



Promixis LLC, Automation Solutions and Assistive Technologies

www.peacautomation.com / www.promixis.com

sales@peacautomation.com

tel: 877.877.0643 x 4

fax: 805.504.9741

1. *What is PEAC?*

Imagine yourself bound to a wheelchair or bed. Imagine yourself with no way to go about every day tasks like turning on lights, opening windows or doors, and controlling your TV. Life doesn't have to be like this, yet more than 9%¹ of the US population deals with this or similar circumstances on a daily basis. Or imagine yourself getting older, we all are, and your range of physical abilities slowly diminishing. You might not have a disability, but having a helping hand by your side would make your day a lot more comfortable. As the US population ages, more and more individuals who are computer savvy will demand more from their homes.

We, as a society, have all the means and technologies available to provide a fuller, richer, more meaningful and independent life for people with physical disabilities.

PEAC, the automation solution from Promixis, brings together for the first time all the various technologies and services needed to provide control over your home and life. As an example take Steve Saling. He is a resident at the Leonard Florence Center for Living in Chelsea, MA. Steve has ALS and has lost a lot of control over his body. This does not stop Steve. With the help of PEAC, Steve gives tours of the center, opening doors and calling elevators along the way. As Steve says:

“Until medicine proves otherwise, technology is the cure”.



¹ <http://www.census.gov/hhes/www/disability/GQdisability.pdf>

2. What can PEAC control?

We can put a man on the moon and have people living in orbit around our blue planet. What is stopping us from using that technology to improve the lives' of people with limited physical abilities due to illness, trauma or age? Nothing. Promixis LLC, Automation Solutions and Assistive Technologies, has developed PEAC, an automation solution that can control almost anything electrical in your environment.

To quote Ron Bessems, Promixis founder and CEO, "*If it's electrical, we can control it.*"

Some of the items that PEAC has control over are lights, doors, blinds, windows, TV's, HVAC, elevators, phones and much more. One important aspect of the PEAC solution is that no matter which device the system controls, it will be accessible to able bodied people as well.

An example of this is the lighting system. We use normal looking and operating light switches that respond like normal switches on the wall to user interaction. Behind the scenes however, the PEAC system can also control the lights.



Another example is elevator control. Even though PEAC can call elevators and send elevators to specific floors, looking at the elevator you would never know there is something special about it -- besides the seemingly magically lighting up of buttons whenever a PEAC user needs the elevator.

3. What are the benefits?

PEAC plays an important role in the day to day life of residents. The benefits PEAC gives to residents as well as the caretakers and the home owners are listed below.

3.1. Independence and quality of living

Users at a home where PEAC has been implemented have a more independent and fulfilling day by not having to ask for even the most minute things like changing TV channels or changing the temperature in their rooms.

Which leads us to the second benefit...

3.2. Staff is less busy

By allowing residents to take control over a whole slew of needs the workload of caretakers can be reduced significantly. This will allow for better care for the residents. And happier staff.

3.3. Energy savings

PEAC can also be used to implement energy savings. For example, the lighting control system allows for incandescent lighting to run at 80-90% of its maximum rating without visibly impacting the amount

of light produced. This immediately gives a 80-90% reduction on power usage and extend the life of the bulbs.

