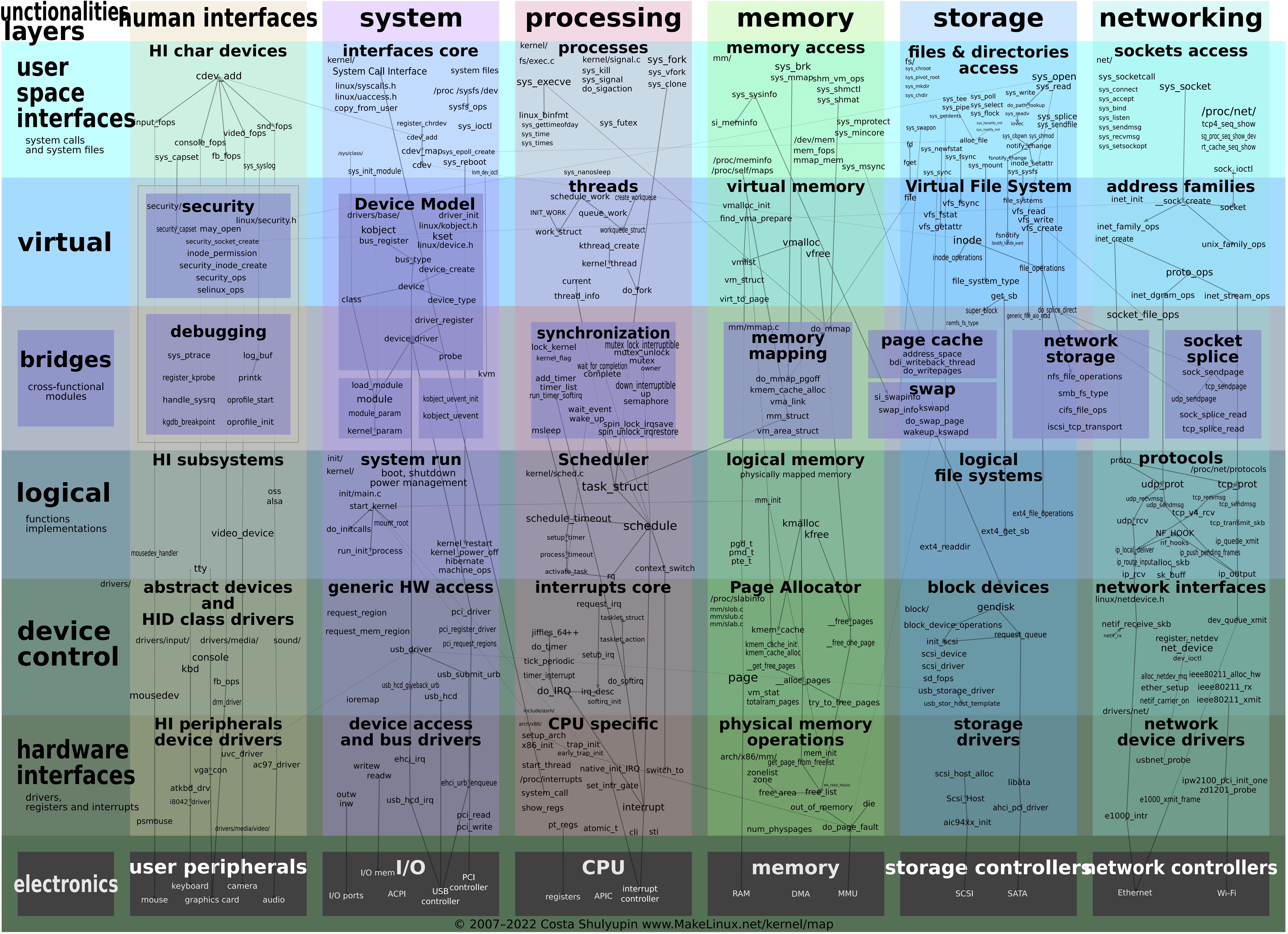
Linux kernel map

2.6



functionalities

layers

human interfaces

system

processing

memory

storage

networking

user space interfaces

system calls
and system files

HI char devices

cdev_add
input_fops
snd_fops
video_fops
console_fops
sys_capset
fb_fops
sys_syslog

