

## INFORMATION SYSTEMS PLANNING FOR E-GOVERNMENT IN INDONESIA

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### ABSTRACT

It has been constantly argued that the key to Indonesia's governance improvement is through the utilization of Information Communication Technology (ICT) to support its operations. This is in-line with the views of [1]; [2] which states that ICT in government (referred to as e-government) promotes transparency, effectiveness, and efficiency in the process. Information Systems (IS) Planning is accepted as an essential step in ensuring that IS/IT in organizations planned and implemented in an optimum manner, remembering that IS/IT is becoming a dominant part of an organization. The activity is also a conscious effort to ensure that there is alignment between IS/IT activities with the organization's objectives. In terms of characteristics government organization are naturally different to those of a private sector, even when compared to the largest multinational corporation. Governments do not aim at making profits. For governments the measure of bottom line success is not an objective. Governments are driven by constraints such as rules and regulations, which translates into bureaucracy. The characteristic is further complicated by different government models of different countries is another factor which drives uniqueness.

**Keywords:** IT Management, IT Planning, Government, E-Government.

### 1. INTRODUCTION

Information Communication Technology (ICT) has become a core elements of managerial reform, and electronic government (e-government) is placed as having a center role in the future governance. Accurate, timely, and comprehensive information is required to support economic development decision and policy making at all levels of government. Additionally, appropriate information must be identified and used to evaluate the effectiveness of policies and decisions. E-Government, a concept dependent on ICT, is one of the most interesting concepts introduced in the field of public administration in the late 1990s, though it has not been clearly defined and understood among scholars and practitioners of public administration.

Information Systems (IS) Planning is accepted as an essential step in ensuring that IS/IT in organizations planned and implemented in an optimum manner, remembering that IS/IT is becoming a dominant part of an organization. The activity is also a conscious effort to ensure that there is alignment between IS/IT activities with the organization's objectives.

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In ensuring that an IS Plan is produced according to the objectives, writers have proposed IS Planning Methodologies. This is also an area which has been extensively covered and discussed. The use of an IS Planning Methodology is an IS planning project ensures that typical risks which may lead to a low quality IS Plan are avoided. An IS planning methodology also facilitates the process itself by guiding the planners as well as the stakeholders in considering the multi-faceted aspects and angles that need to be considered in a producing a quality IS plan.

In examination of the general literature in the area of IS Planning, it is safe to state that to date, the literature in IS/IT Planning has been dominated based on cases in private corporations. It is however important to acknowledge that IS/IT in government organization has been discussed over the past few years. Particularly since the coining of the term e-government, as part of the rise of the theme e-business, IS/IT in governments have received greater focus, covering both IS/IT in supporting government administration as well as supporting public services.

This paper is important for a few reasons; the first reason, following national government initiatives such as the Presidential Decree No. 50/2000, Presidential Instruction No. 6/2001, local governments has taken steps to adopt IT for local governance. This is further stipulated by the recent Presidential Instruction No. 3/2003 which instructs the implementation of e-government in across all government institutions. The second reason is driven by the increasing purchase value of government ICT spending. BPPT states, in 2002 there was a total government IT spending of Rp. 211.85 billion, which 0.67% from the total government spending. With the increasing value of ICT spending in government, planning needs to be conducted to ensure that wastage does not happen. The third reason is driven by the lack of availability of academic discourses and empirical research activities in the domain of ICT in Indonesia [3]. Only by developing discourse and research activities will the ICT domain develop rapidly.

## **2. LITERATURE REVIEW: DEFINITION OF TERMS**

One of the fundamental issues facing the researcher in the field of information systems and e-government is the ambiguity of terminologies used within this domain. [4] describes that this condition stems from the multi-disciplinary and relatively young nature of this domain. This is further compounded by the fact that there is extremely limited literature available on ICT implementation in the Indonesian government sector. Literature on ICT issues in government institutions in Indonesia is very much limited to only a journalistic reporting in the Indonesian media. To ensure readers have the same perception towards the main terminologies used in this paper, the authors have attempted to describe the meaning of a few definitions.

The literature often uses the term “Information Systems Planning” or “Information Technology Planning”, whose meaning is best described using the definition used by [5] as process of planning which brings together the business aims of an organization, an understanding of the information needed to support those aims, and the implementation of information communication technology to provide that information. It is a plan for the development of systems towards some future vision of the role of Information Technology in the organization.

