➔ MESS0011: American Integrated Circuit & use of ORDA [1]

MESS 0026

MIMS 3.1 - American Integrated Circuit as a Pre-Engineering AIM+ and SPACERS//Resilient Compliant Project; a case study (part 1)

Sf. R. Careaga, BSEE, MSTOM, COO & KYC. A. Hardin, BSC, CEO
November 2022

ABSTRACT

In this paper the authors reveal some moderately sensitive process flows and thought processes surrounding pre-engineering American Integrated Circuit to demonstrate the scientific, engineering, and business/financial value of the MIMSiscal work, from pre/post planning right through production stages. Further commentary from colleague J. Kines may follow.

Keywords: semiconductor - manufacturing - STEMM - planning - SPACERS - AIM - engineering

[1] https://www.academia.edu/87820768/MESS0011_Utilizing_the_ORDA_INED_standard_American_Integrated_Circuit_is_a_company_built_around_STEMM_utilizing_Operations_Research_and_Data

Introduction

In Conquering the Solar System[2], the author laid out a strong framework for massive growth. In MESS0015[3], he began laying out the justification for massive, AIM-certified scaled growth of semiconductor manufacture for a special need: satellite expansion to create the Birkeland Polyphase Superweb[4]. In both works, increasingly, A. Hardin had key roles to play in rounding out the vision and creating the tech-stack justification. More SPACER[5] papers are soon to follow. However, the author wanted to bring the CEO of American Integrated Circuit in on this discussion to elucidate the new exemplar of pre-Engineering: AIC. AIC is both AIM[6] and SPACER ready and with the author's help (as COO, as mentioned in MESS011[7]) Resiliently built, and with national security in mind. The following Letter is an example of the thought processes that A. Hardin has put into the endeavor, along with some early release, moderately highly sensitive design work, demonstrating the key visioneering that goes into building America's Next[Next] level companies.

Letter from the CEO

How is it that the authors continuously turn out new IP and technology on a daily basis? While Intelligence is not lacking in either case, I would like to make the observation that it is not entirely necessary when using structured thinking.

The use of pre-engineering is a topic addressed in many educational institutes, though it is not clearly articulated to how or why such steps are necessary.[8] An internal rule that is commonly used by the authors is 20% of the work to achieve 80% of the results. As serial entrepreneurs, neither Sf. R. Careaga or Col. A. Hardin have the time to devote an 8-10 hour day on any of these problems in the deepest depths. Therefore the structure for which one thinks needs to be of the utmost efficiency to achieve the desired results.

One such example is the buildout of the AIC chip manufacturing $6x10^6$ ft.^{2} facility. Before the property was even discovered, there was a basic understanding of what would be needed in a manufacturing facility of this size. Nearly every large manufacturing entity has a problem with logistics. Getting a high enough volume of raw-materials and components into the facility and to the right department, and getting the finished goods out of the facility efficiently with minimal costs, is the problem. Many companies are aware of the top-down or bottom-up analysis process for determining markets, product costs, COGS[9], etc. But seldom do people think of the product-out, or the outside-in perspectives. This is to say your COGS may be perfectly well calculated, but

---

[2] Conquering the Solar System
[3] MESS0015 - SPACERS: A study in expansion
[4] https://www.academia.edu/38560727/Birkeland_Polyphase_Superweb_A_Proposition_for_the_Future_Betterment_of_Mankind_global_defense_interconnection_and_unlimited_power
[5] https://sites.google.com/view/epemcgateway/epemc/spacers
[6] AIM - Advanced Idea Mechanics - Planning Document
[7] https://www.academia.edu/87820768/MESS0011_Utilizing_the_ORDA_INED_standard_American_Integrated_Circuit_is_a_company_built_around_STEMM_utilizing_Operations_Research_and_Data
[8] https://www.transy.edu/academics/program/pre-engineering-program/
[9] Cost of Goods Sold

if you fail to address the cost for a person[10] to move the product from one step to another, to package the product, ship, go and get the box of screws, etc. then you are losing a significant portion of your overhead considerations.

This does not take years in the industry to understand either, though that does not hurt. Before I even knew what our factory was going to look like, I was looking at the biggest pieces that could cause bottlenecks. Roads going into the facility, speed limits of those roads, upcoming construction of those roads, how will we redirect traffic if the main highway was to have a large accident of construction. How does the city and community feel about a large industry going into their community? Is the area favorable towards business or one type of business specifically? What kind of workforce can you expect to get from the neighboring communities? How are the schools and their education programs geared to make your business easier/harder? All of these questions occurred before I even knew what type of building I wanted, and miles before I started to think of our manufacturing process and needs.