interfaces core

kernel/
System Call Interface
linux/syscalls.h
linux/uaccess.h
copy_from_user
system files
/proc /sysfs /dev
sysfs_ops
register_chrdev
cdev_add
cdev_map
cdev
sys_ioctl
sys_epoll_create
sys_reboot
kvm_dev_ioctl
/sys/class/
sys_init_module

processes

kernel/
fs/exec.c
sys_execve
kernel/signal.c
sys_kill
sys_signal
do_sigaction
sys_fork
sys_vfork
sys_clone
linux_binfmt
sys_gettimeofday
sys_time
sys_times
sys_futex
sys_nanosleep

memory access

mm/
sys_brk
sys_mmap
shm_vm_ops
sys_shmctl
sys_shmat
sys_sysinfo
si_meminfo
sys_mprotect
sys_mincore
/dev/mem
mem_fops
mmap_mem
/proc/meminfo
/proc/self/maps
sys_msync

files & directories access

fs/
sys_chroot
sys_pivot_root
sys_mkdir
sys_chdir
sys_open
sys_read
sys_write
sys_tee
sys_pipe
sys_poll
sys_select
sys_flock
do_path_lookup
sys_readv
iovec
sys_getdents
sys_fanotify_init
sys_inotify_init
sys_splice
sys_sendfile
sys_swapon
alloc_file
sys_chown sys_chmod
notify_change
fd
sys_newfstat
sys_fsync
fsnotify_change
inode_setattr
fget
sys_mount
sys_sync
sys_sysfs

sockets access

net/
sys_socketcall
sys_connect
sys_accept
sys_bind
sys_listen
sys_sendmsg
sys_recvmsg
sys_setsockopt
sys_socket
/proc/net/
tcp4_seq_show
sg_proc_seq_show_dev
rt_cache_seq_show
sock_ioctl

virtual

security

security/
linux/security.h
security_capset
may_open
security_socket_create
inode_permission
security_inode_create
security_ops
selinux_ops

Device Model

drivers/base/
driver_init
kobject
linux/kobject.h
kset
bus_register
linux/device.h
bus_type
device_create
device
class
device_type

threads

schedule_work
create_workqueue
INIT_WORK
queue_work
work_struct
workqueue_struct
kthread_create
kernel_thread
current
thread_info
do_fork

virtual memory

vmalloc_init
find_vma_prepare
vmalloc
vfree
vmlist
vm_struct
virt_to_page

Virtual File System

file
vfs_fsync
vfs_fstat
vfs_getattr
file_systems
vfs_read
vfs_write
vfs_create
fsnotify
fanotify_handle_event
inode
inode_operations
file_operations
file_system_type
get_sb

address families

inet_init
__sock_create
socket
inet_family_ops
inet_create
unix_family_ops
proto_ops
inet_dgram_ops
inet_stream_ops

bridges

cross-functional
modules

debugging

sys_ptrace
log_buf
register_kprobe
printk
handle_sysrq
oprofile_start
kgdb_breakpoint
oprofile_init

driver_register
device_driver
probe
kvm

load_module
module
module_param
kernel_param

kobject_uevent_init
kobject_uevent

synchronization

lock_kernel
kernel_flag
mutex_lock_interruptible
mutex_unlock
mutex
owner
wait_for_completion
complete
add_timer
timer_list
run_timer_softirq
down_interruptible
up
semaphore
wait_event
wake_up
spin_lock_irqsave
spin_unlock_irqrestore
msleep

memory mapping

mm/mmap.c
do_mmap
do_mmap_pgoff
kmem_cache_alloc
vma_link
mm_struct
vm_area_struct

super_block
ramfs_fs_type
generic_file_aio_read
do_splice_direct

page cache

address_space
bdi_writeback_thread
do_writepages

swap

si_swapinfo
swap_info
kswapd
do_swap_page
wakeup_kswapd

network storage

nfs_file_operations
smb_fs_type
cifs_file_ops
iscsi_tcp_transport

socket_file_ops

socket splice

sock_sendpage
tcp_sendpage
udp_sendpage
sock_splice_read
tcp_splice_read

logical

functions
implementations

HI subsystems

oss
alsa
video_device
mousedev_handler
tty

system run

init/
kernel/
boot, shutdown
power management
init/main.c
start_kernel
mount_root
do_initcalls
run_init_process
kernel_restart
kernel_power_off
hibernate
machine_ops

