Presentation Agenda
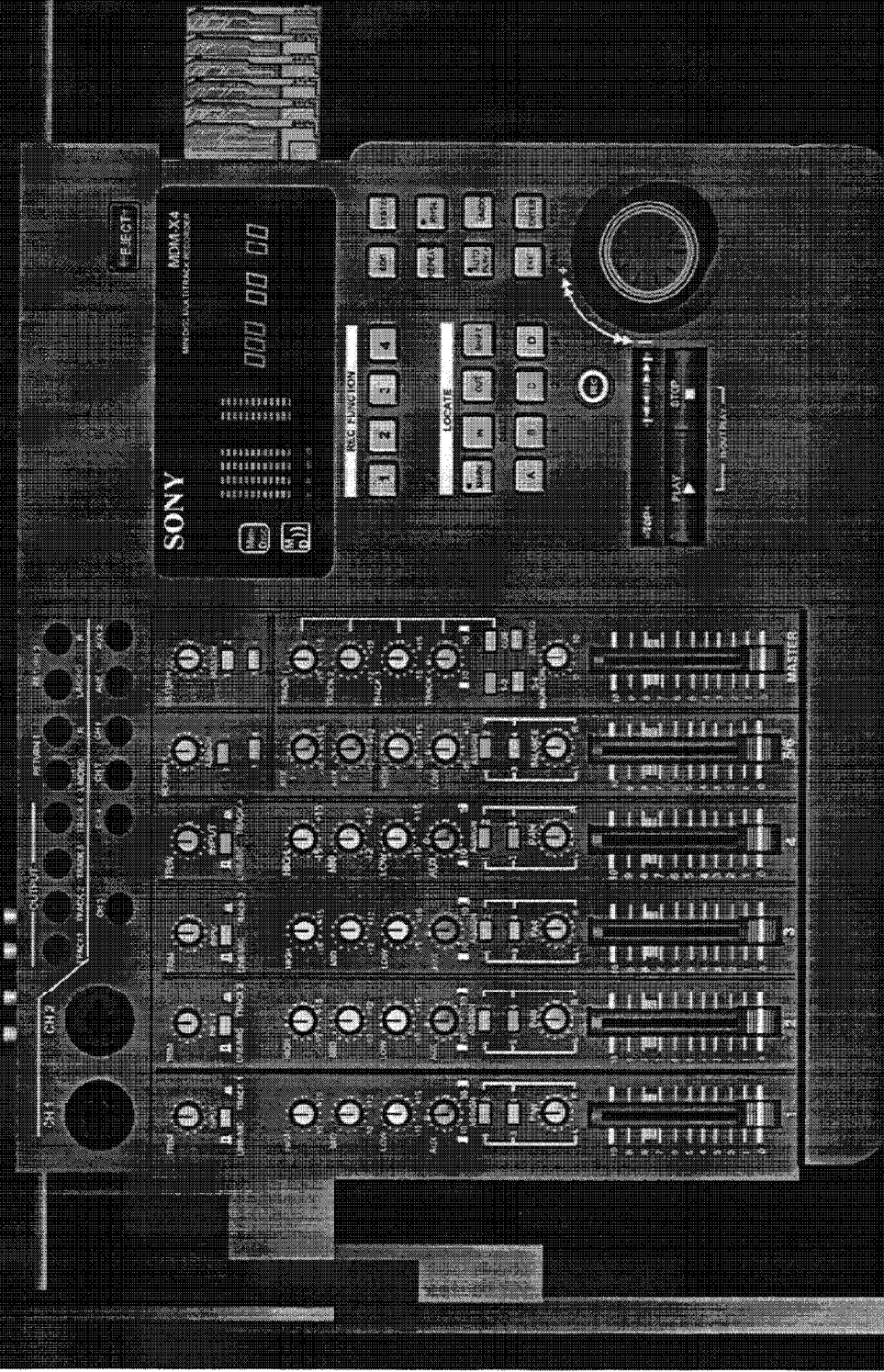
- Technical Overview MD
- Competitive Comparison
- Recording /Editing Workshop
- Summary

Applications

- Project recording.
  - Songwriter's tool !
  - Sample archiving
  - Jingle recording
- Institutional
  - Houses of worship
  - Schools
  - Corporate
- Live
  - Radio / DJ
  - Theater

What do we want in a multi-track?

