Energy > Time:
A Framework for Humane Work Design

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Preprint — DOI: 10.5281/zenodo.21915167

Abstract

This paper proposes a framework for work design that treats cognitive energy—rather than clock time—as the primary variable for structuring tasks, teams, and tools. We formalize a three-variable model distinguishing Work Hours (wh), Productive Hours (ph), and Stuff Done (sd), and use the inequality $ph \leq wh$ to argue that optimizing for time spent is structurally different from optimizing for productive capacity. We then extend the individual-level analysis to team coordination, proposing that teams achieve better collaboration outcomes by concentrating high-interaction work into shared high-energy windows rather than spreading it across uniform schedules. The framework is applied to three domains—scheduling, management evaluation, and software tool design—with concrete recommendations for each. We position this framework as a complement to existing research on flexible work, chronotype-aware scheduling, and neurodivergent-inclusive design, and outline an evaluation agenda grounded in measurable capacity and output metrics rather than time-on-task.

Keywords: work design, cognitive energy, productivity, team coordination, neurodivergent inclusion, capacity-aware management

1 Introduction

The dominant model of work design assumes that the fundamental unit of labor is time. Hours are tracked, billed, scheduled, and compensated. Performance is evaluated against time-bounded deliverables. Meetings are calendared in fixed blocks. The implicit equation is:

$$\text{More time} = \text{More output} \tag{1}$$

This equation is approximately true for manual labor with constant physical demands. It is unreliable for knowledge work, where output depends on cognitive capacity—a variable that fluctuates with circadian rhythm, attentional depletion, emotional state, health, context, and individual neurocognitive profile.

This paper proposes replacing time as the organizing principle of work with energy: the cognitive capacity available for focused, meaningful work at a given moment. The proposal is not "work less." It is not "work more." It is: structure work around when real work is actually possible.

We present this as a framework with three components: a formal model of the relationship between time, capacity, and output; an extension from individual to team-level coordination; and practical application to scheduling, evaluation, and tool design.

2 The Model: Three Variables

2.1 Definitions

We define three variables for any unit of work (a day, a week, a sprint, a project phase), following the model introduced in Pritis (2026a):

- Work Hours (wh): Total time a person is present, available, or nominally working.
- Productive Hours (ph): The subset of work hours during which focused, goal-directed cognitive work occurs.
- Stuff Done (sd): Measurable, meaningful output—tasks completed, decisions made, code shipped, documents finished.

2.2 The Fundamental Inequality

$$ph \leq wh \tag{2}$$

This is trivially true: you cannot have more productive hours than hours present. But its importance lies in the gap it implies. In practice, for knowledge workers, ph is substantially less than wh. Studies of knowledge-worker time use consistently find that focused work occupies 2–4 hours of an 8-hour day, with the remainder consumed by meetings, email, administrative tasks, context switching, and unfocused time (Mark et al., 2008; Newport, 2016).

2.3 The Efficiency Ratio

We define:

$$\text{Efficiency} = \frac{ph}{wh} \tag{3}$$

This measures what fraction of time present is actually productive. A person working 160 hours per month with 100 productive hours has 62.5% efficiency. A person working 80 hours with 75 productive hours has 93.75% efficiency. If both produce the same output, the second person achieves a higher output rate per productive hour and a dramatically higher output rate per calendar hour.

2.4 The Output Rate

$$\text{Output Rate} = \frac{sd}{ph} \tag{4}$$

This measures output per productive hour. It decouples output from time present, focusing instead on the relationship between capacity used and results produced.

2.5 What the Model Shows

The model makes three points explicit:

1. Time is not output. Increasing wh does not proportionally increase ph or sd. Beyond a threshold, additional hours produce diminishing returns due to fatigue, context switching, and attentional depletion.

2. Efficiency varies. Different people, different times of day, and different work conditions produce different efficiency ratios. Treating all hours as equivalent ignores this variation.

3. Output rate matters. Two people with the same sd but different ph are performing at different rates. The person with fewer productive hours but the same output is working more effectively per unit of actual cognitive engagement.

