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Government of India
Ministry of Agriculture & Farmers Welfare
Department of Agriculture, Cooperation & Farmers Welfare
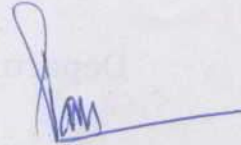
Krishi Bhawan, New Delhi
Dated the   30th March 2016

Sub: Approach paper for implementation of National e-governance Plan- Agriculture 2.0 (Digital Agriculture).

It is to inform that Agriculture 2.0, as a separate MMP under e-kranti/ NeGP-2.0 was approved by cabinet on 25.03.2015. An approach paper for implementation of National e-governance Plan- Agriculture 2.0 (Digital Agriculture) has been approved by the Competent Authority. The following new services/areas will be covered under National e-governance Plan- Agriculture 2.0 (Digital Agriculture).

(a) Cooperation.
(b) Credit.
(c) Governance & Citizen-Centric services for Fertilizer Testing labs.
(d) Agriculture Census.
(e) Integrated Cold Chain Availability Platform (ICAP) for Horticulture.
(f) Animal Husbandry, Dairying & Fisheries.
(g) Integration of Research and Development initiatives in Agriculture and allied sectors
(h) Integration of Farmer Oriented Services.
(i). Development of Mobile Apps.
(j) Integration with Bhuwan Portal.
(k) Thrust areas identified under Digital India for Ministry of Agriculture & Farmers Welfare.

2. Further, under NeGP-A 2.0 (Digital Agriculture), Department of Agriculture, Cooperation & Farmers Welfare (DAC&FW) role would be to lay down broad policies, guidelines, provide templates for Application Development and actual application development work would be got done by Sates in English and in their local languages as per their requirements.

3. The approach paper is enclosed here with for information and necessary action please.

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To

Principal Secretary, Secretary, Commissioner, Director (Agriculture/ Horticulture/Dairies/ Fisheries/ Cooperation/Agricultural Marketing): All State/UTs

Copy to:

1. Secretary (Deity)
2. Secretary (DAH&DF)
2. DG (ICAR)
3. All Additional Secretaries, AS&FA, ESA, DAC&FW
4. DG, NIC
5. All Divisional Heads, DAC&FW
6. CEO, NeGD Division, DeitY
7. DDG, Agriculture Informatics Division, NIC

Approach Paper: Implementation of National e-Governance Plan – Agriculture 2.0 (Digital Agriculture)

Introduction

NeGP-A had been planned to be completed in two phases i.e. an initial Pilot Phase in Centre and 07 States and subsequent Rollout in remaining 22 States & 07 UTs. Pilot Phase has been implemented in Centre & seven States and included setting up of Data Centre Hardware, provisioning of hardware up to block level and development of 12 clusters of services comprising more than 50 components (applications & portals).

2. **Project Cost:** Total sanctioned project outlay for Phase-I and Phase-II is Rs. 885.79 Crores (Rs.227.79 Crore for Phase-I and Rs.658.00 Crore for Phase-II) and attached as **Annexure-I**.

3. **Current Status:**Pilot Phase of NeGP-A has been implemented in Centre & seven States. Detailed status of implementation is as under:-

(a) **Hardware.** All requisite Servers & Networking hardware in Centre at NIC National Data Centre, Shastri Park and State Data Centers were installed and commissioned by Oct 2014. Field level implementation of hardware requirement has also been completed in 3600 sites out of 3610 sites (99.72%) across centre and 7 pilot States. The pilot phase of was declared as operational with effect from 28th Oct 2014 and is now under Operational & Maintenance phase (till Oct 27,2019)by M/S HP Sales India Pvt. Ltd., the implementing agency.

Based on learnings during pilot phase and recommendations of 14th Finance Commission the sharing pattern of funds between Centre and States for NeGP-A has been revised to 60:40 from earlier 90:10 (except for NE/Hill States where it remains 90:10 only). Further, it has also been decided to adopt a decentralised implementation model for procurement of

hardware. Accordingly the funds for current FY to install hardware on priority in selected locations have been released to the States/UTs, in turn will procure and install these hardware as per their needs/priorities. The release of funds will have to be continued in future for installation of hardware at remaining places.

(b) **SoftwareDevelopment**. NIC was selected as software solution development agency. An elaborate SLA had been signed with NIC on 31 Jan 2011 for development of 12 clusters of applications and one cluster of common services. A sum of Rs. 7.06 Cr. was prescribed as the total fee to be paid to NIC for development, rollout, training, change management and support activities for a period of three years. Out of this Rs. 2.46 Cr has already been paid as 1st instalment. System study and preparation of SRS was done under guidance of NIC officers. Services of agencies were taken for SRS document preparation for the 12 clusters of applications and 8 portals identified under NeGP-A Phase I. Out of the above, only few SRS have been used for the various applications developed by NIC. Other SRS could not be considered, as there were not sufficient inputs for development of applications based on these SRS.

