



# **Organizational Applications: Student Management Software Applications in Education**

**Rob Dickinson, Executive Director – MPAAA  
Steve Cameron, Data and Pupil Accounting – Clinton  
County RESA**

## **Terminology**

- **Student Management Software - SMS**
- **Student Information System - SIS**
- **Student Record Software– SRS**

**Different names – same software**

# Agenda

- **SIS Role in School Management**
- **Selecting an Student Information System**
- **Data Quality**

3

## SIS Role in District/Building Management

- **SUMMER**
  - Enrolling students
  - New hardware & applications
  - Application upgrades
  - Scheduling
  - Rollover
  - TSDL reporting
  - All activities must be coordinated among the various related systems

4

## **SIS Role in District/Building Management**

- **SUMMER (cont.)**
  - Direct Certification review
  - Free/reduced lunch applications
  - Transparency reporting

5

## **SIS Role in District/Building Management**

- **FALL**
  - Beginning of the year activities
  - Early warning system (EWS)
  - Prepare for the count day
  - 1st Wednesday in October count day (due mid-November)
  - 5<sup>th</sup> week of school progress reports
  - Parent/teacher conferences
  - 10 weeks ~ 1<sup>st</sup> quarter report cards

6

# **SIS Role in District/Building Management**

- **FALL/WINTER**

- 15 week 1<sup>st</sup> semester progress reports
- Master schedule building for the next year
- End of first semester: Report cards
- Student schedule changes for 2<sup>nd</sup> semester

7

# **SIS Role in District/Building Management**

- **WINTER/SPRING**

- Student course selection for following year
- Membership count 2<sup>nd</sup> Wed. in February (5 wks)
- Progress reports
- Parent/teacher conferences
- K enrollment

8

# **SIS Role in District/Building Management**

- **SPRING**

- Testing
- Scheduling for next year
- End of year activities
- Final report cards
- Final (?) student schedules
- Graduation
- MSDS General Collection submission for end of year
- Update EEM for next school year
- SID reporting
- Graduation rate review & student search

9

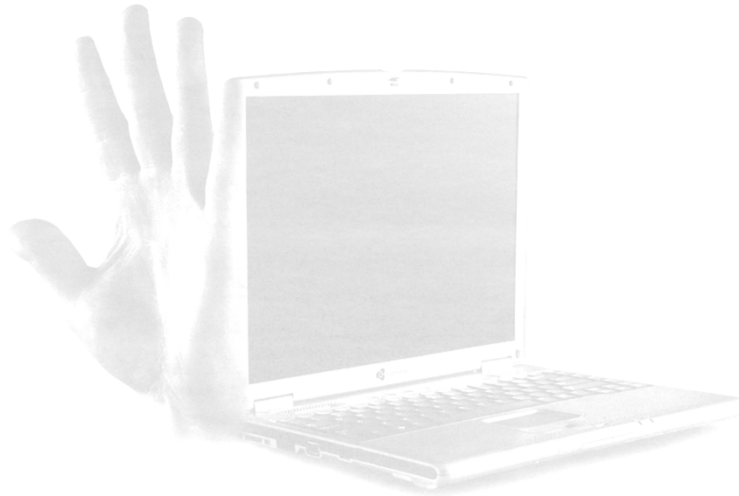
# **SIS Role in District/Building Management**

- **ONGOING**

- IEP Maintenance
- CTEIS reporting
- MEDS reporting
- Grant management and reporting
- Alert/phone system management
- Website management/maintenance

10

## What else should be added?



## System Components

### – Attendance

- Daily attendance for Elementary Buildings
- Period attendance for Middle Schools
- Period attendance for High Schools

**Need to make sure that the student management system can meet and help enforce your district/school attendance policies.**

# System Components

## – Attendance

- Positive or Negative?
- Positive – better audit trail, lots of data
- Negative – Less data, easier to question
- Key Question - Was attendance done?
  
- 1<sup>st</sup> attendance – Positive input?

