

A Look at the Development Program at ASI Controls

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It is clear that substantial and perhaps critical changes are coming upon ASI Controls in the very near future. Business 'as usual' will no longer be the addition of features to the ASIC/1 or ASIC/2. The company is migrating toward a completely new product line. Certainly, this new line will support many of the features of the older 'configurable' and 'pre-programmed' products upon which ASI Controls has made its reputation. However, with the advent of a very much advanced technology, our product will take a substantial turn toward a more wide-spread field of application, and therefore, toward a much wider arena of sales opportunities.

At first glance, we might believe that this new technology will allow us to 'replicate' the total line of existing ASI Control products. Of course this is true, but the real potential in becoming a programmable product is to allow us to reach into any and all other disciplines of control.

ASI Control Resources:

With this prologue, let's now examine the resources within the confines of ASI Controls that will let this change take place.

1. First we have Bill Chapman; CEO and President is approaching the time in life when something other than the daily hassle of ASI business should have some importance to him. Bill has made ASI Controls possible. He started it, and has been at the helm ever since, and without him ASI would not be.
2. Jan Cielbala comes next. Every version of every product has come to reality through his efforts. No Jan, no product. Approaching retirement age, Jan is surely looking forward to a not too distant separation from the chaotic life of an Operations Chief.
3. Mashuri Warren comes next; constant, deliberate and the fount of all the documentation that ASI has ever offered. His specifications have guided all of us to create the product that has kept ASI in business. He has alerted us to his retirement in two years.
4. Paul Chapman; the major introducer of new ideas and modernization into the company's future. An integral component in the long term future of the company, and as it stands now, a central resource for development of the ASIC/3.
5. Kosta Economides represents the current and total hardware resource within the ASI confines. He has kept things moving for a number of years and can be the hardware future for the company.
6. Francis Chapman, hired into the role of Marketing Manager, and having achieved significant enhancements of the ASI marketing program, has been re-directed into the role of software programmer to accommodate another perceived 'requirement' for ASI to meet in order to keep its business rolling.
7. Mike Fong has demonstrated to perfection, that his abilities in handling customer relations as well as training are second to none.

8. Our field personnel have been outstanding in providing the VAR interface and also the customer contacts that are so essential to a successful product sales activity.
9. Nelson, Dave, and Laura make up the balance of the resident team.

Now, let's look at the individuals within the company that are what I might call the 'anchors'. Bill, Jan and Mashuri have brought this company to what it now is. Without them, ASI would probably be a fond memory. These folks are the ones that got us to the point where we might now look forward to a renewed existence in a controls field that requires the latest in technology just to compete. However, all things and all people do have a finite length of time on this planet. And, in order to enjoy the last period of life with a surcease of the anxieties that accompany our working years, these three 'anchors' will be looking for other things to do in the next two, at the most, three years.

Considering these three fellows as 'anchors', does not in any way denigrate the offerings of Paul, Francis or Kosta. It is just that the aforementioned have been key to the last twenty years of operation and we can now look forward to the younger set taking over and moving us toward our earlier expectations.

There are some important caveats, however:

Many things are coming together, all of which seem to indicate a two year time line for ASI Controls to move on to the next chapter in the business.

If ASIC/3 is to see production in quantity in two years, I believe it necessary to concentrate on the development of this totally new product,

In order to allow concentrated effort on getting ASIC/3 to market, I further believe that development effort must be redirected away from ASIC/1 and ASIC/2 products. Continuing to create new features and more new /1 and /2 personalities will siphon critical resources away from making /3 a reality. I suggest that we 'freeze' ASIC/1 and /2, with resources directed to them only for bug fixes.

For ASIC/3 to take the place of current products in the future, the 'brain' of the ASIC/3 will be used in lower cost hardware to accommodate the continued need for VAV and similar less complex product. This smaller product will also require development during this next two years.

I find that many ASI staff members have not yet grasped the enormity of the development program required to implement such a complex product as ASIC/3 promises to be. While our resources are directed away from /3 there will be some unknown extended development cycle required to get /3 into production. There will be no guarantee that /3 will be ready in two years!

Hardware review required.