Development of applications software for more than 25 modules/components (Pesticides Registration, SIP, PQIS, SeedEXIM, Organic Farming (PGS), Realcraft and Fisheries applications, FQCS, Soil Health, Farm Machinery, Prices and arrivals, Agromet Advisories, Scheme monitoring for RKVYetc.) (List at Annexure IA) have been done by NIC and their roll out is being supported through various workshops and trainings. Remaining application components of identified cluster of services have been developed by hired manpower under the guidance of CPMU (List at Annexure IB). Some applications have been developed only by hired manpower under CPMU & NIC (List at Annexure IC).

A detailed review of the NeGP-A implementation with specific emphasis on the applications was held under the chairmanship of Secretary (DAC & FW) on Aug 24, 2015. Based on detailed deliberations, it

has been decided to combine certain components and drop a few of them to avoid any duplication efforts.

4. **Present Status of Adoption of NeGP-A 1.0**. While end user hardware (PCs & printers etc.) procured centrally under pilot phase are being put to use by most of the States, Data Centre hardware is yet to be fully exploited. Meanwhile DeitY has also issued directions for use of cloud for hosting of all Govt. applications and portals. Accordingly, it has been decided not to procure any servers and associated items for State Data Centers in NeGP-A 2.0. All the states are being/had been requested to approach NIC for hosting their applications on cloud.

As mentioned earlier, a total of 36 Applications/portals have been developed under NeGP-A and offered to the States/UTs for adoption. Remaining 17 are under development (Annexure IA, IB, IC). While applications which have been implemented centrally (i.e PQIS, Registration of Pesticides at CIB&RC, ERMS, PGS, Agromet Advisory, Farmers Portal and mKisan) have been quite successful, adoption of others by the States/UTs has not been very encouraging and uniform. Some of the States have started using these, whereas others are yet to take off. This is despite holding of large number of workshops, both at National and regional levels, VC sessions and protracted correspondence to spread awareness and impart training on these for the States/UTs. Some of the plausible reasons for this are as under:-

(a) Varying levels of ICT penetration amongst the States/UTs.

(b) Lack ofpolitical will to implement.

(c) Existing own initiatives under AGRISNET or through States/UT'sown funds.

(d) Language localisation.

(e) Differences in processes and rules/regulations.

(f) Lack of ownership or control.

(g) Lack of technical acumen or understanding within the departments.

5. **Agriculture 2.0 (Digital Agriculture or NeGP-A 2.0).** Meanwhile Agriculture 2.0 has been approved by the cabinet as one of the 10 new MMPs to be implemented under e-Kranti, or now designated as Digital India. This is basically an extension of existing Agriculture NeGP1.0 to areas or services not covered earlier and also to strengthen the efforts initiated during earlier ICT implementations. Some of the key thrust areas identified under Digital India for Ministry of Agriculture & Farmers Welfare are:-

    a) Real Time Price Information.

    b) Online ordering of inputs.

    c) Online cash, loan, relief payments with mobile banking

Proposed Services. In addition to strengthening, completion & maintenance of the existing initiatives, key components initially proposed by DAC&FW to be included under Digital Agriculture (NeGP-A 2.0) are as under:-

    a) Sector Specific Services for Horticulture and Fisheries.

    b) Governance & Citizen-Centric services for Cooperation and Fertilizer Testing Labs.

    c) Agriculture Census

    d) Credit

    e) Integrated Cold Chain Availability Platform (ICAP).

    f) Integration of Farmer Oriented Services.

    g) Areas under Animal Husbandry, Dairying and Fisheries, which were not covered under NeGP-A.

    h) Integration of Research and Development initiatives in Agriculture and Allied sectors.

6. **Proposed Components under Digital Agriculture 2.0.** Work on some of the services in areas identified as above has already been started. During the review meeting held under the Chairmanship of Secretary (AC&FW) on Nov 04, 2015, following decisions on each of these components were taken:-

(a) **Cooperation**. Work on developing a web enabled system for online registration and monitoring of Multi-State Cooperative Societies has been started and one module is already in use (in Beta version). In Digital Agriculture 2.0 a complete integrated system with end to end solution along with additional features for online submission of various Annexures, reports and proceedings etc. by the states/MSCS and required hardware/manpower required to smoothly operationalise the application developed has been included and can be rolled out by Jun 2016. Cooperative Division has been asked to work out their detailed requirement and forward the same to IT Division for further action. Development of Mobile App and translation of the portal in other languages will be taken in Digital Agriculture 2.0.

