



# MIDI 2.0

MUS 305 Fall 2021 | Music Representation  
Renzo Ledesma

# What is **MIDI**?

musical instrument **digital** interface

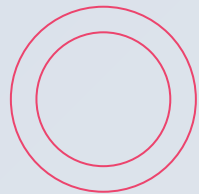
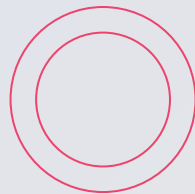
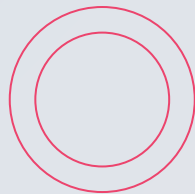
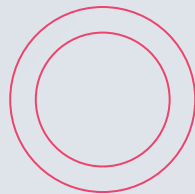
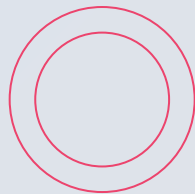
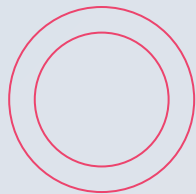
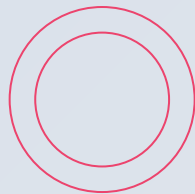
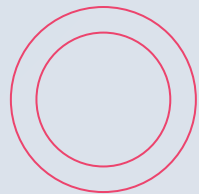
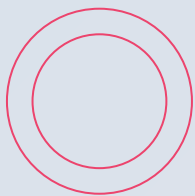
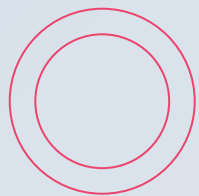
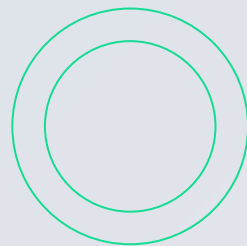


# What is **MIDI**?

- a binary **encoding** of musical performance information
- an industry **standard protocol**
- a set of **specifications**



# MIDI 1.0



# History of MIDI 1.0

1981

MIDI first introduced by Dave Smith and Chet Wood, then from Sequential Circuits (synth company)

1983

**MIDI 1.0** introduced as standard by the MIDI Manufacturers Association (MMA)

1999

USB Device Class Specification is adopted, providing USB transport for MIDI 1.0 (birth of **USB MIDI**)



## Features of **MIDI 1.0**

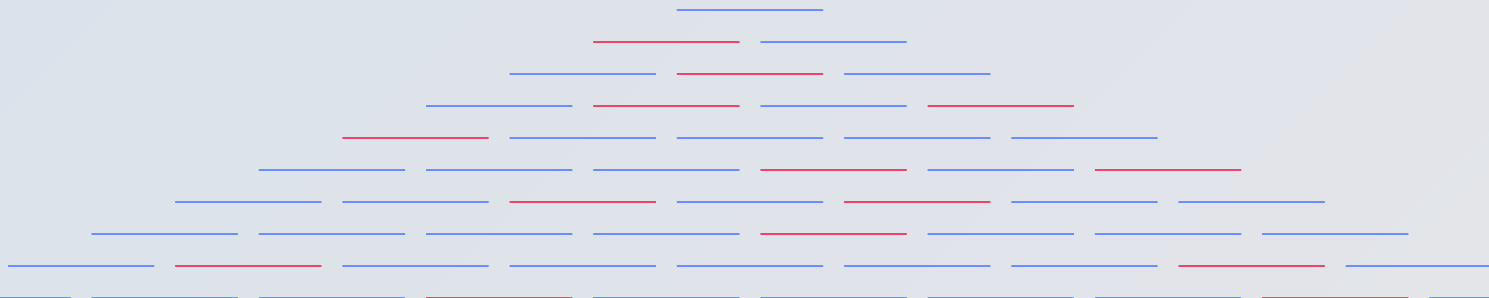
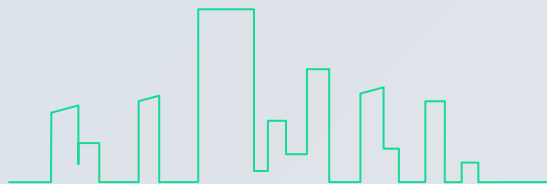
**16**  
channels

