmers support at all stages of the crop cycle and agrarian prosperity chain.**
- ➔ Being extended to 7 more districts.**

INTEGRATING E-KRISHI, KISSAN & VUAT: Towards a System of total K-Empowerment of Farmers

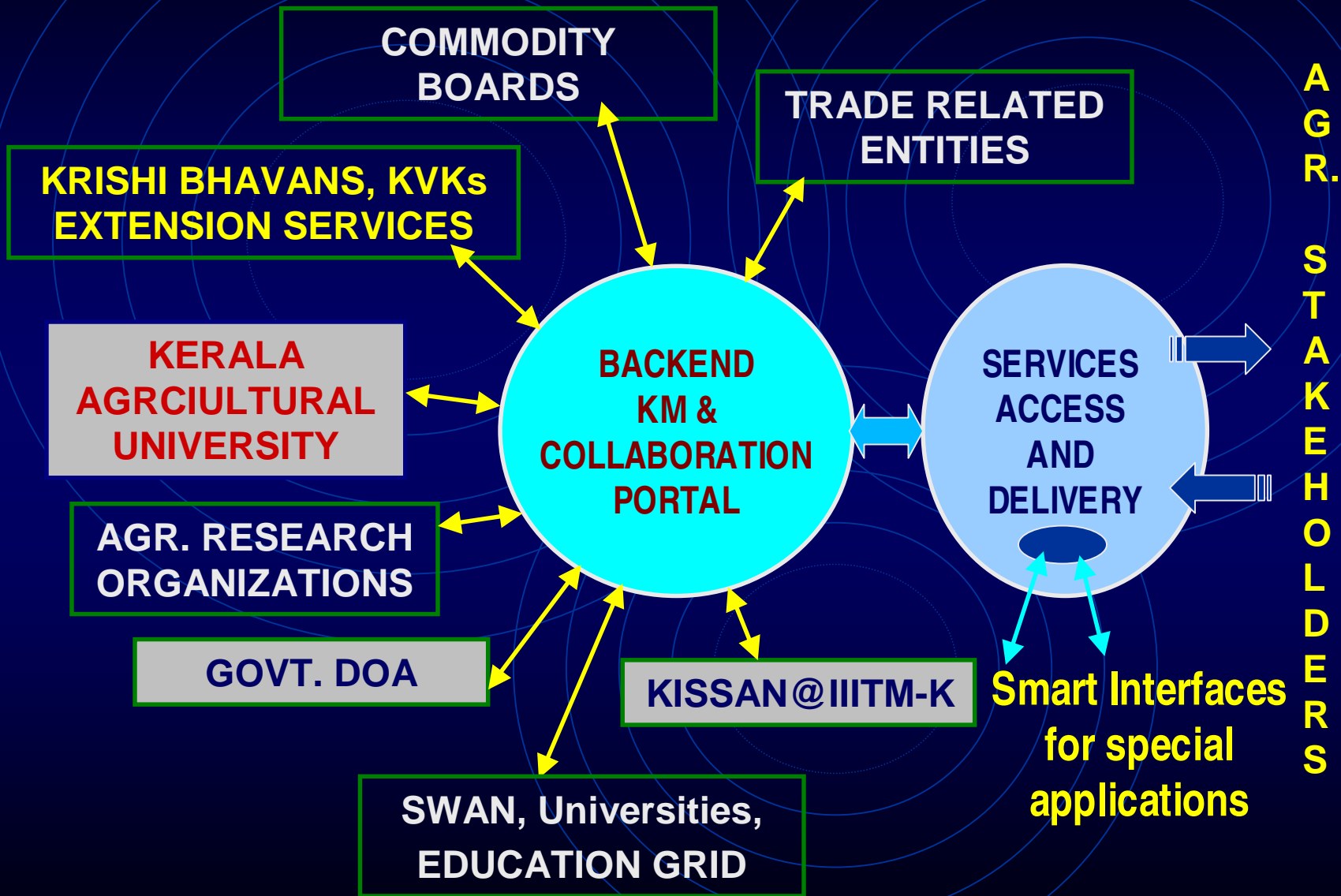


- ✦ E-Krishi: Market & Trade related support services.
 - ✦ VUAT: Virtual University for Agricultural Trade: Needs based / demand driven education/training.
 - ✦ KISSAN: Karshaka Information Systems, Services and Networking - On demand assistance, information & awareness services, e-extension services.
- + Popular Krishideepam TV Serial supports all three above.**

