HCI Paper — Consolidated (1996–2000 Constraints, Market-Agnostic)

Sections 1–3 with KLM Appendix (A), Methods & Metrics (B), and new templates (C–E).

# Table of Contents

# Section 1 — Internationalization Posture (1996–2000, Market-Agnostic)

## 1(a) Internationalization posture (no specific locale)

* Baseline: Ship English UI on Windows 95/98/NT4/2000. Treat other locales as optional plug-ins.
* Text & resources: Externalize all strings to Win32 resource DLLs; avoid text baked into bitmaps. Enforce string-length budgets for 800×600 CRTs.
* Encoding strategy: On Win9x use code-page aware (ANSI) paths and avoid lossy round-trips; on NT4/2000 prefer Unicode (UTF-16) internally and provide ANSI shims for Win9x.
* Locale surfaces: Drive date/number/time formats via LCID at runtime; respect OS short-date and 24h/12h settings; avoid culture-bound abbreviations in the UI.
* Keyboard/shortcuts: Avoid Alt+letter collisions; validate accelerators on US layout and leave room for later remapping.
* QA matrix: Smoke on Win98/NT4; regression on Win2000. Validate Common Controls v5/v6 rendering, font fallback, and truncation at 800×600.

## 1(b) Interaction style of the dialog

* Retain direct manipulation + form dialogs (tabs/panes) with OK/Apply/Cancel semantics and standard Win95/98 widgets.
* Rationale: Period familiarity beats novelty; standard controls lower cognitive load and reduce documentation/training overhead.

## 1(c) What stays/changes without a target locale

* Stays: Layout, control grouping, tab order, and Windows-terminology aligned to platform guidelines of the era.
* Changes: Strip locale-specific guidance; keep i18n hooks (resource DLLs, LCID formatting, accelerator remapping) so future markets can be added without redesign.

# Section 2 — Usability Evaluation & Choice Architecture

## 2(a) Error Counts vs. Learning Curve — Decision Framework

Operating Principle: Optimize for rate of improvement over time, not zero errors on first touch. In a Win95/98/NT4/2000 context, novice users expect minor missteps; what matters is how quickly errors decay between sessions.

KPIs to instrument:

* T1: First-attempt task time; T3: third-attempt task time; ΔT = T1–T3 (higher is better).
* Error Decay Index: e1/e3 (ratio of first-session to third-session errors). Target ≤ 0.4.
* Assist Reliance: help invocations/session (CHM opens, tooltip dwell ≥ 1.5s). Downward trend expected.
* Retention: task success without prompts after 72 hours.

Policy: Ship the design that demonstrates faster error decay and lower assist reliance in longitudinal tests, even if its initial error count is marginally higher than an alternative.

## 2(b) GOMS/KLM — Period-Correct Methods and Assumptions

Use GOMS for qualitative method selection and KLM (Keystroke-Level Model) for quantitative time estimates. Assume late-90s operator times: K=0.20s, P=1.10s, B=0.10s, R=0.10s, H=0.40s, M=1.35s. Model common file tasks (create, rename, move) in Explorer with context-menu and menu-bar variants.

Selection Rules:

* If user is already in Explorer, context-menu method dominates due to fewer homing and mode switches.
* Menu-bar method preferred in keyboard-centric workflows on NT4/2000 with consistent Alt-accelerators.
* Avoid novel widgets without established KLM parameters unless validated via timed studies.

## 2(c) A/B Time Series — When to Choose the Slower Option

If Design B is consistently faster across sessions, default to B. Override only when task risk profile, discoverability, or batch error cost justify a slower but safer Design A. Document the trade-off with explicit deltas.

# Section 3 — Batch File Converter UX (Single-Window Win32)

## 3(b) Interaction Strategy (Keep It Simple)

Primary surface: direct manipulation in a single-window Win32 GUI. Users build a queue, choose format/output, and execute. Avoid mandatory wizards for routine runs.

Core UI elements:

* Multi-select File Open dialog → listbox queue with columns (Name, Size, Source Path, Status).
* Toolbar: Add, Remove, Move Up/Down, Output Folder, Convert, Stop.
* Menu + accelerators: File (Alt+F), Edit (Alt+E), View (Alt+V), Help (F1).
* Status bar with progress and error count; log panel toggled via View.