**in/out**  
flow

**0-127**  
resolution

**SysEx**  
messages

# MIDI 2.0



# History of MIDI 2.0

2005

Research into MIDI 2.0 protocol begins

2020 (January)

MIDI 2.0 standard presented at Winter NAMM Show

2020 (June)

**USB Class Definition for MIDI 2.0** devices is released





## Features of **MIDI 2.0**

1.0

**16**  
channels

**in/out**  
flow

**0-127**  
resolution

**SysEx**  
messages

2.0

**16 x 16 (256)**  
channels

**bidirectional**  
flow

**16/32-bit**  
resolution

**Profiles  
& PE**

# Features of **MIDI 2.0**

## Backwards Compatibility

Fallback to MIDI 1.0 for  
older devices

## Universal MIDI Packet

Format allowing MIDI 2.0  
implementation on any hardware

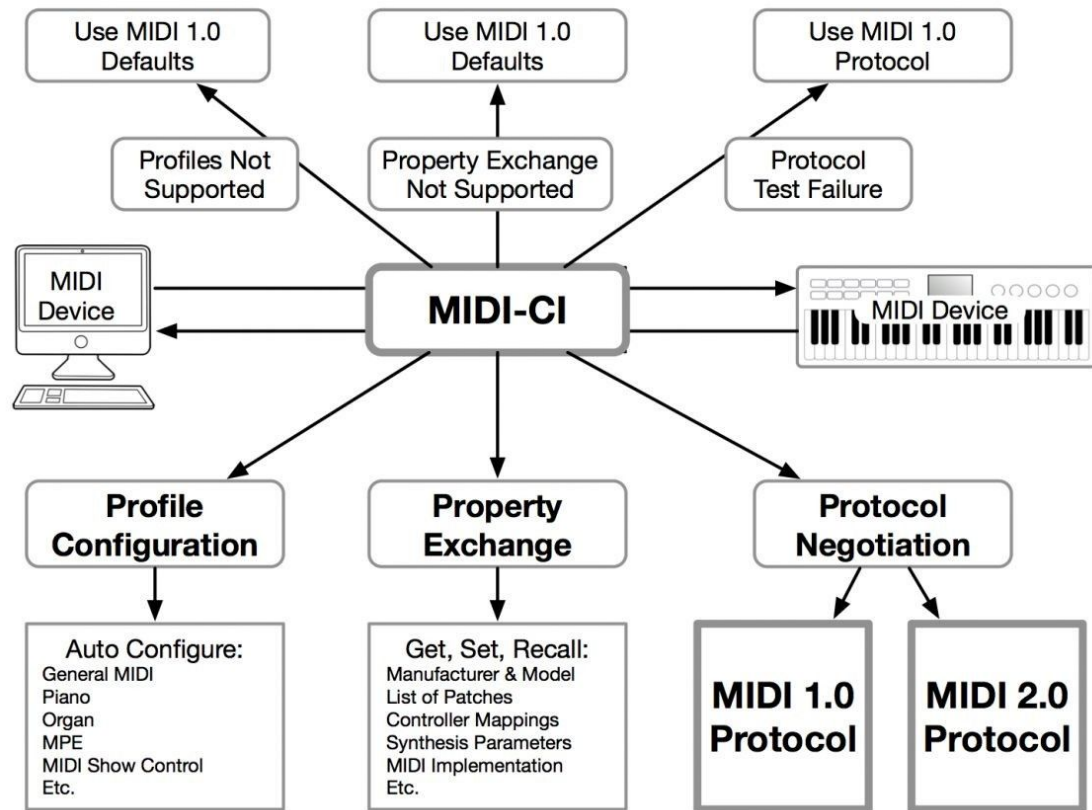
## Profile Configuration

Define sets of rules for how  
MIDI devices communicate

## Property Exchange (PE)

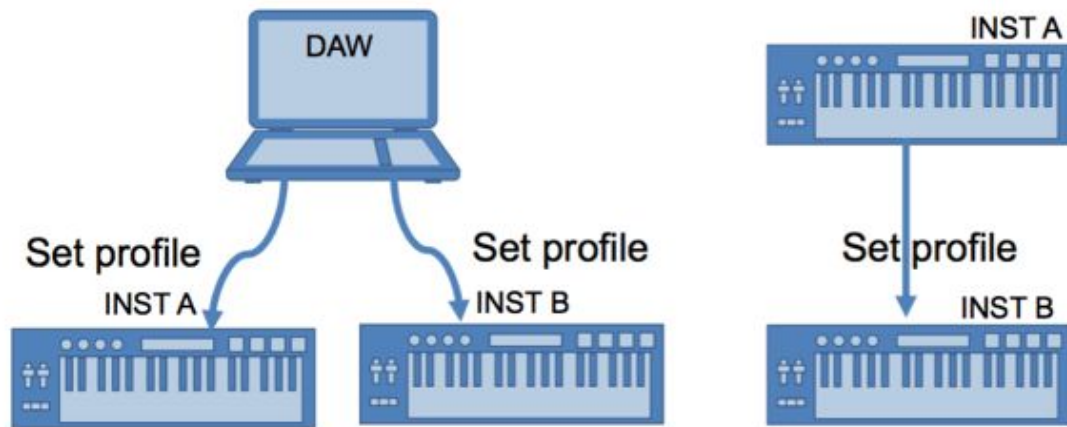
PE messages can get and set  
device properties automatically

# MIDI 2.0 Environment

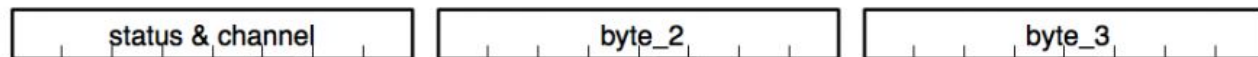


# Profile Configuration Demo

- Set a profile on each inst with one App.
- Confirm the compatibility before/after the profile on
- Show the profile will work both on PC-MI and MI-MI



### MIDI 1.0 Channel Voice Message (original definition)



### MIDI 1.0 Channel Voice Message General Format in Universal MIDI Packet



Note: MIDI 1.0 Channel Voice Messages are not all 3 bytes in length. When putting shorter MIDI 1.0 Messages into the Channel Voice Message General Format packet, unused bytes are reserved and set to zero.

