JOHANNES KEPLER
UNIVERSITY LINZ

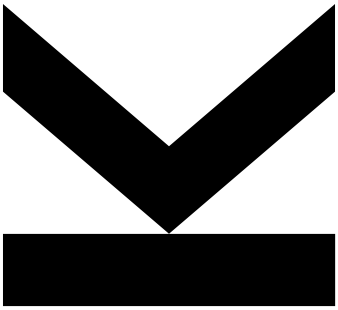
Author
Florian Schnitzhofer

Institute
Institute of Business Informatics
- Data & Knowledge Engineering

June 2025

DESIGN CONCEPT FOR THE EXPERT-INTERVIEW STUDY:

QUALITATIVE RESEARCH FOR AUTOMATED DECISION-MAKING WITHIN ADMINISTRATIVE LAW



INTRODUCING DIGITAL TWINS FOR ADMINISTRATIVE LAW WITHIN THE RULE-OF-LAW

JOHANNES KEPLER UNIVERSITY LINZ
Altenberger Straße 69
4040 Linz, Austria
jku.at

ABSTRACT

To embed the Digital Twins for Administrative Law (DTAL) research program in practitioners lived realities, this study will conduct a series of semi-structured expert interviews with high-level stakeholders in e-government, legal-tech and public administration across the EU, Germany and Austria. The interviews pursue three tightly coupled objectives:

1. ***Expose current pain points** – semantic, organizational and legal – that arise when public bodies translate statutes into software.*
2. ***Elicit design requirements** for DTAL artefacts that balance legal interpretability with machine executability.*
3. ***Chart actionable solution paths** (e.g. digital-twin patterns, ontology scaffolds, smart-contract mechanisms) to be tested in subsequent design-science cycles.*

Situated in an interpretivist, Classic Grounded Theory framework, the study combines open narrative with problem-centered probing. Findings will (i) articulate empirically grounded design principles for DTAL, (ii) steer the next prototype iteration, and (iii) contribute a mid-range theory explaining how legal, technical and organizational actors jointly automate administrative decision making while safeguarding the Rule of Law.

1. Research Aim

To refine and empirically ground the overarching research question:

How can automated decision making (ADM) in administrative law be improved while safeguarding the Rule of Law?

The study will investigate perceived challenges, design requirements and solution paths by eliciting and analysing the situated knowledge of leading Austrian, German and EU e-government, legal-tech and public-administration experts.

2. Methodological Rationale

DIMENSION	CHOICE	JUSTIFICATION
PARADIGM	Interpretivist / Constructivist	The project seeks to understand experts' meaning-making around digital twins for law and uses grounded theory to inductively build explanatory constructs.
STRATEGY	Problem-centred, semi-structured expert interviews	Balances narrative breadth with the ability to re-focus on pre-defined problem statements.
ANALYTIC LOGIC	Classic *Grounded Theory* (Strauss & Corbin, 1998)	Supports systematic, open->axial->selective coding that can reveal processual categories (e.g., "semantic alignment cycle") capable of informing design artefacts.

Grounded theory is particularly suitable because prior empirical work on digital-twin-for-law initiatives is scarce; an emergent, data-driven theoretical model will therefore add the greatest scholarly value.

3. Sampling Strategy

- **Population of interest**: Austrian decision-makers and academics who influence, design or evaluate ADM in public administration.
- **Sampling logic**: *Theoretical sampling*—started with the initial list (below), then I will iteratively expand to fill conceptual gaps (e.g., municipal IT chiefs, standards bodies – Appendix A).
- **Initial invitees (n ≈ 10)**

Table 1. Participants (pseudonyms).

ID	Role	Organization type	Language
E1	Parliamentary Legislation Governance (EU)	Legislature (EU)	EN
E2	Parliamentary Policy, Advisor (EU)	Legislature (EU)	EN
E3	Legislative counsel	National Parliament	DE
E4	Dean of innovation	Education & Research	DE
E5	Notarial practitioner	Legal practice	DE
E6	ERP vendor lead (public sector)	Industry	DE
E7	Parliamentary It Strategy (EU)	Legislature (EU)	EN
E8	Parliamentary Unit IT (EU)	Legislature (EU)	EN
E9	Parliamentary Innovation Lab (EU)	Legislature (EU)	EN

4. Data-Collection Protocol

- **Mode**: 45- to 60-minute in-person or video calls.
- **Instruments**:
    - Interview guide.
- **Recording**: Audio + field notes; verbatim transcription via secure cloud service.
- **Ethics & consent**: GDPR-compliant information sheet; opt-in for anonymized quoting.

5. Data-Analysis Plan (Grounded Theory)

1. **Open Coding** – line-by-line labelling to surface all concepts (MAXQDA).
2. **Axial Coding** – relate categories using Strauss & Corbin's causal-contextual paradigm (e.g., causal condition → phenomenon → intervening condition → strategy → consequence).
3. **Selective Coding & Theoretical Integration** – identify the core category (expected candidate: *"semantic interoperability work-arounds"*) and connect all other categories around it.
4. **Constant Comparison** – compare incidents within and across interviews; memo theoretical hunches.
5. **Theoretical Saturation** – stop sampling when new data add no substantive insight to the core category.

Rigour will be enhanced through *triangulation* (participant-validation of category summaries) and *audit trail* documentation.

6. Trustworthiness & Limitations

- **Credibility**: member checks after axial-coding stage; peer-debriefing with Ph.D. supervisor.
- **Transferability**: thick description of Austrian ADM context.
- **Dependability & Confirmability**: chain of evidence stored in secure repository; reflexive memos to surface researcher bias (the researcher's dual role as practitioner-innovator is explicitly reflected upon).
- **Limitations**: national focus (DACH); potential social-desirability bias among senior officials; reliance on self-reported experience.

7. Indicative Timeline

PHASE	ACTIVITIES	DATES
PREPARATION	Ethics approval, pilot test guide	March 2025
DATA COLLECTION	5–8 interviews (rolling)	May - July 2025
INITIAL CODING	Open + early axial coding	July 2025
THEORETICAL SAMPLING	Additional 2–3 interviews	August 2025
INTEGRATION & WRITING	Selective coding, model building	August 2025

8. Expected Contributions

1. **Design Principles:** Empirically grounded guidelines for DTAL artefacts.
2. **Prototype Direction:** Concrete requirements for the next DTAL iteration.
3. **Mid-range Theory:** An explanatory model of how legal, technical and organizational actors co-construct ADM systems that respect the Rule of Law.

This design concept positions the expert-interview study as a critical bridge between DTAL's conceptual vision and its practical, legally robust implementation.