

ITI0209: User Interfaces

08. Design Systems

Martin Verrev

Spring 2024

Design System is the single source of truth which groups all the elements that will allow the teams to design, realize and develop a product.

in die ire furoris sui. **Non** De excelsis misit ignem in ossibus meis: et exarduit me. **Ep̄** adit velle pedibus meis: conuertit me retro sum. **Posuit** me desolatam: tota die in errore confecta. **Nun** Vigilauit iugum iniquitatum mearum in manu eius: commoluit sunt et imposuit collo meo. **Infirmata** est viscerum mea: dedit me dominus in manu de qua non potero surgere. **Samech** Abstrulit omnes magnificos meos dominus de medio meorum vocauit aduersum me tempus: ut coterer electos meos. **Tocular** calcavit dominus virginum filie iuda. **Am** **Ad** hunc ego plorans et oculus meus deducens aquas: quia longe factus est a me consolator: conuertens animam meam. **Facti** sunt filij mei p̄diti: quoniam inualuit inimicus. **He** **Ep̄** adit syon manus suas: non est qui consolaretur eam. **Man** dauit dominus aduersum iacob: in circuitu eius hostes eius. **Facta** est iherusalem quasi poluita menstruis inter eas. **Sade** **Quis** est dominus: quia os eius ad iracundiam prouocauit. **Audite** obsecro vniuersi populi: et videte dolorem meum. **Virgines** mee et iuvenes mei abiierunt in captiuitatem. **Coph** **Vocaui** amicos meos: et ipsi deciperunt me. **Sacerdotes** mei et senes mei in verbe consumpti sunt: quia questuerunt sibi sibi ut resocillarent animas suas. **Res** **Vide** domine quoniam tabularum: tribularum est venter meus. **Sub** uersum est cor meum in menuecipa: quoniam amaritudine plena sum. **Sforis** **inter** fuit gladius: et domus mors similis est. **Sen** **Audierunt** quia ingenuus ego: et non est qui consolaretur me. **Omnes** inimici mei audierunt malum meum: letati sunt quoniam tu fecisti. **Adduxisti** domine consolatoris: et facti sunt sicut mei. **Tau** **In** ingrediatur omne malum eorum coram te: et deuertentia

ros sicut vindemiauisti me propter omnes iniquitates meas. **Mula** enim genus meum: et cor meum merces. **Alaph** **Quomodo** obrexit caligine in furoribus tuis dominus filiis syon. **Proiecit** de celo in terram iracundiam israel: et non est recordatus scabelli pedum suorum in die furoris sui. **Seth** **Precipitauit** dominus nec peperit omnia speciosa iacob: destruxit in furoribus suis munitiones virginum iuda: et derexit in terram: polluit regnum et principes eius. **Gymel** **Confergit** in ira furoris sui omne cornu israel: auertit retrosum depreca sua a facie inimici: et succendit in iacob quasi ignem flammam deuorans in giro. **Delech** **Scendit** arcum suum quasi inimicus: firmavit depreca sua quasi hostis: et occidit omne quod pulcrum erat visum. **In** **taberna** clis filie syon effudit quasi ignem indignationem suam. **Ne** **factus** est dominus vultus inimicus: precipitauit israel. **Precipitauit** omnia menia eius: dissipauit munitiones eius: et repleuit in filia iuda humiliarum et humiliata. **Vau** **Et** dissipauit quasi ortum tentorium suum: demolitus est tabernaculum suum. **Oblitu** igni tradidit dominus in syon festiuitatem et sabba: et in obprobrium et in indignationem furoris sui regem et sacerdotem. **Sar** **Repulit** dominus altare suum: maledixit sanctificationi sue: tradidit in manus inimici muros ierusalem. **Vocem** dedecit in domo domini: sicut in die solenni. **Yeth** **Cogitauit** dominus dissipare murum filie syon: et tendit funiculum suum et non auertit manum suam a perditione. **Iuxtaque** ante murale: et murus pariter dissipatus est. **Teth** **Dirixit** sunt in terra portem et perdidit: et contemnitur vestes eius: regem eius et principes eius in genibus. **Non** est legem: et propheta eius non inuenietur

