Quality Systems Manual

Lab Services

Joining Quality with Our Customers' Expectations

Revision Level: 11.4 (6-1-15)

Authorized by:

Brad Nagy, Manager Weld and Test Labs

1.0 Table of Contents

2.0 Revision Record

Revision	Revision Date	Revision Detail	Approval
1-10	Various	Revisions 1 through 10 were rendered obsolete by revision 11.0	
11.0	4-29-11	Complete rewrite and reformatting.	C. Rieser
11.1	8-5-11	Policy for use of the A2LA logo added to section 8.0 EWI Lab Services Group Policy Statements, page. 7	C. Rieser
11.2	6-5-13	Position titles revised on page 11	C. Rieser
11.3	7-30-13	Minor wording revisions to Section 7.0	C. Rieser
11.4	6-2-15	Section 11, Representative Org Chart revised. Section 12, Roles and Responsibilities of Technical Management revised.	C. Rieser

3.0 Scope

This manual is applicable to the Lab Services Group of EWI located at 1250 Arthur E. Adams Drive, Columbus, OH 43221.

4.0 Exclusions

This Quality Management System described in this manual conforms to all the provisions of the current revisions of the ISO / IEC 17025, ISO 9001 and all applicable customer specific requirements with the following exceptions:

ISO 9001 Clause 7.3 Design and Development because EWI is not design responsible for product design and development to customers requiring adherence to the ISO 9001:2008 standard.

ISO/IEC 17025 5.7 Sampling – EWI conducts no sampling for testing

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5.0 Normative Reference

All Process Analysis Diagrams contained in this manual are to be considered normative and the latest revision applies. No changes to the revision level of this manual will be made to reflect changes in the normative documents.

6.0 History of EWI

The importance of welding in manufacturing had long been recognized, as was the need for a U.S. center to lead research and development in this area. Prior, in contrast to many other industrialized nations, the United States lacked a central applied research resource in welding.
In the 1970s, several U.S. conferences were held to explore development of a welding institute. At one point, welding was identified as one of several proposed federal technology centers, but funding for this initiative did not materialize. Fortunately, a major opportunity to advance the field of welding was presented when Ohio Governor Richard Celeste established the Thomas Edison Program in 1984. Created to stimulate economic development, a centerpiece of the program was the plan to create several Thomas Edison Technology Excellence Centers in the State of Ohio. A competitive bid process to establish these centers was announced.

There existed major resources in Columbus to justify establishing a welding center of excellence. The unique Department of Welding Engineering at The Ohio State University (OSU), now the Department of Industrial, Welding and Systems Engineering, was in the process of new growth and development. An important part of the department was the National Science Foundation-sponsored Center for Welding Research that was established in 1980. Likewise, Battelle Memorial Institute had a long tradition of excellence in welding research and development. OSU and Battelle made the decision to cooperate in a university-led proposal for an Edison Center of Excellence in the field of welding. Originally conceived as the "Ohio Welding Research and Development Institute" to integrate existing facilities at OSU and Battelle, a final proposal was submitted to the State of Ohio in the spring of 1984. Simultaneously with the OSU/Battelle effort was renewed interest in a national welding center.

With this rapidly changing welding situation in the U.S., The Welding Institute (TWI) of the U.K, which had a strong U.S. presence, undertook evaluation of its future activities in this country. Several major events occurred. On June 12, 1984, Governor Celeste announced that the
OSU/Battelle welding center would be one of six technology centers established under the Edison Program. In September of 1984, OSU committed $4 million to purchase and renovate a 46,000 square-foot building adjacent to the campus for use by the Center on a rent-free basis for several years. The decision was made to incorporate the newly named "Edison Welding Institute" as an independent corporation at the 1100 Kinnear Road facility. In November of that same year, a cooperative agreement was signed with TWI that closely allied the two organizations, and immediately transferred 85 TWI members in the U.S. into EWI membership.

The growth of Edison Welding Institute then began. Ronald Reeve, EWI's first Executive Director, set up operations with a small number of staff in the newly acquired (but not renovated) Kinnear Road building in December of 1984. Battelle transferred the welding staff and associated equipment to the institute, and several TWI staff came on board for two-year assignments. With the initial $4.1 million Edison grant and 85 TWI-transferred members, EWI was in business.

Renovation of the building began in 1984 and was completed in 1986. By June of 1985, the institute had grown to 25 staff. Initially, Battelle handled the administrative matters of the institute. These activities were transferred to EWI in 1986. In 1987, after chairing two engineering departments at The Ohio State University, including the Department of Welding Engineering, Dr. Karl Graff became EWI's second Executive Director.

Dr. Graff played a key role in the establishment of EWI. While at OSU, Dr. Graff led the National Science Foundation-sponsored Center for Welding Research, one of the early National Science Foundation industry-university centers. In 1984, he led the effort to establish EWI, a direct spin-off of the Center for Welding Research.

By the early 1990's, and with significant funding from the State of Ohio Capital budget, EWI began to make plans for its present facility, 132,000 square-feet, located in the OSU Research Park on Arthur E. Adams Drive. The new facility, completed in September 1996, is also home to the EWI-operated Navy Joining Center (NJC) and OSU's Welding Engineering Program. The result has reinforced a unique interplay of industry, government and academia unmatched in the United States.

In recognition of the increasing diversity of the field that it serves, the institute adopted "materials joining technology" as the most accurate descriptor of its activities, and increasingly has used simply "EWI" as its primary means of identification.

On July 1, 2005, Henry J. Cialone accepted the position of President and CEO of EWI. Previously to joining EWI, Dr. Cialone enjoyed 24 years at Battelle in various capacities most recently as Vice President of the Commercial Energy business at Battelle.

Since its 1984 start-up, EWI has grown in size and capabilities. Most importantly, it has grown in the number of member-company customers it serves, with vital assistance in the critical field of materials joining technology. Today, EWI is a leading engineering center in the United States dedicated to the field of materials joining.

7.0 Management Commitment, Quality Policy, Quality Objectives, Quality Manager Responsibilities

Quality Objectives

- **Client Impact** – Give our members a competitive edge
- **Technical Excellence** – Do quality work using the best talent and latest technology
- **Operating Efficiency** – Fuel reinvestment by operating profitable operations
- **Team Relationships** – Work together toward EWI's goals

These objectives support the quality policy and are supported by the measures of effectiveness established for processes throughout the organization.

Management Representative

The Quality Manager has been selected by the top management to

a) ensure that the processes needed for the Quality Management System are established, implemented and maintained,
b) report to top management on the performance of the Quality Management system and any need for improvement,
c) ensure the awareness of customer requirements throughout the organization.

Management Commitment and Quality Policy

EWI and its associates are committed to providing testing services in a professional manner at the highest level of quality to meet all the needs of our customers.

In order to accomplish our goals, we have adopted and implemented a quality system that meets or exceeds the requirements of ISO/IEC 17025, an internationally recognized standard for testing labs.

Associates at all levels of the Lab Services Group are made aware of *and have implemented* the policies and procedures of this system and continually strive to improve them.

We feel that these principles are reflected in our quality statement below.

Joining Quality with Our Customers' Expectations

6.0 History of EWI

8.0 EWI Lab Services Group Policy Statements

In addition to the aforementioned quality policy, other governing polices of the EWI Lab Services Group include the following:

Materials/Equipment/Services Acquisition
It is the policy of the EWI Lab Services Group to procure services and supplies that could affect the quality of testing only from approved sources. The approval process will involve evaluation of potential suppliers to specific criteria related to their quality system and performance among others.

Complaints
It is the policy of the EWI Lab Services Group to investigate and seek prompt resolution to every complaint from both customers and other sources both internal and external. It is a requirement of all LSG associates to report all received complaints, whether in writing or orally, to the Quality Manager or to the Director, Weld and Test Labs.

Nonconforming Tests
It is the policy of EWI Lab Services Group to investigate and, to the extent necessary, take action when any aspect of its testing work, or the results of this work, do not conform to its own procedures or the agreed requirements of the customer.

Corrective Actions
It is the policy of the EWI Lab Services Group to investigate and, to the extent necessary, take corrective action when nonconforming testing or a departure from the policies and procedures of the quality management system or technical operations has been identified.

Training
It is the policy of the EWI Lab Services Group to identify and fulfill training needs of its associates based on analysis of need, opportunity and changing technology. LSG is committed to maintaining high skill levels of associates to better serve both our associates and our customers.

Use of the A2LA Logo
It is the policy of the EWI Lab Services Group to use the A2LA logo in compliance with the A2LA Advertising Policy. The logo is controlled by the Laboratory Quality Manager for use in all laboratory documentation and EWI web sites.

9.0 Business Ethics Agreement and Confidentiality

EWI's reputation for integrity is one of its most valuable assets and is determined by the conduct of its officers and associates. Every EWI Associate and Manager occupies a position of trust. We must be particularly sensitive to any behavior, on or off the job that might erode that trust in EWI or in our individual fairness, impartiality or the good faith of our acts or decisions.

