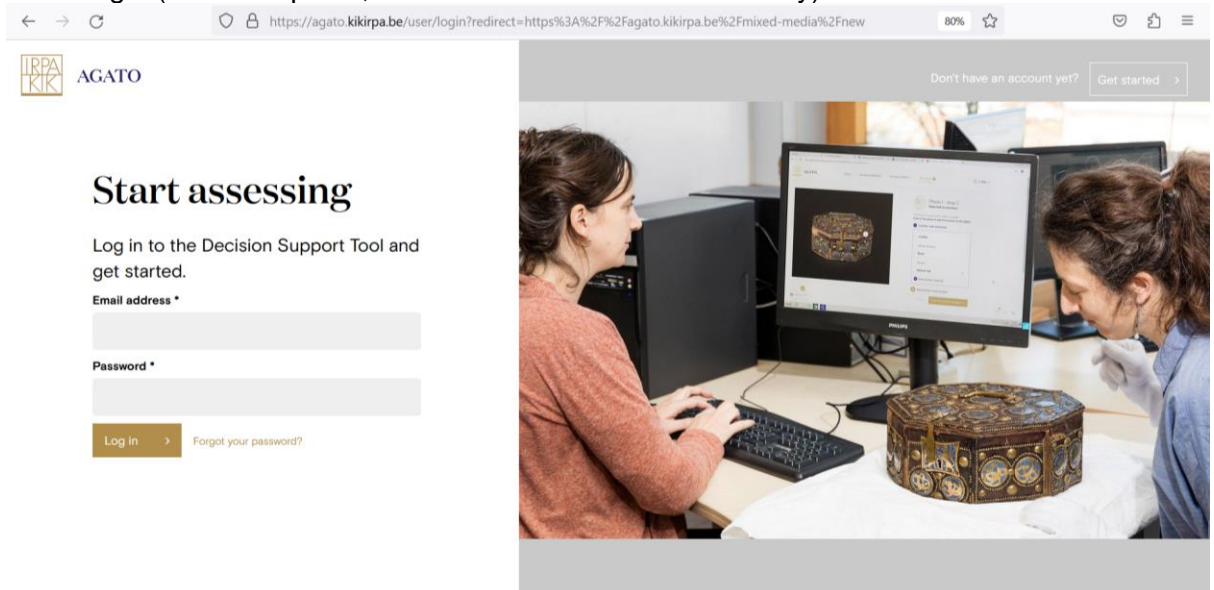


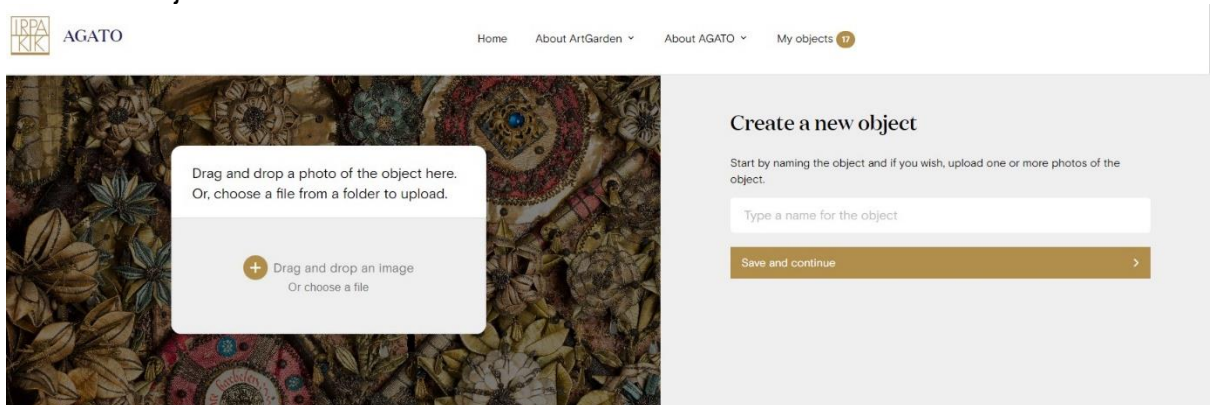
Walk-through the AGATO process : user guidelines – extended version

Input expected from the user:

- Make login (e-mail required, further information not mandatory)



- Name the object to start an assessment



- Upload a photo (not mandatory)
- A progress bar displayed from the start of an assessment visually accompanies the fill-out process and allows to move back and forth


- Identify materials

- Rank materials according to significance and / or prevalence
- Identify material combinations and the way they are combined (not mandatory)

- Identify materials that are enclosed together (not mandatory)

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Step 1 Identification **Step 2 Occurrence** Step 3 Condition Step 4 Environmental hazards Step 4 Overview Final step Results



Phase 1 - step 2: Material occurrence

Materials are enclosed together (but are not in direct contact).

