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ADDICTIVE DESIGN AND THE EU DIGITAL RULEBOOK

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1. Introduction

Design features aimed predominantly at engagement have moved rapidly from product-design practice to the centre of European regulatory debate.¹ The concept of “addictive design” features prominently in recent enforcement actions² under the Digital Services Act (DSA) as well as the regulatory debate³ on the forthcoming Digital Fairness Act (DFA) and, most recently, the Commission’s proposal for an EU KIDS Act⁴. In this context, the expression “addictive design” is used to describe a heterogeneous group of interface and product features, including infinite scroll, autoplay, push notifications, streaks, variable rewards and personalised recommender systems. **Yet the category remains legally amorphous and scientifically contested.**⁵ It does not correspond to a settled clinical diagnosis, and the same feature may be beneficial, neutral or harmful depending on the service, user and context.

Against this background, on 7 September 2026, the Centre on Regulation in Europe (CERRE) organised a Regulatory Lab on Addictive Design. The event brought together stakeholders and policymakers to discuss how the regulatory problem should be defined and which responses could protect consumers while preserving beneficial uses of digital services. The discussion explored the interaction between individual design features, user characteristics, service contexts and business models, as well as the allocation of responsibilities across the digital ecosystem.

Drawing on these discussions and earlier CERRE research,⁶ this issue paper examines the principal choices, trade-offs and evidential questions that should inform further policy development. It also develops initial considerations for a proportionate regulatory approach. The underlying premise is that **both under-regulation and over-regulation carry costs**: a framework that is too narrow may leave vulnerable users exposed to serious physical, psychological or economic harm, while a framework that is too broad – or does not take into account the full context in which product features are deployed – may suppress beneficial product features and require costly redesign without a sufficiently clear legal standard.

The analysis highlights the need to distinguish intensive but freely chosen engagement from problematic use, to assess features in their wider context, and to match interventions to the risks they address. The note is intended to contribute to the continuing debate on the DFA and the proposed EU KIDS Act; it does not represent an agreed position of the participants in the Regulatory Lab.

¹ See European Parliament, Resolution of 12 December 2023, Addictive design of online services and consumer protection in the EU single market, <https://eur-lex.europa.eu/eli/C/2024/4164/oj/eng>.

² See e.g., European Commission, Commission preliminarily finds the addictive design of Instagram and Facebook in breach of the Digital Services Act, Press release of 10 July 2026, IP/26/1579; European Commission, Commission preliminarily finds TikTok’s addictive design in breach of the Digital Services Act, Press release of 6 February 2026, IP/26/312.

³ See e.g., European Commission, 2030 Consumer Agenda, COM(2025) 848 final, p. 7.

⁴ European Commission, Proposal for a Regulation of the European Parliament and of the Council EU KIDS Act – EU Keeping Internet Digital Spaces Accountable and Trustworthy, COM(2026) 681 final, Art. 9.

⁵ See Maëva Flayelle et al., A taxonomy of technology design features that promote potentially addictive online behaviours, *Nat Rev Psychol* 2, 136-150 (2023); Nancy Costello et al., Algorithms, Addiction and Adolescent Mental Health: An Interdisciplinary Study to Inform State-level Policy Action to Protect Youth from the Dangers of Social Media, 49 *Am J Law Med* 135-172 (2023).

⁶ Christoph Busch, Amelia Fletcher, Michèle Ledger, Towards an EU Consumer Law Fit for the Digital Age, CERRE Report (February 2026), pp. 33-51; Christoph Busch and Amelia Fletcher, Harmful Online Choice Architecture, CERRE Report (May 2024).

Following this introduction, Section 2 examines the definition of the problem, including the relevant behavioural thresholds, risk factors and categories of harm. Section 3 considers the existing legal framework and possible regulatory responses. Section 4 identifies priorities for further policy development and research.

2. Defining the Problem

2.1 From “Addiction” to Problematic Design-Related Use

A first challenge is terminological. “**Addiction**” is a clinical and normative term with a high threshold.⁷ Formal addiction disorders are normally assessed by reference to symptoms such as preoccupation, withdrawal, continued use despite harm and damage to relationships or opportunities. Gaming disorder has been formally recognised, whereas a general category of “digital addiction” has not.⁸ Regulatory concern may nevertheless arise well below the threshold of a diagnosed disorder. Users may spend more time or money than they intended, struggle to stop, or repeatedly regret their behaviour. These self-control problems may be socially significant even where they do not constitute addiction in a clinical sense.

