Recordare

MusicXML and MUSICNETWORK

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The Need for a New Music Interchange Format

- Music notation publication has same great Internet potential as music audio, e-books, and other publications
  - Except that each music program has its own proprietary format
  - Or the music is published as PDF images with no musical semantics
- The only common interchange format, MIDI, does not meet publication needs

Prior Attempts at Moving Beyond MIDI

- ◆ NIFF
  - Represents music data graphically, with more notation data than MIDI
  - But worse than MIDI for performance and analysis applications
- ◆ SMDL
  - General-purpose music format
  - Overly complex; never implemented commercially

MusicXML's Approach

- A universal translator for common Western musical notation
- Supports notation, analysis, information retrieval, and performance applications
- Augments, but does not replace, specialized proprietary formats
- Adequate, not optimal, for diverse music applications

How to Succeed Where Past Efforts Failed

- We have an unfair advantage: XML
- MusicXML's design based on two powerful academic music formats: MuseData and Humdrum
- MusicXML definition developed iteratively with MusicXML software
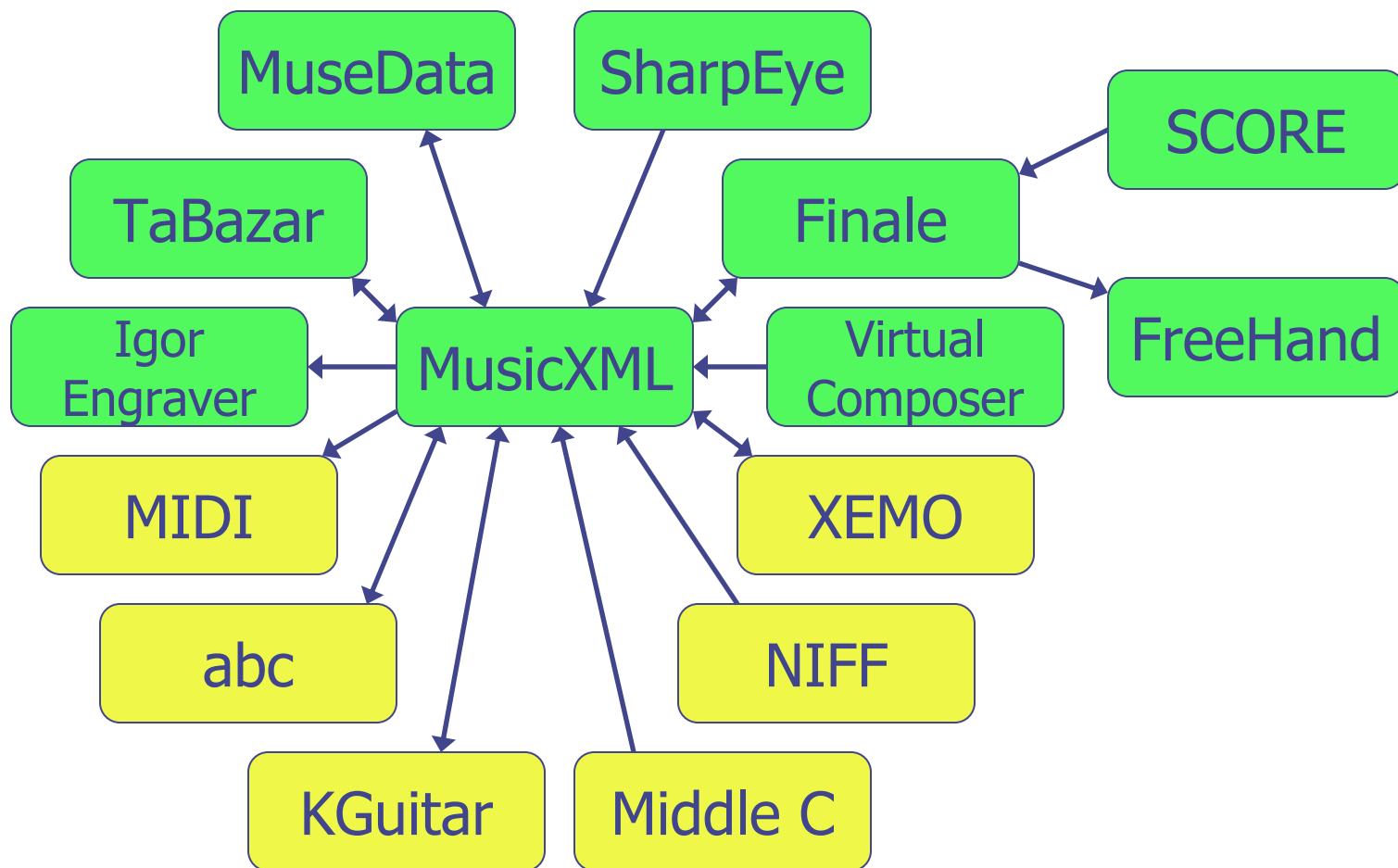- Support real music and real software

And It's Working

- MusicXML available under a royalty-free license modeled on W3C

- Supported by commercial programs: Finale, SharpEye Music Reader, Dolet

- Open source projects include Project XEMO and KGuitar

- Faster adoption than anything since MIDI

MusicXML Interchange Today

Developer Support

- Tutorial, documentation, examples, and subsets make it easy to get started
- Quick answers to developer questions in MusicXML discussion list
- Designed to be easy to program using standard XML tools
- Worked with XQuery group to ensure support for music information retrieval

