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CASE STUDY · MARLUC SYNOPSIS

CAL FIRE and ALERTCalifornia AI wildfire detection

IMPLEMENTED 2023–2026 · GOVERNMENT AND PUBLIC SERVICES · US · BAND C · CLAIMED ONLY

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California's fire agency and UC San Diego added AI smoke detection to a statewide network of more than 1,200 cameras. By CAL FIRE's account, the cameras picked up 1,668 of 7,553 fires in 2024, and 636 of those before any 911 call.

ABOUT THIS SYNOPSIS

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Facts and figures are as reported by the sources listed below, which may be incomplete, self-reported or out of date. Check the original source before relying on any figure.

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NOTICE WORDING LAST UPDATED 16 NOVEMBER 2026

AT A GLANCE

AI used: Computer-vision AI that scans camera images for smoke and alerts dispatch centres, where trained staff verify each alert before crews are sent.

Implemented: 2023–2026. Grade: band C, Process change, Claimed only.

Headline result, as reported: By CAL FIRE's account, cameras with AI detection picked up 1,668 of 7,553 fires in 2024, and 636 of them (38 per cent) before any 911 call

1 · The case

The facts, as reported by the 5 sources listed at the end. Where a source is silent, the field says "Not reported".

Organisation

CAL FIRE and UC San Diego (ALERTCalifornia). California state fire agency working with ALERTCalifornia, a UC San Diego public safety programme. The AI tool runs on a network of 1,263 cameras reported in July 2026 and alerts all 21 CAL FIRE emergency command centres. Canvas block: 4. Operations and process. Also 6. Data and technology, 8. Governance and risk.

Business challenge

The challenge. Human fire lookouts have largely given way to cameras: Bay Area News Group reports 217 lookout towers left in California, with about 50 regularly staffed. Camera feeds still needed people watching them. Before the AI, in the words of CAL FIRE's Napa-Lake-Sonoma unit chief, "we would get a 911 call and we would have to spin the cameras to the area."

How it was addressed. ALERTCalifornia and CAL FIRE added AI software to the camera network in 2023. Six CAL FIRE units tested it from July 2023, and it became available to all 21 dispatch centres in September 2023. When the AI spots a possible fire it alerts firefighters with a percentage of certainty and an estimated location. Trained watchstanders vet and confirm the incident before crews respond, and CAL FIRE feeds the outcome back to the AI. Bay Area News Group reports the AI system was developed by DigitalPath. Microsoft's Signal magazine says ALERTCalifornia worked with Microsoft's AI for Good Lab. [1] [2] [3] [4] [5]

Who implemented it

UC San Diego (ALERTCalifornia) (University or research lab): Runs and maintains the camera network and co-developed the AI tool with CAL FIRE and its industry partner..
In-house (In-house): Funds and oversees the network, tests the AI in its units and gives feedback to the AI..
DigitalPath (Software vendor): Developed the AI system, per Bay Area News Group; named as industry partner in the ALERTCalifornia press release..
Microsoft AI for Good Lab (Model or cloud provider): Named by Microsoft's Signal magazine as working with ALERTCalifornia on the AI model; other sources do not name it..
PG&E (Industry partner): Initially sponsored the AI programme, per the ALERTCalifornia press release..
Sources differ on who built the AI model; see the sources-disagree field.

Technology (SEAM pillar E)

SEAM types: not established; the sources do not say how the system works. Deployment: Not reported. Vendors and products: DigitalPath, ALERTCalifornia AI fire detection tool.

Where it was built in: Built into the ALERTCalifornia camera network; alerts with a certainty percentage and estimated location go to CAL FIRE's 21 dispatch centres, where trained watchstanders verify them.

What changed

Before: the cameras functioned like security cameras, recording the views, and responders turned them towards a fire after a 911 call. After: the AI scans the images and alerts dispatch centres, sometimes before anyone calls 911. By CAL FIRE's count, the cameras picked up 1,668 of 7,553 fires in its jurisdiction in 2024. [1] [2] [3] [4] [5]

What it cost

CAL FIRE contributed at least $24 million to expanding the camera network from 2019 to 2024, per Bay Area News Group. The cost of the AI component alone: Not reported.

What it saved

Not reported. Officials give examples instead of totals: a fire near Grass Valley on 11 September 2023, where the first 911 call came at 6:01 a.m. and firefighters were already at the scene, and a fire near Auburn held to about 30 by 30 feet. [1] [2] [3] [4] [5]

Governance and control

CAL FIRE oversees the network and UC San Diego runs and maintains it, per Bay Area News Group. The cameras do not dispatch crews: alerts go to dispatch centres and are verified by humans. UC San Diego blurs homes, parking lots and nearby features, and the software was taught to ignore steam from the Geysers geothermal fields. No regulator or auditor review of the AI is reported.

S2 · Accountable owner · Claimed
Bay Area News Group says the network is run and maintained by UC San Diego with oversight from CAL FIRE; ALERTCalifornia's director leads the programme. [1] [2]

A1 · Safe use · Claimed
UC San Diego blurs homes, parking lots and nearby features to address privacy concerns, and only trained responders see the AI-enhanced views, per press reports. [2] [3]

A2 · Human in the loop · Claimed
Alerts go to dispatch centres and are verified by humans before crews are sent; the press release says trained watchstanders vet and confirm each incident. [2] [4]

A3 · Monitoring and assurance · Claimed
CAL FIRE gives feedback to the AI after each detection, and the software was taught to ignore known false triggers; no audit or published error rate is reported. [2] [4]

A4 · Vendor AI · Not reported
DigitalPath is named as developer; contract terms and vendor controls are not reported. [2] [4]

A5 · Agent controls · Not reported
No agents described.

