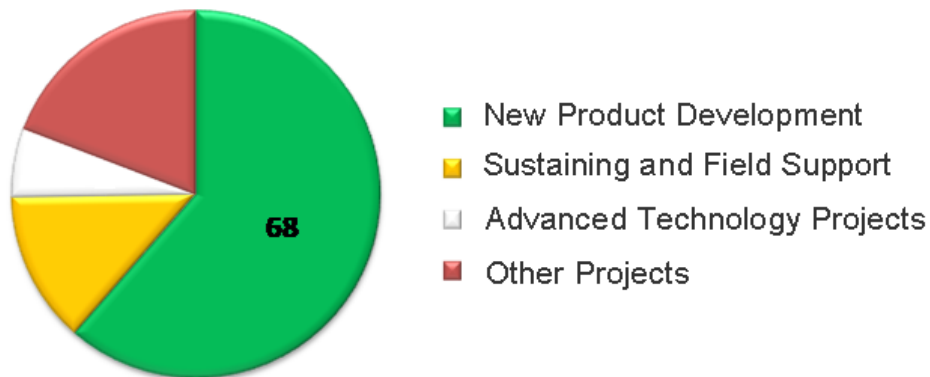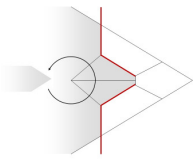Resource management for an organization involves understanding the demand (projects and activities), as well as capacity (number of resources and resource roles). Recall that the triple constraints of project management (cost, time and scope) are continuously balanced, usually in an ad-hoc manner. However, project pipeline and resource management data can be collected and analyzed in order to more effectively balance these constraints, and limited resources can be more effectively utilized on highest-value projects. The following steps can be taken in order to accomplish this:

1) Implement time reporting for all resource roles. Time reporting data forms a basis for understanding current-state activities and provides historical data for estimating future projects resource loading.

2) Formally manage projects using forward-looking resource and schedule estimates.

3) If time reporting data is not available, capacity can be determined by surveying all resources to identify their percent involvement on different project types (for example, in addition to time spent on formally managed projects, resources also support sustaining, field support, advanced technology, research projects, etc.). This data helps you understand available capacity for formally managed projects. An example of this is as follows, where 68 resources were identified as being available to support (formally managed) "New Product Development" projects.

Full Time Equivalent (FTEs) for Project Types

- New Product Development
- Sustaining and Field Support
- Advanced Technology Projects
- Other Projects

4) Standardize on resource role names and identify and assign resource roles to individuals. Individuals who perform multiple roles can be given a relative % of contribution to each role. This sets the total capacity for the organization under which projects are performed. Capacity can be quantified as available hours per month for each resource role.

5) Complete forward-looking resource plans for all formally managed projects. This is usually a monthly resource load for all resource roles required to complete the project. Note that projects can be resourced using a phase and gate schedule format, for example, for new product development phases "Definition-Concept-Design-Validation-Industrialize-Production". Each project has a certain resource loading per phase and each phase has a schedule date. Resource loading can be assumed to be evenly spread over the phase duration.

6) The data should have a sufficient level of accuracy to enable data driven decisions and to enable macro-level planning. With the leverage of time reporting, you will also be able to better understand resource loading 'actuals' and use historical data for improved estimates in the future.

Next steps involve investigating options to address resource constraints on specific resource roles and/or revising plans (schedules) on projects that are constrained. Doing fewer projects should also be considered via project portfolio analysis (making specific project tradeoff decisions).

Below is an example of a capacity plan for an engineering organization, normalized to % demand vs. capacity.

Role	2013-3	2013-4	2013-5	2013-6	TOTAL
ENGINEER – HW ARCHITECT	295%	174%	177%	112%	**191%**
TECHNICIAN – SYSTEMS	66%	204%	183%	152%	**150%**
ENGINEER – SOFTWARE	247%	153%	47%	28%	**120%**
ENGINEER – MECHANICAL	85%	132%	119%	57%	**98%**
ENGINEER – ELECTRICAL	44%	66%	81%	92%	**71%**
ENGINEER – SYSTEM VERIFICATION	124%	58%	49%	34%	**67%**
ENGINEER – SW ARCHITECT	115%	91%	43%	12%	**65%**
ENGINEER – BOARD LAYOUT	51%	57%	53%	36%	**49%**
ENGINEER – SW TEST	92%	64%	16%	10%	**46%**

Pipeline and resource management decisions are summarized below:

a.) Redeploy certain resources to different resource roles (assuming their skill set enables this)
b.) Move selected projects schedule to the right (start later or spread the project timeline to a longer overall duration).
c.) Add resources to add capacity for certain resource roles
d.) Cancel or place projects 'on-hold'

This data collection and analysis approach provides macro-level resource management, redeploying resources from over-capacity to under-capacity situations. When redeployment is successfully accomplished, almost double the benefit of current state is realized (under-utilized to fully-utilized…as-if a new resource has been added). As with any level-loading action taken, additional benefits in the form of improved project performance and project quality are also realized.