visionem a domino. **Joch** **Sederunt** in terra: conticuerunt senes filie syon: conticuerunt sicut capita sua. **Accendi** sunt cilijs: abiierunt in terra capita sua virgines iherusalem. **Caph** **Defecerunt** per lacrimas oculi mei: conturbata sunt viscerum mea. **Effusum** est in terra iecor meum super commitionem filie iuda: cum deficeret paruulus et lactes in plateis oppidi. **Lamech** **Martibus** suis dixerunt ubi est ierusalem et vinum: cum deficerent quasi vulnerati in plateis ciuitatis: cum egalerent animas suas in sinu matris suarum. **Mem** **Cui** comparabo te: vel cui assimilabo te filia iherusalem? **Cui** frequabo te: et consolabor te virgo filia syon? **Magna** enim velut mare conticuit tua. **Quis** medebitur tui? **Nun** **Propheta** tui viderit tibi falsam et multa: nec aperiebatur iniquitatem tuam: ut te ad penitentiam prouocaret. **Viderit** autem tibi assumptiones falsas et reditiones. **Samech** **Plausuerunt** super te manibus omnes ceteri: untes per visum: sibilauerunt et mouerunt capita sua super filiam iherusalem: hec enim est verba dices per te: gaudium vniuersi terre. **Am** **Appuerunt** super te os suum omnes inimici tui: sibilauerunt et fremuerunt dentibus suis: et dixerunt deuorabimur. **In** **Ista** est dies que respicietur: inuenimus: vidimus. **He** **fecit** deus que cogitauerunt: compleuit sequentem suum quem precepit a diebus antiquis. **Destruxit** et non peperit: letificauit super te inimicum: et egaltauit cornu hostium tuorum. **Sade** **Clamauit** cor eorum ad dominum: super inueros filie syon. **Debit** quasi torrem lacrimas per diem et noctem: non des requirit tibi: neque taceat pupilla oculi tui. **Coph** **Consurge**: lauda in nocte in principio vigiliarum: effunde sicut aquam cor tuum ante conspectum domini.

100
La. Hieremia
Ira ad eum manus tuas per animam paruulorum tuorum: qui fame preerunt in capite omnium compicorum. **Res** **Vide** domine et confidera: quem vindemiaueris ita. **Ergo** ne comedent mulieres fructum suum: paruulos ad mensuram palme? **Si** **oc** ciditur in laudario domini: sacerdos et propheta? **Sen** **Facuerunt** in terra foris puer et senes: virgines mee et iuvenes mei ceciderunt in gladio: interfecisti in die furoris tui: percussisti: nec misertus es. **Tau** **Vocaui** quasi die solennem qui terecerunt me de circuitu: et non fuit in die furoris domini qui effugeret et reliqueretur. **Quos** eduxi et egredior: inuenit me? **Consumpsit** eos. **Alaph** **Ego** vir videns paupertatem meam: in iurga indignationis eius. **Alaph** **Me** minauit et adduxit in tenebris: et non est lux. **Alaph** **Tantum** in me uertit: et conuertit manum suam contra me tota die. **Seth** **Detulit** me pelle mea: et carne mea: contemnit ossa mea. **Seth** **Edificauit** in giro meo: et circumdedit me felle et labore. **Beth** **In** tenebrosis collocauit me: quasi motuos sempiternos. **Gymel** **Circum** edificauit aduersum me ut non egrediar: aggrauauit compedem meam. **Gymel** **Heret** et clamauero: et cum rogauero: egredietur orationem meam. **Gymel** **Co** duxit vias meas lapidibus quadris: semitas meas subuertit. **Delech** **Uelut** insidias factus est michi: leo in abscondito. **Delech** **Semitas** meas subuertit: contemnit me: posuit me desolatam. **Delech** **Tendit** arcum suum: et posuit me quasi signum ad sagittam. **He** **Misit** in renibus meis filias pharetrae sue. **He** **Factus** sum in desolatum omnium populo meo: tantum eorum tota die. **He** **Repleuit** me amaritudinibus: imbruit me abstinthio. **Vau** **Et** fecit ad numerum dentes

