

## PREFACE

# *Our Path to Creating In-Car Technologies*

Director

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The automobile has long been an essential item of our daily lives. So long in fact that as we drive our car each day, we give no thought to how it works and its reliability even as our engine faithfully starts smoothly every morning, no matter how cold it is, and later as the engine speed automatically adjusts itself. Our tires firmly grip the road surface no matter how slippery it may be. In this way, various devices and equipment operate unknown to us but providing nonetheless a safe and comfortable driving experience. We are certainly quite aware of entertainment equipment, since we control it directly, but we really enjoy the music, images or information with a similar lack of awareness of the technology that provides them.

Let's briefly review the history of audio product development here at Fujitsu Ten.

- 1955: Supply car radios for Toyota Crown (This radio was of tube construction, could only receive AM and had serious noise problems.)
- 1959: Development of the first all-transistor car radio in Japan
- 1964: Development of AM/FM car radio (FM broadcasts started the following year.)
- 1973: Development of car cassette stereo with radio (Start of all-in-one unit)
- 1979: Development of PLL-type (Refer to below \*1) electronic tuner (Car radio that includes a microcomputer)

From the 1950's to 1980, in opposition to the ideas of "just a radio" or "merely a radio", our predecessors at Fujitsu Ten tackled their work with great passion to create "in-car technology". (That passion may have been much, much greater than what we currently possess.) At that time, as well as now, the ability to take the capabilities of products originally designed for the home and provide them in automobiles, reflects a desire to challenge obstacles and overcome them. While there are large differences today in the complexity of products in relation to factors such as enhanced performance (includ-

ing noise), miniaturization, and improved operability, I don't believe that desire has fundamentally changed.

I'd like to suggest some keywords that we can use as we take on the current challenge of creating "in-car technology".

①Compatibility with new media ②Miniaturization (high density) ③Low cost ④Noiselessness ⑤Heat-resisting measures ⑥Measures for voltage fluctuation ⑦ Vibration resistance ⑧Operability (including universal designs) ⑨High-level acoustics ⑩High-level image quality ⑪Information linkage within vehicles...etc.

Additionally, Fujitsu Ten is currently pursuing three paths: (1) HMI (2) Sensing (millimeter wave, radio-wave media reception, etc.) (3) Global environment

In regards to these, as the head of car info-tainment, I have big expectations personally in relation to the following three points.

- (I) HMI: Various information received from outside the vehicle should be provided by dividing it by
  - ① the timing
  - ② whether it is sound or image
  - ③ the recipient
- (II) Radio-wave media integrated reception: A built-in "antenna reception" device that is capable of receiving satellite transmissions and terrestrial broadcasts, as well as road-to-vehicle and inter-vehicle communication.
- (III) Vehicle interior acoustics: Flat speakers totally integrated with the vehicle and providing personal music areas.

All of the keywords that I mentioned above are important and we cannot cut corners on any of them. Of course, we cannot realize the development of such a divergent variety high technology just by ourselves. In order for Fujitsu Ten to produce products that no other company is producing, we must carefully choose and then concentrate our efforts. By concentrating our developmental power, we can surely create products with unique characteristics. I ask all of you, while casually driving your car everyday, to thoroughly "absorb the smallest details", organize these points and then carry out a full and complete exchange of ideas regarding your observations with your coworkers. I think that the seed of wonderful technical development can be found within even the most mundane of ideas.

As we keep our eye on numerous other exceptional enterprises, spread out across various fields, I am confident that we can forge our own path by finding, nurturing and creating products featuring developmental elements that allow for integration with the vehicle.

\*1 Phased locked loop

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