

# CHANGES PROJECT – The role of FMeA



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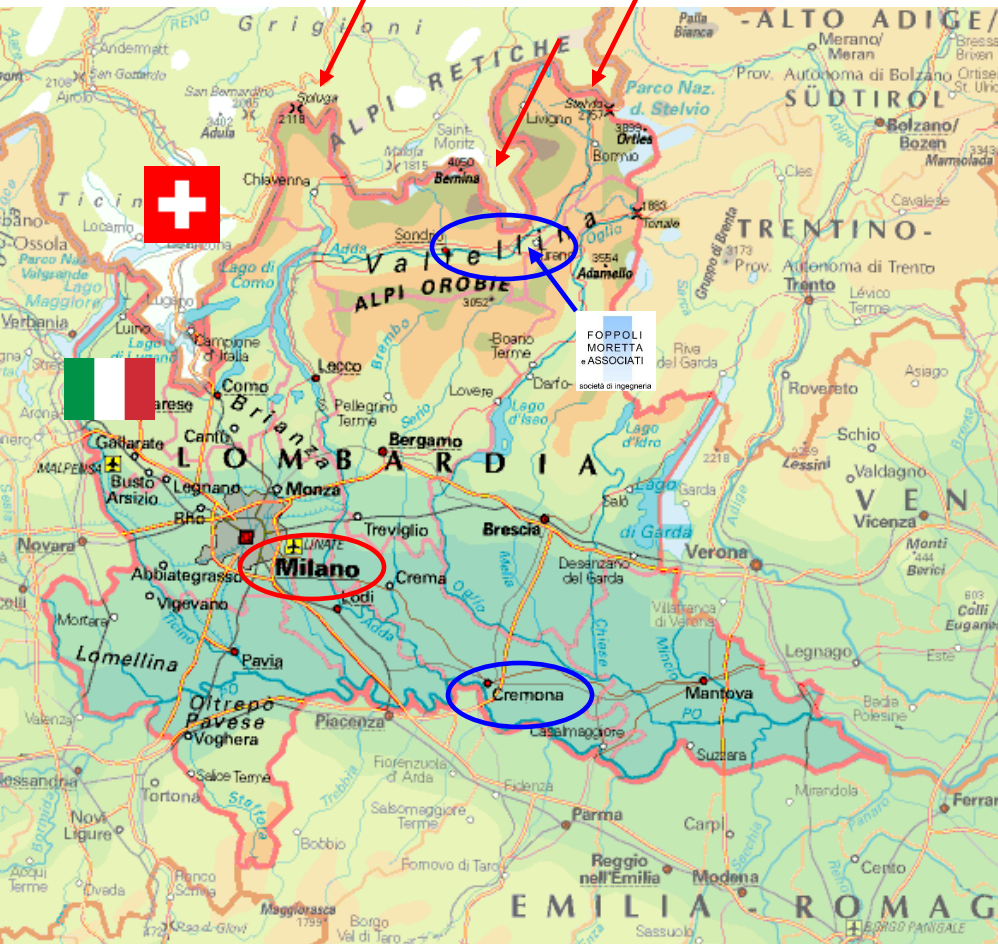
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# Foppoli Moretta e Associati consulting engineers

Zillis

Munstair

S. Romerio



Two very different study areas :

Valtellina:

- Mountain territory
- Country environment
- Stone masonry
- Stone roofs

Cremona

- Plain territory
- Town environment
- Brick masonry
- Shingles roofs

If it is of interest it is possible also to analyze some case history out of EU in Switzerland (Graubünden region – very close to Valtellina)

The project will be carried out in two areas in the northern and in the southern part of Lombardia: the territory of Valtellina and the town of Cremona

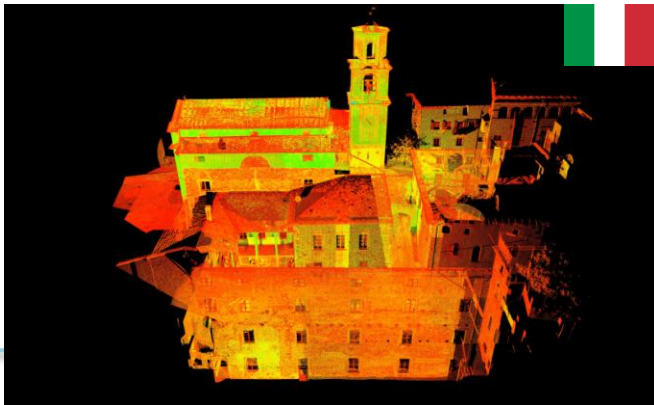
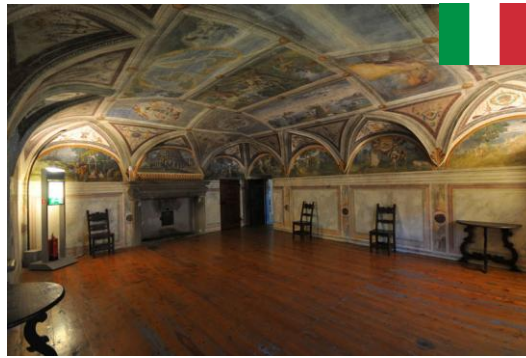
# WP2 Conceptualization previous experiences