A Pattern Language

Towns · Buildings · Construction



Christopher Alexander
Sara Ishikawa · Murray Silverstein
WITH
Max Jacobson · Ingrid Fiksdahl-King
Shlomo Angel

Josef Müller-Brockmann

Grid systems

in graphic design

A visual communication manual
for graphic designers,
typographers and
three dimensional designers

Raster systeme

für die
visuelle Gestaltung

Ein Handbuch für
Grafiker, Typografen und
Ausstellungsgestalter

Verlag Gerd Hatje
Stuttgart

Verlag Arthur Niggli
CH-9410 Heiden

NASA Graphics Standards Manual

Richard Danne and Bruce Blackburn

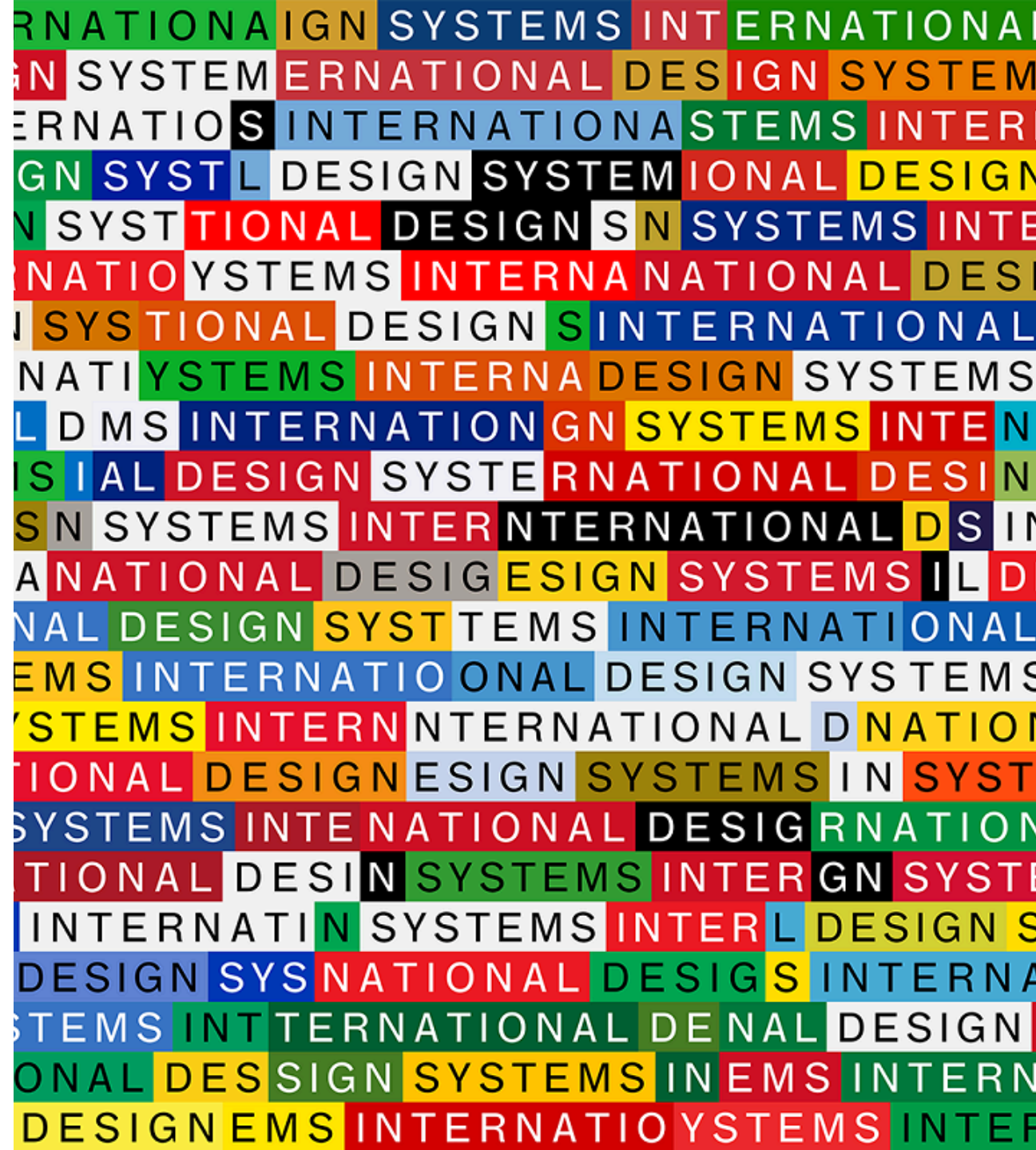
1976

https://www.nasa.gov/wp-content/uploads/2015/01/nasa_graphics_manual_nhb_1430-2_jan_1976.pdf



More

- 1980s: Software design patterns
- 1990s: Jennifer Tidwell.
"Designing Interfaces"
- 2000s: Yahoo! Design Pattern
