



NORTH EAST MUSEUMS HEALTH AND SAFETY GUIDE: Technical Guidelines Interactive Exhibits Performance Specification	Prepared by Ian Thilthorpe 2010 Reviewed and Approved by: Bill Griffiths 19/08/2025 Next Review due: November 2027
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General Interactive Performance Specification and General Notes

These notes should be read in conjunction with any other descriptions and drawings provided.

The following general specifications apply to all the exhibits, in addition to those detailed for any individual exhibits.

Interactives, Models, Replicas and Scenic Works

All Interactives, models, replicas and scenic works must conform to these guidelines. This information should be issued to all subcontractors creating interactives. If the design proposal appears to contravene any of the specifications in these guidelines this must be brought to the attention of NEM.

All materials used for Scenic Works and Models must conform to BS EN 13823 spread of flame.

All textiles must be fire retardant.

Contractor to allow for samples of any scenic finishes to be provided for approval.

Installation

The contractors should allow for all of the work, materials and expenses required to deliver and install all of the interactives, and all wiring and cables to connect where applicable.

The interactives contractors should be familiar with the site before installation and provide a programme for installation.

After commissioning the contractor is to provide clear operating instructions for use by the museum staff.

Warranties

2 year warranty on all interactives to be included in the price and quotations for extended warranties to be provided upon request.

Maintenance and Management

Contractor must provide a maintenance manual and details of all equipment, replacement lamps and other consumables.

Contractor to allow for an appropriate level of training for museum staff in the day-to-day management and maintenance of all equipment.

1. Introduction

- 1.1 The Museums collections are its unique selling point and the audience's interaction with the real thing is an essential part of the visitor experience. Any new displays while employing the most relevant and modern interpretive techniques will always start from the object.
- 1.2 Budgets are limited so we need to be clear why we are spending on technology
- 1.3 We will employ a judicious use of ICT only where it provides added value to the visitor
- 1.4 It will only be used where it is the most relevant and appropriate method of interpretation available. It must be concept led not technology driven
- 1.5 Appropriate uses include
 - To contextualise artefact rich displays providing depth and layering.
 - Where strengths of collections are 2D/graphic
 - To bring artefacts to life, showing them in manufacture or use
 - To bring peoples experiences into the gallery to aid interpretation as drama or reminiscence
 - To provide access to parts of the collection held on other sites
 - To aid conservation by reducing demand for handling fragile items
 - For revealing parts of objects not otherwise visible.

2.1 Definitions

- Interactive; Any item or function of display requiring an action on the part of the visitor. Any item where a visitor is encouraged to touch, feel or engage with in order to obtain a sensory response.

2.2 Details

The words “**must**” and “**should**” when printed in bold text have precise meanings in the context of this document;

Must: This word indicates an absolute technical or performance requirement that must be met

Should: This word indicates that there may be valid reasons not to treat this point of guidance as an absolute requirement, but the full implications should be understood and the case carefully weighed before it is disregarded. “**Should**” has

been used in conjunction with technical standards that are likely to become widely implemented during the lifetime of the project but are currently still gaining widespread use.

General Requirements for all Interactive Exhibits

3.1 Miscellaneous

- Instructions **must** be clearly associated with the interactive – no more than 0.5 metres away
- Where possible, local contractors **should** be used to minimise cost and travel time when problem solving
- Glare from internal lights and the sun **must** be minimised. Reflection angles **should** be considered for a range of heights, including small children and wheelchair users
- Any loose components **must** be designed to not tempt deliberate theft or be of low cost and easily replenished
- Functioning of any exhibit **must** not be heavily dependent on loose components that are likely to go missing without easily being replenished at low cost
- The use of different head types of screws and Allen keys **must** be kept to a minimum across the site
- If polycarbonate is to be used, steps **must** be taken to avoid water absorption
- The exhibits **should** be simple and easy to maintain for staff
- Exhibits requiring electricity **must** have the capacity to be individually/easily switched off and electrically isolated for maintenance purposes and in emergency, but be secure enough to prevent visitors from doing so
- Realistic engagement times **should** be considered for each exhibit. Exploration is more likely to achieve this than explanation.

