

ITI0209: User Interfaces

07. Design Systems

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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.

Design System is a set of standards to manage design at scale by reducing redundancy while creating a shared language and visual consistency across different pages and channels.

in die ire furoris sui. **Mem** De recesso
misit ignem in ossibus meis: et exarduit
me. **Ep** adit recte pedibus meis: con-
uertit me retrorsum. Posuit me deso-
latam: tota die merore confecta. **Rum**
Vigilauit iugum iniquitatum mearum in
manu eius: conuoluit sunt et imposi-
te collo meo. Infirmata est uirginitas mea:
dedit me dominus in manu de qua non po-
tero surgere. **Samech** Abstrulit omnes
magnificos meos dominus de medio mei:
uocauit aduersum me tempus: ut con-
tereret electos meos. Torcular calcauit
dominus uirgini filie iuda. **Ain** Idcirco e-
go plorans et oculus meus deducens
aqua: quia longe factus est a me con-
solator: conuertens animam meam. Facti
sunt filii mei perditioni: quoniam inualuit
inimicus meus. **Fe** Ep adit syon manus
suas: non est qui consoletur eam. Man-
dauit dominus aduersum iacob: in circui-
tu eius hostes eius. Facta est iherusalem pol-
luta mensuris inter eas. **Sade** Iustus
est dominus: quia os eius ad iracundiam
prouocauit. Audite obsecro uniuersi
populi: et uidete dolorem meum. Virgines
mee et iuuenes mei abierunt in captiui-
tatem. **Coph** Vocauit amicos meos: et
ipsi depererunt me. Sacerdotes mei et
senes mei in uerbo consumpti sunt: quia
quesierunt cibum sibi ut resocillarent ani-
mas suas. **Res** Uide domine quoniam
tribulor: tribulatus est uenter meus. Sub-
uersum est cor meum in inuenientia: quoniam
amaritudine plena sum. Foris inter-
fecit gladius: et domus mors similis est.
Sen Audierunt quia ingenuus ego: et
non est qui consoletur me. Omnes ini-
mici mei audierunt malum meum: locati
sunt quoniam tu fecisti. Adduxisti diem conso-
lationis: et factus sis spes mei. **Tau** Ingre-
ditur omne malum meum cor meum: et deuindantia

ros sicut uindemiam meam propter omnes
iniquitates meas. Multi enim genui-
tus mei: et cor meum merces. **Aleph**
Quomodo obrexit caligine in furo-
re suo dominus filiam syon. Proiecit
de celo in terram inditam israel: et non
est recordatus scabelli pedum suorum in die
furoris sui. **Seth** Precipitauit dominus nec
pepercit omnia speciosa iacob: destruxit
in furore suo munitiones uirginis
iuda: et dericet in terram: polluit regnum
et principes eius. **Gymel** Conflagrat in
ira furoris sui omne cornu israel: a-
uertit retrorsum deperatam suam a facie inimi-
ci: et succendit in iacob ignem flammae
deuorantis in giro. **Deleth** Excendit ar-
cum suum quasi inimicus: firmavit de-
peratam suam quasi hostis: et occidit o-
mnem quod pulcrum erat uisum. In taber-
naculo filie syon effudit ignem indi-
gnationis suae. **Ne** Factus est dominus uelut ini-
micus: precipitauit israel. Precipita-
uit omnia mensa eius: dissipauit mu-
nitiones eius: et repleuit in filia iuda
humiliatum et humiliatam. **Uau** Et
dissipauit quasi ortum terrorum suum:
demolitus est tabernaculum suum. Obli-
uioni tradidit dominus in syon festiuitatem
et sabbatum: et in obprobrium et in indi-
gnationem furoris sui regem et sacerdotes.
Zay Repulit dominus altare suum: maledi-
xit sanctificationi suae: tradidit in ma-
nus inimici muros ierusalem eius. Vocem
dederunt in domo domini: sicut in die so-
lenni. **Yeth** Cogitauit dominus dissipare
murus filie syon: retendit funiculum suum
et non auerit manum suam a perditione.
Luxitque ante muralem: et murus pariter dis-
sipatus est. **Teth** Defixae sunt in terra por-
te eius: perdidit et contruit uertes eius: re-
gem eius et principes eius in genibus.
Non est leges: et propheta eius non inueniuntur