Wilson uses the term Information Systems (IS) and Information Technology (IT) as with most of the writers within the IS/T Planning domain. With the advancement of telecommunications technology, in this paper the authors consistently use the term Information Communication Technology (ICT) to describe the concept. Hence reference to IT Planning or IS Planning quoted and reference from numerous sources is described in this paper as “ICT Planning”.

The term “e-Government” often clouds discussions in this domain. The word “electronic” in the term “e-Government” implies technology driven governance. The World Bank [6] defines e-Government as the use of information technologies by government agencies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. e-Government is actually a concept which covers a whole new governance paradigm which defines new philosophical approaches in government administration covering procedures, policies, organization structures, operation flows; driven by the dominance of

ICT. Based on this understanding e-Government planning has the same understanding as ICT Planning for the government usage, and in this paper, the terms "ICT Planning for Government" and "e-Government Planning" are used interchangeably.

### **3. E-GOVERNMENT IN INDONESIA: A BRIEF DISCUSSION**

In Indonesia the term "e-Government" was officially introduced to public administration through the Presidential Instruction No. 6/2001 regarding ICT (in Indonesian known as "Telematika" or "Telematics"), which states that the government of Indonesia has to use ICT to support good governance. However the realization for the needs for ICT to support government operations in Indonesia has been realized and explicitly raised at the national level with the declaration of Nusantara-21 in 1998. Nusantara-21 was a concept prepared by the Indonesian government covering a number of areas including health, tourism, postal services, education, banking, e-commerce. Unfortunately as Indonesia fell into the multi-dimensional crisis later during the same year which was followed by changes in the country's leadership, the Nusantara-21 concept was forgotten.

Through Presidential Decree No. 20/1999 the National Telematics Coordination Team (abbreviated in Indonesian as 'TKTI') was formed. At that time, the existence of the State Ministry of Communication and Information has not yet been established. TKTI was formed as a coordination team between government institutions, academia and private sectors. When the State Ministry of Communications and Information was established in 2001 there were no explicit steps to clarify the function and responsibilities between the two government establishments.

The State Ministry of Communication and Information was formed with the following objectives [7, 8]:

1. To develop a good service system with reasonable cost. The focus are to extend and improve the quality of information and communication network, to build the information portals and integrated public services, to build the electronic document management system, standardization and information security system;
2. To develop management system of central and local government. The focus is to improve the quality of services needed by the community, to manage the changes, to enforce the leadership and to improve the product of the regulation.
3. To optimize the use of information technology. The focus is to build the interoperability, standardization and procedure of electronic document management system, information security, basic application and to develop inter-government network.
4. To improve the participation of private sector and information technology industry. The focus is to use the expertise of the private sector, to encourage participation of private sector and small industries.
5. To develop manpower capacity in the central and local government. The objectives are to develop ICT culture in government institutions, to optimize the use of ICT training facilities, to extend the use of ICT for distant learning, and to put ICT as input for school curriculum and to improve the quality of teaching.

As part of an effort to plan the use of ICT in government administration, i.e. e-Government planning, a framework referred to SISFONAS was put together by the State Ministry of Communication and Information as the target framework describing the target model for Information Systems usage in the Indonesian government. The framework was put together using other predecessor documents such as the 1987 "National Management Information Systems" (SIMNAS), the 1998 "Nusantara-21" and the 2001 "National Information Technology Framework" all of which are frameworks which describes how Information Technology and Telecommunications are to be used for the Indonesian government system [7].

To put the framework together, a joint team consisting of internal ministry staff, academics and representatives from the ICT industry was formed, however for efficiency reasons the team were separated into working groups.

#### 4. ASSESSING INDONESIAN E-GOVERNMENT PLANNING PROCESS

The Indonesian government has conducted a numerous national IS planning activities over the past few years. Given the characteristic of Indonesia's demography it has the vision of the Indonesian government to use ICT to connect Indonesia. This vision was first implemented in the 60s when Indonesia decided to launch the first satellite to connect Indonesia's archipelago.

