PROCEDURE 1310.30
Issued January 6, 1997

SUBJECT: Year 2000 Compliance

APPLICATION: Executive Branch Departments and Sub-units

PURPOSE: To establish the conditions under which Year 2000 compliance is required for state agency information resources and to insure that all computer applications appropriately handle the century date change.

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SUMMARY: These standards are designed to cover all pertinent responsibilities that relate to Year 2000 Compliance including Applicability, Standards Requirements, and Compliance.

APPLICABLE FORMS: As required

PROCEDURES:

These procedures are organized in the following sections:

I. Year 2000 Compliance Standards

II. Applicable Definitions

III. Applicability of These Standards

IV. Standards Requirements for Year 2000 Compliance

V. Year 2000 Implementation Strategy Plan Format

VI. References

I. Year 2000 Compliance Standards

All agencies shall prepare a Year 2000 Implementation Strategy Plan as described and detailed within these standards. This document shall be completed by each agency no later than thirty (30) days after the final Impact Assessment report is published. The Office of Information Technology, DMB shall complete it's review of agency plans within thirty (30) days after receipt.

Agencies are to ensure that Year 2000 Compliance contract language, as quoted in these standards, is included in all Information Technology related contracts (both hardware and software), purchase orders and other legal agreements. This requirement shall begin on the issue date of these standards.

II. Applicable Definitions

Information Technology Resources (IR): For purposes of these standards, Information Technology Resources are defined as all automated information technology hardware, software and data, both mainframe and client/server, to include:

- Computer and telecommunications hardware and computerized devices;
- Computer and telecommunications firmware (microcode);
- Computer applications and telecommunications software, including, but not limited to:
  - Purchased application software,
  - Purchased software development packages (word processing, spreadsheets, project management, database managers, editors, compilers, etc.), and
  - Custom developed applications software;
- Computer and telecommunications system software, including, but not limited to, operating systems, database management systems, Job Control Language (JCL), Work Flow Language (WFL), interfaces to other systems, middleware, etc.;
- Data:
  - DBMS structures (database definitions) and databases
  - Stored data
  - Incoming data (received from other applications or organizations)
  - Outgoing data (being sent to other applications or organizations); and
- Archives and backups

Time Horizon: An information resource's "Time Horizon" is the latest future date that will be processed or handled by the resource. For example, if an application calculates expiration dates two years into the future, it's "Time Horizon" is always a date two years from the present date.

Year 2000 Time Horizon: For purposes of these standards, the "Year 2000 Time Horizon" is the date by which a resource must be compliant before its date processing fails. Based on the time horizon example in the previous paragraph, the "Year 2000 Time Horizon" would require the application to be fully tested and compliant, two years before January 1, 2000.

III. Applicability of These Standards

A. General Applicability:

1. For information technology resources purchased or acquired from an outside source, these standards apply to:

a. Information technology products acquired, purchased, or licensed for use by state government entities.

b. Vendor provided product modifications or upgrades for information technology products (that were originally purchased or licensed from the vendor that is providing the modifications or upgrades.)

c. All vendor maintenance agreements for future product upgrades.

d. Information technology services, including custom software development or modification, and all outsourced information resource services (i.e., computer operations, systems analysis, or other information processing services.)

2. For information resources created by, or for, the State of Michigan, these standards apply to state government entities and their representatives (i.e., employees; contractors), including services and maintenance to support these products.

B. Special Applicability Categories for Information Technology Resources:

Category I addresses mission-critical information resources. Examples include resources critical to running the business (resources that will not be replaced prior to the year 2000); resources that must be kept to meet archival or legal requirements; and resources that must be able to handle dates from multiple centuries.

Category II examples include information technology resources that will be removed from service either 1) prior to the year 2000 Time Horizon, or 2) within the timetable stated in the Year 2000 Implementation Strategy Plan; and programs that perform trivial functions or provide cosmetic features (i.e., printing reports).

Programs that accept potentially non-compliant data from outside sources represent a special case in Category II. The compliance of incoming data may not be within the control of their recipients, however recipient systems must be able to process this data without corrupting any databases.