Project	Period	Buildings nr.	Activities
L 102/90 (reconstruction after 1987 flood)	1996-2003	70	Restoration works Total amount € 30.000.000
Cultural District of Valtellina	2011-2015	40	General inspections Educational activities
CPRE Interreg project	2013-2014	30	Structural inspection LV1 Educational activities
Innovative technologies	2009-2014	Teglio Besta Palace Bianzone Besta Manor Ponte S. Ignazio church Sondrio Masegra castle	Dignosis and monitoring
PPC (ITALY)	2009-2014	Teglio Besta Palace Sondrio Masegra castle Morbegno S. Antonio monastery	Conservation plan
PPC (SWITZWELAND)	2009-2014	Zillis S. Martino church Mustair S. Giovanni monastery	Conservation plan

FMeA will support Politecnico to collect informations concerning with activities related with PPC carried out in Valtellina and Graubünden region in the last 20 years



# WP4 Investigation on efficacy of maintenance practices in Italy - Valtellina



Churches and palaces located in the middle part of Valtellina and in Switzerland

# WP4 Investigation on efficacy of maintenance practices in Italy - Valtellina

<b>VALTELLINA buildings</b>	<b>inspection</b>	<b>NDT</b>	<b>monitoring</b>	<b>Seismical assess. LV1</b>	<b>Conserva- tion planning</b>
Tirano Santuario*	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
Tirano S Romerio	<b>X</b>	<b>X</b>	<b>X</b>		
Tirano S Perpetua	<b>X</b>	<b>X</b>	<b>X</b>		
Tirano S Giacomo	<b>X</b>	<b>X</b>			
Mazzo S. Stefano	<b>X</b>				
Vervio S. Brizio	<b>X</b>			<b>X</b>	
Lovero S. Maria	<b>X</b>		<b>X</b>		
Ponte S. Ignazio	<b>X</b>		<b>X</b>		
Teglio pal. Besta			<b>X</b>	<b>X</b>	

The activity marked with a \* shall be performed only under the agreement of the Cultural Heritage Department of Como bishopric

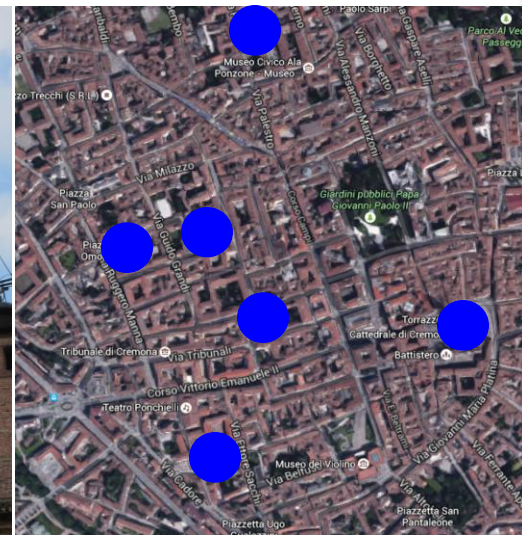


# WPS4 Investigation on efficacy of maintenance practices in Italy - Cremona



Churches located in  
Cremona town centre

- ✓ S. Agostino
- ✓ S. Pietro a Po
- ✓ Torrazzo
- ✓ S. Vincenzo
- ✓ S. Omobono
- ✓ S. Marcellino



The churches in the centre of Cremona were settled on XI – XIII century and as a rule, they were strongly transformed on XVI – XVII century

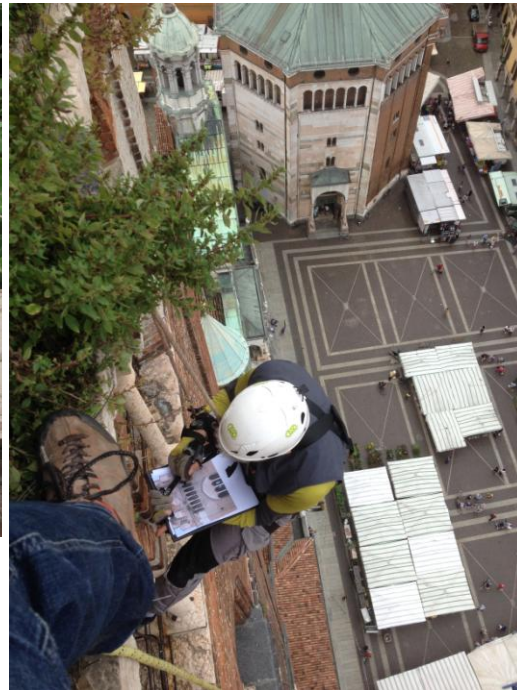
# WPS4 Investigation on efficacy of maintenance practices in Italy - Cremona

CREMONA buildings	inspection	NDT	monitoring	Seismical assess.t LV1	Conservation planning
S. Marcellino*	X	X	X	X	X
S. Pietro al Po*	X	X		X	
S. Agostino	X	X	X	X	X
S. Omobono*	X			X	
S. Vincenzo*	X	X		X	X
Torrazzo	X	X	X		

The activities marked with a \* shall be performed only with the agreement of the Cultural Heritage Department of Cremona bishopric



# Activities in progress - Cremona - Torrazzo



Next week it was performed an inspection on the top of Cremona main bell tower (called Torrazzo) with access and positionign techniques by ropes



The growth of vegetation at the top of the tower is mainly caused by lack of maintenance of the gargoyles. There are also significant decayments of the top concrete structure



# Activities in progress – Valtellina - Lovero



S. Maria church in Lovero displays a wide crack pattern:  
it was installed a structural monitoring system of the