Use Case	Fire detection system		1
Context	As soon as the cooking stove's temperature reaches 180 °C, the system shall detect whether the stove is currently in operation without a person's involvement. Depending on the temperature level, measures will be taken, and the stove will be switched off as a last step.		
Domain	Kitchen environment	*Business Value*	Personalization ☐ Acquisition ☒ Communication ☒ Optimization ☒ Control ☒ Analysis ☒

Description		
Stakeholders & Interests	*Stakeholder*	*Interests*
	Restaurant owner	Prevention of accidents; Reduce damage in the kitchen environment; increase staff safety awareness; As few false alarms as possible; Reaction of the system to an adverse event in the real world must be within seconds
	Kitchen staff	Prevention of accidents; Safe workplace; No false alarm under normal operating conditions or when a person is at the stove; Alarm when no person is at the stove; Reaction of the system to an adverse event in the real world must be within seconds
Required Data	Temperature in °C Video stream of an infrared thermal imaging camera (1 frame/0.6 sec; latency <40ms; detection range: -20 °C to 550 °C; deviation up to 5 °C) Video stream from an optical camera Position of the cooking stoves Training and validation data sets of people (preferably kitchen staff) 140,000 images; 384 x 224 pixels	
Current Conditions	Sensors are used to detect flames, smoke or carbon monoxide. The system only reacts as soon as a fire occurs. Possible false alarms due to normal operating conditions are not prevented. The reaction is usually slow and triggers a buzzer or a call to the fire department. The devices used would have to be replaced to improve the existing system.	

Procedure		
Trigger	Temperature over 180 °C is detected	
Use Case Procedure	*Step*	*Activity*
	1. Temperature detection	Calculating the temperature in °C on the stove
	2. Recognition of persons	Check that no one is currently operating the cooking stove
	3. Temperature has reached 180 °C	Trigger buzzer for warning
	4. Temperature has reached 220 °C	Send a message via instant messaging
	5. Temperature has reached 250 °C	Make a phone call
	6. Temperature has reached 300 °C	Turn off the cooking stove

Use Case Anomalies	*Step*	*Activity*
	2a. A person operates the cooking stove	2. Repeat person recognition
	3a. Temperature is below the threshold value	1. Repeat temperature acquisition
	4a. Temperature is below the threshold value	1. Repeat temperature acquisition
	5a. Temperature is below the threshold value	1. Repeat temperature acquisition
	6a. Temperature is below the threshold value	1. Repeat temperature acquisition
Final State	Switching off the affected stove	

Overlaps
No overlaps with other domains.

Sum of Business Values total (incl. title domain, header)	Personalization	0	Acquisition	1
	Communication	1	Optimization	1
	Control	1	Analysis	1