

Overview and Qualifications Document for TechnoFrolics and Founder & Director David Durlach (Educational / Museum Project Focus)

In addition to the information provided directly below, please note embedded links to relevant areas of our website. If there are questions or comments, of course do not hesitate to contact us.

Sincerely,

David Durlach

Founder & Director

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Introduction

TechnoFrolics specializes in developing high-tech hands-on exhibits and dancing science-artworks. TechnoFrolics' creations are installed throughout the U.S., Europe, Asia, Australia, and Canada, predominantly in science centers, aquariums, nature/visitor centers, and children's museums.

Our core skill and orientation is in merging, in unique and beautiful ways: Art, Engineering, Humor, and Play.

From one of our partners/collaborators: *“Hands On! has worked with any number of artists and exhibit designers and David's ideas are consistently the most innovative and affecting ... David's remarkable sense of the interactive potential between science and art is a perfect match with the atmosphere of discovery and inspiration that we try to convey to the museum visitor. ... What impresses us most about his work is the "social" nature of the experiences. While they are technologically and scientifically advanced, they express that sophistication with an almost childlike wonder that captivates all who encounter them.”* ([Full letter.](#))

Clients and Examples

TechnoFrolics' clients include the Arizona Science Center, MIT, the New England Aquarium, Technorama (Switzerland), the Boston Museum of Science, the Olympics, Ford Motor Company, Technopolis (Belgium), and the Japanese Government, to name just a few. [See many more of our clients from around the world.](#)

Two iconic TechnoFrolics exhibit technologies, representative of our work:

- a) The interactive [FrameGlide | Spin Browser™ video explorer](#), a technology that brings the magic of timelapse, high speed video, and point-of-view journeys into the interactive realm, with over 100 installations in museums and aquariums around the world.
 - *"To say the spin browser is a hit is an understatement! The children (and adults) love it. It is in constant use."* Beverly Papai, Director, Farmington Community Library
 - *"I can't imagine a better method ... to capture our audience's interest in learning about the importance of the world's water resources."* Jerry R. Schubel, Ph.D., President Emeritus, New England Aquarium
 - *"It was a HUGE hit! The volunteers reported that the hold times [...] were off the charts...They were so big that if you didn't know better, it would seem like a mistake. Success!"* Peggy Monahan, Manager of Exhibit Design and Development, Children's Discovery Museum of San Jose
- b) The award-winning "[Dancing Trees](#)" science-artwork composed of iron dust in a choreographed magnetic field.
 - *"Whatever your expectations... nothing can quite prepare you for the ticklish charm and wacky inventiveness of this performance piece."* Mopsy Strange Kennedy, Boston Globe Magazine
 - *"Never seen anything like it, AWESOME!", "They're so friendly.", "They seem alive, even though you know they're not..."* Various fans

Example Projects

For the EcoTarium in Worcester, MA, we developed a 24 hours 30fps live capture FrameGlide | Spin Browser (FG|SB) system, whereby visitors could explore "[A Day in the Life of a Starfish](#)".

For the New York Hall of Science, we contributed three FG|SBs (including comparative flocking behavior between species and the importance of water in our world), and in collaboration with Jeff Kennedy Associates, a custom electric power grid interactive that allowed visitors, through opening and closing switches, and custom made LED flow visualizers, to see changing current distributions as a function of line breaks.

In collaboration with Hands On!, Inc., we developed interactive "[Hotplate](#)" [magnetic experimentation stations](#), installing instances of those along with our "Dancing Trees" kinetic iron dust artwork in science centers around the world.

For MIT, we celebrated the opening of their new gym and dorm with [Dancing Banners™ choreographed fabric forms](#), and a [custom athletic figure sculpture](#).

Capabilities and Services

Our services include:

- High-tech, interactive exhibit development.
- Video production, graphic design, and writing.
- Brainstorming and creative, reality-grounded consulting.
- Contributions to grant proposals that include our work.

High-Tech Interactive Exhibit Development

We conceive, design, prototype, construct, and provide long-term (off-site/remote) support for, high-tech, interactive exhibits. Typically we provide the complex interactive/moving/sensing/electronic hardware and software (code) elements, with the main fabricator providing the casework, physical signage, etc. Some exhibits use previously-developed core TechnoFrolics technologies, while others are entirely custom.

Customized Versions of Stock Technologies

We frequently customize our FrameGlide software to implement unique video-based interactives, ranging from a dual-oar point-of-view rowing exhibit with realistic simulated physics, to an RFID-cued children's block alphabet learning experience, to a themed rotational submarine periscope with functional viewport.

Entirely Custom Exhibits

We also implement 100% custom designer/client concepts, simply requesting that we be afforded opportunity to provide input in order to make the exhibit technically maintainable, financially practical, and fun.

Our particular sensibilities (combining science, art, humor, and play) and skill set (math, physics, coding, electronics, mechanics) inform the custom works to which we are best suited.

Scope of Exhibit Development

We typically provide one to several exhibits, often including particularly cool "signature" science-art pieces. We do not provide large scale design or fabrication services, such as would be required for example to fill an entire new museum. For this latter, we can recommend others.

While we contribute mechanical elements as well as electronics and software, it is rare that we develop interactives that are purely mechanical. For such exhibits, as above, we are happy to recommend others.

Process

We are equally comfortable working independently, or as part of a team.

When developing complex custom exhibits, we strongly recommend multi-stage prototyping with visitor testing. If fixed-costs are required, we request that they be per-stage rather than final, as the outcome of early stage testing often changes, sometimes dramatically, the ideal final deliverable.

