\[ T_{\text{step}} = \max_i (w_i) + \max_i (h_i) g + L \]

- \( w_i \) = time for worker \( i \) to do local computation
- \( h_i \) = number of messages sent by worker \( i \)
- \( g \) = time per message
- \( L \) = total time for barrier synchronization

Program execution within 1 step
Filled box is parallel portion (sped up by factor \( P \))
Clear box is the overhead

If you want to use Amdahl's law to determine how fast your program is when you parallelize it with BSP,

then these are the \( r \) and \( s \) terms

\[ r = \frac{1}{r} \]

\[ s = p \]