The following are a number of IS/IT plans put together by the Indonesian government:

- In the late 90s Indonesia launched the Nusantara-21, a high-level ICT framework to connect the archipelago of Indonesia. Nusantara-21 was one of the first integrated national IS/IT plan. Nusantara-21 is that it is a capital intensive plan which focuses more the IT component. This plan became discarded when the 1998 crisis hit Indonesia and the government changed.
- The TKTI Five Year Action Plan of 2001. TKTI, the National ICT Coordination Team, is cross departmental team put together, lead by the President of the Republic of Indonesia to ensure that ICT is planned in nationally coordinated manner. In the year 2000, TKTI produced a Five-year Action Plan, which was a pragmatic and practical implementation action item of ICT-related activities. The plan divides action items between different departments and institutions. This action plan did not come to implementation with some of the coordination issues of TKTI.
- National IS Framework (SISFONAS). SISFONAS was put together by the State Ministry of Communication and Information in the year 2002. SISFONAS is a framework which attempts to define the system, application/software, hardware, regulative and human capacity requirements needed. To date, SISFONAS has not been implemented and as there has not been any national directive and regulative in support of SISFONAS.

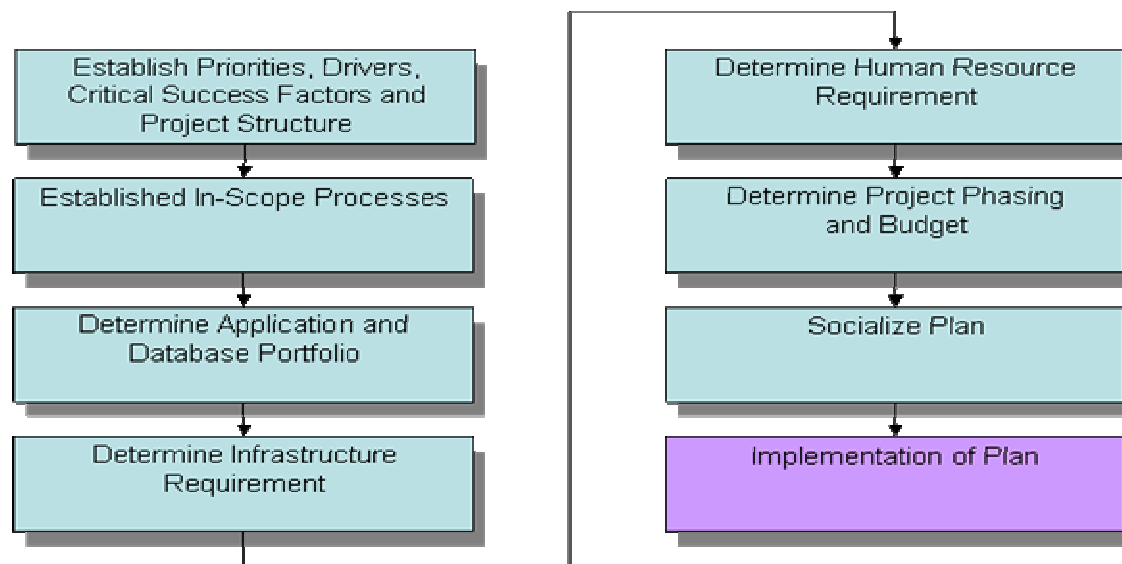


Figure 1: Eight-Step ICT Planning Model

To perform an assessment on the e-Government steps performed by the Indonesia government a model was required. For that purpose, a number of established planning methods was examined and combined. For that reason an eight (8) stage planning process (see Figure 1) based on [9]; [10]; [11] is put together. This assessment framework was required as a base to assess the steps which have been taken by the Indonesian government so far as part of the planning process in the e-Government context. The base framework used must be appropriate to cater for steps performed by government

bodies which have been produced in an environment which is bureaucratic, structured and performed by departments which have high-level of independence and autonomy.

Figure 1 describes the eight-step ICT Planning framework used as base to compare activities and actions taken by the Indonesian government. For the purposes of the analysis presented in this paper, the eight-step process is considered the 'ideal' approach, as they were adopted from proven methodologies used within the industry. These steps, which are presented as sequential steps are in fact cyclical in nature. For example, if the third step (Step 3: Determine Application and Database Portfolio) is reached, depending on the situation faced one may be able to come back to a previous step (for example, back to Step 2: Confirm In-scope Processes). With these steps established, the authors were able to map current government-related activities against each of the step and hence allowing an analysis of gaps and the weaknesses of the existing planning process.