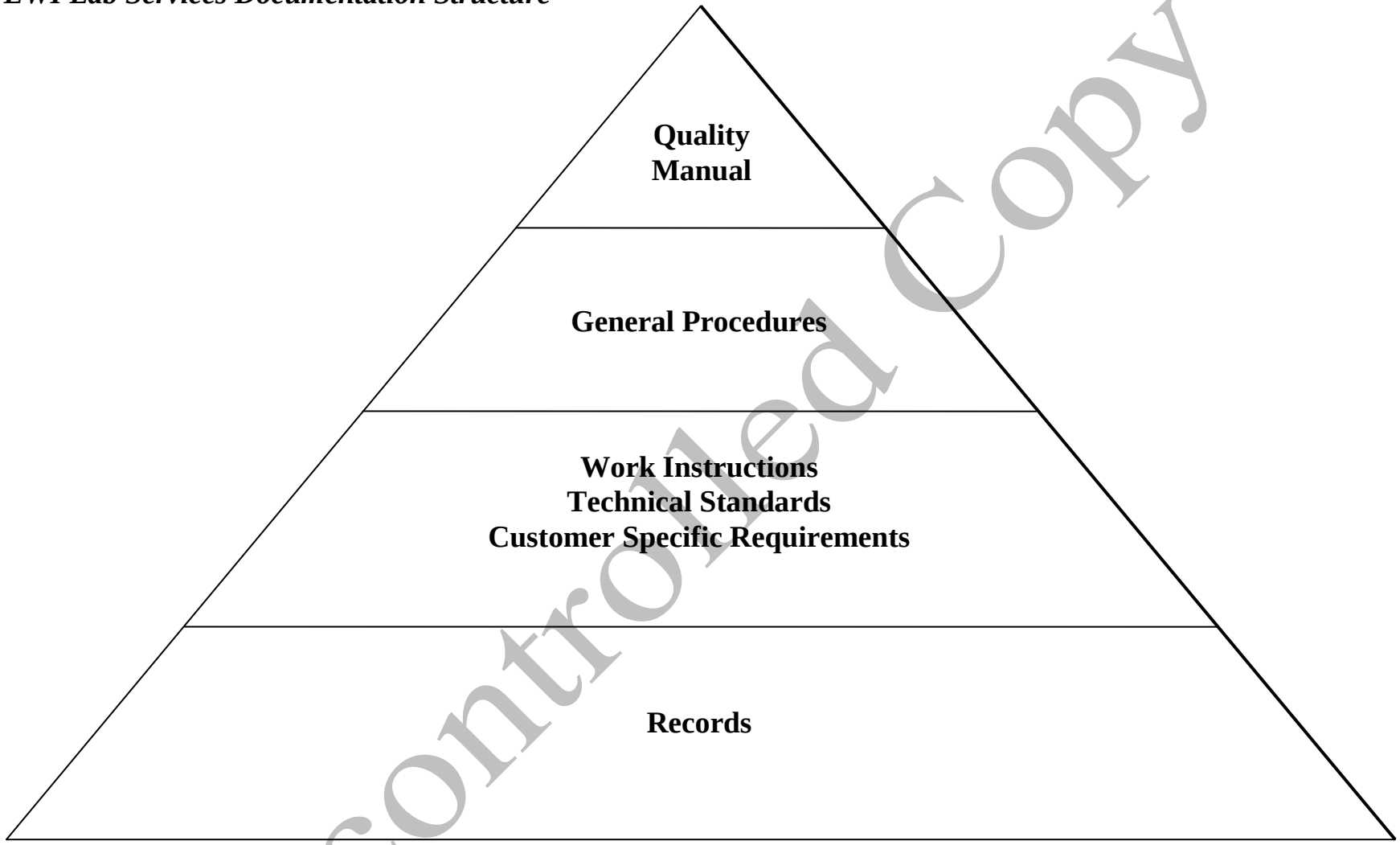
Business Ethics: Consult the EWI Code of Business Conduct. Compliance is a condition of employment.

Conflict of Interest: A "conflict of interest" occurs when your private interests interfere – or even appear to interfere – in any way with the interests of the company, its clients and stakeholders. Business relationships or situations which involve personal or financial interests, including involving you or your immediate family or friends and your EWI job responsibilities, must be carefully avoided. Specific areas of concern are outlined below. If any of these apply, you must promptly inform EWI's Chief Ethics Officer, currently the VP of Human Resources, and disclose in writing the nature of your interest or potential conflict of interest. The Ethics Officer will investigate to determine if a real conflict is present or could be present. If not, the Associate will be given a written clearance to proceed with the action and the notice will be placed in their personnel file. (See also the EWI Code of Business Conduct)

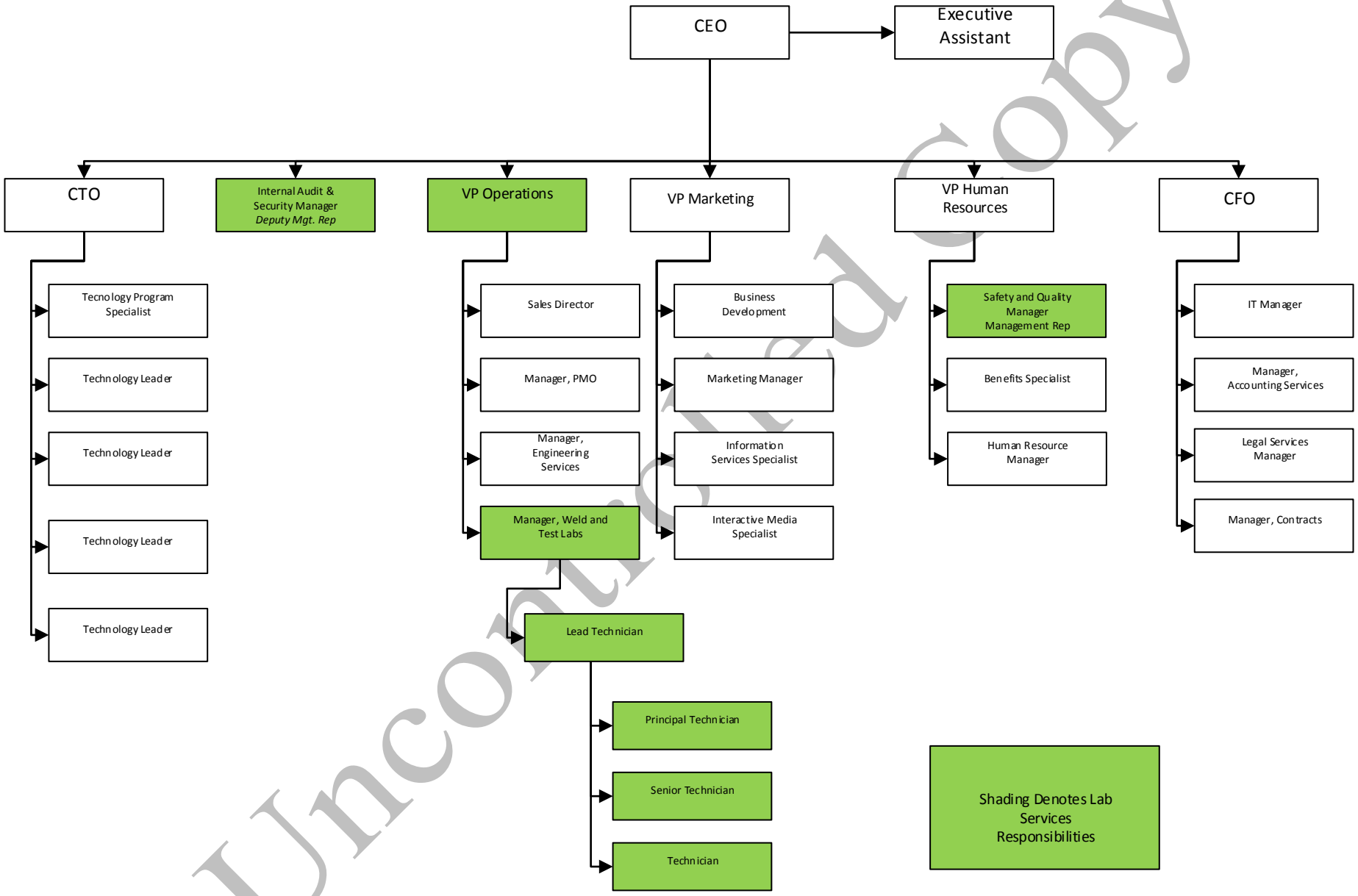
- You or any member of your family has a financial or other personal interest in any client, supplier or other firm that could affect the objectivity of business decisions in which you are involved. This includes any business(s) owned or operated by you.

- You are recommending or approving the recommendation of a particular supplier or business partner and you know that you or a member of your family/household or that of another EWI Associate is employed by or controls any interest in that supplier or partner. This should include close, non-relative personal relationships which could lead to questions about the objectivity of your judgment.