- Good Sound Quality
- Easy to use. Small learning curve
- Flexibility. Must meet application reqirements
- Transportability (machine & media)
- Compatability!
- Affordability

MD Overview

- 4 track mode:
  - DATA MD *only!*
  - 37 mins. rec time
  - Cannot play on standard MD player
  - Length of first track sets song length
- 1 & 2 track modes:
  - 74 min recording time in stereo
  - 148 mins. in mono
  - Cannot change track format in Song once set
  - Compatable with standard MD Rec/players

MD Overview

- UTOC (User Table Of Contents)
  - 255 Indexes
  - Titles (7 characters ea.)
  - Editing
  - Tempo Maps

X4: Operations Overview

- MIXER:
  - All (10) inputs bus assignable
  - Inputs always available for monitoring (stereo)
  - Combo jacks accept XLR or TRS balanced mic or line signal
  - Stereo fader does not effect record levels
  - Low noise mic pre-amps w/buffer amps
  - Low crosstalk design

X4: *Operations Overview*

- **Menu's**
  - **System:**
    - Pitch: Can be toggled from fixed to varied.
    - MMC: Turns MIDI machine control on/off.
    - Sync: Selects MIDI time code or MIDI clock as sync.
    - SW 1 & 2: Assigns funcionality to foot-switch jacks.
    - Roll: Sets Reherse loop pre/post play time.
    - Rec: Sets track format to 1,2 or 4 track.
    - Rehrs: Selects increase or decrease in level after edit point.

The MDM-X4 & MIDI

- **In, Out & Thru**
- **Synchronization**
  - *Midi Machine Control: Can receive transport, rec function & locate commands. Several X4's can be controlled at once (not sync'd)*
  - *Midi Time Code: Will allow a sequencer to slave to MDM-X4*
  - *MIDI Clock (w/tempo maps): Syncs older and non-timecode devices*

MIDI & the MDM-X4

MIDI OUT
MIDI IN
Sequencer
Keys Right
MIDI OUT (MTC)
Keys Left
MIDI IN (MMC)
MDM-X4
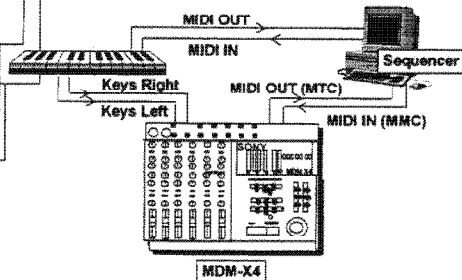
MDM-X4

the COMPETITION

Competitive Comparison:

Existing Recording Media:

Pluses:

- **Cassette:**
  - Affordable, portable. Easy to use
- **Tape-based Digital:**
  - Good sound, low cost media. Expandable
- **Hard-Disc:**
  - Good sound, editing flexibility. Becoming more cost competitive

Minuses:

- **Cassette:**
  - Lower fidelity, speed, reliability
- **Tape-based Digital:**
  - Tape reliability (?). Expensive hdware. No editing. Access ?
- **Hard-Disc:**
  - High media/ hdware cost. Steep learning curve. High maint.

MD (+/-)

Pluses:

- Good sound quality
- Media (R,R,R,A)
- Small learning curve
- Compatability
- Advantages over tape
- Viable cassette replacemant

Minuses:

- Can't be sync'd together
- Slower than HD
- No virtual tracking
- Non-linear audio
- No external back-up
- No digital mixing

MD Overview

■ **ATRAC:**

(Adaptive TRansform Acoustic Coding)

- Data compression is not a "bad" thing.
- Compression in other formats (DVD, workstations, Internet media)
- Psycho-acoustic model (dynamic masking)
- X4 uses ATRAC v3.5. (Encode only).