3 The Individual Level: Working With Energy

3.1 Energy Profiles

Every person has a cognitive energy profile—a characteristic pattern of capacity variation across the day (Pritis, 2026b). This profile is shaped by:

- Chronotype: Morning types peak earlier; evening types peak later (Adan et al., 2012).
- Medication timing: Stimulant medication for ADHD creates a pharmacological capacity curve with peak efficacy and decline (Faraone et al., 2015).
- Sleep quality: Poor or insufficient sleep reduces next-day cognitive capacity, especially for executive function (Lim and Dinges, 2010).
- Mental health state: Depression, anxiety, and other conditions create unpredictable capacity fluctuations (Rock et al., 2014).
- Task history: Sustained effort depletes attention; breaks restore it partially (Warm et al., 2008).

A time-centric work model ignores all of these factors. An energy-centric model treats them as the primary inputs for scheduling and task allocation.

3.2 Matching Work to Capacity

The core practice of energy-centric individual work design is matching task demands to current capacity. Complex tasks (planning, architecture, writing, difficult decisions) require high cognitive capacity. Routine tasks (email triage, data entry, code review of familiar patterns) require moderate capacity. Consumption tasks (reading, passive learning, low-stakes browsing) require minimal capacity.

This matching is not automatic. It requires the individual to be aware of their current state and to have the autonomy to adjust their schedule accordingly. In practice, this means:

1. Schedule complex work during personal peak-capacity windows.
2. Defer routine work to moderate-capacity periods.
3. Use low-capacity periods for consumption and recovery rather than forced production.
4. Treat breaks as investments in future capacity, not as lost time.

3.3 The Anti-Pattern: Capacity Forcing

The opposite of energy-aware work is capacity forcing: demanding high-complexity work during low-capacity periods. This is the default behavior of most workplaces. A meeting requiring complex decision-making is scheduled at 3 PM because the conference room is available, regardless of whether participants have the attentional resources for sound judgment at that hour.

Capacity forcing produces several predictable negative outcomes: lower decision quality, longer task completion times (because the task is harder when capacity is low), increased error rates, and accelerated burnout from the sustained effort of compensating for the mismatch between demand and capacity.

4 The Team Level: Shared Energy Windows

4.1 The Coordination Problem

Most team work requires synchronous collaboration: meetings, pair programming, design reviews, planning sessions. The quality of these interactions depends on the collective cognitive capacity of the participants. A planning meeting where half the team is in an afternoon energy trough produces worse plans than the same meeting during a shared high-energy window.

4.2 Shared High-Energy Windows

We propose that teams identify shared high-energy windows—periods where the most team members are simultaneously at moderate-to-high cognitive capacity—and concentrate synchronous, high-complexity collaboration work into these windows.

This does not require precise measurement. It requires teams to have honest conversations about when they individually feel most capable of complex collaborative work, and to schedule the most demanding interactions accordingly.

4.3 The Hypothesis

Our working hypothesis, not yet empirically validated, is:

> A team that concentrates high-interaction, high-complexity work into shared high-energy windows will produce better collaborative outcomes (higher-quality decisions, faster convergence, fewer post-meeting corrections) than a team that distributes the same work uniformly across the schedule.

This hypothesis is consistent with circadian research showing that group performance on complex tasks varies with time of day (Monk, 2005), and with research on meeting effectiveness showing that scheduling and participant alertness affect meeting outcomes (Rogelberg et al., 2007).

4.4 Protecting Asynchronous Work

The complement of shared high-energy windows is protected asynchronous time—periods where individuals work independently without interruption. The energy framework suggests that these periods should be scheduled around individual peak-capacity windows for deep, solo work. This aligns with Newport's "deep work" concept (Newport, 2016) but grounds it in cognitive energy rather than willpower.

5 Application Domains

5.1 Scheduling

Current practice: Meetings are scheduled based on calendar availability. The calendar treats all time slots as equivalent.

Energy-aware practice: Distinguish between meeting types by cognitive demand. Schedule complex meetings (strategy, architecture, difficult decisions) during identified shared high-energy windows. Schedule lightweight meetings (status updates, announcements) during lower-energy periods. Protect individual peak-capacity periods from meeting intrusion.

Practical constraint: This requires teams to know or discover their collective energy patterns. Simple approaches include retrospective discussion ("When do you do your best thinking?") and iterative adjustment (try different slots, track subjective quality).

