Visual DMDX:
A web-based authoring tool for DMDX

Pablo Garaizar, University of Deusto, Spain
Julen Tellería, University of Deusto, Spain
Ulf-Dietrich Reips, University of Konstanz, Germany

43rd annual meeting of the Society for Computers in Psychology (SCiP)
Toronto, Canada, November 14th, 2013
Outline

- Experimental software
- DMDX
  - Benefits
  - Pitfalls
  - DMDX tutorials
- Visual DMDX
  - Demo
  - Future plans
- Q&A
Experimental software
Several software packages available
Categorized by different dimensions

- General purpose vs. specific
- Offline vs. online
- Single-platform vs. multiplatform
- Commercial vs. non-commercial
- Open source vs. closed source

(Mathôt, Schreij, & Theeuwes, 2012)
Our goal: Provide a web-based editor for novice DMDX users

http://visualdmdx.com
DMDX
It is **precise** and **accurate**

Even in commodity hardware

**LOW PRECISION**  
Low-level drawing and timing APIs

**LOW ACCURACY**

**LOW RESOLUTION**

Fine tuning via TimeDX

(Forster & Forster, 2003)
It is **powerful**

You can do almost everything using its syntax.
It is **free**

Not open source
But...
DMDX/DMASTR syntax is **not easy**

You can do almost everything using its syntax

http://www.u.arizona.edu/~jforster/dmdx/help/dmdxhallkeywordssortedbykeyword.htm

---

DMDX Help.

All Keywords Sorted by Keyword

```
#
<2Did_text_text,N,N,N,...>
<2DInputDevice_text_text,N,N,N,...>
<n N>
<%ctr N>
</ep>
<@ N>
<a>
<ab F>
<AbortDQPurge N>
<AbortItemKeyName_text>
<ac [N]>
<AcousticallySignalExperimenter [N]>
<AcousticControl [N]>
<AgainWhen N,N>
<aikn_text>
<AlphaBlend F>
<AlphaSource>
<an N,N>
<animate N,N>
<apc N>
<AppendCounter N>
```

Enable Time Critical Frames
Select a 2D Input Device
Set Frame Duration
Frame Duration from Counter
Turn RT Clock On
End of extended parameters.
Set Text display row
Azkii format output data file
Frame is to be Alpha Blended
Abort Display Queue Purge
Specify Item Abort key name
Acoustic Control
Acoustically Signal Experimenter
Acoustic Control
Animate frames
Specify Item Abort key name
Frame is to be Alpha Blended
Frame is Source in an Alpha Blend
Animate frames
Animate frames
Display counter's value

A 30-year-old syntax
(counters, branches, etc.)

414 keywords
(224 synonyms)
Most DMDX users are not really interested in coding experiments, but running them.
There are (very) good tutorials. Some of them have been abandoned.

- DM/DMTG Tutorial (K. Forster)
- DM Tutorial (A. Woollams)
- DMDX for Eegits (A. Woods)
- DMDX Resources (J.J. Curtin)
- Use DMDX (N. Jiang)
- Introduction to DMDX (M. Ford > M. Davis > I. Darcy > A. Lukyanchenko)

They cover the basics

Item files: parameters + items

Item lines - masked priming

```
+101 "################" / <fd 4> "wobble" / * "RABIES" /;
+201 "################" / <fd 4> "cove" / * "BRANTLY" /;
+202 "################" / <fd 4> "char" / * "SKELVE" /;
+1 "################" / <fd 4> "jumped" / * "JUMP" /;
```

"################" / This frame contains a pattern mask (actually just a row of # marks) to be displayed before the prime word as used in masked priming.
Visual DMDX:
Added value
Web-based

HTML5 + CSS + JavaScript (see also McClelland & Reips. 2013)

Multiplatform
(Win/Mac/Linux/iOS/Android/...)

No plugins needed

Work from anywhere, anytime

authoring tool
No DMDX-syntax skills needed

(Garaizar, Tellería, & Reips, 2013)
for DMDX

Intended for beginners (and/or procrastinators)

43 keywords (18 synonyms)
Contextual help
Versioning (undo)
Previews

Demo
Welcome!