10.0 EWI Lab Services Documentation Structure



11.0 Representative EWI Organization Chart



12.0 Roles and Responsibilities of Technical Management

Each position is defined in the job description and shown in the organization charts above.

Technical Management:
In addition to assuring compliance ISO/IEC 17025, the technical management group has the following responsibilities:

Manager, Weld and Test Labs – The Manager, Weld and Test Labs provides direct leadership and direction to the LSG. He establishes lab organizational structure, pricing of products, and services and major policies for the LSG. He is also responsible for resource development of staff and equipment. The Director, Weld and Test Labs may suspend or terminate employees on the grounds of dishonesty, insubordination, poor job performance, or repeated non-compliance with quality procedures, and is also responsible for fiscal planning and performance of the LSG.

Lead/Principal Technician – The Lead/Principal Technician reviews incoming work requests in his/her area of responsibility and clarifies discrepancies. The Lead/Principal Technician maintains the log-in database, and uses it to monitor in-process work. He/She reviews the quality of lab data in his area of responsibility with respect to the LSG quality system and test standards and for accuracy and conformance to customer and/or specification requirements. The Lead/Principal Technician oversees maintenance of lab equipment in his area of responsibility and maintains all maintenance records. He also conducts assigned lab work. He/She is authorized to accept data based on compliance with quality acceptance criteria; however, he must report to the Quality Manager, Senior Engineer, Application Engineer or Director, Weld and Test Labs data which falls outside the quality acceptance criteria. The Lead/Principal Technician shall notify the Quality Manager of any quality problem. The Lead/Principal Technician reports directly to the Director, Weld and Test Labs. *He assists in developing new test routines, identifying equipment needs, overseeing implementation/design of new equipment, etc. He assists in business and staff development and provides input for project scheduling to the Director, Weld and Test Labs. He interfaces with customers and manages the technical aspects and customer communication of projects in his area of expertise. He is authorized to prepare customer proposals and reports in his area of expertise.*
The Lead Technician serves as deputy to the Director, Weld and Test Labs.

Quality Manager – The Quality Manager assists with staff development. The Quality Manager manages the LSG operating systems such as quality systems and lab report formats. He documents, implements, and reviews quality procedures and monitors the LSG quality system to ensure compliance with the LSG objectives and ISO/IEC 17025. He reports the status of LSG quality programs to the Director, Weld and Test Labs through formal and informal communication. The Quality Manager issues corrective actions when required. The Quality Manager is authorized to review all lab data with respect to the LSG quality system. The Quality Manager has the authority to require that procedures be amended or discontinued, or analysis suspended or repeated.

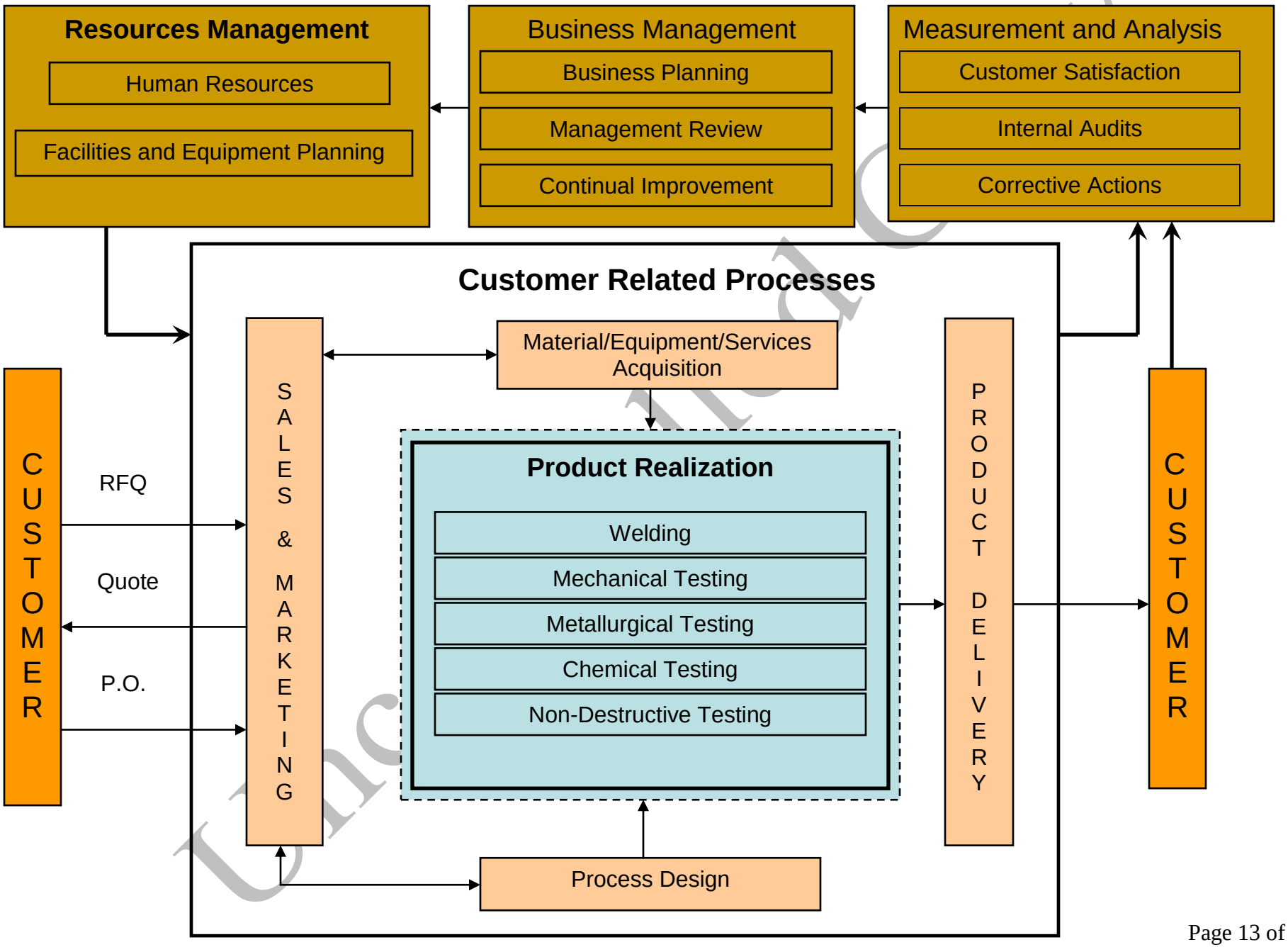
Other Positions:

Vice President, Operations – The Vice President, Operations provides overall leadership and oversight to the LSG.

Internal Auditor – The Internal Auditor conducts the audits as required by procedure LSG-ALL-009 Internal Audits. *The Internal Auditor also serves as deputy Management Representative.*

Technician/Senior Technician/Principal Technician – These technicians conduct assigned lab work in his/her area of responsibility and also perform maintenance, when possible, of lab equipment in his/her area of responsibility and maintain the appropriate maintenance logs. These technicians shall notify the Lead Technician, Application/Senior Engineer or Director, Weld and Test Labs when data falls outside the quality acceptance criteria. These technicians shall also notify the Quality Manager of any quality problems. The technicians report to either the Lead Technician or to the Director, Weld and Test Labs.

13.0 EWI's Process Interactions



14.0 Links to Process Analysis Diagrams

Product Realization

- Sales and Marketing
- Materials / Equipment / Services Acquisition
- Process Design
- Mechanical Testing
- Welding
- Metallurgical Testing
- Chemical Testing
- Non-Destructive Testing
- Product Delivery

