BAUSTEIN.

A Design Tool for Configuring and Representing Design Research.

REPRESENT YOUR PROJECT

PLANNING & STRATEGIZING	PROBLEM & NEED FINDING	ENVISIONING & IDEATION	FEASIBILITY CHECK

GROUNDING & CONCEPTUALIZATION	EX-ANTE EVALUATION & JUSTIFICATION	EX-POST EVALUATION & JUSTIFICATION

REFINEMENT & REVISION	ABSTRACTION LEVEL CHECK	DEPENDENCY ANALYSIS	REFLECTION

ARTIFACT BUILDING	KNOWLEDGE FORMULATION	TARGET USER-SPECIFIC COMMUNICATION	*BLANK*

REPRESENT YOUR PROJECT

PROBLEM & NEED FINDING

What
- What's the actual problem?
- What's the (practical) need?
- How to formalize the problem/need?

How
Analyze data from interview, workshop, focus group, case study; review literature, objects; perform requirement eng., …

Inputs
Observations, lessons learned, literature, theory, regulations, real-world objects, …

Outputs
(Class of) problems, problem structure, problem relevance, knowledge/research gap, need, … — PROB

ENVISIONING & IDEATION

What
- What do we want to develop?
- What can we adapt to a new field?
- Is it worth pursuing the idea?

How
Apply creativity techniques, discuss with colleagues, observe situations, …

Inputs
Transfer of ideas, transfer of technology, own interests, own capabilities, accessibility to technologies, …

Outputs
Project idea, relevance of idea, technology potential, opportunity, … — IDEA

PLANNING & STRATEGIZING

What
- How to organize the project?
- What strategy to follow?
- What is the contextual setting?

How
Craft stakeholder map, specify level of engagement (consortium), ideation, …

Inputs
Project setting, third-party funding requirements, research/practice team, research frameworks, … [PROB] [IDEA]

Outputs
Project plan (procedure and cycles), strategy, target user, project goals, … — PLAN

FEASIBILITY CHECK

What
- Are we able to solve/handle this?
- Do we have enough resources?

How
Reflect on competencies and available resources from the research team, …

Inputs
Team capabilities/skills, list of resources, … [PROB] [IDEA] [PLAN]

Outputs
Proof of feasibility, proof of concept, access to relevant data/cases, … — CHECK

GROUNDING & CONCEPTUALIZATION

What
- Can we build upon prior knowledge?
- What can we learn from literature?
- What can we learn from practice?

How
Search justificatory knowledge, review literature, conceptualize/reuse knowledge, analyze objects/data, …

Inputs
Literature, domain knowledge, (kernel) theory, empirical data, artifacts, … [PROB] [IDEA] [PLAN]

Outputs
(Meta) requirements, conceptual design knowledge/features, … — GROUND

EX-ANTE EVALUATION & JUSTIFICATION

What
- Is there empirical evidence that support the design knowledge?
- Is there theoretical evidence that support the design knowledge?

How
Justify with theory, demonstrate via instantiation, analyze empirical data, benchmark, experiment, …

Inputs
Conceptual knowledge, instantiation, prototype, empirical data, theory, … [ARTE] [FORM] [REFL]

Outputs
Proof of concept, applicability, suitability of technology, strengths, justification, revision potential, … — ANTE

EX-POST EVALUATION & JUSTIFICATION

What
- How to evaluate the (final) artefact?
- How to evaluate the design knowledge?

How
Justify with theory, demonstrate via instantiation, analyze empirical data, (quantitative) benchmark, field test, …

Inputs
Design knowledge, instance, empirical data, usage data, theory, frameworks, … [ARTE] [FORM] [REFL]

Outputs
Usefulness, proof of value, ease of use, effectiveness, testable propositions, … — POST

REFINEMENT & REVISION

What
- How to revise the design knowledge?
- How to revise the artifact?
- Is there a need to revise the problem?

How
Perform splitting, merging, abstraction, contextualization of design knowledge; compare with other artifacts, …

Inputs
Feedback from evaluation, lessons learned, (additional) evidence, … [ABS] [DEP] [REFL] [ANTE] [POST]

Outputs
Refinement, improvement, update, extension of problem, artifact, and design knowledge, … — REFIN

ABSTRACTION LEVEL CHECK

What
- What is the knowledge level?
- Is this a principle or a sub-principle?
- Is this an appropriate abstraction level?

How
Generalize knowledge, visualize hierarchy of design principles, …

Inputs
Design knowledge and artifact, evaluation results, … [FORM] [REFIN]

Outputs
De-abstracted/abstracted principles, level of knowledge, hierarchy, … — ABS

DEPENDENCY ANALYSIS

What
- If and how do the design principles relate to each other?
- Do the pieces of design knowledge relate to each other?

How
Create a system map, discuss and visualize relationship, …

Inputs
Initial or final set of design principles, … [FORM] [REFIN]

Outputs
Dependencies between sets of and single design principles, possible combinations, … — DEP

REFLECTION

What
- Is the relevant knowledge captured?
- What and how do we add value to the (DSR) body of knowledge?

How
Check coverage, apply conceptualizations (e.g., taxonomies), compare results, …

Inputs
Design knowledge, (domain) conceptualizations, theory, … [FORM] [GROUND] [REFIN]

Outputs
Design knowledge, learning, value, novelty, coverage, completeness, transferability, … — REFL

ARTIFACT BUILDING

What
- What type of design artifact should be developed (e.g., software)?

How
Apply prototyping, instantiate design knowledge, use analogical design, perform design workshops, …

Inputs
(Meta) Requirements, design features, design knowledge, expert knowledge, … [PROB] [IDEA] [GROUND] [FORM] [REFIN]

Outputs
Situational artifact, (design) concept, prototype/mock-up, … — ARTE

KNOWLEDGE FORMULATION

What
- How to extract and synthesize pieces of design knowledge from the project?
- How to generalize the knowledge?

How
Cluster knowledge pieces, generalize from artifact, contextualize, heuristic theorizing, use formulation templates, …

Inputs
(Meta) Requirements, design knowledge, key learnings, conceptual design, … [GROUND] [ARTE] [ANTE] [POST] [REFL]

Outputs
Interim/final design knowledge, design theory, meta requirements, … — FORM

TARGET USER-SPECIFIC COMMUNICATION

What
- How to communicate the results to research and practice?

How
Formulate results, visualize knowledge (mock-ups), explore potential, …

Inputs
Final set of design principles, design knowledge collected, added value, … [FORM] [ARTE] [POST] [REFL]

Outputs
Design (knowledge) representation, architecture, algorithm, value, practice recommendations, … — COM