For legal purposes, the **better analytical lens may therefore be a behavioural continuum**: ordinary engagement; extensive but chosen use; overuse inconsistent with the user’s reflected preferences; problematic or compulsive habits; and clinically significant disorder. At what point in this continuum regulation should step in will depend on the protected interest and the type of legal intervention.

This distinction also affects causation. High usage is not in itself proof that design caused harm. A service may be heavily used because it is valuable, socially important or entertaining. The relevant question is whether the feature materially contributes to a foreseeable risk that users lose effective control or suffer specified harms.

2.2 Feature, Context, User and Business Model

The evidence and policy analysis suggest that no reliable assessment can be made at the level of a specific feature alone. **At least four dimensions matter from a perspective of risk-based regulation:**⁹

- (1) **Type of features:** Some mechanisms primarily remove stopping cues or friction, such as infinite scroll and autoplay. Others use variable reinforcement, social reciprocity or loss aversion, such as random rewards, notifications, streaks and read receipts.
- (2) **Context:** A streak in a language-learning or fitness application may support a user-defined goal, while the same mechanism in a shopping or social-media environment may serve predominantly to maximise commercial engagement.

⁷ See e.g., World Health Organization, International Statistical Classification of Diseases and Related Health Problems, 11th ed. (ICD-11), 2019; for an overview see Alice Matone et al, Alcohol and Substance Use Disorders Diagnostic Criteria Changes and Innovations in ICD-11: An Overview, 4 Clin Psychol Eur e9539 (2022).

⁸ Alessandro Musetti et al., Gaming disorder in the ICD-11: the state of the game, 25 BMC Psychiatry 1114 (2025); see also Xin Ye, Dark Patterns and Addictive Design, 5 Weizenbaum Journal of the Digital Society 3.2 (2025) (summarising the controversial debate around the concept of “Internet addiction”).

⁹ Cf. Busch, Fletcher and Ledger (n. 6), pp. 40-41.

- (3) **Category of users:** Risks may be higher for minors, persons with impaired impulse control, and users experiencing situational vulnerability. Certain adults may also be vulnerable, and the DSA does not define “vulnerable adults” for this purpose.
- (4) **Business model and service architecture:** An engagement feature may create different incentives for users and businesses where attention is monetised through advertising, where continued use drives in-app purchases, or where the service is funded by a fixed subscription. The presence of personalisation, real-time experimentation and optimisation against engagement metrics may also increase the provider’s capacity to identify individual susceptibility, and the risk that this susceptibility leads to harm.

In the further regulatory discussions, it should be explored whether and how these dimensions can be translated into an **operational risk matrix**, with variables such as the purpose of the feature, the strength of its behavioural effect, the existence of stopping cues, the user group, the type and gravity of harm, and the provider’s knowledge from internal testing or usage data.

2.3 What Counts as Harm?

The regulatory debate combines several **distinct harms**.

- **Non-economic harms** include sleep loss, anxiety, reduced attention, displacement of other activities and adverse effects on development.¹⁰
- **Economic harms** include excessive spending and purchases induced by virtual currencies, loot boxes or waiting-time mechanisms.¹¹
- **Autonomy harms** arise where users cannot align their actual behaviour with their considered preferences.¹²

These harms should not be treated as a single undifferentiated concept. **Different harms may justify different remedies**, legal bases and evidential thresholds. For example, a spending limit addresses economic harm but not sleep displacement, and disabling night-time notifications addresses interruption but not compulsive scrolling.

¹⁰ See e.g., Danny J. Yu, The Impact of Social Media Use on Sleep and Mental Health in Youth: a Scoping Review, 26 Curr Psychiatry Rep 104-119 (2024).

¹¹ Annette Cerulli-Harms, Loot boxes in online games and their effect on consumers, in particular young consumers, Study for the European Parliament’s IMCO Committee (July 2020).

¹² Cf. Martin Brenncke, Regulating Dark Patterns, 14 Notre Dame J Int’l & Comp L, 39 (2024) (arguing that “regulating dark patterns in European Union law means regulating for autonomy”).

3. Regulatory Options

3.1 The Existing EU Legal Landscape

The EU framework already contains several partially overlapping approaches that are relevant in the context of addictive design.¹³

The **DSA** contains a number of important prohibitions and obligations:

- Article 25 DSA prohibits online platforms from designing interfaces that deceive, manipulate or otherwise materially distort or impair users' ability to make free and informed decisions;¹⁴
- Articles 34 and 35 DSA require VLOPs and VLOSEs to assess and mitigate systemic risks, including serious negative consequences for physical and mental well-being and risks to minors;
- Article 28 DSA requires platforms accessible to minors to ensure a high level of privacy, safety and security, supported by non-binding Commission guidelines.