Measurement and Analysis

- Customer Satisfaction
- Internal Audits
- Corrective Action

Business Management

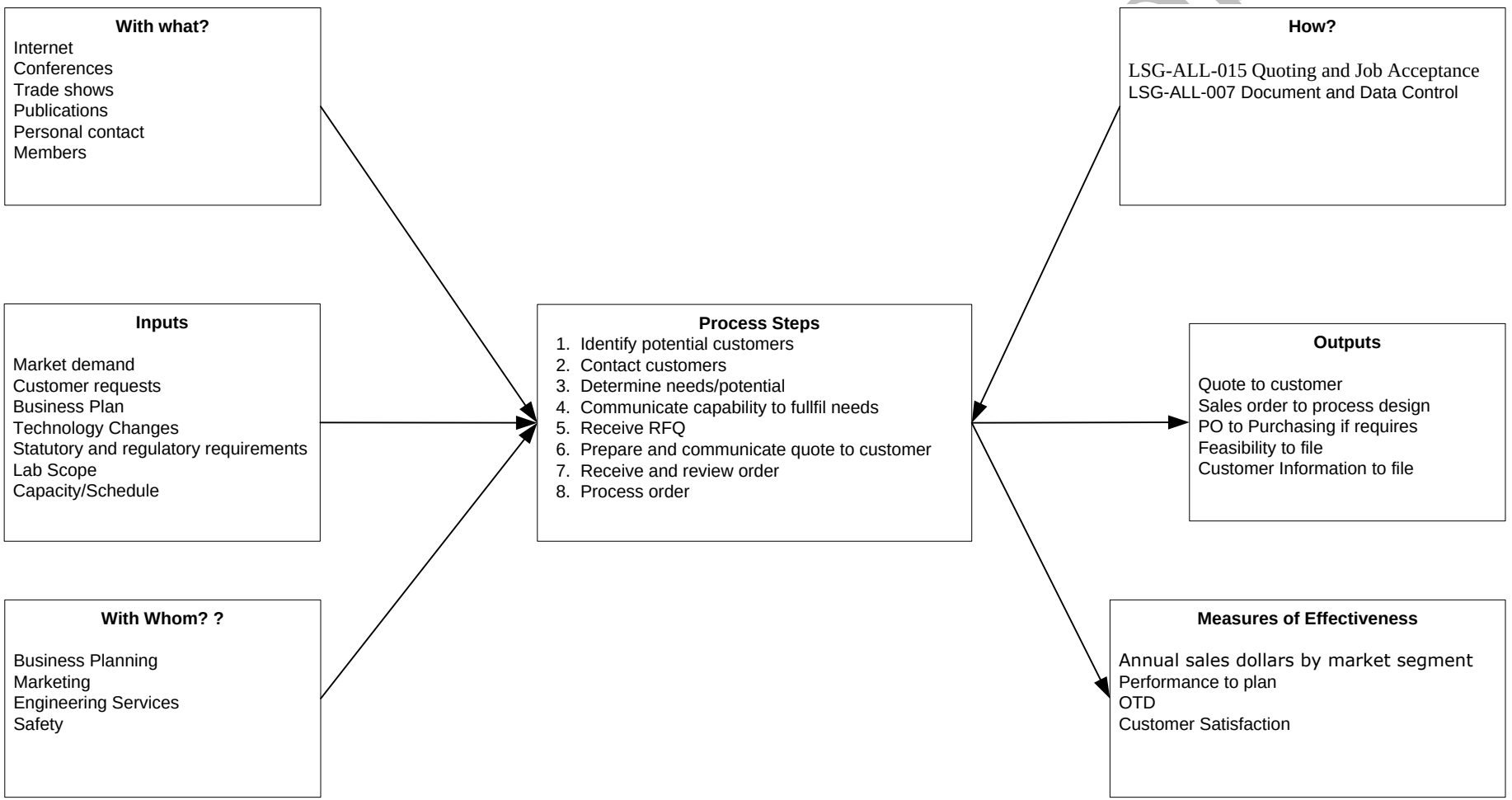
- Business Planning
- Management Review
- Continual Improvement

Resource Management

- Human Resources Management
- Facilities and Equipment Management

Process Analysis Diagram

Process Name: Sales and Marketing **Process Owner:** Brad Nagy [Link to Master Document List]



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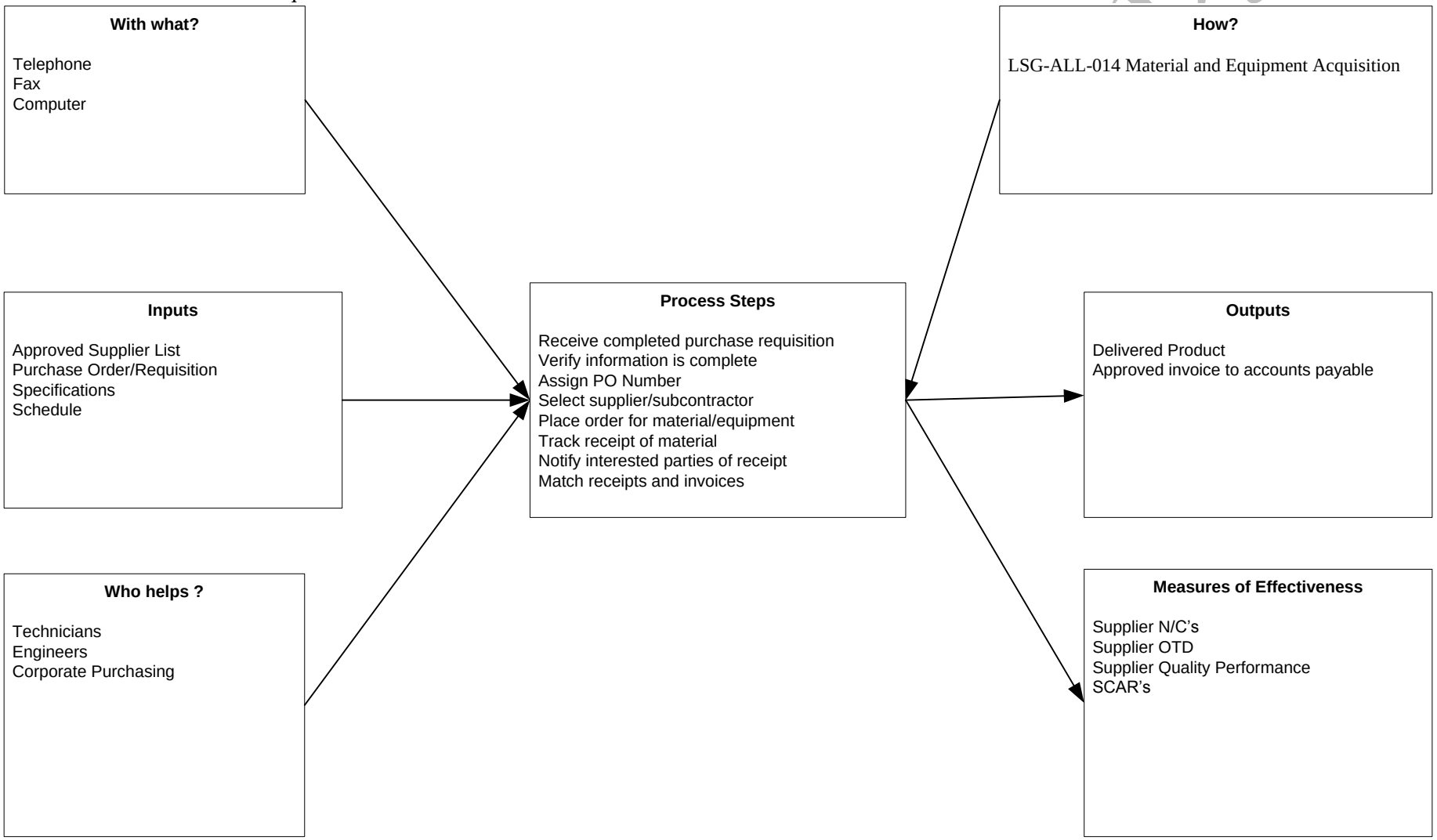
Process Analysis Diagram

Process Name: Materials/Equipment/ Services Acquisition

Process Owner: Brad Nagy

Link to Master Document List



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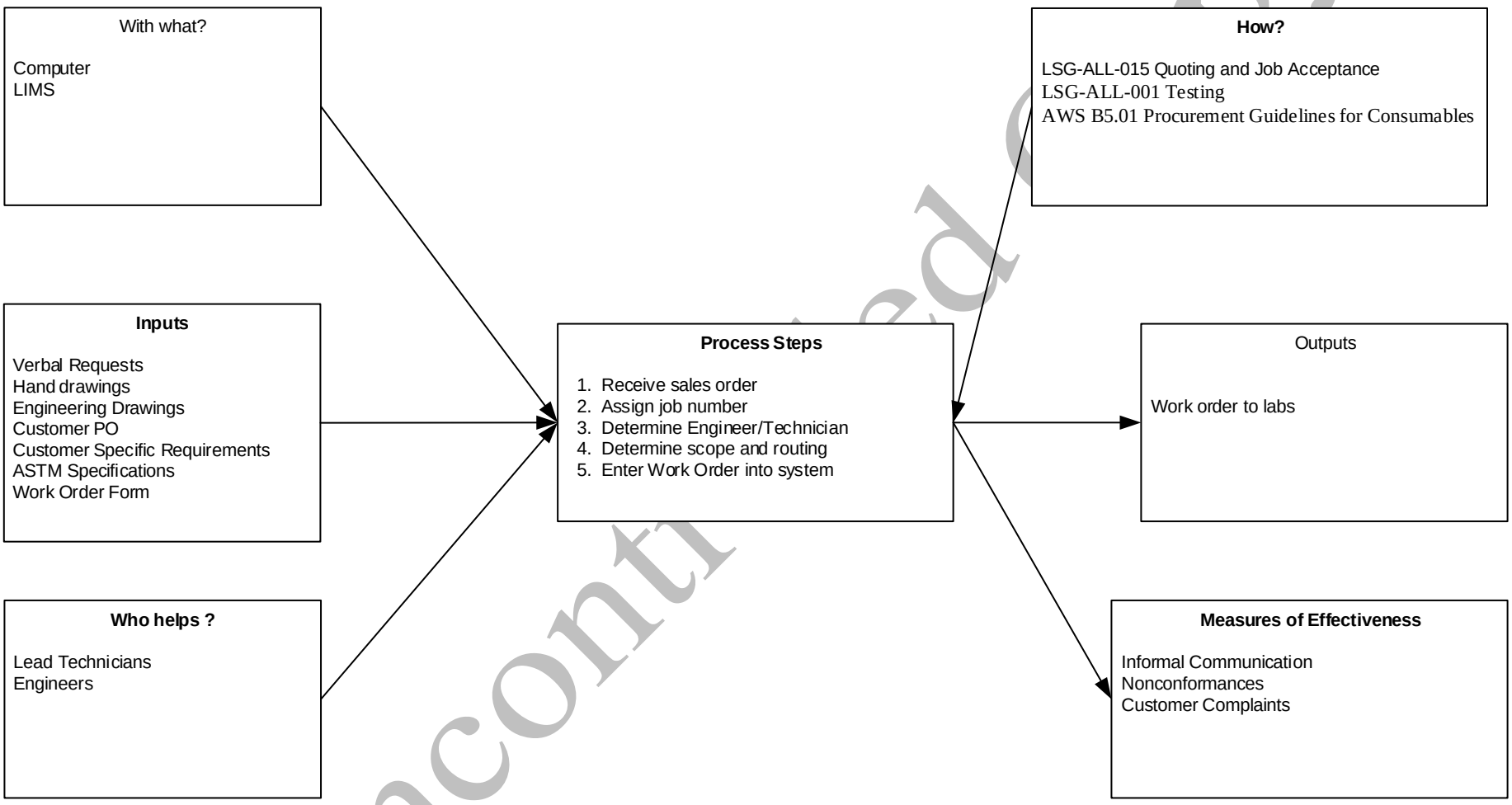
TOC Process Links