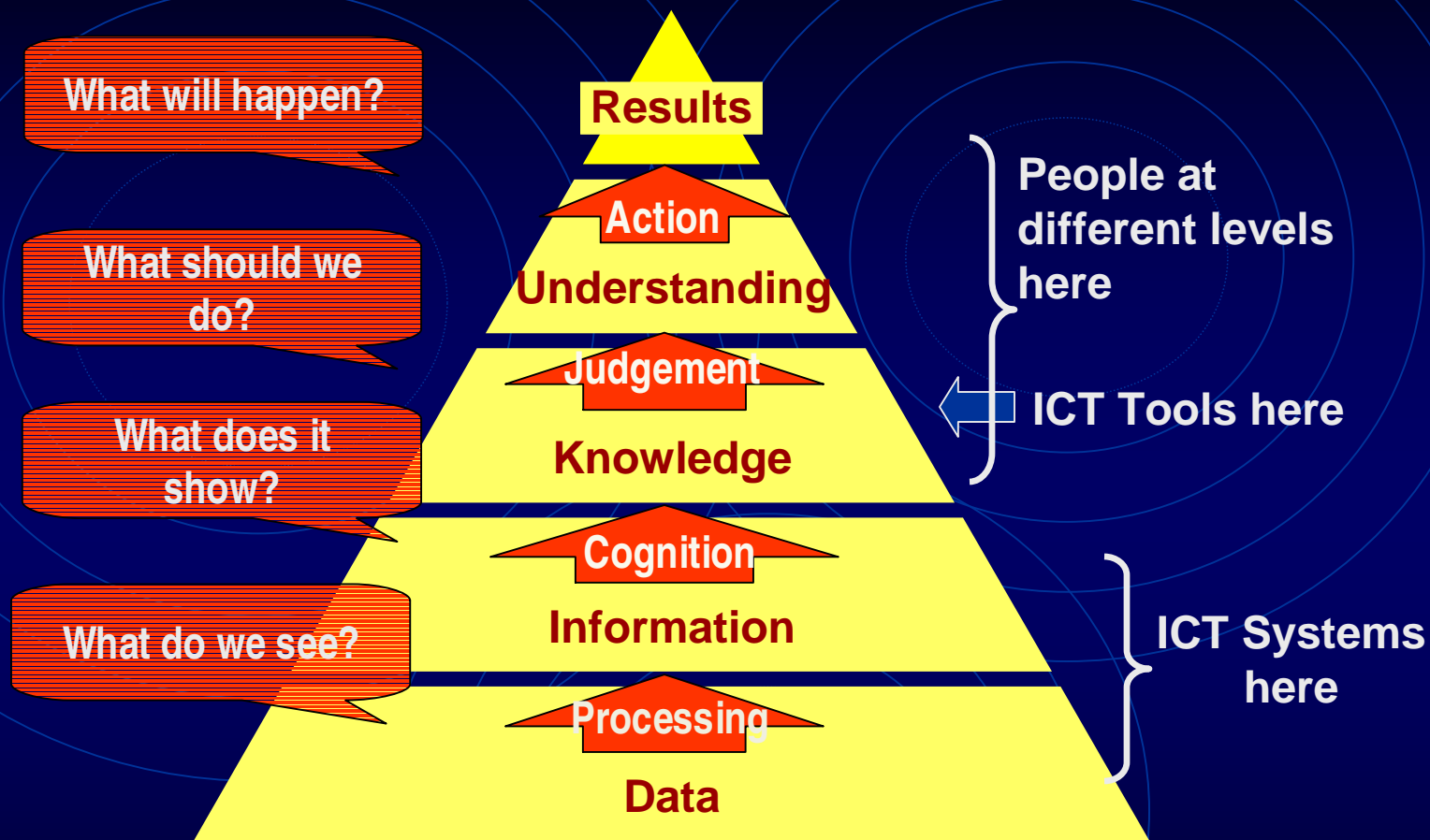
KISSAN-Kerala & E-Krishi: Multi-modal Knowledge Empowerment Services



KISSAN-Kerala Portal & Linkages



Knowledge Empowerment of Farmers



→ **Challenge: To understand & maintain the roles of relevant parties in the above KM chain.**