On recommendation by DeitY for reviewing the pilot project sanctioned in Andhra Pradesh under World bank assistance, for automation of all State Cooperatives, it has been decided that a common application will not be practical for following reasons:-

(i) Differences in local rules/regulations.

(ii)Different accounting systems followed.

(iii) Language issues and differing status of ICT penetration amongst the States/UTs.

(b) **Credit.**This involves development of applications covering Credit and Agriculture Insurance. While work on providing basic Agri-banking information through Farmers Portal was started but it was felt that the detailed information on credit through banks and online loans etc. does not fall in the preview of DAC&FW, and hence no further work is planned to be carried out on this.

First phase of applications for Agriculture Insurance enforcement has already been rolled out and farmers are able to get information about Insurance companies for different crops in their area down to Panchayat level. They can also calculate the premium required to be paid by them. It is felt that crop Insurance will be very important and further

development of this portal may be included in Digital Agriculture 2.0. A mobile app on crop insurance has already been launched. Advanced mobile application will be developed in Digital Agriculture 2.0. The portal will be suitably upgraded to include newly launched PMFBY. Major hurdle in carrying this forward is non linking of Core Banking Systems (CBS) of banks with their insurance components. For this necessary directions need to be issued by DFS and RBI to all banks. Any further work on online transactions can be carried forward once this is done.

(c) **Governance & Citizen-Centric services for Fertilizer Testing Labs.** First Beta version of the software for Central Fertilizer Testing Labs has already been developed & rolled out. This is being used for four Central Fertilizer Testing Labs. It is planned to customise the same software for State Fertilizer Testing Labs and prepare an integrated portal. The Central Application Portal will aggregate fertilizers testing data at the National level for information of all stakeholders. NIC, IT Division and CPMU for NeGP-A will coordinate and supervise the overall technical and financial aspects under Agriculture 2.0. INM Division has been asked to plan and work out hardware requirements of State Fertilizer Testing Labs for their internal automation. If a State Government is already running an online system, efforts will be made to customize & use the running portal of State to integrate with GoI Portal, rather than forcing States to abandon their portal and migrate to this new portal.

(d) **Agriculture Census.** It is planned to develop a system of making information available to public on number, size, area and other characteristics of Operational Holdings including input costs etc. so that this data can be used for development of many applications by various researchers etc. This will be done jointly by IT and DES Divisions through NIC.

(e) **Integrated Cold Chain Availability Platform (ICAP) for Horticulture.** It pertains to developing a virtual grid of cold chain infrastructure with in the country. It is expected that this will provide online information to all stakeholders and result in better utilisation of the capacities created under different projects and schemes of Ministry of Agriculture & Farmers Welfare.

It has been decided to leverage considerable work already done on this by Ministry of Food Processing wherein an application MOFPI-PMS has already been got developed & in use. This software will be customized & updated through the earlier vendor so that all standard & requisite fields for MIDH, NHM & NHB can be included along with design of suitable MIS reports.

A committee, with one representative each from all concerned entities to work out the details of fields required and reports to be developed has also been constituted. The committee will forward the finalised requirement to MOFPI and States. Necessary funds etc. will be made available by IT division/under MIDH for further development and implementation efforts. JS (Horticulture) has already issued instructions for NHB as the implementing agency for the ICAP. Mobile App will also be developed for this under Digital Agriculture 2.0.

(e) **Animal Husbandry, Dairying & Fisheries.** This concerns areas under Animal Husbandry, Dairying and Fisheries, which were not covered under NeGP-A. The department of Animal Husbandry, Dairying & Fisheries has been requested to identify their requirements, get a DPR made and forward their requirement of funds to IT Division of DAC&FW. Then Department of AHD&F can get these applications developed through State Govt. or NIC as the case may be. IT Division would also extend technical guidance in case requested. They have also been requested to create appropriate head for receiving these funds so that direct payments can be made by them. Till then funding of their project

will be done from NeGP-A budget. Any further action would be taken in this regard, only after receiving requisite information from them.

(f) **ICAR.** There is a requirement of integration of Research and Development initiatives in Agriculture and allied sectors by ICAR. It will be endeavoured to disseminate information to farmers and all other stakeholders, on all successful initiatives including new technologies/crop varieties of ICAR through development of suitable Mobile apps, touch screen platforms and web portals. This is an ongoing process and is being achieved through web services at different levels. ICAR has been involved in many projects such as mKisan and generation of Agromet advisories for the farmers. Assistance will be provided to ensure new technologies reach farmers and other stakeholders in minimum possible time.

