

## UBQ4

### Urbiquay for responsive and value-based asset management

#### Summary

Many urban bridges and quay walls (UBQs) in historic cities in the Netherlands show significant **signs of overdue maintenance and or are beyond their functional or technical lifetime**. In November 2022, **three Urbiquay Phase I** projects started with the aims of: delivering tools and methods to improve condition assessment and monitoring (LiveQuay), improving understanding of the potential of lifespan extension measures (STABILITY), and promoting efficient planning of mass renovation projects (Logiquay). **UBQ4 builds upon and synthesizes insights from these projects and develops new knowledge into the incorporation of changing societal values in asset management decisions.**

Changing value frames, technical innovations and new insights enable and demand a **transformation in UBQ asset management practices**. This currently seems difficult to achieve due to: (1) a lack insight into the extent to which their current decisions are responsive and adequately balanced between the **wide range of existing and future societal values** at stake; (2) changing circumstances, standards and (political) preferences **do not translate easily to new practices**; and (3) a highly fragmented operational decision context **prevents integrated decisions**. To overcome these problems, UBQ4 **develops and validates methods, approaches and guidelines** for the implementation of **societally responsive and value-based UBQ asset management practices**.

The UBQ4 consortium engages in **retrospective and action-oriented case study research** that is linked to research activities of Phase I projects in Amsterdam, the Hague and Zwolle. Scientific impacts are achieved in three work packages that each adopt another perspective on so-called synthesis cases: (1) **societal values in socio-technical systems**; (2) **responsive asset management organization practices**; and (3) **innovating asset management**. The research utilizes the multidisciplinary expertise of a knowledge-chainwide consortium, three case providing municipalities, CROW platforms, AMS and other stakeholders to ensure the delivery of **validated, context-specific and generalizable** results for **futureproof, valued-based and responsive** management of UBQs.

## Consortium partners

UNIVERSITY OF TWENTE.



✘ Gemeente  
✘ Amsterdam  
✘



Den Haag



Zwolle



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## Objectives

The **overall goal** of UBQ4 is to **support local municipalities with the implementation of societally responsive and value-based asset management practices for urban bridges and quay walls**. Being "value-based" in asset management means making decisions that consider the important values of society. However, this can only happen if asset management is responsive to the various values involved and how they might change over time. Technology plays a crucial role in this process, helping to build, observe, measure, and coordinate information related to assets. In UBQ4, particular attention is given to the implications of technological innovations and knowledge that are developed in Phase 1 projects. Acknowledging that values are deeply embedded in assets, processes, and practices, UBQ4 not only focuses on understanding these values and how they evolve, but also on developing and embedding responsive practices. Ultimately, UBQ4 aims to provide a better understanding of which societal values matter, how they change, and how innovations, knowledge, and values can be dynamically integrated into strategic, tactical, and operational asset management practices.

The **main objective** of UBQ4 is to **co-create and validate methods, approaches and guidelines for responsive and value-based management** of urban bridges and quay walls by municipalities.