13

# System Components

## – Attendance

- Membership / Pupil Accounting
  - 10 day rule: unexcused absence on a count date, the student has 10 school days to return to class.
  - 30 day rule: excused absence on the count date, the student has 30 calendar days to return to class.
  - 45 day rule – expelled students
  - Suspended/expelled students with IEP – whole year return
  
  - LOSE \$\$\$\$ if a student does not return to class under the various rules.

14

# System Components

## – Attendance

- **75% Attendance**

- EVERY scheduled day of the school year:
- 75% of SCHEDULED students must be in attendance
- Funding loss if below 75% threshold

- **Implications**

- Year round schedules
- Added days in the summer
- Lower threshold – 60%

15

# System Components

## – Student Membership: The software must have the capability to track and report on all student information for funding:

- **Full Time Equivalencies (F.T.E.)**

- All regular students F.T.E.
- Special Education F.T.E.
- Alternative Education F.T.E

16



# System Components

## Membership continued...

- **Non-Conventional or Population III students**
  - Part Time students (5-F)
  - Non-public/Shared Time students (5-E)
  - Cooperative Ed students (5-B)
  - Homebound/Homebased (5-C & 5-D)
  - EC Special Education F.T.E. (5-K)
  - Career and Technical Education F.T.E. (5-P)
  - Virtual/online classes (5-O)
  - Early/middle college (5-G)

17

# System Components

## – Scheduling

- **Software and Humans can create the individual student schedules HOWEVER.. need to take into consideration:**
  - Teacher Contract
  - Master Schedule
  - Facilities
  - Teacher staffing & Collaboration time
  - Course Offerings
  - Failures & Repeat courses
  - Scheduling Constraints (blocks, A/B schedules)
  - School reform issues (focus/priority)
  - Semesters vs Trimesters

**Student software must be able to create the master schedule, rotations, block classes, etc:**

# System Components

## – Discipline

- The system must track student disciplinary incidents for
  - Helping students learn alternative problem resolution techniques.
  - MSDS reporting
    - » Regular Ed – Expulsions AND SUSPENSIONS
    - » Special Ed – Suspensions and Expulsions
  - CRDC
  - Data sharing – student discipline records and sharing with the NEXT District
  - Restraint and seclusion tracking & reporting

19

# System Components

## – Grade Reporting / Progress Reporting

- Graduation requirements
- Grading scales
- Weighted grading
- G.P.A. calculations
  - Academic
  - Honor Roll
  - Term / Cumulative
  - District creative grade point averages
- Student Privacy – Do you publish the honor roll?

20

# **System Components**

- **Grade Reporting / Progress Reporting**
  - **Community Service**
  - **Citizenship marks**
  - **Teacher comments customizable by school**

21

# **System Components**

- **Transcripts / Course History**
  - **Course History capabilities that are flexible to allow transfer classes**
  - **Dual Enrollment Classes**
  - **Distance Learning Classes**
  - **Independent Study**
  - **Credits for work study (CTE)**
  
  - **Michigan E-transcript Initiative (Parchment)**

22

# System Components

## – Immunization & Health Emergencies

- Student software should include a module for tracking immunization information and health emergency information.
- Student software should interface (export a file) to the SIRS program as required by the State Michigan Department of Health.
- Balancing of needs: making information easily & readily available to those who need it vs Student privacy

23

# System Components

## – Emergency Information

- Allergies
- Medical alerts
- Contact numbers for parents
- Alternate Contact numbers as provided by parent(s)
- Who is allowed to pick up a child from school
- Who is not allowed to have contact with the child.