Structured Thinking

Ok, now you have a basic idea on what environment you want to construct your business in, now you need to consider the resources that are available to you. Do you have enough electricity? 1-phase, 2-phase, 3-phase; 100-Amp, 200-Amp, 1000-Amp. 2000-Amp service, etc. Do you have enough water? Gas? Do you have the ability to get rid of your wastewater? Will you need a wastewater treatment facility? Sludge evaporator? Can you return the treated water to a natural source such as a creek or river? What regulatory considerations will you need to meet to do this? Are the utility upgrades going to be covered by the utility company, City, or State? Or will you need to cover those expenses?

Now that you are thinking about what resources you have available to you, it becomes possible to think about the overall function. As mentioned above, you will need to address the key logistics as it is the **largest bottleneck**. Will we be able to use multiple delivery points for the raw material delivery? Will we dedicate a portion of our facility for the inbound and outbound process? Do we have multiple products that need separate logistical considerations? Each step in the process needs to be broken down in this method. How will you get things in, how will you get things out. After all, the physical movement of three-dimensional objects is the primary consideration with most optimizations. Don't just think in three dimensions, think in four and five. Yes, you can go up, down, left, right, forward, and backward. But you can move the order of steps, sequence of assembly, relation of these sub-assemblies to each other, the method of moving the sub-parts and assemblies in relation to each other. So while the simplest sequence would be ABC, you can incorporate A1+A2, B1+B2, and C1+C2 which would have an increase in time by 100%. Or, if each of these steps were completed independently, then they could all be assembled at once for a fourth step with another 100% increase in time. Now consider the space requirements, fixturing, personnel, and energy costs to do this. Are you still improving efficiencies or are you decreasing time with incremental energy and labor increases.

So consider this for a moment. Thinking in one dimension is "ABC." Similar to the list that I will include below, you can start at the top of the list and work your way down like a checklist or a punch list. But what I want you to do is to think about it in the **third dimension**.

[10] Let alone if this is the right person:
https://www.academia.edu/76140647/MIMS_Aether_Flow_and_Business_Circuit_Theory

1. Identify
    a. What is already done?
    b. What is not done, why?
    c. What bottlenecks and problems have others identified?
    d. What new technology could be used to provide an advantage?
2. Environment
    a. Where will this occur?
    b. What design considerations will depend on these conditions?
    c. Can you change the environment or control the variables to your favor?
    d. Can you separate the environmental considerations?
3. Resources
    a. Tools
    b. Power
        i. Electricity
        ii. Fuel
        iii. Storage
    c. Utilities
    d. Raw goods
    e. Labor, education, internet, data, etc.
4. Function
    a. What is the ultimate end result?
    b. What precision do you need to achieve with that end result?
    c. What speed will you need to achieve that end result?
    d. Will you need to repeat the process or is it a one-time function?
    e. How long will the function occur?
    f. Where are the consumable aspects and what are you willing to give up to accomplish the end result?
5. Scale[11]
    a. Will you be moving up in scale or down?
    b. Quantity or quality?
    c. Frequency of performing the function?

NOTE - this process needs to be repeated again during the Planning, Engineering, Refinement, and Implementation phases; which is why a habit of pre-engineering is so important!

The “Fourth” Dimension

The above list in the third dimension you would notice that instead of 123, you can get to your resources and discover that the environment needs to change. So you may choose a city that is not AS favorable, but you get an abundant supply of Natural Gas. Or you may see that instead of Highway access, you need a shortline train access. Each are considerations we had to think about when we were discussing our microchip manufacturing for AIC.

[11] MIMS 2.62 - MESS0027: the Four Domains to Win WW3.0 and WWIII

Now let's add the fourth dimension to this same list. How can we change the list to bring in the fourth dimensional thinking? Elon Musk commonly talks about the way he tests his thinking and assumptions[12]. We are going to do a similar thing here. In what we are designing, does it even need to be designed? The best part is no part. So instead of optimizing a part that doesn't need to even exist, we have to think about how we can simplify the process. How can we use new technology to eliminate other parts, costs, processes, and expenses? How can we use OLD technology, yes you read that right, old technology and equipment to make new systems better?