MDM-X4
Industry Notes:

■ *Current high profile X4 user's:*
- *Laurence Juber (Paul McCartney)*
- *Davey Johnstone (Elton John)*
- *T. Lavitz (Dixie Dreggs)*
- *Diane Ponzio (Martin Guitars)*

Competition

■ **Tascam 564** (ret. $1499)
- More mixer oriented features
- Digital output (?)
- ATRAC v. 2.0
- Confusing layout
- Play-list style editing
- NO track editing !

■ - **Yamaha MD 4** (ret. $1,199)
- Limited mixer features (No XLR's , 2nd aux, stereo fader)
- Limited MIDI functions (No MMC, MIDI in or thru)
- No Jog/shuttle No undo. Very limited track editing.
- ATRAC v. 2.0
- Standard MD compatability

MDM-X4
Key Selling Points

- Targets the *songwriter/pre-production markets* (largest market)
- Combines advantages of other formats
- Build on success of MD format
  - *Growing consumer awareness*
  - *Over 40,000 MD multitracks units sold world-wide*
- Use tools to affect dealer sell-thru:
  - Co-op dollars and promotions
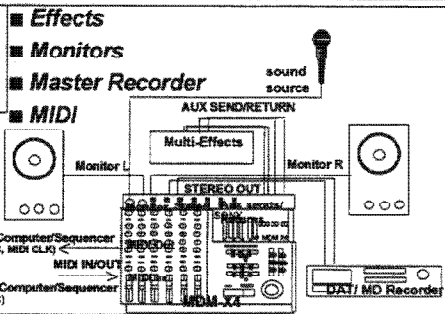 - Training clinics

Where to get more information:

- Other training sessions
- Magazine reviews (EQ, Mix, E.M., Recording)
- Sony Website - http://www.sony.com/proaudio
- X4 literature & User's guide
- Bob's E-mail: Bob_Tamburri@mail.sel.sony.com

MDM-X4

Operational Procedures

Putting it all together: System Integration

- **Effects**
- **Monitors**
- **Master Recorder**
- **MIDI**

sound source

AUX SEND/RETURN

Multi-Effects

Monitor L   Monitor R

STEREO OUT

To Computer/Sequencer (MTC, MIDI CLK)

MIDI IN/OUT

From Computer/Sequencer (MMC)

MDM-X4   DAT/ MD Recorder

Multi-Function Fluorescent Display   88:88

❶ Peak-reading levels Tracks 1-4/L & R

❷ Absolute-time / Bar/beat counter

❸ Song Number

❹ Track Rec Status

❺ Edit Function Status

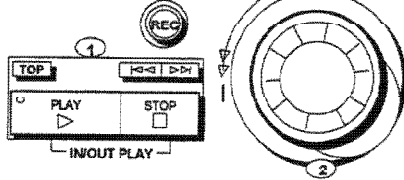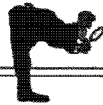CLIP

SYNC OUT MTC   MMC   REPEAT 1   EDIT   SYSTE M

IN/OUT PLAY

SONG NO.   MDM-X4
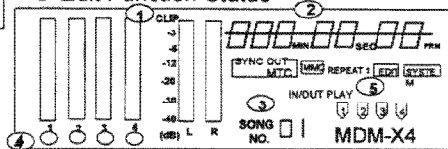
The MDM-X4 Transport

Transport Controls:
❶ Play/Stop/Cue/Review/Rec/Top
❷ Jog/Shuttle Wheel

TOP | ◄◄◄ | ►►►
PLAY ▷ | STOP □
— IN/OUT PLAY —

Locate Controls

- Mark
- In/Out
- Shift (Pitch, Display, Dest. E-H)
- Locate Points A-H

LOCATE
MARK | IN | OUT | SHIFT
DEST.
A | B | C | D
E | F | G | H
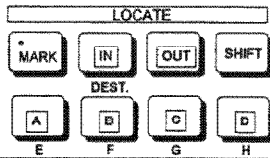
Edit Functions