MusicXML Design Issues

◆ Logical domain in elements

◆ Visual and performance domains in attributes

◆ Each aspect of musical semantics represented in a different element

◆ Separate representations for what is heard vs. what is notated

Importance of Pitch Representation

- How would look in NIFF?
- Pitch is not represented in NIFF
- Instead, the notehead position is represented as a staff step of -2
- So to get the pitch we need to look up the clef, key signature, any prior accidentals, ties from accidentals, and 8va marks
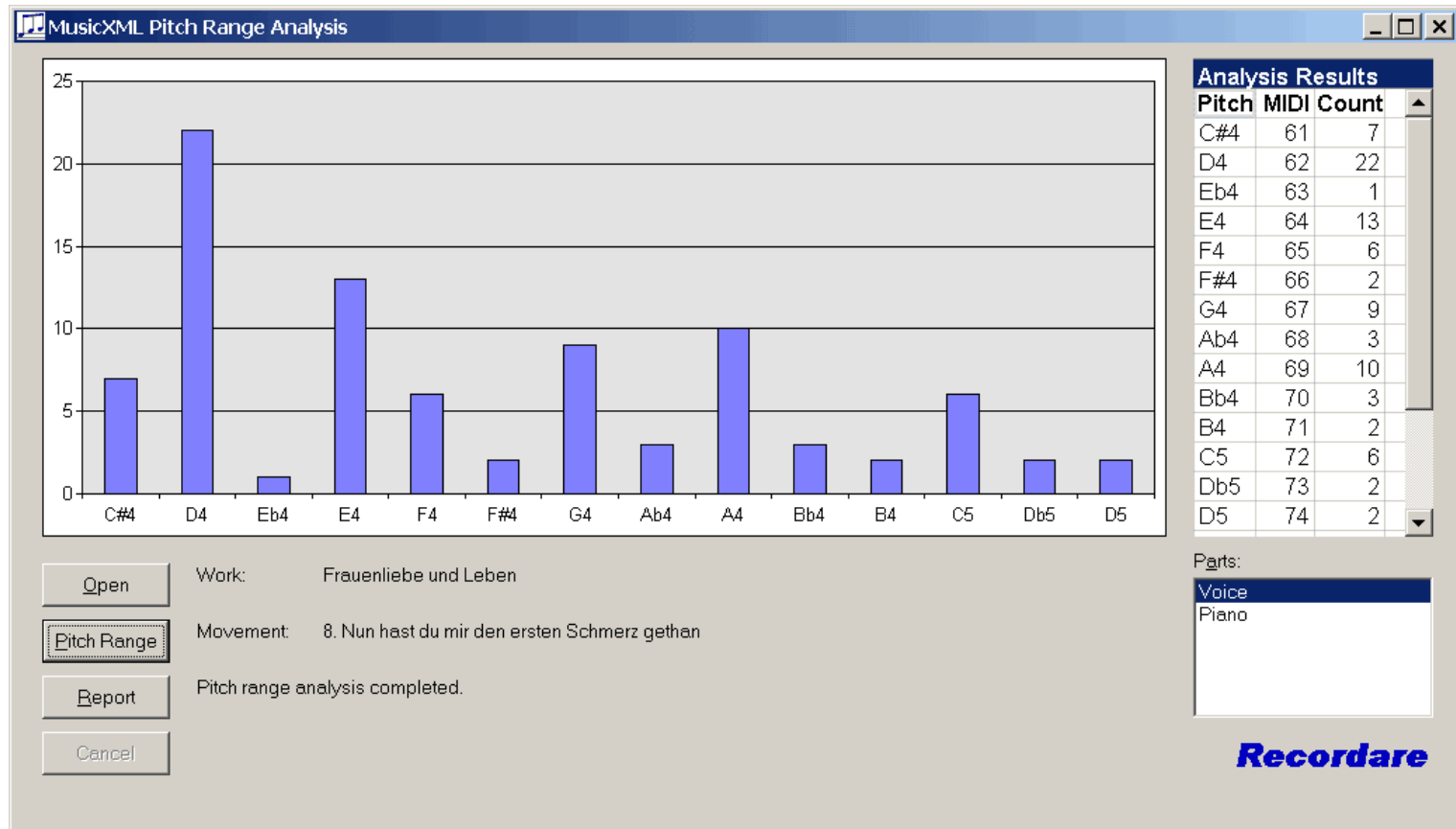
MusicXML vs. NIFF

Original as scanned into SharpEye

Imported into Finale via MusicXML

Imported into Sibelius via NIFF

Pitch Range Report in Visual Basic 6.0

MUSICNETWORK implications

- MUSICNETWORK has a lot of open research issues to address
- An interchange format for common Western music notation need not be one of them
- Use a proven, industry-supported format: MusicXML
- Multimedia integration in separate DTD

Conclusions

- MusicXML is the most widely adopted symbolic music format since MIDI

- Plan to submit to standards group after improvements made for tablature, percussion, and sequencer applications

- Should meet MUSICNETWORK's notation representation needs