Consumer law may cover some practices through the Unfair Commercial Practices Directive (UCPD), particularly where gamification, pressure or exploitation of vulnerability affects transactional decisions. Yet the UCPD is centred on commercial practices and economic behaviour, while many concerns about compulsive use are non-economic.

Art. 5(1)(a) and (b) **AI Act** may apply where AI systems deploy manipulative techniques or exploit age-related or other vulnerabilities in a manner that materially and harmfully distorts behaviour.

Art. 28(1)(a) **AVMSD**, which protects minors on video-sharing platforms, is also potentially relevant to the question of addictive design.

Taken together, these instruments provide substantial but uneven coverage. The remaining questions differ by service category, user group and type of harm: design-related risks outside the DSA's scope, non-economic harms not readily addressed through the UCPD, and the effectiveness of existing obligations within their respective fields. The proposed EU KIDS Act adds a dedicated legislative initiative for minors. Future DFA rules should therefore be assessed alongside that proposal and existing law, with particular attention to remaining gaps affecting adults and to avoiding overlapping obligations.

3.2 Enforcement Under the DSA: Clarification or Regulation by Enforcement?

The **DSA's risk-management model is deliberately context-sensitive**: providers of VLOPs and VLOSEs must identify risks associated with their own systems and adopt proportionate mitigation measures (Art. 34, 35 DSA). Access to platform data (e.g. A/B tests, recommender-system metrics and user-

¹³ For an overview see Busch, Fletcher and Ledger (n. 6) pp. 36-40.

¹⁴ However, there is some legal uncertainty regarding the relationship between Art. 25 DSA and the UCPD, since the scope of this provision is limited by Art. 25(2) DSA, cf. Benjamin Raue, in Hofmann & Raue, Digital Services Act, Article-by-Article Commentary, 2025, Art. 25 paras. 94-103.

behaviour indicators) may allow the Commission to assess effects more accurately than a legislature acting ex ante.

However, in the context of the regulatory debate on the planned DFA, **enforcement under the DSA could raise rule-of-law and institutional-design concerns**. The Commission is simultaneously the direct enforcer of the DSA for very large online platforms and is preparing a legislative proposal on addictive design under the DFA.

Enforcement inevitably develops legal standards in concrete cases. However, where the applicable statutory concepts are open-ended and the remedies may require fundamental redesign, regulated entities may reasonably ask **how far generally applicable product standards should be developed through individual enforcement rather than through legislation**, delegated acts, guidelines or standards.¹⁵ In this perspective, it is important that the ongoing enforcement actions under the DSA do not pre-empt a broader political debate about a balanced and effective regulatory model for the DFA.

3.3 Possible Models for the DFA

For the future DFA, several **regulatory tools could be placed on a spectrum** from least to most interventionist:¹⁶

- (1) **Transparency and user information:** Usage dashboards, spending histories and explanations of engagement features. The evidence summarised in the CERRE report¹⁷ suggests that monitoring alone may have limited behavioural effect, although information can support accountability and research.
- (2) **Mandatory user controls:** Covering activity, spending and notifications, which could allow users to disable or modify specific features. Controls may preserve choice while addressing self-control problems, but their effectiveness depends on visibility, usability, granularity and the friction associated with overriding limits.
- (3) **Protective defaults:** In addition to mandating user controls, regulation could mandate that the default setting for certain engagement features is 'off', so the consumer must actively choose to turn them on. Notifications off at night, autoplay disabled, infinite scroll replaced by stopping points, or time limits activated by default, especially for minors.
- (4) **Conditional restriction or prohibition:** Certain features or combinations of features may be considered unacceptable for particular users, for example variable monetary rewards directed at children or designs that deliberately defeat user-set limits.
- (5) **Process regulation:** Duties to test for foreseeable harms, document design choices, conduct behavioural-risk assessments and demonstrate the effectiveness of mitigations. This approach could improve the evidence base but may impose substantial compliance burdens and create confidentiality concerns.

¹⁵ Cf. Cory L. Andrews, Social-Media Regulation Doesn't Belong in Court, WSJ.com (19 July 2026), <https://www.wsj.com/opinion/social-media-regulation-doesnt-belong-in-court-dd711d19>.

