



## ■ Critical Issues

### ■ Although we introduced 3D-CAD, our engineers won't use it.

- We haven't been able to get the expected results, and the only thing that is increasing is the man-hours.
- 3D-CAD is being used only for design, not leveraged in other divisions.

### ■ Development process innovation in LSI design is not going well.

- We can't fix specifications.
- We often have to re-do the work.
- More work divisions thwarts successful linkage between RTL and circuit data.
- Since the engineers don't understand the technological issues involved in mass production, the yield is not improving at all.

## ■ JMAC Concept

### ■ Utilize design support tools such as 3D-CAD as development process innovation tools.

For top management who generally expect installation of tools to generate a favorable result, JMAC explains the necessity for development process innovation, and supports building, implementation and follow-up of the development process innovation that is directly linked to business results.

### ■ Organizational cooperation and system reformation and knowledge management

Development process innovation focuses on the following six points: the use of 3D-CAD as a design support tool, methods of making 3D data that is adaptable to design changes and layout changes, how to make designs that require the minimum die revisions and changes, role innovation to make the maximum use of the 3D data, and the improvement of technological asset quality.

JMAC has been committed to synchronized innovation of management techniques and digital engineering techniques. JMAC will carry out innovation of the development process through discussions together with engineers and related members until they are completely satisfied, and will provide support from a viewpoint including the building up of technological assets.

### ■ For source-oriented type process innovation in LSI development, build FF process reform techniques/concurrent engineering techniques.

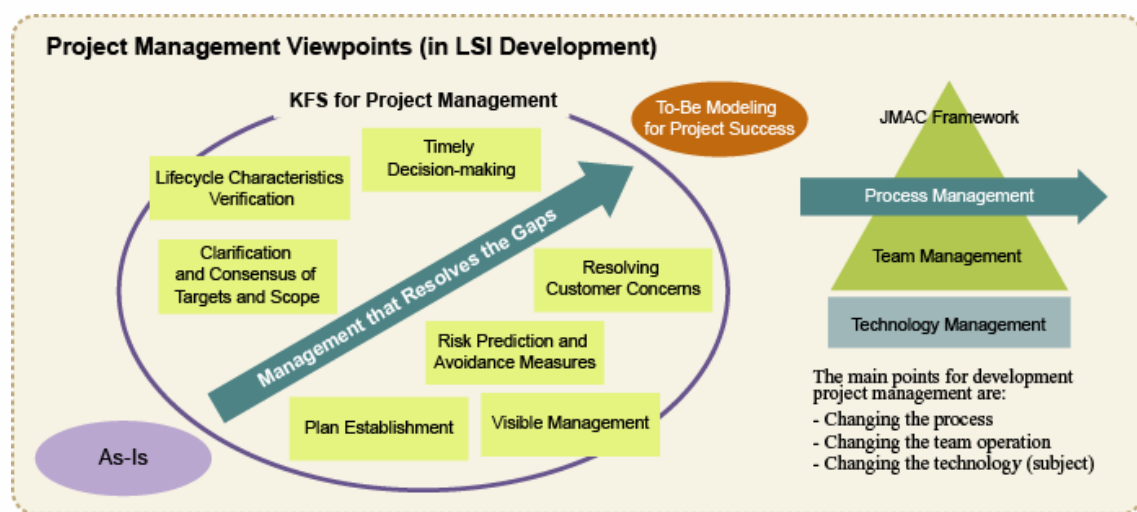
Together with each person in the workplace, JMAC always incorporates viewpoints of VOC (Voice of Customer) and customers of the LSI. JMAC applies various methods and supports the follow-up and settlement of newly installed technology by paying attention to the overall development process to build LSI development with value, and supports the results and adoption of the technology.



## JMAC Features

When implementing this program, JMAC holds thorough discussions with the members of the client organization regarding the anticipated changes to the development process. Further, incorporating development-related members, we concentrate on the creation of results. “Results” does not mean only business results, but also includes the building of personnel education and technological assets.

In addition, JMAC thoroughly examines development period shortening, design quality improvement, and yield rate increasing based on the overall development process. Then, JMAC proposes, implements and follows-up on the process, from the roles of members in the technology-related divisions to the review of the organizational structure. The arrangement of the project management is also included in the JMAC viewpoint.



## Results

### 1. Home electronics product development department

- Requirement to shorten development period using 3D-CAD
- Build system using 3D-CAD which links the planning, marketing, development, production engineering and CS departments, die manufacturers, and local factories.
- 20% reduction in development period, design quality improvement (In mass production, 70% reduction in rejected products)
- Development and installation of knowledge database

### 2. Device manufacturer LSI development department

- Due to many defects caused by mass manufacturing, there is a great demand to shorten the development period through a single operation by improving the design quality.
- Through the linkage between issue-defining in the related divisions at the start of development, and review analysis after completion of development, the design quality has been improved threefold and the development period has been shortened by 50%.
- Full awareness toward VOC (Voice of Customer) throughout the development process has enabled organizations to increase proposals specified for their customers and to enhance their product development capability.