



Ext JS Powers Oncology and Home Health System for Prominent Argentinian Hospital

CUSTOMER SUCCESS STORY

Ext JS framework equips Hospital Aleman's healthcare staff with an interoperable and secure oncology and home health system to closely monitor patient health and enhance clinical communication and workflows.



Hospital Aleman—a leading private hospital headquartered in Buenos Aires, Argentina—uses human and medical factors coupled with state-of-the-art technology to provide community members with the best medical care throughout their treatment journey.

Covering the entire gamut of medical services from cardiology and oncology to psychiatry, pediatric surgery, nutrition, and beyond, the hospital aims to provide its patients with first-class care while focusing on the three main pillars of medicine: care, teaching, and research.

With this principal goal, the hospital invests heavily in procuring key resources such as digital radiology, state-of-the-art tomographs, as well as other aspects of technology such as modern applications and automation to simplify patient data collection and evaluations for physicians, hospital administrators, and healthcare staff.

Over the past two decades, healthcare data management has gone in a whole different direction—and with the advent of mobile technology, nearly all aspects of doctor-patient visits are now meticulously recorded digitally. Telemetric medical monitoring and home-based medical care are especially important for elderly people dealing with chronic medical conditions that need care from their homes.

Hospital Aleman contracted Compustrom, a tech-services company based in Argentina, to develop and design a novel home medical-visit system for elderly patients and a web-based electronic medical record (EMR) management system for the hospital's oncology department. Powered by the robust Ext JS framework, the hospital was able to roll out full-featured web and mobile applications within a short amount of time and increase their treatment efficiency as a result.

A Comprehensive Home Medical Visit System Built with Ext JS

The home medical-visit system built with the Ext JS framework and components was intended to manage patients who receive treatment at home—either due to their inability to go to the hospital or for preventative reasons. There are two aspects of this medical-visit system:

- A web application intended for hospital administrators
- A mobile application for healthcare staff who conduct in-house patient visits

The institute's team of professionals—clinical doctors, nutritionist, psycho-oncologists, kinesiologists, and care specialists—work together as an integrated unit to provide comprehensive care for elderly patients throughout their entire treatment process. These integrated polyclinics allow faster assistance and patient evaluation, immediate doctor-patient interaction, and access to multiple physician opinions in one place.

Web Application

The web application, primarily designed for and used by hospital administrative staff and physicians, consists of a task dashboard and messaging system to review all information in one comprehensive glance. The web system has different profiles. **For example:**

- **Physician View**
 - View and request admission of patients to special care programs
 - Check notes made by professionals performing home treatments
- **Medical Auditor View**
 - For auditors who authorize the admission of patients to special programs
- **Hospital Administrative Staff View**
 - Assign professionals (clinical doctors, psycho-oncologists, kinesiologists etc.) to perform home treatment
 - Coordinate delivery of household aids such as orthopedic beds, wheelchairs, etc.
 - Coordination and assignment of patient transfers from their homes to day hospitals
 - Check patients assigned to treatment centers
 - Request transfers, treatment extension authorization, and more.

Home Medical Visit: Patient Info and Event Calendar

Home Medical Web App: Patient Info and Mapped Location

Mobile Application

The mobile app, for healthcare workers who administer patient home visits, provides a user-friendly interface to view and record visits made at patients' homes.

The app allows healthcare staff to:

- Quickly access patients assigned to staff
- Record medical evaluations
- Respond to referral requests made by web system
- Generate patient admin requirements
- Update GPS location based info
- Accept new patient requests

Mobile App View of In-House Patient Visit

One of the most important requirements from the hospital was to have full control and visibility of the in-home visits that professional staff make. Recorded information is invaluable for medical staff at the hospital to decide the continuity of patients' treatment, and providing the ability to record the date and duration of each visit via GPS was necessary. The app was designed to be able to record information in offline mode—for situations when internet connectivity is poor—and to quickly connect and update when a 4G data signal is restored.

The application was based on the progressive app technology, which allowed healthcare professionals to use the app without installing it on a mobile device and without the need for frequent updates.

