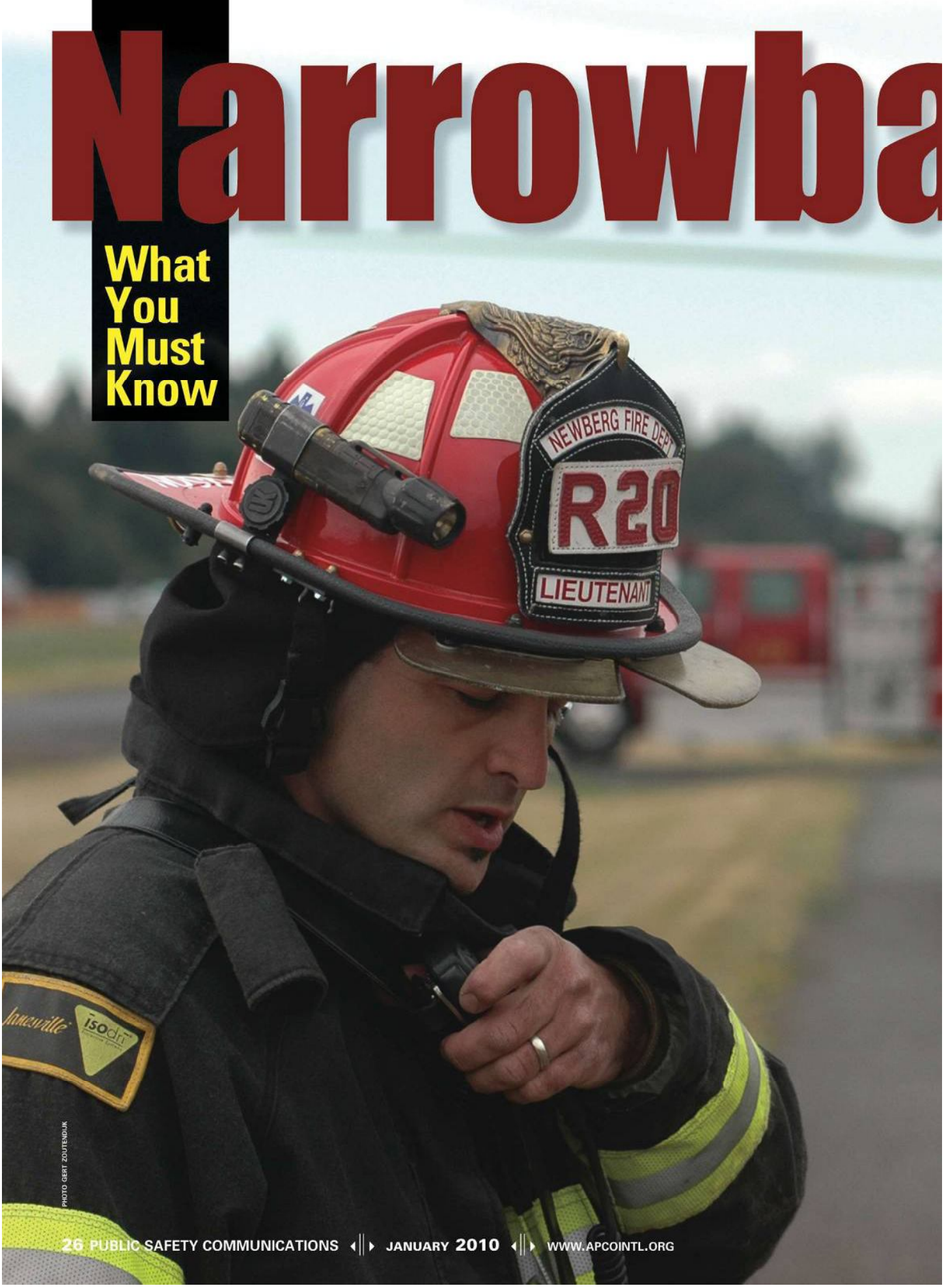
Narrowba

What You Must Know



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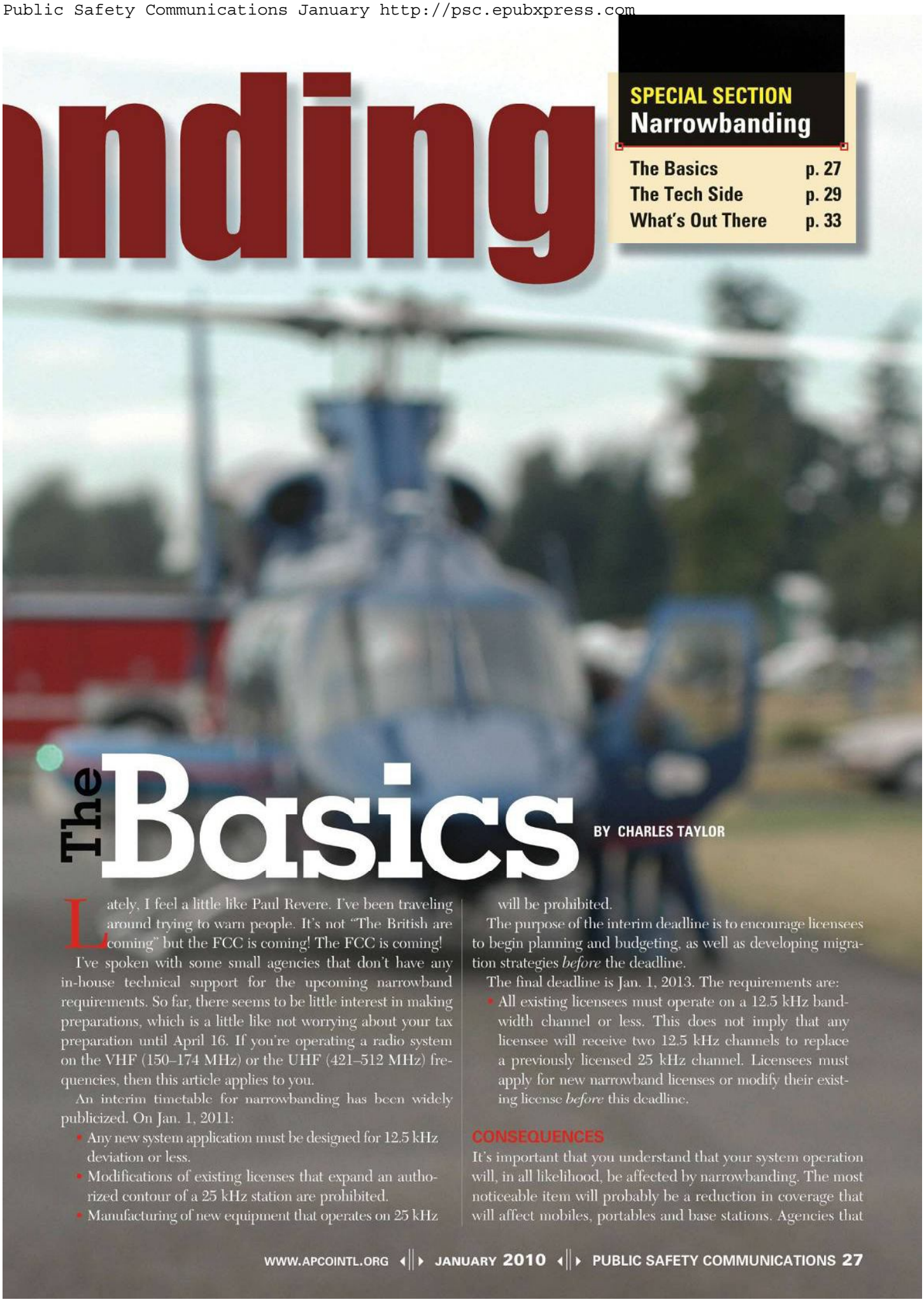
SPECIAL SECTION
Narrowbanding



The Basics

BY CHARLES TAYLOR

Lately, I feel a little like Paul Revere. I've been traveling around trying to warn people. It's not "The British are coming" but the FCC is coming! The FCC is coming!

I've spoken with some small agencies that don't have any in-house technical support for the upcoming narrowband requirements. So far, there seems to be little interest in making preparations, which is a little like not worrying about your tax preparation until April 16. If you're operating a radio system on the VHF (150–174 MHz) or the UHF (421–512 MHz) frequencies, then this article applies to you.

An interim timetable for narrowbanding has been widely publicized. On Jan. 1, 2011:

- Any new system application must be designed for 12.5 kHz deviation or less.
- Modifications of existing licenses that expand an authorized contour of a 25 kHz station are prohibited.
- Manufacturing of new equipment that operates on 25 kHz will be prohibited.

The purpose of the interim deadline is to encourage licensees to begin planning and budgeting, as well as developing migration strategies *before* the deadline.

The final deadline is Jan. 1, 2013. The requirements are:

- All existing licensees must operate on a 12.5 kHz bandwidth channel or less. This does not imply that any licensee will receive two 12.5 kHz channels to replace a previously licensed 25 kHz channel. Licensees must apply for new narrowband licenses or modify their existing license *before* this deadline.

CONSEQUENCES

It's important that you understand that your system operation will, in all likelihood, be affected by narrowbanding. The most noticeable item will probably be a reduction in coverage that will affect mobiles, portables and base stations. Agencies that

use pagers to alert field units should know that these will also be affected.