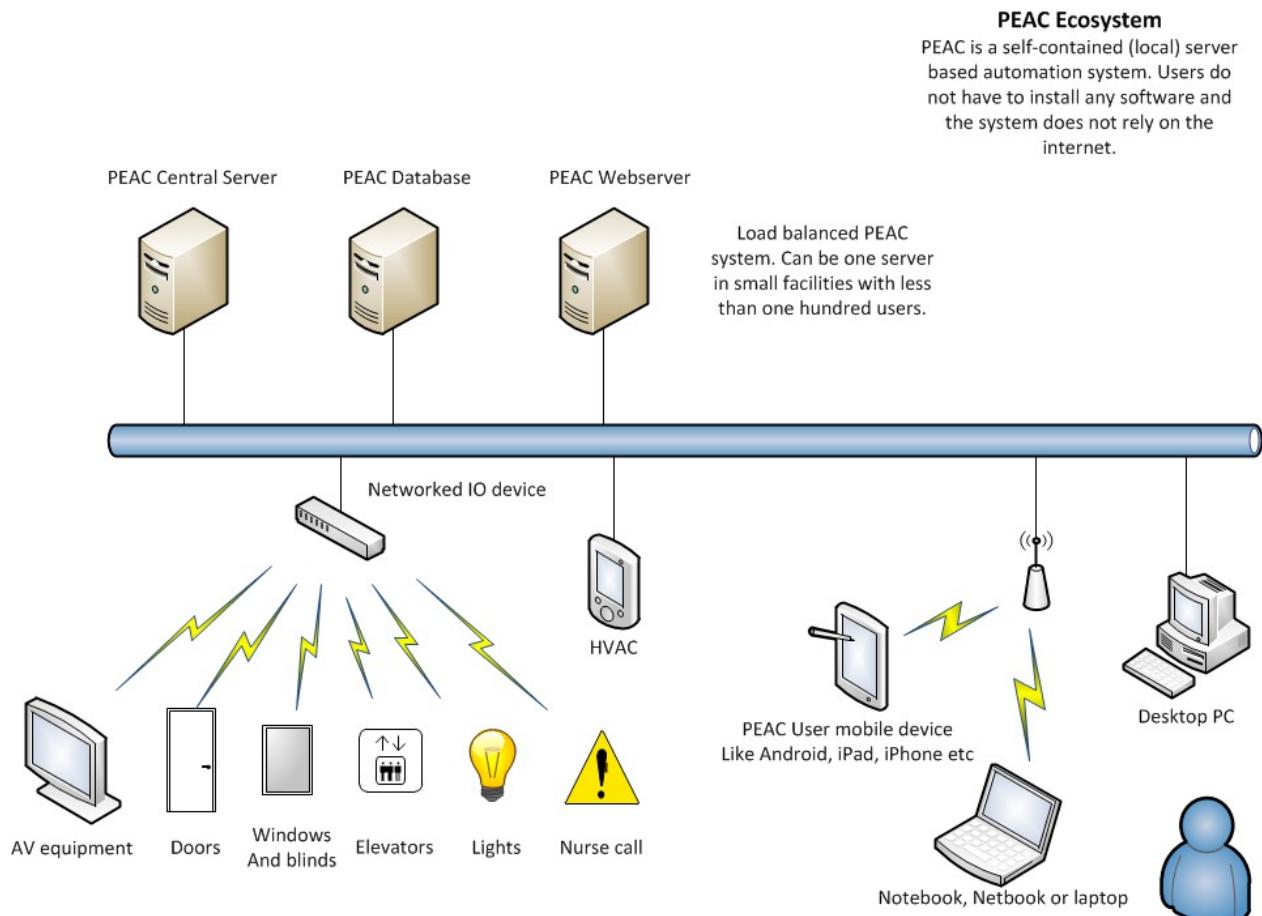
On top of that since the residents can control their lights, blinds and TV's these no longer run all day long but can be easily turned on and off suiting the needs at the time. In summer, shades can be drawn by the residents if the sun is shining in too much reducing the need for AC cooling, whereas in winter PEAC can open the windows for a short while to allow for fresh air yet allow the residents to close the window quickly when the temperature drops too far. All without ever involving the caretakers.

4. Who is it for?

The PEAC system is very well suited to people with physical disabilities that might or might not have mobility of a wheelchair. As our aging population becomes more and more comfortable with computers and technology even retirements homes housing people without disabilities will benefit from the PEAC automation system. PEAC provides a way to a more independent old age. A retirement home utilizing PEAC is distinguished as a better place to live.

5. PEAC topology

The PEAC system relies on a lot of readily available technologies like CAT-5 networking cable, Wi-Fi, PC's Mac's and smart phones. There are three major parts to the PEAC universe. The server, the back-end and the front-end.