Textiles ✕

Silk ✕

Wood ✕

[+ Add another material](#)

[+ Add another enclosure](#)


[< Go back](#) [Save and continue >](#)

- Identify condition of each of the materials and of the materials directly touching another material. Number tags can indicate the locations on the picture. Extra pictures (for instance of details) may be added.

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Step 1 Identification Step 2 Occurrence **Step 3 Condition** Step 4 Environmental hazards Step 4 Overview Final step Results

Use the numbers below on the photo to locate the materials and material combinations on the object. Drag the numbers by the symbol.



Phase 1 - step 3: Material condition

Indicate the current condition of the materials. For material combinations, indicate the condition of each material where they touch each other. Due to interactions between materials, contact points may be more vulnerable.

1 Brass

Good *

Fair *

Poor *

[Learn more](#)

2 Enamel

Good *

Fair *

Poor *

[Learn more](#)


3 Leather

Good *

- Answer 18 questions about environmental hazards related to the 10 agents of deterioration

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Step 1 Identification Step 2 Occurrence Step 3 Condition **Step 4 Environmental hazards** Step 4 Overview Final step Results



Phase 1 - step 4:
Exposure to Environmental hazards

Answer the 18 questions on environmental hazards concerning the 10 agents of deterioration. Use YES or NO.

Question 8/18

Is the object going to be exposed to light in the future?

Yes No


[Learn more](#)

< Go back Save and continue >

- Check overview of answers

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Step 1 Identification Step 2 Occurrence Step 3 Condition **Step 4 Environmental hazards** **Step 4 Overview** Final step Results



Phase 1 - step 4:
Environmental hazards

Check and confirm you answers to the questions on environmental hazards: ✓ identifies likely exposure to potentially dangerous factors associated with the 10 agents of deterioration.

- ✗ Handling
- ✗ Vandalism
- ✗ Impact, vibration, abrasion
- ✓ Fire damage
- ✗ Water damage
- ✓ Pests
- ✗ Pollutants
- ✓ Light, UV and IR
- ✓ High or low temperatures
- ✓ High or low temperatures in the past
- ✓ High relative humidity
- ✓ Fluctuations of relative humidity
- ✓ Fluctuations of relative humidity in the past
- ✗ Dissociation
- ✓ Detaching of parts
- ✗ Loss of parts
- ✗ Theft of parts of the object
- ✗ Theft of the whole object

- View the results of the assessment

The screenshot shows the AGATO interface for the object 'Casket for the crown reliquary of Holy Thorns, Namur'. The object is shown in a gallery view. The interface includes a navigation bar with 'Home', 'About ArtGarden', 'About AGATO', and 'My objects' (with a notification badge). A green checkmark indicates 'Object is now 100% complete'. Below the object image, there are options to 'Add images', 'Edit object', 'Edit materials', 'Duplicate', 'Delete object', and 'Print'. The main content area is titled 'Risk warnings and recommendations' and contains a paragraph: 'After assessment and searching the knowledge base, AGATO found the following risks and recommendations for the object. Risk warnings are ordered from biggest to smallest risk.'

Risks to the object

Show risk ranking results for: **Significance** **Prevalence**

View mode: **Extended** **Compact**

By agent of deterioration	By material	By magnitude
---------------------------	-------------	--------------

Results can be viewed in three ways:

- First and overview of the agents of deterioration identified in the assessment, ranked by importance (visible by color scale). Clicking an agent in the list gives an overview of ranked risks specifically for that agent and general information about the agent.