uisione a domino. **Jeth** Deperit in terra:
contuerunt fetes filie syon: conspexerunt
cinece capita sua. Accendi sunt cilicija-
abiecerunt in terra capita sua uirgines
iherusalem. **Caph** Depererunt per lacrimas
oculi mei: conturbata sunt viscera mea.
Effusum est in terra iecor meum super con-
tritionem filie populi mei: cum deficeret paru-
lus et lactes in plateis oppidi. **Lamech**
Strabus suis dixerunt ubi est triticum et
uinum: cum deficerent quasi uulnera in
plateis ciuitatis: cum egalarent animas
suas in sinu maris suarum. **Mem** Cui
comparabo te: uel cui assimilabo te fi-
lia iherusalem? Cui aequabo te: et con-
solabor te uirgo filia syon? Magna
enim uelut mare contritio tua. Quis
medebitur tui? **Rum** Prophete tui ui-
derunt tibi falsa et stulta: nec aperiebant
iniquitatem tuam: ut te ad penitentiam
prouocaret. Viderunt autem tibi assump-
tiones falsas et risiones. **Samech**
Plauserunt super te manibus omnes trans-
euntes per uiam: sibilauerunt et mouerunt ca-
pita sua super filiam iherusalem: haec enim est uerbo
dixit pedes decoris: gaudium uniuerse ter-
re. **Ain** Aperuerunt super te os suum omnes
inimici tui: sibilauerunt et fremuerunt den-
tibus suis: et dixerunt deuorabimur. **Ain**
Ista est dies que respiciet abimur: inue-
nimus uidimus. **Fe** Fecit deus que
cogitauit: compleuit sermone suum quem
preperat a diebus antiquis. Destruxit et
non pepercit: laetificauit super te inimicum:
et exaltauit cornu hostium tuorum. **Sade**
Clamauit cor eorum ad dominum: super mu-
ros filie syon. Deduc quasi torrentium
lacrimas per diem et noctem: non des-
requie tibi: neque taceat pupilla oculi
tui. **Coph** Consurge: lauda in nocte
in principio uigiliarum: effunde sicut
aqua cor tuum ante conspectum domini.

Teua ad eum manus tuas per animam
parulorum tuorum: qui fame perierunt in ca-
pite omnium compitorum. **Res** Uide domine
et considera: quem uindemiaueris ita.
Ergo ne comedet mulieres fructum suum:
parulos ad mensuram palme? Si oc-
cubatur in laudario domini: sacerdos et
propheta? **Sen** Haeruerunt in terra foris
puer et senex: uirgines mee et iuuenes
mei ceciderunt in gladio: interfecisti in die
furoris tui: percussisti: nec misertus es.
Tau Vocasti quasi diem solemnem
qui tereceret me de circui: et non fuit
in die furoris domini qui effugeret et reli-
queretur. Quos educaui et egerunt: in-
imicus meus consumpsit eos. **Aleph**
Ego uir uidens paupertatem meam: in
uirga indignationis eius. **Aleph**
Nec minauit et adduxit in tenebris: et
non in luce. **Aleph** Tancum in me uenit: et
conuertit manum suam tota die. **Seth**
Detulit pellis meam et carnem meam:
contuit ossa mea. **Seth** Edificauit
in giro meo: et circumdedit me felle et la-
bore. **Seth** In tenebris collocauit
me: sicut mortuos sempiternos. **Gymel**
Circumdificauit aduersum me ut non
egrediar: aggrauauit compedem meam.
Gymel Sed et clamauero: et cum rogauero:
excluset orationem meam. **Gymel** Co-
dulsit uias meas lapidibus quadris:
semitas meas subuertit. **Deleth** Velus
insidiarum factus est michi: leo in abscondito.
Deleth Seruitas meas subuertit: con-
fecit me: posuit me desolatam. **Deleth**
Excendit arcum suum: et posuit me quasi
signum ad sagittam. **He** Misit in retibus
meis filias pharisee sue. **He** Factus
sum in decus omnium populo meo: can-
ticum eorum tota die. **He** Repleuit me a-
maritudinibus: inebriauit me absin-
dipio. **Uau** Et fecit ad numerum denos

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



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

Why Use a Design System?

- Design (and development) work can be created and replicated quickly and at scale.
- It alleviates strain on design resources to focus on larger, more complex problems.
- It creates a unified language within and between cross-functional teams.
- It creates visual consistency across products, channels, and departments.
- It can serve as an educational tool and reference for junior-level designers and content contributors.

If you don't have a Design System in place, creating **consistent** user interfaces is very hard, and focusing in-depth on **details**, will lose **time**, **effort**, and of course the **consistency** of your user interfaces.

<https://github.com/alamenai/ydkui>

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.

