

# General cobordism Theory

Cobordisms w/extra structure

Tangential structures: lifts

$$M \xrightarrow{\quad} B \downarrow f BO(k)$$

e.g oriented cobordism: For  $\partial W = M \sqcup N$ ,  
demand  $W$  have orientation s.t  $\partial W = M - N$

Framed cobordism:  $n$  pointwise-L.I sections of  $\mathcal{V}$  (i.e - trivialization)

$\Rightarrow$  tubular nbhd  $E(\mathcal{V}) = M \times D^n$ ,  $Th(\mathcal{V}) = M \times S^n$

pontryagin-Thom map:  $\mathbb{R}^{n+k+} \rightarrow M \times S^n \Rightarrow S^{n+k} \rightarrow S^n$   
defines element of  $\pi_n^S$ !

theory	spectra
cobordism	MO
oriented cobordism	MSO
spin cobordism	MSpin
framed cobordism	MPfr
cowbordism	MOO

$$\Omega_k^{Fr} \cong \pi_k^S !$$