(g) **Integration of Farmer Oriented Services.** This is also an ongoing process through Farmers Portal and will be carried forward through development of future centric mobile apps as part of Agriculture 2.0.

(h). **Development of Mobile Apps**. Affordable Mobile internet technologies along with their deep penetration in rural parts of the country have provided an excellent opportunity for creating mobile based solutions such as mobile apps to meet information needs of farmer round the clock. This was also emphasised by the group of secretaries on how to use mobile phone and digital technologies for effective communication in rural areas particularly among farmers during a presentation on Jan 25, 2016 to the Prime minister. Accordingly it has been decided to develop 2000 mobile apps over a period of next three years with 500 apps to be developed during first year. These numbers will be achieved through multiple channels i.e. Government departments at Center & States/UTs, ICAR, Agriculture Universities and crowd sourcing. It will be endeavoured to provide maximum government data as open data for development of these apps.In addition to normal in-house development, following Innovative

methods are planned to be used for development and proliferation of these apps:-

(i) **Open Challenge**. Here certain chosen topics would be thrown open to the public to come up with ideas including likely cost and the selected ones will be got developed as apps on fixed cost basis.

(ii)**Free Lance Development**. Declare certain topics for development by industry/free lancers/start ups. Select one or max two apps on each topic based on a transparent evaluation process. Payments will be made (up to a pre-decided maximum amount) based on number of downloads and popularity ratings etc.

(i) **Integration with Bhuwan Portal.**It has been decided to integrate all applications and services being rendered through Farmers Portal to Bhuwan Portal of ISRO. This is likely to pave way for rolling out numerous GIS enabled services for all stakeholders.

(j) **Thrust areas identified under Digital India for Ministry of Agriculture & Farmers Welfare.**These also have been under implementation and would be continued to be included under Agriculture 2.0. Specific status of each is as under:-

i. **Real Time Price Information**. Latest crop prices are already being made available to farmers and all other stakeholders through Agmarknet Portal of the ministry.

ii. **Online ordering of inputs**. Feasibility of online ordering of inputs like seeds, fertilizers and pesticides by farmers and all other stakeholders will be studied for further implementation through both public and private outlets. Buyer-Seller module has been developed, but this will require changes in processes.

iii. **Online cash, loan, relief payments with mobile banking.** These are also being covered under ongoing efforts on DBT and financial inclusion by DFS. This will follow only once mobile has actually

reached in farmers' hands and mobile money / mobile banking becomes popular among farmers.

7. **Need for a Change in Implementation Strategy.** Based on directions received about e-Kranti or NeGP-2.0 from DeitY, as well as revision in funding pattern for all Centrally Sponsored schemes, there is a requirement to have a relook at effectiveness of earlier approach of central applications development. With advancements in mobile telephony, the emphasis also needs to be shifted on making all present and future applications available on mobile and through touch screen platforms for easy access.

Also Agriculture being a State subject; the ultimate success of any venture lies in involvement of State Governments and ensuring their ownership of all these central initiatives. Accordingly, it is felt thatpresent strategy of central development of applications and portals and then handing these over to the States/UTs for adoption or localisation needs to be reviewed.

8. **Proposed Implementation Strategy.**In order to bring in sense of ownership of the States/UTs, it is proposed to adopt following implementation strategy for Agriculture 2.0:-

(a) **Hardware.** As enunciated in communication to the States/UTs on Jul31, 2015, funds would be made available as per their hardware requirements and priorities. These will be in line with the norms or scales proposed for EFC approvals for the Rollout phase and duly outlined in the NeGP-A Guidelines finalised in consultation with IFD. States/UTs have already been asked to work out their actual requirements of hardware after taking into account the existing inventories created from public funds. States/UTs would themselves be responsible for procurement, distribution, installation and subsequent maintenance of this hardware. Funds from the current FY allocations have already been made available to the States/UTs.

This is likely to ensure a sure sense of ownership among the users and state authorities.

(b) **Applications/Web Portals.** Most of the applications developed as part of NeGP-A followed central architecture and states are supposed to provide their inputs either in the form of data entry through interfaces created or through web services. This however, suffers from obvious issues of lack of timely inputs and ownership by the States/UTs. In addition many of the states already have parallel or similar applications under implementation. Even regular following up with the States/UTs by four Joint Directors has not borne desired results. The reliability & aggregation of data at National level and its subsequent availability to all stakeholders has always been a question mark. Issues of local languages and availability of requisite resources further add to this problem.

