Comparisons of Hardware Options

Tech	"Projector FTIR"	"Projector DI"	"LCD FTIR"	"LCD LED-LP"
Image	Projector	Projector	LCD	LCD
Touch Tech	FTIR	DI	FTIR	LED-LP
Size in desk	25" diagonal	25" diagonal	size of LCD (~17-19")	size of LCD (~17-19")
Touch surface	3-ply: Acrylic, compliant, projection/diffuser	Acrylic 2/3-ply (Acrylic, compliant if converted from FTIR, diffuser)	Acrylic 2/3-ply (Acrylic, compliant, diffuser?)	Direct: LCD screen with clear screen protector
IR LED Illumination	side-illumination (into acrylic waveguide)	bottom-illuminated	side-illumination (into acrylic waveguide)	side-illumination (light plane above display)
Conversion Details				
Proj. FTIR		keep proj, add layer to surface, move IR	replace LCD, add diffuser if not used	replace LCD, add surface
Proj. DI	keep proj and surface, move IR		replace LCD, move IR, keep surface (add diffuser?)	replace LCD, move IR, add surface
LCD FTIR	keep surface and side IR, replace proj.	add layer to surface, move IR, replace proj.		keep LCD, add surface
LCD LED-LP	remove surface, keep side IR, replace proj.	remove surface, move IR, replace proj.	keep LCD, remove surface, move IR	
Quality Factors				
User image quality	Good - limited by projector and projection surface	Good - limited by projector and projection surface	OK - LCD has better image quality than free proj., but diffuser blurs image	Very good - as good as regular use of LCD
Surface feel	Projection surface (current prototype is cloth-like)	Projection surface	Diffuser (proj. surface if converted) or compliant surface	LCD panel surface or screen protector sheet
Quality of touch data	Good: senses only touch, limited by compliant surface quality	Good: can optionally sense proximity and object ID	Good-OK: LCD may diffuse FTIR image	Not as much data known yet, supposed to be good
Assembly Details				
Assembly benefits:	Already have projector	Already have projector, no surface experimentation	No mirrors required, self-contained.	No mirrors or surface required, self-contained, no surface experimentation
Assembly drawbacks	Requires mirrors and optics adjustment for image focusing, not entirely self contained (projector and mirror may be on the floor behind the desk), requires some surface experimentation	Requires mirrors and optics adjustment for image focusing, not entirely self contained (projector and mirror may be on the floor behind the desk)	Need LCD. If built from scrapped LCD, backlight must be replaced with white LED illumination or other source. LCD's are fragile so assembly must be very careful. Size limited.	Need LCD. If built from scrapped LCD, backlight must be replaced with white LED illumination. LCD's are fragile so assembly must be very careful. Size limited. Chance of device damage due to direct interaction with screen.

Relative Subjective Ratings

(lower is better)	"Projector FTIR"	"Projector DI"	"LCD FTIR"	"LCD LED-LP"
Time to completion	2	1	4	3
Ease of construction	2.5	1	4	2.5
Final product utility	4	2	3	1
Final product "polish"	3	2	4	1
	11.5	**6**	**15**	**7.5**