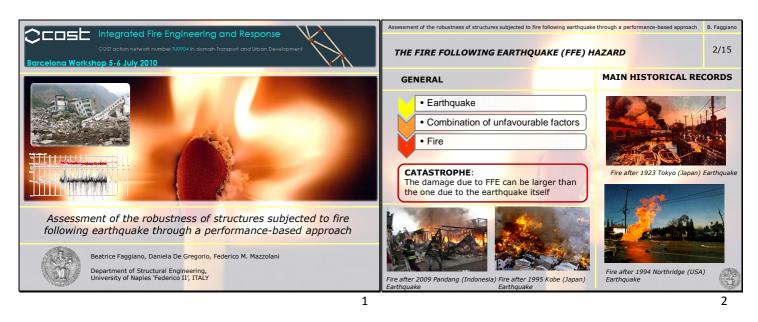
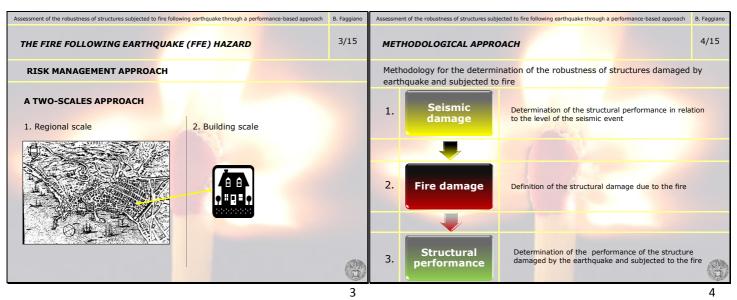
3.4 Assessment of the robustness of structures subjected to fire following earthquake through a performance-based approach (short version)

Faggiano B., Italy





ssessment of the robustness of str	uctures subjected to fire following	earthquake through a performance	e-based approach	B. Faggiano	Assessment of the robustness of st	ructures subjected to fire following	g earthquake through a performan	ce-based approach B. Faggia
1. SEISMIC DAMAGE				5/15	2. FIRE DAMAGE			6/15
Seismic performance	LEVELS (FEMA 356 G	uidelines):			Fire performance LEV	ELS: Structure shoul	d be designed for fire ding to the performan	
Operational (0)	Immediate Occupancy (IO)	Life Safety (LS)	Collapse prevention (CP)		Operational (Of)	Immediate Occupancy (IOf)	Life Safety (LSf)	Collapse prevention (CPf)
Very light damage	Light damage	Moderate damage	Severe dama	ige	Very light damage	Light damage	Moderate damage	Severe damage
•No permanent drift. •Structure substantially retains original strength and stiffness. •Minor cracking of facades, partitions, and ceilings as well as structural elements. •Elevators can be restarted. •Fire protection operable.	•No permanent drift. •Structure substantially retains original strength and stiffness. •Ninor cracking of facades, partitions, and ceilings as well as structural elements. •All systems important to normal operation are functional.	•Some residual strength and stiffness left in all stories. •Gravity-load-bearing •Elements function. •No out-of-plane failure of walls or tipping of parapets. •Some permanent drift. •Damage to partitions. •Building may be beyond economical repair.	•Little residual and strength, 1: bearing:colum walls function. •Large perman •Some exits bit •Infilis and unit parapets faile incipient failu -Building is nea collapse.	out load- ins and ent drifts. ocked. praced d or at re.	 No permanent damage. Structure substantially retains original strength and stiffness. Minor cracking of facades, partitions, and ceilings as well as structural elements. Elevators can be restarted. Fire protection operable. 	•No permanent damage. •Structure substantially retains original strength and stiffness. •Minor cracking of facades, partitions, and cellings as well as structural elements. •All systems important to normal operation are functional.	Some permanent damage. Damage to partitions. Minor damage to electricity and gas building networks Fire protection operable and activated economical repair.	Little residual stiffness and strength, but load- bearing columns and walls function. I-arge permanent damage. Some exits blocked. Infilis and unbraced parapets failed or at incipient failure. Irreversible failure of electricity and gas building networks -Bailure of the fire protection systems -Building is near collapse.