Another example from our factory is when I discovered an ideal factory location, it did not have natural gas like I would have liked, or a shortline train to bring in bulk material. We can add those later if we need to, and it also did not have the ideal electrical supply. So as I just mentioned, within a 5-year span, plenty of time for the company and process to grow and expand, we will be able to bring in the short-line, and Natural Gas supply. The electrical supply could be a potential issue. But instead of eliminating it as an option, I thought fourth-dimensionally, and determined that we could build our own power station to cover these immediate needs. This will address several pain points. We will not have peak charges from the utility company that has bankrupted so many industries, including the shutdown of a General Electric factory. We are able to produce what we need, have greater control of our electricity costs, and we can use some of the gas blow-by from our other equipment and recover the energy, increasing our overall efficiency. Similarly, bulk material handling equipment is often expensive and has long wait times for delivery. I decided to use a readily available auger used by farms to load grain into storage silos. The older equipment performs better in many ways than the commercially available equipment, is a fraction of the price, and has no wait period!

The 'fourth dimension' relies heavily on creativity, whereas schools are not equipped to teach to students. In the classroom setting, you are given a problem and expected to answer. But in many scenarios, it would be better to simply say, "this problem is not worth my time to answer," and simply move on to more important questions. Or you can tell the teacher their question is stupid, and replace it with one that actually makes an impact to the desired end result. Do you need to put everything onto a smart touch screen? Or could you just have a button and a key switch? Do you need a $500k robot? Or can you hire five guys with shovels, and pay them well and give them a warm meal during their shift? Sure in the end you will likely automate the process, but the five guys can start immediately.

Finally: the fifth dimension.

Now for fifth-dimensional thinking. What if you owned the chip fabrication, the robotics, tooling and engineers to make that $500k robot? Each and every decision in this pre-engineering process starts the process flow of new decisions, new engineering challenges, new opportunities to have an impact on the overarching process. With these considerations, I hope you can now understand why AIC is not competing with China, TSMC, or any other entity. We are competing with the **bigger picture**, the future of tomorrow and what we have to do TODAY to get us there. The authors are thinking in six, seven, and eight dimensions, I implore you to take a guess as to how that is possible and will employ you if you are correct in any ONE, and can demonstrate a scenario.

Conclusion

Looking across the pre-engineering work done thus far, what impresses the author most about the CEO's work so far on AIC is how robust it is for the stage of development, without getting hung up on

[12] The First Principles Method: What is Elon Musk Talking About?

perfecting a particular process. There is a tendency to overdevelop and as that happens, real R&D slows down, and sales and such grind to a halt. But this has not (yet) happened at AIC, where the thinking is next level, and next-to-the-next level, and flexibility remains high enough to adopt new plans into designs. However, there is a caution: moving on so fast from good things is *not* the same as pre-engineering or Next[Next] thinking! That's simply changing for change's sake, which is not ideal or ORDAINED because it is not energy efficient.

In future papers in the 3.1X series the authors will be working on AIC, AIM, or SPACERS-related topics, as they relate to pre-engineering specific things. Also, the concepts used in this will be elucidated in the Engineering 3.9X series, and anywhere in between with specific MESSies. The point being that we practice what we preach. Only time will tell if these efforts yield better mimsical, strategic, and business results than the intuitive methods, or following any-ole' hunch and "just doin' it."

Table 1 - Pre-Engineering a Giant (click images to expand)