Stage Name	Description of Objective	Steps Taken in the Indonesian Government
Establish Priorities, Drivers, Critical Success Factors and Project Structure	The objective of this step is to determine the government priorities, government coordination points	<ul style="list-style-type: none"> <li>• Formation of the State Ministry of Communication and Information (MCI) in October 2001</li> <li>• Establishment of National Telematics Coordination Team (TKTI), lead by the MCI on the /2003</li> <li>• Establishment of Cyberlaw (draft ready to put through legislative body)</li> <li>• Formation of e-Government Task Forces (Infrastructure, Human Resources, Application)</li> </ul>
Confirm Established Processes	The objective of this step is to determine responsibilities for the IT components based on processes used in government	<i>No explicit steps are taken</i>
Determine Application and Database Portfolio	The objective is to determine the targeted model	<ul style="list-style-type: none"> <li>• Application partly addressed by SISFONAS</li> <li>• Database partly addressed by SISFONAS</li> </ul>
Determine Infrastructure Requirement	The objective is to determine the infrastructure requirements	<ul style="list-style-type: none"> <li>• Partly addressed by SISFONAS</li> <li>• Some infrastructure planning conducted through e-Indonesia program</li> </ul>
Determine Human Resource Requirement	The objective of this step is to determine the Human Resources requirement to support the application and infrastructure requirements	<ul style="list-style-type: none"> <li>• Steps taken by the MCI to address government HR training standards (for example competency guidelines)</li> <li>• Ad-hoc IT training conducted by regional government</li> </ul>
Determine Project Phasing and Budget	The objective of this stage is to determine project phasing and budget requirement based on priorities, budget constraints	<ul style="list-style-type: none"> <li>• Budget for individual programs determined ad-hoc by central government</li> <li>• Budget for individual programs determined by regional government</li> <li>• National Development Planning Agency (Bappenas) assesses and approves IT budgets proposed by government departments or regional governments</li> </ul>
Socialize Plan	The objective of this stage is to let all stakeholders and others know about the established program	<ul style="list-style-type: none"> <li>• Presidential Instruction No 3/2003</li> </ul>
Implementation of Plan	The objective of this stage is start implementing the components of the plan	<ul style="list-style-type: none"> <li>• Establishment of the e-Indonesia Program initiated by MCI for Infrastructure development</li> <li>• Batam e-Government Pilot Project plan for execution initiated by Batam</li> <li>• Sumatra-Online project in collaboration with an incumbent infrastructure provided initiated by the Sumatra provincial governments</li> <li>• Other e-Government projects initiated by government departments individually</li> <li>• Other e-Government projects initiated by regional government departments individually</li> </ul>

**Table 1:** IT-Planning and Implementation-Related Steps Made by the Indonesian Government

A comparison of activities against the eight-step planning framework is depicted in Table 1. From the information illustrated in the table, by matching the steps taken by the government and comparing

them with the ideal planning approach, it is understandable that the steps, actions and policies which have been taken by the Indonesian government so far as part of its e-government efforts are arguably ineffective, and in some cases can be, in the larger-scale, counter-productive.

## 5. ADDRESSING THE E-GOVERNMENT PLANNING PROCESS IN INDONESIA

Table 2 describes a summary of checkpoints used to assess the ICT planning process taking place in the Indonesian government. As the information in the table describes there are a number of key points which are not in place.

Planning Characteristic	Availability
Use of a Clear and Common Planning Methodology	No
Clear source of Budget to Implement the Plan	No
Owner of the Project has Control over all Affected Areas	No
Clear Project Sponsor and Project Owners	No
Dedicated Planners in Project	No
Coordination with all Relevant Government Planning Agencies	Not Fully
Create Common Perception and Views at National level	Minimal
Create Common Perception between Central and Regional Government	Minimal
Leadership in IT Planning	Minimal
Availability of National Direction in use of ICT	No
ICT Knowledge in Planners	Medium
ICT Knowledge in Stakeholders	Minimal

**Table 2:** Checkpoints in the Indonesian e-Government Planning Process

As described in the earlier section, this paper attempts to provide descriptions of critical steps required to be taken to address the situation faced in the e-Government planning process in Indonesia; Based on the information described in Table 2, the authors propose a (7) steps process to address the matter. A summary of the recommended steps required to address the situation is summarized in Figure 2.