Process Analysis Diagram

Process Name: Process Design **Process Owner:** Rich Minshall/Josh Shoemaker [Link to Master Document List]



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TOC Process Links

Process Analysis Diagram

Process Name: Welding **Process Owner:** Gary Thompson [Link to Master Document List]

With what?
Welding Machines
- SAW power supplies (4)
- MIG power supplies (4)
- TIG power supplies (4)
- PAW (3)

Data acquisitions (5)
Welding Side beams (2)
Ceramic heating pads / Propane torch
Desk Top/Laptop Computers (4)

Inputs

Work Orders
Materials (Base plates)
Customer supplied filler materials
Shielding gases

Who?

Qualified Welding Technicians

Process Steps

1. Receive notification of a work request
2. Obtain work request/router.
3. Log into file on computer, per work order/router.
4. Review work order and ask for clarifications if necessary.
5. Select consumable/base plate/shielding gas, per work order.
6. Setup process on welding machine/s, per work order.
7. Set parameters, per work order.
8. Report irregularities, if any, to engineer/customer before continuing.
9. Perform test/instructions, per work order.
10. Enter data, per work order.
11. Finish testing/instructions, per work order.
12. Finish data entry, per work order.
13. Save and close electronic file.
14. Hard stamp identification on test item.
15. Sign and date router sheet.
16. Deliver test item to next stage in process, per router sheet.

How?
LSG-ALL-001 Testing
LSG-ALL-002 Reporting
LSG-ALL-004 Test Material and Sample Control
LSG-ALL-005 Equipment Control
LSG-ALL-007 Document and Data Control
LSG-ALL-013 Nonconforming Material and Testing
AWS B2.1
AWS B4.0 Mechanical Testing of Welds
AWS B5.01 Procurement Guidelines for Consumables

Outputs

Delivered test to machine shop
Electronic file filled out with data for test.

Measures of Effectiveness

OTD
% Amended
N/C's
Safety Performance

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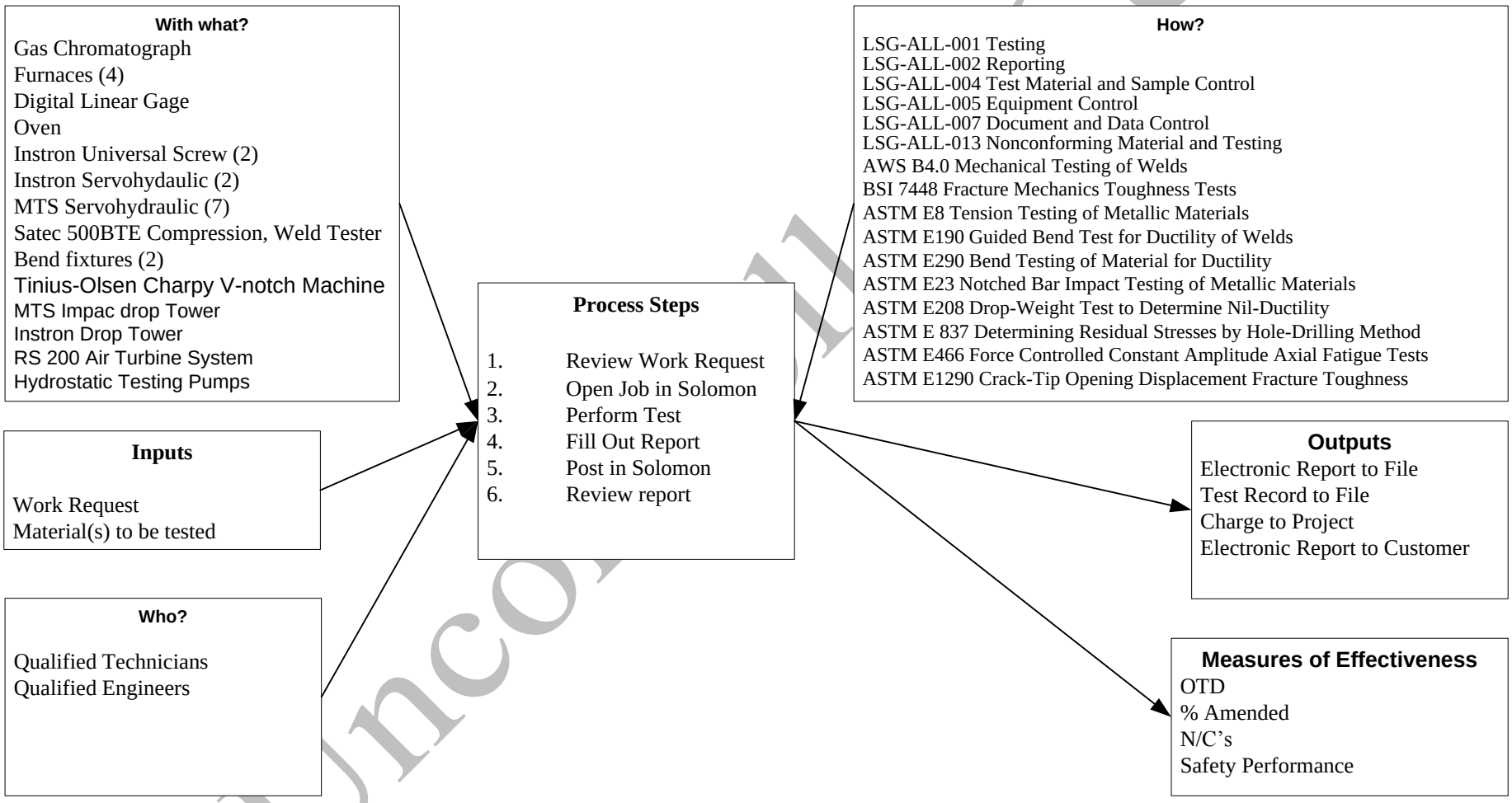
TOC Process Links