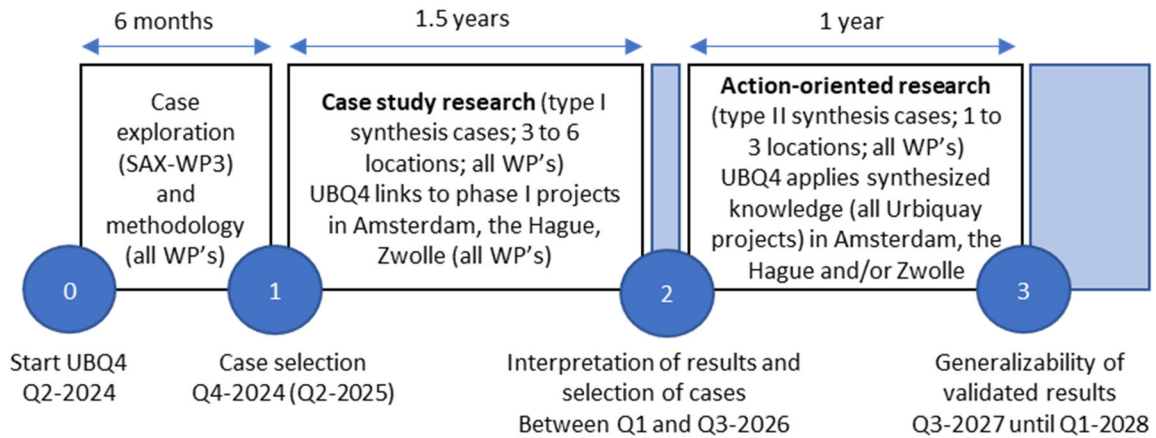
## Work plan

UBQ4 is structured around three work packages, each with their own perspective on asset management (see table below). WP1 focuses on developing a framework for identifying, categorizing and operationalizing the **societal values** that should be considered and institutionalized in UBQ decision-making processes. This framework will also look forward, to anticipate the possibility and impact of changing values. WP2 focuses on identifying how innovations and new knowledge are incorporated in asset **management practices of municipal organizations**. This includes how asset management organizations respond to the consideration and incorporation of values and value

conflicts. WP3 focuses on operational asset management as well as interactions across different levels of asset management. It aims to develop and validate all context-specific and generalizable methods, approaches and guidelines.

WP no. and lead	WP Title	Perspective on asset management
WP1, TUD	Value-responsive Decision-making in Asset Management	Assets and values are part of a socio-technical system and embedded in social-political institutional contexts.
WP2, UT	Responsive Organizational Asset Management Practices	Assets are owned and managed by municipal organisations who manage assets at strategic, tactical and operational levels.
WP3, Saxion	Innovating Asset Management Practices	Operational asset management at specific locations, including project management and procurement, is influenced by location-specific societal and governance challenges and conditions. Value-based and responsive asset management requires changes at and across multiple levels of asset management.

**Case study research** plays an important role in all research activities of UBQ4. Cases are provided by Amsterdam, the Hague and Zwolle; they each have their own challenges in ways of working, differ in size and character but also share similar UBQ challenges. To integrate knowledge across all UBQ4 WPs and individual Phase I projects, UBQ4 makes use of so-called **synthesis cases**. A synthesis case refers to a specific location that serves as a focal point for collaboration among researchers, co-applicants, and cooperation partners involved in the UBQ4 project. These locations typically involve structures such as quay walls and bridges that are undergoing investigation, monitoring, repair, or renewal. After an initial exploration of circa 6 months (see figure below), a first set of selected synthesis **retrospective synthesis type I cases** at 3-6 locations is analysed. In this period, UBQ4 researchers closely collaborate in data collection, which includes: semi-structured interviews, document analysis of organizational and project-based documents that reflect UBQ decisions, on site observations, focus groups and group interviews. When UBQ4 is halfway, the case study results of UBQ4 and any relevant findings from Phase I projects are brought together and reflected upon to formulate value-based and responsive asset management practices. Two years after the project start (moment 2 in the figure), a period of circa three months is reserved for this. The answers to all “how to” questions lead to methods, approaches and guidelines that are validated in a second set of synthesis cases. In these so-called **action-research oriented synthesis type II cases**, newly developed methods, approaches and guidelines are applied in ongoing projects in Amsterdam, The Hague and/or Zwolle. In this phase, UBQ4 researchers complement traditional case-based methods with workshops and other intervention-oriented methods.



## Planned output

UBQ4 develops and applies methods, approaches and guidelines for value-based and responsive asset management. Overall and WP-specific outputs of the three WPs are:

- WP1 delivers **an overview of what values are institutionalized** in Amsterdam, the Hague and Zwolle and **in-depth insights into what values are potentially at stake and how they are dealt with** at specific locations in Amsterdam, the Hague and Zwolle (output 1A); theoretically grounded and empirically validated **methods to identify and categorize values and to address conflicting (conceptions of) values**.
- WP2 delivers **an overview of asset management procedures and practices** in Amsterdam, the Hague and Zwolle and **in-depth insights into the implications of embedding innovations, knowledge and values in asset management** at specific locations in Amsterdam, the Hague and Zwolle (output 2A); theoretically grounded and empirically validated **mechanisms and design principles to incorporate reflection and learning** into asset management practices.
- WP3 delivers **an overview of critical decisions and choices** for selected cases in Amsterdam, the Hague and Zwolle; **guidelines for value-based and responsive project management and procurement**; insight into the multi-level and networked nature of decision-making processes; a suite of methods, approaches and guidelines to dynamically integrate values into asset management and **insight into generalizability of results and upscaling potential** within Amsterdam, the Hague and Zwolle and other municipalities in the Netherlands.