Library (2006)



The Structure of a Design System

Building Blocks

Color Palettes

Typographic

Grid Definitions

Icons &

Pattern Library

Templates

Modules

Components

Elements

Rules

Design

Implementation Guidelines

Editorial Guidelines

Styleguide

Definitions

Design System – A complete set of design standards, documentation, and principles along with the toolkit (UI patterns and code components) to achieve those standards.

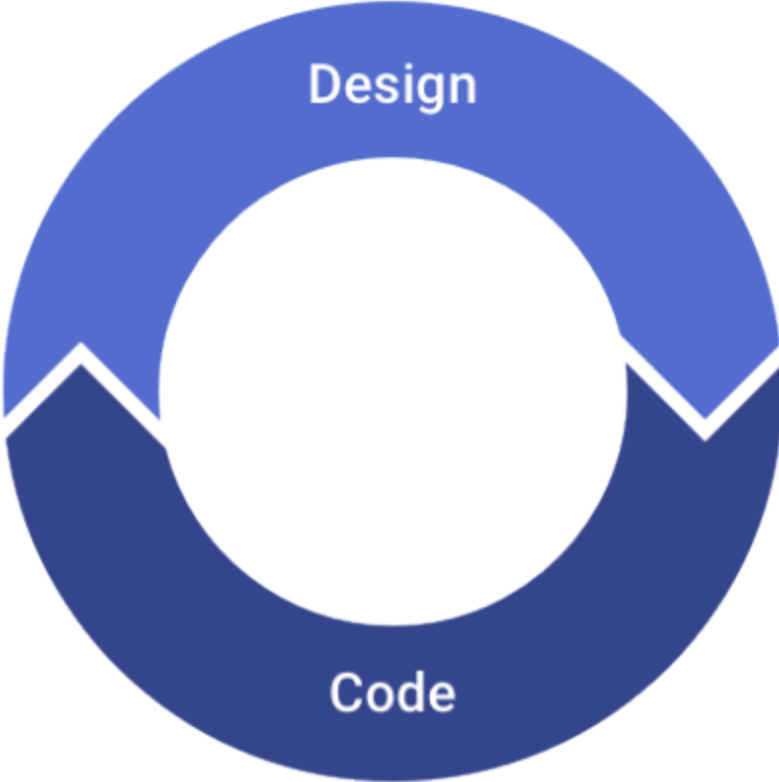
Pattern Library – A subclass in the design system, this is the set of design patterns for use across a company.

Style guide – Another subclass in the design system, this static documentation describes the design system itself: how products should look and feel, use cases for UI patterns, correct typographic scales, etc.

