Google Cloud

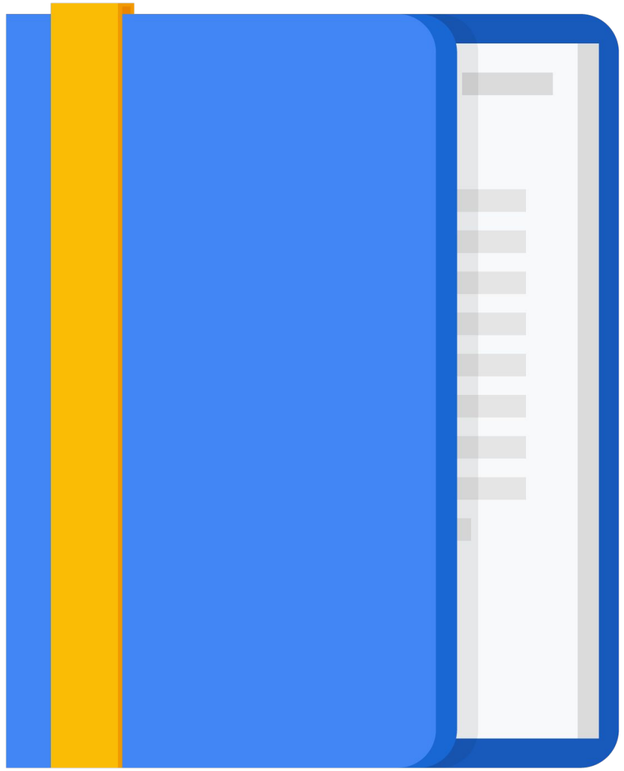
Defining Services

Learning objectives

- Describe users in terms of roles and personas.
- Write qualitative requirements with user stories.
- Write quantitative requirements using key performance indicators (KPIs).
- Use SMART criteria to evaluate your service requirements.
- Determine appropriate SLOs and SLIs for your services.

Agenda

- **Requirements, Analysis, and Design**
- Design Activity #2
- SLOs, SLIs, and SLAs
- Design Activity #3



Qualitative requirements define systems from the user's point of view

Who	Who are the users? Who are the developers? Who are the stakeholders?
What	What does the system do? What are the main features?
Why	Why is the system needed?
When	When do the users need and/or want the solution? When can the developers be done?
How	How will the system work? How many users will there be? How much data will there be?

Roles represent the goal of a user at some point

Roles are not people or job titles	Roles should describe a users objective	Examples of Roles
● People can play multiple roles ● A single role can be played by multiple people	● What does the user want to do? ● “User” is not a good role (*everyone is a user*)	● Shopper ● Account holder ● Customer ● Administrator ● Manager

Personas describe a typical person who plays a role

- In a real-world application, go find your users and talk to them.
- Personas tell a story of who they are.
- Personas are *not* a list of job functions.
- For each role, there could be many personas.

Example persona:

Jocelyn is a busy working mom who wants to access MegaCorp Bank to check her account balances and make sure that there are enough funds to pay for her kids' music and sport lessons. She also uses the website to automate payment of bills and view her credit account balances. Jocelyn wants to save time and money, and she wants a credit card that gives her cash back.

User stories describe a feature from the user's point of view

- Give each story a title that describes its purpose.
- Write a short, one sentence description.
- Specify the user role, what they want to do, and why.
- Use the template: As a [role], I want to..., so that I can...

Example user story:

Balance Inquiry

***As an** account holder, **I want to** check my available balance at any time of day **so** I am sure not to overdraw my account.*

Activity 2: Analyzing your case study

Refer to your Design and Process Workbook.

- Refine the roles you listed in Activity 1.
- Write personas for each role.
- Write user stories for the main features of your case study.