IV. Standards Requirements for Year 2000 Compliance

A. Year 2000 Standard

1. Data Structures (databases, data files, etc.) are to provide 4-digit date century recognition. The standard format for date fields shall either be “YYYYMMDD” or “YYYYDDD”. Database management systems that control the format for “date” must be able to represent date fields in the standard format. Effective November 1, 1996, all new development shall adhere to the standard format. All systems and development prior to November 1, 1996 must accommodate the 4-digit date century recognition within existing date formats (e.g. MMDDYY to MMDDYYYY).;

2. Stored data shall contain date century recognition, including, but not limited to, data stored in databases and hardware device internal system dates;

3. Calculations and program logic shall accommodate both same century and multi-century formulas and date values. Calculations and logic include, but are not limited to, sort algorithms, calendar generation, event recognition, and all processing actions that use or produce date values;

4. Interfaces (to and from other systems or organizations) must prevent non-compliant dates and data from entering any state system;

5. User interfaces (i.e., screens, reports, etc.) shall accurately show 4 digit years; and

6. Year 2000 must be correctly treated as a leap year within all calculation and calendar logic.

B. Agency Compliance Responsibilities:

1. Planning: Agencies shall prepare a Year 2000 Implementation Strategy Plan that:

a. Is aligned with statewide Year 2000 Implementation Strategy plans;

b. Identifies all agency information resources (as defined in these standards); and

c. Includes timetables for all information resources for their retirement, replacement, or Year 2000 compliance.

The Office of Information Technology will contract with an experienced Year 2000 firm to develop a statewide Impact Assessment for the Year 2000 effort. Agencies may then use the output of this engagement to help develop their Year 2000 Implementation Strategy Plan.

All agencies shall prepare a Year 2000 Implementation Strategy Plan as described and detailed within these standards. This document shall be completed by each agency no later than thirty (30) days after the final Impact Assessment report is published. The Office of Information Technology, DMB shall complete it's review of agency plans within thirty (30) days after receipt.

The Office of Information Technology Solutions, DMB will provide assistance in the creation of agency plans upon request.

2. Implementation: Agencies and other state government organizations shall insure that all information resources shall be retired, replaced, or made Year 2000 compliant prior to January 1, 1999 or the resource's Year 2000 Time Horizon, whichever comes first.

Exceptions may be made for the following:

a. A Category II information resource may be exempted from meeting data structure and stored data requirements.

b. A Category II information resource may be exempted from meeting stated deadlines, provided business strategies are in place for addressing non-compliance after the Year 2000 Time Horizon has been reached.

All exceptions need to be identified in the agency's Year 2000 Implementation Strategy Plan. The Year 2000 Implementation Strategy Plan shall identify the Category II information resources that will be non-compliant.

C. Compliance Requirements for Vendor Contracts:

The following language shall be incorporated into all Information Technology related vendor contracts, purchase orders and other legal agreements:

"The vendor warrants that all software for which the vendor either sells or licenses to the State of Michigan and used by the State prior to, during or after the calendar year 2000, includes or shall include, at no added cost to the State, design and performance so the State shall not experience software abnormality and/or the generation of incorrect results from the software, due to date oriented processing, in the operation of the business of the State of Michigan.

The software design, to insure year 2000 compatibility, shall include, but is not limited to: data structures (databases, data files, etc.) that provide 4-digit date century; stored data that contain date century recognition, including, but not limited to, data stored in databases and hardware device internal system dates; calculations and program logic (e.g., sort algorithms, calendar generation, event recognition, and all processing actions that use or produce date values) that accommodates same century and multi-century formulas and date values; interfaces that supply data to and receive data from other systems or organizations that prevent non-compliant dates and data from entering any State system; user interfaces (i.e., screens, reports, etc.) that accurately show 4 digit years; and assurance that the year 2000 shall be correctly treated as a leap year within all calculation and calendar logic."

Notes: The term "software" within the above contract language may be replaced with more appropriate terminology, such as "computerized device(s)" or "computer systems software", as the situation warrants.

Each agency shall determine the appropriate damages for vendor non-compliance and explicitly state those damages, including the circumstances for assessing damages, in the contract, purchase order or other legal agreement.