24

# System Components

## – Parent Information

- Name and contact info of all parents involved with the child
  - Organized by family/student?
- Ability to denote who should or should not have contact with child.
- Designation for sending report cards and other school information to the parent
- FERPA – Rights transfer at 18 to student

25

# Internal Customers or Users of the Data

## – Security rights & Access privileges:

- Teachers
- Students
- Building/District administrators
- Parents/guardians
- School Improvement Teams
- Volunteers
- Board of education
- Technology & other staff

## – Data Access vs FERPA rights

26

# Software Components

(to meet reporting and management)

## – Support systems & ETL

- Career and Technical Education (CTEIS)
- Special Education (variety of software including Tienet, EasyIEP, ISE, etc.)
- Limited English Proficiency (LEP) services software.
- Food Service Software (free and reduced lunch).
- Assessment Systems~ M-STEP (Secure Site), ACT, SAT, PSAT, etc.
- Transportation/bus routing software
- HR software (PIC codes, certifications)
- Library management systems

27

# Software Components

(to meet reporting and management)

## – Support systems & ETL

### – Data Transfer

### – ETL (Extract, Transform, Load)

- Frequency & Data “ownership”
- Student ID issues
- System idiosyncrasies
- File formatting & data structure issues
- Pushed data vs Pulled data
  - Timing issues

28

# External Customers or Users of the Data

- State
  - MDE (program control and evaluation)
  - CEPI (Center for Educational Performance and Information)
  - MiSchoolData
    - » Many, many reports
    - » Public and Confidential
- Feds
  - Many Federal reports based on State collected data
  - CRDC (Civic Rights Data Collection)

29

# External Customers or Users of the Data

- Parents and prospective parents
  - Standard and Poor's District Analysis
  - Michigan report card
  - Transparency reporting
- News Outlets
  - Newspapers, Associated Press, CNN, television
- Data Hubs
  - Kalamazoo RESA (SWMI) Data Hub: <https://portal-kz.midatahub.org/OperationsCockpit>
  - Kent ISD (KENT) Data Hub: <https://portal-kc.midatahub.org/OperationsCockpit>
  - Oakland Schools (GMEC) Data Hub: <https://portal-os.midatahub.org/OperationsCockpit>
  - REMC 1/Copper Country ISD (RNMI) Data Hub: <https://portal-cc.midatahub.org/OperationsCockpit>
  - Wexford-Missaukee ISD (IMC) Data Hub: <https://portal-wm.midatahub.org/OperationsCockpit>

30

## **External Customers or Users of the Data**

- Ed-Fi (Data standardization specification)
- Grants (Eisenhower, Perkins, USF, etc.)
- Researchers (Grad Students, others)
- NCAA for college scholarships

*Others?*

31

## **Selecting an SIS**

32



# Cloud Computing?

- *User interface AND data storage is off-site, decentralized*
- **PROS**
  - *No local servers, software*
  - *No patching, updates*
- **CONS**
  - *Browser issues*
  - *Internet interruption*
  - *Bandwidth*
- *Can your system cope with web access interruption?*

33

# Selecting an SIS

## System considerations

- **Operating system / database choices**
  - **Cloud computing may render irrelevant**
  - **Need to test against ALL browsers**
- **How well will this system mesh with others?**
- **Hardware needs?**
  - **Database server(s)**
    - **How many environments?**
  - **Web server(s)**
    - **User load & bandwidth issues**
    - **Building schedules can effect user load**

34

# Selecting an SIS

## Data backup and recovery

- Backups
  - How frequent?
  - Storage medium(s)?
  - Drive/system mirroring
- Have you tested it RECENTLY?
- Disaster recovery
  - Is there an offsite copy of your system?
  - What would you need to re-open school if IT building was wiped out?
  - If you store to the cloud, what do you do when the internet goes down?

35

# Selecting an SIS

## System access and security

- User rights
  - Flexible enough?
    - FERPA rights apply to INTERNAL staff too!
  - Different rights in different modules?
    - Whole screen, or item level?
  - Are reports user access-sensitive?
    - Whole report, or field level?