→ **Ensure each party at different levels plays their role effectively.**

The Work & Opportunities Ahead

- **Establish and nurture Virtual Farm Cooperatives: Farmers with small quantities output aggregate production to get**
 - (i) Better market returns by feeding supply chains to value adding agri-enterprises, & emerging networked retail business.**
 - (ii) Systems for market assurance even at the stage of crop planning.**
 - (iii) Facilitating different organizations - State Extension services, KVKs, ICAR organizations, KAU, Trade related entities, relevant NGOs, Water resources management bodies, Local Self Help Groups - to join & work together for Agrarian Prosperity.**
- ➔ **Proposing *Kerala Agrarian Practices & Prosperity Alliance (KAPPA)* for better coordination and responsive system at every stage of the agrarian prosperity chain.**

KISSAN Kerala Portal: www.kissankerala.net: With KM & Collaboration features

Variety of Interactive Information Services

- Daily **Market Information**; Virtual market
 - **Portal Interactions: Post Queries and get Expert Answers.**
 - Weather Information; **Soil Information**
 - **Crop Directory** → 55 crops full POP from KAU
 - GIS based Agri-Advisory Services for Locale Specific dynamic information
 - Farming Practices
 - **Fertilizers and Pesticides advisory**
 - E-publications
- **100,000 visits (50% revisits mostly farmers) in 1 year,**
> 5,000 Answered queries in FAQ.

OVERVIEW OF KISSAN: Karshaka Information Systems, Services and Networking

Approach

Right Information
at Right Time
in Places
to Right Persons
In Right Context

→ **Dynamic information and needs driven knowledge empowerment on demand from any farmer**

Systems for KM

Knowledge Capture
Knowledge Reuse
Promote Collaborations
Timely dissemination
Capacity and Competency building

Involve all available experts and organizations.

Multi modal approach

Advanced SOA based Interactive Portal with rich features.

Maintaining dynamic flow of information

Dissemination through TV serial and field programs

Call Centre for personal attention to each farmer

→ Internet access not always necessary, integrated with KSWAN

Krishideepam TV Serial: Agricultural Broadcast Services Integrated with KISSAN Portal and Call Centre Services

- **Enriched high quality multimedia program**
- **Success Stories, News, Best practices, Market prices analysis, weather information.**
- **Agri-Advisory services, Seasonal advisory services**
- **Completed 173 unbroken weekly episodes**
- **Telecast 3 times per week over popular Asianet channel in Kerala**
- **More than 2.5 million viewers.**
- **Proposing Researched and Educative TV Episodes on Trade Related and Competitiveness of Kerala Agriculture.**

INTEGRATED APPROACH TO INFORMATION AND KNOWLEDGE POWERMENT LEADS TO EMPLOYMENT GENERATION

- TV Episodes are followed by large no. of queries from viewers in the Call Centre. Analysis of this forwarded to concerned organizations.

Examples: 1. A handicraft unit making special plant fiber-based decorative objects gets orders from Taj Hotels.