It is my belief that the ASIC/3 hardware should be 'humming' right now, with low level drivers exercising every conceivable input/output lead including all microprocessor ports. Only with extensive board exercise will it be possible to determine the complex interactions of leads and components. Without such intensive low level code work now, we will find board revisions going on well into the development cycle, and unfortunately, beyond.

Something similar might be said about the pending revisions to the ASIC/1 and /2 products. Both board and code modifications could materially benefit by subjecting them to what might be termed 'peer review'. There are several revisions to /1 and /2 hardware pending right now and we must get away from the concept that our board problems will be found in our 'next' revision. A mechanism for achieving this engineering review process should be high on the list of priorities for ASI. Much more extensive hardware testing is absolutely necessary and if further resources are needed, then we must review our staff allocation to testing.

Close Alliance,

Finally, there must be extended interaction between Mashuri, Paul and Kosta. Current ad hoc arrangements might well be augmented by a slightly more rigorous correspondence. Periodic written work statements leave a trail that can become invaluable in tracing future bugs. Writing down one's progress helps the individual to marshal his thoughts and can lead to uncovering omissions and other errors. Of course, some of this 'diary' keeping may be currently being used, but sharing the written work is necessary to achieve the most help.

A further look at Francis leads to the possibility of his adaptation into some of the arena that keeps Bill chained to his desk. If further software developments supporting existing product continue at the present rate, both Paul and Francis will not be able to concentrate on the coming new generation of product. We must harness the productivity of Francis to help us reach our two year goals.

Paul is on the critical path for development of software for ASIC/3. Further addition of features to the software he has already developed will detract from /3 progress. Mashuri is depended upon to provide the specifications that will lead to successful implementation of HVAC algorithms in /3. Kosta is the only resource to provide fully functional hardware to house the work of Paul and Mashuri.

Where from here?

The ASIC/3 will ultimately replace our entire product line and we should be careful to assure that we have all hardware components to supply /1 and /2 products until they are replaced in two or three years. With the frequency with which components have become discontinued and obsolete, it is essential that we include in our development of /3, the smaller product that it will replace. This makes a more rigorous development of hardware during the next two years, to include VAV and its kin.

When we look forward to two years of time available to introduce the ASIC/3, it is tempting to think that we have loads of time. To the contrary, with all priorities rearranged as suggested in this writing, we will have just enough time to introduce the ASIC/3, in all its versions and varieties.

A List of Recommended Steps

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1. Stop all development work on ASIC/3.
2. Tie up all loose ends for as ASIC/1 and ASIC/2. Include pending hardware changes, firmware bug fixes and features scheduled to be included, and software supporting existing product.
3. Freeze all development of ASIC/1 and /2, excepting catastrophic bug fixes.

4. Develop a liaison method for the development team, including interchange of daily work logs.
5. Select and name a Systems Engineer to provide integration of the hardware, firmware and software interfaces.
6. Develop a means of providing Peer Review of hardware, firmware and software. This will necessarily be from periodic outside resources.
7. Prepare a rigorous component evaluation, storage and cataloging system.
8. Consider best methods of achieving local prototyping of PCB.
9. Resume development of ASIC/3.
10. Reexamine the hardware to be developed for ASIC/3:
 - Determine the subset of microprocessor related hardware that will be the 'brain' of all versions of ASIC/3 product.
 - Consider creating a multi-layer PCB layout using north-south and east-west layers. A layout that can be applied to all new products with unique hardware requirements clustered around the 'brain'.
 - Consider first development effort constrained to a less complex application such as VAV.
 - Consider development of the 'brain' as a separate plug-in PCB.
11. Develop written specifications for all firmware drivers prior to writing same.
12. Create firmware drivers for those features required in the less complex application.
13. Intensely exercise the PCB with the firmware drivers at frequencies beyond those expected in final product, correcting those layout conditions that result in instabilities and faults.
14. Provide written specifications for the software that will be at the core of the 'brain'.
15. Provide written specifications for the application software that will define an HVAC product.
16. Proceed with the development of ASIC/3, culminating at the end of two years with a full family of controllers.
17. Be prepared for expansion into areas of application not yet reached by ASI products.