5.2 Performance Evaluation

Current practice: Evaluation metrics emphasize time-based measures: hours worked, velocity per sprint, activity logs, presence tracking.

Energy-aware practice: Shift evaluation toward output metrics (sd) and output rate (sd/ph). Decouple evaluation from hours present. Recognize that a person who produces high output in fewer hours is performing well, not underperforming on effort.

Practical constraint: Output is harder to measure than time. Not all knowledge work produces countable deliverables. The framework acknowledges this difficulty and does not claim to solve it entirely. The point is that even imperfect output measurement is more informative than precise time measurement when time is a poor proxy for value.

5.3 Software Tool Design

Current practice: Software presents the same interface, same complexity, and same notification behavior regardless of user state. Productivity tools assume continuous availability and uniform capacity.

Energy-aware practice: Allow users to declare their current cognitive capacity (Pritis, 2026c). Adapt interface complexity, notification priority, task surfacing, and interaction density to the declared state. Reduce friction and cognitive load when capacity is low. Maintain full functionality access for users who need it.

Implementation: We have implemented this approach in energy-system, a framework-agnostic TypeScript library that treats cognitive capacity as first-class application state (Pritis, 2026a); the design patterns underlying the library are catalogued in Pritis (2026d). The library provides a five-level energy model, decoupled adaptation strategies, and bindings for React, DOM, and custom frameworks.

6 Relationship to Existing Frameworks

The energy framework is complementary to, not in competition with, several existing bodies of work:

Flexible work arrangements (remote work, flextime, compressed weeks) give workers control over when and where they work. The energy framework provides a conceptual basis for how to use that flexibility: align work timing with capacity, not just preference.

Chronotype-aware scheduling (Vetter, 2019) addresses the mismatch between individual circadian profiles and uniform schedules. The energy framework extends this beyond circadian rhythms to include medication effects, mental health variability, and attentional depletion.

Deep work (Newport, 2016) argues for protected periods of focused work. The energy framework adds that the timing of deep work should follow energy peaks, and that non-deep work (administrative, routine) should be mapped to lower-energy periods rather than scattered randomly.

Neurodivergent-inclusive design advocates for workplaces and tools that accommodate ADHD, autism, depression, and related conditions. The energy framework provides a concrete mechanism—energy-state modeling and capacity-aware adaptation—for implementing these accommodations in software.

7 Limitations and Evaluation Agenda

This paper presents a framework, not empirical findings. The claims about improved outcomes are hypotheses to be tested, not results to be reported.

The evaluation agenda focuses on four measurable quantities:

1. Output quality: Does matching task complexity to declared energy level improve the quality of completed work (measured by error rates, revision frequency, or peer evaluation)?
2. Sustainable output: Does energy-aware work design reduce burnout indicators (measured by validated burnout inventories) while maintaining or improving output volume?
3. Team decision quality: Do decisions made during identified shared high-energy windows require fewer subsequent corrections than decisions made during unselected time slots?
4. Self-reported work satisfaction: Do individuals who use energy-aware scheduling report higher satisfaction with their work process, independent of output volume?

These metrics focus on quality and sustainability rather than raw quantity, consistent with the framework's core argument: the goal is not more output, but better output with less waste.

8 Conclusion

The model is simple. Time is not productivity. Not all hours are equal. Cognitive capacity varies, and the variation is not noise to be averaged out but signal to be designed around.

The framework asks three questions of any work arrangement:

1. Does this structure match work demands to actual cognitive capacity?
2. Does this structure protect high-capacity periods for work that requires them?
3. Does this structure treat low-capacity periods as a normal part of the cycle rather than a failure state?

If the answers are yes, the structure is energy-aware. If the answers are no, the structure is time-centric, and it is paying an invisible tax in mismatched effort, degraded quality, and avoidable burnout.

The claim is not that energy-aware work design is easy to implement. Schedules are constrained by clients, markets, timezones, and organizational norms. Not every team can restructure its calendar around chronotype surveys. But the direction is clear: any movement from time-centric to capacity-centric work design is a movement toward more honest, more humane, and very likely more effective work.

Energy is greater than time. That is the simplest version of the argument, and it is sufficient.

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