A6 · Standards and regulation · Not reported
No regulator review or standard is reported in the sources opened.

What worked, what did not, what is unproven

WORKED

– Alerts reach all 21 CAL FIRE dispatch centres; the tool became available to them in September 2023, per the press release.

– By CAL FIRE's count, 636 of the 1,668 camera-detected fires in 2024 were detected before any 911 call.

– Reported early catches: a fire near Grass Valley contained to less than a quarter of an acre (September 2023), and a fire near Auburn held to about 30 by 30 feet.

– The programme director says there are numerous examples of fires limited to much smaller events through early detection and suppression.

DID NOT

– The AI cannot always tell smoke from dust storms, clouds or other false positives, and had to be taught to ignore steam from the Geysers geothermal fields.

– The cameras picked up 1,668 of 7,553 fires in CAL FIRE's jurisdiction in 2024; the other fires were not picked up by the cameras.

– In big urban fires, residents with phones report almost as soon as they begin.

UNPROVEN

– Whether early detection produced smaller fires: reported through examples and estimates, with no independent study opened.

– How the 'before 911' figures were counted and checked: Not reported.

– The AI's false alarm rate and the cost of the AI component: Not reported.

– Microsoft's account of detection up to two and a half hours before a call, and the programme director's estimate that the 2023 Trotter Fire might otherwise have reached nearly 4,000 acres rather than 52, are the partners' own claims.

Timeline

2017 ALERTCalifornia in use as a public safety data platform of camera and sensor feeds [1]

2019 CAL FIRE begins contributing funding to expand the camera network; at least $24 million from 2019 to 2024 [2]

Jul 2023 Six CAL FIRE units begin testing the AI tool with ALERTCalifornia [3]

Sept 2023 The AI tool becomes available to all 21 CAL FIRE 911 dispatch centres [4]

Oct 2023 ALERTCalifornia and CAL FIRE announce the AI tool was named one of TIME's Best Inventions of 2023 [4]

Sept 2025 Bay Area News Group reports 1,211 cameras and CAL FIRE's 2024 detection counts [2]

Jul 2026 Route Fifty reports 1,263 cameras and the programme director's 2025 figures [1]

2 · Grade and SEAM assessment

MarLuc's opinion, made on the evidence above. How cases are graded: marluc.co.uk/case-studies/how-we-rate

Level of change and impact

Claimed: Not applicable. Grade: C, Process change. Proof: Claimed only. Level of change: Process change.

Process change (Level 2, band C). Detection, alerting and human verification run as one workflow across all 21 dispatch centres. Whether it changes fire outcomes is not independently shown.

Detection, alerting and human verification now run as one process across all 21 CAL FIRE dispatch centres: the AI flags a possible fire, trained staff check it and crews are sent. That is a process change. The results are the programme's own counts and no independent evaluation was opened, so the benefit is claimed. Whether earlier detection produces smaller fires is reported through examples and estimates only.

The SEAM view and lessons learnt

The AI does one job: it flags a possible start. The join that matters sits between that alert and the people who verify it and send crews. Every alert passes a trained watchstander, and CAL FIRE's feedback tunes the model. For a mid-sized or larger organisation running an AI alerting system,

1. Keep a trained person verifying every AI alert before resources are sent.
2. Feed confirmed and false detections back to the system and tune out known false triggers.
3. Publish how early-detection counts are made so others can check them.

Evidence

Score 1 of 4. Agency and programme figures reported by the press and a press release; no independent evaluation found.

Evaluation method. Agency and programme counts and examples, reported by Route Fifty, Bay Area News Group and an ALERTCalifornia press release; no comparison group and no audit.

Sources disagree. Counts differ by year and basis. Bay Area News Group reports 38 per cent (636 of 1,668 camera-detected fires) before 911 in 2024; Route Fifty reports more than half of about 3,600 incidents in 2025, on the programme director's account. On who built the AI, Bay Area News Group says DigitalPath developed it and the press release names Digital Path as industry partner, while Microsoft's Signal magazine credits Microsoft's AI for Good Lab as the development partner.

Status. In operation; 1,263 cameras reported in July 2026. Independent evaluation: none found.

3 · Original sources

Read these in full. To challenge a fact or a grade, use the contact form at marluc.co.uk or the link on https://marluc.co.uk/case-studies/calfire-alertcalifornia-wildfire-detection

[1] Route Fifty: What California has learned from an AI-enabled early wildfire detection system
https://www.route-fifty.com/public-safety/2026/07/what-california-has-learned-ai-enabled-early-wildfire-detection-system/414566/

[2] Industry Insider California (Bay Area News Group): AI Cameras Are Spotting California Wildfires Before Humans Call 911
https://insider.govtech.com/california/news/ai-cameras-are-spotting-california-wildfires-before-humans-call-911

[3] GovTech (The Press Democrat): Cal Fire Tests AI Tech in Wildfire Detection System
https://www.govtech.com/products/cal-fire-tests-ai-tech-in-wildfire-detection-system

[4] ALERTCalifornia: ALERTCalifornia and CAL FIRE's fire detection AI program named one of TIME's Best Inventions of 2023
https://alertcalifornia.org/alertcalifornia-and-cal-fires-fire-detection-ai-program-named-one-of-times-best-inventions-of-2023/

[5] Microsoft Signal magazine: How AI can detect wildfires before they spread
https://news.microsoft.com/microsoft-signal/magazine/issue/06/ai-helping-tackle-california-wildfires-alertwildfire-alertcalifornia/

CAL FIRE and UC San Diego (ALERTCalifornia) website: https://alertcalifornia.org

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