Scheduler

kernel/sched.c
task_struct
schedule_timeout
schedule
setup_timer
process_timeout
activate_task
rq
context_switch

logical memory

physically mapped memory
mm_init
kmalloc
kfree
pgd_t
pmd_t
pte_t

logical file systems

ext4_file_operations
ext4_get_sb
ext4_readdir

protocols

proto
/proc/net/protocols
udp_prot
tcp_prot
udp_recvmsg
udp_sendmsg
tcp_recvmsg
tcp_sendmsg
tcp_v4_rcv
udp_rcv
tcp_transmit_skb
NF_HOOK
nf_hooks
ip_queue_xmit
ip_local_deliver
ip_push_pending_frames
ip_route_input
alloc_skb
ip_rcv
sk_buff
ip_output

device control

drivers/

abstract devices and HID class drivers

drivers/input/
drivers/media/
sound/
console
kbd
fb_ops
mousedev
drm_driver

generic HW access

request_region
request_mem_region
pci_driver
pci_register_driver
pci_request_regions
usb_driver
usb_submit_urb
usb_hcd_giveback_urb
ioremap
usb_hcd

interrupts core

request_irq
tasklet_struct
tasklet_action
jiffies_64++
do_timer
setup_irq
tick_periodic
timer_interrupt
do_softirq
do_IRQ
irq_desc
softirq_init
include/asm/

Page Allocator

/proc/slabinfo
mm/slob.c
mm/slub.c
mm/slab.c
kmem_cache
__free_pages
kmem_cache_init
kmem_cache_alloc
__free_one_page
__get_free_pages
page
__alloc_pages
vm_stat
totalram_pages
try_to_free_pages

block devices

block/
gendisk
block_device_operations
request_queue
init_scsi
scsi_device
scsi_driver
sd_fops
usb_storage_driver
usb_stor_host_template

network interfaces

linux/netdevice.h
netif_receive_skb
netif_rx
dev_queue_xmit
register_netdev
net_device
dev_ioctl
alloc_netdev_mq
ieee80211_alloc_hw
ether_setup
ieee80211_rx
netif_carrier_on
ieee80211_xmit
drivers/net/

hardware interfaces

drivers,
registers and interrupts

HI peripherals device drivers

uvc_driver
ac97_driver
vga_con
atkbd_drv
i8042_driver
psmouse
drivers/media/video/

device access and bus drivers

ehci_irq
writew
readw
ehci_urb_enqueue
outw
inw
usb_hcd_irq
pci_read
pci_write

CPU specific

arch/x86/
setup_arch
x86_init
trap_init
early_trap_init
start_thread
native_init_IRQ
switch_to
/proc/interrupts
set_intr_gate
system_call
show_regs
interrupt
pt_regs
atomic_t
cli
sti

physical memory operations

arch/x86/mm/
mem_init
get_page_from_freelist
zonelist
zone
NR_FREE_PAGES
free_area
free_list
out_of_memory
die
num_physpages
do_page_fault

storage drivers

scsi_host_alloc
libata
Scsi_Host
ahci_pci_driver
aic94xx_init

network device drivers

usbnet_probe
ipw2100_pci_init_one
zd1201_probe
e1000_xmit_frame
e1000_intr

electronics

user peripherals

keyboard
camera
mouse
graphics card
audio

I/O

I/O mem
I/O ports
ACPI
USB controller
PCI controller

CPU

registers
APIC
interrupt controller

memory

RAM
DMA
MMU

storage controllers

SCSI
SATA

network controllers

Ethernet
Wi-Fi