- Edit....................... EDIT | SYSTEM
  PITCH
- System...................
- Repeat.................. REPEAT | RHSL
- RHSL..................... DISPLAY
- Auto-Punch............. AUTO PUNCH | UNDO
- Undo.....................
- Exit/Enter.............. EXIT | ENTER
  NO | YES

Recording Guidelines

- Maintain clean audio
- Independent track control
- Back-up/ recall work
- Flexibility to experiment
- Work in stereo

Recording Tracks:

- Operation similar to standard 4 track units:
  - Select "New Song" (press "TOP" twice)
  - Input signal (mic, guitar, keyboard)
  - Adjust trim, fader, eq, etc. Assign to track bus (1-4)
  - Arm corresponding track (1-4)
  - Press Rec & Play. Begin Recording
  - Record for full song time or a bit longer, as this sets song length format
- Tracks may be overwritten several times with no degradation of sound quality

Mix-Write

- **Purpose of Mix-write:**
  - To make room for more new tracks
  - To add effects to existing tracks
  - To record new information onto existing tracks
- All four tracks may be recorded before bouncing is performed (unlike analog where one track must be left open)
- Generation loss due to re-recording is negligible

Editing

■ Types of editing available:

- **Song editing:** Changes the order or appearance of Song ID's
- **Section editing:** Allows cut and paste edting of Song sections to facilitate arrangment editing
- **Track editing:** Allows indivual tracks or track sections to be copied, cut and pasted to any other Song/track location
- **Punch-in/out:** Allows insert recording of new take to be seemlessly entered over old take

Song Editing
SONG COPY

- **FIRST:**   **THEN USE:**

PRESS   [EDIT]   ⊕ TO SELECT EDIT FUNCTION

- **FIND:**   **THEN PRESS:**   THE DISPLAY WILL NOW FLASH

"SONG COPY"   [ENTER/YES]   "COPY 001"

USE THE INNER

⊕ TO SELECT THE SONG YOU WISH TO COPY

THEN PRESS: [ENTER/YES]

THE DISPLAY WILL ASK: "COPY OK?"   **PRESS:** [ENTER/YES]   THE DISPLAY WILL FLASH: "PROCESSING"

SONG COPY (CONT'D)

- **WHEN DONE, DISPLAY WILL FLASH:**   **PRESS:** [EXIT/NO]

"SONG COPY"
(THIS MEANS THE SONG HAS BEEN COPIED TO THE NEXT AVAILABLE SONG INDEX)

- YOU HAVE NOW EXITED THE EDIT PAGE

(• THE "UNDO" BUTTON WILL NOW BE LIT TO INDICATE IT IS AVAILABLE   [UNDO])

- USE THE SONG SELECT BUTTON TO ADAVANCE TO THE COPIED SONG FILE

NOW:

PRESS [PLAY]

[|◁◁] [▷▷|]

- TO VERIFY THE COPY

How to set up edit points

FIRST:

PRESS   THEN

[MARK]   [IN]   AT APPROPRIATE LOCTAE TIME

SECOND:

PRESS   THEN

[MARK]   [OUT]   AT APPROPRIATE LOCTAE TIME

THEN, IF A MOVE OR COPY EDIT IS BEING PERFORMED:

PRESS   THEN & HOLD

[MARK]   [SHIFT] [IN]   AT APPROPRIATE LOCTAE TIME
DEST

How to rehearse and trim edit points

FIRST:

PRESS & HOLD

[RHSL] THEN [IN]   THIS WILL BEGIN PLAYBACK REHEARSAL LOOP OF IN POINT SECTION W/ PRE/POST ROLL

THEN:
USE INNER JOG WHEEL

TO ADJUST THE FRAME LOCATION POINT TO THE DESIRED TIME

THEN:
PRESS & HOLD MARK

[MARK] TMEN [IN]   TO SET THE NEW POINT

*REPEAT THESE STEPS FOR OUT & DESTINATION POINTS

Selecting an Edit Function

FIRST: THEN USE:

PRESS

[EDIT]   TO SELECT EDIT FUNCTION

SELECT EITHER A TRACK OR SECTION EDIT FUNCTION
(THIS MAY BE A COPY, MOVE, EXCHANGE, ERASE OR INSERT)

WHEN THIS HAS BEEN SELECTED PRESS: [ENTER YES]

IN THE CASE OF A SECTION EDIT THE DISPLAY WILL SAY:
"EDIT OK?"

PRESS: [ENTER YES]   THE EDIT WILL BE BE PERFORMED ACCORDING TO THE IN/OUT AND DESTINATION POINTS SELECTED

TRACK EDITING

- IN THE CASE OF TRACK EDITING, WHEN YOU HAVE SELECTED
A TRACK EDIT FUNCTION THE DISPLAY WILL READ:

[1] [2] [3] [4]   THEN USE:

TO SELECT TRACK #(1-4)

PRESS: ☞ ENTER YES

TO MOVE THE CURSOR
TO THE NEXT TRACK

[1] [2] [3] [4]

2

WHEN ALL TRACKS HAVE BEEN SLECTED THEN:

PRESS: ☞ ENTER YES   TO EXECUTE THE EDIT

MIXDOWN

- All inputs assigned to "TRK"
- Adjust fader levels (including Master)
- Adjust EQ to taste. *Add FX
- Monitor levels on X4 and mix master
  Maintain level under "0"
- Press rec/play on Master deck
- Press play on X4
- Begin mixing

Summary

- Build on success of MD
- Target appropriate customers
- Sell on *simplicity* & price-point value
- Sell up from low-end
- *Don't* compete in HD market
- Anticipation of future products?
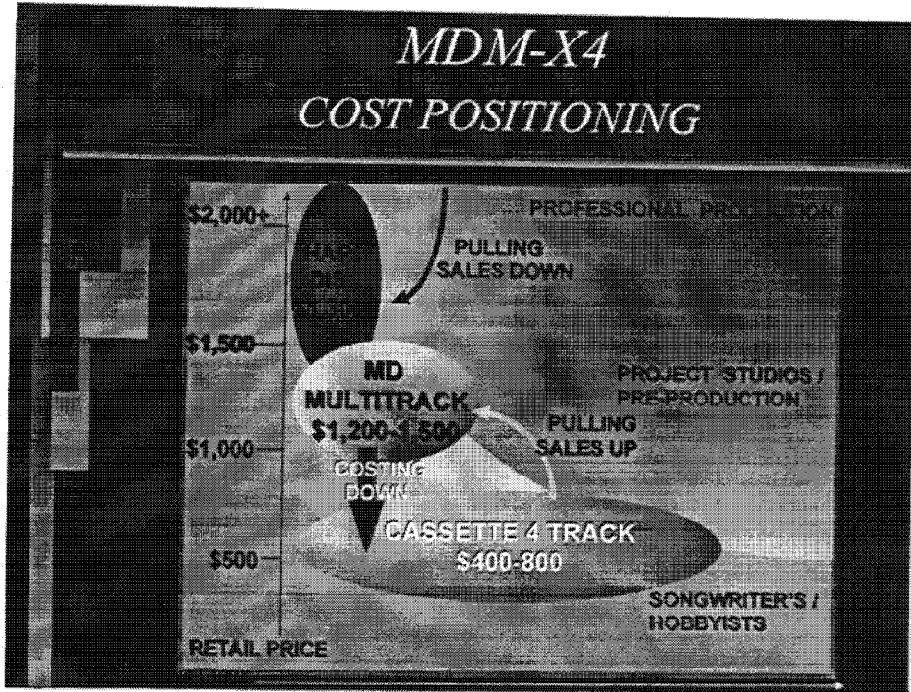- Maintain momentum. Use incentives