36

# Selecting an SIS

## System access and security

- User rights approaches:
  - User groups
    - Collect rights unto user groups
    - Employee-based groups
    - Assign group or groups to users
    - Harder to customize, less complex
  - Function-based (Lego) security
    - Lowest common denominator
    - Function-based groups
    - Small blocks, pieced together into larger blocks
    - Easiest to customize, more complex

37

# Selecting an SIS

## System access and security

- Cross system security
  - Do other systems support the same user IDs, access rights
  - Distributed user management
  - Active directory support
  - Eliminate/minimize multiple IDs/passwords

38

# Selecting an SIS

## Student ID (numbers, not badges)

- Can you use UIC?
  - Remember, some UICs start with '0'
- Keep legacy ID from last system?
  - Field compatibility
  - Connectedness to historical data
- **SINGLE SOURCE** new student IDs
  - Including connected systems
  - Special ed, transportation, food service
- **Good tools to find, merge Student IDs**
  - All tables, modules
  - Cross school year breaks?

39

# Selecting an SIS

## Student History

- Can you move previous year into new system?
  - Are tables able to translate?
- If not, how do you maintain old records?
  - Are printouts enough?
  - Keep old software?
  - Can old backups be read?
  - Changing storage media
  - Cloud solutions are a challenge in this area
- **What old records MUST be maintained?**
  - Transcripts
  - Attendance?

40

# Selecting an SIS

## Customization

- **Software drives policy**
  - Does your system do what you want it to do, or do your processes adjust to what the software allows?
  - Find the right balance
- **Can you unify across buildings?**
  - One standard set of screens for the district
  - Important to include building level staff in review
- **Can you unify across building levels?**
  - Elementary screens, secondary screens, etc

41

# Selecting an SIS

## Customization

- **Customization allows better user experience**
  - Screens follow forms, processes
- **Customization leads to better data quality**
  - Input limiters, front end data checking
- **Customization makes upgrading harder**
  - Must re-apply changes
- **Customization makes ETL harder**
  - Less standardization, more opportunities for error
- **Customization makes vendor support \_\_\_\_\_**
  - Always makes more difficult

42

# Selecting an SIS

## Query tools

- **Ultimate double edged sword**
  - Easier to use, more dangerous they are
  - Avoids UI data quality checks
- **Should be easy to search kids**
  - Save searches, distribute to others
- **Should be hard to alter data**
  - Require reporting **PRIOR** to alteration
    - Would provide recovery information
    - Does not currently exist
- **Front-end vs back-end query tools**
- **Does your query tool follow your user access limitations?**

43

# Selecting an SIS

## Query tools

- **Use 2 step process to alter data w/queries**
  - 1. Create report of data to be changed**
    - Includes **ALL** criteria, all changed data
    - As it exists **PRIOR** to change
    - Save, print, keep
  - 2. THEN, change data**
    - If possible, re-use same query
    - Minimize chances of typos in criteria
- **Change data first thing in the morning**
- **Weekends are even better!**

44

# Selecting an SIS

## Reporting tools

- **Can you recreate existing reports?**
  - If not, they better be LOTS better!
- **Can reports be shared, distributed?**
  - Can updates flow out to distributed reports?
  - Can users change reports for ALL users, or just themselves?
- **Needs to be tightly tied to user rights**
- **Can reports be run into excel?**
  - Data leaving your control, changed to say something else
  - FERPA follows the data
- **SECURE Acrobat (PDF) reports**

45

# Selecting an SIS

## User Community

- **Who else uses this software?**
  - In my area
  - Among districts like mine
- **Consortiums**
  - ISD level purchases
- **User groups**
  - Share knowledge, reports, best practices
  - User group meetings
  - Questions to a listserv

46

## ~~Data Quality~~

**Data Quality is highest when:**

- 1. Data providers know what is expected.**
- 2. Data providers use the data themselves for their own work.**
- 3. Everyone, everywhere checks the data**
- 4. The data are available and used**
- 5. Systems are required to share data**

47

## **Data Quality**

**Data Quality - 2 approaches:**

- **Quality Control**
  - Finding and fixing bad data already in the system
- **Quality Assurance**
  - Keeping bad data out of the system