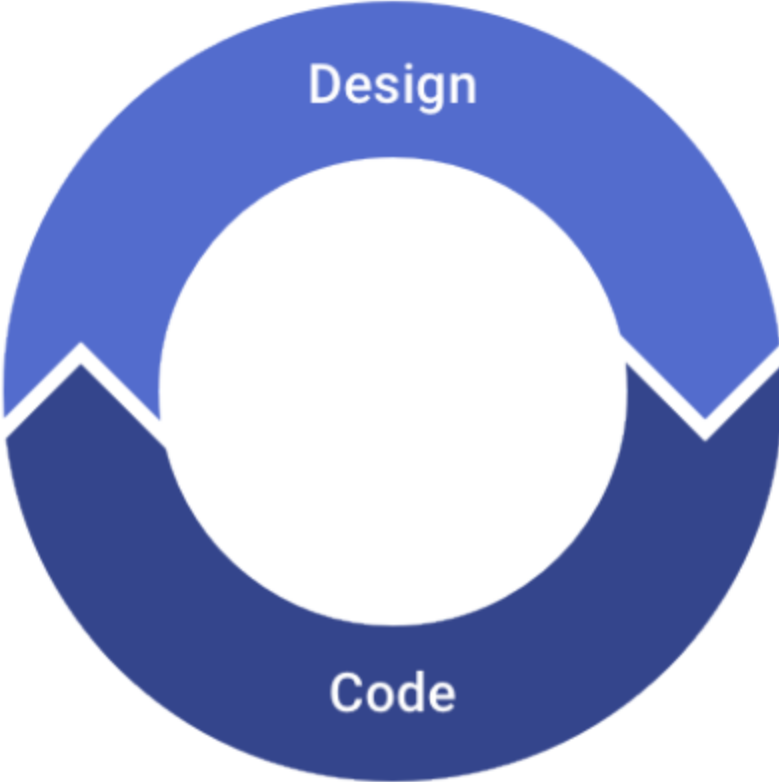
Style guide – Another subclass in the design system, this static documentation describes the design system itself: how products should look and feel, use cases for UI patterns, correct typographic scales, etc.