MD Vs. Cassette

	MiniDisc	****Cassette**
Frequency Response	5hz-20khz	30hz-16khz
Wow & Flutter	unmeasurable	<.10 % RMS
THD (@ 1K)	<.01%	<3%
Signal to Noise	>94dB	>50dB (NR out)
Locate Time	Faster than CD	>60sec
Rec. Time	37min (4track)	22.5 min (C-90)
Crosstalk	>85dB	>45dB
Non-linear Editing?	Yes	No
Cleaning Requir.?	No	Yes
Printthrough/Stretching	No	Yes
Media Cost	<$15	<$5 (C-90)

**Cassette specifications are average and not necessarily representative of all cassette technology

MDM-X4 vs. Other MD

	Tascam 564	Yamaha MD4	SONY MDM-X4
Compat. w/ stand. 2x MD's	Yes (Play only)	Yes	YES
# of Song Index's	5	255	255
Data Compression used	Yes (ATRAC)	Yes (ATRAC)	YES (4th gen. ATRAC)
# of XLR inputs	4	0	2
# of Aux sends	2 (2 pots)	1	2 (1 pot)
# of 1/4" mic/line inputs	4	4	4
# of stereo inputs	2	0	1
# of bands EQ	3-(mid sweep)	3	3
# of stereo FX returns	2	1	2
Song/Part editing?	Yes	Yes	YES
Edit Undo?	Yes	No	Yes
Track editing?	No	Yes (No time locate change)	YES
Jog/Shuttle?	Yes	No	YES
Large readable display?	No	Yes	YES (w/ dimmer)
MTC/MIDI Clock	Yes	Yes	YES
Tempo Maps?	Yes (30 per song)	Yes (26 per song)	YES (50 per song)
MMC	Yes ("MD Track arming)	No	YES
Footswitchable?	Yes (X1-rec in/out)	Yes (X1-rec in/out)	YES (X2-assignable)
Pitch control?	+/- 9.9 %	+/- 6 %	+/- 8 % (w/toggle in/lock)
Virtual-Mixing	Yes "Bounce-forward	Yes	YES "MIX-Write
# Auto-locate memories	20	8	11
Edit Rehearsal/trim?	Yes (rapid repeat)	NA	YES (w/Pre/post roll)
Color-coded controls	No	Yes	YES
Suggested Retail Price	$1,499	$1,199	$1,250

MDM-X4
COST POSITIONING

$2,000+

PULLING
SALES DOWN

PROFESSIONAL PRODUCTION

$1,500

MD
MULTITRACK
$1,200-1,500

PROJECT STUDIOS /
PRE-PRODUCTION

$1,000

PULLING
SALES UP

COSTING
DOWN

CASSETTE 4 TRACK
$400-800

$500

SONGWRITER'S /
HOBBYISTS

RETAIL PRICE

Building tracks with the MDM-X4

Example: Recording up to 12 :virtual tracks

Mix-Write area (final mix)

sec gen. | fifth gen

DRUMS(L)+BASS+GTR+KYBD(L)+ VOC 1+LD VOC+SAX	DRUMS (L)	KEYBOARDS (L)	LEAD VOCAL
DRUMS (R) + BASS + KYBD (R) + VOC 2 + SOL GTR+ PERC	DRUMS (R)	KEYBOARDS (R)	SOLO GUITAR
LEAD VOCAL	TRACK COPY (3 - 1)	BASS	VOCAL 1	SAX
SOLO GUITAR	TRACK COPY (4 - 2)	GUITAR	VOCAL 2	PERCUSSION

first gen. | third gen | fourth gen

Mix-Write Tracks 1-4 to tracks 1 & 2 in Song 1
All individual tracks are saved (songs 2, 3 & 4)
All individual tracks can be accessed for re-recording or re-mixing.
Up to 14 tracks (6 generations) are possible, with virtually no quality loss
   (due to ATRAC V 3.5)
Only tracks that you want to redo are affected. All other tracks remain intact.