Questions that need to be answered

Air Identification & Registration for Cultural Heritage: Enhancing Climate Quality
## 1. Introduction

### 1.1. Programme of Thursday 28 April

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker/Institution</th>
<th>Topic</th>
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</thead>
<tbody>
<tr>
<td>9:40 - 10:40</td>
<td>Jean Tétreault (Canadian Conservation Institute)</td>
<td>Past and present pollutant concentration targets and how they are used or misused</td>
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<tr>
<td>10:40 - 11:10</td>
<td>Elke Otten (Royal Museum of the Army and of Military History)</td>
<td>Large and mixed collections in the Royal Military Museum. How to deal with it? Why does a museum engage in scientific research on air quality?</td>
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<td>11:10 - 12:00</td>
<td>Diana Leyva Pernia (University of Antwerp, Department of Mathematics - Computer Sciences) and Caroline Meert (Royal Museums of Fine arts of Belgium)</td>
<td>What is the meaning of 'Indoor Air Quality'? Risk management or mathematical algorithm approach</td>
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<td>12:00 - 13:30</td>
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<td>Lunch</td>
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<td>13:30 - 14:30</td>
<td>Hannelore Römich (New York University, The Conservation Center of the Institute of Fine Arts)</td>
<td>Environmental impact dosimeters: what are the possibilities and limitations?</td>
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<tr>
<td>14:30 - 15:00</td>
<td>Johanna Leissner (Fraunhofer EU Office Brussels)</td>
<td>What is the impact of climate change on cultural heritage? Implementing climate models and building simulation for the prediction of risks, changes in monitoring strategies and target values.</td>
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<tr>
<td>15:00 - 15:15</td>
<td>Diana Leyva Pernia (University of Antwerp, Department of Mathematics - Computer Sciences)</td>
<td>AIRCHECQ: Demonstration software</td>
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<td>15:15 – 15:45</td>
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<td>Coffee break</td>
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<td>15:45 – 16:15</td>
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<td>Round table discussion</td>
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<td>16:15 – 17:00</td>
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<td>Guided tour at the Royal Museum of the Armed Forces and of Military History, Brussels</td>
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1. Introduction

1.2. Announcements

- **Inspire us!**
  - Put your comments on the boards
  - We will use them for the round table discussions

- **Access to museums**
  - Royal Military Museum
    (Thursday, Friday, **Saturday**)
  - Royal museums of Art and History
    (Thursday, Friday)

- **WiFi connection**

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<tr>
<th>Network</th>
<th>Guest</th>
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<tbody>
<tr>
<td>Password</td>
<td>MRAH2015</td>
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</table>
2. What do we need?

2.1. How to manage the environment?

- How do we manage the environment?
- How dangerous is the environment?
- Is there a more sustainable way to manage the environment? And if so how much risk does it pose to collections?
- When do we take action?
- How do we evaluate the effectiveness of actions?
- Can we predict the effect of actions in advance?

Can we build a decision support system?
2. What do we need?

2.2. The 10 agents of deterioration

**Can we measure air quality?**
- Incorrect temperature
- Incorrect relative humidity
- Pollutants
- Light & radiation
- Physical forces

**Can we monitor environmental quality over time?**
- Pests
- Thieves & vandals
- Fire
- Water
- Custodial neglect
2. What do we need?

2.2. The 10 agents of deterioration

Can we measure air quality?
- Incorrect temperature
- Incorrect relative humidity
- Pollutants
- Light & radiation
- Physical forces

Can we monitor environmental quality over time?

Anti-theft detection system
- Fire detection system

- Pests
- Thieves & vandals
- Fire
- Water
- Custodial neglect

Can we reduce the threats of these agents by monitoring them?
3. Causes and effects

3.1. Complex relations between environment & material behaviour

**Causes of degradation**
- Sun
- Climatisation
- Visitors
- Traffic

**Environmental parameters**
- Temp.
- UV
- Humidity
- NOx

**Effect on materials**
- Corrosion
- Cracks
- Yellowing
- Bleaching

**Appreciation of changes**
- Almost invisible
- Visible change
- Appreciation
- End of life

*Relations are only partially known!*
3. Causes and effects

3.2. Determine target values

How do we determine target values for environmental parameters & effect on materials?
3. Causes and effects

3.3. Convert measurements in Indoor Air Quality (IAQ)

How do we make judgements about good and bad environments?
4. Questions to be answered

- How do we determine relations between causes and effects?
- What are good and bad conditions?
- What guidelines/norms do we have to use?
- How do we determine indoor air quality?
- How can we make huge amounts of complex information understandable?

Can we build bridges by using technology?

Heritage professionals

Scientists
5. AIRCHECQ project

Offer heritage caretakers a user-friendly tool to manage Indoor Air Quality (IAQ)

**Monitoring kit**
- Measure several environmental parameters
- Monitor materials behaviour

**Software**
- Interpretation of measurements
- Calculate Indoor Air Quality index
- Determine most aggressive parameter

**Workflow**
- Determine measurement location
- How to use monitoring kit & software
- Determine efficiency mitigation actions
Let’s start to find some answers