Power paths:

* Drag-and-drop onto the queue list.
* Function keys: F2 rename, F5 convert, Esc cancel.
* Right-click context menu on queue items.

De-prioritize:

* Voice input (accuracy/training overhead circa 1999).
* Modal wizards for routine batch runs (increase friction, limit flexibility).

## 3(c) User Variability — Practical Accommodations

* Accessibility: full keyboard navigation with clear Tab order; respect system high-contrast themes; no text baked into bitmaps.
* Motor precision: larger click targets (≥ 24 px at 96 DPI) and sticky selections for low-DPI mice.
* Experience spectrum: surface tooltips and CHM topics; avoid jargon in error messages; provide safe defaults and reversible operations.

# Appendix A — KLM Time Estimate (Folder Creation, Windows 98 Explorer)

Method A (Context menu). Operators: Keystroke (K=0.20s), Point (P=1.10s), Button Click (B=0.10s), Right-Click (R=0.10s), Homing (H=0.40s), Mental prep (M=1.35s).

|  |  |  |  |
| --- | --- | --- | --- |
| Operator | Count | Unit Time (s) | Subtotal (s) |
| M | 1 | 1.35 | 1.35 |
| P | 1 | 1.1 | 1.10 |
| B (select) | 1 | 0.1 | 0.10 |
| R (open context) | 1 | 0.1 | 0.10 |
| B (New) | 1 | 0.1 | 0.10 |
| B (Folder) | 1 | 0.1 | 0.10 |
| K (type name, ~8 chars) | 8 | 0.2 | 1.60 |
| K (Enter) | 1 | 0.2 | 0.20 |
| TOTAL |  |  | 4.65 |

Notes: Times reflect late-1990s KLM defaults; actuals vary by device and user motor precision.

# Appendix B — Methods & Metrics (One-Page Playbook)

Scope: Late-90s Windows desktop usability studies for novice–intermediate users.

Study Design:

* Sampling: 8–12 participants, mix of novice/intermediate; 2 sessions each (Day 0, Day 3).
* Environment: 800×600, 96 DPI, Win98/NT4 hardware with low-DPI mice; CHM help installed.
* Tasks: Create/Rename/Move files, Batch convert queue (5–20 files), Configure dialog settings.

Instrumentation:

* Timing via lab logs; screen capture optional; key events timestamped (open, commit, error prompts).
* Event taxonomy: benign vs. severe errors; assist events (CHM open, tooltip dwell ≥ 1.5s).
* Metrics: ΔT (T1–T3), Error Decay Index (e1/e3), Assist Reliance trend, 72h retention.

Decision Rules:

* Prefer designs with faster error decay and fewer severe errors over marginal first-use speed gains.
* Escalate to redesign only if retention < 80% or severe errors > 5% of attempts by session 2.
* Document trade-offs explicitly in release notes with numeric deltas.

# Appendix C — A/B Results Template (Time Series + Error Decay)

Use this template to summarize longitudinal outcomes over two sessions (Day 0, Day 3).

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| Task | Design | T1 (s) | T3 (s) | ΔT | Errors S1 | Errors S2 | Error Decay | Assist Δ |
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Decision Note: Ship the variant with faster ΔT, lower severe errors, and improved retention.

# Appendix D — Risk Register (Severe Error Classes)

Track high-cost errors and mitigations.

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| --- | --- | --- | --- | --- | --- |
| Risk ID | Error Definition (Severe) | Trigger/Context | Mitigation | Residual Risk | Owner / Status |
| R-01 |  |  |  |  |  |
| R-02 |  |  |  |  |  |
| R-03 |  |  |  |  |  |
| R-04 |  |  |  |  |  |
| R-05 |  |  |  |  |  |
| R-06 |  |  |  |  |  |
| R-07 |  |  |  |  |  |
| R-08 |  |  |  |  |  |

# Appendix E — Study Notes (Methods & Metrics Capture)

Use during sessions to log instrumentation and anomalies.

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| Participant | Design | Task | Events | Observations | Follow-ups | Timestamp |
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# Appendix F — Win9x/NT4 Test Matrix Reference

See the companion spreadsheet “HCI\_Test\_Matrix\_Win9x\_NT4.xlsx” for the full device × DPI × Common Controls coverage. Record results for font fallback, truncation at 800×600, accelerators, and CHM accessibility.