By agent of deterioration	By material	By magnitude
---------------------------	-------------	--------------

Agents of deterioration ranked:

[Learn more](#)

- Fire
- Incorrect Temperature
- Incorrect Relative Humidity
- Light, Ultraviolet and Infrared
- Pollutants
- Pests
- Dissociation

Risk legend:

[Learn more](#)

- Catastrophic
- High risk
- Medium Risk
- Low Risk
- Negligible

Fire

This agent ranks #1 out of 7. To view the other 6 ranked agents, use the list on the left. To view all risks, scroll down below.

Fire can cause serious damage or even total loss of collections, buildings and services. While the probability of fire in an institution is relatively low, the impact of a fire can be disastrous as within a very short time it may destroy a large part of the collection and building.

Some objects may be lost or irreversibly damaged, while other objects may be restored and some may even remain undamaged. Depending on the type of material and the extent of the fire, damage may result in distortion, discoloration, embrittlement or soiling by soot. Organic materials are more susceptible to combustion, and ignite more easily when dry or thin. Items from wood, paper and textiles are more rapidly burned than inorganic materials such as stone, glass, metal and ceramics, which may still melt, warp, discolor, crack, embrittle or shatter. Soot, extinguishing agents and improper handling during evacuation of collections, may cause secondary damage. Mechanical damage, stains, mold, and bacterial degradation may be secondary damage provoked by water used for putting out the fire.

Collections and buildings, especially historic houses, contain plenty of combustible materials that contribute to a museum's fire load. Unmaintained installations for electricity, light or heating, unsafe working sites, and external natural or industrial sources may cause an accidental/unintentional fire. Certain themes dealt by museums, monuments or exhibitions may make them more susceptible for arson.

In any situation, fire prevention is extremely important to swiftly detect fire, rapidly suppress it and avoid quick propagation of the fire to limit damage. Fire safety rules and regulations are not always easy to implement in museums or historic buildings to meet safety standards, but it is important to identify potential threats and take measures to reduce the risk and severity of fire. Involving the local fire

- Secondly, the materials present in the object are listed (as the user has ranked them). Clicking a material in the list gives an overview of ranked risks specifically for that material.

Risks to the object

Show risk ranking results for: Significance Prevalence

View mode: Extended Compact

By agent of deterioration	By material	By magnitude
---------------------------	-------------	--------------

Materials ranked as entered in Step 1:
[Learn more](#)

- Enamel
- Brass
- Leather
- Silk
- Wood

Risk legend:
[Learn more](#)

- Catastrophic
- High risk
- Medium Risk
- Low Risk
- Negligible

● Incorrect Temperature
● Incorrect Relative Humidity

Risk #1/11 - Enamel - Fair - Poor - Humidity - Temperature

The crizzling of an unstable enamel, chemically altered due to poor enamel composition (eg. Limoges enamel 1480-1530, green translucent enamel 17th century), will continuously deteriorate. Fluctuations in relative humidity would lead to weeping (at conditions from and above 50% relative humidity) and crizzling (at 40% relative humidity and below). These ongoing deliquescence and crystallization cycles of salts cause irreversible cracks, changes in color and transparency of the enamel, delamination of the enamel layer from the metal support and eventually even loss of material.

When weakened by chemical degradation, an enamel is more sensitive to thermal changes.

+ Avoid

Avoid conserving the enameled object in unstable climatic conditions, provide a very controlled environment with stable relative humidity and temperatures (ideally relative humidity 42-45% and temperature 18-20°C) as high levels of relative humidity lead to the formation of a moist film on the surface) and low levels of relative humidity to crizzling of the dehydrated altered surface layer.

- Finally, all risks identified (for all materials and all agents present) are ranked according to the magnitude of the risks.

Risks to the object

Show risk ranking results for: Significance Prevalence

View mode: Extended Compact

By agent of deterioration	By material	By magnitude
---------------------------	-------------	--------------

Risk legend:
[Learn more](#)

- Catastrophic
- High risk
- Medium Risk
- Low Risk
- Negligible

● Fire

Risk #1/53 - Silk - Fire

Burning of this thin, organic material during a fire can cause visual damage by discoloration; (nearly irreversible) soiling by soot; embrittlement; or loss of the silk. After a fire, silk can release an unpleasant odor of soot. The protein fibre of silk ignites more slowly than cotton and is a slow burner. Heavily weighted black silks however show a high flammability, with even the risk of spontaneous combustion (heat is produced during the fast chemical decay).