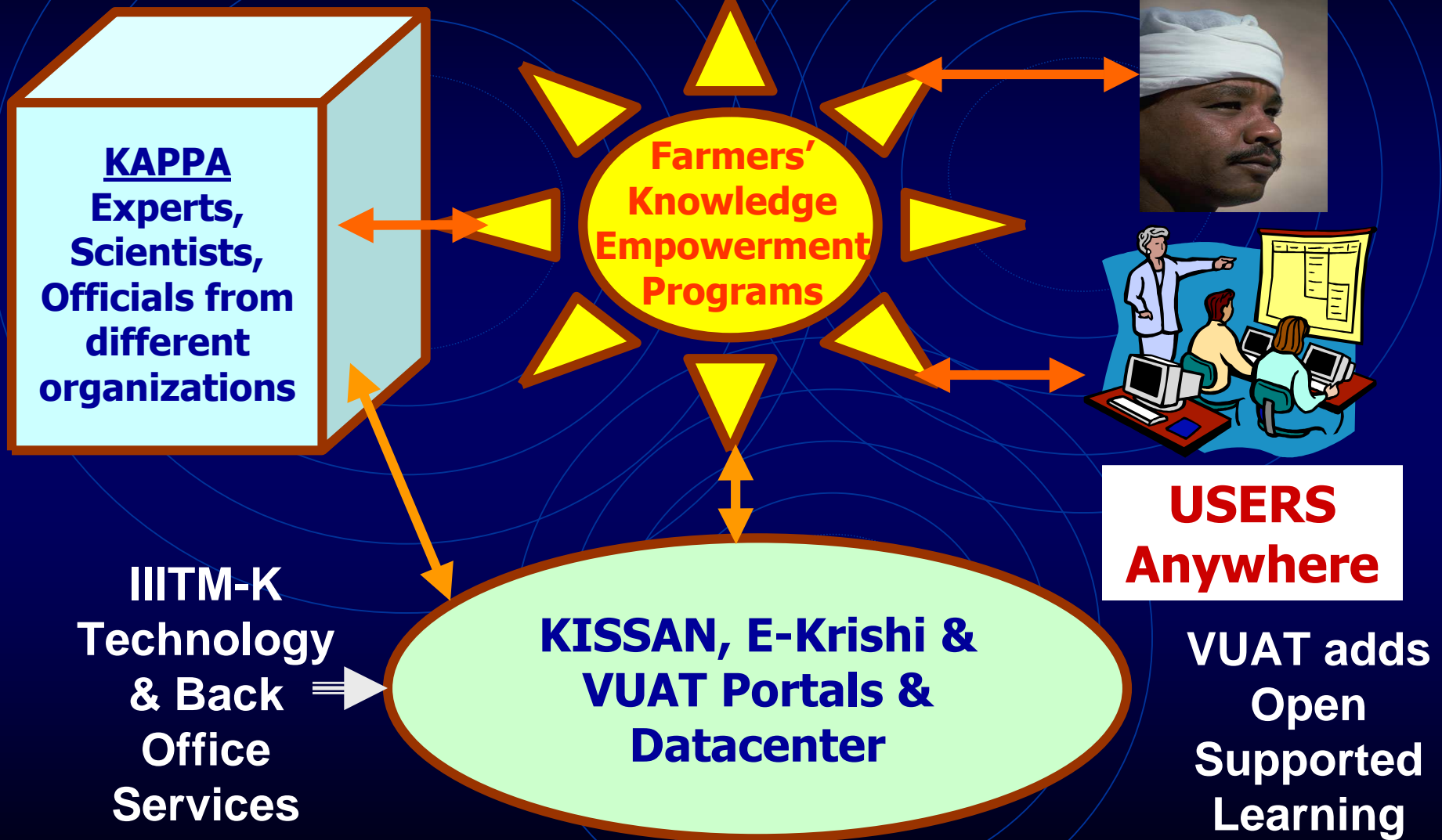
2. Interest in Vermi-composting leads to Dept. of Agriculture coming up with a scheme leading to services units doing it in 100s of house gardens in Trivandrum.

3. Better coordination and follow up of extension services.

4. Better understanding of issues from social and farmers' concerns.

→ E-Krishi portal adds marketing extension to KISSAN.

Quality Education & Knowledge Empowerment through Virtual Institutions



About IIITM-K's Services for

- www.iiitmk.ac.in - Institute
- www.edugrid.in - Kerala Education Grid
- www.kissankerala.net - **KISSAN-Kerala Agriculture Portal**
- ➔ Watch our TV Serial Krishideepam! Friday 5.30 PM, Repeat Saturday 9 AM on Asianet.
- (www.tvmcitypolice.org - Trivandrum City Police)
- www.compchem.in - Comp. Chemistry Portal
- www.vuatkerala.org - **Virtual University for Agriculture**
- www.e-krishi.org - **Farm Trade Facilitation Portal**
- Technology & Business Incubation