Process Analysis Diagram

Process Name: Mechanical Testing

Process Owner: Rich Minshall

Link to Master Document List



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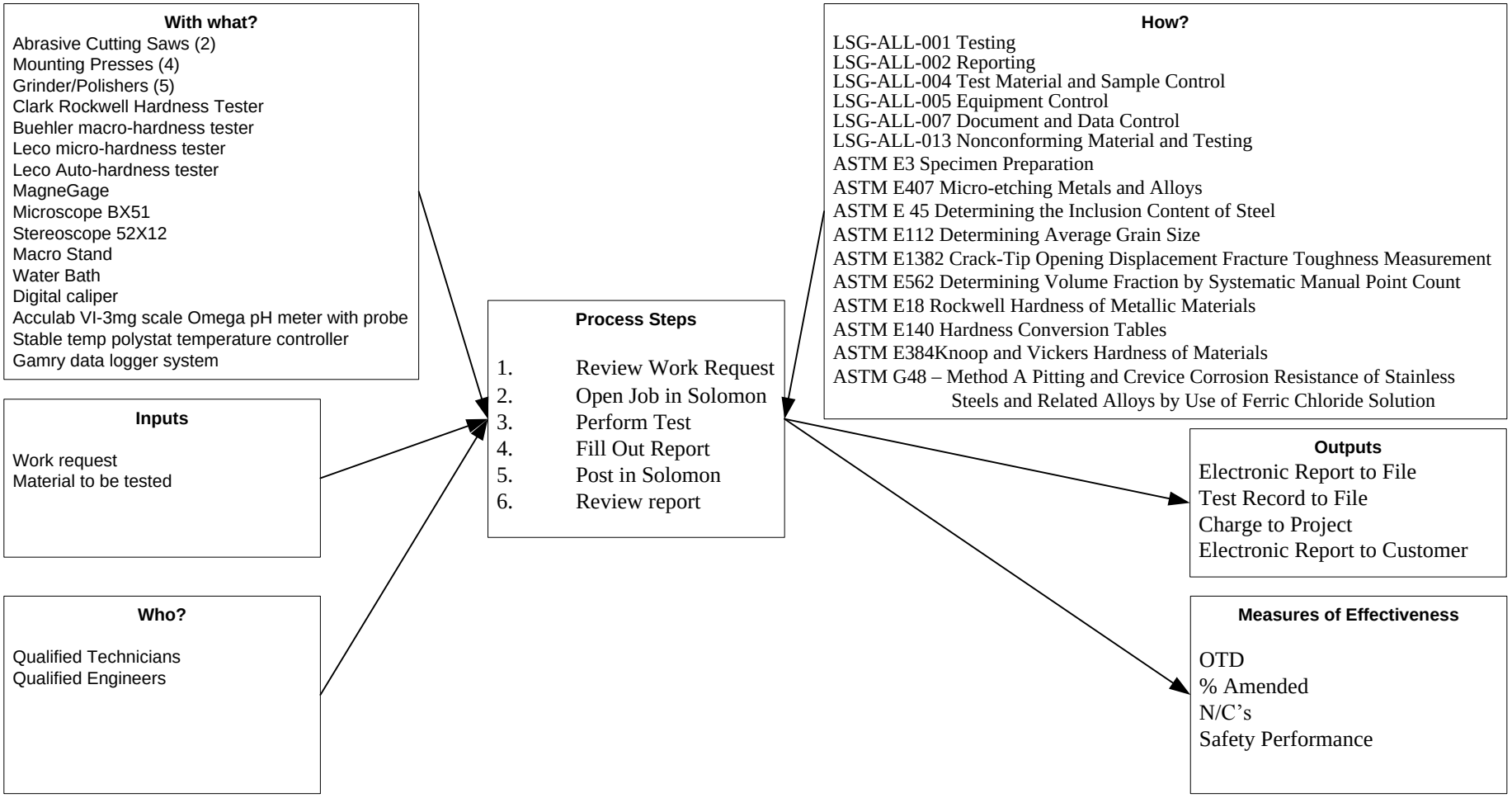
TOC Process Links

Process Analysis Diagram

Process Name: Metallurgical Testing

Process Owner: Rich Minshall

Link to Master Document List



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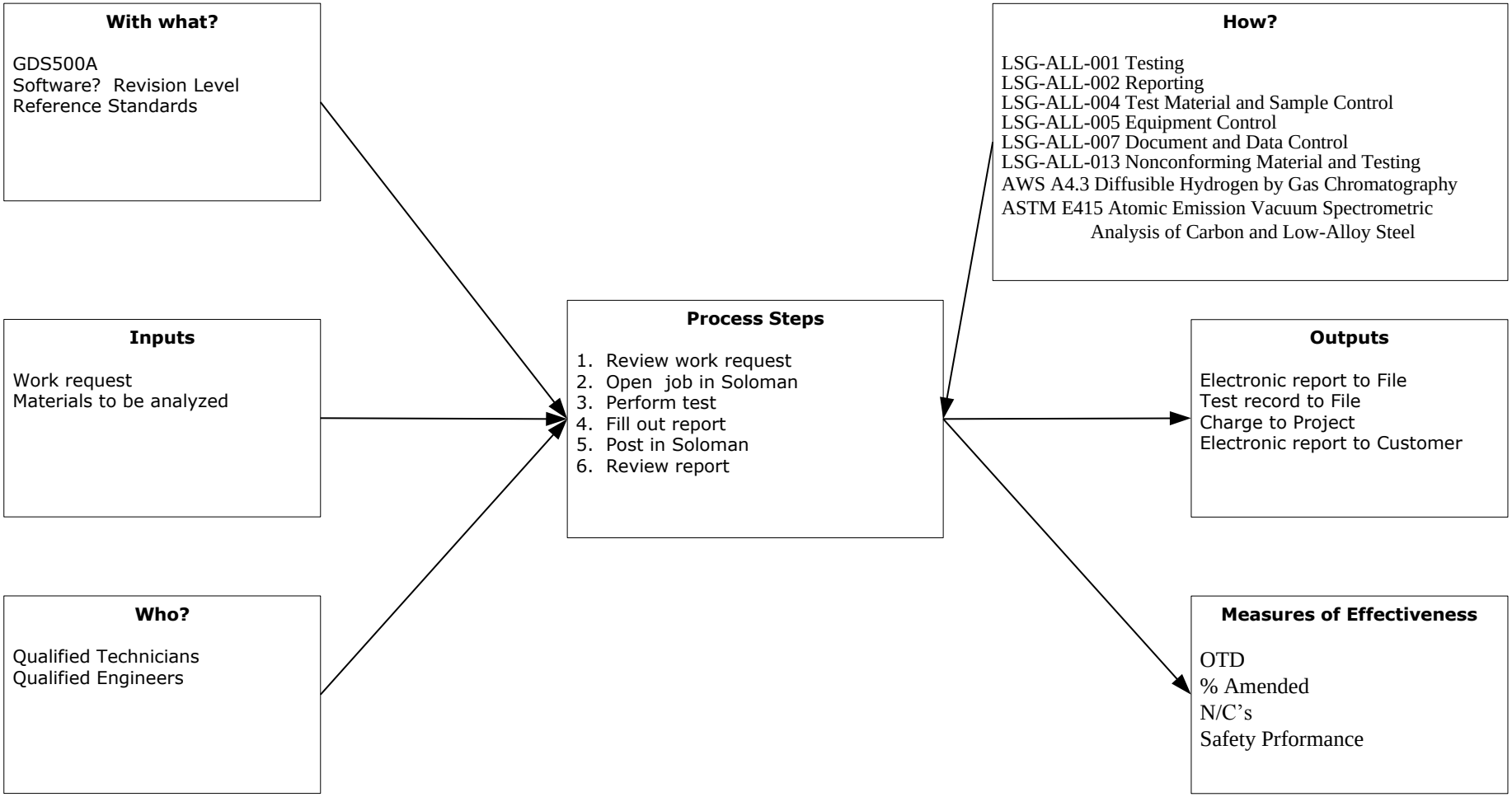
TOC Process Links