### **Step 1: Address Major Institutional Issues**

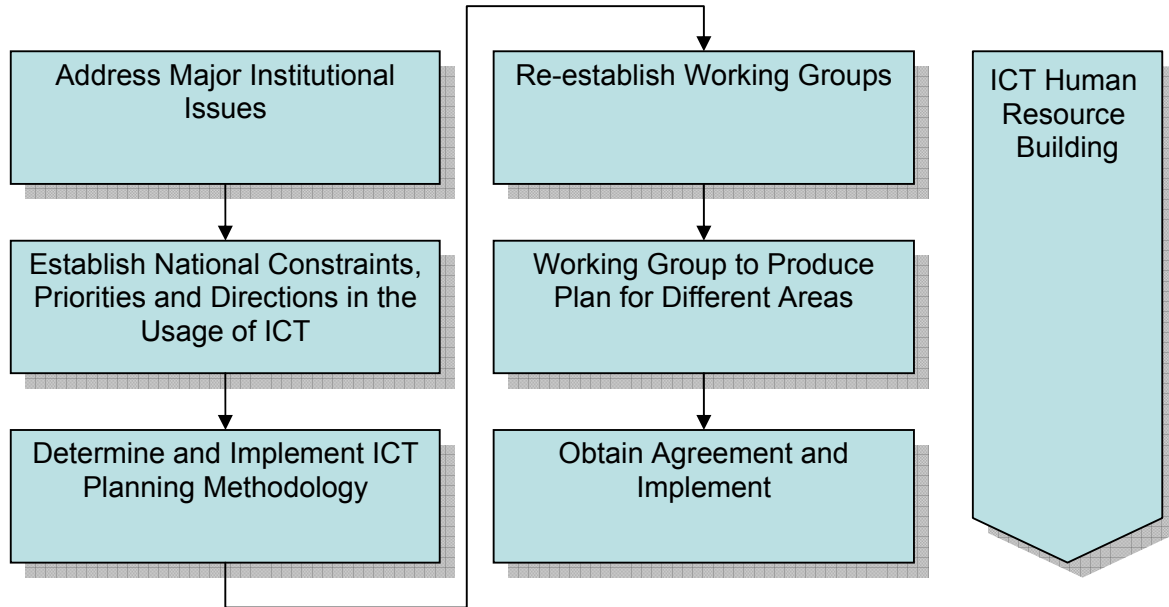
As described in the section before, one of the main causes of confusion is the lack of clarity regarding the role of different institutions with regards to ICT planning and implementation within the Indonesian national government structure. [12] described that this is a common problem with IT planning processes. Addressing this problem is crucial to ensure that there is a clear point of accountability and coordination for all ICT related activities. Clear responsibilities must be differentiated between the Ministry of Communications, TKTI, State Ministry of Communications and Information, as well as with other government institutions. The role that local governments is required to make in local government ICT planning must also be defined and integration issues must be described and clear to all parties.

### **Step 2: Establish National Constraints, Priorities and Directions in the Usage of ICT**

Resources are limited, and there are multiple directions, ways and form in which ICT can be used for government purposes. The process of Step 2 is equivalent of a “strategic alignment process” which is the process of aligning corporate and IT directions [13]. Finance is not the only constraining factor; in fact a research conducted [14] in developing countries states that financial strength does automatically lead to ICT planning effectiveness. Priorities must be established and communicated across all government institutions. A sample priority may be the implementation of e-government applications to support basic public services in regional governments, or creating infrastructure connections between all government local government institutions. Allocation of resources must follow the established priorities and directions.

**Step 3: Determine and Implement ICT Planning Methodology**

In their paper, [15] stipulated that there are numerous ICT planning methodologies. There are the two extreme grouping of ICT planning methodologies, one which is driven by interaction, common understanding; the more interpretivist approaches ([16-18]), the other is a structured step-by-step approaches ([11, 19]). Based on the formal ICT-related documents produced by the Indonesian government so far, there is clear indication that the focus is not on action, i.e. methodology, but in policies and regulations. [14] describes a strong correlation between planning approaches and successful planning in ICT. For that reason it is important to select a planning process suited for the Indonesian government context, which will produce a plan all parties would be committed to.