More to come: Community Portal for Panchayaths

Wiki based E-Learning Management Systems

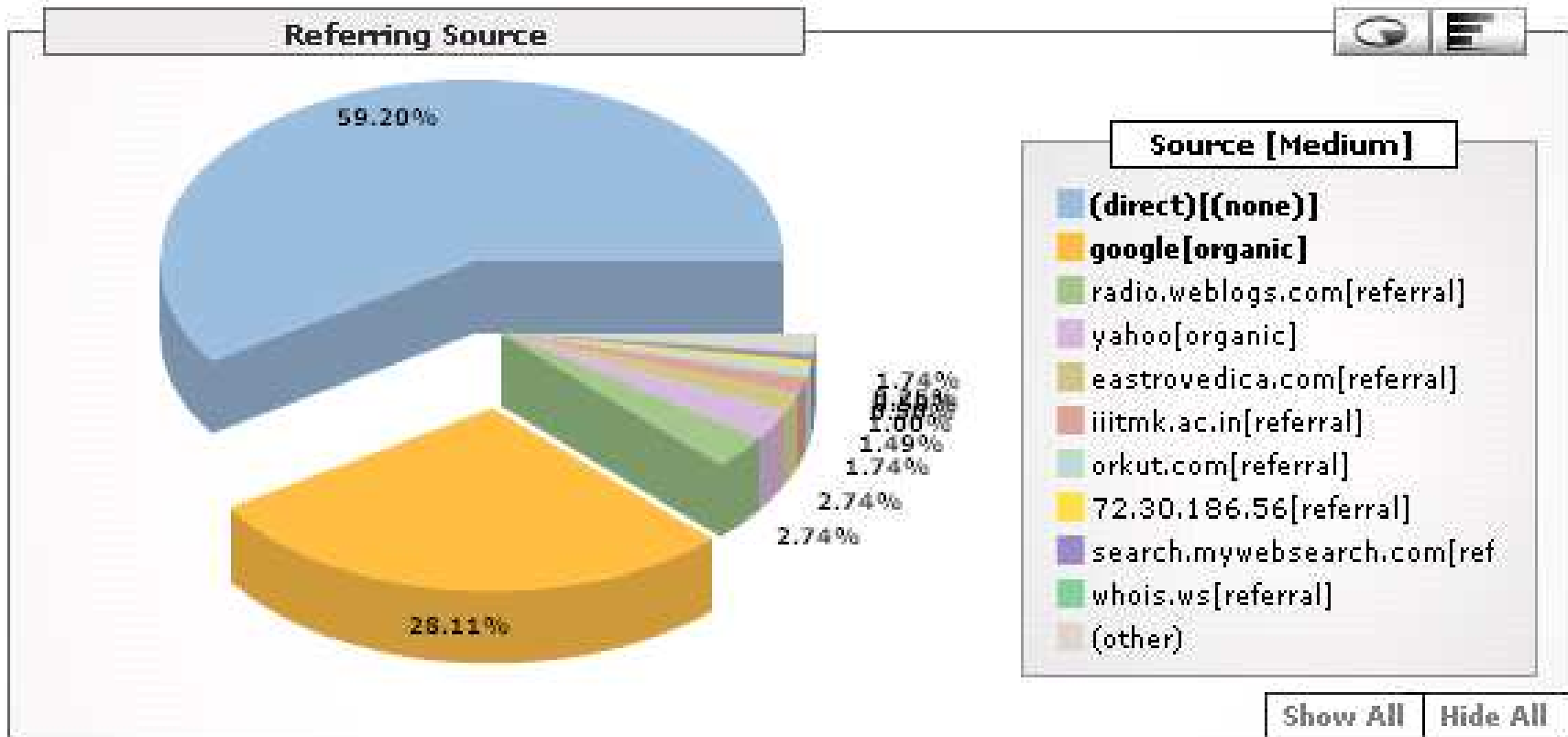
E-Krishi: Some Statistics from Google Analytics