Your Style Guide

You will want to describe for things like:

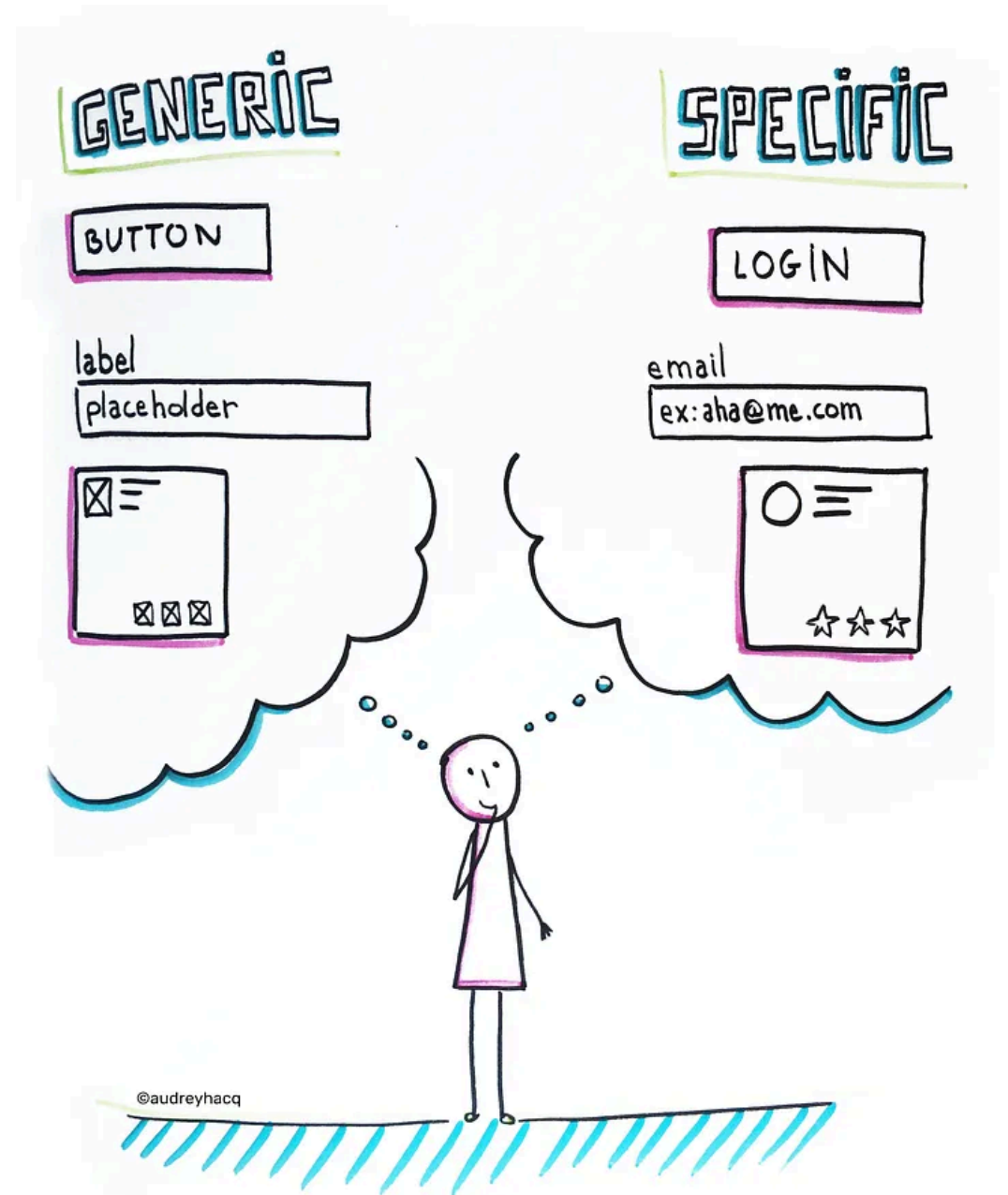
- Typography
- Colors
- Margins and paddings
- Box and image styles
- Border styles
- Opacity
- Lists and tables



Think Generic

When we design with atomic, we always have to keep in mind that the same component is going to be declined and reused in very different contexts.

We are thus going to make a real distinction between the structure of an element and its contents.