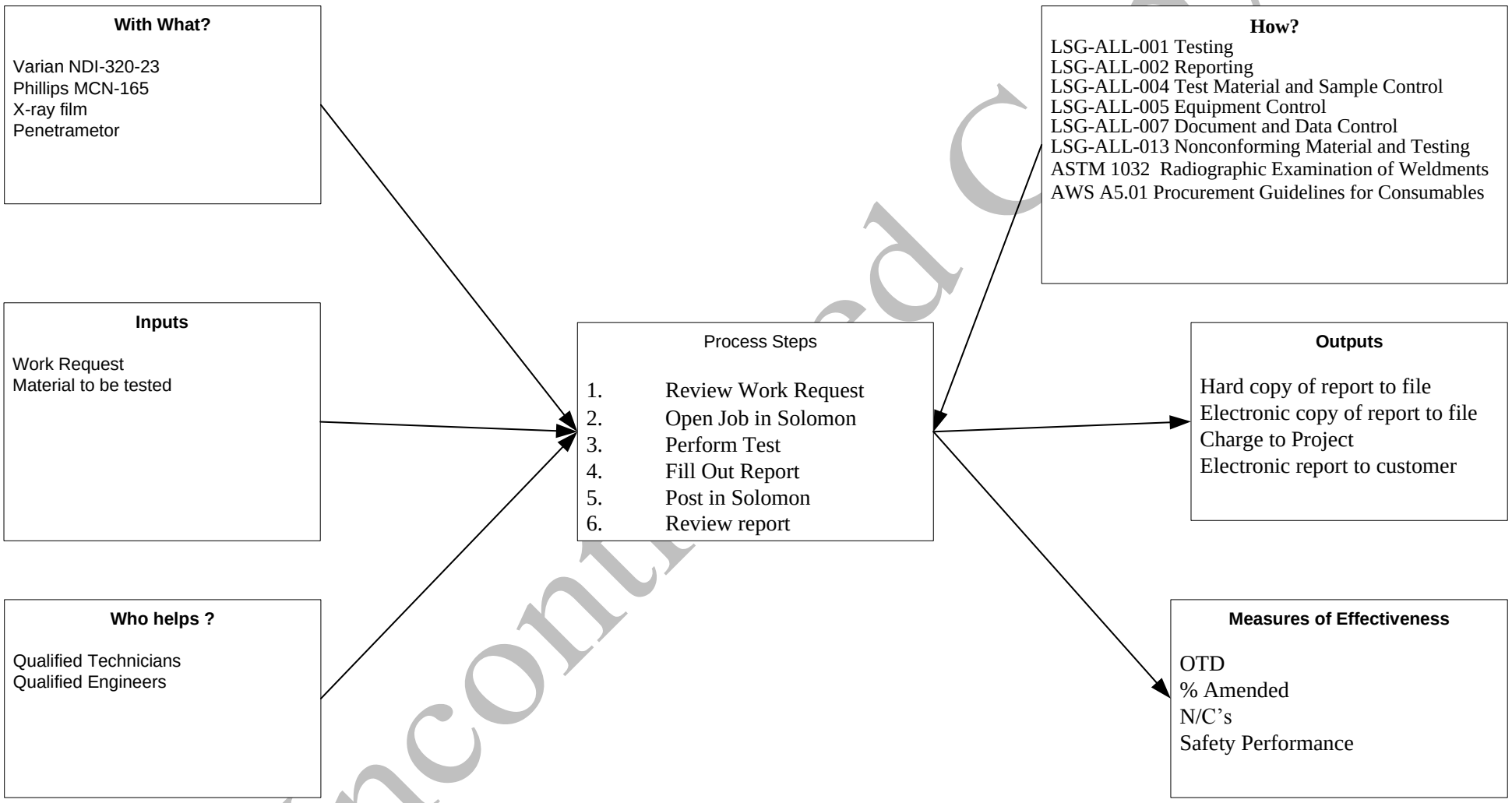
Process Analysis Diagram

Process Name: Chemical Testing **Process Owner:** Rich Minshall [Link to Master Document List]



Process Analysis Diagram

Process Name: Non-Destructive Testing **Process Owner:** Rich Minshall Link to Master Document List



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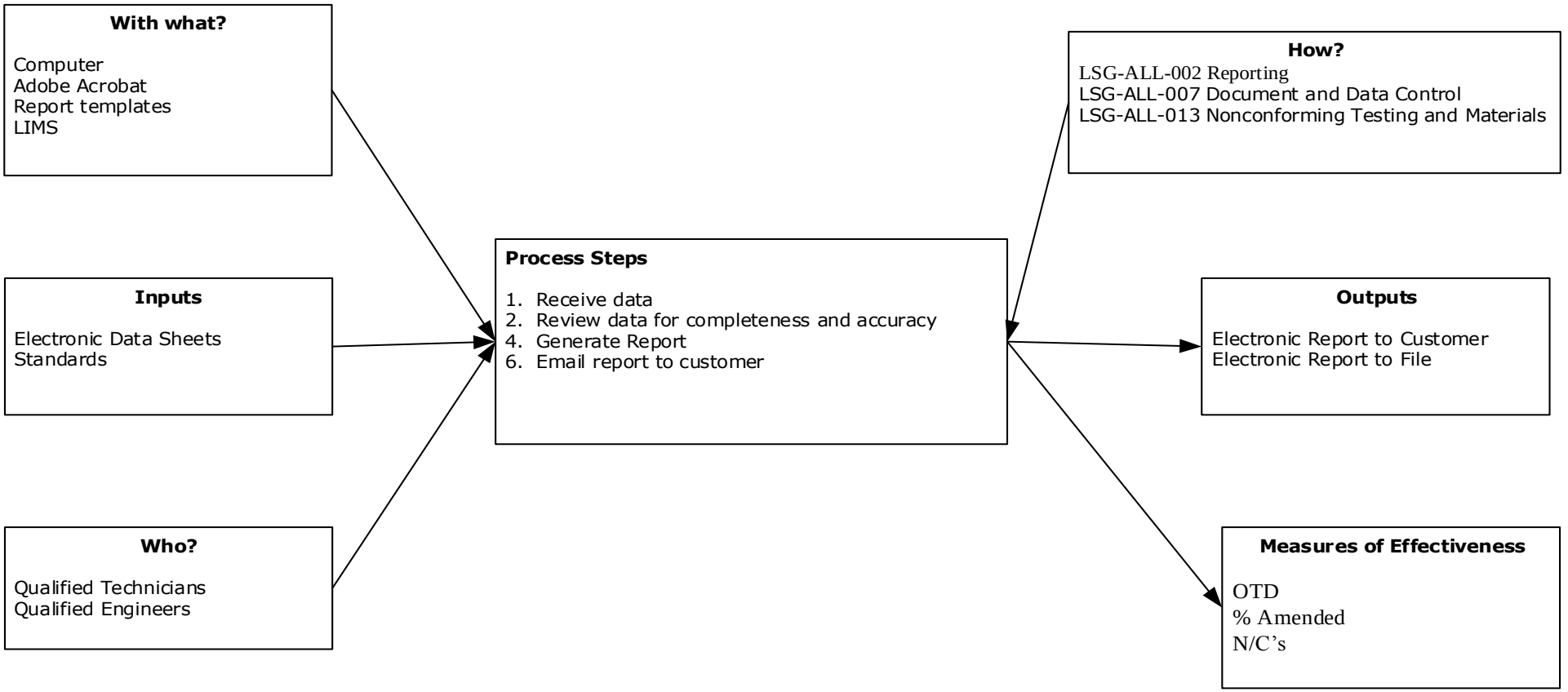
Process Analysis Diagram

Process Name: Product Delivery

Process Owner: Rich Minshall/Josh Shoemaker

Link to Master Document List



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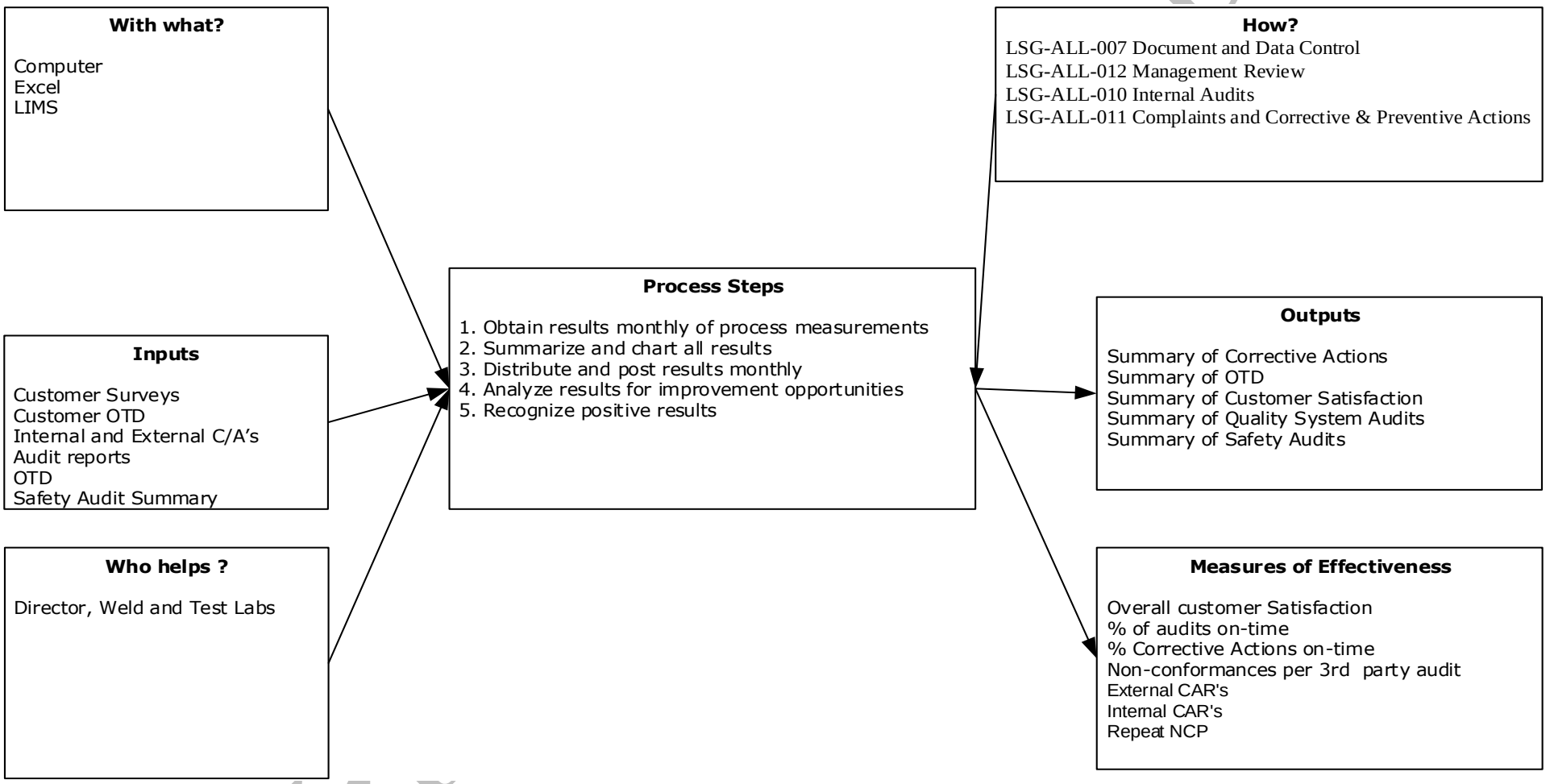
TOC Process Links