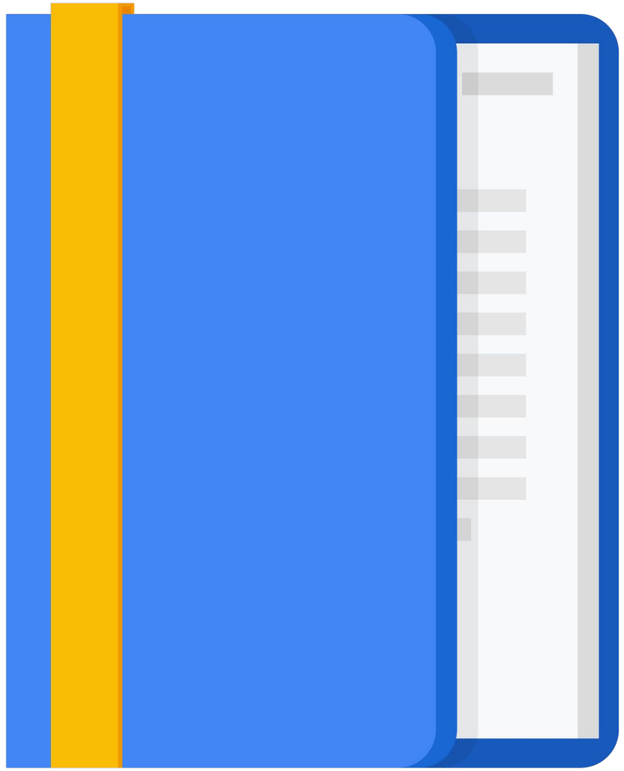
Agenda

Requirements, Analysis, and Design

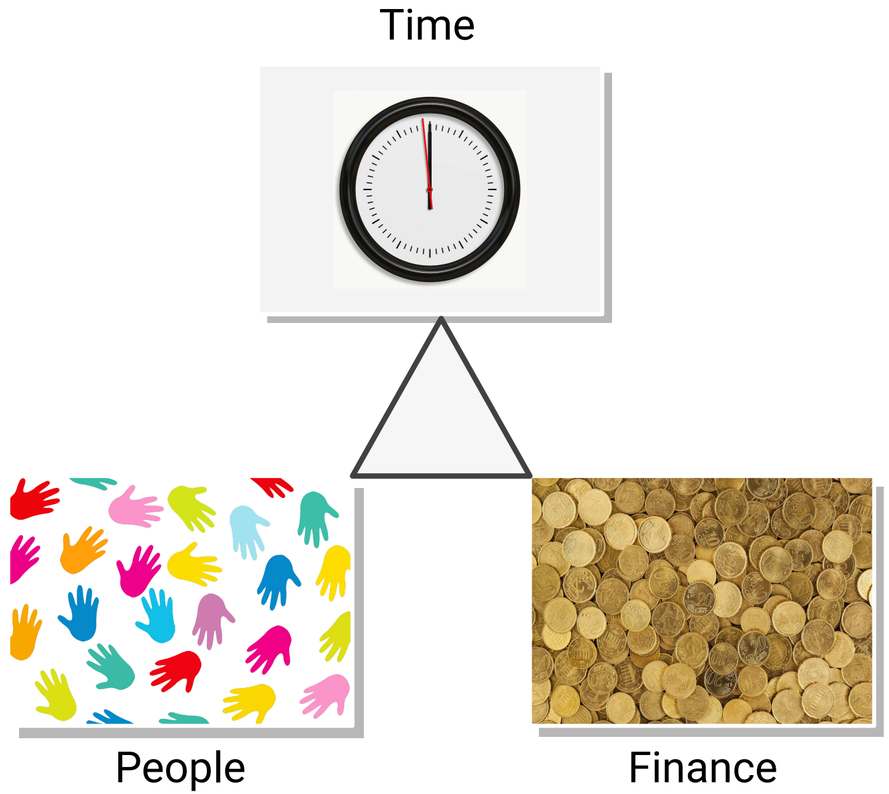
Design Activity #2

SLOs, SLIs, and SLAs

Design Activity #3



Quantitative requirements are things that are measurable



Given the constraints:

- Time
- Finance
- People

What can be achieved:

- How many users are there?
- How much data is there?
- What are the rewards and risks?
- Which features can be launched?

