

OFDMA and ... and Surface flinger

Friday, 24 March 2023 3:43 PM

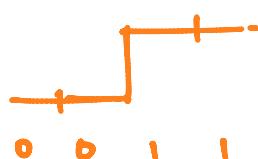
OFDMA → LTE (high speeds) + Hz (high)

$F \propto$ bitrate (bandwidth) → Shannon Hartley's ($\frac{SNR}{CNR}$) $\frac{2}{dB}$

RMS (electronics) → Root Mean Square

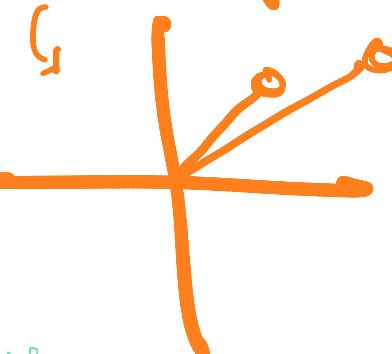
$$SNR \left(\frac{V_s}{V_n} \right)^{RMS}$$

Vital part → Fourier transforms.



⇒ Constellation Diagram

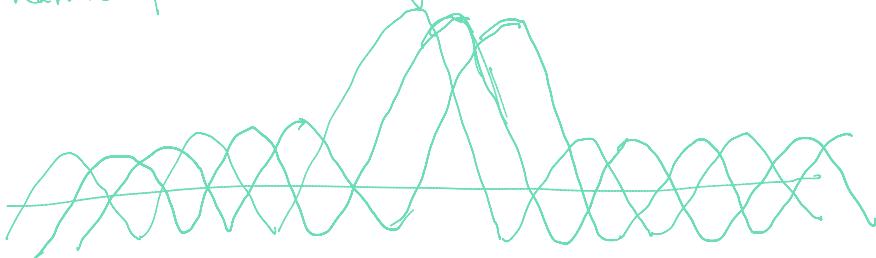
QAM / QPSK



QAM 2 requires more power, but more resistance to noise.

Sinc wave:

Peak to power ratio is high.



Sent in such a way that wave's peak coincides with zero of another.

MIMO

→ This is why LTE has higher bandwidth.

Time Domain & Frequency Domain:

Time vs amplitude

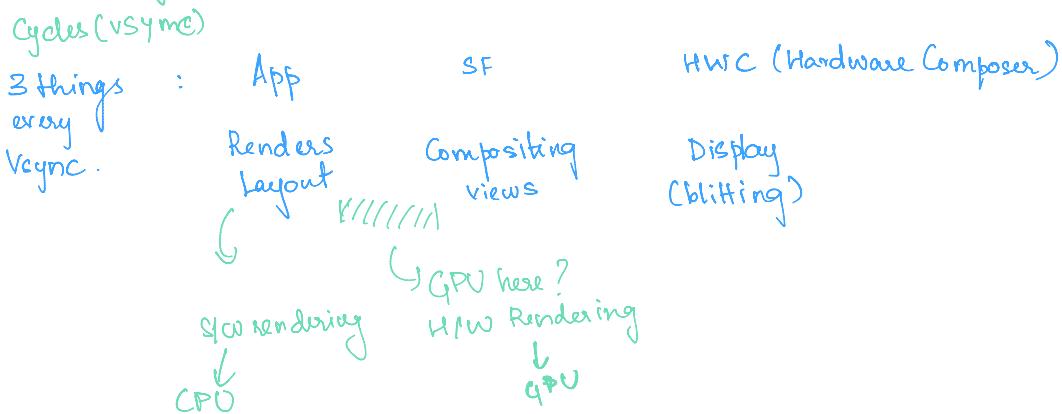
Frequency vs Amplitude.

Sampling rate is fixed for Fourier transform from time → frequency domain.

Sampling rate is fixed for Fourier Transform domain.

But when bandwidth & frequency ↑, wavelength decreases.
5G almost every building is setup with antenna in place of BS.

Surface Flinger:



App → SF → HWC → Display.

OpenGL → multiplet form

Vulkan → crossplat form, low level API.

UI thread

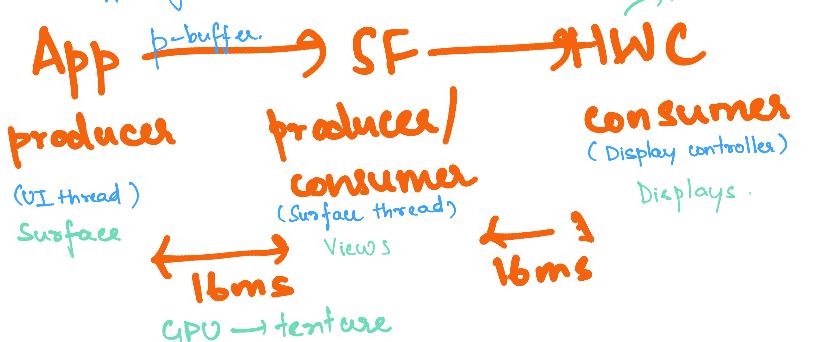
Every window has EGL Content → visible to all 3 layers.

Only UI thread can update UI.

p-buffer - not visible to user - used for offscreen buffering.

If all 3 act on buffer at same time, causes tearing.

3-buffering:



Rendering: Figuring out layout, (Styling) painting,
2D, 3D commands.

Coroutines

* 3 threads which are interchangeably used instead of creating a new thread every single time.

* Work stealing scheduling scheduling.

* Context : Job, thread its running on
↳ Can be cancelled.

launch / aync function → Launch fn launches coroutine in a separate instance.

async → dispatcher I/O thread.

Main thread → suspended when coroutine runs.

Way the code reads, is how it executes.

Any no. of async jobs can be launched on coroutine, as cost is very cheap in terms of coroutines.

Thread assumes identity of coroutine.

Source Android, E-linuX.org → Surface Flinger.

A coroutine can only be called by another co-routine.

First Coroutine?

Bridge b/w Java threads where you can co-routine land.

Coroutine Structured Concurrency → Scala, Kotlin,
Swift.)
One huge leap for
mankind in language
design.

kotlinlang.org → Coroutines.