GOVERNED AUTONOMY

Cuttlefish Environment: Continuing Work Across Applications and Collaboration

A paper in the Governed Autonomy collection

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Research on authority, evidence, and continuity in autonomous systems.

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Cuttlefish Environment: Continuing Work Across Applications and Collaboration

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Research study: conceptual exposition of the Cuttlefish environment architecture
Source: Public exposition, successor 2026.10.8; historical research and evidence separately qualified

Abstract

Work frequently spans applications, people, documents, decisions, and interruptions. An agent that can perform isolated actions still leaves a coordination problem if the person must repeatedly reconstruct the situation, identify the correct resources, and explain unfinished work after every change of interface or runtime. The Cuttlefish environment sources investigate continuity at the level of the user's objective. They define an environment in which application state retains its actual source authority, participants retain their own permissions, and changing a view does not recreate the work. This paper examines three requirements: responsibility must survive interruptions without extending permission, collaboration must share results without merging private environments, and completion must correspond to a verified outcome. Four scenarios connect these requirements to proposals, shared reviews, uncertain submissions, and live revisions. The examination I directed on 10 October 2026 with AI assistance identified Cuttlefish as an implemented host operating with Freehold in AWS. The AD8 corpus and reference analysis introduced in 2026.10.7 adds no new product or infrastructure examination; this edition corrects the authorial voice and publication packaging. The architecture's broader acceptance programmes remain the criteria for establishing those properties across the complete operating environment.

1. The continuity problem

A person preparing a proposal may begin in email, compare a spreadsheet, consult a document, discuss options with a colleague, and present a result to a customer. The work is continuous even though the interfaces are not. A decision made in one place constrains an action elsewhere. A later change can invalidate an earlier calculation. A conversation can end while the underlying obligation remains unfinished.

Agent assistance does not automatically close these gaps. A competent response can still depend on the person supplying the same context repeatedly. A completed tool invocation can leave the business result unverified. A new window can look like a continuation while holding a separate account of the work. A colleague joining a discussion may need access to the result while remaining unauthorized to inspect the private material used to prepare it.

The Cuttlefish sources treat these as connected problems of operating an environment. The proposed unit of continuity is the objective: the outcome being pursued, the responsibilities

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involved, the relevant resources, and the conditions under which completion can be established. Conversations, applications, and views participate in that work without each becoming a separate account of what has happened.

This framing is useful because many interruptions do not change the user's intent. Closing a view, replacing a model, or losing a connection may require recovery, but none inherently means that the objective disappeared. The architectural question is how to preserve the work through those changes while respecting current authority and current source state. Public review scope.

2. Work, collaboration, and presentation

The sources distinguish three questions. **Work** concerns what is being pursued and what remains to be done. **Collaboration** concerns who can contribute, receive information, and make decisions. **Presentation** concerns what part of the work is currently visible and how a person interacts with it.

The distinction explains several otherwise confusing cases. A hidden view can correspond to active work. A visible participant can be unauthorized to edit a particular document. A person presenting a slide can lack authority to approve the commercial terms on it. A colleague can contribute a permitted finding without sharing the private environment in which that finding was developed.

The source calls the durable collaboration facet a Working Group. Its purpose is to keep participation and discussion associated with the objective. It does not establish a second outcome that must be maintained independently. A presentation, call, or customer review can occur around the same work without requiring the person to duplicate the project and reconcile it afterward.

This does not mean every related activity belongs in one shared boundary. A new purpose, independent accountability, incompatible retention requirements, or a genuine separation of authority can justify distinct but linked work. The source distinguishes those reasons from changes that are merely presentational.

The proposed benefit is reduced reconstruction: people should be able to encounter the same work in a compact interaction, a focused application view, a shared discussion, or a review without losing its meaning. The benefit remains conditional on those views corresponding to the same actual work and respecting each viewer's access. Public review scope.

3. Exact resources matter more than familiar labels

Applications often expose familiar labels that conceal materially different resources. Two open documents can have the same title. Two accounts can use the same service. An unsaved local workbook can differ from its saved copy. A browser page can change while its surrounding window remains recognizable.