Define Choices in Advance

Instead of hand-picking values from a limitless pool any time you need to make a decision - start with a smaller set of options.



Hierarchy Matters

Visual hierarchy refers to how important the elements in an interface appear in relation to one another - it is the most effective tool you have for making something feel *"designed"*.

Separate visual hierarchy from document hierarchy

Web browsers assign progressively smaller font sizes to heading elements, so an `h1` is large, and an `h6` small. It can encourage bad decisions in application UIs.

Don't let the element you're using influence how you style it — pick elements for semantic purposes and style them however you need for best visual hierarchy.

Semantics is Secondary

When there are multiple actions a user can take on a page, it's easy to fall into the trap of designing those actions based purely on semantics.

- **Primary actions** should be obvious. Solid, high contrast background colors work great.
- **Secondary actions** should be clear but not prominent. Outline styles or lower contrast background colors are great options.
- **Tertiary actions** should be discoverable but unobtrusive. Styling these actions like links is usually the best approach.

PRIMARY

SECONDARY

TERTIARY

Save Draft

Save Draft

[Save Draft](#)

Sign up

Sign up

Sign up

Learn More

Learn More

Learn More

PRIMARY

SECONDARY

TERTIARY

Unpublish

Unpublish

Unpublish

Sans Serif

Aa

Montserrat

Serif

Aa

Playfair Display

Typography

- If you want an elegant or classic look, you might want to incorporate a serif typeface in your design
- For a playful look, you could use a rounded sans serif:
- If you're going for a plainer look, or want to rely on other elements to provide the personality, your safest bet is a fairly neutral sans-serif — think something like Helvetica.
- If you really don't trust your own taste, one great option is to rely on the system font stack: `-apple-system, Segoe UI, Roboto, Noto Sans, Ubuntu, Cantarell, Helvetica Neue;`

Text Scales

Choosing font sizes without a system is a bad idea for two reasons:

1. It leads to annoying inconsistencies in your designs.
2. It slows down your workflow.

Hand-crafted scales

For interface design, a good approach is to simply pick values by hand. You don't have to worry about subpixel rounding errors this way, and you have total control over which sizes exist instead of outsourcing that job to some mathematical formula.

Choosing a Font

- **Ignore typefaces with less than five weights.** While not always true, typefaces that come in a lot of different weights tend to be crafted with more care and attention to detail than typefaces with fewer weights.
- **Optimize for legibility.** When someone designs a font family, they are usually designing it for a specific purpose. Fonts meant for headlines usually have tighter letter-spacing and shorter lowercase letters, while fonts meant for smaller sizes have wider letter-spacing and taller lowercase letters.
- **Choose Popular fonts.** If a font is popular, it's probably a good font. Most font directories will let you sort by popularity, so this can be a great way to limit your choices. Inspect some of your favorite sites and see what typefaces they are using.