Why will system coverage be reduced? There are some scientific explanations for range reductions, but this is a non-technical article (see p. 29, "The Tech Side"). A simple explanation is that your transmitter deviation will be reduced by half. Your "voice power" will be reduced. Your radio receiver, which can't be narrowbanded, will still be expecting to receive a signal at full deviation. What will fill this newly created empty space? Noise. Noise from power lines, spark plugs, electronic cash registers, atmospherics and distant stations. Your voice signal is now competing with all of these other sources for your radio's attention. Your receiver will have a hard time separating your voice from all of this noise. As a result, you will experience a reduction in coverage. In some areas, this reduction could be significant.

PREPARATION

What can you do to get ready for this change? First, make a comprehensive plan to deal with the issues; include a list and a timetable. Update your FCC licenses. Your local APCO chapter will probably be able to assist you in this effort. Next, I suggest you conduct a complete system inventory. If you don't have an asset control system in place, now is a good time to start one. Inventory every piece of radio equipment you have in service. Record the manufacturer, model, serial number and date of purchase, if possible. Don't forget to count the portable stored in the captain's desk drawer. This list will tell you what equipment can be modified and what must be replaced.

Next, I suggest you perform a complete inspection of all base stations, repeaters and voting receivers. Pay special attention to antennas, feed lines, lightning arrestors, connectors and proper grounding. Look for anything that might allow unwanted signals or noise to enter your system. Replace parts as needed.

COST

Now you're ready to prepare a budget to replace some items. Remember, you're only two budget cycles away from the deadline. Keep your budgetary decision-makers informed. Council and commission members don't like surprises. You may have a great relationship with some vendor(s), but it's highly recommended that you have your equipment list reviewed by a neutral third party. Your local APCO chapter can be of assistance. There's a lot of cool new equipment on the market, but some of it may not mesh well with your existing system. You may want to replace base stations and voting receivers first; they're the backbone of your system.

Implementing this project will most likely have a cost for your agency. Various APCO members have participated in talks with government officials about this problem. One APCO member described it as "an unfunded mandate" in which the government requires an agency to do something but refuses to help pay for it. It's possible, but unlikely, that grants may become available. So it's important to prepare now.

There's a rumor going around that suppliers may be stocking up on equipment to sell as interim solutions. The transmitter will meet the new requirements but the receiver will not, meaning this equipment will have to be replaced again, probably sooner rather than later. Think twice before starting down this path. If you need new equipment, get something that's fully compliant and will have a useful life span.

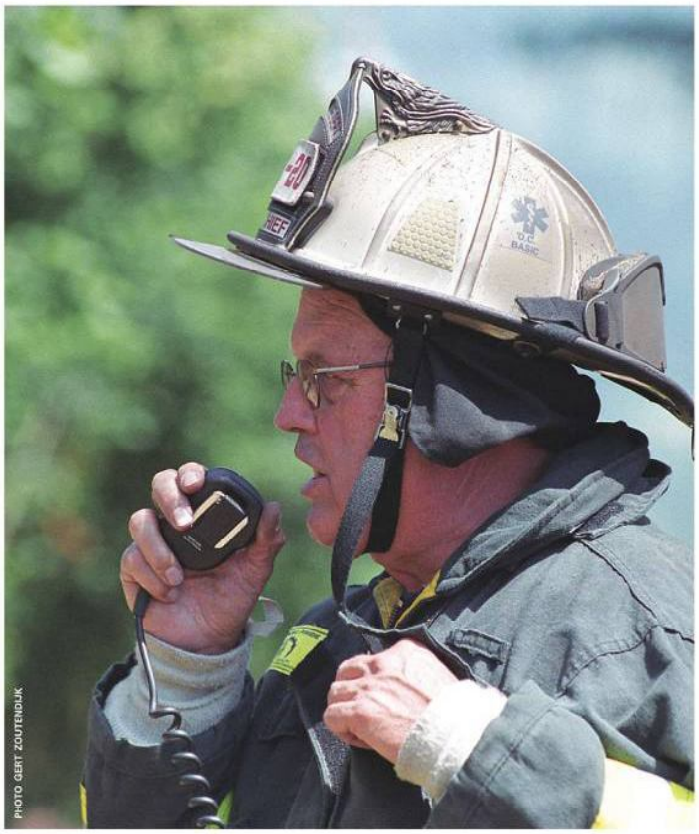


PHOTO GERT ZOUTENDIJK

Some rural areas may be far enough away from major cities to be able to use older, wideband receivers beyond the deadline. There is less interference in these areas due to adjacent channel noise, co-channel interference and other types of noise associated with the urban environment. In this case, using a unit with a wideband receiver may be acceptable for a while. Before taking action, I suggest conducting a comprehensive coverage test of your service area that will provide a basis for future reference.

The bottom line: The narrowbanding deadline is fast approaching. Now is the time to get started. If you're not a member of APCO International, I suggest you consider membership. There are many chapters across the country with members who will be able to provide assistance and make your transition to narrowbanding easier.

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