STATE OF MARYLAND
2-D BARCODE PROCESSING

James M. Arnie, Director
Revenue Administration Division

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MARYLAND 2-D BARCODE PROCESSING

- Entered a partnership with IBM to develop an Imaging System that processes handwritten and typewritten data
- Result was an Intelligent Forms Processing (IFP) System
  - Performs Intelligent Character Recognition (ICR) on the data to be captured.
- Maryland implemented the IFP System in full production for the 1994 tax processing season
  - Processed only personal income tax returns

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MARYLAND 2-D BARCODE PROCESSING

- In 1998 implemented an upgrade of the IFP system which allowed us to add additional forms
  - Began processing Corporation and Pass Through Entity Income Tax Returns
  - Began processing Fiduciary Tax Returns in 1999

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MARYLAND 2-D BARCODE PROCESSING

- Advantages of the IFP System
  - Automatic Data Entry
    - Saved money on Data Entry costs
    - Performed our own data verification
    - Entered only those returns unreadable by the IFP system
  - Paperless Storage
    - Only the current year tax return is kept onsite
  - Immediate Document Retrieval
    - Images are available within seconds to Error Correction personnel, Taxpayer Service Representatives, Audit and Collection personnel and any other employees with a need to view a tax return

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MARYLAND 2-D BARCODE PROCESSING

- Use 4 high speed BancTec Series S scanners in 2000 at a cost of $148,998 each
  - capacity of the scanners is 220 pages per minute
  - average daily production is 24,000 to 27,000 using 2 - 8 hour shifts
- Purchased a 3 year maintenance contract
  - 4 hour response time
  - 16 hour coverage Monday - Friday from February through May
  - 16 hour coverage Saturdays during the month of April

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MARYLAND 2-D BARCODE PROCESSING

- Did not want to lose the benefits of Image with the implementation of 2-D Barcode processing.
- Went back to IBM to develop an enhancement to the IFP System which would integrate 2-D Barcode processing with the IFP System

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MARYLAND 2-D BARCODE PROCESSING

- Imaging requires us to train data capture fields
  - All of the required Taxpayer Identification information and the required financial information is trained for each form for each vendor
- The 2-D Barcode is an additional input field that must be trained
- Rules must be set up for the data within the barcode
  - the IFP System must look for the barcode
  - if found, is the barcode readable
  - if readable is the Barcode valid
    - meets the specifications Maryland set up for each data field for each form
  - if valid is the Barcode data valid
    - the data is the correct data for the field
      - a field set up as an alpha field contains only alpha characters

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MARYLAND 2-D BARCODE PROCESSING

- IBM developed additional software which reads the 2-D barcode on the return and decodes the data to be read in our IFP system.
  - We have been able to read any of the 2-D barcodes used by the 4 vendors presently participating
- The barcode is Imaged the same as any other data on the form as it is scanned
  - If successfully read in IFP, the returns with 2-D barcodes will skip Data Verification

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MARYLAND 2-D BARCODE PROCESSING

- System reverts to Intelligent Forms Processing if the 2-D barcode fails any rule
- Data is captured by Intelligent Character Recognition
- Data is verified by a Data Verifier

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MARYLAND 2-D BARCODE PROCESSING

- What can make a Barcode fail?
  - If the start and stop patterns (vertical bars at the beginning and end of the barcode) are completely damaged
  - If there is extensive damage to the barcode itself
    - holes
    - labels placed over the barcode
    - more than a 1/2" area blackened out
    - IBM 's program can still read the barcode if there is minimal damage
      - a small white area within the barcode of less than 1/2 inch
      - a small/thin line drawn through the barcode (either dirt from the scanner or stray characters written through the barcode)

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MARYLAND 2-D BARCODE PROCESSING

- Advantages of integrating 2-D Barcodes with the IFP System
  - Forms can be mailed to one address whether or not they are 2-D forms
  - Forms can be processed without sorting 2-D forms from non-2-D forms
    - This eliminated the need to retrain employees in processing returns as they are handled exactly the same as non 2-D forms
  - Forms Processing will read the 2-D barcode and validate the data and send directly to the interface for our tax processing system or ICR the required data if the 2-D barcode fails the rules and sends the data to DV
  - Data entry is still automated
  - Eliminates keying errors if the 2-D barcode passes all rules and skips DV

MARYLAND 2-D BARCODE PROCESSING

- If the barcode is too small
  - Because we are scanning at 200DPI, the barcodes must be larger than what was originally used in the industry
    - the IFP system is set up to scan at 200 DPI
    - earlier users were using hand held scanners or in line scanners that read at 400DPI

MARYLAND 2D BARCODE PROCESSING

- Advantages of integrating 2-D Barcodes with the IFP System
  - Images are still available and can be retrieved on the employee's PC's
  - Taxpayers can receive a copy of the return that looks exactly the same as the return submitted
  - The return is in the same format and retrievable through the Image System for Audit and Collection purposes

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MARYLAND 2-D BARCODE PROCESSING

- Challenges to Overcome
  - Forms were redesigned to accommodate the barcode
    - Finding the room on the returns was difficult as the forms were already full
      - A barcode containing 12 columns should be 4.7" x 1.3",
      - A barcode containing 10 columns should be 3.7" x 1.5" and
      - A barcode containing 8 columns should be 2.1" x 1.9"
      - White space of at least 1/4" around the barcode was also required
    - Could not increase the pages to any particular form
  - Needed to be able to read a barcode with scanners using 200DPI
  - Developing test returns for IBM to use to test their progress
    - Creative Solutions provided test data for us using their 2-D barcode softwa and our test data

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MARYLAND 2D BARCODE PROCESSING

- Challenges to Overcome
  - Developing the specifications for the first year
    - Determining what data was to be included in the barcode
    - How many characters per field would be allowed while attempting to comply with the FTA guidelines for maximum field lengths allowable
      - The guidelines are published in the 2-D Barcoding Standards Guide on the FTA Website.
  - Educating professional preparers on the 2-D barcode so they are familiar with what is contained in the barcode

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MARYLAND 2-D BARCODE PROCESSING
Results of Maryland's First Year

4 Vendors Participated

- H & R Block - 55,619
- Creative Solutions - 46,447
- STF Super Forms - 302
- Tri Tech - 4

– Over 100,000 processed with over 83% of those completely skipping DV

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MARYLAND 2-D BARCODE PROCESSING

Plans for the Future

- Increase the number of vendors participating
  - We have already begun testing with Drake Software for 2002
  - We are hoping to add Intuit, however, they have not yet committed to Maryland for the 2002 tax returns
- Increase our skip DV rate to over 90%

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MARYLAND 2-D BARCODE PROCESSING

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