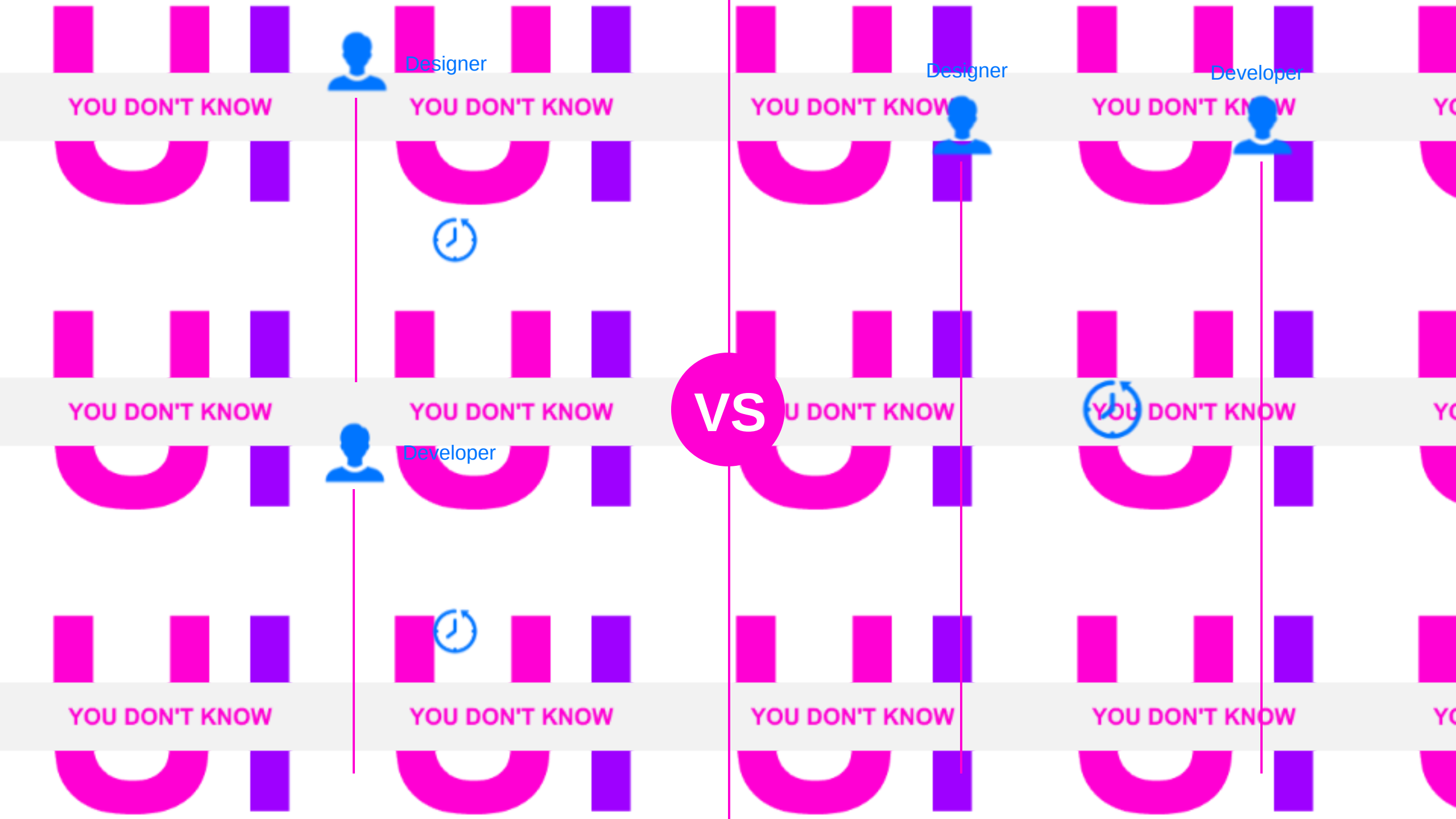
Your Style Guide

You will want to describe for things like:

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

... etc





Designer

YOU DON'T KNOW

YOU DON'T KNOW



Designer

Developer

YOU DON'T KNOW

YOU DON'T KNOW

YOU DON'T KNOW



YOU DON'T KNOW

YOU DON'T KNOW

VS

YOU DON'T KNOW



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Developer



YOU DON'T KNOW

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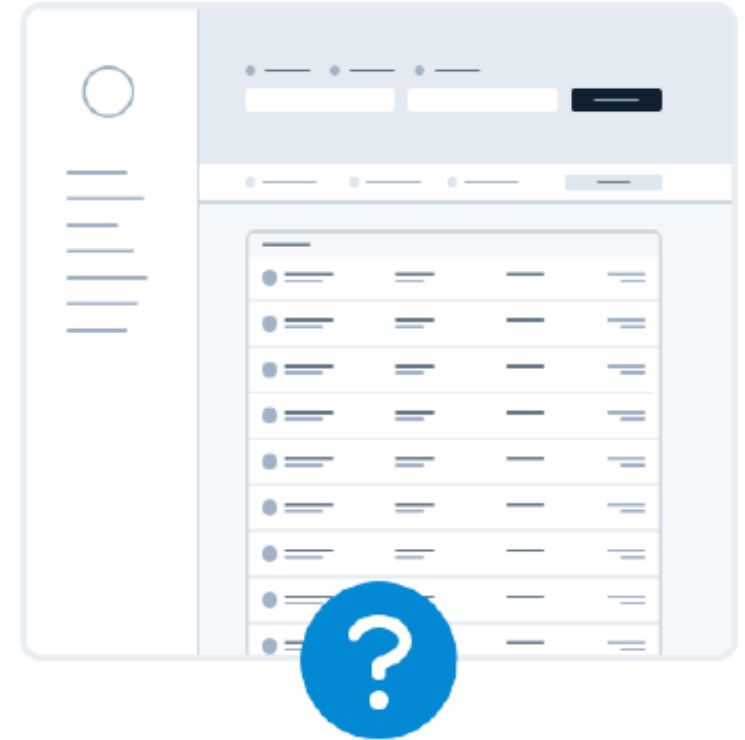
YOU DON'T KNOW

Start with a feature, not a layout

When you start the design for a new app idea, what do you design first? If it's the navigation bar at the top of the page, you're making a mistake.

The easiest way to get stuck when working on a new design is to start by trying to “design the app.” When most people think about “designing the app”, they're thinking about the *shell*.

Instead of starting with the *shell*, start with a piece of actual functionality.



Details Come Later

In the earliest stages of designing a new feature, it's important that you don't get hung up making low-level decisions about things like typefaces, shadows, icons, etc.

That stuff will all matter eventually, but it doesn't matter right now.

Resist the temptation to introduce color right away. By designing in grayscale, you're forced to use spacing, contrast, and size to do all the heavy lifting.



Choose the amount of storage
that's right for you.

Bill yearly Bill monthly

Full name

Email

Password

Card number

MM/YY

CVC

CREATE ACCOUNT

ESSENTIAL



200 GB of storage

\$10 / mo

PRO

1 TB of storage

\$20 / mo

PREMIUM

2 TB of storage

\$40 / mo

Choose the amount of storage
that's right for you.

Bill yearly Bill monthly

Full name

Email

Password

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MM/YY CVC

CREATE ACCOUNT

ESSENTIAL



200 GB of storage

\$10 / mo

PRO

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PREMIUM

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\$40 / mo

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.

Be a pessimist

Do not imply functionality in your designs that you are not ready to build.

When you're designing a new feature, **expect it to be hard to build.**

Designing the smallest useful version you can ship reduces that risk considerably.

If part of a feature is a “nice-to-have”, **design it later.** Build the simple version first, and you'll always have something to fall back on.

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

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

- Why you should think in a feature, not a layout when you create UI?
<https://dev.to/menaiala/think-a-feature-not-a-layout-32ke>
- 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>

Thank you!