Contract language may exempt vendors from fixing Year 2000 problems that are unrelated to the contracted work, provided:

a. Work performed does not produce new non-compliant information resources, and

b. Vendors are accountable for notifying agencies of non-compliant information resources they encounter, or work on, while performing contracted work.

D. Compliance Time Frames:

1. New Contracts: Agencies, with the assistance of the Office of Purchasing, DMB, shall include and enforce Year 2000 compliance language (as identified above) on all vendor contracts, purchase orders and other legal agreements for information resources products and services. This compliance shall begin on the issue date of these standards.

2. Existing Contracts: Vendor contracts, purchase orders, and other legal agreements reached prior to the effective date of these standards, should be amended to include certification language for Year 2000 compliance (as identified above), as soon as possible, but at least by January 1, 1999 or the affected resource's Year 2000 Time Horizon, whichever comes first.

3. Information Technology Resources: Compliance, including implementation, shall be achieved within the agency prior to either January 1, 1999 or the resource's Year 2000 Time Horizon, whichever comes first.

E. Compliance Measurement:

1. Any and all information technology resources may be subject to examination for compliance. Compliance examinations may include stored data, database structures, screens, application code, archives and backups, output from system processing, or other information resources.

2. Agency Year 2000 Implementation Strategy plans may be subject to periodic review by the Office of Information Technology Solutions, DMB.

3. All cases of non-compliance shall be identified in the agency's Year 2000 Implementation Strategy Plan.

4. All vendors providing information resource products and / or services (including all outsourced processing) may be required to demonstrate conformance to these standards on request. Vendors will be held accountable for meeting Year 2000 compliance requirements (as described in these standards) under terms of their contracts.

V. Year 2000 Implementation Strategy Plan Format

The Year 2000 Implementation Strategy Plan format shall include, at a minimum, the following sections:

1. Implementation Strategy Plan Purpose

2. Year 2000 Conversion Requirements

- Definition of standard rules and procedures for this effort
- Identify Methodology to be used for Year 2000 Conversion
- Year 2000 Steering Committee members chosen (including member profiles)
- Year 2000 Project Manager chosen
- Identification of resources skill sets required during conversion
  - -- customers
  - -- information analysts
  - -- programmers
  - -- testers / Quality Assurance (QA)
  - -- Identification of additional hardware/software requirements
  - -- Identification of conversion and testing environment requirements

3. Affected Software Inventory

- Inventory of application systems to be rewritten before the year 2000
- Inventory of application systems to be replaced before the year 2000
- Inventory of vendors for leased software that may require Year 2000 certification
- Inventory of operating system software needing Year 2000 certification
- Inventory of firmware that may require Year 2000 certification
- Inventory of applications/firmware that has already been certified as being Year 2000 compliant
- Inventory of applications/firmware that can not be compliant by the year 2000

(note: “year 2000” = “year 2000 or the application’s time horizon”)

4. Cost Estimation

   - For each application system to be rewritten, updated or replaced

5. Project Plan

   - Identify Time Horizon for each affected software application
   - Develop a work plan for each application
     -- Timeline with conversion milestones
     -- Implementation schedule or vendor certification timeframe

6. Business Area Presentation

   - Outlining the Year 2000 problem
   - Approach to implement solutions
   - Cost to implement solutions
   - Business Area involvement in the process

7. Test Plan Development

   - Identify resources needed for each type of software testing (unit, system, user acceptance, etc.)
   - Definition of testing milestones and QA procedures

8. Vendor Identification

   - Leased software vendors
   - Year 2000 Planning vendors
   - Year 2000 Code Conversion vendors
   - Year 2000 Quality Assurance vendors

9. Software Tool Identification

- For Year 2000 planning staff
- For Year 2000 programming staff
- For Year 2000 testing / QA staff

VI. References

ANSI Standard X3.30 -- Representation for Calendar Date and Ordinal Date for Information Interchange (R 1991)

State of Minnesota, Department of Administration -- Year 2000 Compliance Standards

Gartner Group Research Note SPA-650-259 Building Year 2000 Contract Protection, Nov. 21, 1995

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