¹⁶ See Busch, Fletcher and Ledger (n. 6) pp. 45-51.

¹⁷ Christoph Busch, Amelia Fletcher, Michèle Ledger, Towards an EU Consumer Law Fit for the Digital Age, CERRE Report (February 2026).

One question to be further explored is **whether the DFA should combine a general principle with a graduated toolbox**, rather than selecting one model for all cases, and whether **compliance should be based on specified outcomes, prescribed features**, or a combination of both.

3.4 At Which Level of the Digital Ecosystem?

Many relevant controls can be implemented either **at service level or at system level**.¹⁸ Operating systems already provide screen-time, notification and parental controls, and gaming platforms offer activity and spending management. Centralised controls may be easier to find and permit limits across multiple services, while service-level controls can be tailored to the specific feature and context.

An ecosystem approach raises competition and governance questions. Requiring operating-system or app-store providers to mediate compliance could strengthen gatekeeper power and sit uneasily with the DMA's objective of contestability, particularly for side-loaded applications. A possible allocation is to place cross-service activity, spending and notification controls at system level, while leaving controls over specific features to the individual service.

A key question is **who should bear which responsibility** – application provider, platform, app store, operating-system provider, device manufacturer, payment provider, parent or user – and whether safe-harbour mechanisms should allow a service to rely on certified system-level controls without making the intermediary responsible for policing the service's substantive compliance.

3.5 Evidence, Standards and Adaptive Governance

A durable framework requires a mechanism for **translating evolving scientific evidence into operational requirements**.¹⁹ static lists of prohibited features are unlikely to remain adequate, while a broad principle without practical guidance may create uncertainty and uneven enforcement.

Possible governance mechanisms include Commission guidelines, harmonised standards, codes of conduct, common risk indicators, independent audits and periodic review. Standardised metrics might include night-time use, repeated reopening, failed attempts to stop, override rates and user-reported regret, although no metric is self-proving: each has limitations and may be gamed.

Access to evidence is a recurring problem. Providers possess the most granular behavioural and experimentation data, while regulators and independent researchers may lack access. The DSA's researcher-access mechanisms offer a partial foundation; the DFA could extend them to providers outside the DSA, subject to safeguards for privacy, trade secrets and security.

¹⁸ See Busch, Fletcher and Ledger (n. 6) p. 42.

¹⁹ See Busch, Fletcher and Ledger (n. 6) p. 47-49.

4. Priorities for further policy development

The discussion points towards a risk-based regulatory approach that combines different regulatory instruments. Effective controls and protective defaults offer important tools, while restrictions may be warranted where foreseeable serious harms cannot be adequately mitigated. Common protective standards should be accompanied by proportionate compliance procedures and evidence-based guidance, with scope for review as technologies and business models change.

Moreover, the DSA, the prospective DFA and the proposed EU KIDS Act should be considered as parts of a coherent framework. Priorities include identifying residual gaps, clarifying responsibilities across service and system levels, and improving access to evidence on both harms and the effectiveness of safeguards.

In this perspective, further policy development should address six clusters of questions:

- (1) **Concept and threshold:** What conduct should be regulated: addictive design, problematic use, material impairment of autonomy, or risk of specified harm? How to formulate a workable threshold without requiring proof of clinical addiction?
- (2) **Risk differentiation:** How should the framework differentiate by feature, service, business model, age, vulnerability and intensity of use? Which combinations justify controls, defaults or prohibition?
- (3) **Evidence and causation:** What evidence is sufficient to establish that design materially contributes to harm? Which indicators should providers monitor, and what data should regulators and researchers be able to access?
- (4) **Allocation of responsibility:** Which controls belong at device, operating-system, app-store, platform or service level? How can system-level solutions be reconciled with competition and interoperability objectives?
- (5) **Regulatory instrument:** Which issues can be addressed through DSA enforcement, and which should be addressed in the DFA, the EU KIDS Act or sector-specific legislation?
- (6) **Institutional safeguards:** How can legal certainty, consistent enforcement and procedural fairness be maintained when rules evolve through enforcement?

About CERRE

Providing high-quality studies and dissemination activities, the Centre on Regulation in Europe (CERRE) is a not-for-profit think tank. It promotes robust and consistent regulation in Europe's network, digital industry, and service sectors. CERRE's members are regulatory authorities and companies operating in these sectors, as well as universities.

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