For continuing work, these differences are consequential. An agent asked to revise the current document must not silently act on an older copy merely because that copy is easier

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to obtain. An instruction concerning a work account must not move into a personal account because the application name matches. A restored view should not be treated as evidence that its source is current.

The environment sources therefore preserve the authority of the actual application, filesystem, or service over its own state. A representation maintained by Cuttlefish can make the work understandable and accessible, but it does not acquire ownership of external facts by describing them. This is a limit on the claim of environmental awareness: the system must account for where its knowledge came from and what it can presently establish.

Automatic context is valuable within that limit. Where the relevant source and permission are already established, repeatedly asking the person to paste a link or reattach a file adds effort without adding meaning. Where the source remains ambiguous or inaccessible, familiarity should not replace evidence. The useful interaction is to resolve the specific missing distinction while continuing independent authorized work.

The same principle constrains remote continuation. Work that can legitimately proceed elsewhere may continue, but a remote copy is not automatically the same live resource as an unsaved local document. The user should not receive a confident completion claim for an operation performed on the wrong version or source. Public review scope.

4. Responsibility can persist while permission changes

A sustained instruction differs from a single action. Keeping a budget current includes future occurrences, changing inputs, and an eventual condition under which the responsibility ends. Completing one update does not necessarily complete that continuing obligation.

The source separates the responsibility from the particular worker, model, or visible window assigned to it. A model can become unavailable without changing what is owed. A person can close a view without cancelling the work. A qualified replacement can continue an assignment without claiming that it performed the earlier actions itself.

Persistence must not become perpetual authority. A responsibility can remain meaningful after a permission expires or is withdrawn. The system may still owe a result, but it cannot use that obligation to justify action outside current scope. It needs another legitimate route or the genuinely required decision. This preserves both continuity and the person's ability to remain in control.

Learning creates a similar distinction. Observing a successful way to perform a task can contribute reusable knowledge. It does not establish that the method is reliable under every later condition, nor does it authorize every future use. The source treats learning, recurring intent, and current permission as separate concerns. Changes in the application or its circumstances can require renewed evidence about the learned behavior.

For users, the practical consequence is that “working,” “watching,” “waiting,” and “complete” answer different questions. A quiet system can be maintaining an authorized responsibility without continuously generating model responses. A finished response can leave a responsibility active. The visible status must be grounded in the actual condition of the work. Public review scope.

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5. Collaboration without merging private environments

Sharing a task does not imply sharing every source, tool, credential, or conversation involved in it. Two people can contribute to one proposal while operating under different organizational and personal permissions. Their agents may need to exchange a specific finding, rather than everything each agent has seen.

The collaboration master makes this separation central. A participant's own environment remains distinct. A remote agent contributes as an identified participant; it does not become a local copy of that agent's private environment. A shared visual result is a result offered for inspection, not an implicit right to operate the producer's applications.

This permits a useful asymmetry. One participant can receive a conclusion that has been approved for disclosure while remaining unable to inspect its confidential supporting source. That conclusion still needs appropriate evidence and disclosure authority. A model's assertion that a summary is harmless cannot itself supply permission to share the information it contains.

The same distinction applies to audiences. An internal team may need working assumptions, unresolved alternatives, and private evidence. A customer may need the approved proposal and the opportunity to ask questions. A controlled view of the same work can support both, provided access is enforced across every way information can appear, including search, previews, exports, and media.

Participation also has a history. Removing someone from current work need not erase their permitted past contributions or relabel who produced them. Equally, preserved history does not grant continuing access after permission ends. Continuity must preserve attribution while respecting the current rules for retrieval and disclosure. Public review scope.

6. Actual applications and human coexistence

The environment proposal concerns work in actual applications. A representation that resembles a spreadsheet does not establish that the real workbook changed. A captured application image does not establish permission to control the application. A second visible pointer does not establish independent interaction inside software that supports only one active selection.

These observations constrain what the user can reasonably be promised. Application capabilities differ. Some support well-defined concurrent operations; others impose broader coordination requirements. Two changes that appear visually separate can depend on the same data or affect a shared application state. The source therefore ties the strength of a coordination claim to the actual source behavior.

Human coexistence is equally concrete. An agent should not disrupt unrelated human work simply because both are active on the same machine. At the same time, continued progress cannot depend on pretending that two conflicting operations are independent. The intended behavior is to coordinate the work that actually conflicts and allow other authorized work to continue.