1. Total No. of Visitors: 1,45,075 (as of 12th March 2005)

2. New Visitors Statistics



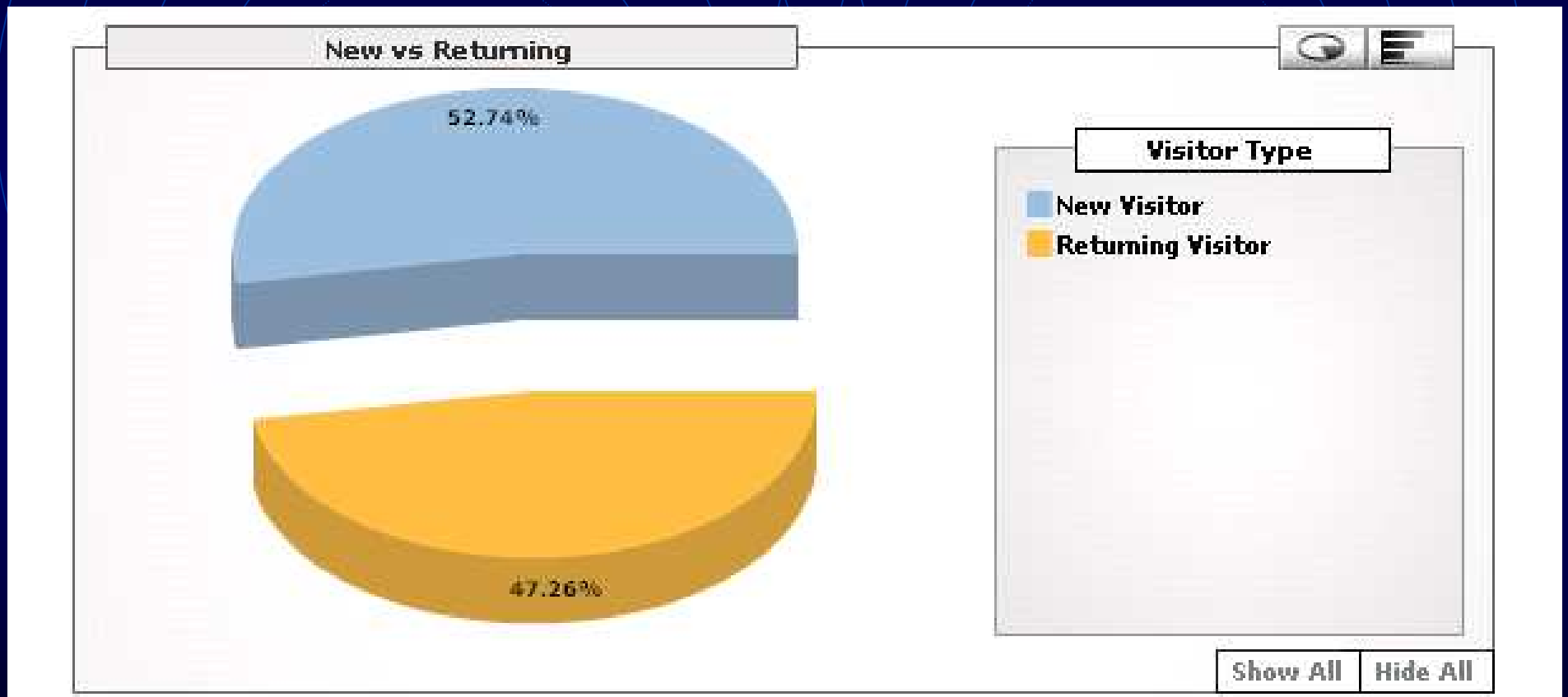
E-Krishi Portal: Visits by Source



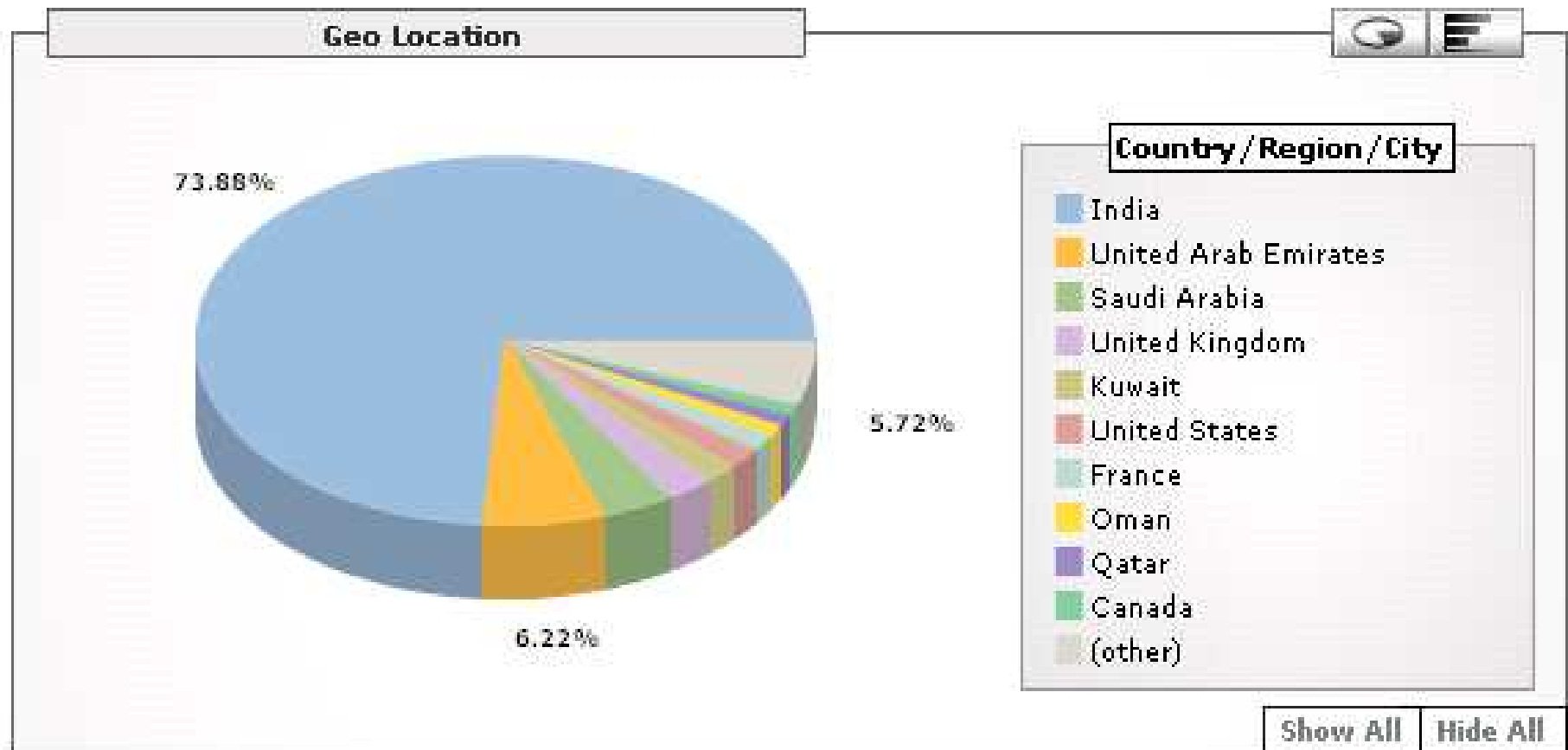
E-Krishi: Some Statistics from Google Analytics

1. Total No. of Visitors: 1,45,075 (as of 12th March 2005)

2. New vs. Returning Visitors



E-Krishi Portal: Visits by Geographic Location



IT Makes the difference for Small Farmers!

- It is possible to empower small / unorganized farmers through virtual collaborative communities supported by strategy / services focused groups of experts from multiple organizations.
- If driven with commitment, some imagination, collective will to serve, we will bring far reaching changes in Agrarian Prosperity.
- ➔ ***WE THEN WILL MOVE FROM GREEN REVOLUTION TO EVERGREEN REVOLUTION.***