Key performance indicators (KPIs) are metrics that can be used to measure success

In business, common KPIs include:

- Return on investment (ROI)
- Earnings before interest and taxes (EBIT)
- Employee turnover
- Customer churn

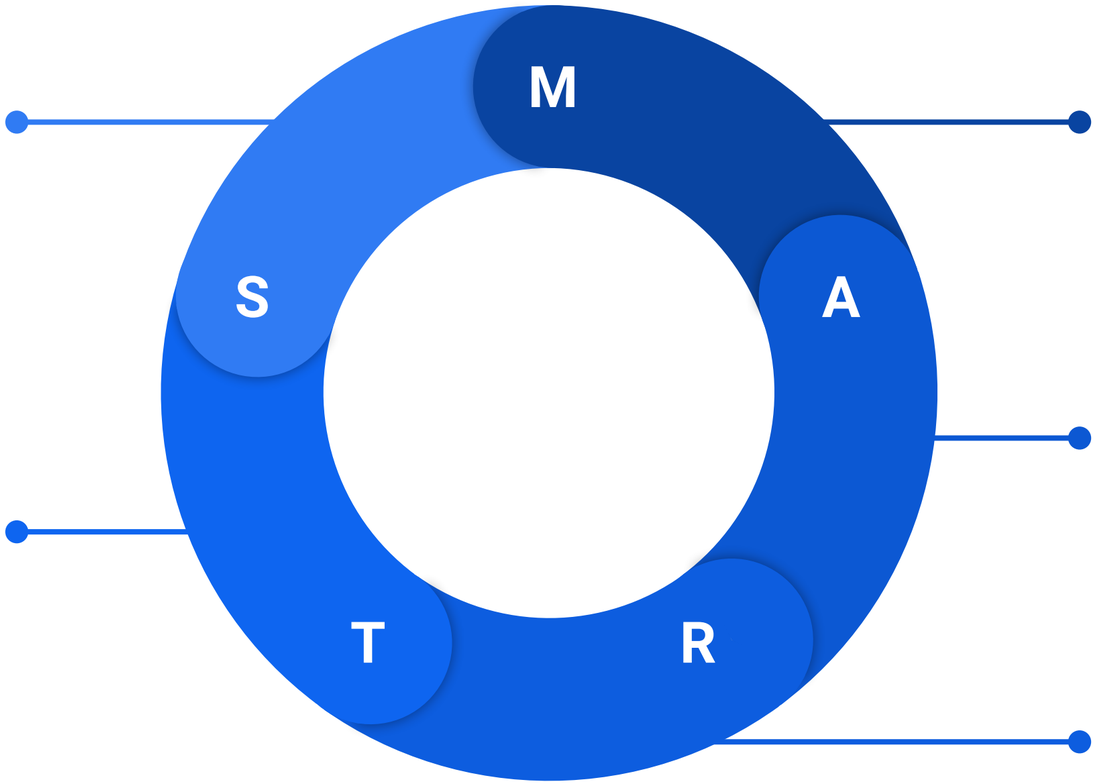
In software, common KPIs include:

- Page views
- User registrations
- Clickthroughs
- Checkouts

For KPIs to be effective, they must be SMART

Specific
"User Friendly" is not as specific as "Section 508 Accessible."

Time-bound
99% available: Per year? Per month? Per day? If we don't know, how can we measure?



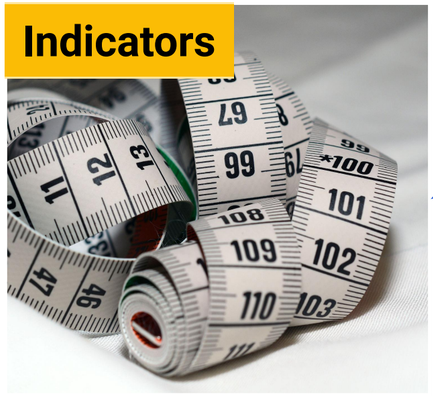
Measurable
You have to find an objective way to test whether you're meeting your KPIs.

Achievable
"100% Availability" might sound good, but it's not really possible.

Relevant
Does it really matter to the user? Will it help achieve application goals?

Quantitative requirements can be expressed in terms of SLIs, SLOs, and SLAs

Indicators



An SLI is a measurable attribute of a service. A KPI.

E.g., Availability

Objectives

The SLO is the number or the goal you want to achieve for a given SLI for a given duration.

Do you want 95%, 99%, or 99.99% availability?

Agreements

An SLA is a binding contract providing the customer compensation if the service doesn't meet specific expectations.

The SLA is a more restrictive version of the SLO.