In the case of customized versions of TechnoFrolics technologies, because it is often less critical to prototype, costs for software and hardware are can be better defined up front

For more information, see our whitepaper “[How We Work with Museums](#)”.

Withstanding the Tests of Time and High-Volume Use

TechnoFrolics understands well the extreme ruggedness and reliability requirements of public exhibits. Our installations run for years of continuous use at institutions with annual visitors numbering in the hundreds of thousands to millions.

"Longest running exhibit I have ever seen." Duane Stanton, Aquarium of the Pacific, Long Beach, California

"We have had your Spin Browser since 2005 and it still works flawlessly to date!" Dave Conley, VP Exhibits, MOSI (Museum of Science & Industry), Tampa, Florida

For more information, see our whitepaper “[Maintaining Interactive and/or High-Tech Exhibits](#)”.

Video Production, Graphic Design, and Writing

In these areas, our focus and unique expertise is in producing engaging content for our FrameGlide | Spin Browser video explorer. In that regard, production of content is entirely flexible, as best suits the client/project. It may be done:

- Entirely by the client
- Entirely by third a party video producer.
- Entirely by TechnoFrolics.

Any combination of the above. We offer both written guidelines and ongoing advice to help others produce optimally engaging FrameGlide | Spin Browser content.

Brainstorming and Creative Consulting

We encourage connection at early stages of project planning. There are several reasons for this:

1. One of our greatest strengths is in coming up with project-relevant, fun, technologically-realizable ideas that combine science, art, education, promotion, humor, and play. The earlier we have the opportunity to contribute, the greater the likelihood these ideas can actually be realized as part of your project.
2. Regarding the FrameGlide | Spin Browser technology in particular:
 - a. When designers and video producers consider content for interactive exhibits, they often think in time durations of a couple of minutes. With our technology however, considering upwards of 10 *hours* is often appropriate. Without this mindset being introduced early in project planning, there is high likelihood that wonderful opportunities will be missed.
 - b. When appropriate, we offer demo units of our FrameGlide | Spin Browser system, at times with project-specific content, to help inspire idea generation at designer charrettes, and to delight and motivate potential donors and other stakeholders at board meetings, etc.

About David Durlach, TechnoFrolics Founder & Director

As director of TechnoFrolics for over two decades, David is deeply involved in the electronic, software, and mechanical design and implementation of virtually all of TechnoFrolics' creations, and has been awarded several patents in connection with this work. He was/is:

- Lead software architect of the patented FrameGlide | Spin Browser™ technology upon which scores of installations in museums across the world are based.
- Lead software and hardware developer of TechnoFrolics' "Dancing Trees" choreographed iron dust display. ([Additional details available.](#))
- The Principal Investigator for an NSF SBIR Phase I/II award "*Visual Performance Instruments (VPIs): Bringing Music and Musicianship to the Deaf and Hard of Hearing, Choreographed Dancing Physics Exhibits to Science Museums, and Sophisticated Product Animation to the Trade Show & Point-of-Sale Industries.*"
- Associated with the Harvard Extension School Math Program for over 25 years. ([Additional details available.](#))
- A regular sponsor of science-art-education student engineering projects in connection with Harvard and BU undergraduates.

- Consultant on the development and application of emotionally rich, expressive technologies within both educational and commercial settings.
- Interdisciplinary speaker covering topics ranging from methods of combining technology and psychology to create memorable eye-catching displays, to how all-too-common visual and emotional sterility impedes science and math education, to the integration of performance art and physics.

Awards

TechnoFrolics has received numerous awards for its dancing artworks and attractions over the years.

Several highlights:

Over two decades after TechnoFrolics' *Dancing Trees* choreographed iron dust piece was voted "Most Popular Invention" at the Boston Museum of Science's Inventors Weekend, the self-same artwork returned from the NYC World Maker Faire proudly bearing three "Editor's Choice" blue ribbon awards. We are particularly proud of this award as it celebrates the perennial emotional/artistic appeal of this iconic TechnoFrolics artwork

Most recently, David received a personal achievement award at National Association of Broadcasters (NAB) for being one of the year's StudioDaily 50 "Top Creatives and Technologists".

Grants

Over the years David and TechnoFrolics have received support from diverse sources, including private patrons supportive of their work, NSF SBIR Phase I and II awards, and a grant from the Massachusetts Artist Foundation.

In the Media

Among the many media outlets that have featured TechnoFrolics and David are Good Morning America, BBC/National Public Radio (NPR), Discover, Science, Wired and the Boston Globe magazine

A Brief Introduction to ChoreoV

A current TechnoFrolics initiative, called *ChoreoV* (for “Choreography via Video), allows choreographing physical, real-world objects using commercial computer graphics animation tools.. This environment has exciting potential for Maker spaces within museum contexts; visitors would be able to choreograph artworks in real time to perform live dances set to music. It also has diverse application potential within the commercial display industry. For more information, see <http://www.ChoreoV.com>.

Additional Details for Selected Projects

Choreographed Iron Dust

As part of this work, David contributed to the design and implementation of a 16-channel logic-level-in, high-power output amplifier that controls the display’s electromagnets. He also wrote a choreography environment that allowed real-time waveform composition, onscreen graphical representation of these waveforms, ability to apply time and space “distortion” functions onto basic control signals, and much other functionality.

Harvard Extension School Math Program

As part of his teaching activities at the Harvard Extension School, David built a range of educationally-focused science and math exhibits, including such devices as a fixed plus variable frequency tone generator, where students could hear the “beats” resulting from the summation of two similar frequency sin waves, while at the same time seeing the resulting waveform on an oscilloscope.