- ➔ **IT IS POSSIBLE TO EMPOWER FARMERS WITH KNOWLEDGE AT EVERY STAGE OF CROP LIFE CYCLE - from crop planning to quality farm inputs, practices, credit support, branding, certification, expert support during crop tending, harvest, post harvest situations to marketing and value addition opportunities.**
- ➔ Let us establish a KISSAN - E-Krishi combine in every region.

IT Makes the difference for Small Farmers!

→ *In summary, Agrarian prosperity needs many new Knowledge Intensive Services initiatives involving multiple stakeholders in each category of services. KISSAN - E-Krishi demonstrate how to establish such knowledge services using state-of-the-art ICT systems and network of experts/organizations.*

“ Knowledge has become the key economic resource and the dominant - and perhaps even the only source of competitive advantage.”

- Peter Drucker

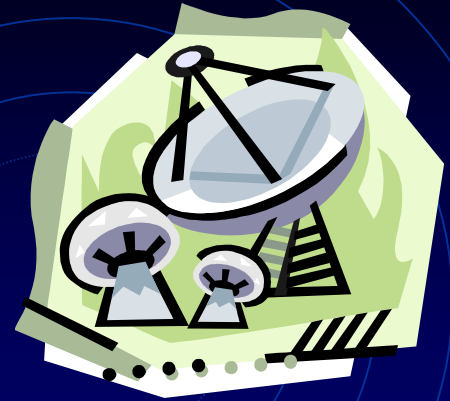


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Thank You