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Presentation can help people inspect this activity without becoming compulsory supervision. A person may want the real application visible, may prefer a concise result, or may need to inspect a change only when a decision arises. Hiding an application view should not alter the meaning of the underlying task. Showing it should not overstate its currentness or the rights available through it.

Accessibility is part of that claim. Essential sources, controls, decisions, and capture status must remain understandable through supported interaction modes. A visual effect or activity animation cannot replace readable status, accessible controls, or evidence that the intended operation occurred. Public review scope.

7. Reviewable artifacts and coherent audiences

A work product often has several relevant states: a draft, a reviewed version, an approved version, and a version shared with a particular audience. These are not interchangeable. Approval does not necessarily publish an artifact; publication does not necessarily establish approval of its business content.

Live collaboration makes this distinction especially important. A customer can ask for an alternative while an internal team updates a cost model, proposal, and presentation. Showing whichever document finishes first can produce a misleading combination of new figures and old assumptions. A useful environment should keep the audience's current account coherent while the underlying work changes.

The collaboration master treats introducing a revised shared result as a deliberate act with evidence and authority of its own. People must be able to tell which version they are reviewing, what changed, and whether the relevant parts agree.

Supporting media introduces further boundaries. A live call, captions, stored transcript, retained recording, and agent processing are different uses of information. Joining a discussion does not automatically authorize all of them. Likewise, an internal note visible to the presenter should not enter a recording merely because it appears near a shared slide.

Control over a presentation is also narrower than control over the source application or the business decision. Advancing through approved material is different from editing the underlying terms. A spoken comment can become a work request without becoming a signature or blanket permission. These distinctions allow collaboration to remain convenient without hiding material changes of authority. Public review scope.

8. Worked conceptual scenarios

Four hypothetical scenarios examine continuity, privacy, recovery, and shared review.

8.1 A proposal continues after its view closes

A manager asks for a proposal using an identified customer request and current internal cost information. The work begins within the manager's existing authorized scope. A colleague contributes a permitted requirements summary. The manager closes the visible collaboration view while the comparison continues.

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A successful result preserves the original objective and attribution. When the manager returns, the proposal, supporting comparison, and remaining decisions correspond to the work already accepted. Closing the view has neither duplicated the task nor silently cancelled it. The final result is complete only when the required content and verification are present, rather than when the last response stops streaming.

8.2 A shared review reaches a privacy boundary

A customer reviewing the proposal asks to inspect the internal margin workbook. The customer can discuss the permitted proposal and request an explanation. Their participation in the review does not establish permission to see the workbook.

The legitimate review can continue using approved information. A useful response may provide a permitted explanation or route a disclosure decision to the person entitled to make it. The customer should not receive private titles, hidden workbook content, or a misleading button suggesting that review membership already includes source access. The boundary applies to the information, including any derived chart or summary that would reveal it.

8.3 An interrupted submission is reconciled

A user authorizes one submission of a finished document. The connection drops before the result becomes clear. The work remains owned, but the system does not yet know whether the submission occurred.

Recovery must establish the available evidence before another attempt. If the first submission is confirmed, continuation proceeds from that result. If non-occurrence is established and permission remains valid, retry may be appropriate. If the evidence remains insufficient, the uncertainty is material. A new view or replacement agent must not mistake the missing response for proof that nothing happened.

8.4 A live revision remains coherent

During a review, a customer asks for a smaller deployment option. The existing scope permits analysis and draft preparation. The team revises the affected assumptions and documents while the audience continues to inspect the currently shared version.

The new option becomes ready only when its relevant figures and statements agree. Any required commercial decision remains separate from the ability to calculate the alternative. The audience receives the revised result at a deliberate point and can distinguish it from the earlier version. The meeting ends without erasing the follow-up work or extending access beyond its agreed scope.

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9. Evidence boundaries

9.1 Current implementation and the broader architecture

The implementation examination I directed on 10 October 2026 with AI assistance identified Cuttlefish workloads operating in AWS. It separates source inspected at that time, the revision declared by the examined gateway image, registry reads made during that examination, and workload readiness retained from 07:27 UTC on the same date. The hosted Freehold integration inspected in that examination included current grant evaluation, governed external dispatch, lineage and writeback records, and cognition settlement. Those implementation facts cannot be reduced to the status of an older design document.