# Preliminary JUCE implementation

## ◆ PacketProtocol

enum `universal_midi_packets::PacketProtocol`

The kinds of MIDI protocol that can be formatted into

Enumerator

MIDI\_1\_0

MIDI\_2\_0

## ◆ MidiProtocol

enum `universal_midi_packets::MidiProtocol`

All kinds of MIDI protocol understood by JUCE.

Enumerator

bytestream

UMP\_MIDI\_1\_0

UMP\_MIDI\_2\_0

## universal\_midi\_packets::Midi1ToMidi2DefaultTranslator Class Reference

[juce\\_audio\\_basics](#) » [midi](#)

Translates a series of MIDI 1 Universal MIDI **Packets** to corresponding MIDI 2 packets.

[More...](#)

# Sources

- <https://en.wikipedia.org/wiki/MIDI>
- <https://www.usb.org/document-library/usb-class-definition-midi-devices-v20>
- <https://www.midi.org/midi-articles/details-about-midi-2-0-midi-ci-profiles-and-property-exchange>
- [https://docs.juce.com/develop/classuniversal\\_midi\\_packets\\_1\\_1Midi1ToMidi2DefaultTranslator.html](https://docs.juce.com/develop/classuniversal_midi_packets_1_1Midi1ToMidi2DefaultTranslator.html)
- [https://docs.juce.com/develop/namespaceuniversal\\_midi\\_packets.html#a326824bbd3be0be66cbe449db58db252a9287da69dd7561e4680280c9df63543a](https://docs.juce.com/develop/namespaceuniversal_midi_packets.html#a326824bbd3be0be66cbe449db58db252a9287da69dd7561e4680280c9df63543a)
- <https://www.youtube.com/watch?v=klun6WMxryU>