48



# Data Quality

## Quality Control

- Finding and fixing bad data already in the system
- Sooner is better!
- Less time to make other data wrong
- Less chance to propagate into other systems
  
- Need good tools to find, fix data errors

49

# Quality Control

## Finding the errors

- CEPI
  - Errors and warnings
    - After loading data
    - Internal consistency
  - Certification errors and warnings
    - During certification process
    - Compares to other data sets
  - Staging reports
    - Longitudinal analysis
  - DQ reports
  - Great tools, but occurs too late in data stream

50

# Quality Control

## Finding the errors

- **Parents**
  - Parent portal and reports
    - Need communication route
    - Don't let yourself become their sounding board
- **Staff**
  - Knows data the best
    - Knows students, school best
  - Probably made the mistake!
    - Can be learning opportunity
  - Who makes the fix?
- **Both groups find individual errors, not group ones**<sub>31</sub>

# Quality Control

## Finding the errors

- **If you want it found right...**
  - Find it yourself!
- **Compare Summary data**
  - Reports, queries, excel dumps
- **Totals by various categories**
- **Needs good feel for your data**
- **Keep and compare next time**
- **Strong reporting tool, better data quality**

52

# Quality Control

## System Propagation

- Find the best “source” of the data
- Where is the primary originating point of that data?
- Ensure all systems rely on THAT version of data

53

# Quality Control

## Fixing the errors

### 2 Types of error

#### 1. Data errors

- Data is simply incorrect
- Should be fixed

#### 2. Data definition errors

- Data can't fit the required form
- Need to create crosswalk field
- Or alter output to meet report needs

54

# Quality Assurance

## Quality Assurance

- Keeping bad data out of the system
  - Best time to fix, at input!
  - No chance to propagate
  - Fixed by the person who knows best
  
  - Part of system design
  - SHOULD be major part of system evaluation
    - Seldom is
  - Vendors sell on slick screens, cool report writers
  - If customers don't demand QA controls, the vendors won't bother with them

55

# Quality Assurance

## Data field design

- What kind of field do you store the data in?
- Date Types:
  - Boolean – Pure Yes or No, no 3<sup>rd</sup> option
  - Number – Max/Min, nothing not 0-9
  - Text – Almost no controls
  - Date – Few internal controls & format checkers
- Always use the LEAST flexible you can
- Flexibility is bad quality assurance!

56

# Quality Assurance

## Code fields

- Hold data that means something else than what it is
- SSN, School code, UIC, Exit code
- Two types:
  - Intrinsic – has meaning in itself
    - You can tell what it means by looking at it
    - EEM District code – ‘41010’, SSN
    - Must follow rules
    - Takes good planning to avoid running into corner
    - Easier to understand if you know the rules
  - Non-Intrinsic – has no internal meaning
    - Can’t tell what it means by itself
    - MSDS Exit code, UIC
    - Simple rules
    - Need to look up to get meaning

*Can be issued by several sources!*

*Must be issued by single source!*

57

# Quality Assurance

## Input Control functions

- Error checkers that run as data goes into the field
  - Won’t allow birth dates in the future
  - Can’t enter ‘0’ as a last name
- Best case:
  - Every field, 3 ranges of input
  - Accepted
    - Input without issue
  - Questioned
    - “Are you sure?”
    - Can compare against other fields
  - Rejected
    - Forced correction


58

# Selecting an SIS

## Data Governance

- **Who 'Owns' a set of data**
  - If it's duplicated, which is 'official'
- **Data owners and stewards**
  - Owners – update, keep accurate
  - Stewards – Make data quality a priority, make sure owners have what they need
  - Bad data falls on BOTH owners and stewards

59



**Thank you for your time,  
patience, and  
participation**

*Questions ? Comments?*

Rob Dickinson, MPAAA - [rob@mpaaa.org](mailto:rob@mpaaa.org)  
Steve Cameron, CCRESA – [scameron@ccresa.org](mailto:scameron@ccresa.org)