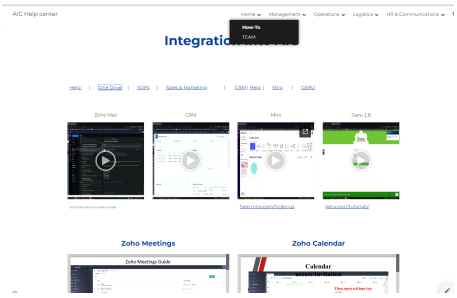

Figure 1 -Team/ZOHO integrations

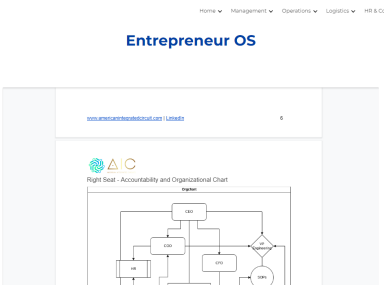

Figure 2 - EOS + Org Chart

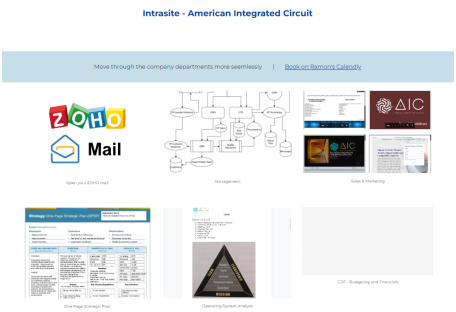

Figure 3 - Embeds and Direction

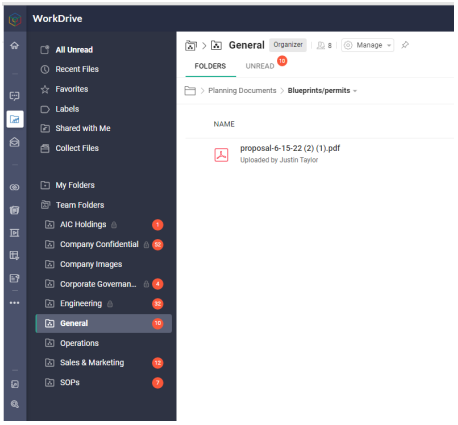

Figure 4-ZOHO file structure; deep

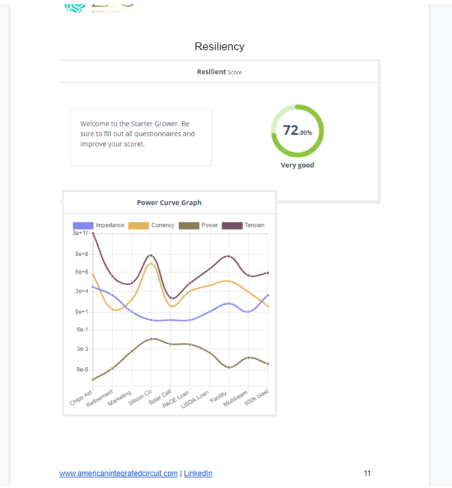

Figure 5 -Resilient Score[13] & Project Power Curve[14]

Figure 6 - Whole Chiefs/Team built Executive Summary Template

[13] www.startergrower.com | www.resilient-way.com
[14] MIMS 2.11.1 - MESS0002: The Project Power Curve

References

1. "MESS0011 - Utilizing the ORDA:INED standard; American Integrated Circuit is a company built around STEMM utilizing Operations Research and Data," Academia, Sf. R. Careaga, 2022, https://www.academia.edu/87820768/MESS0011_Utilizing_the_ORDA_INED_standard_American_Integrated_Circuit_is_a_company_built_around_STEMM_utilizing_Operations_Research_and_Data
2. "Conquering the Solar System," Academia, Sf. R. Careaga, 2021https://www.academia.edu/62757621/Conquering_the_Solar_System
3. "MESS0015 - SPACERS: A study in expansion; the demand for semiconductors (part 1) -Satellite Communications with a 3x application for rough calculations on Birkeland Polyphase Superweb 1 satellite expansion," Academia, Sf. R. Careaga, 2022, https://www.academia.edu/88245614/MESS0015_SPACERS_A_study_in_expansion_the_demand_for_semiconductors_part_1_Satellite_Communications_with_a_3x_application_for_rough_calculations_on_Birkeland_Polyphase_Superweb_1_satellite_expansion
4. "Birkeland Polyphase Superweb A Proposition for the Future Betterment of Mankind, global defense, interconnection, and unlimited power," Academia, Sf. R. Careaga, 2019, https://www.academia.edu/38560727/Birkeland_Polyphase_Superweb_A_Proposition_for_the_Future_Betterment_of_Mankind_global_defense_interconnection_and_unlimited_power
5. "SPACERS - Public page," (EPEMC) Gateway) Sf. R. Careaga, 2022, https://sites.google.com/view/epemcgateway/epemc/spacers
6. "AIM - Advanced Idea Mechanics - Planning Document, " Sf. R. Careaga, 2022, https://docs.google.com/document/d/13LERLHpdrossnPzJ-EBSUSOzLIvJ5arTNoCEidt0c9I/edit
7. "MIMS: Aether Flow & Business Circuit Theory," Academia, Sf. R. Careaga, 2022, https://www.academia.edu/76140647/MIMS_Aether_Flow_and_Business_Circuit_Theory
8. "The First Principles Method: What is Elon Musk Talking About?" Youtube/ Think Like a Physicist, 2020, https://www.youtube.com/watch?v=pfgQS5kK70w
9. “MESS0002 - MIMS 2.11.1: EPEMC Management As Applied through the Project Power Curve,” Sf. R. Careaga, 2022 https://www.academia.edu/87225337/MESS0002_MIMS_2_11_1_EPEMC_Management_As_Applied_through_the_Project_Power_Curve
10. “MESS0027 - MIMS 3.11: the Four Domains to Win WW3.0 and avoid World War III,” Sf. R. Careaga, pp.8 https://www.academia.edu/89645682/MESS0027_MIMS_2_62_the_Four_Domains_to_Win_WW3_0_and_WWIII