SLIs must be time-bound and measurable

Fast response time

HTTP GET requests respond within 400 ms aggregated per minute

Highly available

Percentage of successful requests over all requests aggregated per minute

SLOs must be achievable and relevant

SLI	SLO	
HTTP POST photo uploads complete within 100ms aggregated per minute	**99%**	✖ If our users are using mobile phones, maybe this is overkill.
	80%	✔ This might be good enough.
Available as measured with an uptime check every 10 seconds aggregated per minute	**100%**	✖ Sounds good, but not practical.
	99.999%	✖ Possible, but maybe too expensive.
	99%	✔ Maybe good enough and easier and more cost-effective.

Tips for determining SLOs

- The goal isn't to make SLOs as high as possible; the goal is to make them as low as you can get away with while still making users happy. That's why it's important to understand your users.
- The higher you set the SLO, the higher the cost in compute resources (redundancy) and operations effort (people time).
- Applications should not significantly outperform their SLOs, because users come to expect the level of reliability you usually give them.

An SLA is a business contract between the provider and the customer

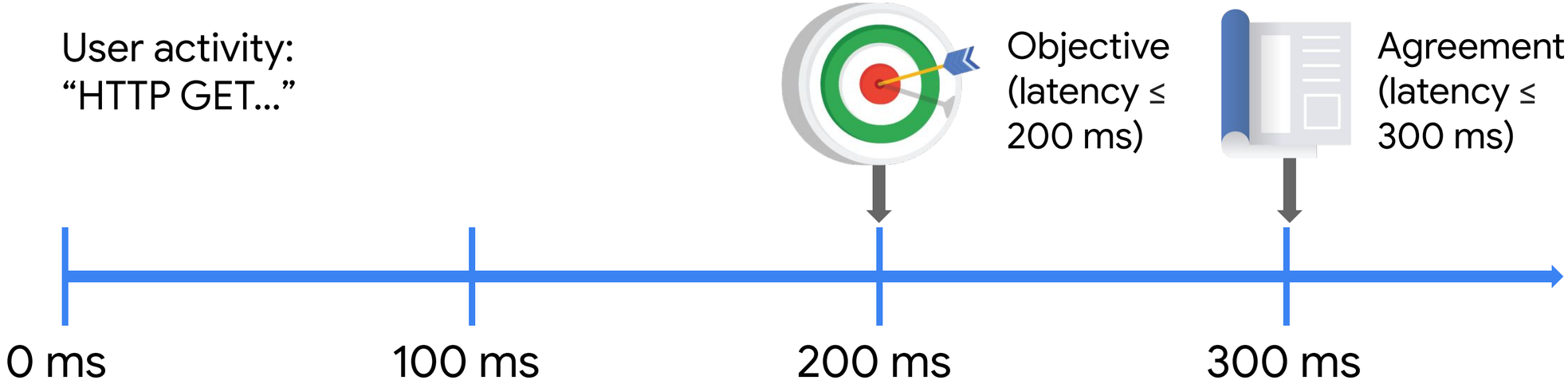
The SLA stipulates that:

- A penalty will apply to the provider if the service does not maintain certain availability and/or performance thresholds.
- If the SLA is broken, the customer will receive compensation from the provider.

Not all services have an SLA, but all services should have an SLO.

Your SLO thresholds should be stricter than your SLA.

Example: SLI, SLO, and SLA



End-to-end latency of the successful HTTP responses (HTTP-200) (averaged over 1 minute)

- SLI: The latency of successful HTTP responses (HTTP-200).
- SLO: The latency of 99% of the responses must be ≤ 200 ms.
- SLA: The user is compensated if 99th percentile latency exceeds 300 ms.

Activity 3: Defining SLIs and SLOs

Refer to your Design and Process Workbook.

- Write SLIs and SLOs for your case study features.

Quiz

Describe the differences between Users, Roles, and Personas.

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A user is any person (or system) that happens to be using an application.

Roles represent specific goals users have at any moment in time. A single user can play many roles, and roles can be played by many users.

Personas are descriptions of typical users who are playing roles. A role can have many personas.

Quiz

Which best describes a user story?

A. It is a requirement of the system you are developing.

B. It is a short description of a feature written from the user's point of view.

C. It is a short description of a typical person using the system.

D. It is a narrative that describes the sequence of steps a typical user would perform to accomplish some task or goal when using the system.

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A. Page views per hour

B. User signups per month

C. Clicks per session

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Review

Defining Services

More resources

Site Reliability Engineering

https://landing.google.com/sre

SRE Books

https://landing.google.com/sre/books/


Google Cloud