3.2 Sound

- Any sound effect used **must** not produce an excessively harsh, noisy general ambience
- All sound-effects and electronic sounds **must** be agreed with designer and client
- Local sounds **should** not impinge on the general sound environment unless they contribute to it positively
- Staff **must** have volume control of all interactives, multimedia and audiovisuals. The controls **must** be out of sight and inaccessible to visitors

3.3 Lighting

- Any lighting effects required **must** be UV filtered, be of minimum functional intensity and not effect any museum object by more than 96000 lux-hours per year (approx. 260 lux-hours per day).
- Lighting **must** have the capacity to be switched off
- Generation of heat from lighting **must** be kept to a minimum
- Any items requiring power **must** come to site pre wired and tested for simple installation

3.4 Durable surface-finishes

- All surface finishes **must** be appropriate to the wear and tear to which they are likely to be subjected by children in a hands-on environment.
- There **should** be no serious deterioration of surface finishes for at least one-year of public use.
- Where appropriate, painted surfaces **should** have fully raised edges to minimise visible wear.
- Parts **must** not be susceptible to 'picking' by children's fingers. E.g. plastic trim, rubber grommets etc.

3.5 Maintenance

- A full operation and maintenance (O&M) manual **must** be provided. This should include full descriptions and sources of any spare parts likely to be necessary and recommended schedule and instructions for routine maintenance and safe operation. It should identify all key safety features, their function and maintenance requirements.
- Training of staff on how to operate, examine and repair exhibits **must** be included as part of the installation agreement
- Each interactive or set of interactives **must** have a NEM Safety information form and risk assessment completed and included as part of the O&M manual
- The successful tenderer **must** make staff available to *immediately* assist with teething problems/malfunctions during the first month of opening.
- The successful tenderer **must**, if required, be able to enter into a maintenance contract with NEM, requiring them to repair any reported problems and malfunctions that staff are unable to repair themselves
- A number of spares of all component parts **should** be included as part of the installation agreement. This should include a minimum provision of one full replacement of any individual component/interactive (definition to be agreed as part of the contract)

3.6 Safety

Generally safe for prolonged, hands-on use by adults and children, paying attention to the following risks, for example:

- Exhibits **must** be electrically safe
- There **must** be no sharp edges or corners
- Corners **should** be placed above toddler head height or be cushioned
- The possibility of children climbing on structures and barriers **should** be taken into account
- The exhibits **must** not be foreseeably likely to encourage dangerously inappropriate use by children
- Surface finishes, such as laminates, **must** not be used where they are likely to be damaged in such a way that sharp edges result

- Interactives **should** be constructed with the same checks as children's play equipment. Clearances **must** be considered to avoid trapped fingers, hands, elbows, heads etc. Loose pieces **must** be too large to be swallowed and pass recommended choke tests, but not heavy enough to cause strain or damage when dropped

3.7 Mechanisms

- Exhibits **should** generally be suitable for prolonged, hands-on use by adults and children
- Exhibits **should** have a minimum number of moving parts. All hands-on components **must** be stronger than they appear to the user and not weaker
- The correct method of use **should** be apparent to the user from the design
- All push-buttons, levers, crank-handles etc. **must** combine minimum size with maximum strength: if they are too large they will encourage users to apply more force than necessary, increasing wear and tear
- Exhibits **should** be as simple as possible
- Exhibits **must** be designed to minimise access to moving parts or machinery. All safety features **must** be clearly identified in the O&M documentation and identified in the supplied NEM safety check proforma

3.8 Accessibility

- All exhibits **must** conform to DDA guidelines
- Exhibits **must** be at an appropriate height for young children and wheelchair users to use
- The comments made by user groups during the consultation phase **should** be taken into account
- Any parts that require movement **should** be moved with minimum effort
- Buttons and touch screens **should** be designed under the assumption that they will be used by individuals with no fingers
- Any exhibits requiring spoken audio **must** also have subtitles

3.9 Safety category definitions

All hands on/interactive exhibits must be assessed and rated under the following safety categories:

- Priority A –High risk Electrical, electro-mechanical and mechanical devices where specific additional safety critical guarding systems are required in order to prevent access to moving parts, electrical connections or other hazards. Electricity is mains voltage. Specific ongoing control measures must be put in place to ensure that these guards remain effective.

- Priority B – medium risk Mechanical or electrical devices where moving parts and systems are completely enclosed in self contained units. Any hazardous parts of the device are inaccessible to members of the public and cannot be accessed without the removal of device parts using specific tools or equipment. All electrical systems are predominantly low voltage.

- Priority C – Low risk All other interactive/ hands on exhibits with no significant associated hazards– to include soft play, jigsaws, drawing tables, feely boxes etc

The presumption is that Category A interactives should not be commissioned unless it is deemed essential for delivery, and only then if a specific monitoring and maintenance programme can be agreed.

Contractors must work with museum staff to agree the category rating of any interactive they are producing. See also the NEM Health and Safety Guide *Maintenance and Inspection of Public Interactive Exhibits*

When commissioning interactives a full risk assessment must be completed, an information guidance sheet produced and appropriate R&M documentation material received before accepting the interactive into service.