Web and mobile apps allow providers to effectively streamline communication and allow for an always-on, 24/7 patient management and care environment. Multiple teams—from care teams, ancillary staff, and other physician networks—can collaborate and communicate quickly, effectively, and securely to address concerns and administer patient treatment plans quickly.

Oncology System: Benefitting from the Detailed Electronic Medical Record Collection

One of the biggest priorities for the medical specialists at the hospital oncology unit was to have an updated, detailed, and easy-to-digest digital view of patients' treatment cycles—specifically the cycles each patient has undergone, the drugs and dosages used, and the possibility of generating new treatment plans based on previous cycles. Backed by the robust Ext JS framework and components, Compustrom designed a similar web interface that allowed physicians to easily get access to this view.

Oncology System Web Dashboard

With intuitive grid data views and visual charting, oncologists could efficiently reference the patient dosage and treatment history. The system has been used for the treatment of over 2,000 patients each year and is growing.

Oncology System Web View: Patient Active Treatment Dashboard

Building a Scalable Healthcare System

The backbone of the healthcare application is a robust data grid built with Ext JS.

"There is so much patient data that is being populated—and it's important that we have a robust grid to effectively handle the large data volumes," says Maximiliano Yusso, lead JavaScript developer working on the application.

"The object-oriented nature of the Ext JS framework and the well-laid-out class structure make the app versatile and easily scalable. There are no issues with performance since the Ext JS grid and other components work seamlessly with big data," says Yusso.

The application is designed with configurability in mind, which means that it has the hooks in place to manage any complexity and can be tweaked and configured to add in any new features easily.

Other than the main data grid, the web and mobile apps use many other Ext JS components such as forms, calendars (for scheduling patients at home to in day hospitals), maps (for patient location), checkboxes, buttons, and charting components (to graphically demonstrate mono-drug usage for the oncology system), along with customized themes, layouts, and more. The entire front-end UI was implemented in Ext JS and was connected to an Oracle database on the back end. Yusso and his team particularly used Sencha Themer for theming the app.

"We love Sencha Themer since it gives users many options to customize," said Yusso. Using Themer, his team was able to design the app to suit the look and feel that the hospital required.

"The nice thing about Ext JS is that older versions are compatible with new versions, so upgrading isn't all that tough. With Angular framework, we've discovered that just isn't the case—upgrading to major versions can be very challenging and the updates require a lot of rebuilding," said Andres Galaz, a senior full stack developer and systems architect involved in the app development.

"We find that the Ext JS Grids and plugins are pretty much the best in the frameworks market," Galaz said.



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Maximiliano Yusso, **Lead JavaScript Developer**

At the Forefront of Healthcare Innovation

The home medical visit has significantly increased the efficiency of the hospital staff and reduced any workflow barriers in the administration of the overall treatment plans. With more connected and fluid communication between the entire administrative circuitry and workflow, the hospital noticed a significant reduction in the downtime to respond to patient requests and enabled a cohesive and speedy communication. The visualizations provided by Ext JS charts and grids provided oncologists a visual cue for the doses of mono-drugs applied and cycles fulfilled, and they increased the overall treatment efficiency. The automation and built-in statistical data reduced treatment lags and resulted in significant improvements in treatment quality and efficiency.

From optimizing laborious medical workflows and handling real-time healthcare data collection securely and easily to enhancing patient experience, the possibilities with Ext JS are endless. Millions of developers and thousands of companies worldwide trust Ext JS products to expedite and simplify app development.

Ext JS offers a rich set of prebuilt, high-performance, ready-to-use components, framework, and tools to develop engaging enterprise-grade applications.

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About Sencha

Sencha tools help companies accelerate development cycles for enterprise-ready web applications. Sencha's development framework offers a single coding paradigm across all components, with hundreds of pre-integrated and tested UI components, built-in themes, and sample apps and stencils. More than 60 percent of the Fortune 100 use Sencha products to design, develop, and test their data-intensive, cross-platform web and mobile applications.

About Compustrom

[Compustrom](#) is a Sencha partner with over 10 years of experience on Sencha tools. After years of presence in the market, they have managed to develop and consolidate their Software Factory recognized for providing significant value with innovative solutions based on best practices, business experience and an agile and solid software development methodology.

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