New Development Strategy for Applications. In the proposed system the Departmentof Agriculture, Cooperation & Farmers Welfare (DAC&FW) role would be to lay down broad policies, guidelines, provide templates and actual application developmentwork would be got done by States in English and intheir local languages as per their requirements. Following will be the broad contours of new policy:-

(a) DAC&FW will hire a consultancy agency which will prepare and make available necessary documents like DPR, and /or SRS (with functional & technical requirements), draft RFPs for hiring of implementing agencies/manpower. DAC& FW will also make funds available for such Application/portal identified for development effort. States would be free to study these with respect to existing applications, information flow requirements to GoI applications and then decide to customise these as per their local requirements. Work of this Consultancy agency will be evaluated by steering committeewith members from respective divisions and NIC.

(b) DAC&FW will also lay down broad policies in terms of application development to bring in standardization in hosting, and input/outputs to be provided for integration or aggregation of data etc with the outside world.

(c) DAC&FW or otherwiseto develop & maintain only Central Portals and applications which pertain to centre's jurisdiction like Census, PQIS, SIP, CIB&RC, Farmers Portal, mKisan Portalsand National Portal for Seeds Registration etc. NIC will continue to maintain and enhance, all the applications which have been developed by NIC.

(d) Based on documents prepared centrally, the States/UTs will develop their own applications either new or upgrade the old ones in English, Hindi and in their regional languages, incorporating their rules/regulations and processes. These would capture data or inputs at the point of occurrence rather manual data entry being carried outas of now.

(e) DAC & FW will also create mobile apps and mobile versions of all applications already developed or to be developed in future.

(f) The Central Agriculture Portal (CAP) will act as an aggregation portal at National level by fetching data/inputs from State Agriculture Portals (SAPs) or individual applications at States level.

9. **Proposed Implementation Model.** It is proposed to hire a consultancy agency at the central level. This agency will be responsible for following tasks:-

(a) Detailed study of existing ICT initiatives of the Department of Agriculture, Cooperation & Farmers Welfare (DAC&FW) andthose developedby different States/UTs. The Agency will identify the differences in requirements for different State/UTs in respect of proposed components of Agriculture 2.0.

(b) Suggest methods for aggregation of data at State/UTs as well at Central level applications. It will also develop protocols and standards to be incorporated in State applications for integration at all levels.

(c) Identification of gaps in the current service delivery processes, suggest suitable architecture wherein complete data is captured at the source of transaction and aggregated at National level without any human intervention.

(d) Recommend key applications in following categories:-

    (i) To be developed ab initio.

    (ii) Requiring major changes along with details there to.

    (iii)To be adopted from other States/UTs along with detailed methodology for successful proliferation to other States/UTs.

(e) Recommend Government Processes Reengineering (GPR) and changes in delivery processes to different stakeholders.

(f) Recommend incorporation of new vistas like space technologies, Mobile apps, GIS mapping, online transactions, Payment Gateways integration and crowed sourcing etc.

(g) Prepare detailed project report incorporating required resources and likely financial effects.

(h) Prepare templates and other documents like DPR and /or SRS with Functional Requirements, Data Flow diagrams (DFDsetc). which could be used by Center and States/UTs for application development through NIC or any other outsourced agency so as to speed up development and with minor changes to cater for local conditions and vernacular languages.

(i) Prepare draft RFPs for hiring of resources or agencies in Centre and States/UTs.

(j) Assist DAC&FW CPMU in planning, execution and management of the complete project across all States and UTs.

10. **Availability of Funds.** Funds for procurement of hardware down to the block level are already being released to the States/UTs under NeGP-A 1.0. These are considered sufficient to equip all offices till block level in terms of hardware needs for delivering online services. It is felt that presently approved funds for National e-Governance Plan in Agriculture will be sufficient to fund all proposed application development work. This will also be facilitated by the savings accruing from the hardware and system software requirements of State Data Centers during Rollout phase as well as from funds available as Contingency & Risk Premium (7.5%). **Hence, there seems no requirement of going in for a fresh EFC approval at this stage.**

11. **Hiring of ICT Consulting Agency.** It is proposed to hire one of the reputed ICT Consulting Agencies for above defined scope of work. The duration of hiring would be coterminous with achieving their targeted milestones of completion of bidding processes in pre decided number of States/UTs. A proposal for seeking funds from DeitY for preparation of DPR has already been submitted and accorded "In Principle approval".