Visual DMDX is a web-based authoring tool for DMDX Experiment Software. Please, feel free to create a new project or to continue editing a previous draft.

Why?

DMDX is a script interpreting system for screen control, stimulus presentation, and timing for cognitive experiments programmed by Jonathan Forster at the University of Arizona, USA.

DMDX is reliable, flexible, millisecond accurate and can be downloaded for free, thus it has become very popular among experimental researchers. However, setting up a DMDX-based experiment is burdensome due to its command based interface.

Visual DMDX is an HTML5-based web interface to set up simple experiments and store them in files format in R.

Free

The use of Visual DMDX is (and always will be) free of charge :)

Moreover, we decided to release it under a free software license (Affero General Public License version 3) to foster collaboration in its continuous improvement. Fork Visual DMDX’s public repository at Github.

We are very much interested in receiving your comments, suggestions and questions concerning Visual DMDX.

About

Visual DMDX has been designed by Pablo Garalzar and Ulf-Dietrich Relps, and coded by Pablo Garalzar and Julen Telleria at the University of Deusto, Bilbao, Spain.

This website is based on Bootstrap (developed by Mark Otto and Jacob Thornton at Twitter) with the Flatly theme (designed by Thomas Park), KnockoutJS (developed by Steve Sanderson), and some PHP magic using Symfony’s routing system (developed by Sensio Labs).

Coded by Pablo Garalzar, 2013.

1. Access http://visualdmdx.com
Welcome!

Visual DMDX is a web-based authoring tool for DMDX Experiment Software. Please, feel free to create a new project or to continue editing a previous draft.

2. Create a new project

Why?

DMDX is a script interpreting system for screen control, stimulus presentation, and timing for cognitive experiments programmed by Jonathan Forster at the University of Arizona, USA.

DMDX is reliable, flexible, millisecond accurate and can be downloaded for free, thus it has become very popular among experimental researchers. However, setting up a DMDX-based experiment is burdensome due to its command-based interface.

Visual DMDX is a HTML5-based v5.0 interface for simple experiments and exports documents to DNX item files format in RTF.

Free

The use of Visual DMDX is (and always will be) free of charge :)

Moreover, we decided to release it under a free software license ( Affero General Public License version 3) to foster collaboration in its continuous improvement. Fork Visual DMDX's public repository at Github.

We are very much interested in receiving your comments, suggestions and questions concerning Visual DMDX.

About

Visual DMDX has been designed by Pablo Garaizar and Ulf-Dietrich Reips, and coded by Pablo Garaizar and Julen Telleria at the University of Deusto, Bilbao, Spain.

This website is based on Bootstrap (developed by Mark Otto and Jacob Thornton at Twitter) with the Flatly theme (designed by Thomas Park), KnockoutJS (developed by Steve Sanderson), and some PHP magic using Symfony's routing system (developed by Sensio Labs).
3. Define **parameters**
4. Add items: Instructions

http://visualdmdx.com/edit/7qvofp
5. Add items: **Stimuli**

![Stimuli interface with multiple options and settings](http://visualmdx.com/edit/7qvofo)
5. Add items: Clone
6. Looping and scrambling items

http://visualdmdx.com/edit/7qvofp
7. Preview

DEAD
8. Export

http://visualmdx.com/edit/7qvofp
9. Contextual help

DMDX Help.

Timeout Keyword

<Timeout N1>
<t N1>
<Timeout counterN2>
<t counterN2>
<Timeout cN2>
<t cN2>

T parameter and switch alternative. Sets the subject response timeout in milliseconds to N1 or the switch version can take the value of counter N2 (at item parsing time), default value is 4000ms.
10. Versioning (undo, nice URLs)
Future plans
Future plans
Suggestions are very welcome ;)

- Improve previews
- Add more keywords
- Set expertise level
- Export to other formats
Q&A
Thank you ;}
References


All rights of images are reserved by the original owners*, the rest of the content is licensed under a Creative Commons by-sa 3.0 license

* see references in each slide