Silk may also be affected by water from fire-extinguishers when exposed to fire.

+ Avoid

Avoid presence of sources for fire, flammable / explosive materials near the object or in the vicinity of the building (markets, street food vendors, festivals, etc); faulty electrical systems, activities with open flames such as certain construction works involving welding. Install and maintain a lightning rod. Regularly inspect and maintain buildings systems and keep building and its surroundings clean.

Avoid losing crucial time in case of a fire by talking with fireguards regularly, keeping emergency plans for people and for collections up-to date, being able to provide suitable documentation on building and collection, and training staff for emergency procedures.

- Every risk describes the possible degradation of a material due to exposure to a certain agent of deterioration. Recommendations are given to avoid this degradation, to block the agent of deterioration to reach the material, to detect the presence of the agent and to respond in case the material was affected by the agent of deterioration. The same goes for material combinations.

Risk legend:

[Learn more](#)

- Catastrophic
- High risk
- Medium Risk
- Low Risk
- Negligible

● [Incorrect Relative Humidity](#)

Risk #6/53 - Brass - Leather

Copper alloys, and especially brass, may corrode by contact with leather treated with dressings (containing Sulphur residues or fatty acids), forming blue-green corrosion products with a waxy appearance and feel; forming metal soaps; and causing pitting of the surface (material loss).

Corrosion products, here metal soaps, increase in volume and may distort components of the object. Metal soaps can degrade organic materials (dangerous if they are the materials for the objects' construction such as threads).

+ Avoid

If possible, avoid direct contact of brass with leather (containing wax, oils, fats), causing corrosion of the metal. Avoid levels of high relative humidity.

+ Block

Block direct contact between brass and leather if possible. Turn to a conservator to decide on the necessity and nature of an intervention. Eventually, insert an adequate and stable barrier material between the brass and the leather such as a removable polyester barrier film (for instance Melinex). As an alternative, block direct contact by applying a surface coating on the brass like Paraloid B-72 (by a trained conservator).

+ Detect

Monitor level of relative humidity. Regularly check the object for active corrosion on the contact points.

+ Respond

Turn to a conservator to remove unstable corrosion products from affected surfaces if present.

[Learn more](#)

- Every 'risk & recommendation' that is shown, mentions also 'learn more'. Clicking 'learn more' leads to the bibliographical references that are used and may be useful for further reading.



Copper alloys, and especially brass, may corrode by contact with leather treated with dressings (containing Sulphur residues or fatty acids), forming blue-green corrosion products with a waxy appearance and feel; forming metal soaps; and causing pitting of the surface (material loss).

Corrosion products, here metal soaps, increase in volume and may distort components of the object. Metal soaps can degrade organic materials (dangerous if they are the materials for the objects' construction such as threads).

References

- › Barclay R.L., C. Dignard and L. Selwyn, *Caring for metal objects* (online resource: Preventive conservation guidelines for collections), Canadian Conservation Institute, 2018.
- › Göpfrich J., N. Frankenhauser and K. Mackert, *Wettlauf mit der Vergänglichkeit. A Race against Transience*, Offenbach, Deutsches Ledermuseum / Schuhmuseum Offenbach, 2012.
- › Tétreault, J., *Agent of deterioration: Pollutants* (Web Resource: Agents of deterioration), Canadian Conservation Institute, 2020.
- › Werner, U., et al., *The removal of metal soaps from brass beads on a leather belt*, in *Studies in Conservation*, 57(1), 2012, p. 3-20.

The output can be interpreted in two ways:

- The risk of loss of value is shown when the user ranked the materials according to 'significance' in the first step and when the slide-button on the result-page is set on 'significance'.
- The risk of losing material important to the structure of an object is shown when the user ranked the materials according to 'prevalence' in the first step and when the when the slide-button on the result-page is set on 'prevalence'.

The output-page offers different possibilities:

- Results can be viewed in a 'compact' way, only the titles of the ranked risks are mentioned to allow a better overview. A user may choose to slide the button between 'extended' and 'compact'.