**Figure 2:** Steps to Address e-Government Planning in Indonesia

**Step 4: Re-establish Working Groups**

Currently there are numerous Working Groups formed under different groups. For example the TKTI secretariat has formed separate Working Groups to handle Infrastructure, e-Government, e-Commerce, e-Health. The e-Indonesia initiative has formed separate Working Groups to handle Infrastructure, e-Government, Business Model and Budgeting. The State Ministry of Communication and Information has formed Working Groups to handle Infrastructure and e-Government Applications. All these Working Groups currently have different charters and although they have the same names (such as ‘Infrastructure’) they have slightly different objectives. The groups need to be abolished, and new groups with clear distinctions of roles and responsibilities need to be formed.

**Step 5: Working Group to Produce Plan for Different Areas**

The Working Groups have the responsibility to produce separate action plans. This is followed by an alignment between the plans and aligning them to ensure the overall plan is arranged to achieve common objectives. Creating working groups to handle different tasks is a common activity in corporation planning, and the challenge is in the process integrating them. [16], [18] offers techniques which are more consultative in nature, IBM Corporation [19] offers techniques which are more structured. Which ever integration method used, the bureaucratic nature of government must be taken as the main consideration and requires the formation of Working Groups to be planned with care to

ensure all relevant stake-holders are represented in the Working Groups. This will assist maximum smooth integration between plans produced by the Working Groups.

#### **Step 6: Obtain Agreement and Implement**

The e-Government plan produced will affect regions, other ministries, other non-department institutions. To obtain support from the other areas of government, an explicit step, i.e. obtaining approval must be taken. Currently this cross-area coordination and implementation is done through TKTI.

#### **Step 7: ICT Human Resources Building**

[7] addressed in numerous occasions that IT Human Resources is a major problem in Indonesia. This problem appears from the highest level, i.e. planning, down to the lowest level, i.e. users. The lack of ICT Human Resources has caused ICT to put in a low priority. A study conducted by [20] showed that a lack of ICT knowledge in organizations can lead to ineffective ICT plans. In corporations this is often addressed through pre-planning training. In Indonesia this problem is caused by the general problem of Digital Divide. For ICT to be implemented at a national level properly, the general knowledge of ICT must be increased to allow planning and implementation.

### **DISCUSSION AND CONCLUDING REMARKS**

Localized success cases in e-government implementation have been reported, particularly in regional government offices. From a national stand-point it would be difficult to claim that there is success of in both the planning and implementation of e-Government in Indonesia. Numerous problems are perceived to be the reason, among them include the problem of regional autonomy and the lack of authority held by the State Ministry of Communication and Information as government institution responsible for the planning and implementation of e-government in Indonesia. The situation is compounded by the separation of the Telecommunications as a domain currently under the responsibility of a different government department, hence creating a problem with the convergent planning the Information Technology and Telecommunications in the implementation of e-Government. Although there are talks within the government to put the responsibility of Information Technology and Telecommunications under the same government institution, this very much depends on the political will of the new government to be elected in April 2004.

Currently the development of e-Government in Indonesia has no reference to design or blueprint. This paper contains an assessment of the steps which have been taken by the Indonesian government. These steps are reflected against accepted theoretical ICT planning approaches. The analysis shows that at the moment there is no single, national, centrally-coordinated methodical approach in the implementation of national e-Government in Indonesia. The State Ministry of Communication and Information is currently holding a "centralized guidance" and "autonomy planning and implementation" philosophy in its current management of Information Technology in Indonesia. The argument is the lack of regional Human Resources whom can support IT, and hence first priority is to build IT-related human resources capability, and later on allowing IT to flourish regionally and followed by an integration effort in 2010 [7]. This lack of immediate national coordination is however seen by many to create potential wastes.

The development of e-Government is part of the efforts to set up structure, system, and an administration which is efficient, effective, transparently, and accountable. For this, it is essential to be supported by capable human resources, good management systems, processes, and controlling systems. The main challenges in the development of e-Government lie in the non-technical aspect, particularly planning.



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