5.1. The Server(s)

The PEAC system is server based. This server is installed at your facility directly and does not require an internet connection. If the internet goes down, the PEAC system is unaffected. If internet is available, Promixis can remotely diagnose issues and direct staff to address any problems that arise. Typically issues that might arise are people unplugging networking cable or power cords. These can be found and fixed very quickly.

If you have a large facility or expect a lot of growth, the PEAC system can grow with you. The design of PEAC allows for splitting of the load (work) over multiple servers.



Illustration 1: Promixis PIO-1

5.2. The back-end infrastructure

The back-end infrastructure of PEAC is strongly dependent on the hardware / technologies you wish to have control over. Typically though the PEAC system requires a CAT-5 network to operate. Most often we advise this network to be completely independent or VLAN'ed for security purposes.

We install IO boxes near the hardware to control (like doors or TV's). These boxes can be tucked away in the ceiling or behind furniture. One such box is the Promixis PIO-1. The PIO-1 allows for control over different kinds of hardware like door openers, shades, TV's and DVD players.

5.3. The front-end infrastructure

The PEAC automation system is designed to make the front end as easy to use as possible. The way we have accomplished this is by leveraging modern web based technologies. Each user will have one or more computers, laptops, smart phones, iPad's or android tablets. These computers are connected over the facility Wi-Fi network to the central PEAC server using FIPS 140-2 level 1 compliant encryption. Residents use a normal web browser to log-in using their personal credentials. By using web-browsers we ensure that there is no software to install or maintain reducing the cost of ownership of the PEAC system tremendously.

Users choose their own preferred device (mouse, head-tracking, eye-tracking, voice etc)

In addition, the PEAC system integrates with the users' preferred assistive technology devices. Anything from a normal mouse, through head-tracking, eye-tracking, voice control to a scanning interface using sip and puff can be used.

The administrator of the system can give access to a specific set of the devices in the PEAC universe allowing each resident to control only his own devices and common devices but not the lights of his neighbor.



Illustration 2: PEAC interface on wheelchair

6. How is it installed and isn't this expensive?

You might wonder isn't it hard or expensive to install a system like this? Our answer is a whole-hearted NO! By using a range of common and commercially available, non proprietary pieces of equipment we can keep the cost of the system down by leveraging economies of scale.

Installation of PEAC can be done either at the time of construction or during a renovation. If no CAT-5 network is available in the facility this will be the biggest change needed. The lighting system used does not require any extra communication lines reducing the cost of implementation significantly. In the residents' rooms the largest change will be the installation of selected hardware like door openers, window shades and thermostats. Promixis is happy to talk to you about your specific requirements and solutions we offer.

The PEAC system is an open design allowing to us add new hardware quickly as needed by your requirements. If you wish to control something that was not mentioned, call us and find out what we can do for you.

7. Press

[Are smart homes the next big thing?](#) Arlington Heritage Group

[Ensuring their independence](#) – Palm Beach Post

[What ALS takes away, Steve Gleason and technology can cure](#) – The Times-Picayune

[When Technology is the Cure](#) - Forbes

[Home Automation Brings Dignity, Independence to Residents with ALS](#) - CEPro

[How Technology Gives Freedom to Nursing Home Residents with Disabilities](#) - LeadingAge

[In the blink of an eye](#) - Santa Barbara Newspress

[Inventing for a Purpose](#) - Stephen Key

[Healthcare Automation](#) - Home Toys

[Fighting ALS, one gadget at a time](#) – Boston Globe

8. About Promixis

Promixis, the company behind PEAC was founded in 2004 and has been working on automation technologies every since. Promixis provides automation tools for schools, governments, museums, individuals, military and commercial entities alike we have tens-of thousands of customers globally using our software and hardware developed at our headquarters in Jupiter FL. The founders have been in the automation business since 1998 and PEAC has been running successfully at installations since it's official launch in January 2010. Ask us about visiting a facility.



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