Risks to the object

Show risk ranking results for: Significance Prevalence

View mode: Extended Compact

By agent of deterioration	By material	By magnitude
---------------------------	-------------	--------------

Materials ranked as entered in Step 1:
[Learn more](#)

- Enamel
- Brass
- Leather
- Silk
- Wood

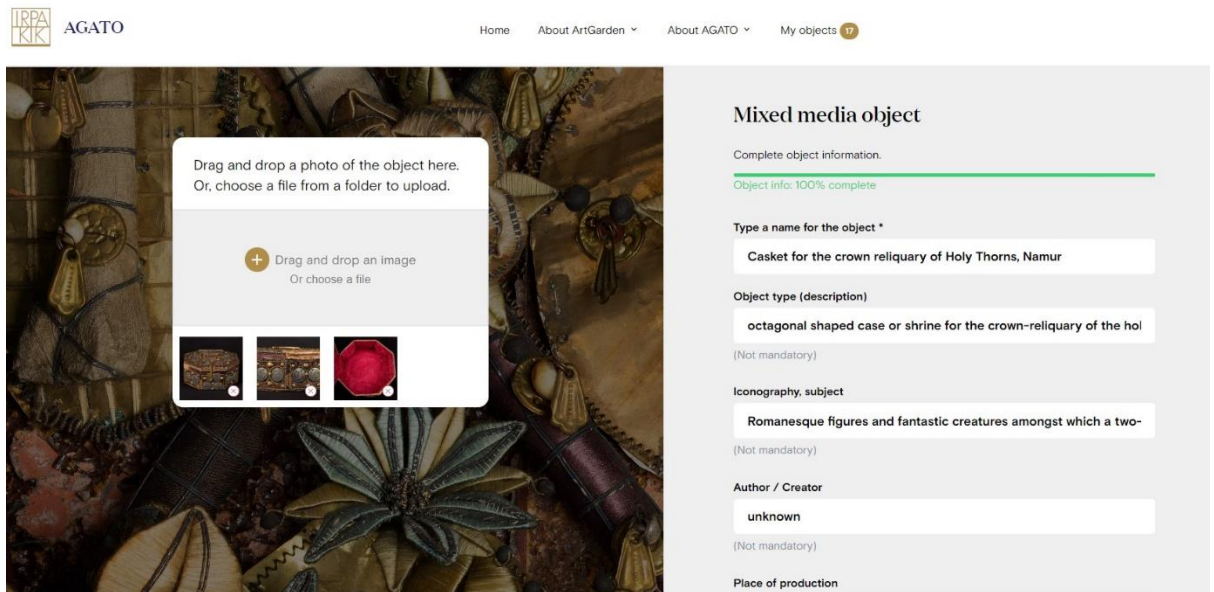
Risk legend:
[Learn more](#)

- Catastrophic
- High risk
- Medium Risk
- Low Risk
- Negligible

- Risk #1/11 - Enamel - Fair - Poor - Humidity - Temperature**
Incorrect Temperature, Incorrect Relative Humidity
- Risk #2/11 - Enamel - Fair - Poor - Pollutants - Humidity**
Pollutants, Incorrect Relative Humidity
- Risk #3/11 - Enamel - Past Humidity Fluctuations**
Incorrect Relative Humidity
- Risk #4/11 - Enamel - Fire**
Fire
- Risk #5/11 - Enamel - Temperature**
Incorrect Temperature

- The object can be duplicated to create a 'copy of the object' including all information filled out earlier. This may be used to compare different situations, for instance difference in possible risks to the object when it is conserved in another environment (storage, exhibition, display case,...), or the difference for an object before or after a conservation treatment. In that case answers can easily be adapted using the 'overview' by clicking an environmental hazard to be directed to the question and modify the answer.

- Using 'edit object' more (curatorial) information on the object can be registered, administrative data such as the inventory number, owner, iconography, dimensions, repository,... (not mandatory)



- Results of every assessment are saved within a user's account, on the server of KIK-IRPA, only visible to its administrator. Objects or assessments are not accessible to the public.
- To use the results of an object assessment, they can be exported by using the 'print' button and create a pdf. All administrative data filled out in 'edit object' will be used as a header for this pdf.