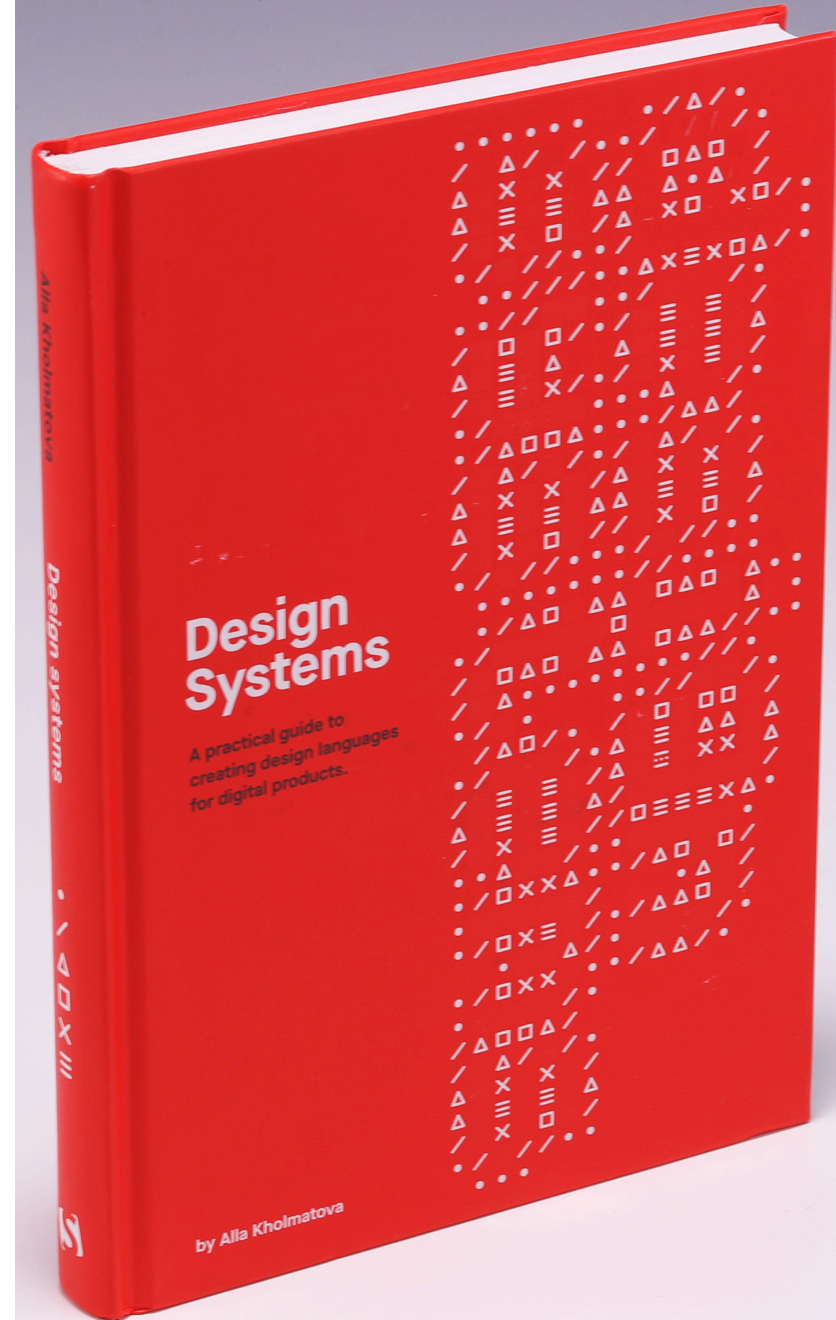
Examples of Design Systems

- Google Material Design System. <https://material.io/>
- Apple Human Interface Guidelines. <https://developer.apple.com/design/>
- Shopify Polaris. <https://polaris.shopify.com/>
- Uber Base Web. <https://baseweb.design/>
- Taltech. <https://taltech.ee/brand>
- Tartu Ülikool. <https://ut-stiiliraamat.voog.com/>
- UK Government Design System. <https://design-system.service.gov.uk/>

See also: Design Systems in Finland. <https://github.com/viljamis/design-systems-in-finland>

Useful Ebooks

- Designing Interfaces. *Jennifer Tidwell*. 2010. <https://bedford-computing.co.uk/learning/wp-content/uploads/2016/07/Livro-Designing-Interfaces-2nd-Edition-2010.pdf>
- Design Systems. *Alla Kholmatova*. 2017. <https://www.smashingmagazine.com/provide/eBooks/design-systems.pdf>
- Programming Design Systems. Rune Madsen. 2020. <https://programmingdesignsystems.com/>



Links

- Everything you need to know about Design Systems.
<https://uxdesign.cc/everything-you-need-to-know-about-design-systems-54b109851969#>
- A Brief Guide to Creating a UI Style Guide. <https://xd.adobe.com/ideas/process/ui-design/ui-style-guide-template/>
- 10 great design systems and how to learn (and steal) from them
. <https://uxdesign.cc/10-great-design-systems-and-how-to-learn-and-steal-from-them-4b9c6f168fa6>

Fonts In Use. <https://fontsinuse.com/>

Thank you!