The full environment claim is broader. Continuity across native applications, collaborators, views, models, and hosts requires observations of the actual affected journeys. Workload readiness does not establish correct application effects, complete cross-person privacy, or preserved obligations during model replacement. This edition makes no such blanket acceptance claim.

9.2 Source lineage and remaining conformance questions

The operating architecture and the later collaboration master form a documented design lineage. The latter expressly builds on the former's work, source, authority, and continuity concepts while refining collaboration and presentation. Both describe target behavior; that relationship alone does not establish a deployed integration.

Historical prototype and document checks are described in the sources, but their referenced input assets and raw results are unavailable in the source edition. Those accounts therefore cannot establish current runtime behavior. The acceptance programmes identify the demonstrations still needed.

The scenarios are requirements for future demonstration. Testing a control in a storyboard would not establish independent execution, actual application effects, cross-person privacy, or recovery after uncertain external outcomes. Similarly, passing a document consistency check would not establish native interaction or current enforcement.

The operating architecture also discusses a longer-term primary operating-system direction, with separate hardware, compatibility, graphics, and recovery obligations. Useful work on a supported host does not establish that endpoint, and a successful boot would not establish the complete environment claim.

External products and technical standards in the source research registries provide background and feasibility context. The comparison contains no independent product benchmarks and supports no conclusion of priority or comparative superiority. Public review scope.

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10. Research questions and relation to the collection

The central research question is whether the full continuity claim can be demonstrated across real changes of application state, participant, model, view, and host. It is insufficient to verify each part in isolation if their combination loses the objective, broadens authority, or repeats an external action.

Source fidelity remains an empirical burden. Which applications expose enough current state to support a particular operation? What evidence distinguishes a correct result from a plausible-looking one? How should the system continue when one source is unavailable without quietly substituting a different resource?

Collaboration creates a related burden. Can participants obtain the information needed to contribute without receiving private sources they do not need? Can an approved audience see a coherent result while internal work changes? Can capture, model processing, and publication remain understandable and controllable as the person moves among surfaces?

The environment paper connects conceptually to the collection's thesis through the separation of evidence, authority, and effects. Its documented relationship with the collaboration master is an explicit source dependency. Similar concerns in Semantic OS or other papers do not, without further evidence, establish that one architecture has adopted or implemented the other's mechanisms. The architecture synthesis records those distinctions, with common terms in the glossary and claim categories in the evidence guide.

The contribution is an account of continuity with four linked obligations: work must remain correctly identified, current authority must govern every consequential continuation, the actual source must support the reported result, and collaboration must change what is visible without silently changing who may act. Establishing those properties together is the test of the proposed environment.

Source guide

This successor guide points to public arguments and their limits. The new private evidence linkage remains excluded. Previously public conceptual source guides, including any retained titles, document ordinals, sections and chapter maps, are not claimed to have been removed; see the correction scope. The historical edition remains available unchanged.

Purpose and scope. Review the relevant argument and assumptions in this paper, the evidence guide, and the research review route. Specification, reported results and production observations have distinct scope.

Sources and context. Review the relevant argument and assumptions in this paper, the evidence guide, and the research review route. Specification, reported results and production observations have distinct scope.

Responsibility and continuity. Review the relevant argument and assumptions in this paper, the evidence guide, and the research review route. Specification, reported results and production observations have distinct scope.

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Collaboration and participation. Review the relevant argument and assumptions in this paper, the evidence guide, and the research review route. Specification, reported results and production observations have distinct scope.

Applications and human control. Review the relevant argument and assumptions in this paper, the evidence guide, and the research review route. Specification, reported results and production observations have distinct scope.

Artifacts and review. Review the relevant argument and assumptions in this paper, the evidence guide, and the research review route. Specification, reported results and production observations have distinct scope.

Evidence and adoption. Review the relevant argument and assumptions in this paper, the evidence guide, and the research review route. Specification, reported results and production observations have distinct scope.

No source-guide entry establishes a full implementation, a complete historical migration proof, or an independent audit.

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