Process Analysis Diagram

Process Name: Measurement and Analysis **Process Owner:** Brad Nagy Link to Master Document List



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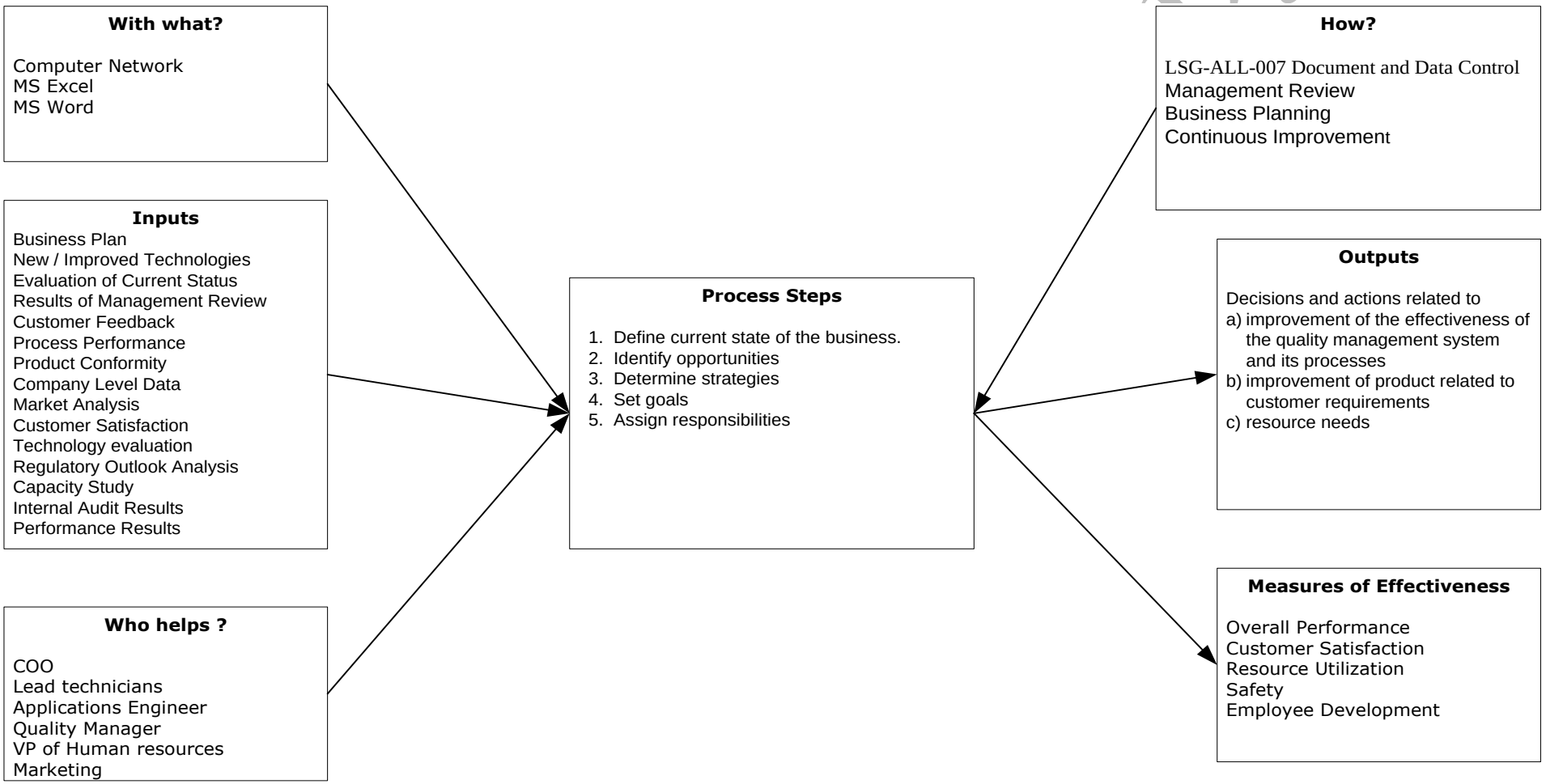
TOC Process Links

Process Analysis Diagram

Process Name: Business Management **Process Owner:** Brad Nagy [Link to Master Document List]



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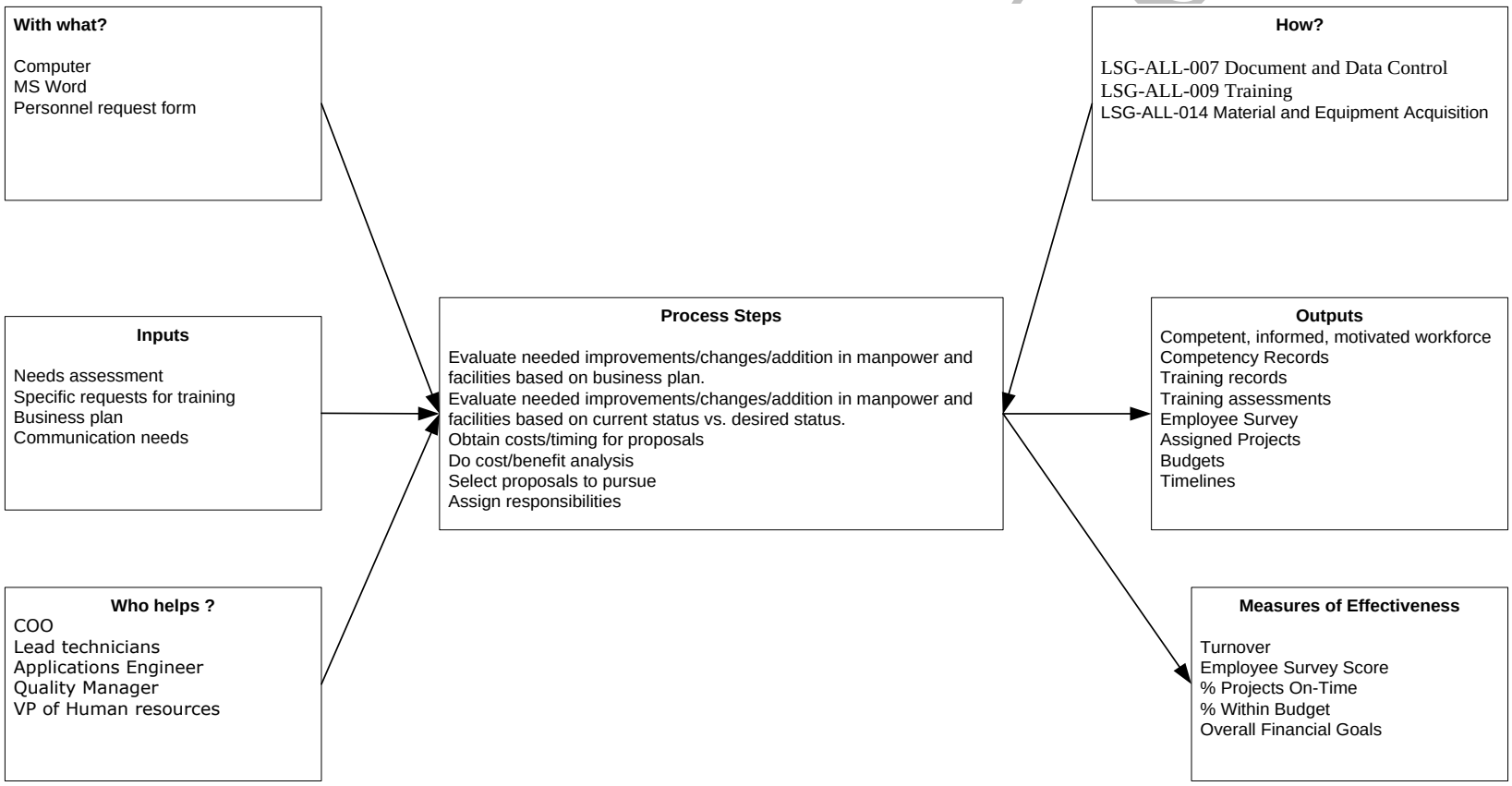
TOC Process Links

Process Analysis Diagram

Process Name: Resource Management **Process Owner:** Brad Nagy Link to Master Document List



15.0 Customer Specific Requirements

Our quality system is designed to be compliant with the ISO 9001 and ISO/IEC 17025, quality standards recognized world-wide, as well as, any customer specific requirements as identified on the Master Document List.

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